City of King City

TRANSPORTATION SYSTEM PLAN – VOLUME 2 APPENDIX

SEPTEMBER 2022

TSP VOLUME 2: APPENDIX

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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APPENDIX A. PUBLIC AND STAKEHOLDER INVOLVEMENT PLAN

KING CITY
TRANSPORTATION SYSTEM PLAN (TSP)
AND LAND USE REFINEMENT

PUBLIC INVOLVEMENT & COMMUNICATIONS PLAN

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King City

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JLA Public Involvement

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INTRODUCTION

This Public Involvement and Communications Plan (PICP) will guide stakeholder and public involvement during the King City Transportation System Plan (TSP) project. The PICP reflects commitments from The City of King City, the Oregon Department of Transportation (ODOT) and consultants to carry out public involvement activities designed to keep stakeholders and the broader public engaged and informed about the project and its goals. This project is an opportunity to reshape the ways people walk, bike, roll and move around King City, Oregon and public feedback is crucial for understanding both near-term and long-term transportation goals for the area.

PROJECT OVERVIEW

The King City TSP project will develop the City of King City's first transportation vision, policies, standards, network maps, and capital projects list. The TSP will include options for improving the multimodal network within the existing and newly incorporated areas of the City, with strong connections to neighboring communities in Washington County. The Project Area includes heavily-traveled arterials, including SW Beef Bend Road, SW Roy Rogers Road, and Pacific Highway West ("99W") and a major focus of the project will be to assess key intersections along these routes for safety, reliability, and congestion issues and opportunities.

A Growing City

King City is a city that has been experiencing fast growth and increased diversity of its residents over the last twenty years. While the City of King City was originally incorporated in 1966 as community for people over the age of 50, today it is home to families and a rich and diverse community that will continue to evolve as the city area doubles with the addition of the area that makes up URA 6D. A TSP will help the City to prepare for and meet the transportation needs of the current and future community of King City.

Project Objectives

The primary objectives of the Project are to:

- Create an integrated, multimodal TSP that:
    - Identifies needs, policies, and standards related to all modes of transportation, including walking, biking, transit, motor vehicles, and freight.
    - Provides safe and reliable transportation choices for people of all ages and abilities.
    - Minimizes reliance on driving to make trips within the City.
    - Supports the vision of a new main street/ town center that provides easy access for everyday needs and offers a range of employment opportunities.
    - Provides access to existing and planned recreational facilities and open spaces.
    - Minimizes potential environmental impacts of transportation infrastructure, services, and trip-making.
    - Can be built and maintained with feasible public and private investments.
- Refine the land use designations for URA 6D prior to master planning, so that the land use in the new Main Street/Town Center is compatible with vision for new developments, planned City transportation infrastructure, and adjacent major arterials needs.

Project Area

The project area includes incorporated King City and URA 6D, which is bordered by 99W to the east and south, SW Beef Bend Road to the north and SW Roy Rogers Road to the west.

Anticipated Project Timeline

This effort is anticipated to take 18 months and will conclude late summer 2021.

DEMOGRAPHIC DATA REVIEW: TITLE VI POPULATIONS

As part of the outreach to engage citizens and stakeholders in the King City TSP project, the project team will make special efforts to involve historically underrepresented groups as well as the priority populations recognized by the 1994 Executive Order (E.O.) 12898. The demographic data below compiles Census tracts within King City and its the expansion area, Tigard, and other applicable tracts as a comparison to Washington County and the state of Oregon overall. The following demographic analysis used various tables from the 2013-17 5-Year American Community Survey (ACS) estimates and population forecasts from the Population Research Center at Portland State University.

How This Information Informs Public Engagement

Demographic information can inform the best ways to engage the various community groups that live within a project area, including language translation and interpretation needs, public engagement activities that match the community's age and/ or backgrounds, and providing appropriate accommodations for disabilities.

Additionally, the following demographic data includes information about areas outside of the project area including Tigard and Washington County. As the overall population in the region grows, it is important to reflect the needs of those who may relocate to growing King City in the near future. For this reason, demographics for the other nearby areas will be considered with outreach and public engagement activities for this effort.

About the Area Analyzed

The demographic analysis for this project looked separately at the demographics for two overlapping areas. The first geographic area we looked at were the two census tracts that make up King City and the expansion area for the TSP, referred to as "King City Plus." The second area looked at broader demographic context around the proposed project area, including the city of Tigard, Bull Mountain, and three census tracts that make up King City and the expansion area; this is referred to in this report as "Tigard Plus." Both areas are compared to Washington County and the state of Oregon to understand broader regional context and demographic trends.

Total Population

The total population of the King City Plus area is estimated to be 11,281 people. The population of the larger Tigard Plus area, which includes the King City Plus area, contains 79,901 people and encompasses almost 14 % of the population of Washington County. According to forecasts done by the Population Research Center at Portland State University, the population of Washington County is expected to grow considerably in the future. By 2030 Washington County is expected to have 718,633 residents, an increase of 25.6%. By 2040, the population of Washington County is expected to increase an additional 12.8%, to 810,303 residents.

Table 1. Total Population

	Estimate
King City Plus: Total population	**11,281**
Census tracts	
319.07	6,190
320.01	5,091
Tigard Plus: Total population	**79,901**
Census tracts	
Tigard city (place)	51,355
Bull Mountain CDP (place)	9,698
319.07	6,190
319.08	7,567
320.01	5,091
Washington County: Total population	**572,071**
Oregon: Total population	**4,025,127**

Source: 2013-2017 American Community Survey 5-Year Estimates (DP05).

Note: The percentages included in this report are estimates from the American Community survey, each number comes with a margin of error, or an over/under range by which the estimate could be off. In some cases, the percentages will not add up to exactly 100% because of this margin or error.

Race & Ethnicity

The area of King City Plus is 93.4 percent residents identifying as white, while the larger area of Tigard Plus is more diverse, with 86.5 percent of its resident identifying as white. The Tigard Plus area has a slightly higher percentage of people who identify as Hispanic/Latino with a population of 10.2 percent, compared to King City Plus's 9.4 percent. That said, ***because almost 10% of the population identifies as Hispanic/ Latino, public engagement should strive to provide activities and information that reach this community in meaningful ways***.

There is a higher percentage of people who identify as Asian in Tigard Plus (11.0%) compared to King City Plus area's four percent.

The large differences in racial and ethnic makeup between King City and the proposed expansion area, and the area that surrounds it, means that the project team will need to work with community partners to reach community groups who may not be largely represented in the community today.

Table 2. Race and Ethnicity

	King City Plus	Tigard Plus	Washington County	Oregon
Total population	**11,281**	**79,901**	**572,071**	**4,025,127**
White	93.4%	86.5%	82.0%	89.1%
Black or African American	1.3%	2.3%	3.0%	2.8%
Hispanic/ Latino	9.4%	10.2%	16.4%	12.7%
American Indian and Alaska Native	1.1%	1.3%	2.0%	3.1%
Asian	4.0%	11.0%	12.3%	5.6%
Native Hawaiian and Other Pacific Islander	0.7%	1.3%	1.1%	0.8%
Some other race	2.3%	2.3%	5.5%	3.5%

Source: 2013-2017 American Community Survey 5-Year Estimates (DP05).

Age

The King City Plus area contains a significantly higher population of people aged 65 and older compared to the City of Tigard Plus area, Washington County, and the state of Oregon.

Table 3. Age

	King City Plus	Tigard Plus	Washington County	Oregon
Total population	11,281	79,901	572,071	4,025,127
Under 5 years	5.0%	6.0%	6.4%	5.8%
5-9 years	5.5%	6.0%	6.6%	6.0%
10-14 years	4.1%	6.3%	6.9%	6.0%
15-19 years	4.0%	5.8%	6.2%	6.1%
20-24 years	4.0%	5.8%	6.0%	6.6%
25-34 years	10.5%	13.7%	15.4%	13.9%
35-44 years	11.5%	14.5%	15.0%	13.1%
45-54 years	9.5%	12.5%	13.5%	12.8%
55-59 years	7.1%	7.0%	6.2%	6.7%
60-64 years	8.6%	6.0%	5.5%	6.8%
65-74 years	15.6%	9.4%	7.3%	9.8%
75-84 years	9.4%	4.6%	3.2%	4.5%
85 years and older	5.1%	2.3%	1.6%	2.1%
Median Age	51.4	40.4	36.4	39.2

Source: 2013-2017 American Community Survey 5-Year Estimates (DP05).

Sex

There is a significantly higher proportion of females in the King City Plus area (57%) than the other three comparative areas.

Table 4. Sex

	King City Plus	Tigard Plus	Washington County	Oregon
Total population	11,280	79,901	572,071	4,025,127
Male (%)	43.0%	48.6%	49.4%	49.5%
Female (%)	57.0%	51.4%	50.6%	50.5%

Source: 2013-2017 American Community Survey 5-Year Estimates (DP05).

Disability

The King City Plus area has a higher percentage of people living with a disability than Tigard Plus, Washington County, or the state of Oregon. The most common type of disability in this area is difficulty with walking (ambulatory difficulty). The area of Tigard Plus has a lower percentage of people with a disability than the state of Oregon on average, and a similar percentage to the rest of Washington County as a whole.

Per state standards, all public events will be held in ADA-accessible locations.

Table 5. Disability Characteristics

	King City Plus	Tigard Plus	Washington County	Oregon
Total population with a disability	17.2%	11.3%	10.2%	14.6%
With a hearing difficulty	6.1%	3.7%	2.9%	4.7%
With a vision difficulty	3.6%	2.1%	1.7%	2.5%
With a cognitive difficulty	5.9%	4.3%	4.6%	6.2%
With an ambulatory difficulty	10.3%	5.5%	4.9%	7.5%
With a self-care difficulty	3.4%	1.8%	2.0%	2.8%
With an independent living difficulty	7.9%	4.1%	4.6%	6.1%

Source: 2013-2017 American Community Survey 5-Year Estimates (S1810).

Limited English Proficiency

Limited English proficiency looks at the number of people who speak a language other than English and who also speak English less than “very well.” Both the King City Plus and Tigard Plus areas have percentages of people who speak only English that are similar the state of Oregon. Washington County has a lower percentage of people who speak only English. Both areas also have lower percentages of people with limited English proficiency than Washington County, with 3.1 percent for the King City Plus area and 6.7 percent for the Tigard Plus area compared to 9.1 percent in Washington County.

Of the languages spoken by people with limited English proficiency, Spanish is spoken the most in the King City Plus area, while in Tigard Plus, Spanish and Asian and Pacific Islander languages are equally common. Both Tigard Plus and King City Plus have a much higher number of languages classified as “other” by the American Community Survey than either Washington County or Oregon.

Table 6. Limited English Proficiency

Percentage of population who speak a language other than English and who speak English less than "very well"

	King City Plus	Tigard Plus	Washington County	Oregon
Population aged 5 years and over	10,717	75096	535,299	3,793,273
English only	85.5%	81.0%	75.7%	84.8%
Speaks a language other than English, speaks English less than “very well”	3.1%	6.7%	9.1%	5.9%
Breakdown of those that speak a language other than English (3.1%)				
Spanish	54.2%	35.9%	5.1%	3.6%
Other Indo-European languages	18.3%	13.9%	0.7%	1.1%
Asian and Pacific Islander languages	13.2%	37.0%	2.6%	1.4%
Other languages	14.4%	13.1%	0.4%	0.2%

Source: 2013-2017 American Community Survey 5-Year Estimates (DP02)

Income & Poverty Status

Overall, the population of King City Plus includes slightly more people that are experiencing poverty than in the other comparative areas. The median household income of the Tigard Plus area is higher than the King City Plus area and the median income of Oregon as a whole, but less than the median income of Washington County. The Tigard Plus area also has a significantly lower proportion of people who have lived in poverty in the past 12 months than the state of Oregon. The percentage of people living at or below the poverty level in the King City Plus area is slightly higher than Washington County as a whole.

	King City Plus	Tigard Plus	Washington County	Oregon
Total households	5,289	31,535	212,778	1,571,631
Less than $10,000	5.8%	3.8%	3.8%	6.5%
$10,000-$14,999	5.9%	2.8%	3.0%	4.8%
$15,000-$24,999	8.5%	6.7%	7.2%	10.0%
$25,000-$34,999	10.8%	9.6%	7.9%	10.0%
$35,000-$49,999	13.0%	10.6%	11.4%	13.5%
$50,000-$74,999	21.7%	15.9%	17.5%	18.5%
$75,000-$99,000	10.7%	13.1%	14.6%	12.9%
$100,000-$149,000	13.0%	18.2%	18.4%	13.8%
$150,000-$199,999	3.4%	9.6%	8.5%	5.0%
$200,000 or more	7.2%	8.9%	7.8%	5.0%
Median household income	$58,427	$70,120	$74,033	$56,119
Mean household income	$77,316	$104,441	$93,043	$75,851
Percentage of people whose income in the past 12 months is below the poverty level	11.8%	8.2%	10.3%	14.9%

Source: 2013-2017 American Community Survey 5-Year Estimates (DP03).

Key Considerations for this Project

The above data shows that King City has a different demographic makeup than the surrounding Tigard and Washington County areas. Overall, residents in the surrounding area are younger, more racially diverse, and have higher incomes. This is significant because this project will need to consider both the current and future transportation needs of the area. With more people moving to the Portland Metropolitan Area and its surrounding cities, King City will need to plan for different modes of transportation that serve a wider variety of needs and destinations.

PUBLIC INVOLVEMENT PURPOSE AND GOALS

The purpose of the public involvement program is to share information and gather input on the needs, issues and options of potentially affected interests living near and served by the project area, as well as other stakeholders and interested parties.

The project's public involvement and communication goals are to:

- Communicate complete, accurate, understandable and timely information to the public throughout the project.

- Specifically engage the public to help identify near- and long-term multimodal transportation needs and desires.
- Collaborate with interagency partners; support the city in working with the Planning Commission, City Council and Technical Advisory Team (TAC).
- Comply with Civil Rights Act of 1964 Title VI requirements.
- Ensure that the public involvement process is consistent with applicable state and federal laws and requirements, and is sensitive to local policies, goals and objectives.

KEY MESSAGES

Throughout the project, we'll use these key messages in public communications. We'll update them as needed to reflect the project's progress.

- Help us plan for King City's growing transportation needs – for now and the future.
    - The city and surrounding areas will keep growing, so we need your help in creating a transportation plan to address our community's needs today and 20 years from now.
    - This is our *first* formal transportation plan. Your input can truly set the tone for years to come.
    - The project will take 18 months — but it's time well spent, because it will serve a generation.
- This project is for *all* of King City and nearby — not just developing the western expansion area, but also serving our commercial core and underdeveloped areas, and planning "complete streets" everywhere in town.
- We'll look especially closely at the roads people use most, including SW Beef Bend Road, SW Roy Rogers Road, and Pacific Highway West (99W). We'll assess how to make their key intersections safer, more reliable and less congested.
- We'll plan for *all* the ways people get around in King City and neighboring parts of Washington County, whether you drive, bike, walk, roll, take the bus or use a golf-cart.
- We're committed to reaching out to people of all incomes and backgrounds, including those who use assistance to get around or who speak other languages.
- The plan will have a *whole framework* for building a safe, well connected system: policies, standards, network maps, a capital projects list and more.
- Instead of working separately, we'll mesh this project with the King City Beef Bend South Master Plan project. That will help build one consistent vision for a healthy, thriving community.

CONCURRENT EFFORTS AND COORDINATION

There are other regionally significant planning projects that have overlapping goals and activities occurring concurrently with this project. It is important to be aware of these efforts to ensure that outreach and messaging are consistent and, when possible, coordinate outreach activities to reduce public confusion and redundancies. These projects include:

- **King City Master Plan** – The Master Plan activity overlaps with the same project area and will consider the outcomes of the TSP process. While this project has not yet started, it will overlap with the TSP schedule.
- **Tigard River Terrace Project** – Part of the focus for this URA planning effort will include SW Beef Bend Road. It will be important to know how this plan may place additional demands on this corridor and how transportation system elements should be coordinated.

- **Washington County Urban Reserve Transportation Study (URTS) Project** -This study will consider possible amendments to the County's TSP and will include key projects such as the Tile Flat Road extension to Beef Bend Road.

AUDIENCES

The public involvement process will seek to inform and engage the following types of affected and interested people and organizations in the project area:

- King City and expansion area residents
- King City elected officials
- Nearby Washington County residents
- King City TSP Technical Advisory Committee
- Agency partners working on related plans or projects
- Area businesses and business organizations
- Bike and pedestrian interests
- Transit interests, including current or potential passenger transit
- Culturally specific community-based organizations serving residents of the project area
- Freight interests
- Environmental interests
- Accessibility groups
- Senior services
- Tourism and recreation interests
- Tigard-Tualatin School District
- Housing and community development interests
- Emergency services providers
- Local event organizers
- Recreational interests and recreational users
- King City Public Golf Course
- Houses of worship, including those that provide service in multiple languages

PROJECT TEAM MEMBER ROLES AND RESPONSIBILITIES FOR PUBLIC INVOLVEMENT

ODOT

- **Talia Jacobson, Region 1, Project Contract and Funding Administrator –** Talia provides project oversight to ensure that the project meets state requirements and objectives of reaching affected community members and organizations within the project area and surrounding areas.

King City

- **Mike Weston, City Manager –** Mike serves on the Project Management Team (PMT) and will provide strategy for and review of all public engagement activities and deliverables to ensure they meet City goals and align with other City planning projects.

DKS

- **Carl Springer, Consultant Project Manager –** Carl is leading the consultant team, providing oversight on the TSP and strategy and development and leading presentations with the public as needed.
- **Kevin Chewuk, Deputy Project Manager –** Kevin supports Carl in the coordination and development of the TSP and Land Use Refinement Plan.

JLA Public Involvement

- **Jessica Pickul, Public Involvement Lead –** Jessica will oversee the public involvement plan and engagement activities, including leading the in-person and online project open houses and managing public comments.
- **Jaye Cromwell, Public Involvement Coordinator –** Jaye will manage the day-to-day coordination of public engagement activities for the project.

TECHNICAL ADVISORY COMMITTEE

This project will include a Technical Advisory Committee (TAC). The TAC will be comprised of City, County and other agency partners and will provide input on transportation opportunities and prioritization of those opportunities. They will also review project deliverables and provide feedback. This project will also seek to engage the community and community groups through public events, focus groups community meetings and through online engagement. Community feedback will be presented to and considered by the TAC throughout the process.

ENGAGEMENT DURING THE COVID-19 CRISIS

COVID-19 has rapidly changed the way many community members in Washington County work, live, and interact with each other. Washington County, ODOT and the Consultant team understand that while project progress needs to continue, community safety is the top priority.

Gathering community input is central to the development of a refinement plan that is created and supported by the broad community. The current project scope outlines several engagement opportunities that require in-person public engagement which may need to be adjusted to enable community members to participate safely, yet meaningfully. Current state and federal guidelines prevent such a gathering for the foreseeable future.

The below table outlines engagement strategies that were scoped and alternative engagement ideas for the Project Management Team to consider as the project advances during the COVID pandemic.

PUBLIC INVOLVEMENT STRATEGIES AND SCHEDULE

Tool/Activity	Description	Lead	Anticipated Schedule
Public Involvement Communications Plan (PICP)	The PICP outlines public involvement goals, activities and key messages for the project. The PICP will also include a demographic analysis of the project area.	JLA	April 2020
Project Website	Consultant will develop, host and maintain Project Website suitable for hosting on the City website after project completion.	JLA	April 2020
Factsheet	The factsheet will include a description of the project purpose, its goals, the timeline, the website, and ways people can provide input.	JLA	April 2020
Overview Video	A project overview video will provide an engaging introduction to the project and will be used on the website and social media.	JLA	Early Summer 2020

Tool/Activity	Description	Lead	Anticipated Schedule
Community Events Targeted Outreach to EJ and Title VI Communities	Consultant will plan and develop tabling and canvassing materials for, and lead public and stakeholder involvement at, up to eight (8) existing community events as outlined in the Public and Stakeholder Involvement Plan. Outreach materials will be translated into Spanish (based on demographics data). **COVID-19 Considerations:** *Gathering feedback:* Several of these meetings could become online community meetings with social clubs and churches that are meeting online. The project team can coordinate with group organizers to host a video call with their members to hold a brief presentation and gather early feedback. Paper packets of the materials could be created to provide the same information as the online event for those who an online event is not accessible. These packets could be advertised and made available for pick up at critical locations like grocery stores. *Build awareness:* For those who are exercising outside, we could include signage throughout the City about the project and encourage feedback through the online event. The project could place a large advertisement in the Regal Courier to build awareness and include a challenge to the public to provide feedback for a prize.	JLA	Up to 3 in the Spring/ Summer 2020; Other meetings to be scheduled as opportunities arise

Tool/Activity	Description	Lead	Anticipated Schedule
In-Person and Online Outreach	Consultant will provide up to one (1) In-Person and two (2) interactive online engagement opportunities over the course of the Project. **Covid-19 Considerations**: These events may need to resemble more robust online events that include short video presentations, partnered with interactive activities to gather feedback.	JLA	At project milestones (TBD)
Contact and Comment Log	Consultant will develop and maintain a log of public and stakeholder contacts, involvement activities, participation, and major themes of input received.	JLA	February 2020; ongoing updates
Public Involvement Summary Report	Consultant will prepare a Public Involvement Summary Report summarizing outreach activities, input received, and how the input was used and responded to.	JLA	Summer 2021

COMMUNITY EVENTS

There are many community events throughout the year that the project team will consider for public outreach activities:

- Fourth of July Walk and Roll Festival
- Events at the Tualatin National Wildlife Center (including Drop In Exploration Days and Puddle Stompers)
- Downtown Tigard Street Fair & Latino Festival
- Events at Deer Creek Elementary School (including the Walk-a-thon and Carnival events)

The following organizations have many events year-round that the project could present or participate at:

- King City Civic Center Clubhouse
- King City Lions Club (including the flea market events)
- King City Dance Club
- King City Shuffleboard Club
- King City Travel Club

There are also several opportunities for the project team to hold Spanish-led focus groups or discussions. The following is an initial list of opportunities:

- ESL classes at St. Anthony Catholic Church, Tigard Senior Center and Tigard United Methodist Church
- Events hosted by Tigard Covenant Church

Note: This list will continue to grow as the Project Team conducts further outreach with stakeholders.

MEASUREMENTS AND MONITORING OUTREACH ACTIVITIES

The project team will evaluate the public involvement process on an ongoing basis to determine the effectiveness of the outreach effort.

At key milestones, the project team will assess how well the program is meeting the public involvement goals listed in this plan. While evaluation of these goals is necessarily subjective, the team will also consider the following more measurable objectives as the team assesses program effectiveness:

- Number of participants attending meetings or events.
- Number of website hits or downloads occurring during a specific time period.
- Number of people who have signed up for the project mailing list.
- Number of project comments received (phone, email, comment cards, online).
- Whether the comments are relevant to the project (indicates project understanding).
- How project decisions have been modified as a result of public input.

APPENDIX B. PUBLIC AND STAKEHOLDER INVOLVEMENT SUMMARY

King City Transportation System Plan

PUBLIC OUTREACH EXECUTIVE SUMMARY

ODOT and King City conducted public outreach between September 2020 and June 2021 to share information about the King City Transportation System Plan (TSP) project and invited community members, stakeholders, and other interested parties to share their ideas and feedback about how people currently get around in King City, what can be improved, and solicit feedback on the proposed transportation projects for the TSP

Feedback received through this outreach period helped the City and its consultants address planned growth in King City and the changing transportation needs of residents. Feedback was also used to develop a list of proposed transportation projects in the draft TSP, which will be further refined through the Kingston Terrace Master Plan project.

The **Public Engagement Plan**, developed by the project team at the beginning of the project, considered the demographic makeup of the project study area to inform outreach activities. In light of the COVID-19 pandemic, the project team adapted to provide several engagement opportunities (virtual, in-person and by mail) to enable community members to safely participate and provide meaningful input.

Approximately 350 people were engaged through a variety of outreach opportunities. These opportunities, as well as highlights from the feedback received, are summarized below.

Opportunities for engagement

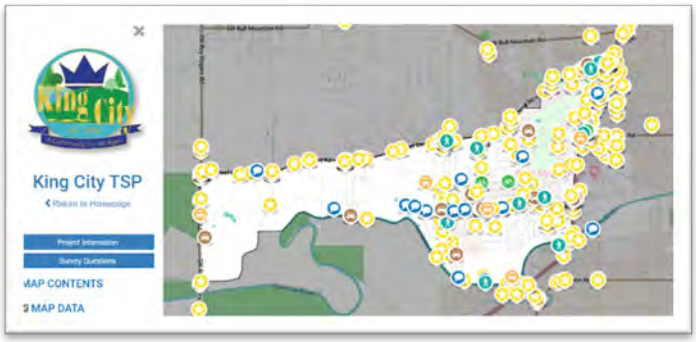
- **2 Online open houses** with a total of 317 participants
  - *Online open house #1 participation*: 169 participants provided comments
  - *Online open house #2 participation*: 148 participants provided comments
- **1 Mail-in survey** sent to all residents within King City and the expansion area with over 237 mailed back to the project team.
- **1 Feedback map** offered in both the first online open house and the mailed-in survey, received 709 location-specific comments
- **2 In-person tabling events** with approximately 85 attendees
- **1 project website** with project updates
- The public were also given the opportunity to reach out to City staff to ask questions and share their thoughts on the project


King City
Transportation System Plan
and Land Use Refinement Plan
SPRING 2020
Help us plan for King City's growing transportation needs—for now and the future.
Help us shape our first Transportation System Plan
This is our first formal Transportation System Plan. Until now, most major roads in town have been managed by other jurisdictions, such as ODOT, but that's about to change.
Our population more than doubled in the last 20 years, approaching 5,000. It could double again in another 20 years. The City is planning for gradual growth west to Roy Rogers Road, which will add to city-owned roads. Just as we're planning land use, we must plan for how everyone will get around.
The TSP will include a whole framework for a safe, well-connected transportation system: policies, standards, network maps, a capital projects list and more. We need your help finding the best ways to serve people walking, biking, using transit, and driving.
For more information: Michael J. Weston II City of King City, City Manager
503-639-4082 | mweston@ci.king-city.or.us | www.kingcitytsp.org

How engagement opportunities were promoted

- Social media posts on the King City Facebook page, Nextdoor, Twitter, and Instagram
- Updates on the project websites
- Postcards mailed to residents within the project study area advertising each of the online open houses and in-person tabling events
- Emails sent to interested parties, stakeholders, and community organizations
- Press releases for the online open houses

Public Feedback Key Themes



Overall, participants expressed **overall satisfaction with the transportation network in King City**, saying that they were satisfied with the road network and walking and biking network. **Most participants indicated that they currently use a car to get around**, so many did not comment on the transit network in King City.

Overall, the public was **concerned with the following** when thinking about how they get around King City:

- **Safety of pedestrians and bicyclists**. Many expressed a desire to see more walking and biking trails throughout King City, preferrable separated from vehicle traffic.
- **Traffic** and **potential impacts to neighborhoods** as the population increases.
- **Vehicles travelling unsafe speeds**. Many noted that speeding was already a problem and were worried it would get worse with increased cars on the road.

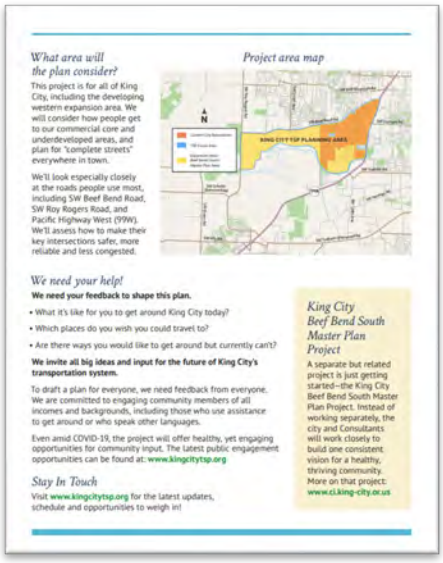
The topic most commented on were the proposed **East/West Connection Alternatives** intended to create road, walking, and biking connections between current King City neighborhoods and the expansion area west of the current King City boundaries.

The majority of participants were **concerned that an extension of Fischer, Macbeth, or Capulet roads would negatively impact the Edgewater and Rivermeade communities** and **suggested that Beef Bend Rd be widened** to accommodate east/west vehicle traffic.

Community members were also concerned about how an East/West Connection and other transportation improvements (be they road or multi-use paths), may **impact the Tualatin River and the surrounding natural areas within the Columbia Land Trust.** Many also cited current erosion in this area as a concern and were worried about exacerbating it.

Who we heard from

Online Open Houses: The majority of participants identified as white. The second largest racial or ethnic identity selected was Hispanic/Latino. The majority of respondents were 36 years of age or older. The majority of respondents had a household income of $100,000 or above.


What area will the plan consider?

This project is for all of King City, including the developing western expansion area. We will consider how people get to our commercial core and underdeveloped areas, and plan for "complete streets" everywhere in town.

We'll look especially closely at the roads people use most, including SW Beef Bend Road, SW Roy Rogers Road, and Pacific Highway West (99W). We'll assess how to make their key intersections safer, more reliable and less congested.

Project area map

We need your help!

We need your feedback to shape this plan.

- What it's like for you to get around King City today?
- Which places do you wish you could travel to?
- Are there ways you would like to get around but currently can't?

We invite all big ideas and input for the future of King City's transportation system.

To draft a plan for everyone, we need feedback from everyone. We are committed to engaging community members of all incomes and backgrounds, including those who use assistance to get around or who speak other languages.

Even amid COVID-19, the project will offer healthy, yet engaging opportunities for community input. The latest public engagement opportunities can be found at: www.kingcitytsp.org

Stay In Touch

Visit www.kingcitytsp.org for the latest updates, schedule and opportunities to weigh in!

King City Beef Bend South Master Plan Project

A separate but related project is just getting started—the King City Beef Bend South Master Plan Project. Instead of working separately, the city and Consultants will work closely to build one consistent vision for a healthy, thriving community. More on that project: www.ci.king-city.or.us

Who Supported Project Outreach

- The City of King City
- ODOT
- DKS Associates
- JLA Public Involvement

What's Next?

The City of King City and its consultants will use the feedback gathered through this process to further refine the list or proposed transportation projects in the TSP for inclusion in the Kingston Terrace Master Plan project, which is expected to be adopted by fall 2021.

King City TSP

Fall Outreach and Engagement Summary

Prepared for

The City of King City
Oregon Department of Transportation
DKS

Prepared by

JLA Public Involvement, Inc.

November 2020

Table of Contents

Introduction

ODOT and King City conducted outreach activities between September 14 and October 30, 2020 to solicit feedback from the community for King City's Transportation System Plan (TSP). This feedback will help the City and its consultants create a TSP that addresses planned growth in King City and help respond to the changing transportation needs of King City residents.

Outreach activities were amended to encourage community feedback during the COVID-19 pandemic and included a variety of online engagement opportunities and a mail-in survey.

Feedback received through this outreach period will be considered as King City creates an integrated, multimodal TSP.

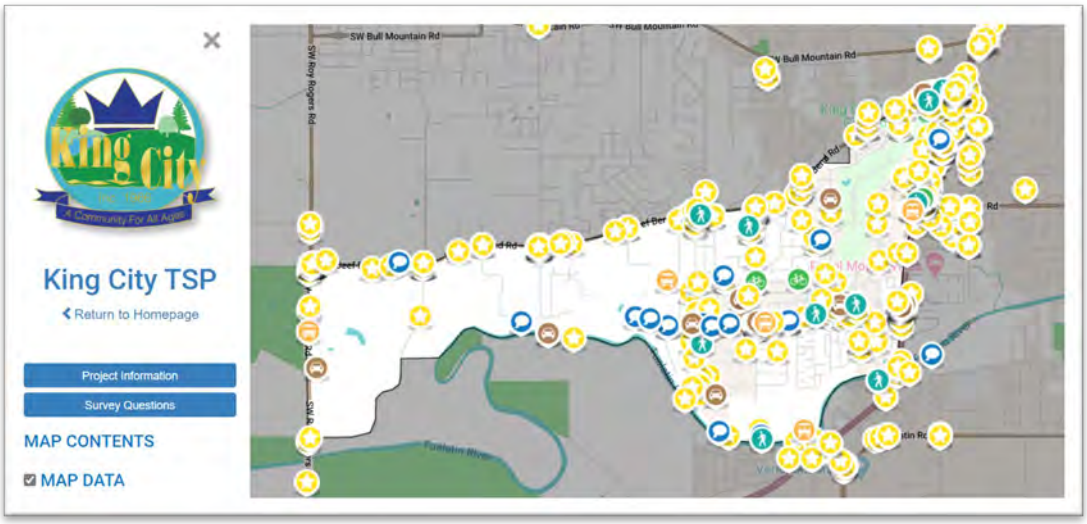
Overall Participation and Notification

To gather feedback on the proposed TSP, the project team developed an **online open house and mail-in survey** and hosted an **in-person tabling event** to gather community feedback.

Overall, the project team received **survey responses and talked with over 450 people**. Of those comments, 169 people responded to the survey in the online open house and 237 responded via the mail-in survey. Additionally, approximately 50 people attended the in-person tabling event, 709 comments were submitted with the comment map, and 3 comments were received via email and the project website.

Community members were informed about the online open house through the following:

- Newsletter with mail-in survey to residents within the City of King City boundaries
- Email to stakeholder and interested parties list
- Posts to the King City Facebook pages, Twitter, Nextdoor, and Instagram
- Posts on the project website



Outreach Opportunities

Online Open House

The online open house was intended to provide community members with information about the TSP and the opportunity to provide feedback on King City's current transportation system. This online event included a feedback map and online survey.

The online open house asked participants to use the map to tell the project team where they were experiencing transportation issues and identify important destinations (such as schools, businesses, or parks).

Tabling Event

The project team held their first in-person tabling event to gather community input about King City's Transportation System Plan (TSP) on Thursday, October 8th from 3-6 pm at the King City Community Park, near the basketball court. They talked to **approximately 50 community members.** The purpose of the tabling event was to make the community aware of the project and to solicit feedback on transportation in King City.

The event was successful, especially considering that the event was hosted during the pandemic and included several CDC recommended distancing measures. Participants shared their thoughts on potential TSP improvements and more generally about transportation in King City. People who decided to participate were able to speak with City staff and the Mayor of King City, Ken Gibson, ODOT staff, and engagement specialists from JLA Public Involvement.

Newsletter with Mail-in Survey

A newsletter was distributed to all residents within King City boundaries that included two sections: an informational section and a feedback section.

The informational section introduced residents to the project and the feedback section asked a series of questions that mirrored the online survey. Recipients could then mail this survey back to the project team.

Feedback Summary

This section summarizes the feedback received through the in-person tabling event, the survey in the online open house, the mail-in survey, and other comments sent to the City via email or the website comment form.

The graphs for each section include only the responses from the virtual workshop, the newsletter did not contain those questions.

Feedback Map

Participants in the online open house and mail-in survey were shown a map of King City and asked to provide feedback on locations needing improvements. Participants submitted a total of **709 location comments**. Comments from both forms of engagement are summarized below.

Important Destinations

Participants submitted **395 comments** that identified important destinations in King City and the surrounding areas. The following is a summary of the most commonly mentioned locations:

- **Beef Bend Road**
  - **Intersection of Beef Bend and Highway 99W** (King City Plaza and adjacent businesses)
  - **Deer Creek Elementary School**
  - **Intersection of Beef Bend and Roy Rogers** (residences and access to Hillsboro)
- **Fischer Rd**
  - **Intersection of Fischer Road and Highway 99W** (residences, businesses/shopping, and access to and from King City)
  - Intersection of Fischer Road and 131st Avenue (residences)
- **Intersection of Durham Road and Highway 99W** (residences, Tigard Town Square, businesses/shopping, access to Bridgeport, access to the hospital)
- King City Community Park
- Intersection at Royalty Parkway and Highway 99W
- Intersection at Tualatin Road and 124th Avenue (access to Fred Meyer, I-5, Tualatin, and the coast)

Challenging and/or Dangerous Locations

Participants submitted **268 comments that identified challenging and/or dangerous locations** in King City and the surrounding areas. The most common locations and the issues raised by participants include:

- **Beef Bend Road**
  - **Pedestrian concerns** included narrow sidewalks, sidewalk gaps, and a lack of pedestrian crossings
  - **Intersection of Beef Bend Road and Highway 99W**
    - Heavy traffic
    - Signals are too short and/or not coordinated well to support the flow of traffic
    - Lack of bike infrastructure
    - Unsafe driving behavior
  - **Intersection at Beef Bend Road and 131st Avenue**
    - Inconsistent speeds

        - Lack of sidewalks
        - Speed limits are too high
        - Lack of sufficient lighting
        - Too busy
        - Unsafe driving behavior around pedestrians
        - Landscaping and streetscape restrict visibility
- **Fischer Road**
    - **Intersection at Fischer Road and Highway 99W**
        - Driveway conflicts
        - Congestion
        - Signals need better coordination
        - Lack of sidewalk access
        - Pedestrian signals are too short
    - **Intersection at Fischer Road and 131st Avenue**
        - Congestion
        - Unsafe driving behavior
        - Lack of sidewalk connectivity
- **Intersection at Durham Road and Highway 99W**
    - Signal timing is too long
    - Unsafe driving behavior and speeding
    - Perceived high frequency of collisions
    - Lack of pedestrian safety or driver awareness
    - Difficult to cross as a bike or pedestrian
- Intersection at Royalty Parkway and Highway 99W
    - Needs a left turn signal
- Intersection at Tualatin Road and 124th Avenue
    - Lane changes are dangerous
    - Signal need better coordination
- Intersection at Bull Mountain Road and Highway 99W

Online Open House, Mailed-in Survey Responses, and Comments Sent to King City

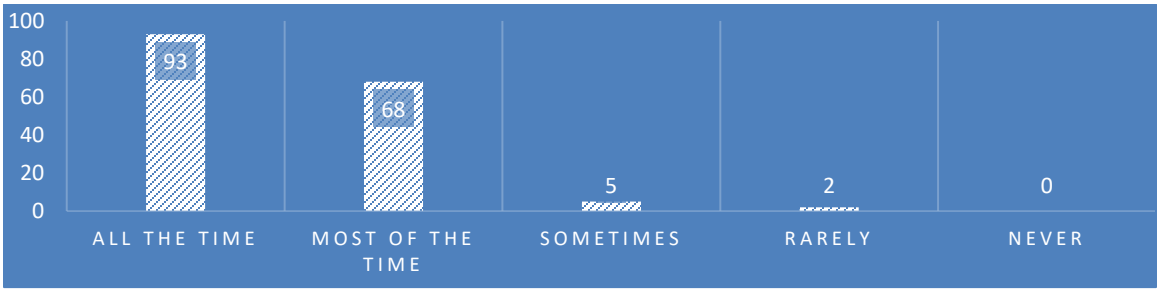
Those who participated in the online open house and sent back the mail-in survey were given the opportunity to ask a series of questions related to their perspectives and use of the transportation system in King City. Some questions were not included on the mail-in survey due to its limited space, but participants were also provided the online open house link if they wished to respond to the full survey. Participants were also able to submit comments to the City via email and the project website comment form. Feedback is summarized below.

1. ***How do you usually get from one place to another?***

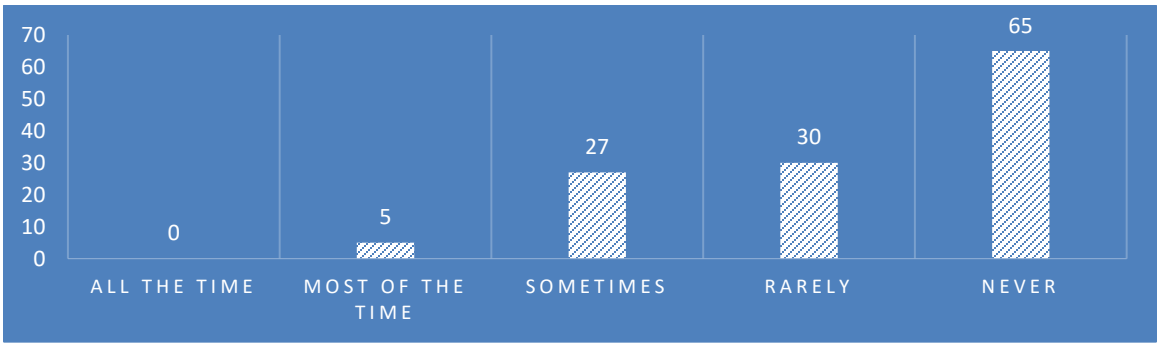
   The project team wanted to know how people are currently getting around King City. **Of the people that responded to the questions related to this topic, the majority travel by car.**

   Online open house participants were asked how they most commonly get around and how frequently they travel by each mode of transportation.

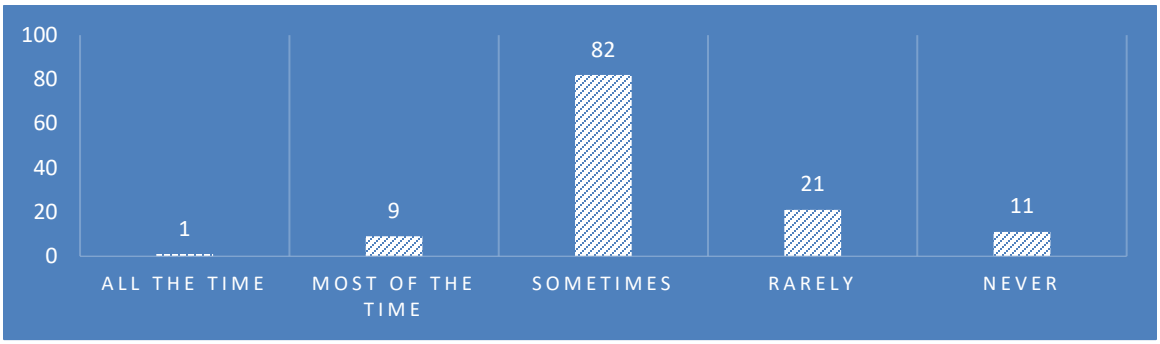
How often do you drive by car? *(Online survey responses only)*



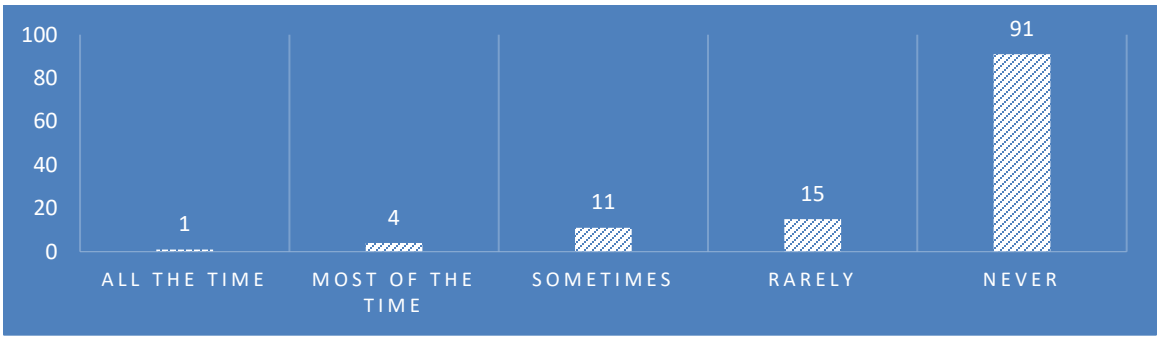
How often do you ride a bike? *(Online survey)*



How often do you walk? *(Online survey)*

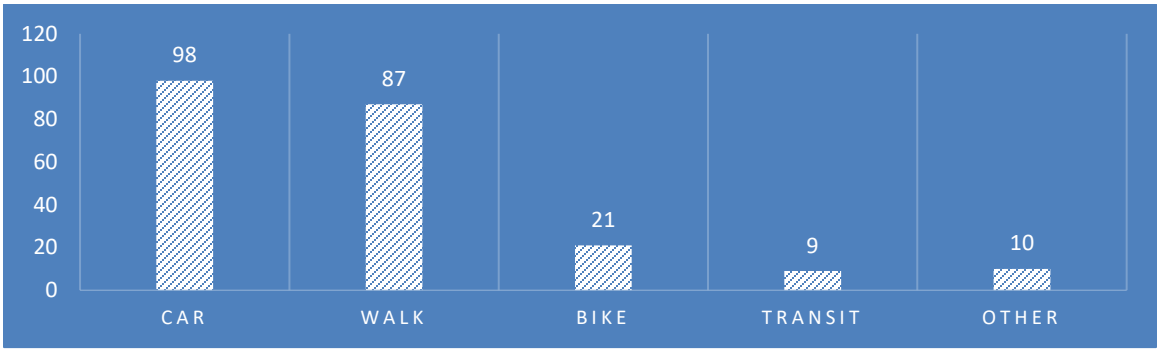


How often do you use transit? *(Online survey)*



What ways do you typically use to get around? *(Mail-in survey)*

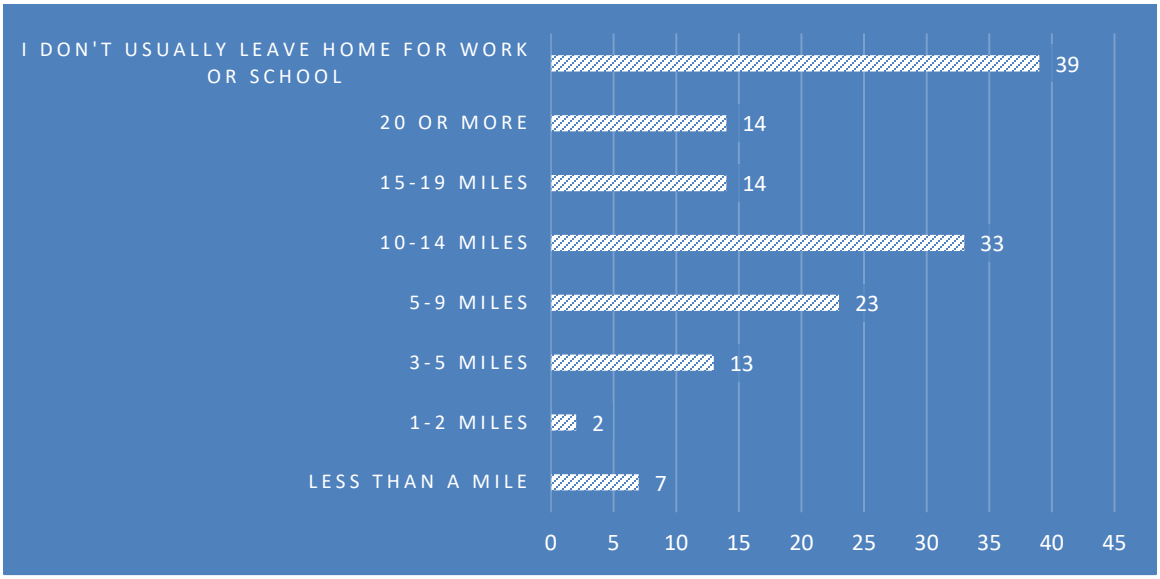
Mail-in survey participants were asked to select all the ways they travel.



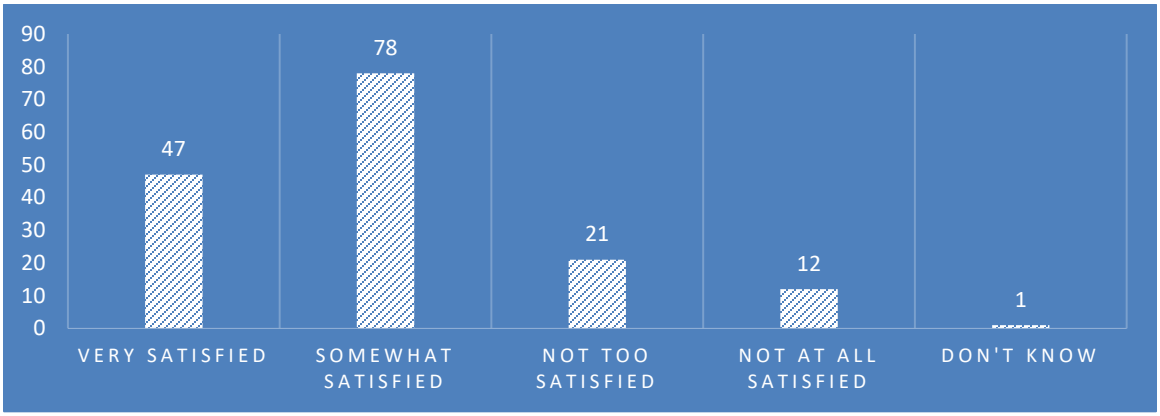
Participants from both the online survey and the mail-in survey were given the option to list other modes they use to get around. Other modes listed include:

- Golf cart
- Motorcycle
- Mobility scooter
- Rideshare (Lyft, Uber, etc.)

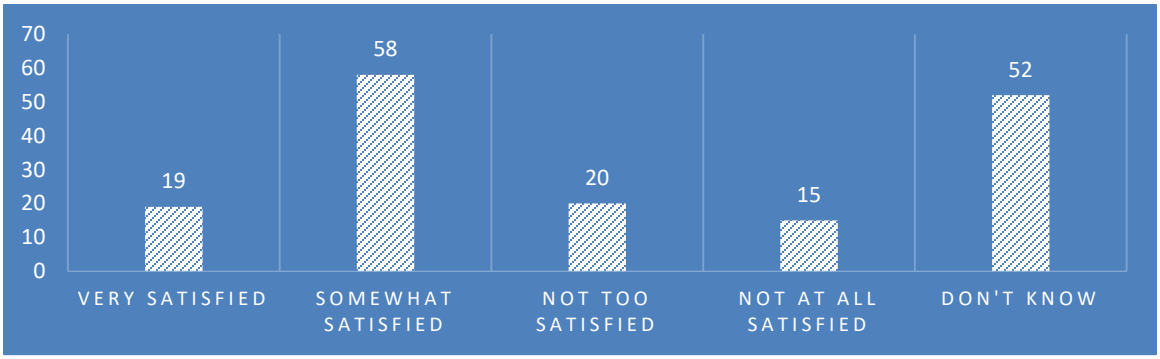
2. ***How far do you typically commute for work or school?*** *(mail-in survey only)*
Participants of the mail-in survey were asked how far they typically commute for work or school. Of the people that responded, **the largest group said they don't commute or leave home for work or school**. It is unknown how much of this response is due to stay-at-home orders during the pandemic. The second largest group of responses indicated that **people are traveling between 10 – 14 miles**, which may mean many people are traveling to nearby Portland for work.



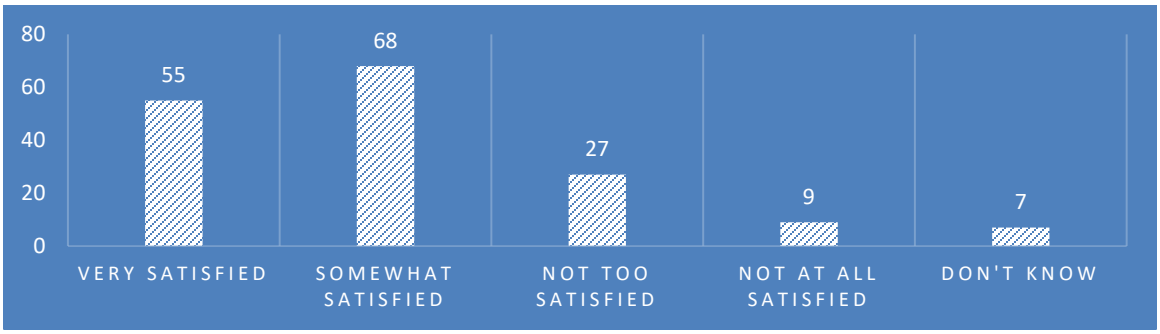
3. ***How satisfied are you with the roadway network and driving conditions for cars in King City?*** *(online survey only)*
   Of the participants that responded to this question, **most people are satisfied with the current roadway network and driving conditions in King City**. This is consistent with the feedback received at the tabling event feedback.



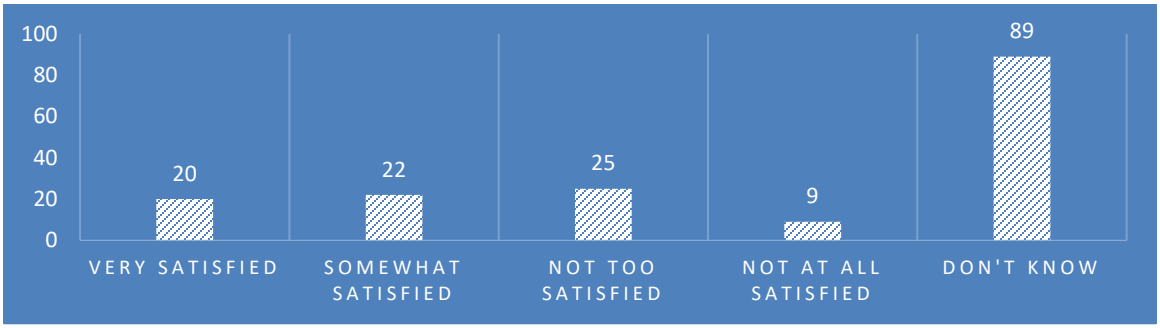
4. ***How satisfied are you with the conditions for bikes in King City?*** *(online open house only)*
   Feedback on how satisfied participants are with the current conditions for biking in King City was mixed with a large number of people saying they are somewhat satisfied and almost the same amount of people saying they don't know, which may be due to how many people said they don't currently travel by bike.



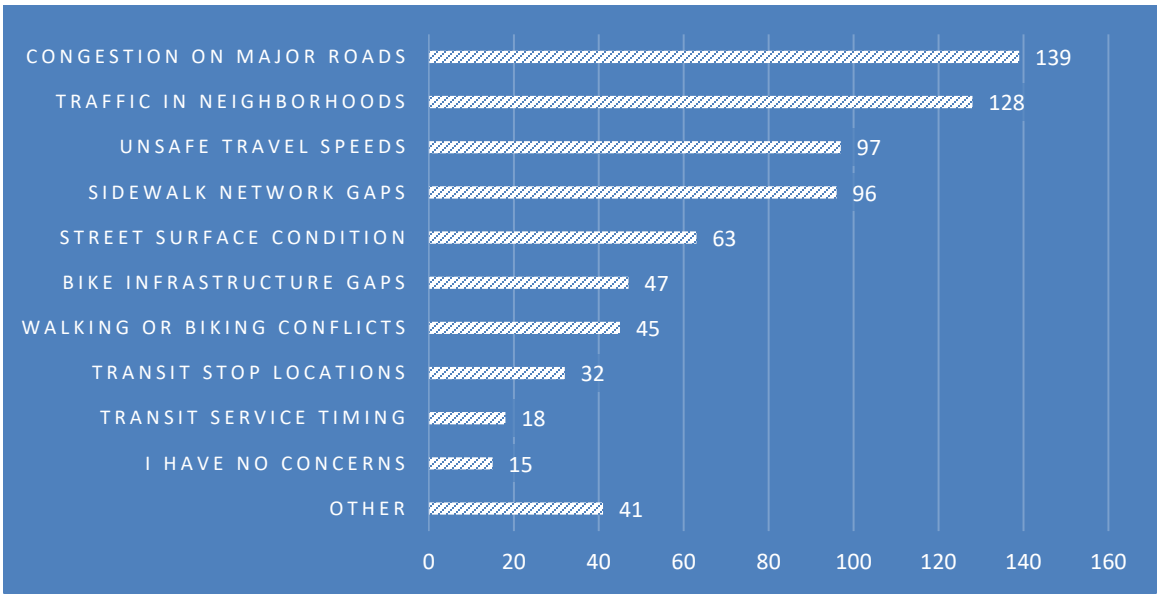
5. ***How satisfied are you with the conditions for walking in King City?*** *(online open house only)*
   Of the participants that responded to this question, **most people are satisfied with the current walking conditions in King City.**



6. ***How satisfied are you with the transit service and connections in King City?*** (*online open house only)*
   Feedback on how satisfied participants are with the current transit service in King City was mixed, with most people indicating that they don't know.



7. ***What are your main concerns with getting around in King City?*** (included with both surveys)
   Participants responded that **congestion on major roads and traffic in neighborhood streets are their biggest concerns with getting around in King City today**. There were also a fair number of participants who indicated a concern about unsafe travel speeds and sidewalk network gaps.

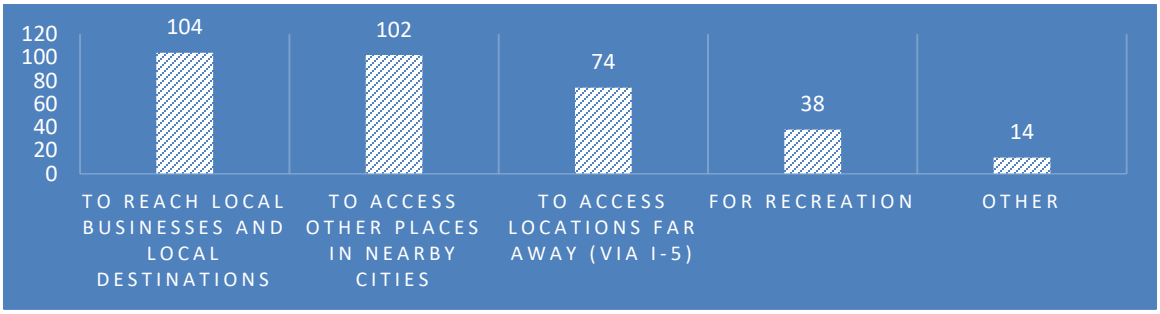


Of those that chose the option "other," common answers included:

- Concern about the impacts of extending Fischer Road
- Parking limitations and conflicts
- Lack of multiuse trails and paths
- Lack of general safety
- Limited infrastructure that does not support all modes
- Lack of inter-city transit options
- Golf cart mobility and access
- Increased development impacts

As there were many entries for the "other" category, individual responses are included in Appendix B.

8. ***How do you usually use the King City transportation system?*** (online open house only)
There was almost an even split with the top response for how people usually use the King City transportation system. Today, people are using it to **reach local businesses and destinations and to access other places in nearby cities.**



For those that chose the option "other," a majority responded with answers indicating they do not ride the bus or mainly use their car.

9. ***What should we consider as we develop this plan?*** *(included with both surveys)*
   Below is a summary of the comments received through the mailed-in survey, the survey in the online open house, and comments sent to the city via postal service or the website comment form. Review all individual comments in Appendix B, Appendix C, and Appendix D.

   Key Themes:

   - **Strong opposition to the proposed extension of Fischer Road**
   - **Desire for capacity and traffic improvements on major arterials and popular roads to support new development and address connectivity issues**
     - Improved signal coordination
     - Coordinate with adjacent jurisdictions
   - **Demand for less traffic on neighborhood streets**
     - Reduced traffic through neighborhoods
     - Restriction of vehicle access through neighborhoods
     - Neighborhood speed reduction measures
   - **Support for increased pedestrian safety, facilities, access, and connectivity**
     - Fill gaps in the sidewalk system
     - Pedestrian crossings on major arterials and popular roads to provide access and safety while walking
     - Improved walkability and mobility options for seniors and the disabled
     - Maintenance of existing pedestrian facilities
   - Support for reduced speed limits and creating consistent speed limits on roads. Multiple comments asked to prevent the need for quick braking.
   - Desire for connected multiuse (bike, pedestrian, etc.) paths throughout King City
   - Support for safety improvements that protect users of all modes (specifically pedestrian, bike, and student safety)
     - Address issues related to unsafe user behavior (specifically drivers)
     - Increase police enforcement
   - Concern about **impact to the Tualatin River, wildlife in the area, exacerbation of erosion**
   - **Concern that the traffic study** used was not sufficient and does not look at the transportation network as a system.

Tabling Event

Key Themes

Most people were generally happy with the current transportation system in King City with 99W and a lack of safe bike lands and crosswalks being common exceptions. In terms of the TSP, many were concerned about extending Fischer Rd. into the Rivermeade Community and increased traffic in neighborhoods. Many participants mentioned that they had either gotten the mailed survey and sent it or were going to mail it soon.

More details below for each key theme and specific comments from the public.

Fischer Rd Extension

- Rivermeade residents and city residents on Fischer between the power lines and 131st share concerns about the proposed extension and don't feel that the city is listening to them.
- Residents are concerned about increased traffic in their community – many describe their neighborhood as a calm and quiet neighborhood and don't want that to change. They don't want a major road going through their neighborhood.
- Many are worried that the neighborhood will change and look like Fischer between 131st and 99W.
- Some were worried about the impact to waterways and nature.
- Worried that people will speed along the extension, creating safety concerns.
- The extension may increase noise levels.
- There was general worry about over-population in the area.
- Folks are worried about "cut-through" traffic.

What to consider moving forward: We need to make a thorough explanation of the Fischer Rd. extension and have a detailed explanation of why we are doing the extension on-hand when we talk to the community. Consider creating more than one "Fischer" route west of the power lines to reduce traffic in Rivermeade. We also need to keep Washington County in the loop so that we are all on the same page.

Pedestrian and Bike Connections

- Several mentioned their interest in continuing to improve connections for pedestrians and cyclists, including trails.
- Several people mentioned that they get around by bike to do errands, but the bike paths were either dangerous or there were not enough to run all errands by bike.
- They like having biking trails and would like more.
- There are no bike paths between 150th and the 99W on Beef Bend Rd, making it dangerous for all. A designated bike path along this section of the road would be good.
- Crossing and walking along 99W is scary and dicey.
- Folks want running paths near nature; interconnected, regional trails between all the nearby cities; and, more formal trails along the river, there are informal trails right now that are dangerous.
- Someone mentioned that there are potholes in Gabriel Park and that it is not walkable.

What to consider moving forward: How can we increase the number of safe sidewalks and crosswalks?

Traffic

- Roundabouts would be nice
- Folks are worried about "cut-through" traffic
- 131st at Fischer – need speed signs for cars
- There were a lot of concerns about 99W, including:
    - People avoid 99W as much as they can
    - Many expressed their frustration with 99W – it's like the strip in Las Vegas, you can't go anywhere in King City without it, and there is no parallel route.

- Widening Beef Bend: This would require more signalized (?) intersections.

What to consider moving forward: How can we minimize traffic in neighborhoods while creating more streets and connections within King City (and to neighboring cities)?

Safe Routes to School

- One parent mentioned the importance of safe routes to school and noted the problem with Deer Creek Elementary having students on the north side of Beef Bend with no safe way to cross the street.
- One community member said that there need to be more schools as the area grows

What to consider moving forward: Existing and potential attendance areas for the schools serving King City and the master plan area.

King City Community Park

- Love what the city is doing with the park
- Stairs down to the river near the community park would be nice, as well more lighting and a boat launch
- Would be nice to have manmade paths under the electrical lines
- There needs to be better signage about how to get the King City Community Park – many people simply take the private road.

Questions / Ideas from participants:

- Could there be alternative boundaries for school districts? 150th? Halfway up to Bull Mtn?
- Could we include a wildlife preserve with the new development? Could we do a wildlife study about how much space wildlife will need?
- Could we extend Durham Rd? (instead of Fischer Rd. extension)

Other

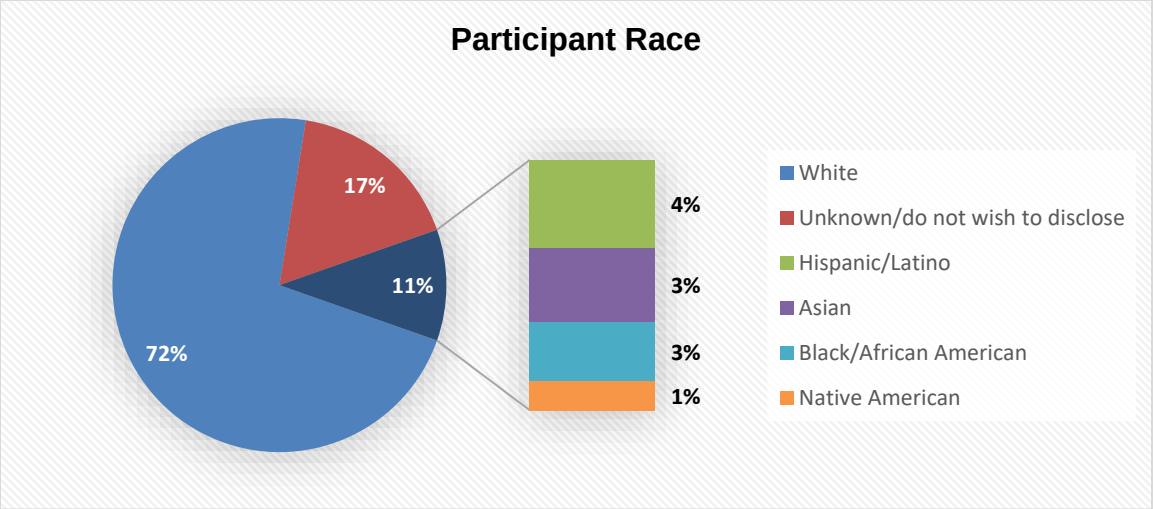
- One participant said they were excited about the Master Plan growth.

Demographic Information

Participants from the online open house were asked a series of optional demographic questions. This information is useful to compare with the city's current demographics.

Race

The majority of participants identify as white, with the second largest group of participants selecting that their race is unknown or that they do not wish to disclose it.

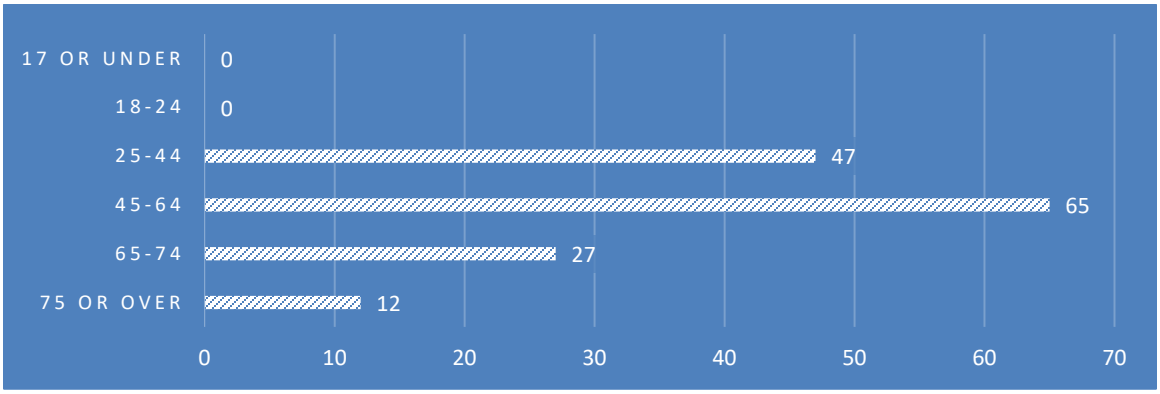


Language (other than English)

Participants were asked if they spoke any language other than English at home. **A majority did not respond indicating that they do not speak another language**, seven responded that they speak Spanish, four responded that they speak German, and three responded that they speak Bosnian. Answers that were submitted by only one participant each included: Chinese, Korean, Russian, Polish, and Tamil.

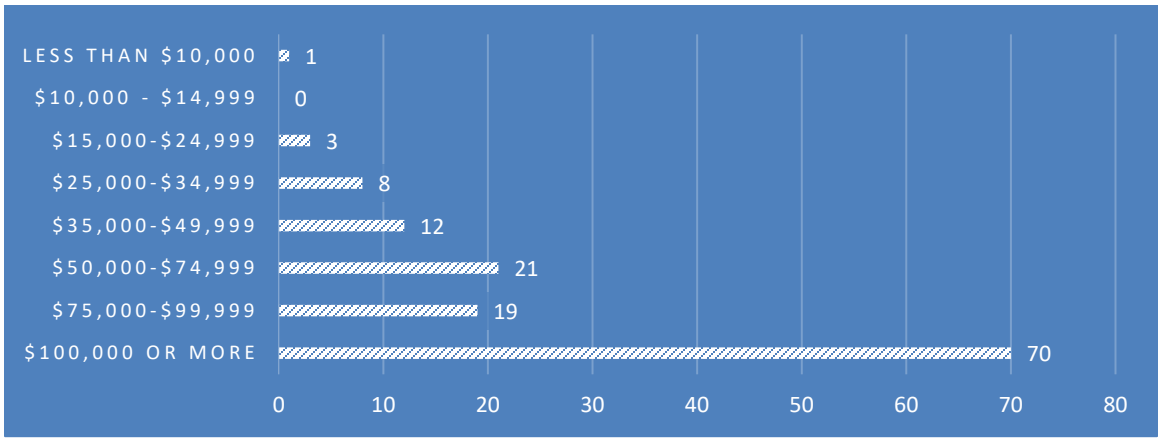
Age

Overall, the age of participants with the online survey are consistent with the average ages of community members in King City. Of those that responded, the largest group of participants are within the ages of 45 – 64. The second largest group of participants are between the ages of 25 – 44.



Household Income

The **majority of the online survey participants have a household income of $100,000 or more** a year, which is higher than the average household income in King City.


LESS THAN $10,000
1
$10,000 - $14,999
0
$15,000-$24,999
3
$25,000-$34,999
8
$35,000-$49,999
12
$50,000-$74,999
21
$75,000-$99,999
19
$100,000 OR MORE
70
0
10
20
30
40
50
60
70
80

Appendix A: Feedback Map Comments

Below are the unedited comments that were both mailed-in (denoted under the “Location Name” column) and submitted online via the feedback map in the online open house.

Location Address	Location Name	Comment
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	SW corner of Hwy 99/Beef Bend intersection	This is the place for a gateway to King City feature
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	SW corner Hwy 99/Beef Bend intersection	This is the place for a gateway to King City feature
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	SW corner of Hwy 99/Beef Bend intersection	This is a place for a gateway to King City feature
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Southwest corner of Hwy 99/ Beef Bend intersection	This is a location for a gateway to King City feature
2 SW Beef Bend Rd, Tigard, OR 97224, USA	Condo building 11535 at end of Crown Court	Residents need a safety, privacy and noise-buffering wall to protect them from Beef Bend Road.
15905 SW 116th Ave, Tigard, OR 97224, USA	Exit out of the US Bank parking lot	Dangerous left turn coming out of the exit due to speed of traffic coming from Hwy 99 intersection and curve of street limiting exiting driver's view of traffic.
14978 SW 116th Pl, Tigard, OR 97224, USA	Condo building 11535 at end of Crown Court	Residents need a safety, privacy and noise-buffering wall between their living units and Beef Bend Road traffic.
17031 Bard Way, King City, OR 97224, USA	Fischer Road	This road was not designed for the traffic that will cut through to avoid the traffic and new lights on Beef Bend after that route gets overloaded by thousand of new residents in all the thousands of new homes in the expansion areas. Roy Rogers and Beef Bend will funnel traffic through King City along any extension of Fischer Road. This would be an expensive headache to fix later, so don't create the problem in the first place. No extension, just

		connections north to an expanded Beef Bend.
13582 SW Fischer Rd, King City, OR 97224, USA	Fischer Road	The HOA says NO NO NO to extending Fischer Road
13632 SW Fischer Rd, King City, OR 97224, USA	Do NOT extend Fischer Rd	Our community is just starting to mobilize to fight this planned extension. It will NOT be allowed to happen.
13582 SW Fischer Rd, King City, OR 97224, USA	Fischer Rd	Do not extend Fischer Road. Edgewater neighborhood qualities and values would be destroyed by huge volume of traffic increased.
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous - on Durham facing towards Portland. Upon crossing street as pedestrian, I have nearly been hit by vehicle. The stop light is flashing arrow. Drivers do not stop even when the pedestrian is lit. Any solutions?
13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Elementary School	Important destination - too much traffic
16530 SW Royalty Pkwy, Portland, OR 97224, USA	Mailed in comment - Royalty	Challenging and dangerous - through traffic on Royalty instead of using 99
11820 SW King James Pl, King City, OR 97224, USA	Mailed in comment	Important destination - Bull Mtn Dental
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - King City Plaza	Important destination - lots of crazy traffic
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous

17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
17040 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous - sidewalks no continuous throughout
12350 SW Tualatin Rd, Tualatin, OR 97062, USA	Mailed in comment - 124th and Tualatin Rd	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination - the traffic light takes longer time than normal to turn green. It doesn't let parents reach the school on time for our kids.
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Bridge	Important destination - The bridge doesn't provide enough space for bikes to ride. There is no signs for bikes to ride and be aware.
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Bridge	Challenging and dangerous
15100 SW Crown Dr, Portland, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - Most traffic concerns are getting though Tigard
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and 124th	Challenging and dangerous - light poorly coordinated
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - lights are poorly coordinated
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - lights not well coordinated
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - lights not coordinated
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous - cars traveling on 131 don't always stop for traffic coming west on Fischer
Durham Rd. Plaza (Albertson's), Tigard, OR 97224, USA	Mailed in comment - Tigard Town Square	Important destination
15030 SW 116th Ave, King City, OR 97224, USA	Mailed in comment - Beef Bend and 116th	Important destination

SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - Corner by the gas station
11530 SW Majestic Ln, King City, OR 97224, USA	Mailed in comment - Dominos	Challenging and dangerous - congestion on the corner
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - King City Plaza	Important destination
16043 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Elementary School	Important destination - Deer Creek Elementary
16731 SW Romeo Terrace, King City, OR 97224, USA	Mailed in comment - Elementary School	Important destination - residence
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment - 99 and Bull Mtn	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
16962 SW 125th Place, Portland, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous
16394 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
15563 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Queen Elizabeth	Important destination
23 11th St, Tigard, OR 94941, USA	Mailed in comment - Durham and Summerfield	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and 124th	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination

Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and dangerous - Beef Bend speed change abruptly before and after the school the street is narrow with no sidewalks for walkers and cars typically tailgate anyone driving at even a slightly lower speed! There are no street lights and visibility is poor as are turn offs not visible until you are almost to them (not plainly marked to be seen from a distance to signal other cars for a turn on to the street.
16082 SW 113th Ave, Tigard, OR 97224, USA	Mailed in comment - Durham and 113th	Important destination - Bus stops
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - lights (traffic) crossing or getting onto 99 doesn't stay green long enough to accommodate the traffic.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - Fischer Rd traffic is heavy. Making it difficult to leave King City, via Fischer Rd. Many people us our streets to avoid Fischer.
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous - light on fischer to turn left onto 99 does not stay green long enough to accommodate the number of cars on Fischer.
23 11th St, Tigard, OR 94941, USA	Mailed in comment - Durham and Summerfield	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
12053 SW Tualatin Rd, Tualatin, OR 97062, USA	Mailed in comment - Tualatin Rd	Important destination
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and 124th	Challenging and dangerous

21155 SW Baler Way, Sherwood, OR 97140, USA	Mailed in comment - Tualatin Sherwood and Balor	Important destination
21003 SW Pacific Hwy, Sherwood, OR 97140, USA	Mailed in comment - 99 and Borchers	Challenging and dangerous
20945 SW Pacific Hwy, Sherwood, OR 97140, USA	Mailed in comment - 99 and Borchers	Important destination
16574 SW Sidney Ln, Sherwood, OR 97140, USA	Mailed in comment - Roy Rogers and Borchers	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
16980 SW 129th Ave, King City, OR 97224, USA	Mailed in comment - Fischer and 129th	Challenging and dangerous
16278 SW 113th Ave, Portland, OR 97224, USA	Mailed in comment - Dollar Store	Important destination
15355 SW Royalty Pkwy, King City, OR 97224, USA	Mailed in comment - McCanns	Important destination - McCanns
15161 SW Royalty Pkwy, Portland, OR 97224, USA	Mailed in comment - Safeway	Important destination - Safeway
16055 SW Tualatin-Sherwood Rd, Sherwood, OR 97140, USA	Mailed in comment - 99 and Roy Rogers	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
16043 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and dangerous - Whose stupid idea was it to plant trees and landscape in the middle of 131st?? It is impossible to see pedestrians or oncoming traffic when turning onto 131 from any of the side streets. This was supposed to be a safety measure, but its result is just the opposite. That whole project was a waste of tax dollars and not necessary. Center turn lane was much better.
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Challenging and dangerous
16325 SW 113th Ave, Portland, OR 97224, USA	Mailed in comment - 113 and Gabrielle	Important destination

Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
15371 SW 114th Ct, Tigard, OR 97224, USA	Mailed in comment - Royalty and Naeve	Important destination
15030 SW 116th Ave, King City, OR 97224, USA	Mailed in comment - Beef Bend and 116th	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
17001 SW Eldorado Dr, Tigard, OR 97224, USA	Mailed in comment - Fischer and 124th	Challenging and dangerous
16605 SW King Charles Ave, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous
16324 SW 126th Terrace, Tigard, OR 97224, USA	Mailed in comment	Challenging and dangerous
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
16401 SW Roy Rogers Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
16401 SW Roy Rogers Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Challenging and dangerous - narrow road no sidewalks and bike lanes
16003 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Elsner	Challenging and dangerous
15540 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend	Challenging and dangerous - narrow road, no sidewalks and bike lanes
SW Pacific Hwy & Fischer, Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous

SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - using city plaza: Shari's, McCann's
16398 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Challenging and dangerous - the most dangerous is where Beef Bend Rd meets SW Roy Rogers
14445 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - 150th and Bull Mtn	Challenging and dangerous
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Challenging and dangerous
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Important destination - i frequently drive here
13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Elementary School	Important destination - drive here often
20718 OR-99W, Sherwood, OR 97140, USA	Mailed in comment - 99 and Roy Rogers	Challenging and dangerous
20718 OR-99W, Sherwood, OR 97140, USA	Mailed in comment - 99 and Roy Rogers	Important destination
12350 SW Tualatin Rd, Tualatin, OR 97062, USA	Mailed in comment - 124th and Tualatin Rd	Challenging and dangerous
12350 SW Tualatin Rd, Tualatin, OR 97062, USA	Mailed in comment - Tualatin and 124th	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
16980 SW 129th Ave, King City, OR 97224, USA	Mailed in comment - Fischer and 129th	Challenging and dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
16285 SW Royalty Pkwy, King City, OR 97224, USA	Mailed in comment - Royalty and King Charles	Challenging and dangerous
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - 99 and Royalty	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous

Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Royalty	Challenging and dangerous
Tigard - EB Hwy 99W & Durham (TriMet Stop 8792), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous - to safeway
16629 SW Jordan Way, Tigard, OR 97224, USA	Mailed in comment - 131 and Jordan	Important destination
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - there are a lot of cars that take Beef Bend as a throughway from Roy Rogers. Traffic has definitely increased on this road making it loud and congested. People drive fast which has led cars to hit local deer on Beef Bend.
12700 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Beef Bend and Prince Albert	Important destination - this is my home
12775 SW Prince Albert St, King City, OR 97224, USA	Mailed in comment - Beef Bend and Prince Albert	Important destination - golf carts without turn signals, brake lights, without or not being used and Beef Bend too narrow.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination - cars going through pedestrian light turning from 99 (northbound) turning onto Fischer.
13226 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 124th	Important destination - Speeding on Fischer Rd - all the time.
17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and dangerous
Deer Creek Elementary School, King City, OR 97224, USA	Mailed in comment - Elementary School	Important destination
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Important destination

16388 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
16388 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination - So much increasing traffic from new home construction
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - Safeway	Important destination - Safeway and Bull Mtn Rd
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - King City Plaza	Important destination - KC Plaza and onto Safeway
11500 Quakenbush Ln, Tualatin, OR 97062, USA	Mailed in comment - Tualatin and 115	Important destination
12035 SW Tualatin Rd, Tualatin, OR 97062, USA	Mailed in comment -Tualatin Rd	Important destination - Tualatin and Wilsonville
11297 SW Gabriel St, Tigard, OR 97224, USA	Mailed in comment - 113 and Gabrielle	Important destination
23 11th St, Tigard, OR 94941, USA	Mailed in comment - Durham and Summerfield	Important destination - Tualatin
15525 SW 114th Ct, Tigard, OR 97224, USA	Mailed in comment - Safeway	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - Tigard
16950 SW Meyer Ln, Tigard, OR 97224, USA	Mailed in comment - Tualatin River	Challenging and dangerous - proposed commuter route to Roy Rogers that will make me move out of KC
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - Heavy traffic through traffic, disruption of 99 and Barbur if MAX is congested there.
15555 SW Tualatin-Sherwood Rd, Sherwood, OR 97140, USA	Mailed in comment - Tualatin Sherwood and Langer Farms	Important destination - route to veterinarian and target
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and Tualatin	Important destination - route to Tualatin Fred Meyers and I5
15900 SW 116th Ave, King City, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - route to OHSU, Freddies and Tigaard library
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and Tualatin	Important destination

15383 SW 122nd Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 122nd	Challenging and dangerous
12072 SW Royal Ct, King City, OR 97224, USA	Mailed in comment - Beef Bend and 116th	Important destination - turn onto Prince Albert from Beef Bend Rd
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - access to businesses across Durham/99
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination - space age, DQ
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - no bike lanes - dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - King City Plaza
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - long wait at signal
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous - long wait at signal
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - long wait at signal

11500 Quakenbush Ln, Tualatin, OR 97062, USA	Mailed in comment - Tualatin and 115	Important destination - route to shopping
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - route to shopping
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Important destination - residence
16001 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Elsner	Challenging and dangerous
23 11th St, Tigard, OR 94941, USA	Mailed in comment - Tigard Town Square	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
136 West St, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Peachtree	Challenging and dangerous - No continuous sidewalks on north side of Beef Bend from 131st to Peachtree
17040 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous - drivers not aware of pedestrians
13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and dangerous - Drivers not aware of pedestrians
11540 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - Planet Fitness	Important destination - planet fitness
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - shopping
17445 SW 135th Pl, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
20705 OR-99W, Sherwood, OR 97140, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination - Access to coast
18255 SW 124th Ave, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination - Access to Tualatin
18255 SW 124th Ave, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination - Access to Tualatin
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment - 99 and Bull Mtn	Important destination Access to coast
16398 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination - access to Hillsboro
10717 SW Versailles Ln, King City, OR 97224, USA	Mailed in comment - Fischer Rd	Challenging and dangerous

16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - Home
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment - 99 and Hazelbrook	Important destination
13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Beef Bend and Peachtree	Important destination
17040 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - 99 and Royalty	Important destination
20703 OR-99W, Sherwood, OR 97140, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination
16082 SW 113th Ave, Tigard, OR 97224, USA	Mailed in comment - Durham and 113th	Challenging and dangerous
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Royalty	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
King City Community Park, 17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination

Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - 99 and Royalty	Important destination
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment - 99 and Durham	Signal is too short for more than three or four cars.
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Royalty	Important destination - light too short
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - too much short cut traffic from 116 - too fast!
18255 SW 124th Ave, Tualatin, OR 97062, USA	Mailed in comment - Tualatin and 124th	Getting south to I5 south
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment - 99 and Bull Mtn	Errands North on 99
15532 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment - Safeway	Important destination - Safeway shopping center
14200 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Myrtle	Challenging and dangerous - sidewalks are missing in several sections of Beef Bend, making it difficult to walk and cross since there is only one safe crosswalk on that street.
136 West St, Portland, OR 97224, USA	Mailed in comment - Beef Bend and West	Challenging and dangerous - sidewalks are missing in several sections of Beef Bend, making it difficult to walk and cross since there is only one safe crosswalk on that street.
Deer Creek Elementary School, King City, OR 97224, USA	Mailed in comment - Elementary School	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - 99 and Royalty	Challenging and dangerous
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Royalty	Important destination - McCann's

1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Royalty	Important destination - Kaddy Car Wash
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Safeway	Important destination - Safeway
15371 SW 114th Ct, Tigard, OR 97224, USA	Mailed in comment	Important destination
11495 SW Crown Dr, King City, OR 97224, USA	Mailed in comment - King City Plaza	Challenging and dangerous
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - 99 and Royalty	Challenging and dangerous
12281 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer Rd	Challenging and dangerous
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Bridge	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Important destination
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination Challenging and dangerous
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Royalty	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
15280 SW Naeve St, Tigard, OR 97224, USA	Mailed in comment - 99 and Naeve	Challenging and dangerous
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
17040 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Important destination
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - to bridgeport
17723 OR-99W, Tualatin, OR 97062, USA	Mailed in comment - 99 and Hazelbrook	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination

SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - Safeway	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
17471 SW 135th Pl, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - With the massive increase in new home construction around the intersection of Scholl's Fy Road and Roy Rogers Rd, there has been a large increase in traffic on Beef Bend Rd. It often necessitates two to three "light changes" to make left tun from Beed Bend onto 99. Where Beef Bend meets 99: there should be two left turn lanes instead of the current on left turn.
11505 SW Majestic Ln, Portland, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - cars doing U-turns in front of Pizza P and Liquor Store
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - cars parking or backing out of parking lot in front of strip mall
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - lots cutting through KC from 99 and Beef Bend
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - strip mall
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous - 131st and Fischer is getting really congested for a just a stop sign.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - The traffic flow at 99 and Fischer is terrible with the first driveway

		to the gas station so close to the intersection.
18308 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Mailed in comment - Roy Rogers and Elsner	Challenging and dangerous - A traffic light would be nice here if there isn't one between here and Beef Bend
20705 OR-99W, Sherwood, OR 97140, USA	Mailed in comment - Royalty Pkwy and 99	Important destination - Sherwood Walmart/Target area
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Challenging and dangerous - the stop sign at 150th and beef bend is an iffy spot as people still run through it.
3620 East St, Portland, OR 97224, USA	Mailed in comment - Beef Bend	Important destination - our home in Mtn View Mobile Estates
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - King City Plaza
17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
16642 SW 134th Terrace, Tigard, OR 97224, USA	Mailed in comment	Important destination
16642 SW 134th Terrace, Tigard, OR 97224, USA	Mailed in comment	Challenging and dangerous
Deer Creek Elementary School, King City, OR 97224, USA	Mailed in comment - Elementary School	Important destination
12072 SW Royal Ct, King City, OR 97224, USA	Mailed in comment - Beef Bend	Challenging and dangerous - sidewalk gaps and lack of safe crossing spots along Beef Bend
15540 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend	Challenging and dangerous - sidewalk gaps and lack of safe crossing spots along Beef Bend
11685 SW Nicolai Pl, Tigard, OR 97224, USA	Mailed in comment - Beef Bend	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
13560 SW Willow Top Ln, Tigard, OR 97224, USA	Mailed in comment	Important destination
13750 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend 137th	Challenging and dangerous

14730 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and 147th	Challenging and dangerous
16801 SW Elsner Rd, Sherwood, OR 97140, USA	Mailed in comment - Beef Bend and April	Challenging and dangerous
16388 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
16388 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Challenging and dangerous
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Challenging and dangerous
13656 SW Capulet Ln, Portland, OR 97224, USA	Mailed in comment	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
15270 SW Crown Dr, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment - 99 and Bull Mtn	Important destination
18255 SW 124th Ave, Tualatin, OR 97062, USA	Mailed in comment - 124th and Tualatin Rd	Challenging and dangerous - Lane changes at last minute by through traffic - dangerous.
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous - most dangerous intersection - even worse since cameras force drivers to slam on their brakes to avoid a ticket. Close call on rear end collision number of times!!
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - my apartment

SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment - 99 and Bull Mtn	Challenging and dangerous - always a bottleneck!! Gridlock!!
11321 SW Naeve St, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - Safeway and eye doctor location
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - shop most at the plaza including hair salon and bank
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous
11870 SW King George Dr, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous
11870 SW King George Dr, King City, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
12438 SW King George Dr, King City, OR 97224, USA	Mailed in comment - King George	Challenging and dangerous - We live on King George Dr in the apartments. There are two speed bumps, but we need one between the two. People drive very fast in front of our apartment. 11777 SW King George Dr
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous - we really need a red light at Beef Bend and 99. Cars and big trucks run that light all the time.
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Signal at 131st and Beef Bend in later afternoon when school lets out and 5-6 traffic
269 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - cars pulling our of gas station and onto Fischer
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - Safeway	Challenging and dangerous - Going south on 99 left turn into safeway shopping area.

15785 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Important destination
11788 SW Royal Villa Dr, Portland, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Fischer, Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - New road from Fischer Rd to Roy Rogers - stop this - if need be, widen Beef Bend or Bull Mtn. Timing of lights. Please stop building houses on good farm land - too close together and too mant!! Keep farming alive so we have food in our future - and wildlife too. Keep trees and vegitation to control global warming.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - during the afternoon rush hour, the left turn lanes on the 99 as one turns into Fischer always overflow. This causes traffic to back up down the 99. This can be dangerous as cars are sometimes at a complete stand still. I would recommend changing the left turn light timing on the 99 to prevent traffic build up.
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Bridge	Important destination
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
16398 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
12780 SW Prince Albert St, King City, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and dangerous - busy traffic especially at rush hour by our house
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Bridge	Challenging and dangerous - Bridge construction
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment - 99 and Bull Mtn	Challenging and dangerous - tricky intersection with split traffic

12035 SW Tualatin Rd, Tualatin, OR 97062, USA	Mailed in comment	Important destination - more shopping
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - shopping in the area
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - Entrance to the gas station is dangerous - so is the exit.
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	This intersection is too much of a bottleneck leading into King City
18205 SW Pacific Hwy, Tualatin, OR 97062, USA	Mailed in comment	Challenging and dangerous - we need a walking path/sidewalk that is safe from Pony Ridge to King City!
16082 SW 113th Ave, Tigard, OR 97224, USA	Mailed in comment - Durham Rd	Challenging and dangerous - Durham has no transit from 99 to Hall it is incredibly inefficient for those coming from Tualatin to circumvent all the way to the transit center. Something that would be a 5 minute drive becomes a 40 minute to an hour commute.
13030 SW Bull Mountain Rd, Tigard, OR 97224, USA	Mailed in comment - Alberta Rider Elementary	Challenging and dangerous
15685 SW 116th Ave, King City, OR 97224, USA	Mailed in comment - Grocery Outlet	Important destination - grocery outlet
13030 SW Bull Mountain Rd, Tigard, OR 97224, USA	Mailed in comment - Alberta Rider Elementary	Important destination - Alberta Rider Elementary
12207 SW Pond Ln, King City, OR 97224, USA	Mailed in comment	Important destination - my place of residence
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Challenging and dangerous
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment	Important destination
12018 SW Pond Ln, King City, OR 97224, USA	Mailed in comment	Important destination
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
14385 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment - 99 and Bull Mtn	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous

11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment - 99 and Tualatin Bridge	Challenging and dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
12053 SW Tualatin Rd, Tualatin, OR 97062, USA	Mailed in comment - Tualatin Sherwood	Important destination
3155 SW Pacific Hwy, Portland, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
13597 SW King Lear Way, King City, OR 97224, USA	Mailed in comment - Fischer and 136th	Challenging and dangerous
17057 SW 130th Pl, King City, OR 97224, USA	Mailed in comment	Important destination
17040 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous
15100 SW Crown Dr, Portland, OR 97224, USA	Mailed in comment	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and Tualatin Sherwood	Challenging and dangerous
SW Pacific Hwy & Fischer, Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
23 11th St, Tigard, OR 94941, USA	Mailed in comment	Important destination
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
12700 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment	Important destination
23 11th St, Tigard, OR 94941, USA	Mailed in comment	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
15599 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous

11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
12072 SW Royal Ct, King City, OR 97224, USA	Mailed in comment - Beef Bend and 116th	Important destination
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment	Important destination
23 11th St, Tigard, OR 94941, USA	Mailed in comment	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
11692 SW King John Pl, King City, OR 97224, USA	Mailed in comment - Beef Bend and 116th	Challenging and dangerous - turning left onto Beef Bend from 116th
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination
11795 SW Graven St, Portland, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination
17025 SW 131st Ave, King City, OR 97224, USA	Mailed in comment - Fischer and 131st	Important destination

SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - Plaza
16388 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination - Traffic in neighborhoods
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Important destination - Street surface condition
17040 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Important destination - Congestion
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous - traffic light
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - Traffic light
13680 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 136th	Challenging and dangerous - roundabout
11692 SW King John Pl, King City, OR 97224, USA	Mailed in comment - Beef Bend	Important destination - Food for less
14590 SW McFarland Blvd, Tigard, OR 97224, USA	Mailed in comment - Bull Mtn	Important destination - Shell service station
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - safeway
20718 OR-99W, Sherwood, OR 97140, USA	Mailed in comment - 99 and Tualatin Sherwood	Important destination
16200 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Important destination
16080 SW Royalty Pkwy, King City, OR 97224, USA	Mailed in comment	Important destination
11617 SW King George Dr, King City, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Royalty Pkwy and 99	Challenging and dangerous
15350 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous - left turn by fire station onto Fischer (still not enough during peak hours)
15290 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Challenging and dangerous - King City shopping Center
Durham Rd. Plaza (Albertson's), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - McDonalds

15563 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Important destination - car wash
12499 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer Rd	Important destination - crown jr. indoor pool
16015 SW Tualatin-Sherwood Rd, Sherwood, OR 97140, USA	Mailed in comment	Important destination - hardware, home goods, DMV, medical care, nature trails
11663 SW Royal Villa Dr, Tigard, OR 97224, USA	Mailed in comment	Important destination - shopping, drug store
15280 SW Naeve St, Tigard, OR 97224, USA	Mailed in comment	Important destination - grocery stores
12241 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Queen Anne	Needs speed bump at rush hour people cut through to avoid signals.
16230 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Challenging and dangerous - right turn from 116th onto 99
15200 SW Crown Dr, King City, OR 97224, USA	Mailed in comment - 99 and Royalty	Challenging and dangerous
11655 SW King George Dr, King City, OR 97224, USA	Mailed in comment - Beef Bend and 116th	Challenging and dangerous
16920 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Mailed in comment - Al's Garden	Important destination - Al's Garden
16035 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - US Bank
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination - Safeway
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Google maps sends people this was as a "fastest route. People drive 131st and Fischer that do not live here and drive 35-50 mph on 25mph roads. I am concerned this will be worse when it extends to Roy Rogers. I want speed humps and roundabouts to keep drivers at 25 mph and discourage those that use it as a cut through.

12450 King Village, King City, OR 97224, USA	Mailed in comment	Google maps sends people this was as a "fastest route. People drive 131st and Fischer that do not live here and drive 35-50 mph on 25mph roads. I am concerned this will be worse when it extends to Roy Rogers. I want speed humps and roundabouts to keep drivers at 25 mph and discourage those that use it as a cut through.
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
16280 SW 126th Terrace, Portland, OR 97224, USA	Mailed in comment	Important destination
3155 SW Pacific Hwy, Portland, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous
16805 SW 124th Ave, King City, OR 97224, USA	Mailed in comment	Important destination
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and Tualatin Sherwood	Challenging and dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
20703 OR-99W, Sherwood, OR 97140, USA	Mailed in comment	Important destination
SW Roy Rogers Rd, Sherwood, OR 97140, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
17000 Block SW Pacific Hwy, Metzger, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - this is right by my apartment. We have no safe entrance to the sidewalk, I would like a sidewalk entrance from within the community.
15336 SW Pacific Hwy, Tigard, OR 97124, USA	Mailed in comment	Challenging and dangerous - this crossing makes me nervous.

15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging and dangerous - This is where my boyfriend was hit crossing 99. He was heading to the bank before I woke up and next thing he knows a car hit him. His lawyers last case was someone who was also hit there. Something could surely be done there to increase safety.
15100 SW Crown Dr, King City, OR 97224, USA	Mailed in comment	Important destination - shopping centers
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Important destination - my home
16145 SW Barrington Pl, Portland, OR 97224, USA	Mailed in comment	Challenging and dangerous
16825 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging and dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
16398 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous - Intersection of Beef Bend and 99 light needs to be longer other than morning commute. Taking away the extra left turn onto Beef Bend ffrom 99 would greatly help traffic all the way around. Light would allow southbound traffic a longer light and a shorter wait time or at least the same for Beef Bend traffic.
15100 SW Crown Dr, King City, OR 97224, USA	Mailed in comment	Dentist
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Bank

16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging and difficult - it feels like a fair amount of traffic flows through SW 131st to Fischer. My guess is people think it's faster for folks coming from SW 150th and farther to get to 99. My impression from walking by SW 131st and Fischer is the majority of traffic goes from SW 131st to Fischer and vis versa. As more homes built in Beaverton. I believe more traffic will com through 131st and Fischer.
17211 SW Montague Way, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous - intersection of Fischer and 131st
3620 East St, Portland, OR 97224, USA	Mailed in comment	Challenging and dangerous - conflicting center lane arrows when driving from 99 and waiting to turn south (L) into KC (not 131st but before suicide lane) arrows for left turn painted too early on road before a turn to the right, so high potential for head on collision.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
15550 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Challenging and dangerous - bank entrance and exit wit people also exiting and entering on right 99 side of curve in road when entering KC from SW Durham
15550 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Important destination - bank entrance and exit wit people also exiting and entering on right 99 side of curve in road when entering KC from SW Durham
15550 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Important destination - shopping center
12942 SW Timara Ln, Tigard, OR 97224, USA	Mailed in comment	Challenging and dangerous
16398 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment - Bull Run and 99	Important destination

15900 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Important destination
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Challenging and dangerous
Tigard - EB Hwy 99W & Durham (TriMet Stop 8792), Tigard, OR 97224, USA	Mailed in comment	Challenging and dangerous
17025 SW 131st Ave, King City, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging and dangerous
18255 SW 124th Ave, Tualatin, OR 97062, USA	Mailed in comment	Important destination
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Durham, Tigard, OR 97224, USA	Mailed in comment	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous - Royalty Parkway on 99
15820 SW Highland Ct, Tigard, OR 97224, USA	Mailed in comment	Durham to Tualatin
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	KC Safeway
13228 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment	Home
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging or dangerous
16980 SW 129th Ave, King City, OR 97224, USA	Mailed in comment - Fischer and 129th	Challenging or dangerous
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous
20718 OR-99W, Sherwood, OR 97140, USA	Mailed in comment	Challenging or dangerous
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous

Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous - Fischer/99 has too much traffic. Need to reduce the number of cars that travel on Fischer Rd, especially the number of cars turning from 99 onto Fischer. Very dangerous.
18255 SW 124th Ave, Tualatin, OR 97062, USA	Mailed in comment	Important destination
17311 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	King City Community Park
16933 SW Monterey Ln, King City, OR 97224, USA	Mailed in comment - Fischer Rd	All along fischer
15695 SW 114th Ct, Tigard, OR 97224, USA	Mailed in comment - Planet fitness, shopping center	Planet Fitness, shopping center
15280 SW Naeve St, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous - Safeway
20190 SW 112th Ave, Tualatin, OR 97062, USA	Mailed in comment - News Seasons	New Seasons
17755 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment	Important destination
12218 SW Versailles Rd, King City, OR 97224, USA	Mailed in comment	Important destination
13660 SW Blue Spruce Ct, Portland, OR 97224, USA	Mailed in comment - Elementary School	Challenging or dangerous
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment	Challenging or dangerous
King City Community Park, 17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	Important destination
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
11470 SW Crown Dr, King City, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
12760 SW Prince Albert St, King City, OR 97224, USA	Mailed in comment	Challenging or dangerous
16973 SW 123rd Ave, Tigard, OR 97224, USA	Mailed in comment	Important destination

13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Elementary School	Challenging or dangerous - Insufficient left turn lanes into school
12765 SW Prince Albert St, King City, OR 97224, USA	Mailed in comment	Challenging or dangerous - no bike lanes - dangerous for running
20711 OR-99W, Sherwood, OR 97140, USA	Mailed in comment	Challenging or difficult
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 131st	Challenging or dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
11470 SW Crown Dr, King City, OR 97224, USA	Mailed in comment - King City Plaza	King City Plaza
King City Community Park, 17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - King City Community Park	King City Community Park
269 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Challenging or dangerous
16888 SW Elsner Rd, Sherwood, OR 97140, USA	Mailed in comment	Important destination
16920 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Mailed in comment	Important destination
20705 OR-99W, Sherwood, OR 97140, USA	Mailed in comment	Challenging or difficult - marking lanes turning left onto 99 or going through to Roy Rogers (need to know a little earlier if one or two lanes turn left) especially at night.
11970 SW Fischer Rd, Portland, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous - A new traffic light at Fischer and Queen Anne to ease turning left out of King City to 99

16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment	Not wide enough.
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Light does not leave enough time to cross 99 or take a left to 99
16035 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Durham	Important to get to Meridian Park Hospital. I don't like to drive on I5. Too many speeding vehicles and rude drivers.
18081 SW Pacific Hwy, Tualatin, OR 97062, USA	Mailed in comment	Challenging or difficult
16180 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment	Challenging or difficult
3155 SW Pacific Hwy, Portland, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous
12274 SW Adina Ct, Tigard, OR 97224, USA	Mailed in comment	Important destination
16035 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
16055 SW Tualatin-Sherwood Rd, Sherwood, OR 97140, USA	Mailed in comment	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous - too congestive by the gas station
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous - turning by Durham Rd can be tricky.
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous - light doesn't let very many cars through at one time
16398 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Elementary School	Important destination
16230 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Speed on Beef Bend at 116th intersection.
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Congestion at Beef Bend and 99 and Durham and 99

15805 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Unsafe conditions for pedestrians crossing 99W from Plaza to businesses on other side and back.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	I live on Fischer and travel usually to 99 via 131st to Beef Bend and then north or down Fischer to 99. Speeders on both of these routes is a concern (especially on Fischer) from 131st to 99!
2106 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	I live on Fischer Rd and usually travel to 99 via 131st to Beef Bend and then north or down Fischer to 99. Speeders on both of these routes is a concern (especially on Fischer) from 131st for 99!
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Crosswalk too short
12283 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment	Challenging or dangerous - too fast drivers and too busy for two lanes
269 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous - Walk signal too short. cars turning from 99 to Fischer, back up due to gas station. Move entry. Crosswalk signal too short.
15100 SW Crown Dr, Portland, OR 97224, USA	Mailed in comment	Signal too short from Safeway across too short!
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - 99 and Royalty	Challenging or dangerous - Royalty and 99 needs a proper left turn signal.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous - SW Fischer Rd and 99 - backed up from gas station and Dairy Queen
11525 SW Crown Dr, King City, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous - 116th to Beef Bend completely blocked at rush hour.

15280 SW Naeve St, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous - double intersection - royalty parkway and 116th and 99 and people backing out of weed shop....severe congestion/danger
Unnamed Road, Tigard, OR 97224, USA	Mailed in comment - Planet Fitness/Mall	Important destination
11545 SW Majestic Ln, King City, OR 97224, USA	Mailed in comment - clubhouse pool	Important destination
11321 SW Naeve St, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Safeway
15450 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Challenging or dangerous - all difficult to cross on foot or bike
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous - all difficult to cross on foot or on bike
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous - all difficult to cross on foot or bike
11725 SW Queen Elizabeth, Portland, OR 97224, USA	Mailed in comment - grocery outlet, drug store	Important destination
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment - Safeway	Safeway
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Fitness center, hardware, drug store
16394 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Will need traffic light
12218 SW Versailles Rd, King City, OR 97224, USA	Mailed in comment	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
15238 SW Harvey's View Ave, Portland, OR 97224, USA	Mailed in comment	Important destination - Police patrol. Enforce handicap parking. City needs money from not enforcement as current. No priority for police to protect neighborhoods or handicap.
12078 SW Turnagain Dr, Tigard, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination

11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
14796 SW Mulberry Dr, Portland, OR 97224, USA	Mailed in comment	Challenging or dangerous
16401 SW Roy Rogers Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Proposed the development of a fire lane Beef Bend Rd to 150th to Roy Rogers. Cut back on number of proposed homes to reduce number of cars, congested population centers, increase acres of parks, wild areas and community gardens. Rapid growth is not necessary.
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Proposed the development of a fire lane Beef Bend Rd to 150th to Roy Rogers. Cut back on number of proposed homes to reduce number of cars, congested population centers, increase acres of parks, wild areas and community gardens. Rapid growth is not necessary.
12450 King Village, King City, OR 97224, USA	Mailed in comment	Important destination
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
14390 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment	Important destination
18465 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Mailed in comment	Important destination
15800 SW Beef Bend Rd, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous
16004 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Elsner	Challenging or dangerous
16065 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment	Important destination
11545 SW Majestic Ln, King City, OR 97224, USA	Mailed in comment	Important destination
16980 SW 129th Ave, King City, OR 97224, USA	Mailed in comment - 131st and Fischer	We need street lights on 131st between Timara and Bedford
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Walk to shopping
15885 SW 116th Ave, King City, OR 97224, USA	Mailed in comment - 99 and Durham	99 by car

12719 SW Bexley Ln, Tigard, OR 97224, USA	Mailed in comment - King City Senior Villa	King City Senior Villa
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Fischer Rd light left turn lane light is too short, Fischer Rd light is too long. Royalty Parkway people are running the light through caution and red lights. Traffic on 99 is very heavy.
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous
20705 OR-99W, Sherwood, OR 97140, USA	Mailed in comment	Important destination
14978 SW 116th Pl, Tigard, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Safeway
17180 SW Lasich Ln, Sherwood, OR 97140, USA	Mailed in comment	Challenging or dangerous
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous
14590 SW McFarland Blvd, Tigard, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Durham, Tigard, OR 97224, USA	Mailed in comment	Important destination
12700 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment	Important destination
14978 SW 116th Pl, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 116th	The turn from Beef Bend to 116th (teaching a teen driver this one gave me gray hair and gripping seat moments).
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous
11860 SW King George Dr, King City, OR 97224, USA	Mailed in comment	Challenging or dangerous
11495 SW Crown Dr, King City, OR 97224, USA	Mailed in comment - King City Plaza	People walking on the street
17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment	Important destination
15785 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Important destination
15440 SW Royalty Pkwy, King City, OR 97224, USA	Mailed in comment	Important destination

SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Crossing 99 to get to Safeway and then walking through the parking lot to get to the store can be intimidating for an elderly person. Perhaps a longer time for people to cross at the light? And maybe a sidewalk along the parking lot so it's safer to get to the grocery store?
15166 SW 119th Ave, Tigard, OR 97224, USA	Mailed in comment	Important destination
15371 SW 114th Ct, Tigard, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
18315 SW Pacific Hwy, Tualatin, OR 97062, USA	Mailed in comment	Local shopping
16180 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment	Small coffee shops - bakery
16006 SW Refectory Pl, Portland, OR 97224, USA	Mailed in comment - grocery store	grocery store - we need more choices!
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Gateway treatment at 99 Beef Bend corner
15182 SW 116th Ave, King City, OR 97224, USA	Mailed in comment	Gateway treatment at 99 and Beef Bend corner
16035 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Unsafe left turn exit from US Bank lot
16660 SW King Charles Ave, King City, OR 97224, USA	Mailed in comment - KCCA Pool	Important destination
15805 SW 116th Ave, King City, OR 97224, USA	Mailed in comment - Grocery Outlet	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Safeway	Safeway
13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment	Need flashing crosswalk from northside of Beef Bend to Deer Creek side. Note: kids and adults cannot cross Beef Bend safely to get to Deer Creek. Sidewalk gap makes this even more dangerous especially for grade school kids.

12390 SW King Richard Dr, King City, OR 97224, USA	Mailed in comment	It is dangerous to turn onto Fischer, you can't tell if cars are speeding there should be a 4-way stop sign on 126th and Fischer.
20721 OR-99W, Sherwood, OR 97140, USA	Mailed in comment	Important destination
14389 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Important destination
17585 SW Pacific Hwy, Tualatin, OR 97062, USA	Mailed in comment	It would be so great to have a sidewalk along the west side of 99W to get to the wildlife refuge.
11605 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment	This would be greatly improved with better parking for kayak launching.
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	The lack of sidewalk on SW 116th is a problem.
11675 SW Hazelbrook Rd, Tualatin, OR 97062, USA	Mailed in comment	Kayak launching
13311 SW Ute St, Tualatin, OR 97062, USA	Mailed in comment	I walk and run here
17020 SW 131st Ave, Tigard, OR 97224, USA	Mailed in comment - 131st and Fischer	Home - Fischer Rd has become a shortcut for hundreds of cars on a daily basis. If Fischer is put through to Roy Rogers, we won't be able to get out of our own neighborhood!! Whoever thinks this is a good idea needs to come stand on this corner for 10 minutes to view the already high volume of traffic.
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Traffic light is too short.
17180 SW Lasich Ln, Sherwood, OR 97140, USA	Mailed in comment	Important destination - getting to Scholl's Ferry to my son
15100 SW Crown Dr, King City, OR 97224, USA	Mailed in comment - grocery outlet	Important destination
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment	Challenging or difficult
16760 SW Monaco Ln, King City, OR 97224, USA	Mailed in comment	Challenging or dangerous

16585 SW King Charles Ave, King City, OR 97224, USA	Mailed in comment	Challenging or dangerous
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Royalty Parkway, Tigard, OR 97224, USA	Mailed in comment	Important destination
14325 SW Pacific Hwy, Portland, OR 97224, USA	Mailed in comment	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	The green planet - congestion, parking and cars pulling out onto street.
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Intersection of 116th and Beef Bend
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Traffic noise - Beef Bend and 99 - awful!
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging and dangerous
18301 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Mailed in comment = Roy Rogers and Elsner	Challenging and dangerous
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	challenging and dangerous
13620 SW Beef Bend Rd, King City, OR 97224, USA	Mailed in comment - Elementary School	Challenging and dangerous
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment - 99 and 124th	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous
Tigard - EB Hwy 99W & Durham (TriMet Stop 8792), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258),	Mailed in comment - Fischer and 99	Challenging and dangerous

Bull Mountain, OR 97224, USA		
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Please reconsider "green blvd" aka Fischer Rd...
15536 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Important destination
16892 SW Romeo Terrace, King City, OR 97224, USA	Mailed in comment	Important destination
13199 SW Timara Ln, King City, OR 97224, USA	Mailed in comment	Important destination
15745 SW 116th Ave, Portland, OR 97224, USA	Mailed in comment - Victoria Pl	Challenging and dangerous - Straight stretch on Victoria Pl beginning from Elizabeth speeders honk at elderly drivers and pass them as they zoom by/past. This danger was created by the City needs resolution in the community. Created by making Victoria speedway between two parallel streets with bumps - very poor planning.
15745 SW 116th Ave, Portland, OR 97224, USA	Mailed in comment - Victoria Pl	Important destination
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination - I normally drive to 99 to get where I need to go. I turn left from Beef Bend onto 99, go straight across 99 to Safeway shopping center, or go south on 99 from our southern entrance. I don't want to have more development so close to King City.
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous - the immediate turn available into the gas station to Fischer Rd from 99 is problematic back up traffic and clogs up the ability to turn left onto Fischer and creates an unsafe situation. I feel the first driveway should be closed.
16200 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Important destination

SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Important destination
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous - Lack of sidewalk on Beef Bend (south side) east of 131st.
16396 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment - Beef Bend and Roy Rogers	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
Tigard - EB Hwy 99W & Durham (TriMet Stop 8792), Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Challenging or dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Challenging or dangerous
269 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Traffic light on 99W north turning left onto Fischer is wildly long at evening hours, needs time adjustment during PM commute time.
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 99	Light at Beef Bend onto 99 is too long.
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Beef Bend 131st	Important destination
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment	Important destination
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	Important destination
16043 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous
SW Pacific Hwy & Durham, Tigard, OR 97224, USA	Mailed in comment	Important destination
269 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous

269 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment - Fischer and 99	Important destination
17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment	Important destination
16195 SW Taylor Ln, Portland, OR 97224, USA	Mailed in comment	Challenging or difficult - plan for new school with a blind corner
16255 SW 150th Ave, Tigard, OR 97224, USA	Mailed in comment - Beef Bend and 150th	Challenging and dangerous - crosswalk at Peach Tree and Beef Bend for easy/safe access to the school for families that live on the north side of Beef Bend.
14808 SW Mulberry Dr, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous - 45 mph is too fast in a residential area.
17470 SW Montague Way, King City, OR 97224, USA	Mailed in comment - Community Park	No comment
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	No comment
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment - Deer Creek Elementary	No comment
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 99	Challenging or dangerous - high traffic volume. People turning into space age creates back up onto 99W
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment - Fischer and 99	entries and exits from King City
16021 SW 130th Terrace, Tigard, OR 97224, USA	Mailed in comment	Entries and exits from King City
13124 SW Deergrove Ln, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous location - speeding going south on 131st Ave - speed sign sort of useless where it is located near the top of the hill.
Tigard / Tualatin (McDonalds), Tigard, OR 97224, USA	Mailed in comment	Important destination
18200 SW 126th Pl, Tualatin, OR 97062, USA	Mailed in comment	Challenging or dangerous
16357 SW Beef Bend Rd, Portland, OR 97224, USA	Mailed in comment	Important destination
13600 SW Blue Spruce Ct, Tigard, OR 97224, USA	Mailed in comment	Important destination

15675 SW Greenfield Dr, Tigard, OR 97224, USA	Mailed in comment	Important destination
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment	Important destination - stores
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Safeway	Important destination
14295 SW Pacific Hwy, Portland, OR 97224, USA	Mailed in comment	Important destination
14385 SW Pacific Hwy, Tigard, OR 97224, USA	Mailed in comment	Challenging or dangerous
SW Pacific Hwy & Bull Mtn, Tigard, OR 97224, USA	Mailed in comment	Important destination
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment	Challenging or dangerous
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment	Challenging or dangerous
Tigard - EB Hwy 99W & Durham (TriMet Stop 8792), Tigard, OR 97224, USA	Mailed in comment	No comment
16346 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Mailed in comment	No comment
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	Mailed in comment - Fischer and 99	There is a lot of traffic using Fischer Rd to avoid 99 traffic.
16325 SW 113th Ave, Portland, OR 97224, USA	Mailed in comment	No comment
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment - Beef Bend	Beef Bend could be expanded to help carry traffic to Roy Rogers. Don't complicate the situation by running more traffic through neighborhoods.
11555 SW Durham Rd, Tigard, OR 97224, USA	Mailed in comment - 99 and Durham	99 and Durham is a major problem.
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment	No comment
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment	No comment
269 SW Fischer Rd, King City, OR 97224, USA	Mailed in comment	No comment

1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment - Royalty and Durham 99W	Lights at Royalty, Durham and 99W are much longer for cars traveling west than for those traveling east - congestion on King City side perhaps traffic counters.
15805 SW 116th Ave, King City, OR 97224, USA	Mailed in comment - Royalty and Durham 99W	Lights at Royalty, Durham, and 99W are much longer for cars traveling west than for those traveling east
Tualatin - WB Hwy 99W & 124th (TriMet Stop 4316), Sherwood - Tualatin North, OR 97224, USA	Mailed in comment	No comment
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Mailed in comment	No comment
SW Pacific Hwy & Beef Bend, Tigard, OR 97224, USA	Mailed in comment	No comment
1427 SW Pacific Hwy, King City, OR 97224, USA	Mailed in comment	Groceries, etc.
15905 SW 116th Ave, Tigard, OR 97224, USA	Mailed in comment	US Bank
17016 SW 130th Pl, King City, OR 97224, USA	Mailed in comment	MI - 16570 SW Monaco LN
20000 SW Pacific Hwy, Sherwood, OR 97140, USA	Mailed in comment	MI - If you were genuinely concerned with dangerous or challenging areas, this map would be as large as this page. My "x" on this map would take up an entire neighborhood. Yet another box checking effort by King City that is lacking effort. You don't care about your citizens, you only care about money. You don't care about our input or thoughts. You've already made those decisions on behalf of us.

13443 SW Ute St, Tualatin, OR 97062, USA	Tualatin River	Development along the river has created major erosion and land slides. This has occurred on both sides, for example the south side near the new apartment development and the north side from the additional runoff and other impacts of the newer Edgewater community, The TSP but understand how the new runoff from hard surfaces of the new roads and dense development will only increase the already problematic erosion issues in the expansion area along the Tualatin River. Roads must be moved back from the river and runoff must be captured and collected for slow release well uphill. It is not acceptable to continue to destroy the river and the streams that flow into it near King City, as we can see it has already caused huge issues for those of us who live here.
16385 SW Myrtle Ave, Portland, OR 97224, USA	Columbia Land Trust, Bankston property	Do not build a road through the Columbia Land Trust wetlands. Other alternatives are available that will be less costly and will not destroy this critically important preserve. Other alternatives must me used instead, as directed by Metro and requested by other organizations.
15570 SW Pacific Hwy, Tigard, OR 97224, USA	Safeway	We often buy groceries at Safeway
15705 SW 116th Ave, King City, OR 97224, USA	Grocery Outlet	Grocery Outlet is a frequent stop for groceries
11725 SW Queen Elizabeth St, King City, OR 97224, USA	King City Barber Shop	I get my hair cut here, every 6weeks
11725 SW Queen Elizabeth Ave, Portland, OR 97224, USA	Jejo's Jewelry	I get my watch fixed here
15685 SW 116th Ave, King City, OR 97224, USA	McCann's	Frequently shop at McCanns

16588 SW Matador Ln, King City, OR 97224, USA	Morocco and Matador	The stop sign here should be either on all three legs or just the north and south legs. Traffic from the east already has to slow significantly to turn. The north and south have no reason to stop. The foliage and other obstructions on all quadrants of this intersection restrict the intersection sight distance for bicycle traffic heading E/W.
13493 SW Shakespeare St, King City, OR 97224, USA	Tualatin River at transmission easement	1 - would be nice to have a formal boat launch 2 - would be better to have a non-motorized crossing of the river here to allow for the extension of the westside trail.
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Durham at 99W	The split phased signal at this location adds to the inefficiency of this signal. The congestion at this intersection is the root cause of cut through traffic around the Royalty Parkway Loop as well as the Fischer to 131st to Beef Bend connection. The type of intersection also creates a long E/W pedestrian crossing that requires an excessive pedestrian clearance time that further congests this intersection.
Tigard - WB Hwy 99W & Durham (TriMet Stop 8644), King City, OR 97224, USA	Durham at 99W west side	Lack of bicycle accommodations creates dangerous situation for westbound through bikes. Need at least a bike box on the east stop bar and a bike lane leading to that stop bar due to excessive queuing in the middle lane of the westbound approach.
16621 SW Jordan Way, King City, OR 97224, USA	Jordan Way at 131, east side	Line of sight from Jordan blocked to SB conflicting traffic by lack of clear zone in SE quadrant.

17020 SW 131st Ave, Tigard, OR 97224, USA	131st at Fischer	Minor existing congestion during PM peak hour almost completely resulting from cut through traffic NB to Beef Bend Road.
17755 SW 131st Ave, Tigard, OR 97224, USA	River	Make it easier to access the river.
12220 SW King Richard Dr, King City, OR 97224, USA	Intersection FIscher and Versailles	Also a driving issue. It is near impossible to see pedestrians cross the road at Fischer and Versailles due to the bend in the road. Even a simple crosswalk, like that at Fischer and 126th, would not help. For the safety of pedestrians a crosswalk with safety lights need to be installed.
17001 SW Eldorado Dr, Tigard, OR 97224, USA	Crosswalk Fischer and 126th	This crosswalk needs a safety light. We have been crossing Fischer using this crosswalk and drivers will not stop or stop just before running us over. A speed trap would give insights on how fast people drive on Fischer. It is definitely not the speed limit.
11795 SW Graven St, Portland, OR 97224, USA	Traffic Light Highway 99 and Fischer	This intersection has been an issue for a while now. It takes three to four lights to get a chance to turn into Fischer. Coming from Fischer onto the Highway is also a nightmare. At the very minimum, there needs to be an adjustment to the traffic lights and SENSORS!

13305 SW Fitzwilliam Dr, King City, OR 97224, USA	133rd Terrace between Fitzwilliam and MacBeth	Remove this route as a thoroughfare. Heading south on 133rd to Fitzwilliam is a blind corner and most people drive too fast. There are so many kids out playing and it is a safety concern. There is a natural divide between the two developments just north of the bike path. You could close the road with large beautiful planters or equivalent instead of the typical orange and white road barriers. This would create two more private streets for the people that live on them driving the home values up and keeping the neighborhood kids safe.
13660 SW Fischer Rd, King City, OR 97224, USA	Fischer Road Exentsions	DO NOT EXTEND FISHER ROAD. HOME VALUES WILL DROP. OUR KIDS SAFETY WOULD BE IN JEOPARDY. POLLUTION WOULD GO UP.
17213 SW 136th Ave, King City, OR 97224, USA	Sidewalk and Tree Issues	King City elected to have trees removed that did not pose sidewalk hazards and left trees that clearly left sidewalk hazards. They also did not put in the appropriate types of slips to prevent this root issue from happening again. For the people who walk the neighborhood on a regular basis we now have identified tripping hazards all over the neighborhood, and the city has chosen to look the other way. The city has chosen to remove trees in which the sidewalks were not lifted. Please take an IQ test next time you spend our tax dollars.

16995 SW 134th Terrace, King City, OR 97224, USA	Fisher Road	Speed through a residential area is a HUGE concern. Turning Fisher Road into a through road to Roy Rogers would cause major safety concerns in the neighborhood(s). Do NOT push through to Roy Rogers
15390 SW 116th Ave, Tigard, OR 97224, USA	Entire expansion plan	Oct. 21, 2020: Provide a well publicized opportunity to put the entire UGB planned expansion and King City proposals to public vote on whether to drop the project entirely or continue planning. There does not seem to be any information in the public domain indicating anyone ever asked for King City to expand.
13997 SW River Ln, Portland, OR 97224, USA	Fischer Road (DO NOT) Extension	Do not extend Fischer Road along the Tualatin River. Save this as recreational area that can be used by the community.
13997 SW River Ln, Portland, OR 97224, USA	Fischer Road (DO NOT) Extension	Do not extend Fischer Road along the Tualatin River. Save this as recreational area that can be used by the community.
13472 SW Fischer Rd, King City, OR 97224, USA	No Fischer Rd extension.	.
13472 SW Fischer Rd, King City, OR 97224, USA	No Fischer Rd extension.	.

16925 SW Meyer Ln, Portland, OR 97224, USA	Ravine	There are 3 or 4 ravines that need to be crossed or skirted around for any road or trail that travels along the Tualatin River. The each of the ravines have a very nice natural environment with a small stream great park potential. It would be very expensive and probably destroy the wetland environment of the ravines if road bridges were built to cross them. Roads should skirt around the ravines but it might be possible to build walking or bike trails that go into the ravens and use small (less impactful) bridges to cross the streams.
16925 SW Meyer Ln, Portland, OR 97224, USA	Ravine	There are 3 or 4 ravines that need to be crossed or skirted around for any road or trail that travels along the Tualatin River. The each of the ravines have a very nice natural environment with a small stream great park potential. It would be very expensive and probably destroy the wetland environment of the ravines if road bridges were built to cross them. Roads should skirt around the ravines but it might be possible to build walking or bike trails that go into the ravens and use small (less impactful) bridges to cross the streams.

16862 SW 136th Ave, King City, OR 97224, USA	Fischer and tempest way	Kids travel up and down these roads on bikes, boards, scooters and foot. The ravel to the park and along the power lines playing all day and everyday. Our HOA has been tasked with rescuing the turn about to make the area more safe for kids when cars are travel wing around the four about. Putting in a road that will increase traffic by 20x plus more traffic will make the roads crossing over to the park and back extremely dangerous. This is a peaceful neighborhood that doesnâ€™t need to become a thoroughfare for speeding cars.
11795 SW Graven St, Portland, OR 97224, USA	99 & Fischer	Extending Fischer will make this intersection a nightmare. Donâ€™t do it!
269 SW Fischer Rd, King City, OR 97224, USA	FISCHER	DO NOT EXTEND FISCHER RD TO ROY ROGERS. THIS IS A TERRIBLE DECISION THAT WILL CAUSE MORE HARM THAN BENEFIT.
13621 SW Fischer Rd, King City, OR 97224, USA	Fischer Rd	Do not make Fischer Rd a through street. This is a terrible idea that will devalue homes and hurt the community.
13685 SW Fischer Rd, King City, OR 97224, USA	Fischer Road Extension	Cancel the Fischer Road extension plan. Extending Fischer Road will add significant traffic to a residential area. This will certainly prove to be dangerous for individuals, especially children, in the neighborhood. Please reconsider this project in the interest of public safety.

18205 SW Pacific Hwy, Tualatin, OR 97062, USA	extending 124th Ave to King City	It would be great to extend 124th Ave to Roy Rogers St via King City. It would decrease transition and traffic on 99W, Fischer Rd and 131st as well. It would require building a bridge, but It is well worth to consider the option.
Error:ERROR	Fisher Rd Extension	Extending Fisher Rd to Roy Rogers would disrupt the Edgewater Community & well as the farms & land between the two roads. Beef Bend works for commuters needing to get between those two destinations. If there are concerns with that road's efficiency, then improving the existing road would be a much better use of money & time for King City.
269 SW Fischer Rd, King City, OR 97224, USA	Fischer & 99W	Numerous cars making a left turn from 99W on to Fischer - some slowing to enter gas station. Can be dangerous as well as cause congestion
16715 SW 137th Ave, Tigard, OR 97224, USA	Fisher Road extension	Would the Fisher Road extension running through this area be better than extending River Ln/137th so that you can take into consideration the large culvert (no bridge will be needed) and also preserve the land along the river for public use and not a road?
Deer Creek Elementary School, King City, OR 97224, USA	Deer Creek School	Children should have safe walking access from all the current neighborhoods. Current gaps in the sidewalk system, and narrow sidewalks right next to the street are unsafe. We need to teach our kids to walk, not depend on cars.
18321 SW Pacific Hwy, Tualatin, OR 97062, USA	131st extension to Tualatin River	It would be very nice to have a canoe/ kayak ramp here connected by trail to the community park.

15905 SW 116th Ave, Tigard, OR 97224, USA	Intersection of 99W and Durham Rd	It is a boring and hazardous half mile walk from Fisher Rd to this intersection. Going through the neighborhood is indirect and longer for the residents who live directly on 99W.
17009 SW 130th Pl, King City, OR 97224, USA	intersection of 131st and Fisher Rd	There used to be a bus stop here. We've grown since then and could use one now. I see many people walking the mile to 99W.
15082 SW 116th Ave, Portland, OR 97224, USA	Sidewalk at Beef Bend and SW 116th ave	Please consider finishing the sidewalks. Folks are walking in the street.
13620 SW Beef Bend Rd, King City, OR 97224, USA	Crosswalk on Beef Bend, where the sidewalk ends	Deer Creek students walking from the unincorporated part of Bull Mountain need a pedestrian crossing over Beef Bend, as the sidewalk abruptly ends right here. It would be very beneficial for pedestrians, runners, bikers and dog walkers too. Community members have tried FOR YEARS to get this on a planning list . . . but which one?
Tigard - WB Hwy 99W & Fischer (TriMet Stop 4258), Bull Mountain, OR 97224, USA	99W & Fischer	U-turn at Fischer/99W is costly in many ways, light does not recognize vehicles so they just sit even when this is no other traffic in any direction or side streets. This causes excess emissions and prohibits the flow of traffic. Left-hand turns between Durham and Fischer would eliminate unnecessary CO2 emissions and increase traffic flow.
269 SW Fischer Rd, King City, OR 97224, USA	Fisher and 99	This is in an important intersection where access needs to be prioritized.
13350 SW King Lear Way, King City, OR 97224, USA	Fischer Road	Please consider not extending Fischer Road to Roy Rodgers. The Edgewater community is not in favor of this expansion.

16603 SW 134th Terrace, Tigard, OR 97224, USA	Throughout KC TSP Plan area	Please develop a realistically achievable TSP. I've worked on many master planning and TSP plans that are beautifully designed with curving roads that don't consider the reality of eventual development. The West Bull Mountain concept plans had very aesthetic roadway designs that ignored property lines and ultimately were/are unachievable thus developers using common grids. Please think about a balance between ideal design ideas and realistic planning that can be accomplished.
16700 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Expansion Area Transit Access	I'm. hoping the KC TSP will include a level of specificity for transit access in the expansion area, including walk/bike routes that minimize out-of-route access to planned transit facility. Between KC and City of Sherwood residential expansion, I'm hoping there will be enhanced transit along Roy Rogers Road and the KC TSP considers that potential.
16035 SW Pacific Hwy, Tigard, OR 97224, USA	KC Business area transit parking	Can the TSP consider how to increase transit parking? No idea what ridership is from KC transit stops or what the typical travel distance is (is there a high percentage to Tigard Transit Center?) Bus frequency seems pretty good, but transit stops typically see 1 or 2 riders which seems low given the residential density. I'm guessing transit on Beef Bend Road is years away, if ever but potential ridership density within a 1 mile walkshed seems good for Pacific Hwy use.

13128 SW MacBeth Dr, Tigard, OR 97224, USA	Throughout KC TSP Plan area	Please consider how alternative forms of travel can be accomplished such as golf carts gaining access through neighborhoods to King City businesses in existing and expansion areas. Currently limited to no connections west of KCCA much less any suggested routes. TSP could include route-finding signage requirements?
16700 SW Roy Rogers Rd, Sherwood, OR 97140, USA	Roy Rogers Road access for future development	Given the limited distance between the southern edge of the expansion area and Beef Bend Road, how many access roads will be allowed and will they require additional traffic signals? Does that agree with the Washington County TSP expectations?
14075 SW River Ln, Portland, OR 97224, USA	Extension of Fischer Road as multi-modal	Having listened to Rivermeade Community members object to extension of a public road, how does one community's input influence the long-term larger community benefit of a thru multi-modal roadway?

16075 SW Beef Bend Rd, Sherwood, OR 97140, USA	Beef Bend Road multi-modal expansion	How will BBR expansion occur to accommodate expansion into new growth area? That section of road is not with the UGB (and won't be until Tigard seeks expansion through the Metro process - maybe 2028?). The section from 150th Avenue west can't be expanded - so is the expectation that KC will seek additional ROW from developers to accommodate capacity? And how will that get paid for? The section from 150th east to Pacific Hwy is on the County's TSP as "very long term" and in the millions in 2014 costs - this is a really low priority for County funding - if the KC TSP identifies the capacity needs for the next 25 years how will that get accomplished. Please don't just say "it needs expansion" without some realistic considerations of how. I would assume it would be a multi-modal system (walk/bike and maybe golf carts?) but this is a narrow, constrained roadway. ROW comes from???
12539 SW Overgaard St, Tigard, OR 97224, USA	transition between HOAs/Planned Developments	Currently there are 1960s - 1990s cul-de-sac development with no connectivity for walking/biking or perhaps even golf carts. Please look across the existing neighborhoods and determine opportunities to make through connections. Current walk score for many of these areas is very low with only right-of-way acquisition opportunities to improve dramatically

16535 SW 150th Ave, Portland, OR 97224, USA	major riparian/water conveyance areas in expansion area	Little to no discussion on bridging a parallel connector/arterial to Beef Bend Road regarding how those drainage areas will be accomplished and how they will be paid for. With the envisioned growth, Beef Bend Road will reach an "F" capacity rating very quickly.
12421 SW Prince Albert St, King City, OR 97224, USA	SW Pince Albert and King George	People drive too fast at this intersection and often don't stop for stop sign (especially a right turn off of King George onto Prince Albert
17474 SW 135th Pl, King City, OR 97224, USA	Pacific Highway (99W) & Fischer Rd	Turning left from 99W onto Fischer Rd creates significant back-ups on 99W during peak hours. It takes several signal cycles to get through the left turn and cars making the left and then turning into the service station on the right and the apartments on the left add to the back-up and create traffic and pedestrian hazards.

Appendix B: Open Text Comments from Survey in Online Open House

Below are the unedited comments from the open text questions in the survey on the online open house.

1	There is going to be an increase in through traffic, due to all the new home construction nearby.
2	1) Lowering the speed limit on Hwy 99 to 35mph. 2) Painting a crosswalk from 116 across Beef Bend Rd.
3	adding 2 left hand turn lanes to hwy 99 at beef bend or another street to turn onto 99 from King City neighborhoods
4	As King City expands and the surrounding areas by Roy Rogers Rd and Scholls Ferry Rd have seen massive new housing construction, the traffic and noise from Beef Bend Rd has increased tremendously. Would the city or the county consider a sound barrier wall from 99W along Beef Bend Road, covering the length of the King City Condominium boundaries? Also a flashing yellow/red light is needed on Beef Bend Rd/116th Ave. since it is sometimes very difficult to make a left turn from 116th onto Beef Bend Rd. It is an accident waiting to happen. Thank you for your consideration.

5	Be aware of increased traffic turning left onto Fischer from 99W. The question to be answered is why are these cars traveling through neighborhoods? Would it be wise to update 99W and/or Beef Bend Road to create more east to west capacity? We also need to consider the environment as we look to future expansion of the King City boundary
6	Beef Bend Rd. should be approved and started before the western expansion is phased in.
7	Better walking/bike paths throughout. We don't need more roads. Less roads, more safe walking/bike paths!
8	Bike and pedestrian safety, I was hit very bad in bike lane 10/07/2019 by City bus In front of fire station on 99 and also knocked down in Durham cross walk from left turn traffic out of king city shopping ctr.
9	Blocking a few streets into King City off Fisher on North???but Leave bike and walking way open!!! Add speed bump cross walks at four way intersection on Royalty and 116th??? Beef bend needs more speed bumps and lights for turning into community. Fisher and 135th intersection needs work.....wider so traffic flows from Beef bend and 135th.
10	Bringing traffic down fisher through edgewater would be a nightmare. Beef bend should be evaluated.
11	building an additional roads (124th Ave to Roy Rogers) or expanding capacity existing ones (Beed Bend) instead of extending an existing ones (Fischer Rd).
12	Bus stop that comes down to 131st and Fischer.
13	Bus stops within King City! I don't understand why they don't right now.
14	Cancel this effort along with the entire King City expansion effort. Or, at minimum, put it to a well publicized public vote for all landowners and residents in all areas that would be affected if the expansion is ultimately properly developed.
15	Comfort and safety for pedestrians and bicyclists as we encourage the health of humans and the planet. For example, street trees were vital shade this summer while we all tried to get some exercise. I saw many gaps as people take them down over the years and their replacement is not enforced. Sidewalks are not wide enough for more than two people so two parents can't walk with a child between them (Mom always follows alone, at least that was my experience). Passing someone or encountering someone during this pandemic time often forced one out into the street. Green planting strips create safety between pedestrians and the street. BIcyclists often encounter hazards in tree branches, leaves or storm drains. To avoid them, they must veer into the automobile lane, sometimes suddenly with a car coming. (BUt I do believe that bicycles belong on the street). It is half a mile between Fisher Rd and Durham. There is no way to cross 99W; in fact, the crossing is made farther because of the locations of the crosswalks on the far sides of the intersections. I have seen people with walkers navigating the green divider between north and southbound lanes of 99W. Also, the apartment dwellers on Fisher often cross to the SpaceAge mini-mart at the driveway. It's convenient and they're going to do that. Let's acknowledge that and put in a crosswalk? There used to be bus service at the corner of Fisher and 131st. That was before anyone lived to the west of 131st, so of course it wasn't frequently used. Now I see many transit riders walking the mile to 99W, in rain, shine, heat and cold. Local residents should be acknowledged when putting Fisher Rd. through. When I lived in Eugene with small children, it was impossible to find a place to live without lots of cars driving by because of their through-street policies. Fisher Rd going through there would cut that community in half.

16	Connecting Roy Rogers to Fischer will only create MORE traffic and unsafe traffic for our neighborhood community. Drivers already (who live in the community) drive WAY TOO fast on fisher. Imagine people commuting from Roy Rogers. It would become a speedway and extremely dangerous for our walkers, bikers, children and families who enjoy the quiet and peaceful neighborhood. Fix the speeding around the neighborhood (speed bumps?!) then consider expanding. But you can't expand to an even less safe driving system if the one we have now is already damaged.
17	Connectivity, walk ability and protecting the neighborhood feel of the various neighborhoods
18	Consider that the primary mode of transport is the car. Don't oander to bike and pedestrians, who don't pay for the roads.
19	Consider that walkers and bikes are important but NOT any more so than cars. A system that works for everyone is needed. It i bad enough that bikes don't have to stop and go to front of the line which scares drivers.
20	Consistency as much as possible between the various, diverse neighborhoods
21	Could you please remove the reflective barrier at the end of 130th Avenue. It was supposed to be temporary and is not serving any purpose. There are several similar dead end streets in King City that do not have these barriers.
22	Do not expand Fischer road. Edgewater community is not in favor.
23	Do not extend Fischer rd
24	Do not extend Fischer Rd to Roy Rogers as it would increase safety concerns with volume of traffic as well as devalue the Edgewater community. It would be more beneficial to expand beef bend first.
25	Do not extend Fischer road and make it a through street. This will add significant traffic through a residential area and make it dangerous for many children.
26	Do not extend Fischer Road! Please look for other options and do not extend Fischer Road.
27	Do not extend Fisher Rd. To Roy Rogers
28	Do not extend Fisher to Roy Rogers. that is absolutely nonsense. You have Beef Bend and Bull Mt you can widen.
29	Do not use Fischer Rd as a through or connecting street to Beef bend rd.!! The streets in Edgewater on the Tualatin which would be effected are narrow due to the planned high density neighborhood. The neighborhood already has no parking on some side streets just to get fire emergency vehicles around. Children playing in the neighborhood would also be at high risk if there was increased traffic! This would be a very unsafe and poor decision!!!
30	Do not use Fischer road as a bypass for Beef Bend Road.
31	Don't expand Fisher Rd. to Roy Rodgers. Beef Bend Rd. is close enough for the purpose
32	Don't get too crazy, maintenance is important, but remember there our tax dollars. Being fiscally responsible is just as important as many of the other issues here .
33	DONT OVER BUILD HOMES!!!!
34	Drop it. Don't need special bond $ like Sherwood did with water and schools - growth. Will drive out the 55+ community.
35	Drop it. We moved from Sherwood because of the rapid increase in property taxes due to the growth bonding. KC isn't and shouldn't be Sherwood. You'll drop many people out of KC for your expansion plans.
36	Ensure that the KC roads don't provide a shortcut for impatient commuters avoiding 99W or Beef Bend congestion. We must maintain safety for our children.

37	Evening and weekend transportation.
38	Extend Fischer Road!!!
39	Filling in the gaps for sidewalk networks.
40	First of all, this is essentially the same survey that was done two years ago. I'd like to know what was done with the results of that survey and why we're doing the same thing again. The definition of failure is doing the same thing over and over and expecting a different result each time. As far as things to consider, 1. THINK OUTSIDE THE BOX. I don't think the existing King City transportation system has any major problems as far as getting from one place to another within the city. It's when you try to go someplace OUTSIDE King City that you start running into colossal bottlenecks at 99W (Beef Bend, Royalty Parkway, Durham Rd., and Fischer Rd.) and at Roy Rogers where it intersects Beef Bend. You don't have to be a traffic engineer to look at a map and see that, from the beginning, King City had no realistic chance of expanding beyond its original footprint. It was painted into a corner from the get-go. With the proposed expansion area, you still have the major constraints of major roads, the river, and now additional constraints of topography. You have more land to work with, but you're still painted into a corner. All of the east-west connector streets you've talked about won't solve the bottleneck problems, it will only make them worse. You should be asking questions like where do people go, and how often. You should be looking at access and egress possibilities not for now, but for 50 years from now, but you need to build it now. If you don't have adequate access and egress to and from the city - in all directions - any development within is futile and will end up being a huge mess. This is going to require a lot of collaboration with other cities - Tigard, Tualatin, Sherwood - and other entities - WashCo, ODOT, DEQ, EPA, Metro, and so on. The infrastructure OUTSIDE King City is more important than what's inside. THINK OUTSIDE THE BOX. 2. You ask questions about mass transit. However, Tri-Met has no service to King City other than a couple of stops on 99W and has no interest in expanding service to other points in King City until AFTER development is complete and a population base is in place. The light rail extension to Bridgeport is all but dead and was a poppycock idea in the first place. You should be asking whether IF Tri-Met had service throughout King City, how many people would use it and base your plans for discussion with Tri-Met on that information; what routes, what frequency, and what would they require in terms of development. 3. You have from the beginning touted as a major part of your plan the "green boulevard" (i.e. the extension of Fischer Rd. from 131st westward to Roy Rogers. Since that is not mentioned as part of this survey, is that still a major part of your plan? If so, then what impact will that have on the Edgewater and Rivermeade neighborhoods? I assure you, it will be a MAJOR impact, even if you can successfully overcome the environmental and topographic challenges between 137th and 150th. I don't see the effort to overcome those challenges to be economically feasible. Consider this - if you throw out the Fischer Rd. extension as a part of your transportation plan, I guarantee you will have much more cooperation from Edgewater and Rivermeade residents than if you pursue it. 4. From the outset I have heard a lot about what "we" need to do and what "we" should consider. And I've attended several meetings and town hall discussions and have even made pleas before the city council, but have never heard anything except YOUR plans for moving forward. This is a huge undertaking and you have spent a lot of money on "experts" (much of which was wasted, in my opinion), but you have never really listened to your citizens who will be most impacted by your proposals. If this is really a "WE" effort, then it's high time you paid attention to our ideas and concerns. As citizens, we demand transparency and accountability to what

	is happening to our community. This cannot be an "us" and "them" project. THINK OUTSIDE THE BOX!
41	Fischer road should not be put through to Roy Rodgers. I would no longer feel comfortable walking my own neighborhood with that much traffic running through it every day.
42	Fisher road expansion and the families that live in the Edgewater community. We moved to Edgewater due to the walking conditions and being able to safely travel on the streets to the park and play in the neighborhood. If a main road comes throughs our neighborhood, I am afraid that our kids will not be able to play outside as Fisher road will become just like Beef Bend. On Beef Bend there are not front doors on the roadway, however this is how it is in Edgewater. The Edgewater community was not designed to be a major roadway!
43	Fix 99w and widen Beef Bend. Get the traffic off neighborhood streets and onto these major roads. Neighborhood roads need to feed these major roads. No new long roads or extension of Fischer Rd to carry traffic through neighborhoods. That just causes HUGE problems later. Short roads that feed expanded and improved Beef Bend and 99w are the only way to build a safe road system and safe neighborhoods for King City.
44	Fix 99W or Pacific Highway at Fischer, Durham and Beef Bend Rd. instead of traffic going through established neighborhoods. Expand Beef Bend Rd. to five lanes Avoid any new streets or extensions along the Tualatin River Strive to maintain and enhance the livability of existing neighborhoods
45	Fixing the major traffic issues on 99w, including the intersections at Durham Road and SW Beef Bend Rd, which needs to be widened to at least 4 lanes to safely and effectively handle the increase in traffic due to the heavy concentration of new development around the Mountain View HS.
46	Fixing the major traffic issues on 99w, including the intersections at Durham Road and SW Beef Bend Rd, which needs to be widened to at least 4 lanes to safely and effectively handle the increase in traffic due to the heavy concentration of new development around the Mountain View HS.
47	I am a big walker and find it very difficult to access any trails or areas without breaks in sidewalks unless I trespass into the 55 and over walking trails. Would love to see some plans for a great improved walking/hiking/biking area along the river that would stretch all the way through King City and the river. It would be really cool to King City stay unique and keep the legal golf cart access in the entire span of town. Could help alleviate traffic and give it a unique vibe.
48	I am not in favor of the Fischer Rd. Extension. It will impact the Edgewater Community unfavorably and will forever change the Rivermeade Community and surrounding area.
49	I feel very strongly that Beef Bend Road should be widened to be used as the main thoroughfare between 99 and Roy Rogers, rather than using Fisher as a through-road. I believe if Fisher Rd. were expanded it would be very detrimental to the neighborhood by increasing noise and decreasing home values, safety and the enjoyment of residents. As many homes don't have yards there are a lot of children and adults who can currently ride bikes and walk throughout the neighborhood safely and we would lose that sense of community if people no longer felt comfortable or enjoyed doing this. Please also consider using round-a-bouts where possible to keep the traffic flow moving steadily.
50	I object the plan to extend Fischer Rd as it will bring significant destruction to the community and its safety. The crimes will increase as a result of this expansion, the street will no longer be safe for my child, or elderly parent, and will contribute to a

	reduced home value due to being considered a high traffic neighborhood if this expansion occurs. This also impacts the appeal and draw of the Edgewater community as potential buyers will be deterred from buying homes as the once safe space and quiet community will be destroyed. The increased traffic will cause more fatalities to all age groups. The plans have not been transparently communicated and the community has not been listened to. Please consider alternate routes such as Bull Mountain, as it has more potential for expansion and the neighborhoods are not immediately off of a main street (i.e. my front door won't open immediately to a highly trafficked area). Lastly, please take into consideration the number of protected natural land and all the animals that will be left without a safe space to inhabit. This destruction will be detrimental to its beauty and inhibit our ability to do our due diligence in protecting animals, many of them that are federally protected. Thank you for listening to our community. There has been a survey of the Edgewater community owners that has also been AGAINST this expansion to Fischer Rd. This should have been filed to you by our HOA. Thank you for your time.
51	I think that we need to recognize that traffic studies should incorporate the impacts of new development outside of our city limits and how it will impact our roads. We need to think of Beef Bend as a regional street and not just a street serving only the citizens of King City. I am not sure about who is responsible for the ultimate development of Bull Mountain but as this hill gets developed from the top down to Beef Bend, Beef Bend is going to have to be large enough to accomodate this increased vehicle load as well as increased traffic from new King City residents. I don't think that Bull Mountain road will be able to accommodate the extra traffic as Bull Mountain develops towards Beef Bend. Envisioning King City homes with front and back yards facing towards Beef Bend and pretending that there will be a low traffic column and a quiet residential environment is very unrealistic.
52	I'd like to better understand how the UGB expansion will change the use and functional class of existing roadways.
53	I'm an avid cyclist, my route is from my home (150th and Beef Bend) to downtown King City and then to Cook Park. Beef Bend needs the most attention as I see pedestrians, joggers and cyclists frequently challenging motor vehicles at the pinch points. As we all know, not all vehicles use caution when they need to yield to peds and bikes. If we are trying to get more people out of cars and onto the road to recreation areas and businesses we need to improve the safety of the main arteries like Beef Bend. Thank You!
54	Increased traffic in neighborhoods. Have you had a traffic engineer look at various options? Why not widen existing Beef Bend as a main through street - not Fischer.
55	Keep Edgewater community as is, do not extend Fischer roads to connect with Roy Rodgers.
56	King City and surrounding areas are not equipped to deal with added traffic. As is, getting into the community is already an issue due to high traffic and horrible traffic light situation. In addition, speeding through the neighborhood is a daily occurrence, putting pedestrians, especially those trying to cross Beef Bend and Fischer Rd in danger.
57	King City has become overcrowded and overdeveloped. Your plans to continue building and developing the area doesn't make sense. It's because of a few people on city and the KC mayor that have ruined our community and we suffer. Stop trying to make this something it's not. We aren't equipped for more people and confession. People who drive will continue to drive and light rail is waste of our money.

58	King City has been an area where kids can play freely. I worry about Fisher road becoming a road like beef bend-busy and a higher speed limit right through our neighborhoods.
59	Less traffic in the neighborhoods and do not disrupt farmland
60	Longer LH turn lane on HWY 99 W at Fischer Rd.
61	Look at widening Beef Bend Road if further expansion between 99W and Roy Rogers Rd is needed. This should reduce the traffic within King City. Also adding road humps may cut down any unnecessary cut through traffic within King City.
62	Lots or walking paths so people and golf carts can go from King City central all the way to Roy Rogers road
63	Make sure money is not wasted.do not go over budget
64	Making sure traffic not is not directed into the neighborhoods
65	More places dedicated for bikes. Kill the plan to extend Fischer to Roy Rogers. Enhance Beef Bend road instead.
66	Moving the traffic efficiently and safely.
67	My biggest concern is if Fischer Rd is made into a major road we are causing a very high increase in traffic in our neighborhoods. Downsize of changing Fischer Rd into a major street would include: louder streets, more traffic accessing a neighborhood that wasn't intentionally made to be a major access road, increase car traffic in a very highly foot trafficked area and the speed and volume of cars traveling on this road.
68	My problem is the amount extra traffic in our senior roads, rush hour and late at night from the Duram rd , to king George , up to Prince Albert . Taking a short cut up to beef bend rd. Stops sign are ignored, speed bumps are a waste of money have one outside my bedroom window the noise wakes us up. How about a “right turn only at the top of Prince Albert” except for emergency vehicles. Big problem solver for our community. Or don’t the senior community really count?
69	Narrowness of streets in the senior area - not enough room for 2 cars to pass if there is parking on both sides of the street. Consider changing streets to one way or IF they have to be 2 way then limit parking to one side of the street only.
70	Need to be multi-modal, walk, bike, golf cart, car. Where possible cars should be separated. The trail system isn't just a way to move around, it is also an exercise system and we need to appreciate this aspect in the design.
71	neighborhood congestions
72	No major roads / traffic through Edgewater neighborhood
73	No more building houses or apartments. There is to much traffic on Fisher. Most days take several minutes to get off Versailles onto Fisher and then returning there is so much congestion at the entrance to the gas station. I want to move out of King City due to the traffic conditions. It shouldn’t take me 5-10 minutes to get across 99 from the time I leave my house on 119th Pl.
74	Not cutting through Fischer - will increase traffic to much in a quiet residential area. Widen beef bend and fix the lights on 99W.
75	Not expanding Fisher Rd, due to enviromental and neighborhood impacts.
76	NOT extending either Fischer Road or Capulet Ln under the power lines to the west. Definitely not Capulet Ln.
77	Not increasing ease of “comuter traffic shortcuttong through the length of Fischer Rd and the 131st. Not wanting to support a traffic light at that intersection, or the continuation of Fischer Rd to Beef Nend Rd. A better solution is for widening Beef Bend Rd that would not affect a more condensed neighborhood; I.e Edgewater on the Tualatin.

78	Not opening up Fischer road for thru traffic
79	Not to create a high speed drive through on Fischer road to Roy Rogers. This will increase unsafe conditions for the kids in the neighborhood.
80	Our family enjoys the ability to feel safe while walking around the neighborhood. Another part of why we love living in the Edgewater community in King City is how quiet it is and the only traffic is local to people living in the community or visiting family & friends.
81	People do not stop at stop sign at fisher and 131st coming from beef bend. They use it as a cut through and are impatient. Wish only local traffic allowed on fisher.
82	Plant trees
83	Please avoid spoiling residential neighborhoods and the charm of King City with new, major connectors.
84	Please consider a stop closer to the Deer creek school
85	Please consider NOT extending Fischer Road into Roy Rodgers. The Edgewater community is not designed for high level traffic that would be created through such an extension. Edgewater is a family-friendly, walkable community. Children are constantly at play and people are walking their dogs and interacting with their neighbors. Such and extension would destroy this community, the home valuables and the desirability of living in King City.
86	Please do not make fischer a through street!
87	Please do not make SW Fisher Road busier. Develop Beef Bend Road more so our neighborhood is not ruined.
88	Please do not open Fischer to Roy Rodgers or Beef Bend. We have a larger community of 55+Living amongst some kids and families in the Greater Edgewater/ Castle Oaks/ Highlands area that are always walking and biking this area. By creating a through street to Roy Rogers your plan would actually limit walking and safe biking by increasing traffic on Fischer. We already have a route by using BeefBend since it's already a through street. Maybe consider widening BeefBend to have safe walking and biking along with space for bus transit pick ups. By widening Beef Bend you would already have a road with through traffic use and it would cost less to widen than creating another road which would impact neighborhoods and homes already in that path.
89	Please do not push Fischer Road through to Roy Rogers. That would destroy multiple homes and neighborhoods as well as destroy fragile natural lands, and be very expensive due to river and ravine crossings, etc.
90	Please do not push through Fischer Road. This is an unnecessary expansion that will cost too much with little to no benefit...even detriment the neighborhoods.
91	Please don't extend SW Fischer, there is already too much traffic on this road.
92	Please keep in mind extending and/or running new roads through existing neighborhoods. This will have a negative impact on the feel of the community and likely reduce property values for houses that would be on these new busy through streets, and would benefit people only passing through in their cars.
93	Prioritize improving accessing to Highway 99
94	Private property disruptions. It appears that Beef Bend or Bull Mountain would be better routes to connect to Roy Rogers rather than extending Fischer Road.
95	Refer to item 7 for my comments.
96	Safe places for bicycles on what used to be rural roads without shoulders. e.g. Beef Bend Road
97	Safe quiet neighborhood

98	Safety for children and pedestrians
99	Safety for drivers, bicyclists, and pedestrians including sufficient street lighting, road shoulders, dedicated clearly marked cross-walks by incorporating traffic signals with motion-sensors and/or timers for periods of high volume traffic.
100	Safety for local community, traffic congestion; public transportation options and safe routes to school; pedestrian safety.
101	safety for pedestrians ~ many are seniors who move at different walking speeds. The intersection of Hwy 99 & Durham has a crosswalk that seems as if it could be modified to create a more safe situation for pedestrians. Many drivers do not wait for the walker who is in the portion of crosswalk on 99 heading East.
102	Safety in neighborhoods- reduce traffic of people using neighborhoods as thoroughfares, reduce traffic speeds/enforce traffic speed limits, create safe sidewalk/bike route systems through neighborhoods that can link to bigger systems that have access to retail/business centers.
103	School Overflow, traffic concerns over Fisher Rd. Being expanded through Edgewater neighborhood.
104	Stay
105	Stay on budget.do not come back a year later and claim you do not have enough money
106	Stops and schedules
107	streamline systems for efficiency. Having cars sitting at unnecessary points (such as u-turns) and stop lights that do not recognize cars so they just sit forever waiting on the timed cycle, increases CO2 emissions and decreases efficiency of all other cars on the road, adding more unnecessary CO2 emissions. KC's road systems need to concern themselves with efficiency strategies to minimum emissions.
108	Take care of the major problems on 99W to reduce the traffic in neighborhoods!
109	The added traffic in our neighborhood. The danger for the kids. More crime in our neighborhood. Our property value will go down
110	The continuation of sidewalks
111	the future of transportation and aging people who can't or don't want to drive
112	The increased traffic load on Beef Bend from development on Roy Rogers. People taking short cuts through our neighborhoods to avoid the lights on Hwy 99 and pot holes on Crown Drive and Majestic. Uneven sidewalks also create a hazard.
113	There should be another way for 99W traffic to reach Roy Rogers and public transportation access along that new road, Bull Mtn, and Beef Bend.
114	This is a residential neighborhood with lots of car, walkers, and biking transportation. It contains a tremendous amount of school age children and senior citizens. If Fischer Road is extended through to Roy Rogers Rd, it will create a thoroughfare which will then travel directly through the Edgewater on the Tualatin housing development. This will create unsafe comminuting conditions by not only increasing the speed of drivers driving on Fischer Rd, but also, increase the amount of traffic driving through the neighborhood. It will create an extreme safety hazard to all drivers, walkers and bikers. Do not extend Fisher Rd.
115	This neighborhood began in 1958 when a group came together and saw the need to develop a community that met the needs of others like themselves who were over 55 years young. Any transportation plan must consider the needs of senior citizens, who make up a significant portion of the King City population. Those considerations must address those citizens' current transportation experiences, not what you would like to plan for them.

116	Thoroughfare from 99w to Roy Rogers...NOT BULL MOUNTAIN!!!
117	Those of us that live 1 block away from Fischer Road detest this plan. My quiet neighborhood needs to stay the way it is.....PLEASE!
118	Time of day and frequency of availability of transportation (if/when I cannot drive any more). I would imagine wheelchairs and folks with walkers would be high users IF times were convenient.
119	Too much traffic back up at 99/Fischer Look at a regional approach to traffic so people are not cutting through our neighborhoods making it unsafe for our kids & elderly out walking/biking. Expand Beef Bend Rd to better connect to Roy Rogers. Avoid new waterway crossings
120	Traffic signals from side streets to Highway 99 need to allow for more cars to get through a cycle. Fischer Road should not be extended through to Roy Rogers! There is nothing you could possibly do to keep the Edgewater neighborhood safe. The additional traffic through the neighborhood would make it dangerous for children walking to the park and playing outside. You'd be destroying one of the greatest neighborhoods in King City.
121	Travel patterns within the study area are heavily influenced by the failure of segments and nodes of the regional network. The traffic forecasting methodology used to assess the impacts of different options of providing E/W capacity between 99W and Roy Rogers Road must factor in the latent demand on the shortest path and account for the diversion that occurs because the shortest path is well over capacity. When comparing alternatives, breaking the continuity of existing communities should be a scoring criteria. Look at origin-destination patterns for all modes and look at way to address the root of the demand, not just the problems created by it. One example is a desire to cross 99W by bicycle to use the Tualatin River Greenway. You could focus on doing something at the high volume Durham intersection, or you could enhance a path on the west side of 99W and snake a path under 99W on the north side of the river.
122	We want easier access for King City residents we don't want it to be easier for people to get to other cities through King City.
123	Well connected and well landscaped residential streets
124	Widen Beef Ben road and put up some lights. Let that be the thoroughfare. Do not create high traffic roads through neighborhoods that make them unsafe and undesirable.
125	Widen Beef Bend Rd to four lanes with a center turn lane with a wide and protected bike lane. Widen 99W and put in a protected bike lane.

Appendix C: Mailed-In Open Ended Comments

Below are the unedited comments from the mailed-in survey.

1	1. People who walk on streets wearing earphones and not aware of traffic 2. Please provide a driv-by mailbox at many post offices, so stamped mail can be ported from a car - esp. now that the McCann's PO closed.
2	99 - increase lanes in both directions to handle increased traffic due to increasing housing density.
3	A lot of people use King City (to cut through Royalty Prkwy) to 99W and get to Fischer. More gentle speed bumps?

4	Allow golf carts to cross 99W to go to Safeway.
5	As I no longer drive, I walk. Most areas are fine, however I don't feel like I can safely cross 99 to go to Safeway and other shops there. How walkers can safely cross 99 to go to shopping areas.
6	Beef Bend is used as a highway, dangerous for many kids in area, bikes and near the school. No signals or sidewalks. Need another route to Roy Rogers and back to 99 because Bull Mountain Rd gets too congested. The corner of 99 and Fischer is dangerous for walkers and bikes because light is timed poorly. If Roy Rogers and Beef Bend will have more commercial and apartments one day, will need another access road.
7	Cannot walk on sidewalks and too old and narrow (must walk in road) - lot of vegetation overhang. Speed bumps - hurt me at 5 mph
8	Cars parked on the street on both sides of garage care in street
9	Cars speed down 99 and don't pay attention to "yellow" lights. Try to make safe turn from Fischer to 99 is difficult due to drivers not paying attention. Traffic extremely heavy on SW Tualatin - Sherwood Rd - hard to get through stop lights safely. Would like to bike but traffic is too heavy. Thank you for trying to improve our lives! I stay off 99 as much as possible.
10	City refuses to pass ORD/laws to guide police or protect residents. Running stop signs, some speeding (lack of police patrols during the day) police could stop crimes! Have been retaliated by KCCA for complaints (major and council - members KCCA) No police protection!
11	Commuters only cut through neighborhoods whe major streets are poorly planned. Beef Bend needs to be developed with two lanes in both directions.
12	Connect the walking paths - King City - highlands all the way through with directionals and signage
13	Cost
14	Crossing 99 while walking is challenging. Driving from 116th onto Beef Bend turning left because of the curve to the right. It is hard to see someone coming. At 131st and Beef Bend there are two lanes, one to left one to right, there are three lights, two to left and one to right. Could cause an accident. Pave Crown Drive and Majestic Lane.
15	Do not allow the expansion of Fischer Rd
16	Do not extend Fischer Rd through the quiet Edgewater community. Priority should be given to preserve open and green spaces.
17	Easier for seniors who no longer drive to get to downtown Tigard shops. Sidewalk on Beef Bend could be better. Transit stop at or near the Highlands Senior Community.
18	Easier walkability for elderly people.
19	East/west multi-use path from Roy Rogers to 131st and connecting north to River Terrace.
20	Expanding Beef Bend rather than Fischer Rd to access Roy Rogers Rd from 99.
21	Fischer Rd runs through a family-oriented neighborhood - do not put through Roy Roger!
22	Fix regional problem, people are cutting through neighborhoods to avoid 99 problems. Expand Beef Bend to avoid traffic in neighborhoods. Avoid any new crossings of waterways to avoid problems for the river. Dangerous for senior citizens and children for neighborhood congestion.
23	Future changes to Beef Bend (three lanes/four lanes) ADA requirements.
24	I believe Beef Bend needs to be widened significantly including bike lanes.

25	I don't think King City can do transportation in isolation. Needs to involve tigard and ODOT.
26	If construction on Beef Bend, do not direct traffic through KC neighborhood.
27	Intersection at Royalty Pkwy and 99 is very congested. Royalty Pkway is used as a throughway to Bull Mtn and other areas. Cars drive too fast. Re-route traffic to Bull Mtn and the King City expansion to some streets other than Royalty Pkwy
28	It would be so great if there were a safe way to cross Hwy. 99 at either Durham or Royalty Parkway. In my old neighborhood in SE Portland, I biked everywhere. I just don't here, because I fear I am taking my life in my hands everytime I cross 99.
29	Light at 99 and Durham road only allows 3-4 cars to go through - should be longer. Walk light at 99 and Durham is too short to get across before changing
30	Livability and sense of community. We need more community gathering places. Please do not extend Fischer Rd through the Edgewater Community.
31	Maintain and enhance the livability of existing neighborhoods (Edgewater and Rivermade) do not propose Green Blvd to Roy Rogers Rd.
32	Make King City a nice walkable city with lots of green spaces.
33	Many vehicles don't stop at the 4-way stop on Royalty Pkwy and 116th. Being on foot is very scary.
34	MI - not having a major thoroughfare through a neighborhood
35	MI - People walk the streets with their dogs.
36	More through streets out onto Beef Bend Rd. The sheer volume of traffic on 131st and on Fischer Rd is too much.
37	My main concern is unsafe traffic using the surface streets and create difficult situation for our senior pedestrians. Far too often I see cars driving too fast through the education often obviously not residents of King City.
38	Need major grocery store due to growth.
39	Need stop lights/signals at Beef Bend and Eisner and 150th. Need more lanes on Beef Bend. Need more police officers/patrols.
40	Needs to be another route from 99W to Roy ROgers past/south of SW Tualatin Rd. No new traffic on Fischer Rd
41	No construction to join Fischer to Roy Rogers.
42	No new property taxes!
43	Noise on 99. I live at Royal Villas MHP - noise is loud!
44	Noise, pollution, congestion, livability
45	None of my destination are on the map. More transit, do not push through Fischer.
46	Not wasting money on things people rarely if ever use - bike lanes! Not interfering with the current urban growth boundary! Stop expansion!
47	Please consider those of us who live on Fischer in the quiet Edgewater neighborhood. The only visitor parking we have is in front of our homes. It is a safe place for us to walk. Would hate to have to sell if all this is going to be taken away.
48	Please do not make SW Fischer Rd a connection to Roy Rogers!! It will ruin the quiet and safe neighborhood feel (and the reason I moved here).
49	Please do not open Fischer Rd to Roy Rogers. Not only would it take people's property, but also destroy the quietness and neighborhood feeling of the Edgewater community.
50	Please do something to increase pedestrian safety crossing 99 and Durham.
51	Please keep King City friendly for 55+ folks - thank you!
52	Putting in a dog park.

53	Safety/privacy/noise wall for residents of king condos building at end of Crown Court to buffer them from Beef Bend Rd.
54	School buses should be part of transportation discussion. Tigard High School would serve the area better an intern from Tigard at King City underscores this.
55	Sidewalk maintenance walking all over Jordon Way! Widening Beed Bend to at least three lanes - middle for turning should have done this on 131st
56	Sidewalks in KC area are very poor for senior walkers. A dedicated walk path tied into Highlands walking path and going through to KC Park would be fantastic. Need to look at traffic using KC roads as a short cut from Beef Bend 99W. Sidewalk and bike lanes on 131st south of SW Fischer Rd going to back entrance to KC community park would be nice.
57	Something needs to be done with the house at the top of 131st and Beef Bend. The house looks scary across the street from a school and the strange people who sit in the sport court and watch. Sidewalks are needed on Beef Bend. Too many gaps. Garbage on roads needs to be taken care of. Unsafe! More walking paths connecting neighborhoods. If you do a bus line, make sure the bus doesn't have to stop on already busy roads. No light at Fischer and 131st .
58	Sound reduction walls - Kings City condo area. Quality of roads/pavement in Kings City.
59	Speed bumps on straight, long stretch on Victoria from Elizabeth, not only to restrict speeders and also as both streets running parallel above and below have speed bumps. And to ensure traffic is not consequentially diverted to Victoria.
60	Speeds along Beef Bend are posted at 35 and 45, but there are people who are going faster and do not slow to 35
61	Stop the extension of Fischer Rd. It will create an unsafe amount of traffic through a residential neighborhood.
62	The speed limit on 99 between Roy Rogers and Tualatin Rd is terrible! Safety should be number 1. The speed limits between King City and Sherwood and 99 are too high and dangerous.
63	The streets west of 126th need handicap ramps. A lot of us have to use walkers or canes
64	The traffic pattern as it is now makes very well the obstructions [sic] be caused by expanding Fischer are too horrible to consider. The destruction of our neighborhood is at stake. Big is not better. Allow King City to keep it's charm and comfort - of safety and a sense of community. I am vigorously opposed to your ideas to lengthen Fischer Rd through our area to Roy Rogers.
65	There is not transit within walking distance. No other transit to Roy Rogers other than Beef Bend. Fischer Road has low visibility for traffic.
66	This development needs to keep a neighborhood feel not just a cut through from Tigard to Sherwood.
67	Traffic speeds are horrendous and not enforced (due to limited resources). We watch cars go 40+ mph towards 99 on Fischer.
68	Transit should be more readily available!
69	Uniform speed limits - there are three in King City
70	Very concerned about Fischer Rd extension. Not clear it even makes sense. Beef Bend Rd is a great alternative.
71	Very concerning with traffic flow and travel times. Pedestrian and bike safety is a major concern. Flow to capacity ratio at major intersections like 99W-Beef Bend, 99W to Durham, 99W to Fischer Rd.
72	Walking trails

73	We are not in favor of further urbanization of our once quiet environs. We would not use public transit.
74	We could have serious issues. These are what I have marked above.
75	We live in Edgewater and I am deeply concerned about the expansion of Fischer; it will ruin the neighborhood cohesion and erode property values in our currently very walkable area.
76	We need more paved walking paths on trails like in the highlands. Returning right turn just before bridge over River from Backroad to go north on 99.
77	We want to keep our neighborhood streets free from major traffic and congestion.
78	Widen 99W, other roads if traffic increases there due to development.
79	Sensitivity to the Tualatin River + Natural Resources. Pushing through Fischer threatens the above.
80	Please include our names for any future consideration or access as we are without any transportation and have lived in King City for 8 years now! Natalie. King City: Swimming pool (indoor) Library Clubhouse close-in Foot dr., dentist, bank Safeway across Hwy 99 Swimming Pool Crown Royal We carry 1-2 full-ish shopping bags for groceries. Neither of us (67 and 92) have any transportation. We are totally dependent on rides. Cars turn too fast onto Q. Elizabeth. Broken sidewalks and uneven pavement, the sidewalks are very narrow and tilt. Easy to lose balance! I use adult 3-wheel bicycle in good weather only.

Appendix D: Comments Received by City

Below are the unedited comments sent to the City via the website comment form or by mail.

1	Could I please get the name of someone who my neighbors could speak to if we have comments on the proposed changes? We did not receive a mailer and would like a chance to add our voice. Thank you!
2	Tualatin Riverkeepers (TRK) is a community-based organization that protects and restores the Tualatin River watershed. We build watershed stewardship through engagement, advocacy, restoration, access, and education. We appreciate the opportunity to provide our thoughts on additional things to consider when undertaking the King City Transportation System Plan. We feel it is important to weigh in at this time to ensure that the planning process is relying on good data and good analyses. We address our concerns by topic below. I**. Avoid Environmental Impacts to the Maximum Extent Possible** In the concept plan submitted to Metro for URA 6D, there is a Fischer Road extension contemplated to add needed east to west capacity and would potentially create 4-5 new creek crossings which would harm the Tualatin River and its tributaries. Most of these creeks in the planning area are already impaired from legacy stormwater pollution that was legal at the time. These massive erosion sites are complex and are continuing to worsen as time goes on. One example is the wooded trail along the river at King City Community Park. The erosion site looks like a cavern or sink hole with a waterfall in the

rainy season. It is worth noting that not too far in the distant past one could step over from one side of the creek bank to another. Now at the river's edge the creek banks are approximately 15 feet from each other and there is approximately a 20-foot drop to the creek bed from the bank. This is just one of several sites in the King City area.
It is vitally important that any additional development not make these erosion issues worse. At the time when the existing developments occurred in King City and on Bull Mountain, developers and regulators were treating stormwater quality, but not offsetting increases in stormwater volume and velocity.
Although new hydromodification standards are now in place, these are new standards and only time will tell if they adequately protect against the damage caused by increased volume and velocity of stormwater. Given these factors, caution is necessary, and impacts should be avoided to the maximum extent possible.
Additionally, past impacts should be retrofitted for to ensure these erosion sites do not continue to worsen. If we guess wrong, it is important to remember that these failures are not cheap. Each of the legacy erosion sites we have mentioned here will be multi-million-dollar fixes. King City cannot afford to under protect the creeks in their planning efforts. It is also worth noting that in Tigard these types of erosion sites have impacted infrastructure and homes, which is another cost King City cannot afford.
Therefore, any environmental impacts should be thoroughly and accurately studied. We also ask that any new creek crossings be avoided to the maximum extent possible.1 It is also important for the quality of life of King Cities' residents that natural areas be preserved and integrated into planning efforts. Additionally, efforts should guard against habitat fragmentation and create and preserve wildlife corridors when possible. Wildlife corridors are going to be especially important for allowing species to migrate to deal with the impacts of climate change. Therefore, we ask that the road network maximize wildlife corridors throughout King City when drafting the Transportation System Plan. TRK notes that the most obvious way to preserve some wildlife corridors in the transportation planning efforts are to avoid creek crossings altogether and preserve large vegetative buffers along the creeks.

II. Serious Flaws in the Traffic Study Need to be Addressed

TRK believes in the importance of good data and strong analysis. Therefore, we want to address the Traffic Study done for the Concept Planning around URA 6D. This study was based on faulty assumptions and if relied on, will drive the development of an inadequate transportation system. In general, the analysis completed was not sophisticated enough and made assumptions which are not true. To truly be effective King City must take a regional approach and recognize that much of the existing traffic problems are due to people cutting through neighborhoods to avoid the failing intersections on 99W. The report does not take these factors into consideration and therefore any conclusions it draws are invalid.
We have identified several serious flaws with the analysis and modeling and will raise them below in more detail. First, we acknowledge that the traffic report assumes that ODOT will not make anything but minor changes to 99W. All our comments and concerns are made with these 99W improvement constraints in mind. Now we will discuss a few specific problems with the Traffic Study:
TRK would like to note if any creek crossings must be done, we urge that those crossings to be as far north as possible. The
further north the crossings are placed the shorter the distance they need to span and the less impactful the construction and runoff issues will most likely be. Additionally, the further north the crossings, the more intact the wildlife corridor will be.
1. The analysis south bound at Fischer and north bound at Beef Bend are faulty. The calculations performed in the traffic analysis heavily modified variables such as "upstream

filtering" and overstated the quality of traffic progression leading to a significant underestimation of delay. In other words, the analysis made assumptions such as every car would get a green light as soon as they reach the intersection, which anyone who has driven 99W between the Tualatin River and Bull Mountain knows is not the case most of the time.
2. The storage analysis is incorrect and does not account for access starvation resulting from through queues blocking entrances to turn bays. In other words, the analysis assumes that all cars who want to get in the turn lane on 99W at Fischer Road, Durham, Royalty, or Beef Bend can access the turn lane right away. Again, anyone who has tried to make these turns knows that sometimes you have to wait for cars trying to go north on 99W to move before you can access the turn lane.
These calculations regarding storage length were used to support the idea that minor mitigation would be sufficient to correct any problems. Given that known existing problems were not
identified in the modeling means minor mitigation will not be enough.
3. No field observations of existing conditions were documented. It would be clear to any observer in the field that the results shown of the operational delay and queuing in the report do not match existing conditions. For example, see the descriptions in 1. and 2. above and 4. below regarding TRK's observations of the intersections on 99W including Fischer, Durham, and Beef Bend.
4. Forecast volumes do not consider likely diversion away from 99W due to congestion on 99W. The analysis underestimates the amount of traffic that would shift to Fischer should it be connected to Roy Rogers. Instead, a simple growth rate calculation was applied to existing conditions and does not account for the diversion caused by the failure of the Durham intersection.
Today, the only roads west of 99W are Fischer, Beef Bend, and Bull Mountain. All of them are single left turns that do not operate well currently. Fischer, in particular, is the worst of the three with northbound left turns often taking multiple cycles before a driver is able to make the turn. The backup on 99W through Durham means people are willing to wait to turn left on Fischer just to avoid 99 north at Durham and northward. This will get worse and the traffic forecast that was performed does not account for this self-diversion. Additionally, there is anecdotal evidence that this self-diversion is the main cause of the congestion. The stop sign at 131st and Fischer Road is only an issue in the PM rush hour with a majority of the traffic coming from 99W and turning to head north to Beef Bend Road. If the volume were strictly local then you would expect to see an issue in the AM rush hour going the opposite direction, but that does not happen. Because 99W is not severely congested in the AM and it is easy for eastbound traffic to turn right onto 99W directly from Beef Bend Road, this lack of mirroring makes sense. The afternoon congestion at 131st and Fischer is therefore from people trying to avoid a going northbound through the congested Durham intersection and then turning left from 99W onto Beef Bend. Therefore, current congestion on Fischer is mostly from divers trying to avoid congestion on 99W. Again, the analysis does not take this into account in the modeling or variable selection.

In summary, the analysis looked at each intersection individually instead of as a system. As anyone who has driven that section of 99W knows, those intersections are very dependent on each other. This lack of a system wide analysis created serious flaws in the traffic study and lead to misleading conclusions. By not looking at the system as a whole we see flaws like failing to account for queue spillback from other intersections in the analysis. For example, the analysis did not account for cars having to wait to advance

	beyond Durham. In other words, backups caused by the Durham intersection on 99W was not accounted for when studying how the system would work in the future. These serious flaws with the analysis mean that the Transportation System Plan cannot rely on the Traffic Study in their planning efforts if King City wants to create a functioning traffic system. A regional approach must be used to study the traffic needs for King City. This also means that a viable alternative to the Fischer Road extension should be considered moving forward. One such alternative could be expanding Beef Bend Road to four lanes and fixing the problems on 99W by adding a double left turn somewhere and making other minor improvements. **III. Conclusion** In conclusion, we encourage the consultants and committee members to look critically at all analysis and data presented to them, especially the flawed traffic study. If possible, we also encourage the City to commission a regional traffic study that examines the system as a whole before moving forward with any planning efforts. Without an accurate study the plans will likely provide inadequate traffic solutions for the future of King City. That would mean 4-5 new creek crossings would possibly be created for a traffic network that would not function properly. TRK asks that any plans which would include impacts to creeks be thoroughly studied and rely on good data. Finally, in addition to requesting good data, we also ask that road crossings of creeks be avoided to the maximum extent possible and that wildlife corridors be preserved when planning the transportation system. Thank you for your time and consideration.
3	I submitted a PDF letter to Michael Weston via email with our comments and response to the survey. That letter is dated October 29th. I have requested that he forward that letter to the project team. I am commenting here today to request an email response confirming that the project team received our letter. Thank you for your time,

King City TSP

Spring 2021 Online Open House Summary

Prepared for

The City of King City
Oregon Department of Transportation
DKS

Prepared by

JLA Public Involvement, Inc.

June 2021

Table of Contents

Introduction

ODOT and King City conducted outreach activities between June 9-21, 2021, to share the final draft of the project list for the draft King City Transportation System Plan (TSP) with the community and solicit feedback. This feedback will help the City and its consultants refine the draft TSP so that it adequately addresses planned growth in King City and responds to the changing transportation needs of King City residents.

Outreach activities were amended to encourage community feedback during the COVID-19 pandemic and included an online survey and outdoor tabling event.

Feedback received through this outreach period will be considered as King City refines the draft TSP, which will be further refined during the Kingston Terrace Master Plan effort.

Overall Participation and Notification

To gather feedback on the proposed transportation projects in the draft TSP, the project team developed an **online open house** and hosted an **in-person tabling event** to gather community feedback.

Overall, the project team received **survey responses and feedback from 148 people**. Of those, 107 people responded to the survey in the online open house and approximately 35 people attended the in-person tabling event, and 6 comments were received via email and the project website comment form.

Community members were informed about the online open house and tabling event through the following:

- Postcard to residents within the City of King City boundaries
- Email to stakeholder and interested parties list
- Posts to the King City Facebook pages, Twitter, Nextdoor, and Instagram
- Posts on the project website

Of those who shared how they found out about the online open house, the **majority (38%) said they learned about it through social media**, followed by 31% saying they found out about via email. Four people said that they found out about the online open house through the postcard. Other ways people found about the open house included word of mouth, neighborhood homeowner's association, the tabling event, and the website.

Outreach Opportunities

Online Open House

The online open house was intended to provide community members with information about the final list of proposed transportation projects in the draft King City TSP and the opportunity to provide feedback through an online survey.

Tabling Event

The City of King City held the second in-person tabling event to gather community input about the city's first Transportation System Plan (TSP) on Wednesday, June 9, 2021 from 4-6pm. This informal tabling event at King City Community Park invited park users and residents within the project study area to learn more about the project and the proposed transportation project list and to provide input.

People who participated were able to speak with City staff, the Mayor of King City (Ken Gibson), City Council members, consultants from DKS, and engagement specialists from JLA Public Involvement. Participants were also able to submit comments through a written questionnaire.

The event included one informational table and displays for the proposed transportation projects. Kingston Terrace Master Plan project staff were also in attendance and hosted their own table.

Feedback Summary

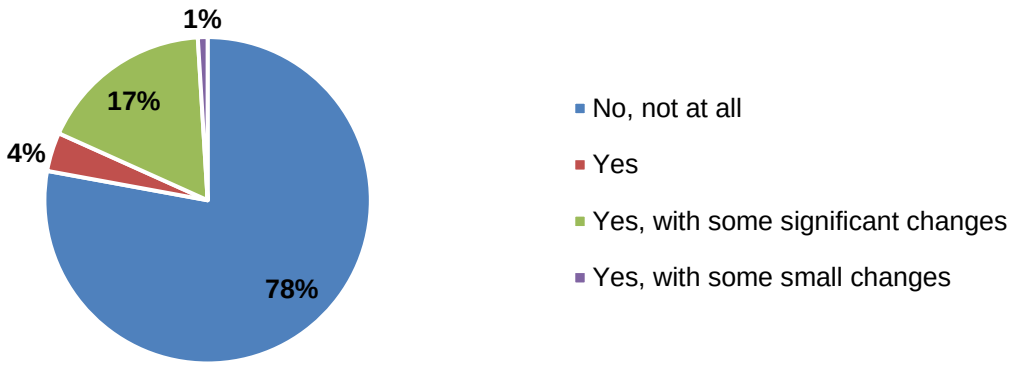
This section summarizes the feedback received through the in-person tabling event, the survey in the online open house, and other comments sent to the City via email or the website comment form. Review individual comments in Appendix A and Appendix C.

Online Open House Responses and Comments Sent to King City

Participants from the online open house were given the opportunity to answer a series of questions about proposed projects for motor-vehicles, pedestrians, bicycles, and transit. Feedback is summarized below.

1. Do you support the motor-vehicle projects included?

Of the 104 people who responded to this question, the **majority of respondents (78%) said that they do not support** the proposed motor-vehicle projects.



2. Is there anything else we should consider with motor-vehicle improvements?

Below is a summary of the 83 comments received through the open text box. Review all individual comments in Appendix A and Appendix C.

East/West Connection Alternatives

The majority of comments were related to the East/West Connection Alternatives.

- Of those who submitted comments for this question, **more than half (68%) expressed their concerns and opposition to extending Fischer Rd** to create a connection for east-west traffic. Below is a summary of comments relating to the Fischer Rd Extension:
  - **People had the following concerns:**
    - **Impact to neighborhood:** Believe that it would negatively impact the character of the neighborhood and reduce quality of life of those living there.
    - **Increase in traffic:** Fischer Rd is already too busy – the extension would increase traffic, more people would speed through the area, and the smell of exhaust and noise would increase.
    - **Impact to private property:** People were concerned about the use of eminent domain to build the extension and possible impact on property value.
    - **Environmental impact:** Concern about the Columbia Land Trust conservation area, habitat, and wildlife in the area**.** Someone brought up Metro's ordinance in connection to the land trust and the Bankston Property. Desire to have fewer creek and river crossings.
    - **Safety:** Pedestrian and bicyclist safety, especially that of children crossing the street to go to school.
    - **Unsuitable area for extension:** Several people stated that the geography, topography, and ecology of the surrounding area is not suitable for a road to be constructed. It will need bridges, which will be costly.
    - **Erosion and landslides** along the banks of the Tualatin River will worsen.
    - **Parking:** Potential elimination of on-street parking.
  - Some suggested that a **multi-use path for pedestrians and bicyclists** would suffice for an east/west connection, whereas a road for vehicles is not needed.
  - Of those opposed to extending Fischer Rd, many mentioned that **improvements (such as adding more traffic lanes) should be made to Beef Bend Rd**. to facilitate East/West traffic across King City.
  - Someone **suggested extending Elsner Rd to Kummrow Rd**, which they believe would impact less property owners and would be safer than Fischer Rd Extension.
  - Some expressed a **dislike for roundabouts** because they take up more space and are difficult for large vehicles to navigate.
- Concern that both the **Capulet and Macbeth alternatives would increase traffic** and make these streets unsafe for children and drivers.
- A few people expressed that they would not like to see a street extended across the **power line field**, either on Fischer Rd or Capulet Lane.

- Several people said that they felt that there is **no need for an east/west connection** street. Many mentioned that they heard that neither **Metro or Washington County required such a connection** and questioned why King City was proposing it.
- **Desire for more public engagement:** Several people expressed that this plan had not been adequately discussed with those in the community and a few said that their Homeowners Association had voted to not support the Fischer Rd Extension. Many expressed that they felt ignored by the City.

General Comments Related to Motor-Vehicle Improvement

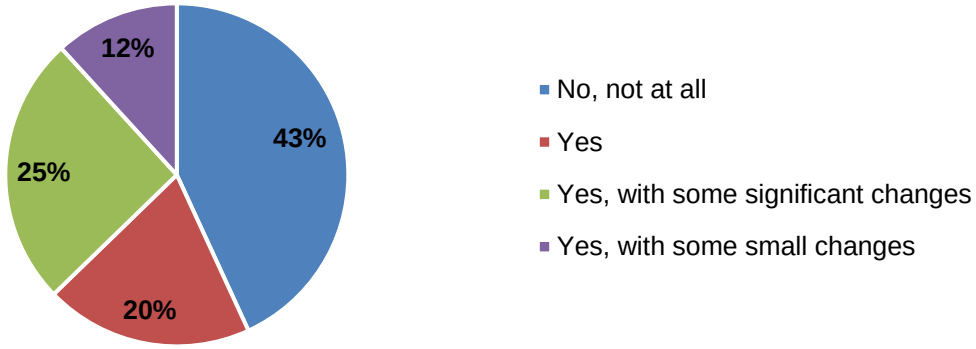
- People were concerned about **increased traffic** throughout King City as a result of motor-vehicle improvements.
- Concern that there is **not enough parking** in the area.
- **Specific suggestions:**
  - **SW 137th Ave and River Ln** should have sidewalks, bike paths, and a light at Beef Bend like SW 131st Ave.
  - **Project ID 15a:** Someone said that a 3-way stop sign is needed, not a traffic circle, which might make accessing their property difficult and cause a safety issue.
  - **Project ID 15** should be designated as a neighborhood collector.
  - There was a request to **improve the efficiency of traffic lights** in King City.
- There was **conflicting feedback about roundabouts**. Some felt that certain intersections (River Ln, Watson, SW 137th) and Roy Rogers should be considered for roundabouts, while others felt that they were not needed and would create safety issues and/or make it more difficult to access private property (Project 15a).
- Someone said that the plan **relies too heavily on vehicles.**

General comments unrelated to motor-vehicle improvement

- **Placement of new town center:** The new town center should not be placed in the new expansion area as some felt it was too far away from the original center of King City.
- Questions about how King City's TSP **compares to the County's TSP.**
- A few people expressed concern and/or **opposition to the King City expansion.**
- Someone was **concerned about pollutants** getting into river and streams.

3. Do you support the pedestrian projects included?

Of the 102 people who responded to this question, **over half of respondents (57%) said they do support** the proposed pedestrian projects with either no changes, some small changes, or some significant changes.



4. Is there anything else we should consider with pedestrian improvements?

Below is a summary of the 46 comments received through the open text box. Review all individual comments in Appendix A and Appendix C.

General comments

- A few people expressed a general **desire to see more pedestrian and bike paths** throughout the plan.
- **Environmental concerns:** People would like to see pedestrian paths along the perimeter of natural spaces, rather than through these spaces. There were also concerns about erosion and a desire to place walking trails in such a way so that erosion is not exacerbated (perhaps even mitigated)/
- **Sidewalk improvements:** A few respondents noted that there are several places where sidewalks end without transition and that should be fixed.
- **East/West Walking Trail**
    - Suggestion that Fischer Rd and Capulet Ln extensions should be **bike and walking paths only** and should have adequate lighting.
    - Several people stated their concern that a pathway from the southern end of River Ln to King City Park would **negatively impact private property** in the Rivermeade Community.
    - Would like the East/West trail to **connect from 99W to Roy Rogers Rd.**
- **Safety:** Several people were concerned about pedestrian safety and would like there to be separation between cars and pedestrians along arterial roads, lighted pathways, more law enforcement, etc. Many were concerned about speeding cars and the safety risks to pedestrians without improvements.
- Walking paths should be located to the north and **run parallel to Beef Bend Rd.**
- Some people noted that the **area west of Fischer Rd does not need more walking paths** because it is rural.
- Someone stated that the **plan overlooks a large part of the population that will continue using cars** and that do not want to use walking trails.
- Suggestion that **River Ln be improved like the SW 137th**
- **Accessibility:** All walking paths should be level (not tilted) so that manual wheelchairs and strollers can be used.

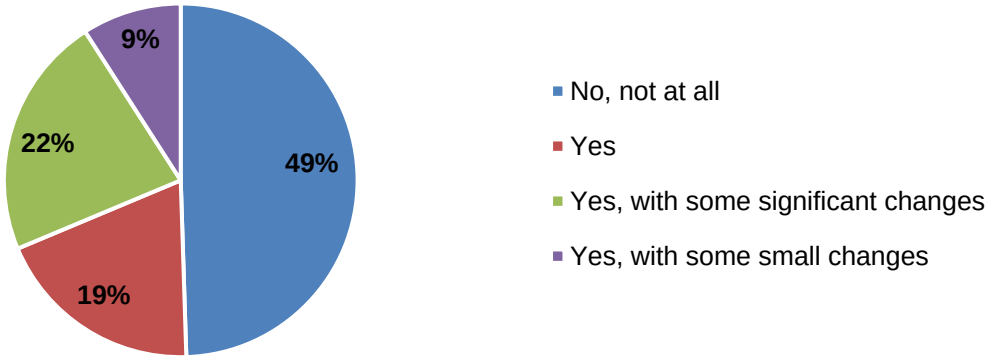
- Someone asked about how the **enhanced bicycle and pedestrian crossings on 99W** will be implemented without impacting traffic flow.

Comments unrelated to pedestrian improvements

- Adding a **bus route along Fischer Rd** would not outweigh perceived negative impacts to the community.
- A few people expressed **dislike for the plan** in its entirety.
- Several people repeated their comments from the previous question in this space.

5. Do you support the bicycle projects included?

Of the 99 people who responded to this question, **roughly half of respondents (51%) said that they do support** the proposed bicycle projects with either no changes, some small changes, or some significant changes.



6. Is there anything else we should consider with bicycle improvements?

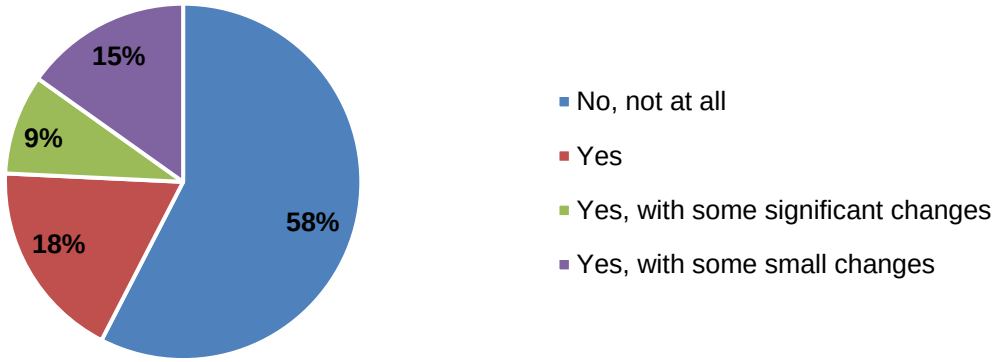
Below is a summary of the 38 comments received through the open text box. Review all individual comments in Appendix A and Appendix C.

- Suggestion that Fischer Rd and Capulet Ln extensions should be **bike and walking paths only** and should have adequate lighting.
- There was **opposition to bike facility through the Columbia Land Trust** conservation area.
- **Roundabouts:** Someone expressed a dislike for biking through roundabouts.
- **Impacts to private property:** Concern that bike lanes would infringe on private property.
- **Safety:**
    - People would like to see **separated bike lanes**, with some parts of the path off the road.
    - **Increased traffic** will exacerbate feeling of being unsafe.
    - **On-street parking** will affect bike lanes and bicyclists.
    - There's a need for improved **visibility** and **lighting improvements** for bicyclists.

- Some respondents felt that there are **not enough people who bike** in this area to warrant these improvements. Some also felt that the area west of Fischer Rd did not need any bike paths.
- Preference for improvements to go up **131st to Beef Bend Rd** rather than on Fischer Rd.
- Desire to see bicycle paths **parallel Beef Bend Rd**., cross the BPA field, and run behind Deer Creek Elementary.
- Someone recommended **RCUT-type bike facility treatments**.
- Concern about **connectivity for pedestrians and bicyclists in the Highlands community to goods and services to the east**, suggestion of creating access across Pacific Highway at SW Royalty.

7. Do you support the transit projects included?

Of the 99 people who responded to this question, **the majority of respondents (58%) said that they do not support** the proposed transit projects.



8. Is there anything else we should consider with transit improvements?

Below is a summary of the 34 comments received through the open text box. Review all individual comments in Appendix A and Appendix C.

- **Suggestions**
  - Bus service along Beef Bend Rd. to 99W
  - Bus service along Roy Rogers
  - Creation of a free parking zone
  - Add a transit center at the new town center
  - Bus shelters that have real time bus arrival information and bike lockers
  - Keep bus service north of (and avoid) natural areas, like the Bankston property, and be placed on major streets
- **Safety:** Someone said that they equate more public transportation with more crime and feeling unsafe, while others felt that buses will increase safety and help people get to public services.

- Concern that there will not be **transit stops in the interior of King City** until there is a large population. This related to another comment that there are **not enough people who will use the buses.**
- Someone expressed a desire to create communities that are **not dependent on vehicles.**
- Some said that there need to be **more transit improvements along Beef Bend.**
- Many said that they would **not like transit to run through quiet neighborhoods.**
- There was general support for buses as they **will help reduce car traffic and emissions.** However, some said they do not want bus service along a Fischer Rd Extension (if it occurred).

In-Person Tabling Event

Participants in the tabling event were given the opportunity to talk with City staff, City Council members, the mayor, and project staff to learn more about the proposed projects included in the draft TSP.

The majority of participants expressed concern about extending Fischer Road and were interested in discussing the East/West Connection Alternatives.

Key themes and feedback from the questionnaire and conversations with community members is summarized below. Review all individual comments from the questionnaire in Appendix B.

Key Themes

Motor Vehicle Improvements and Traffic

- Some participants mentioned that people are already upset about the **cut through on SW 131st St.**
- Some mentioned that the **99W and Beef Bend improvements** weren't well received.
- Some were worried about how street improvements and new streets would **impact waterways, riverbank erosion, nature, and wildlife.**
- Participants would like to see traffic calming measures implemented on streets – especially the east/west connection.
- Many were curious about the **east/west connection alternatives** to the **Fischer Road Extension**. Edgewater and City residents share strong concerns about the proposed Fisher Road extension and don't feel that the city is listening to them. Feedback and concerns include:
    - Feedback related to **Fischer Rd:**
        - Residents are concerned about **increased traffic in their community** – many describe their neighborhood as calm and quiet and don't want that to change. They don't want a major road going through their neighborhood.
        - There was concern about the potential for **increased noise** (someone suggested that a sound barrier be put in place), and that **people will speed** along the extension, creating safety concerns for all ages.

        - **Home fronts will be negatively impacted** as houses are already close to the street.
        - Kids have to cross Fischer Rd to get to the park, with this extension, **kids won't be able to walk to the park safely.**
        - Some said that it is **already hard to get out of the neighborhood** and the Fischer Road Extension will make that harder, as traffic will increase.
    - Feedback related to other east/west connection alternatives:
        - One person said that **SW Capulet Ln would be a better alternative** because of the ecological concerns with the Fischer Rd Extension.
        - **Roy Rogers to 150th is a better alternative** than Fischer Rd. Extension
        - Someone said that a connector street make sense, but not an arterial street.
- **Questions:**
    - Will a speed limit be put in place on the east/west connection?
    - Where are the bike and pedestrian improvements on Fischer Rd going to go? This is important as some houses don't have driveways, there are age-based accessibility concerns, and the vistas have no parking.
    - How much of Beef Bend Rd. is buildable?
    - Why is widening Beef Bend not a good alternative? *Isolating factor is the neighborhood to the north.*
    - How are red light and roundabouts chosen for intersections?
    - How is [traffic] forecasting done?

Pedestrian and Bicyclist Improvements

- Southern walking trail along the river: Participants were concerned about impacts to private property and imminent domain. There were also concerns about how access to the river will be impacted. Some participants mentioned that it makes sense to have a shared use path, with a bike path, only on the King City side.
- There was a suggestion of having shared use paths on SW Elsner Ave. There is a steep embankment around SE Elsner Rd. Would like the trail to be along the river.
- Participants would like there to be better visibility for street crossings and were concerned that an east/west connection would negatively impact pedestrian safety due to increased traffic.

Neighborhood and City Expansion

- Some expressed shock that the community will be expanded and that there will be more people in the area.
- **Questions:**
    - When will homes be built in this new, annexed area? *Could be 20-25 years, depends on the developers. Will start at Roy Rogers or Beef Bend.*

Impact On Natural Areas

- There was some discussion around a bridge over the river and how it would or would not be impacted by erosion. Some said that stormwater drainage is getting much worse and the banks of the river are eroding.
- Someone mentioned that they liked what Ashley Short from Tualatin River Keeper's idea as it relates to the river.
- Participants said that they need larger parks and that parks should be different from the wildlife refuge area. *(Comment relates to Kingston Terrace Master Plan)*

Concerns about Public Outreach Process

- Many expressed that they either had not been aware of the project until very recently and/or that they had not received an email in a long time from the project team. Several participants expressed frustrations with the public outreach process for not feeling heard and for not having enough input opportunities.
- Some expressed confusion about where the project is at in the process of being finalized and adopted. Some feel that the timeline is rushed.
- Some said that City Council is not responding to neighborhood feedback and that they feel that the City does not care about the existing community.
- **Questions:**
  - When will the TSP be brought to City Council?
  - When are planning commission meetings? *Once a month.*
  - When are dates posted? *Planning commission meeting dates are currently posted on the City website.*

Other

- Some participants expressed general concern about campers.
- Some participants expressed concerns about privacy by having a trail along the river and close to homes located near the river.
- Questions:
  - What is Kingston South?
  - Questions about the southern area on the map that is METRO owned
  - Will there be access to a MAX Station?
  - Are motor sizes capped on the river?
  - Who are the developers?

Questionnaire

In addition to being able to speak directly to project staff, participants were able to fill out a questionnaire about the proposed transportation projects. The questions on the questionnaire mirrored those in the online open house. **10 people filled out a questionnaire**, not all questionnaires were completely filled out.

Below is a summary of the feedback captured in the questionnaire for the “Yes/No” questions. Feedback for the open-ended questions is captured above in the “Key Themes” section. Review all individual comments from the questionnaire in Appendix B.

Motor Vehicle Improvements

Most respondents generally supported the motor vehicle projects in the TSP but would like to see changes made. Five participants selected “Yes, with significant changes”, one selected “Yes, with small changes” and two selected “No, not at all.”

Bicycle Improvements

Most supported bicycle improvement projects in the TSP. Two participants selected “Yes”, three selected “Yes, with some significant changes”, one selected “Yes, with some small changes” and one selected “No, not at all.”

Pedestrian Improvements

Most supported pedestrian improvement projects in the TSP. Three participants selected “Yes”, three selected “Yes, with small changes”, one selected “Yes, with some significant changes” and one selected “No, not at all.”

Transit Improvements

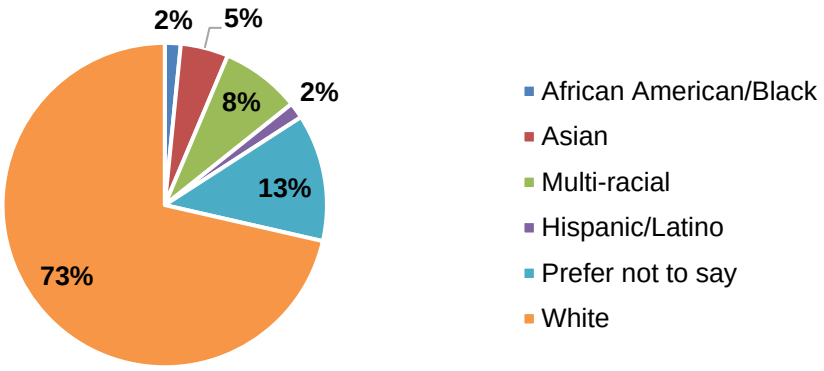
Most supported transit improvement projects in the TSP. Two participants selected “Yes”, one selected “Yes, with some significant changes”, and two selected “No, not at all.”

Demographic Information

Participants from the online open house were asked a series of optional demographic questions. This information is useful to compare with the city’s current demographics.

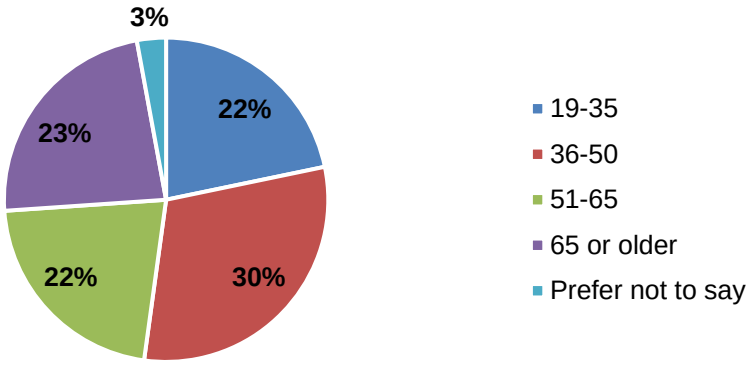
Racial or Ethnic Identity

The majority of participants identify as white, with the second largest group of participants selecting that their race is unknown or that they do not wish to disclose it.



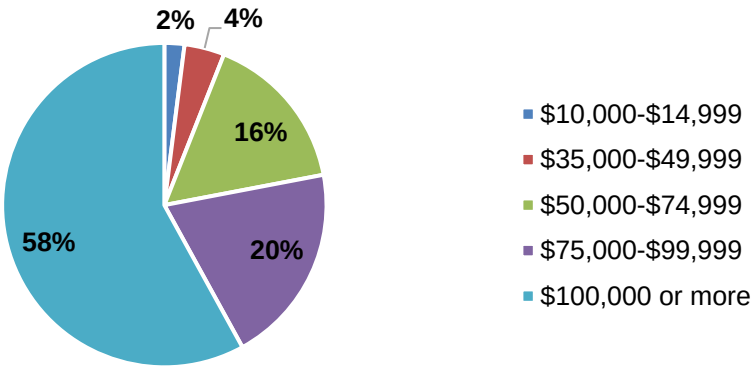
Age

Of those that responded, **the largest group of participants is within the ages of 36-50**. The next largest group of participants is 65 or older.



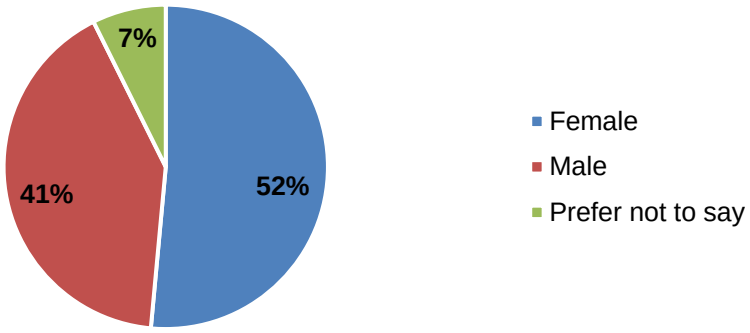
Household Income

The **majority of the online survey participants have a household income of $100,000 or more** a year, which is higher than the average household income in King City.



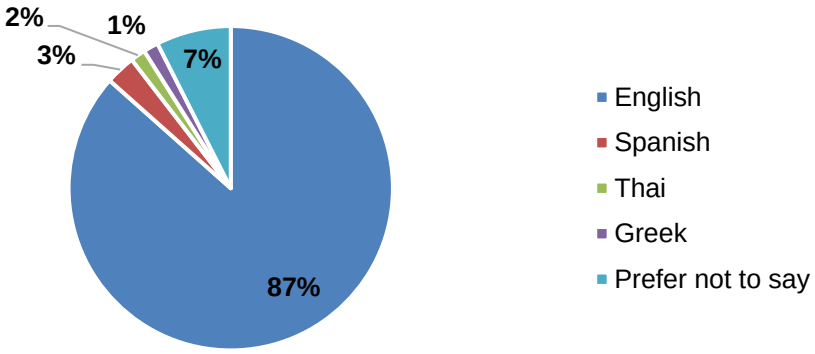
Gender Identity

Half of participants identify as female, with a little less than half identifying as male.



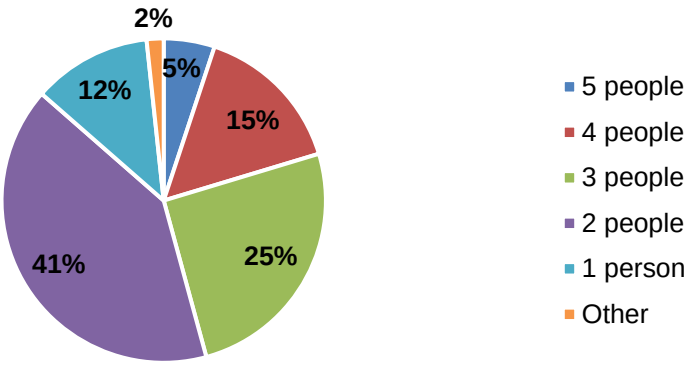
Languages spoken at home

The majority of respondents **(87%) indicated that they speak English at home.** A few respondents said they speak Spanish, Thai, and/or Greek.



People living in household

The majority of respondents **(41%) indicated that 2 people live in their household,** followed by 25% who said they live with 3 people.



ZIP Code

The majority of participants (96%) selected 97224 as their ZIP code, and 2% selected either 97062 or 97223. Through this question, 11 people indicated that they would like City staff to follow-up on a specific comment.

Appendix A: Online Open House Open Text Questions

Below are the comments respondents submitted for the open text questions in the open house.

Question 2: Is there anything else we should consider with motor-vehicle improvements?

1	A 20-yr forward looking TSP that continues relying on today's vehicles. What about alternative transportation types (electric carts, golf carts, and others considered in the County's Transportation Futures report)? One stated purpose of the TSP is to provide safe, convenient access to goods/services - yet the proposed system relies on the same premise we live with today. How much effort has been put into discussions with partners such as the County. The proposal includes 3 additional signals on a proposed 5-lane arterial, all within a very short distance - would these warrant signals? I can't imagine the congestion signals that close would entail - what does the County say about that proposal - in addition to where on the County's TSP is the proposal to expand Roy Rogers past the current cut-off?
2	Add capacity to Beef Bend from 137th to 99W instead of extending Fischer across the powerlines.
3	At the Community Park event on Wednesday, June 9th, Mike Weston repeatedly stated there were alternatives to extending Fischer Road. It is clear on this website that he was lying. Glad I called you out on that at the park! We will continue to spread the word about your deceit. See you next time.
4	Avoidance/minimization of stream/wetland impacts and crossings, particularly in those areas with steep terrain and along the Tualatin River where slopes are susceptible to erosion, failure, and/or landslides.
5	Do not expand Fischer Road. Do not change Fischer Road to accommodate King City expansion plan.
6	Do not extend Fischer rd. Only widen Beef Bend.
7	Do NOT extend Fischer Road!!
8	DO NOT extend Fisher Road through Edgewater!!!!
9	Do not push Fischer through. You will destroy the rivermeade community and wildlife
10	Don't destroy the character of the Rivermeade neighborhood by connecting Fisher Rd to SW 137th and River Lane, with the sole purpose of making it easier to reach the westernmost reaches of the planned development. perhaps more forethought should have gone into the concept of trying to create a "new" town center so far from the original center of King City.
11	Don't do it! Its too costly!!
12	don't put the road so close to the river
13	Edgewater all rejects a Fischer extension.
14	Edgewater is united in our opposition to this plan and extension of Fischer Rd.
15	Edgewater needs to leave King City. We need a new mayor and city manager.
16	Everyone in Edgewater that I have talked to hates this plan if they have looked at it. We need better involvement and a better plan.

17	Expand Beef Bend, leave existing neighborhoods uninterrupted.
18	Extending Fischer Rd. is NOT practical. It is narrow from Cordelia to King Lear and can't handle more traffic than it now has. Eliminating parking would be a hardship due to no drive ways for visitor parking.
19	Extending Fischer through the Columbia Land Trust conservation area is not acceptable. Use of eminent domain by King City would be a huge political mistake that would result in the Council and the City Manager losing their jobs. Jaimie Fender would never be elected mayor if this occurs since the backlash would be severe.
20	Extending Fisher is a mistake. There are far too many houses very close to the road on that street to make it a they-way.
21	Few suggestions: 1. Capulet Ln getting extended is a public safety hazard due to increased traffic on a single lane Capulet Ln to 131st 2. The Fischer and Capulet Ln extensions should be bike/walking paths (with lights) instead of roads connection the east and west sides. 3. Make the effort and widen Beef Bend instead of extending Fischer and Capulet. 4. Please improve the efficiency of the traffic lights going through King City.
22	Fischer extension causes all kinds of problems for us.
23	Fischer extension causes too much environmental damage.
24	Fischer Rd and the community were not built to be a through street. Turning Fischer Rd into a through street will disrupt the neighborhood, endanger children, and devalue homes. The role of city officials is to serve those in the city, not those passing through. Please cancel this plan.
25	Fischer RD in the edgewater neighborhood cannot be neglected. Speed controls and improvements need to be made if it is going to connect to Roy Rodgers. The safety of pedestrians and families is more important than expansion. Small roundabouts do not reduce speed, there needs to be more. Improvements to beef bend should be made all the way through to 99W.
26	Fischer Road already is really busy. It doesn't need another feeder from Roy Rogers.
27	Fischer road extension brings too much traffic into the edgewater neighborhood. The houses and roads are too close to the road from ~131st to the end of the development to support arterial extension. These homeowners on Fischer road there will now have multiple cars coming through fast and nothing can be done to help them. No room for road width expansion, sound blocking walls, etc. This will negatively affect their ~500k homes that are very close to the road. Plus this extra traffic will be a hazard to children who currently play freely in the neighborhood.
28	Fischer road is already too busy. Thousands of new speeding cars is not acceptable since my house backs to Fischer and I cross it on my daily walks. There does not need to be a east to west shortcut. I was told Washington county did not even require it. So stop the stupid plan for Fischer road.
29	Highway 99 will divert cars through the middle of all our houses on our narrow streets never designed for this. It just destroys why I moved here.

30	I adamantly oppose the cut through from Cordelia to 137th. It will harm the livability and safety of our Edgewater Community and is unnecessary for the King City Expansion.
31	I am COMPLETELY opposed to the Fisher Road extension through Edgewater on the Tualatin and am ready to do whatever I can to stop this
32	I don't see how you can extended Fischer Rd to Roy Rogers. Trying to turn off of hwy 99 to Fischer already backs up to the fire station light and to the bridge. I have sat through the turn light up to 4-5 times before being able to turn. How do you plan to fix that?
33	I don't support the expansion of Fischer Road at all, but would support the expansion of Beef Bend as I and many neighbors all agree that's much more logical and doesn't destroy our quiet neighborhoods and wildlife preserve/tualatin river. I don't like the idea of having two busy roads flanking SW 131st. I've lived on SW Jordan Way for 23 years now, and don't want yet another busy road and lack of safety for children. In my opinion no other street in our community should even be considered an option because it's not as efficient as Beef Bend, and would mean some families are displaced.
34	I was told this was the mayor's plan to create a road connection from Roy Roger to 99. There is no requirement like that anywhere. Start over and make connections that carry traffic to Beef Bend and only walking paths and bike paths going all the way through the middle of King City. Traffic should go along the city edge and not cut it in half.
35	If you are going to extend Fischer Road, it should be bicycles and pedestrians only. No new car traffic!
36	Keep motor vehicles away from natural areas.
37	Leave the traffic to Beef Bend rd. Not through 5 ravines that wi;; erode and need constant replacement.
38	Light timing on 99w
39	Macbeth is already incredibly dangerous to get in and out of. With increased traffic it would be SUCH a safety hazard for kids (many of whom play and ride bikes between Capulet and Macbeth) and drivers alike. That is not an appropriate point at which to push through a connector road. The sheer amount of parking that is done on Macbeth makes it impossible. It is already, essentially, a one way street.
40	No alternatives have been presented for the East side. Alternatives have been suggested but there has been no dialogue at the SAC, TAC, Planning Commission or City Council meetings. Your plan punches through a conservation easement. Your plan draws vehicles to a collector toward the river instead of drawing vehicles South to North. Your plan ignores the topography and crosses the ravines at their widest points. Your plan needs to shift collectors North, one crossing for vehicles and another, if two are necessary, for pedestrians and bikes. You need to communicate with the community about this and your reasons behind it because I for one am not buying it. Why was this map not presented at the tabling event on 6/9? Many want to know.
41	No extension to Fischer Rd. This would greatly increase speed and motor vehicle traffic in an area with many elderly residents that use the area for walking and

	many school age students walking to school. Existing Beef Bend road is easy access for vehicle transportation to and from Roy Rogers.
42	No Fischer extension!
43	No Fischer Road extension
44	No Fisher Rd. Going through
45	No roundabouts & too many traffic lights along Beef Bend.Roy Rogers could use them though since the speed limit seems too high along there until you get to the traffic light before Sherwood. Hard to turn in and get out of Al's sometimes.
46	No, you are continuing to insist on extending Fischer Road. We in this area do not want the traffic coming through our quiet neighborhood
47	Not sure why you think this is needed. You are about to ruin a very quiet neighborhood for what gain? There is zero economic gain to be had with this plan other than ruining a neighborhood. Next time a city manager wants to do things like this, he should not live in Lake Oswego and should live on the streets and neighborhood to be effected!!! I bet there would be a different plan!!!!!!!!!!! We have lived in this neighborhood for over 20 years, and NEVER, repeat NEVER had we had an issue getting from point A to B on Beef Bend road or driving ALL THE WAY AROUND to Fisher Road!! Wow, what a horrible thing that is..... what a mile!!!! REALLY. I hope all are happy about absolutely destroying a neighborhood for what??? And spending what $150M to do that!!!!!!!!!!! Again, all those who want to support this, please as a show of faith, buy a home on the roads you plan to build on. I dare you!!! But you don't care because none of this affects you. It very much affects all of us! Very negatively. Not ONE SINGLE ADVANTAGE!!!!!!!!!!!!!!!
48	Object to extending Fischer Road which is primarily a residential road for accessing Edgewater community homes. This will create additional traffic thru the neighborhood and thereby reducing the attractiveness and value of the homes as well as endangering youth and adults who use this road for walking, riding bikes, etc. Suggest you re-evaluate expanding Beef Bend Road even more than proposed, which is already used as a thoroughfare which does not split any neighborhoods.
49	Pay attention to where school are and the facts kids will be out
50	People already drive too fast in the area. Expanding Fisher and Cordelia Roads will bring in more traffic and cause safety issues for the current residents (especially young children and the elderly). My niece was almost hit twice because of people driving too fast. One of the incidents was on Sebastian St. And the other on Cordelia. We have too many families with young children as well as the elderly that need to be protected.
51	Plan causes too much environmental damage.
52	Please do not extend fisher road. A multi use path (bike/per) would suffice
53	Please do not extend Fisher Road. It puts many families at risk. There are many children, seniors and pets in this beautiful neighborhood. I urge the committee to take another look at other expansion options. I do support expansion just not by destroying existing neighborhoods with unnecessary traffic!!!!
54	Road changes would create Highway traffic in a true and confined residential area. Children, pest, bicycle riders for enjoyment - not a commuter type. Put a

	major rick to the people and impact parking and reduce property value..... what are you guys thinking. Would you like to live on Fisher???
55	Stop a Fischer extension or stop the King City expansion plan.
56	STOP THE FISCHER ROAD EXPANSION... enhance Beef Bend road instead. The price is tooo much in disrupting a family oriented neighborhood, dessimating river mead homes and wildlife and old growth trees..
57	Strongly oppose extending Fischer road. This will significantly impact the existing neighborhoods. Improvements should instead be made to Beef Bend road.
58	The amount of traffic that this will bring to our area by extending fisher will ruin our communities. The appeal that we have here is quiet and safe neighborhoods. With the extension of Fisher it will not be safe for our children, it will bring more crime, accidents and noise. I do not believe that you are thinking what is best for our community. Don't turn us into a California community. We like our quiet quaint neighborhoods. just the way they are.
59	The best option would be for King City to build the roadway much closer to the northern side of Beef Bend Rd. The Tualatin River is a busy wildlife corridor, and we frequently see groups of deer, eagles, coyotes, beavers, and nutria. The roadway should be built with minimal impact to wildlife. Why not make Beef Bend Rd. a 4-lane roadway from Roy Rogers to 150th, and a 2-lane roadway from Capulet to 137th? As part of that plan Cordelia could be enlarged by taking part of the field. A Fischer Rd. extension doesn't make sense from ecological and financial standpoints. The topography, with large ravines and landslide vulnerabilities, is a disaster waiting to happen. Was the state of Oregon's map with orange coloration showing actual landslides been considered when the Fisher extension proposal to River Lane was made?
60	The east - west alignment should be further to the north to minimize impact on creeks.
61	The extension to the west is not thought out, not researched, and not feasible. These "concept plans" are pie in the sky ideas that are so far from reality. You have no idea what the actual terrain is beyond the tiny scope of what is now king city. This extension is showing a road through the conservation easement. Can’t do that. It also shows a road that goes south right into the floodplain which will be covered by water for many months each year. Once again, you have no idea the terrain. Shift everything majorly north or just use existing beef bend. You’re completely ignoring the topography and therefore will cause environmental and ecological damage to the area and existing wildlife.
62	The Fischer Road extension will change the dynamics of the neighbor hoods and the local governments have a prioritized responsibility to existing citizens before considering future citizens. There is no benefit to the existing infrastructure. It will

	only decrease property values and increase traffic and exposure to "out of neighborhood" influences.
63	The HOA voted against Fischer extension. Why is this still happening? Is anyone listening to us?
64	The motor vehicle project and road expansions i do not support at all. First of all you plan to take out large green spaces that are home to many wild life like deer, eagles, beavers etc. Also they fact that these roads go right through people person homes and property is disgusting to me I can believe King City thinks its ok to take people homes from them!
65	The plans are fine for Beef Bend and west of Elsner Road. Ruining the neighborhoods and natural areas in the west part of the area, which your own documents identify as a rural character neighborhood, Rivermeade was a neighborhood for almost 20 years before King City was incorporated. That entire area currently has entirely sufficient roads to serve them. Rural areas by definition do not have grids of streets. There is not a need for a 3rd east-west street south of the Capulet line.
66	The power line field should no be breached to extend Fischer lane abs Capulet lane. This will add increased, unnecessary traffic to both neighborhoods on either side. Keep our neighborhoods safe!
67	There are already roads that go thru to RoyRogers. Ruining our neighborhoods will be the result of the waste of money. Who's paying you off? We'll find out.
68	There is no rationale included to indicate why a vehicle route was chosen. In some cases the proposed route would put a roadway within 10 feet of an existing resident's home. In many cases the proposed route would cut a current resident's land in half, rendering it useless and unsellable. There appears to have been no thought to terrain restrictions or environmental issues; it's merely a squiggle of lines on a flat surface that might have been drawn by a two year old. The extensive use of roundabouts is preposterous - they take up more land than a straight-on intersection, make it difficult for large vehicles (garbage trucks, fire trucks, large recreational vehicles) to navigate, and are no safer than a normal intersection. I believe current residents want a plan that works well for everyone, not something that forces many residents to give up their homes where they have lived for generations. To have worked on this for over two years and to spring a result like this on existing residents at the last moments of the project is more than unacceptable. In my way of thinking, King City has been sold a worthless bill of goods.
69	There is TOO MUCH NEW TRAFFIC proposed to go through existing neighborhoods. This isn't progress, it's little government trying to bully its way into neighborhoods. It's one thing to purchase vacant land and put in roads; it's another to carve up existing neighborhoods and scar it with connector roads. Take out the Fischer Road extension!
70	This is an unsafe proprosal for all those families and communities on Fisher Rd and River Lane. Thereis no benefit to extending Fischer Rd when a main thoroughfare of Beed Bend can be expanded and already exists. There is no community support for this whatsoever

71	This plan completely cuts up a thriving community that has been in place since the 50's, with second and third generation property holders. It eliminates existing homes like a tornado, devastating one home while leaving the neighboring home intact. Those homes remaining will just be homes, the community will be lost. But that's what King City wants. Rivermeade is in the way of their big city dreams. If your going to bulldoze our neighborhood like you did 131st then do it right! 137th should look like 131st. Sidewalks, bike paths, pretty, and a light at beef bend. The "Y" intersection on 137th (river on, Watson, and new collector segment) should be considered for a tragic circle. River Ln should be improved just like 131st. Parking isn't listed anywhere on the maps. This community uses street parking for private events. The park has some parking space, but making it public it will need official parking areas. With more homes going in, all streets listed in this map need to address street parking. King City has a reputation for not planning for appropriate parking leaving streets unsafe to drive as a 2 lane road. That is unacceptable! I own the property at 15a. A 3 way stop sign is all that is needed, a traffic circle is not necessary! A circle would make entering/exiting my home more difficult and a safety concern.
72	This plans major problem was created by King Coy council before the TSP even started. Making a requirement for a straight connection from 99W to Roy Rogers Rd created this monster that will destroy the Edgewater neighborhood.
73	This will cut us in half if Fischer is extended as it was never designed to take all this new traffic from 99 and Roy Rodgers off of Beef Bend Road.
74	Too much traffic will cut through the heart of the city to get away from overcrowded highway 99 under this plan. Start again, and listen to current residents next time. I heard the mayor shut down our HOA elwhen we tried to get involved and that is just dead wrong.
75	Use Beef Bend - forget about Fischer Road extension and all roads in the proposed transportation study that disrupt existing residents.
76	We do NOT need the Fischer extension!
77	We do not want our neighborhood destroyed by 10000 cars a day short cutting from Roy Rogers to 99w. This plan was NOT adequately discussed with my Edgewater development neighbors. FAIL! Shame on you, the mayor, and council!!!
78	We live on Fischer. I have 17 windows facing Fischer. We have a cement wall surrounding our backyard. King city has done NOTHING in environmental impact to the people of Edge water our home the smell of exhaust in our kitchen and front rooms. The sounds of vehicles racing down Fischer and right in front of our house. They do no policing. We have 4 cameras on our house. The speeding in so crazy. The city looks the other way. They want no issues on Fischer because they want the expansion. We need help!!!!! They have done nothing but ignore us. This is our only life our only home. This Fischer ext will destroy our HOA our neighborhood and our house. We wont be able to live here. The smell alone is crazy. HELP!!!!!!!!!!!!

79	Yes, how about walking my children to and from Deer Creek and having to cross a busy new street that was not needed. This is craziness and will destroy the neighborhood we moved here for, to start and raise a family.
80	Yes. You obviously aren't concerned by metro's ordinance that states King City shall protect, to the maximum extent possible, the land trust acreage at the end of River Ln. Considering the location of the northeast corner of said acreage, the Fischer Rd. extension would have to cut straight across the entire property. Not very minimal.
81	Yes. First, regarding Project ID 7, educate yourselves on the Bankston property location and Metro Ordinance No. 18-1427 which states that "The Columbia Land Trust holds a conservation easement over portions of the Bankston property, which King City's concept plan identifies as the intended location for a key transportation facility serving the expansion area. King City shall work with the Columbia Land Trust to protect, to the maximum extent possible, the portion of the Bankston property covered by the conservation easement." Your map fails even to simply identify the location of the Bankston property and your draft TSP fails to discuss the Metro Ordinance requirement or even attempt to justify ignoring Metro and the local community interest in continuing protection of the area from development impacts. Then you unbelievably continue the error from the Concept Plan by again routing an east-west alignment through the middle of the protected Bankston property. Stubbornness or arrogance, I'm just not sure how I would classify this failure. Second, regarding Project ID 15, 137th is located within the rural character neighborhood with lower housing densities and should not be designated as a collector. It should be designated a neighborhood collector, similar to Royalty Parkway.
82	Your plan shows no understanding of neighborhoods or topography of the area. These suggested roads will require the engineering of massive bridges and other extremely expensive projects. This plan needs to be revisited.
83	Your survey is lacking relevant information is that pertinent to everyone filling out the survey. First, there is no mention of the Columbia Land Trust easement (12.82 acres) that has been set aside along the Tualatin River. A Fischer Rd. extension that completely ignores the unstable landslides along the five ravines is not only irresponsible but reckless. Alternatives of the roadway, including both bicycle and pedestrian pathways should be focus north toward Beef Bend Rd. and not the lower southern route recommended. So many different recommendations have been given by qualified experts (traffic engineers, civil engineers) for alternatives but they have not been addressed. There is no requirement for an east/west roadway by Metro, Washington Co. or the state of Oregon. Clearly, there is large public opinion against this proposed Fischer Rd. extension along with the Tualatin Riverkeepers.

Question 4: Is there anything else we should consider with pedestrian improvements?

1	1. The Fischer Rd and Capulet Ln extensions should be bike/walking paths instead of roads. These paths should include lights as well.
2	A new pathway from the southern end of River Lane to King City Park is not acceptable. The Rivermeade Community owns this private land and would never allow a public pathway through their private park.
3	Adding a bus route to Fischer Rd would not add enough benefit to counteract the negative impact to the community.
4	Any additional pedestrian projects associated with the expansion of Fischer road.
5	As a handicapped person that uses a mobility scooter, I encounter several places where sidewalks end without a transition to the road. Sidewalks that severely raised or blocked.
6	At the Community Park event on Wednesday, June 9th, Mike Weston repeatedly stated there were alternatives to extending Fischer Road. It is clear on this website that he was lying. Glad I called you out on that at the park! We will continue to spread the word about your deceit. See you next time.
7	Connect the king city phases with per/bike path not cars/roads. This will increase the value of our neighborhoods and put our city on the map! Do not extend fisher road.
8	don't put paths in areas next to river that flood every winter.
9	Fischer extension causes too much environmental damage.
10	For both ped/bike a key input point was separated access from motor vehicles, instead most of the neighborhood/local streets simply have sharrows - nice job! Again going back to a basic tenet of making safe, convenient (and attractive) alternative access to goods/services let's only include a couple of shared use paths. I don't see any discussion of nature trails either. Is this the most innovative design we can come up with?
11	Geography makes no sense for pedestrian projects. The entire concept would give King City the shape of a dumbbell - King City and the cluster of buildings at Roy Rogers. Plus, the river floods every year and there is no way to build there.
12	I dont think this is needed in the areas shown on the map, the roads are rural and do not need paths and sidewalks. By doing this you would again be taking property away from home owners.
13	I hate the whole plan.
14	I realize you're looking to a future where everyone walks from one place to another, but that isn't the case now, and you're ignoring a vast and vocal segment of the existing population here. I know of very few people who are going to spend their time and energy walking from one end of Kingston Terrace to another. Like the roads, some of your proposed pedestrian routes run right through existing residents' yards. If this is 'progress', I want no part of it.
15	I said NO to the road changes and that would then apply to all else.
16	I'd like to know what safety precautions will be taken with these improvements such as lighted pathways, law enforcement access, etc.
17	If you are going to extend Fischer Road, it should be bicycles and pedestrians only. No new car traffic!
18	Just make places for people to travel on the main arteries safely.
19	Low impact natural areas
20	Make the cut through from Cordelia to 137th a bike and pedestrian only (no vehicles.) This will link the areas with out harming Edgewater.

21	Most
22	Move the pedestrian crossing further north toward Beef Bend Rd. and align it with the alternative crossing off of 137th.
23	No Fischer extension!
24	No Fischer extension.
25	No need for pedestrian projects beyond current stretch of Fisher Road
26	No, it moves on Fischer Road.
27	Nothing works if there is a Fischer extension.
28	Nothing wrong with the walkways we have now. Do not see a need for these 'so-called improvements'!
29	Older residents in the area. Too many speeding cars to be safe
30	See above.
31	Stop a Fischer extension or stop the King City expansion plan.
32	STOP THE FISCHER ROAD EXPANSION. There are other less destructive options.
33	Strongly oppose extending Capulet st. I believe currently there are enough pedestrian walkways.
34	Take advantage of existing natural greenspace features (wetlands, streams, rivers, steep terrain, naturally vegetated areas) and locate pedestrian paths along the perimeter of these where possible rather than crossing through them.
35	The east west trail should be connected from 99W to Roy Rogers Road. The trail over highly eroded areas should be planned so as not to make erosion worse and should be retrofitted to mitigate existing erosion.
36	The HOA voted against Fischer extension. Why is this still happening? Is anyone listening to us?
37	The pedestrian projects although nice, should be scaled according to the above street improvements.
38	The pedestrian walkway should parallel the northern route along Beef Bend Rd.
39	The plans are fine for Beef Bend and west of Elsner Road. Ruining the neighborhoods and natural areas in the west part of the area, which your own documents identify as a rural character neighborhood, Rivermeade was a neighborhood for almost 20 years before King City was incorporated. That entire area currently has entirely sufficient roads to serve them. Rural areas by definition do not have grids of streets. There is not a need for a 3rd east-west street south of the Capulet line.
40	The private community park showing a public trail can not happen unless you make the whole park public and to do that you'll need to buy the whole property from the residents at a fair market price. Again parking will need to be addressed. Without designated parking, bike lanes get blocked, home owners have to deal with being blocked and property damage. Also River ln will need to be improved like the rest of 137th.
41	There are too many problems and too much traffic to be safe with this TSP plan.
42	To much traffic off 99 and Roy Rodgers.
43	Too many busy streets for outsiders to drive fast down our streets.
44	Visibility for pedestrians should be a priority. Crossing streets with increased traffic needs to be easy and safe. Safety needs to be the priority.
45	When installing pedestrian walks, trails, pathways, please make them level from side to side. It is very difficult to use a manual wheelchair or even some strollers when the walkways are tilted. Thank you.

46	Would prefer to see a multi-use path system connecting 131st and Roy Rogers. What are the "enhanced bike/ped" crossings of 99W that are proposed and how will that occur without further impacting traffic flow? It seems like the most natural path for peds from King City Plaza to the town center is Royalty to Morocco to Jordan to MacBeth to Capulet and then due west from there. The more extensive ped improvements should account for that shortest path.

Question 6: Is there anything else we should consider with bicycle improvements?

1	1. Instead of Fischer Rd and Capulet Ln getting extended. They should become bike/walking paths (with lights) connecting the east and west sides. 2. There should be a bike path that goes from Roy Rogers all the way to HWY 99
2	A bike facility with or without a new roadway through the Columbia Land Trust conservation area is not acceptable.
3	A couple of shared-use paths, the rest of the system in-street with vehicles? Then add round-abouts (mini or major) how many of these have you ridden through? As a bike commuter for much of the last 15 years - please go out and see how much fun round-abouts are. I haven't seen the TSP public input summary, but the Kingston Terrace input included a key request for separated access.
4	Again, parking will affect bike lanes. Westside trail will need to be built out and I don't see the pedestrian/bike bridge across the Tualatain river listed in the map. This will bring in more traffic, plus beef bend already sees lots of bikers as it's in the scenic hwy maps for bikes. More homes more bikes, plus lots and lots of kids. My son walked and road his bike to school at deer creek. Families should be able to safely get to school walking and riding bikes with the road improvements.
5	Any additional bicycle projects associated with the expansion of Fischer road.
6	At the Community Park event on Wednesday, June 9th, Mike Weston repeatedly stated there were alternatives to extending Fischer Road. It is clear on this website that he was lying. Glad I called you out on that at the park! We will continue to spread the word about your deceit. See you next time.
7	bike paths are good to have but not infringing on private property
8	Clear visibility for bikes and crossings.
9	Do NOT extend Fischer Road.
10	Fischer extension causes too much environmental damage.
11	For the amount of people that would use them is not worth the money spent. I very rarely see anyone using the ones already on Fischer rd.
12	I dont even like the bike improvements because all the cars off Roger's and 99w will make it all unsafe.
13	I'd like to know what safety precautions will be taken with these improvements such as lighted pathways, law enforcement access, etc.
14	If it travels somewhere else besides Fischer Road. Going up 131st to Beef Bend makes sense
15	If you are going to extend Fischer Road, it should be bicycles and pedestrians only. No new car traffic!

16	It's not safe for bikes to be on the road.
17	Just make places for people to travel on the main arteries safely.
18	More bike paths to connect the new construction phases. Do not extend fisher road!
19	Need bike lanes
20	No Fischer extension!
21	No need to extend bicycle projects beyond current stretch of Fisher Road
22	Not enough users at the moment and too costly!
23	Not safe enough
24	Not safe. Too much traffic.
25	Nothing works if there is a Fischer extension.
26	On the proposed Cordelia to 137th cut through, I suggest a bike and passenger cut out only, no vehicles. Making Fischer a through way down the middle of Edgewater will hurt the existing neighborhood.
27	Same answer as above.
28	Same as above
29	See above! Move the bicycle crossing north toward the roadway paralleling Beef Bend Rd.
30	See above.
31	Stop a Fischer extension or stop the King City expansion plan.
32	STOP THE FISCHER ROAD EXPANSION. STOP. Listen to and respect the homeowners who will be affected. Reconsider your position.
33	The bicycle path should also parallel Beef Bend Rd., cross the BPA field, and run behind Deer Creek Elementary.
34	The HOA voted against Fischer extension. Why is this still happening? Is anyone listening to us?
35	The plans are fine for Beef Bend and west of Elsner Road. Ruining the neighborhoods and natural areas in the west part of the area, which your own documents identify as a rural character neighborhood, Rivermeade was a neighborhood for almost 20 years before King City was incorporated. That entire area currently has entirely sufficient roads to serve them. Rural areas by definition do not have grids of streets. There is not a need for a 3rd east-west street south of the Capulet line, or for pedestrian and bicycle traffic to go through private property.
36	The same holds true for bicycle projects as pedestrian projects, since most follow the same routes.
37	Trails should be connected east to west and should have some sections off the roads.
38	Would prefer to see a multi-use path system connecting 131st and Roy Rogers. Given that this is all new construction/planning, would prefer bike treatments are dedicated instead of shared.

	What are the "enhanced bike/ped" crossings of 99W that are proposed and how will that occur without further impacting traffic flow? Would recommend RCUT-type treatments.

Question 8: Is there anything else we should consider with transit improvements?

1	Add a transit center at the new Town Center, and bus service along Beef Bend Rd. to 99W. Why not create neighborhoods with no vehicles and have a free parking zone instead?
2	Again. People's safety. I chose to live in King City for the quiet neighborhood that it is and the fact that it didn't have public transportation in the neighborhood. Expanding public transportation brings more crime and homeless people, which often comes with drug use and unsanitary conditions.
3	All of your proposed transit stops are on the periphery of the area. That means anyone dependent on mass transit will have to walk, bicycle, or drive somewhere to catch a ride. Tri-Met has stated in the past that they have no intention of providing service to an area until there is significant population to make it profitable. How can you possibly plan for transit stops when no service exists, and likely won't exist for another twenty years?
4	At the Community Park event on Wednesday, June 9th, Mike Weston repeatedly stated there were alternatives to extending Fischer Road. It is clear on this website that he was lying. Glad I called you out on that at the park! We will continue to spread the word about your deceit. See you next time.
5	Buses are great and are going to help reduce cars/emissions, increase safety and allow community members to get to services. Do not extend fisher road.
6	Busses are never full and a lot to empty even now. Not worth the money on this one. There a lot of elderly in the community and this brings unwanted strangers into their communities. The situation is getting worse already without more transit
7	Expansion of transit to the Terrace area...assuming this means up and down Roy Rogers not E/W connectivity, right? That seems to be a missing link. Shelters with real time bus arrival information would be nice along with perhaps bike lockers?
8	I do not support any transit projects associated with the expansion of Fischer Road.
9	I would like for the people who need to take the bus to have nice bus stops with shelter from rain.
10	If you are going to extend Fischer Road, it should be bicycles and pedestrians only. No new car traffic!
11	improving transit on public roads is good
12	Keep the buses on the major streets. Seriously, the plan involves disrupting neighborhoods and taking people's land. This is criminal. HEAR people's opinions and have a conscience about your decisions.
13	Keep VERY NORTH of natural areas and wildlife.
14	More transit, less traffic.
15	No Fischer extension!
16	No Fischer extension! We need a better and safer plan for our neighborhood.
17	Not coming through Fischer, but traveling to KT down Beef Bend.

18	Not enough transit improvements along Beef Bend.
19	Nothing works if there is a Fischer extension.
20	Poor plan, not enough.
21	See above
22	Stop a Fischer extension or stop the King City expansion plan.
23	STOP THE FISCHER ROAD EXPANSION. Stop, stop, stop.
24	The bus lines should run through the Capulet road, not further south.
25	The HOA voted against Fischer extension. Why is this still happening? Is anyone listening to us?
26	Transit hubs should avoid wooded areas, creeks and sensitive habitats.
27	TriMet will dictate major transit hubs once a sufficient number of rooftops are available. What I don't see is any last-mile considerations to potential stops. How do you envision direct ped/bike access?
28	We live on Fischer. I have 17 windows facing Fischer. We have a cement wall surrounding our backyard. King city has done NOTHING in environmental impact to the people of Edge water our home the smell of exhaust in our kitchen and front rooms. The sounds of vehicles racing down Fischer and right in front of our house. They do no policing. We have 4 cameras on our house. The speeding in so crazy. The city looks the other way. They want no issues on Fischer because they want the expansion. We need help!!!!! They have done nothing but ignore us. This is our only life our only home. This Fischer ext will destroy our HOA our neighborhood and our house. We wont be able to live here. The smell alone is crazy. HELP!!!!!!!!!!!!
29	What entity has stated (in writing) that a new east-west road is required? Leave the existing residents alone. No one wants new roads going through their neighborhoods. Use allotted finds to widen and improve Beef Bend Road.
30	Yes bus routes need to be extended and safe to access along Beef Bend road. The main road needs the most work to handle the heavy traffic for all users. It can't be a pretty family road, its the heavy lifter the semi truck while all the new side roads are the family sedans.
31	Yes. Further insulting local interest regarding the Bankston property and Metro Ordinance No. 18-1427, you identify a potential transit route through the middle of the protected Bankston property.
32	you are planning to destroy green spaces, animals land and an amazing neighborhood and I do not agree with this at all. hundreds of wildlife animals will be displaced if you do this.and you will be taking homes and property from people that do not want that to happen, people that have lived in this neighborhood for over 50 years.
33	You can call it whatever you choose, but it's still RIVERMEADE, and we will continue to oppose with every means possible any plans that would effectively destroy the character and integrity of the neighborhood for the sake of an ill-conceived, under-funded and overly ambitious plan of development.
34	Your street grid system is 600 feet from one street to another is certainly an overkill. Focus should be less on automobiles and more on parks, green ways, wildlife corridors, and open spaces instead of 36 feet wide roadways. Do not make an asphalt, concrete environment!!

Appendix B: Tabling Questionnaire Comments

Below are the unedited comments participants submitted through the questionnaire.

Is there anything else we should consider with motor-vehicle improvements?

- The fisher road extension is going to severely impact the homes in Edgewater that live on 131st to the end Fisher. The road is too small to handle the large amount of traffic through there. There is no room to widen, build sound blocking walls, etc.
- Fischer should not be the main connector. Nothing you could possibly do would keep the neighborhood safe.
- There are better ways to control traffic. Mini roundabouts are not enough. Speed isn't controlled now, none of the improvements are encouraging lower speeds.
- I do not support extending fisher beyond the current boundary of the Edgewater neighborhood.
- I need more information.
- To use traffic calming to keep speed low. Have it friendly enough to support new city center.
- It's perfect just the way it is.

Is there anything else we should consider with bicycle improvements?

- Proposed bicycle options seem ok.
- It's perfect just the way it is.

Is there anything else we should consider with pedestrian improvements?

- Edgewater cannot handle the amount of through traffic, people and cars on Fisher Road if extended.
- Must be built with pedestrian safety in mind.
- Better visibility for street crossings.
- Increasing traffic on Fisher will erode pedestrian safety. Edgewater is currently walkable, increased traffic will harm that.
- It's perfect just the way it is.

Is there anything else we should consider with transit improvements?

- It's perfect just the way it is.

Is there anything else you would like to add?

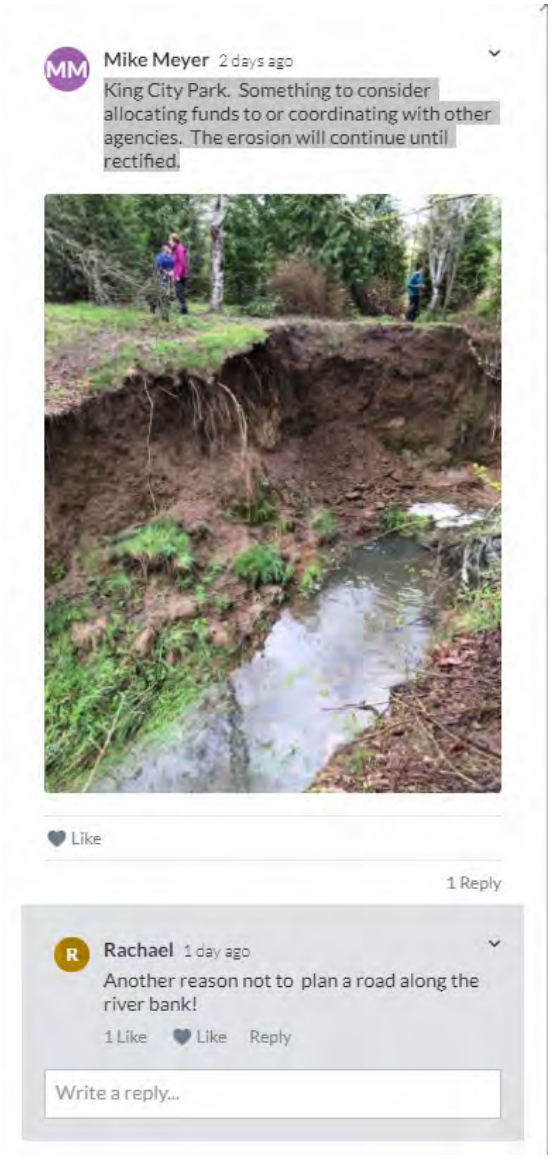
- I like the improvements overall, but we are really not considering those houses with my neighbors who live so close to the road in Edgewater. That part of Fisher simply cannot handle large amounts of cars and people without affecting those people greatly.
- No Fisher Road extension
- Fisher Road speed isn't controlled now even with the addition of a speed flasher. There needs to be significant changes to that if you want it to be a through street. Safety is more important than expansion.
- My main concern is pushing Fisher beyond Edgewater. It will destroy our neighborhood with increased traffic. I support widening Beef Bend with feeders into King City.
- I purchased a home (my first home) in Edgewater after two years of careful consideration of dozens of criteria to meet the needs and desires of living in an area/neighborhood to be comfortable in. I'm not speaking for anyone else, but if I want to travel to a different area or town, I take the best route that is available. I don't wake up and decide one day that I want to PLOW THROUGH someone else's home/area/comfortable place to live and make things "better" for others while making things worse for the folks that were there first. Where is the consideration for the existing homeowner? First, we survive a global pandemic, then our livelihoods are swept out from under us. Unreal. Pretty sure there are SEVERAL alternative routes to explore before condemning/mutilating the beautiful community which is Edgewater at Fisher Road. Whoever you folks are, ask yourselves, how you would feel if this unnecessary expansion were happening in your front yard? I beg you to examine options that affect the very least amount of people and families. There's an awful lot of green space out there…how about looking into choosing a better path.

Appendix C: Comments Received by City

Below are the unedited comments community members submitted through the website comment form or emailed directly to City staff.

1	i thought King city was a 55 and over community. what happens with all these new people moving in. also since we had to pay an assessment fee to move to King city when we bought our house are these new people going to pay the same assessment. if not why. that would be discrimanatory to single ouit us folks who already had to pay. peace. have a nice day
2	Just to voice my great concern- I live in the Edgewater community that will be impacted by this extension. This is a community of FAMIIES. We have a life style the includes - walking, animals ,chidden and Bikes, all sharing the sidewalks and streets. A major highway going straight through this community would be a disaster. The streets were never created for this use, the houses too close to the streets , and the life style does not allow for this use of streets. Please stop this insanity. No through street for Fischer. Thank You M. Liserani - 17211 SW Montague Way 97224

3	've been a King City resident for 7 years. We were attracted here due to the somewhat secluded nature of the community. There's really no reason to be on our roads unless you live here. Making Fisher Rd a throughway is a terrible idea. #1, it's not necessary; Bull Mountain, Beef Bend and Roy Rogers provide plenty of access. #2 the cost of running a road through a number of private properties would be substantial due in no small part to the lawsuits filed by long time homeowners who would be displaced. Presently I see children walking and biking to Deer Creek elementary. Having Fisher Rd as the thoroughfare would hamper the idea of this being safe. I just don't see a reason for it. The existing roads provide ample access and Beef Bend could be widened. Extending Elsner Rd to Kummrow Rd to would affect less property owners, be far less disruptive to the established communities and likely much less expensive while providing and equally if not better and safer routing.
4	How about adding how long the online survey will be open on the front page? Had to go to Events to find out. When you use transportation terms of art "Complete Streets" - maybe explain what that means - most , I'm guessing, don't have a clue. I realize DKS's memo is to the project team, but since you've made it public - who in the community can explain "financially constrained.."? along with several other transportation terminology. I understand the Highlands community is just one of many, but to deny 300+ property owners access to goods/services to the east other than the Morroco Land goatpath - could you consider slightly better connectivity to KCCA streets for peds/bikes/golf carts? How about access across Pacific Highway to goods/services at Royalty/Hwy 99 for bikes/electric carts - presumably we're all trying to move away from single-occupant vehicles - we can do better can't we?
5	Good Afternoon Michael, I attended the June 9 Open House in the park, hoping to get some answers about the Fischer extension from Cordelia to 137th. The only answers I got were vague, not really answers. I did get a list of the Draft Aspirational Project list and it does list that exact area; 7;7e. Although the other improvements in Edgewater along Fischer are fine, I am very much opposed to this cut through from Cordelia to 137th. It will seriously demean the livability of our neighborhood in Edgewater as it will only encourage more pass-through traffic. We bought into this neighborhood as is. I do support planned growth, it’s a must. But that growth can happen without harming our existing Edgewater community. I hope you are taking neighbor feedback into consideration. Thank you for your attention,
6	I took a quick look at the information provided and the survey questions. I am supportive of fewer creek and river crossings. I feel at this time I cannot give the survey/feedback the time required.

	I do feel we all need to be aware of the pollutants added to our creeks and surface water in addition to the degradation of the surrounding land. https://en.wikipedia.org/wiki/Rubber_pollution
7	King City Park. Something to consider allocating funds to or coordinating with other agencies. The erosion will continue until rectified. 

APPENDIX C. FRAMEWORK DOCUMENT

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

FRAMEWORK DOCUMENT

DATE: May 13, 2020

TO: Project Management Team

FROM: Carl Springer and Kevin Chewuk | DKS Associates

SUBJECT: King City Transportation System Plan and Land Use Refinement Framework Document (Deliverable 3A) Project #20020-002

This memorandum summarizes planning documents, policies, and regulations that will apply to the King City Transportation System Plan (TSP) as it is developed through this process. The primary documents that guide TSP development, and updates within the Portland Metro area are:

- The Transportation Planning Rule (TPR) (Oregon Administrative Rule (OAR) 660-012),
- The Oregon Transportation Plan and State Modal Plans,
- The Regional Transportation Plan (RTP) and Regional Transportation Function Plan (RTFP), and
- Local TSPs (the Washington County TSP will provide guidance to King City)

In particular, the RTFP lays out a process that draws on information from a technical system analysis and from stakeholder input to address transportation needs through the year 2040. As solutions and strategies for addressing transportation needs in King City are proposed in later work tasks, a cross-check will be required to ensure compliance and coordination with the state and regional plans, policies, and regulations.

TRANSPORTATION SYSTEM PLANNING IN OREGON

Transportation system planning in Oregon is required by Statewide Planning Goal 12 – Transportation[1]. The Transportation Planning Rule (TPR), OAR 660-012, describes how to implement Statewide Planning Goal 12 [2].

[1] Statewide Planning Goals: https://www.oregon.gov/lcd/OP/Pages/Goals.aspx

[2] Transportation Planning Rule: https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3062

By implementing Statewide Planning Goal 12 (Transportation), the TPR promotes the development of safe, convenient, and economic transportation systems that are designed to reduce reliance on the automobile. Key elements include direction for preparing TSPs under OAR 660-012-0015 through 0040.

OAR 660-012-0035 describes the evaluation and selection of transportation system alternatives in the TSP. 660-012-0035(2) allows jurisdictions to evaluate alternative land use designations, densities, and design standards to meet local and regional transportation needs.

OAR 660-012-0045 describes implementation of the TSP. It includes the requirement for each local government to amend its land use regulations to implement the TSP. It also requires local government to adopt land use or subdivision ordinance regulations consistent with applicable federal and state requirements, to protect transportation facilities, corridors and sites for their identified functions. This policy is achieved through a variety of measures, including access control measures, standards to protect future operations of roads, and expanded notice requirements and coordinated review procedures for land use applications. Measures also include a process to apply conditions of approval to development proposals, and regulations assuring that amendments to land use designations, densities, and design standards are consistent with the functions, capacities, and performance standards of facilities identified in the TSP.

Specifically, the TPR requires:

- The state to prepare a TSP, referred to as the Oregon Transportation Plan (OTP);
- Metropolitan Planning Organizations (MPOs) to prepare a Regional Transportation Plan (RTP) that is consistent with the OTP (the Metro RTP[3] applies to King City); and
- Counties and Cities to prepare local TSPs that are consistent with the OTP and RTP.

As the guiding document for local TSPs, the OTP[4] establishes goals, policies, strategies and initiatives that address the core challenges and opportunities facing transportation in Oregon. The goals and

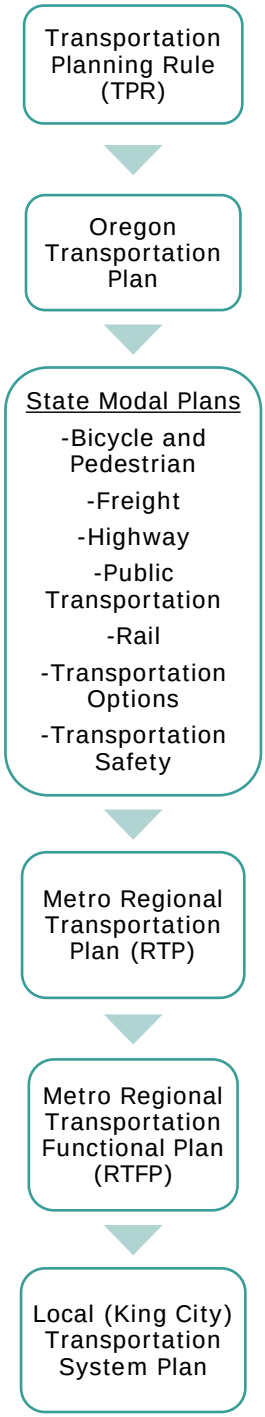


FIGURE 1: GUIDING DOCUMENTS FOR THE TSP

[3] Metro Regional Transportation Plan: http://www.oregonmetro.gov/index.cfm/go/by.web/id=25038

[4] Oregon Transportation Plan: http://www.oregon.gov/ODOT/TD/TP/OTP.shtml

policies are further implemented by various modal plans, including the Bicycle and Pedestrian Plan, Freight Plan, Highway Plan, Public Transportation Plan, Rail Plan, Transportation Options Plan, and the Transportation Safety Action Plan. Each of the OTP's seven goals are defined by more specific policies and strategies.

MPOs are established to address federal planning requirements. A primary work product of an MPO is the RTP. In addition, the TPR requires local agencies within the MPO to adopt Regional Transportation System Plans (RTSP) to address State transportation planning requirements. For most Oregon MPOs, the RTP serves as the RTSP. The TPR also directs local agencies within the MPO area to have adopted local TSPs that are consistent with the regional plan.

What this means for the King City TSP:

The TSP must address the policy and regulatory requirements included in the OTP, State Modal Plans, TPR and RTP, as described in the ODOT TSP Guidelines and the specific policy documents.

METRO REGIONAL TRANSPORTATION FUNCTIONAL PLAN

Metro's Regional Transportation Functional Plan[5] (RTFP) directs how King City should implement the RTP through the TSP and other land use regulations (as shown in Figure 1). The RTFP codifies transportation planning and implementation requirements that local plans must comply with to be consistent with the RTP. If a TSP is consistent with the RTFP, Metro will find it to be consistent with the RTP[6].

The RTFP provides guidance on several areas including transportation design for various modal facilities, system plans, regional parking management plans and amendments to comprehensive plans. The following directives specifically pertain to local TSPs:

- Regional and state transportation needs identified in the 2040 RTP should be included in local plans
- Local needs must be consistent with 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

[5] Metro Regional Transportation Functional Plan: http://www.oregonmetro.gov/index.cfm/go/by.web/id=274

[6] The 2012 RTFP does not reflect the most recent Regional Transportation Plan.

- Traffic calming
- Land use strategies in OAR 660-012-0035(2)[7]
- Roadway connectivity that include 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

What this means for the King City TSP:

The TSP will address the policy and regulatory requirements in the RTFP, as described above, to ensure that the TSP is consistent with Metro's RTP.

DEFINING THE TRANSPORTATION SYSTEM

The following sections summarize roadway classifications and land use designations for areas of King City derived from the identified documents. This information ultimately informs the adopted standards, regulations, and policies that apply to the multi-modal transportation system in King City.

KING CITY AND WASHINGTON COUNTY ROADWAY CLASSIFICATIONS

To manage the roadway network, the roadways are classified based on a hierarchy according to the intended purpose of each road. From highest to lowest intended usage, the classifications are typically arterials, collectors, neighborhood routes and local streets. Roadways with a higher intended usage generally provide more efficient traffic movement (or mobility), while roadways with lower intended usage provide greater access for shorter trips to local destinations such as businesses or residences.

[7] This section of the Transportation Planning Rule requires Metro area jurisdictions to evaluate land use designations, densities, and design standards to meet local and regional transportation needs.

The existing classification of streets in King City depends on jurisdiction and is either defined in Washington County's TSP or the City's Comprehensive Plan. The following classifications apply to King City:

- **Arterial roadways** are intended to serve as the main travel route through the City. These roadways serve the highest volume of motor vehicle traffic and are primarily utilized for longer distance regional trips. In King City, the County has classified SW Roy Rogers Road and SW Beef Bend Road as arterials.
- **Collector roadways** often connect the neighborhoods to the arterial roadways. These roadways generally provide more direct property access than arterial roadways, while providing efficient through movement for local traffic. In King City, the County has classified portions of SW 131st Avenue, SW Fischer Road and SW Elsner Road as collectors.
- **Neighborhood Routes** (or sometimes referred to as Neighborhood Collector or Minor Collector roadways) are similar to collector streets in that they provide greater accessibility to neighborhoods and provide efficient through movement for local traffic. While some may interpret the term "neighborhood" to imply residential land use, this classification refers to a level of connectivity for any land use type, including commercial and/or industrial land uses. Neighborhood routes are not required to provide bicycle facilities. Therefore, routes with relatively low traffic volumes, where bikes could travel comfortably in a shared lane environment, would be designated neighborhood routes. In King City, portions of SW 131st Avenue (south of SW Fischer Road), SW Fischer Road (west of SW 131st Avenue), SW 116th Avenue and SW Royalty Parkway are neighborhood routes.
- **Local streets** provide more direct access to residences without serving through travel. These roadways are often lined with residences and are designed to serve lower volumes of traffic at slower speeds. In King City, any street not designated as either an arterial, collector, or neighborhood route is considered a local street.

What this means for the King City TSP:

The functional classification system for the City will be revisited and revised, if necessary.

ODOT CLASSIFICATIONS FOR OR 99W

Oregon Highway Plan (OHP) Goal 1, Policy 1A (State Highway Classification System) categorizes state highways for planning and management decisions. Through King City, OR 99W is classified as a Statewide Highway. Statewide Highways typically provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective is to provide safe and efficient, high-speed, continuous-flow operation. In constrained and urban areas, interruptions to flow should be minimal.

What this means for the King City TSP:

While this policy places importance on the efficient travel of through motor vehicle trips on OR 99W, the policy must still be balanced with other goals and objectives of the Oregon Transportation Plan to ensure its multi-modal intentions are addressed.

State Highway Freight System: OHP Goal 1, Policy 1C addresses the need to balance the movement of goods and services with other uses. It states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. Through King City, OR 99W is classified as an Oregon Freight Route and Federal Truck Route.

What this means for the King City TSP:

Transportation solutions must be accommodating to the Truck Route designation. Federal Truck Routes require 12' travel lanes.

Reduction Review Routes: ORS 366.215 requires review of all potential actions that will alter, relocate, change or realign a Reduction Review Route that could result in permanent reductions in vehicle-carrying capacity. Reduction of vehicle-carrying capacity means a permanent reduction in the horizontal or vertical clearance of a highway section, by a permanent physical obstruction to motor vehicles located on useable right-of-way subject to Commission jurisdiction, unless such changes are supported by the Stakeholder Forum. If ODOT identifies that an action may result in a reduction of vehicle-carrying capacity, a Stakeholder Forum (consisting of at a minimum, a bicycle representative, pedestrian representative, a trucking industry representative, a mobile home manufacturing representative, an oversize load freight representative, a representative of automobile users, and a representative from any affected city, county or Metropolitan Planning Organization) will be convened to help advise ODOT regarding the effect of the proposed action on the ability to move motor vehicles through a section of highway. Through King City, OR 99W is classified as a Reduction Review Route.

What this means for the King City TSP:

Transportation improvements recommended on OR 99W must include a record of the proposed roadway dimensions and enough detail to allow for a review of Vehicle-Carrying Capacity during future design.

Lifeline Routes: OHP Goal 1, Policy 1E designates routes for emergency response in the event of an earthquake, categorized as Tier 1, 2 and 3. The routes identified as Tier 1 are considered to be the most significant and necessary to ensure a functioning statewide transportation network. A functioning Tier 1 lifeline system provides traffic flow through the state and to each region. The

Tier 2 lifeline routes provide additional connectivity and redundancy to the Tier 1 lifeline system. The Tier 2 system allows for direct access to more locations and increased traffic volume capacity, and it provides alternate routes in high-population regions in the event of outages on the Tier 1 system. The Tier 3 lifeline routes provide additional connectivity and redundancy to the lifeline systems provided by Tiers 1 and 2. Through King City, OR 99W is classified as a Tier 1 lifeline route.

What this means for the King City TSP:

The City could use the TSP to designate local lifeline routes, if necessary, to ensure their intended function is considered in system investment and management decisions.

SUMMARY OF ODOT CLASSIFICATIONS FOR OR 99W

The TSP will support the existing classifications of OR 99W and will enhance its ability to serve the defined functions. The following summarizes the classifications:

- OR 99W (Pacific Highway West, No. 091) is classified as a Statewide Highway, part of the National Highway System (NHS), a Freight Route, Truck Route and a Reduction Review Route and is a Tier 1 lifeline route.

REGIONAL CLASSIFICATIONS FOR KING CITY

Within the King City area, Beef Bend Road, OR 99W and Roy Rogers Road have special designations for their role in the regional transportation system, as detailed in the following section.

TABLE 1: REGIONAL CLASSIFICATIONS

ROADWAY	PEDESTRIAN	BICYCLE	TRANSIT	MOTOR VEHICLE	FREIGHT
OR 99W	Pedestrian Parkway	Bicycle Parkway	Frequent Bus / Future High Capacity Transit	Major Arterial	Main Roadway Route
BEEF BEND ROAD	Regional Pedestrian Corridor	Regional Bikeway (between SW 137th Avenue and SW 150th Avenue)	No special designation	Minor Arterial	No special designation
ROY ROGERS ROAD	No special designation	Regional Bikeway	No special designation	Arterial outside UGB	Roadway Connector

WHAT DO THE REGIONAL CLASSIFICATIONS MEAN FOR KING CITY?

- **Regional Pedestrian Network:** OR 99W is a Pedestrian Parkway, which are generally major urban streets that provide frequent transit service (existing and planned). Beef Bend Road is a

Regional Pedestrian Corridor, which are any major or minor arterial on the regional urban arterial network that is not a Pedestrian Parkway.

In addition, the designated Town Center adjacent to OR 99W is classified as a Pedestrian District, which is an area where high levels of walking exist or are planned. All streets and trails within the Pedestrian District are part of the regional system.

- **Regional Bicycle Network:** OR 99W is a Bicycle Parkway, which currently serve or will serve higher volumes of bicyclists and provide important connections to destinations. Roy Rogers Road and the segment of Beef Bend Road between SW 137th Avenue and SW 150th Avenue (the future alignment of the River Terrace Trail) are Regional Bikeways. These provide for travel to and within Centers. On-street Bicycle Parkways or Regional Bikeways should be designed using a flexible "toolbox" of bikeway designs, including bike lanes, cycle tracks (physically separated bicycle lanes) or shoulder bikeways.

  In addition, the designated Town Center adjacent to OR 99W is classified as a Bicyclist District, which is an area where high levels of bicycle activity exist or are planned. All bicycle routes within bicycle districts are considered regional and are eligible for federal funding.
- **Regional Transit Network:** OR 99W is part of the regional transit network, with Frequent Bus and Future High Capacity Transit designations.
- **Regional Motor Vehicle Network:** Within King City, the Arterial classification applies to Beef Bend Road, OR 99W and Roy Rogers Road. Arterial streets are intended to provide general mobility for travel within the region and provide important connections to the throughway network. Major arterial streets accommodate longer-distance through trips and serve more of a regional traffic function. Minor arterial streets serve shorter trips that are localized within a community. As a result, major arterial streets usually carry more traffic than minor arterial streets.
- **Regional Freight Network:** OR 99W is a Main Roadway Route, which connect major activity centers in the region to other areas in Oregon. Roy Rogers Road is a Roadway Connector, which connects other freight facilities, industrial areas, and 2040 centers to a main roadway route.

What this means for the King City TSP:

Management decisions and potential improvements to Beef Bend Road, OR 99W and Roy Rogers Road must be consistent with the Regional Network Classifications.

METRO LAND USE DESIGNATIONS

Metro's 2040 Growth Concept[8] in the Regional Transportation Plan applies land use designations to the Portland region. The 2040 Growth Concept is the region's long-range plan for managing growth by integrating land use and transportation. The concept concentrates mixed use and higher density development in areas of the region designated as "Centers", "Station Communities", and "Main Streets". The 2040 Growth Concept land uses are arranged in a hierarchy, with the primary and secondary land uses, referred to as 2040 Target Areas, as the focus of Regional Transportation

[8] Metro 2040 Growth Concept: http://www.oregonmetro.gov/index.cfm/go/by.web/id=29882

Plan investments. King City includes one Regional primary Town Center designation along OR 99W, generally east of SW Royalty Parkway between SW Crown Drive and SW King James Place and one secondary "Corridor" designation for OR 99W outside of the Town Center (north of SW Crown Drive and south of SW King James Place). Town Centers provide services to people within a two- to three-mile radius, have a strong sense of community identity and are well served by transit. Corridors are major streets that serve as key transportation routes for people and goods and are typically served extensively by transit.

The remaining areas of King City, including the URA 6D expansion area, are designated as Neighborhood land uses. These areas have the lowest priority for Regional Transportation Plan investments.

What this means for the King City TSP:

The TSP should ensure the intended function of these areas are considered in system investment and management decisions. Metro, as part of the Conditions of Approval, designated the URA 6D expansion area as a Neighborhood on the 2040 Growth Concept map.

MANAGING AND MONITORING THE TRANSPORTATION SYSTEM

To ensure that the transportation system maintains acceptable quality, it is monitored with a variety of measures. These measures are typically defined by the agency with maintenance responsibilities, which includes King City, Washington County and ODOT in the area. OR 99W is under jurisdiction of ODOT. Streets that are expected to be under the jurisdiction of Washington County include SW Roy Rogers Road and SW Beef Bend Road. All other existing or planned streets will be assumed under the jurisdiction of King City (portions of SW Fischer Road and SW Elsner Road currently under County jurisdiction are desired to become City streets in the future). Each responsible jurisdiction sets various standards for the streets to maintain its designated classifications.

MOTOR VEHICLE MOBILITY TARGETS

The state and region have adopted vehicle mobility targets to ensure that the transportation system will have adequate capacity to support planned growth. If changes made in the TSP or King City Comprehensive plan would cause study intersections to exceed adopted performance measures, mitigation could be necessary before plans are approved. The intersection mobility targets vary by jurisdiction of the roadways. ODOT standards are consistent with the regional standards. For streets designated on the Regional Motor Vehicle Network, local Transportation System Plans are required to adopt the regional targets or alternative targets that are no lower

than those adopted by the region[9]. Designated streets in the area include OR 99W, Roy Rogers Road and Beef Bend Road. Regional standards require a volume to capacity (v/c) ratio of 1.10 during the peak first hour, and 0.99 during the peak second hour[10] in designated Town Centers and 0.99 during the highest two consecutive hours of the day along designated "Corridors," including OR 99W outside of the Town Center and within designated "Neighborhoods," including Beef Bend Road.

Washington County mobility targets will be applied to streets under their jurisdiction that are not designated on the Regional Motor Vehicle Network, including SW Fischer Road and SW Elsner Road. County mobility targets are based on the area designations in the Metro Regional Transportation Plan. Intersections along SW Fischer Road and SW Elsner Road must maintain a v/c ratio of 0.90 during the highest two consecutive hours of the day, with a v/c ratio of 0.99 acceptable during the first hour in urban areas[11]. All remaining Washington County streets in the area, including Roy Rogers Road and Beef Bend Road, are designated on the Regional Motor Vehicle Network and subject to the regional targets.

King City does not currently have adopted performance standards for motor vehicles. For comparison purposes, the regional mobility target for "Neighborhoods," a v/c ratio of 0.99 during the peak hour, could be applied as an interim performance measure for City streets.

What this means for the King City TSP:

System performance will be measured, in part, using the adopted mobility targets. The TSP can establish mobility targets for City streets to evaluate performance. For comparison purposes, the Regional mobility target for "Neighborhoods," a v/c ratio of 0.99 during the peak hour, could be applied as an interim performance measure.

MULTI-MODAL PERFORMANCE MEASURES

The Metro Regional Transportation Functional Plan requires local transportation system plans to employ a performance-based approach, focusing on measurable outcomes of investments to the transportation system[12]. It requires that each local plan include performance measures for safety, vehicle miles traveled per capita, freight reliability, congestion, and walking, bicycling and transit

[9] Metro Regional Transportation Functional Plan, Section 3.08.230, Subsection A and B, Performance Targets and Standards

[10] Second hour defined as the single 60-minute period either before or after the peak 60-minute period, whichever is highest

[11] Washington County Transportation System Plan, Part 3 – Transportation Modal Elements. Effective September 26, 2019.

[12] Metro Regional Transportation Functional Plan, Section 3.08.230, Subsection D, Performance Targets and Standards.

mode shares to measure the degree to which its investments support regional and potentially City-wide priorities. In this manner, investment decisions could be tracked and compared to a set of performance objectives, offering a baseline against which to assess how the investments and planning decisions made may affect the future. King City does not currently have adopted multi-modal performance measures.

What this means for the King City TSP:

The traditional approach to mobility standards has changed in response to many evolving conditions such as transportation funding for projects, economic viability, livability, and funding priorities. The TSP could explore measures to evaluate multi-modal performance and offer a baseline to compare during future Transportation System Plan updates.

STREET AND DRIVEWAY SPACING STANDARDS

Access spacing along streets in the King City area will be managed through access spacing standards. Access management is a broad set of techniques that balance the need to provide efficient, safe, and timely travel with the ability to allow access to individual destinations. Proper implementation of access management techniques will promote reduced congestion and accident rates and may lessen the need for additional street capacity.

To improve connectivity of the region's arterial system and support walking, bicycling and access to transit, the Metro Regional Transportation Functional Plan requires that, to the extent possible, major arterial streets be spaced at one-mile intervals, and minor arterial or collector streets to be spaced at half-mile intervals[13].

In addition, to improve local access and circulation, and preserve capacity on the region's arterial system, each local Transportation System Plan must include a conceptual map of new streets for all contiguous areas of vacant and redevelopable lots and parcels of five or more acres that are zoned to allow residential or mixed-use development. Full street connections should be provided at least every 530 feet (or 1/10th of a mile) or pedestrian and bicycle connections every 330 feet if a full-street connection is not possible. Cul-de-sac or other closed-end street designs are also restricted to circumstances in which barriers prevent full street extensions and such streets are limited in length to 200 feet and the number of dwellings along the street to no more than 25.

[13] Metro Regional Transportation Functional Plan, Section 3.08.110 Street System Design Requirements

The King City roadway spacing standards are consistent with the Metro Regional Transportation Functional Plan, requiring full street connections every 530 feet[14] and pedestrian and bicycle accessways every 330 feet[15] in instances where spacing exceeds 530 feet.

The City does not have a spacing standard for driveways along streets under its jurisdiction. Streets under County jurisdiction, including Roy Rogers Road, Beef Bend Road, SW Fischer Road and SW Elsner Road, must comply with Washington County spacing standards.

Washington County restricts direct access to arterial streets to other arterial or collector streets, with spacing of at least 600 feet[16]. In King City, local street or driveway access to Roy Rogers Road and Beef Bend Road would be restricted.

Access to County collector streets in King City, including SW Fischer Road and SW Elsner Road, would be limited to neighborhood routes or local streets. Commercial, industrial and institutional uses with 150 feet or more of frontage will be permitted direct access to a Collector, spaced at least 100 feet from intersections or other driveways. Approaches to SW Fischer Road and SW Elsner Road would also be restricted by the County in areas where vehicle queues commonly form approaching intersections or in areas where adequate left turn refuge cannot be provided.

OR 99W SPACING STANDARD

The Oregon Access Management Rule[17] (OAR 734-051) attempts to balance the safety and mobility needs of travelers along state highways with the access needs of property and business owners. ODOT's rules manage access to the state's highway facilities in order to maintain highway function, operations, safety, and the preservation of public investment consistent with the policies of the 1999 OHP. Access management rules allow ODOT to control the issuing of permits for access to state highways, state highway rights of way and other properties under the State's jurisdiction. In addition, it sets access spacing standards, identifies the ability to close existing approaches and establishes a formal appeals process in relation to access issues. These rules enable the State to direct location and spacing of intersections and approaches on state highways, ensuring the relevance of the functional classification system and preserving the efficient operation of state routes.

OHP Goal 3, Policy 3A and OAR 734-051 set access spacing standards for driveways and approaches to the state highway system[18]. The standards are based on state highway classification

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[14] City of King City Municipal Code, Section 16.212.050

[15] Ibid

[16] Washington County Community Development Code, Article V Public Facilities and Services, Section 501-8.5

[17] Access Management Rule:
https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3317

[18] ODOT Access Management Standards (Appendix C): www.oregon.gov/ODOT/TD/TP/OHP_AM.shtml

and differ based on posted speed. OR 99W in King City requires 800 feet of spacing between accesses.

What this means for the King City TSP:

The functional classifications of transportation routes in the King City will be reviewed to determine the appropriateness of the classification and connectivity. New streets, including in the URA 6D expansion area, may be proposed consistent with the Regional and standards to improve street connectivity. In addition, pedestrian and bicycle connections will need to be provided every 330 feet if a full-street connection is not possible.

REGIONAL PERFORMANCE TARGETS

The Regional Transportation Plan includes nine system performance measures with aspirational targets to provide a basis for measuring expected performance of the plan in the long-term. All regional performance targets are for the year 2040, unless otherwise specified. The performance targets are regional measures that the King City TSP should work toward achieving.

FIGURE 2: RTP PERFORMANCE TARGETS

What this means for the King City TSP:

The TSP should work toward achieving the performance targets identified in Figure 2 by recommending safety improvements, infrastructure improvements (e.g. connectivity, sidewalks, bicycle facilities), congestion mitigation, etc.

REGIONAL MODAL TARGETS

The Regional Transportation Plan established regional mode share targets that are intended to be goals for cities and counties to work toward during implementation of the 2040 Growth Concept at the local level. Increases in walking, bicycling, ridesharing and transit mode shares will be used to demonstrate compliance with per capita travel reductions required by the State Transportation Planning Rule. The following modal targets apply to Regional Transportation Plan land uses in King City:

- Town Centers and Corridors: Non-drive alone modal target of 45 to 55 percent
- Neighborhoods: Non-drive alone modal target of 40 to 45 percent

As required by the Regional Transportation Plan and the Transportation Planning Rule, jurisdictions within the Metro region must adopt policies and actions that encourage a shift towards non-single occupancy vehicle modes.

What this means for the King City TSP:

The TSP should adopt policies and actions that encourage a shift towards non-single occupancy vehicle modes.

GUIDING THE TRANSPORATATION SYSTEM

The following sections summarize additional background information or guidance documents for development of the King City TSP.

BICYCLE AND PEDESTRIAN

The Oregon Bicycle and Pedestrian Plan provides a decision-making framework for walking and biking efforts in the State within the context of the overall transportation system. The Plan is an element of the Oregon Transportation Plan and provides local plans guidance in its implementation. The policies and strategies in the Plan impact transportation decisions of local jurisdictions through their transportation system plans and other planning efforts, which must be consistent with statewide policy plan direction. The nine goals of the plan, described below, reflect statewide values and desired accomplishments, and refine and expand upon the broad goals of the OTP.

- **Safety-** The safety goal is written to align with “Vision Zero” and other federal and local initiatives that target the elimination of the most serious safety issues. Policies and strategies call for a multimodal look at roadway cross-sections, updating design guidance to identify the most appropriate walking or biking facility depending on context (such as physical separation), more visible pedestrian crossings, and examination and consideration of lower speeds where appropriate. They also focus on safe operations on the walking and biking system through

education and encouragement, comfort and security help to encourage more users to the system by increasing their sense of safety, and an assessment of the system to determine safety issues.

- **Accessibility and Connectivity-** This goal targets making walking and biking accessible in areas where it currently is not, filling in gaps, and connecting to other modes. Policies and strategies call for such things as system inventories to identify gaps and prioritize walking and biking needs, retrofitting existing facilities to accommodate pedestrians and cyclists, wayfinding signage, bike share, and enhancing connections to other modes, especially public transportation.
- **Mobility and Efficiency-** This focuses on assuring that pedestrians and cyclists can move freely and easily on the existing system. Policies and strategies seek to reduce physical barriers that may impede movement, address maintenance practices, seek to assure movement through or around construction zones, and reference design elements such as signal timing and bicycle detection, among other issues.
- **Community and Economic Vitality-** Both land use and tourism are included under this goal area. Specifically, the land use policy framework identifies the need for model code assistance, siting schools and government buildings so they are accessible to walking and biking, considering land use attractors to assure safe connections, bicycle parking, and prioritizing employment centers and main streets as critical connection points that serve the community and economy. Tourism policies and strategies focus on partnerships, collaboration opportunities, and disseminating information as ways to encourage pedestrian and bicycle recreational travel.
- **Equity-** This goal focuses on making walking and biking options equally available to all. Assuring access for underserved areas and transportation disadvantaged populations is called out. The policies and strategies under this goal are designed to address issues that may prevent certain portions of the population from walking and biking, such as looking at census data, conducting research, and doing network gap analysis that looks at demographics. They also focus on integrating equity criteria and considerations into decision making, locating and prioritizing transportation disadvantaged populations, and helping to close the gap between areas served and not served.
- **Health-** This goal highlights the link between personal and public health. Policies and strategies call out such things as integrating health criteria in transportation decision making, engaging health professionals and strengthening partnerships, and improving data collection and sharing.
- **Sustainability-** This goal highlights the impacts that zero emission modes can have on helping the state reduce Greenhouse Gas emissions, have cleaner air and water, and reduce impacts to the environment. Strategies promote encouragement, and innovations such as electric bikes or scooters, which may attract more people to use those modes.
- **Strategic Investment-** This goal highlights the contribution that walking and bicycling facilities make to the entire transportation system. A strategic approach is needed to spend existing resources on the highest need and greatest value investments, leverage what is available, and to identify additional funding sources. An investment prioritization framework lays out priorities as follows: protect the existing system (e.g. maintenance and preservation) and address significant safety issues; add critical connections; complete the system (e.g. separation, and bicycle parking); and elaborate the system.
- **Coordination, Cooperation, and Collaboration-** With an interest in creating an integrated and seamless system, this coordination, cooperation, and collaboration goal assures communication between entities in decision making. Policies and strategies call for a checklist of communication needs, and guidance for coordinating.

The Plan includes performance measures to track and monitor implementation progress. The performance measures indicate whether safety is improving, use of the system is increasing (assumed through overall improvements to the network), and that data needs are being understood and data collected for more robust performance measures in the future:

- Number of pedestrian and bicycle fatalities (five-year average)
- Number of pedestrian and bicycle serious injuries (five-year average)
- Perceived safety of walking and biking
- Utilization of walking or biking for short trips
- Identifying data needs for pedestrian and bicycle performance measures
- Pedestrian access to transit

What this means for the King City TSP:

This Plan serves as the guiding policy for bicycle and pedestrian planning. The TSP should work to incorporate the goals and performance measures of the Plan.

OREGON TRANSPORTATION OPTIONS PLAN

The Oregon Transportation Options Plan is an element of the Oregon Transportation Plan and provides policy guidance for state and local partners to enhance and expand transportation access for all while ensuring that transportation investments are efficient and support broader community goals. The Oregon Transportation Options Plan:

- Identifies opportunities to expand transportation choices.
- Looks to increase funding opportunities for transportation options programs and investments.
- Provides information to better integrate transportation options into local, regional, and state transportation planning.

Policies, strategies, and programs described in the Oregon Transportation Options Plan promote efficient use of existing transportation system investments, reducing reliance on the single-occupancy vehicle and facilitating use of walking, biking, transit, and rideshare. While transportation infrastructure and operations are critical to the success of a balanced transportation system, this Plan focuses on the programs, strategies, and investments that support the efficient use of transportation infrastructure.

The Transportation Options Plan process identifies a critical need to establish responsive and reliable funding for transportation options programs. Opportunities exist to expand funding by integrating transportation options into existing transportation planning processes and identifying and leveraging new sources of funding.

What this means for the King City TSP:

The policies, strategies, and programs of this plan provide guidance for the TSP to support the efficient use of existing and future transportation infrastructure.

TRANSPORTATION SAFETY

OREGON TRANSPORTATION SAFETY ACTION PLAN

The Oregon Transportation Safety Action Plan is an element of the Oregon Transportation Plan and provides long-term goals, policies and strategies and near-term actions to eliminate deaths and life-changing injuries on Oregon's transportation system by 2035. The goals, policies, and strategies in the Plan are focused on changing safety culture and proactively planning, designing, operating and maintaining a transportation system that eliminates fatalities and serious injuries.

The Plan includes emphasis areas to provide a framework for the near-term component. Emphasis areas are focus areas directly related to the long-term goals, policies, and strategies. The emphasis areas include:

- **Risky Behaviors-** Reductions in fatalities and serious injuries can be accomplished by deterring unsafe or risky behaviors made by drivers and other transportation users. For this emphasis area, actions are identified to minimize impaired, unbelted, speeding and distracted driving crashes.
- **Infrastructure-** Transportation facilities can be constructed or retrofitted to reduce fatal and serious injury crashes. Opportunities to do this include implementing safety treatments on a site-specific basis or implementing low-cost treatments system-wide. Actions are identified to minimize intersection and roadway departure crashes.
- **Vulnerable Users-** Vulnerable road users can be characterized by the amount of protection they have when using the transportation system – pedestrians, bicyclists and motorcyclists are more exposed than people in vehicles, making them more susceptible to injury in the event of an incident. Older drivers and pedestrians can also be more vulnerable to severe injuries in the event of a crash because of increasing fragility and potentially longer healing times. Actions are identified to minimize pedestrian, bicycle, motorcycle, and older road user crashes.
- **Improved Systems-** Opportunities to address and improve transportation safety come in several forms. Actions have been identified to continually improve data, train and educate transportation and safety staff, support law enforcement and emergency responders, and minimize commercial vehicle crashes.

WASHINGTON COUNTY TRANSPORTATION SAFETY ACTION PLAN

The Washington County Transportation Safety Action Plan documents the current state of transportation safety in the County, outlines potential strategies to address transportation safety issues and identifies ways to implement these strategies. While the aim is to reduce the number of crashes overall, the focus of the action plan is to develop strategies that will reduce severe injuries (where the victim's normal life functions are severely impacted) and fatalities.

What this means for the King City TSP:

The goals, policies and strategies and near-term actions of these plans provide guidance for the TSP to support the changing of safety culture and proactively planning, designing, operating and maintaining a transportation system that eliminates fatalities and serious injuries.

PUBLIC TRANSPORTATION

OREGON PUBLIC TRANSPORTATION PLAN

The Oregon Public Transportation Plan is an element of the Oregon Transportation Plan and strives to create a statewide public transportation network, and help communities develop transit options that best meet their need. The Plan sets a path forward for maintaining and improving the public transportation system across the state. It calls for further integrating public transportation with the transportation system and for making its use a convenient, easy and reliable choice.

SOUTHWEST SERVICE ENHANCEMENT PLAN

The Southwest Service Enhancement Plan outlines a long-term vision to improve transit service in the southwestern portion of the Portland Metropolitan Area. The plan includes the following recommendations related to King City:

- Realigning bus routes to provide more connections between suburban residential communities and suburban employment centers and streamline routes and fill service gaps. This includes extending the South Shore Boulevard line (Line 36) from the Tualatin Park & Ride to King City via 72nd Avenue and Durham to improve east-west connections between Lake Oswego, Tualatin, Tigard, and King City, and add trips.
- Suggesting areas where TriMet could pass through federal funding to serve low income residents or low paying, entry-level jobs and where fixed route transit service is lacking due to the street network or population size, including the King City-Tigard-Beaverton area, to connect senior and low income residents in King City with jobs and services in Progress Ridge, Murrayhill, and the future River Terrace and South Cooper Mountain areas.

SOUTHWEST CORRIDOR PLAN

The Southwest Corridor Plan is a comprehensive vision for the investments needed to keep the area moving and support the people who live here today as the area grows. The corridor includes King City and all the surrounding area from Tualatin and Sherwood to Tigard and Southwest Portland. The Plan includes priority projects to invest in roadways and active transportation. The following relate to King City:

- Pedestrian improvements in the King City Town Center
- Pedestrian improvements on OR 99W to serve transit stops in King City.

What this means for the King City TSP:

The goals, policies and strategies on these plans will be supported by the TSP to make public transit a convenient, easy and reliable choice.

EMERGING TECHNOLOGY STRATEGY

Technology is already transforming the region's transportation system. The Emerging Technology Strategy identifies steps to take to harness new developments in transportation technology—including automated, connected and electric vehicles; new mobility services like car share, bike or scooter share and ride-hailing services like Uber and Lyft; and the increasing amount of data available to both travelers and planners—to create a more equitable and livable greater Portland region and meet the goals in the 2018 Regional Transportation Plan.

Policies focus on the key issues that need to be addressed over the next decade in order to stay on track to meet regional goals as technology and mobility continue to evolve. The strategy identifies implementation actions to consider in implementing these policies.

- Policy 1: Equity: Make emerging technology accessible, available and affordable to all, and use technology to create more equitable communities.
- Policy 2: Choices: Use emerging technology to improve transit service, provide shared travel options throughout the region and support transit, bicycling and walking.
- Policy 3: Information: Use the best data available to empower travelers to make travel choices and to plan and manage the transportation system.
- Policy 4: Innovation: Advance the public interest by anticipating, learning from and adapting to new developments in technology.

What this means for the King City TSP:

The policies and implementation actions of this plan provide guidance for the TSP to help meet regional goals as technology and mobility continue to evolve.

CONCEPT PLANS

KING CITY URBAN RESERVE AREA 6D CONCEPT PLAN

The King City Urban Reserve Area 6D Concept Plan serves as a guide for the future development of the 528-acre Urban Reserve Area. The plan identifies an internal system of street and paths, including improvements to SW Roy Rogers Road and SW Beef Bend Road. Improvements would include a planted median, bike lanes, street trees, and separated sidewalks or multi-use paths. A collector street is planned to run east-to-west through the area, connecting SW Roy Rogers Road east to SW Fisher Road. Other improvements include an east-to-west neighborhood route between

SW Beef Bend Road and the planned collector, and north-to-south routes connecting these proposed east-to-west facilities with SW Beef Bend Road and future street extensions in the River Terrace area. Additionally, a series of trails will run through the site to enhance pedestrian connectivity throughout the area.

CONDITIONS OF APPROVAL FOR URA 6D

The Metro Urban Growth Boundary was amended to add four UGB expansion areas, including the King City Urban Reserve Area 6D Concept Plan area. The following Conditions of Approval are applicable to King City:

A. Comprehensive planning in the four UGB expansion areas:

1. Within four years after the date of this ordinance, the four cities shall complete comprehensive planning consistent with Metro code section 3.07.1120 (Planning for Areas Added to the UGB).

2. The four cities shall allow, at a minimum, single family attached housing, including townhomes, duplexes, triplexes, and fourplexes, in all zones that permit single family housing in the expansion areas.

3. The four cities shall explore ways to encourage the construction of ADUs in the expansion areas.

4. As the four cities conduct comprehensive planning for the expansion areas, they shall address how their plans implement relevant policies adopted by Metro in the 2014 regional Climate Smart Strategy regarding: (a) concentrating mixed-use and higher density development in existing or planned centers; (b) increasing use of transit; and (c) increasing active transportation options. The cities shall coordinate with the appropriate county and transit provider regarding identification and adoption of transportation strategies.

5. As the four cities conduct comprehensive planning for the expansion areas, they shall regularly consult with Metro Planning and Development staff regarding compliance with these conditions, compliance with the Urban Growth Management Functional Plan, compliance with the state Metropolitan Housing Rule, and use of best practices in planning and development, and community engagement. To those ends, cities shall include Metro staff in advisory groups as appropriate.

6. At the beginning of comprehensive planning, the four cities shall develop – in consultation with Metro – a public engagement plan that encourages broad-based, early and continuing opportunity for public involvement. Throughout the planning process, focused efforts shall be made to engage historically marginalized populations, including people of color, people with limited English proficiency and people with low income, as well as people with disabilities, older adults and youth.

B. Citywide requirements (for the four cities):

1. Within one year after the date this ordinance is acknowledged by LCDC (excluding any subsequent appeals), the four cities shall demonstrate compliance with Metro code section 3.07.120(g) and ORS 197.312(5) regarding accessory dwelling units. In addition to the specific requirements cited in Metro code and state law, cities shall not require that accessory dwelling units be owner occupied and shall not require off street parking when street parking is available.

2. Before amending their comprehensive plans to include the expansion areas, the four cities shall amend their codes to ensure that any future homeowners associations will not regulate housing types, including accessory dwelling units, or impose any standards that would have the effect of prohibiting or limiting the type or density of housing that would otherwise be allowable under city zoning.

3. Before amending their comprehensive plans to include the expansion areas, the four cities shall amend their codes to ensure that any future homeowners associations will not require owner occupancy of homes that have accessory dwelling units.

4. The four cities shall continue making progress toward the actions described in Metro Code section 3.07.620 (Actions and Investments in Centers, Corridors, Station Communities, and Main Streets).

5. Cities shall engage with service providers to consider adoption of variable system development charges designed to reduce the costs of building smaller homes in order to make them more affordable to purchasers and renters.

6. For at least six years after this UGB expansion, the four cities shall provide Metro with a written annual update on compliance with these conditions as well as planning and development progress in the expansion areas. These reports will be due to the Metro Chief Operating Officer by December 31 of each year, beginning December 31, 2019.

E. King City:

1. King City shall coordinate with Washington County and the City of Tigard as it engages in its work on a Transportation System Plan, other infrastructure planning, and comprehensive planning.

2. Before amending the King City comprehensive plan to include the expansion area, King City shall conduct additional market analysis to better understand the feasibility of creating a new mixed-use town center.

3. Pending the results of the market analysis of a new town center, King City shall plan for at least 3,300 homes in the Beef Bend South expansion area. If the market analysis indicates that this housing target is infeasible, King City shall work with Metro to determine an appropriate housing target for the expansion area.

4. The expansion area shall be designated Neighborhood on the 2040 Growth Concept map.

5. Pending the results of the market analysis of a new town center, Metro will work with King City to make necessary changes to the 2040 Growth Concept map.

6. Prior to amending the King City comprehensive plan to include the expansion area, King City shall complete a Transportation System Plan for the city.

7. Prior to amending the King City comprehensive plan to include the expansion area, King City shall amend its code to remove barriers to the construction of accessory dwelling units, including:

   a. Remove the requirement that accessory dwelling units can only be built on lots that are at least 7,500 square feet, which effectively prohibits construction of accessory dwelling units in the city.

   b. Remove or increase the requirement that accessory dwelling units be no bigger than 33 percent of the square footage of the primary home so that an accessory dwelling unit of at least 800 square feet would be allowable.

8. The Columbia Land Trust holds a conservation easement over portions of the Bankston property, which King City's concept plan identifies as the intended location for a key transportation facility serving the expansion area. King City shall work with the Columbia Land Trust to protect, to the maximum extent possible, the portion of the Bankston property covered by the conservation easement.

9. To reduce housing costs, King City shall, in its comprehensive planning, explore ways to encourage the use of manufactured housing in the expansion area.

TIGARD RIVER TERRACE CONCEPT PLAN

The Tigard River Terrace Concept Plan area is located just north of the King City URA 6D expansion area. The transportation system proposed for Tigard's River Terrace development to the north provides structure and guidance to the system proposed for King City's URA 6D expansion area. North/south internal roads and access locations onto SW Beef Bend Road proposed in the River Terrace Plan will need to be coordinated with the planning of this area. This includes the extensions of River Terrace Boulevard, SW 161st Avenue and the River Terrace Trail (along Beef Bend Road) into the area.

What this means for the King City TSP:

The TSP will incorporate the recommendations of the King City Urban Reserve Area 6D Concept Plan and will link the planned transportation system with that of the River Terrace area.

FACILITY DESIGN

ODOT BLUEPRINT FOR URBAN DESIGN

The ODOT Blueprint for Urban Design documents the urban design practices and guidance for ODOT facilities and projects. The purpose of the Blueprint for Urban Design is to highlight opportunities for flexibility in ODOT's current design criteria. This allows practitioners to determine the effective outcomes for each facility based on the urban context and to identify ways in which design flexibility can accommodate individual community needs. ODOT has created a set of six urban land use contexts to describe the variety of urban areas and unincorporated communities in Oregon.

The Blueprint for Urban Design builds from ODOT existing manuals and existing plans and serves as interim guidance until the principles and guidance can be incorporated during the next update to the Highway Design Manual, Analysis Procedure Manual, Traffic Manual, and other guiding documents.

METRO DESIGNING LIVABLE STREETS AND TRAILS DESIGN GUIDE

The purpose of the Designing Livable Streets and Trails Design Guide is to support implementation of the 2040 Growth Concept. This guide is a resource for designing, constructing and maintaining the region's transportation system. The design guidance is intended to assist in designing new and reconstructed streets and trails but may also be applied to maintenance projects that preserve and extend the service life of existing streets and structures when minor retrofits are needed.

What this means for the King City TSP:

The TSP should follow these design guides when designing, constructing and maintaining existing or future transportation facilities.

SCHOOL ACCESS

WASHINGTON COUNTY SCHOOL ACCESS IMPROVEMENT STUDY

The Washington County school access improvement study, a part of the County's Safe Routes to School Program, provides a comprehensive look at the extent of traffic infrastructure barriers that prevent or limit students' ability to walk to school safely. Traffic safety improvements identified in the study vary by school and include sidewalks, bike lanes, crosswalk treatments and trails.

For Deer Creek Elementary School in King City, the following improvements were identified on County roadways:

	DESCRIPTION	LOCATION
1	Sidewalk on North Side of Street	Beef Bend Rd: 146th Ave to Westminster Dr
2	Sidewalks	Beef Bend Rd: Coyler Wy to 131st Ave
3	Sidewalks	131st Ave: Fischer Rd to Timara Ln
●	Westside Trail	
●	Enhanced Crossing	131st Ave: Between Peachvale St/MacBeth Dr
●	Enhanced Crossing	Beef Bend Rd: Between Colyer Wy/Peachtree Dr

TIGARD-TUALATIN SCHOOL DISTRICT LONG RANGE FACILITIES PLAN

The Tigard-Tualatin School District Long Range Facilities Plan presents a long-term vision for facilities development to accommodate District operations and educational programs. The Plan discusses the new Art Rutkin Elementary School in River Terrace to relieve existing and projected overcrowding at area schools, including Deer Creek Elementary in King City.

What this means for the King City TSP:

The TSP should incorporate the findings and recommendations of these studies into the future needs of the transportation system. The TSP should work towards reducing the impact of traffic infrastructure barriers that prevent or limit students' ability to walk to current or future schools safely.

APPENDIX D. LAND USE EXISTING CONDITIONS AND FUTURE BASELINE REPORT

ECONorthwest
ECONOMICS • FINANCE • PLANNING

DATE: April 16, 2020
TO: Michael Weston, City of King City
FROM: Sadie DiNatale and Matt Craigie, ECONorthwest
SUBJECT: Existing Land Use Conditions and Future Baseline Report – REVISED DRAFT

The City of King City contracted DKS, and several subconsultants including ECONorthwest, to develop a Transportation System Plan and Land Use Refinement. This memorandum is one of several deliverables for the project. This document addresses Task 4A in the project's Scope of Work—the "Land Use Existing Conditions and Future Baseline Report."

URA 6D: Existing Land Use Conditions

Purpose of the Memorandum

The purpose of this memorandum is to provide land use context for King City's Transportation System Plan and Land Use Refinement project. Specifically, it aims to explain the historic, present, and likely future land use conditions of King City's urban expansion area (URA 6D) and its immediate vicinity to inform the market analysis component of the TSP project. To do so, it summarizes previous analyses, reports and studies; it does not present new analysis.

Ultimately, the data summarized in this memorandum will serve as a baseline for the area's future Master Plan. The Master Plan would include Comprehensive Plan and Zoning Code Amendments.

This memorandum acknowledges that cities adjacent to King City are similarly planning for growth by developing Town Center and Neighborhood Center plans. This memorandum describes those plans to provide background on nearby areas that may influence development in URA 6D.

Background

King City is a small city located inside Metro's Urban Growth Boundary (UGB). The City sits along Oregon Route 99W, between the cities of Tigard and Sherwood. Consistent with regional trends, in the last two decades King City's population more than doubled, adding 2,245 residents between 2000 and 2019.[1]

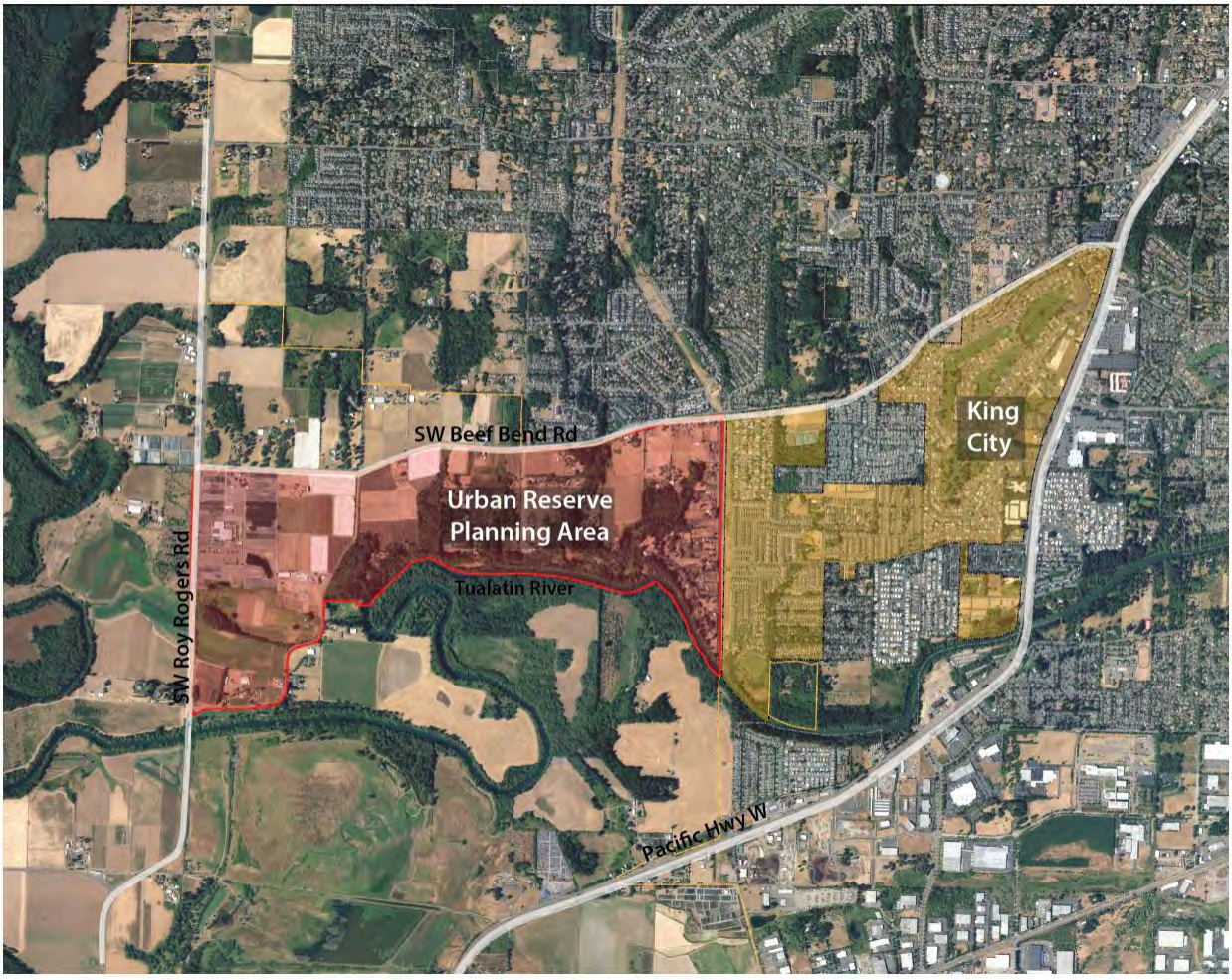
The challenge of a limited land supply has become a pressing problem as the City seeks to accommodate growth. To better plan for the community's long-term needs, the City initiated steps to expand into Urban Reserve Area 6D (Exhibit 1). Urban Reserve Areas (URAs) are lands suitable for accommodating urban development over 50 years after their designation. URA 6D,

[1] Portland State University, Population Research Center (2000 and 2019). Population Estimates.

located just west of the current King City city limits line, was designated as an URA in 2011. In a technical sense, URA 6D is expected to accommodate urban development through 2061.

To explain its long-term plans to Metro and key stakeholders for URA 6D, the City sponsored a concept plan for the area. While the concept plan was developed in May 2018, more analysis is needed to evaluate the suitability of the land use mix and development types proposed for the Area.

Exhibit 1. Urban Reserve Area 6D
Source: City of King City. (May 2018). King City Urban Reserve Area 6D Concept Plan.



Methodology

This memorandum summarizes previously conducted studies. It is informed by content and analysis from several land use planning documents and reports developed by, or for, the City of King City in the last few years. The following list describes each of the documents that were reviewed for this report.

- **URA 6D Concept Plan (2018).**[2] With the assistance of several consultants, the City of King City developed a concept plan for URA 6D. The Concept Plan, submitted to Metro, served as a request to expand King City's geography so that it would include URA 6D. The Plan proposed land use designations, four neighborhoods (including a Main Street/Town Center), a residential buildout program, transportation routes, and needed infrastructure (and costs) to support development. The Plan concluded that the mix of proposed uses would help address the city's residential land deficit and create a mix of amenities, employment, and educational opportunities to serve the area.
- **Housing Needs Analysis (2018).**[3] ECONorthwest developed a Housing Needs Analysis for King City in 2018. The analysis documented national and state housing trends and analyzed local housing, demographic, and housing affordability trends. In addition, the analysis inventoried the suitability of residential lands, forecasted housing needs, and determined the sufficiency of residential lands to accommodate the housing forecast.
- **Market Analysis (2017).**[4] Leland Consulting Group developed a market analysis for URA 6D. Leland defined a 525-acre study area to understand existing and likely future site conditions, economic and demographic indicators, and residential/commercial development trends including pipeline activities. The analysis concluded that (1) there is increased demand for walkable, in-town neighborhoods with cultural amenities and proximity to jobs; (2) millennial household formation will drive starter home demand in the near-term; (3) seniors will drive active senior and assisted living demand; and (4) the URA 6D area could absorb 500-900 dwelling units and 54,000 to 85,000 square feet of retail.
- **King City Comprehensive Plan.**[5] Adopted in 1995, King City's Comprehensive Plan guides the long-term use of land in the City. In 2013, the City amended its Comprehensive Plan to include the King City Town Center Planning Area as a special planning district.
- **King City Municipal Code.**[6] Title 16 of King City's Municipal Code describes community development and zoning requirements. It presents procedures, land use

[2] City of King City. (May 2018). King City Urban Reserve Area 6D Concept Plan.

[3] ECONorthwest. (February 2018). City of King City Housing Needs Analysis.

[4] Leland Consulting Group. (March 2017). King City Market Analysis.

[5] City of King City. (1995). City of King City Comprehensive Plan.

[6] City of King City. (Codified 1990, Revised 1999). King City Municipal Code, A Codification of the General Ordinances of the City of King City, Oregon.

districts, development standards, development review, land division standards, and public facility and service requirements.

- **Washington County Community Development Code.**[7] Washington County's Community Development Code describes procedures, land use districts, development standards, public facility and service requirements, land division and property line adjustments procedures, and public transportation facility.

Existing Conditions

This document concerns the entire city, but it specifically focuses on URA 6D. Therefore, we provide some applicable city-level information/statistics throughout this memorandum but generally apply that knowledge to URA 6D.

Land Use Conditions in King City

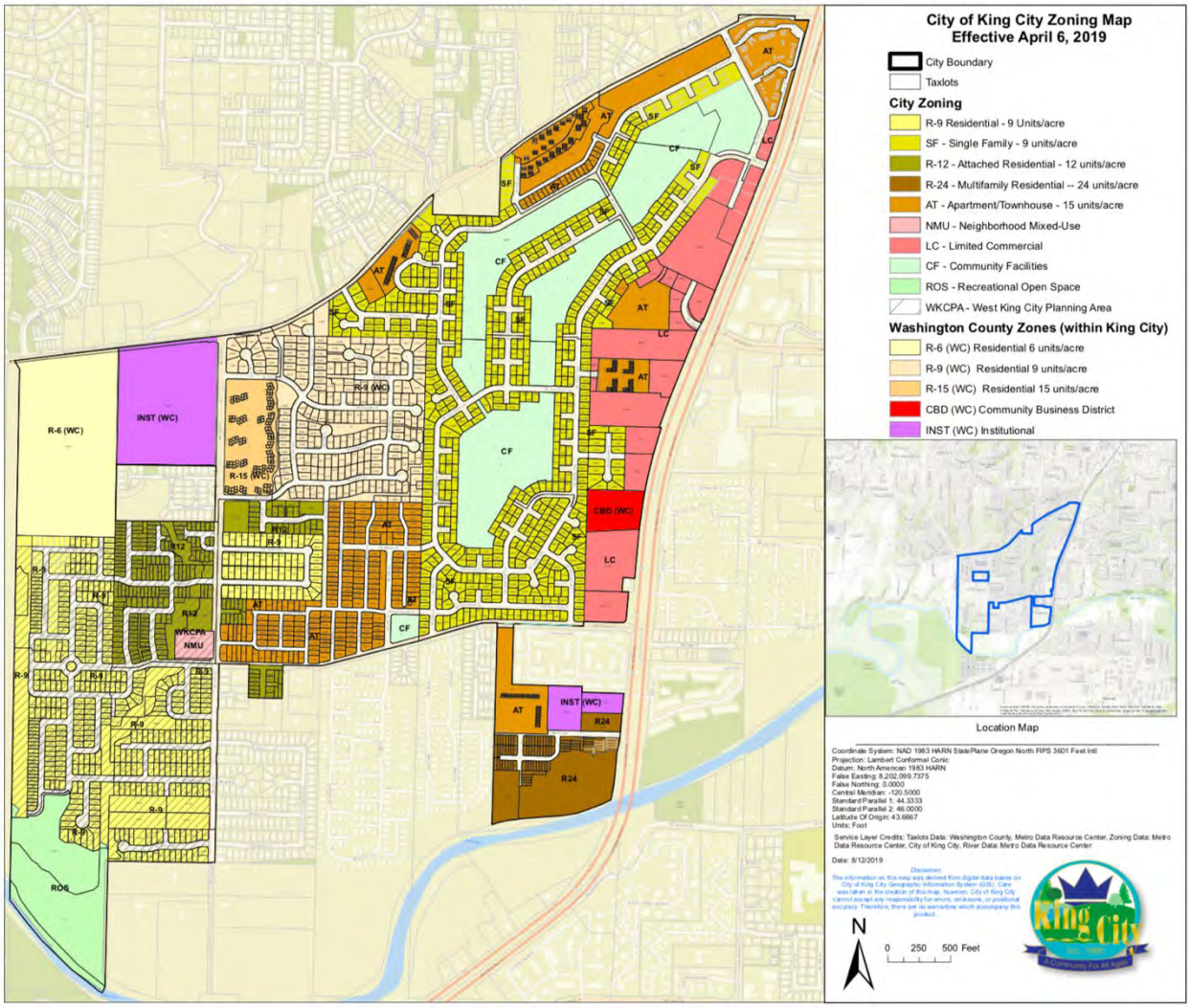
The city of King City is bounded by SW Beef Bend Rd to the north, SW 137th Avenue to the west, the Tualatin River and local neighborhood streets to the south, and Oregon Route 99W to the east.

As illustrated in Exhibit 2, most of the city's land area is zoned for residential uses with a narrow portion along the eastern boundary of King City that is zoned for commercial and neighborhood mixed-use uses. In 2013, the eastern portion of the city (comprising the commercially designated uses) was codified in King City's comprehensive plan as a special planning district. Importantly, this area, which is just shy of 50 acres, "was designated as a town center and corridor in the Metro 2040 Growth Concept."[8]

[7] Washington County. Community Development Code.

[8] City of King City. King City Town Center Plan and Implementation Strategy, Comprehensive Plan.

Exhibit 2. Zoning Districts Map, King City, 2019
Source: City of King City.



Land Use Conditions in URA 6D

URA 6D, which is about 600 acres, is largely undeveloped. The area is bounded by SW Beef Bend Rd to the north, SW Roy Rogers Rd to the west, the Tualatin River to the south, and King City's city limits to the east. The 2018 Concept Plan summarized the area's existing land uses and limited development types as:

> *The current land use in the planning area generally ranges from home sites of ½ to 4 acres on the east, larger rural residential and small agricultural properties in the central portion (1.2 to 10+ acres), and larger agricultural properties (up to 40+ acres) on the west. Non-residential and non-farm uses include a small airstrip (Meyer's Riverside Airport) and a commercial garden and landscaping supply business (Al's Garden and Home) on SW Roy Rogers Road.*

The area's existing plan designations are outlined below with a characterization of each designation using language from Washington County's Community Development Code.

- **RR-5 Rural Residential (5-acre minimum):** intended to designate rural areas which qualify for an exception to LCDC Goals 3 and 4 and which have been committed or developed for suburban residential use with minimum farm and forest uses and to provide for rural residential uses.
- **AF-10 Agriculture and Forest District (10-acre minimum):** intended to retain an area's rural character and conserve the natural resources while providing for rural residential use.
- **AF-5 Agriculture and Forest District (5-acre minimum):** intended to retain an area's rural character and conserve the natural resources while providing for rural residential use.
- **EFU Exclusive Farm Use:** intended to preserve and maintain commercial agricultural land within the county.
- **Private Use Airport Overlay:** intended to recognize the locations of certain private-use and privately-owned, public-use airports and heliports and to provide for their continued operation and vitality consistent with state law.

Despite urban levels of development surrounding the northeast quadrant of URA 6D, existing zoning and development standards in the area ensured the development pattern remained highly rural and grounded in agriculture and natural resources.

Planned Uses

This section identifies planned uses (1) within and surrounding URA 6D, (2) in nearby urban and rural reserves, and (3) in recent UGB expansion areas.

Planned Uses within and Surrounding the Project Area

The 2018 Concept Plan for URA 6D envisioned four, distinct neighborhoods (Exhibit 4) and several plan designations for the study area (Exhibit 5). Each neighborhood was proposed at different intensities to ensure a deliberate development pattern that transitioned from urban to rural. The following provides a high-level summary of the land use framework for each proposed neighborhood:

- **Rural Character Neighborhood:** The eastern portion of URA 6D would comprise low-density residential uses, some redevelopment opportunities, low-volume traffic, and prominent natural areas.
- **Central Neighborhood:** The central portion of URA 6D would comprise single-family attached/detached residential neighborhoods and neighborhood parks and natural areas along the ravine and river, connected by a trail system.

- **Beef Bend Neighborhood:** The northern portion of URA 6D would comprise higher-density, single-family attached/detached residential neighborhoods, neighborhood-scale commercial uses, live/work units, and potentially some mixed-use development (residential above retail).
- **Main Street / Town Center:** The western portion of URA 6D would comprise the highest intensity uses of commercial and mixed-use residential uses (three to five stories); civic uses (e.g., new city hall, school, and library); and public plazas, parks, or community gathering sites.

Per the Concept Plan, the estimated amount of housing achievable for URA 6D at full build out was roughly 3,500 units. Exhibit 3 presents a more detailed housing mix proposal by neighborhood.

Exhibit 3. Planned Housing Mix by Neighborhood Type
Source: City of King City. (May 2018). King City Urban Reserve Area 6D Concept Plan.

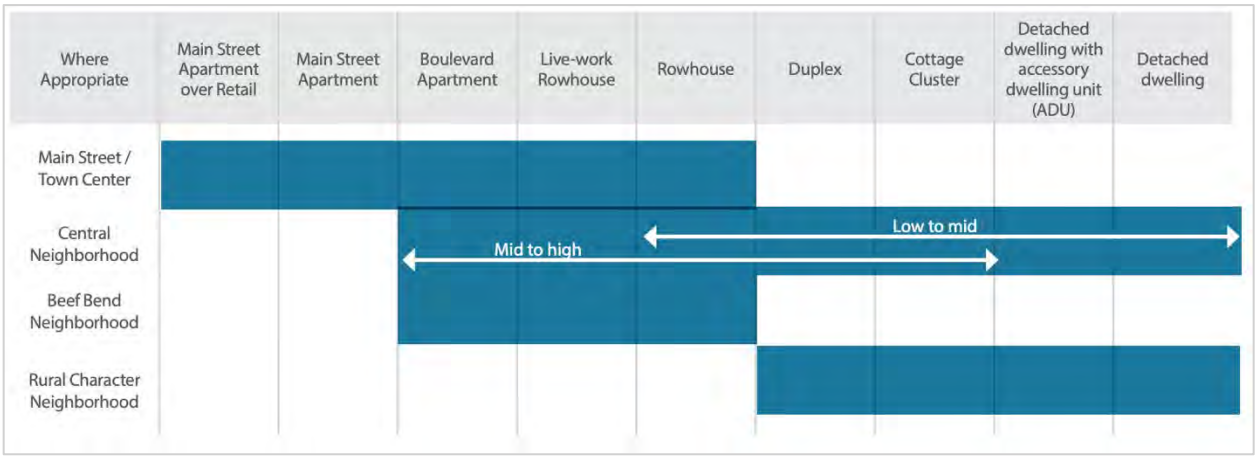
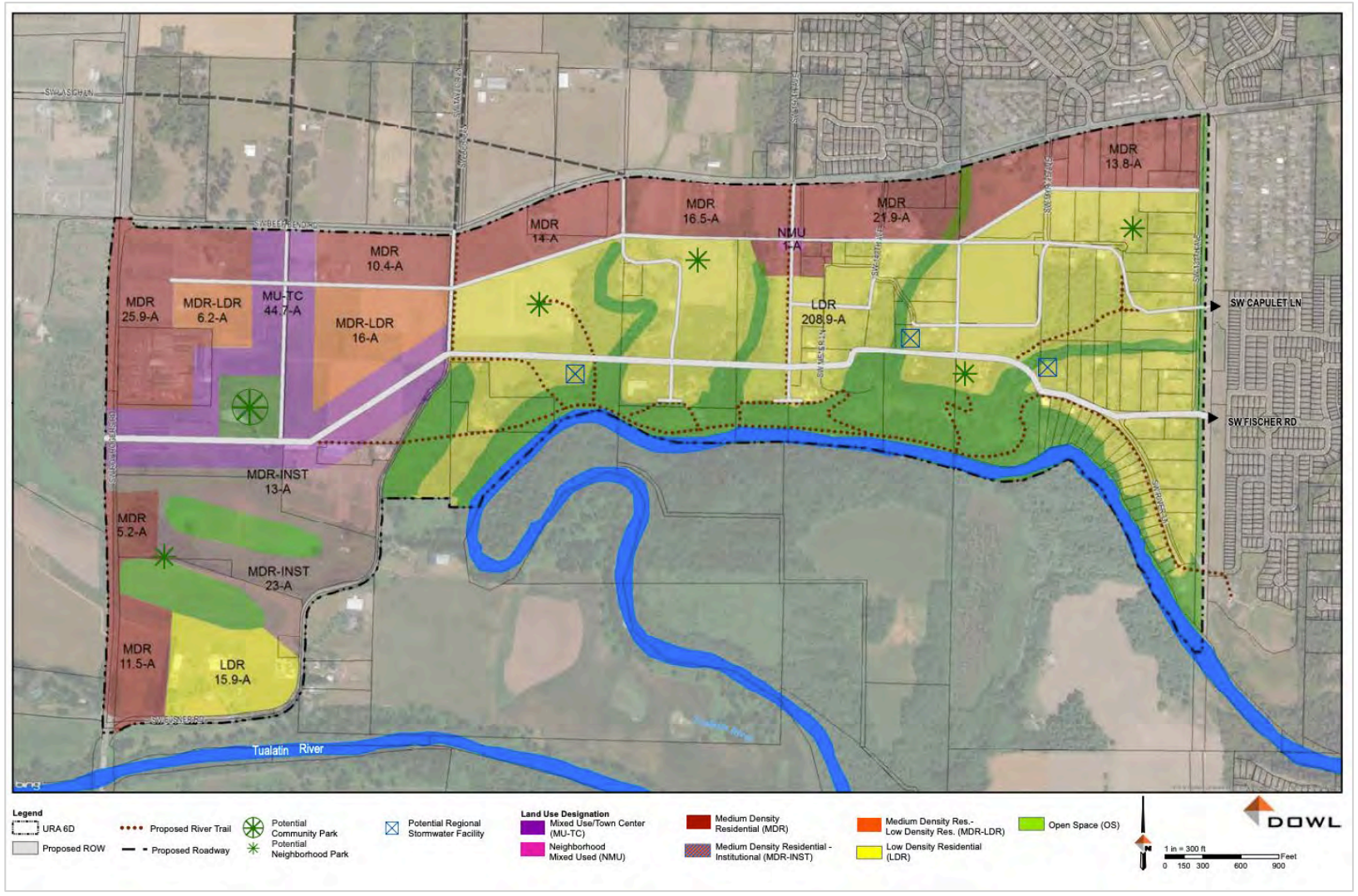


Exhibit 4. Proposed Neighborhoods, URA 6D

Source: City of King City. (May 2018). King City Urban Reserve Area 6D Concept Plan.

Exhibit 5. Proposed Plan Designations, URA 6D

Source: City of King City. (May 2018). King City Urban Reserve Area 6D Concept Plan.



Further, within URA 6D, the Concept Plan envisioned several unique park types: (1) open space, (2) trail, (3) linear park (i.e., a greenway), (4) community agriculture park, (5) community park, (6) neighborhood park, (7) private park, (8) pocket park, and (9) urban park. While the plan identified approximate sizes, ultimately these details would be developed in a later master planning stage.

Planned Uses in Nearby Urban and Rural Reserves

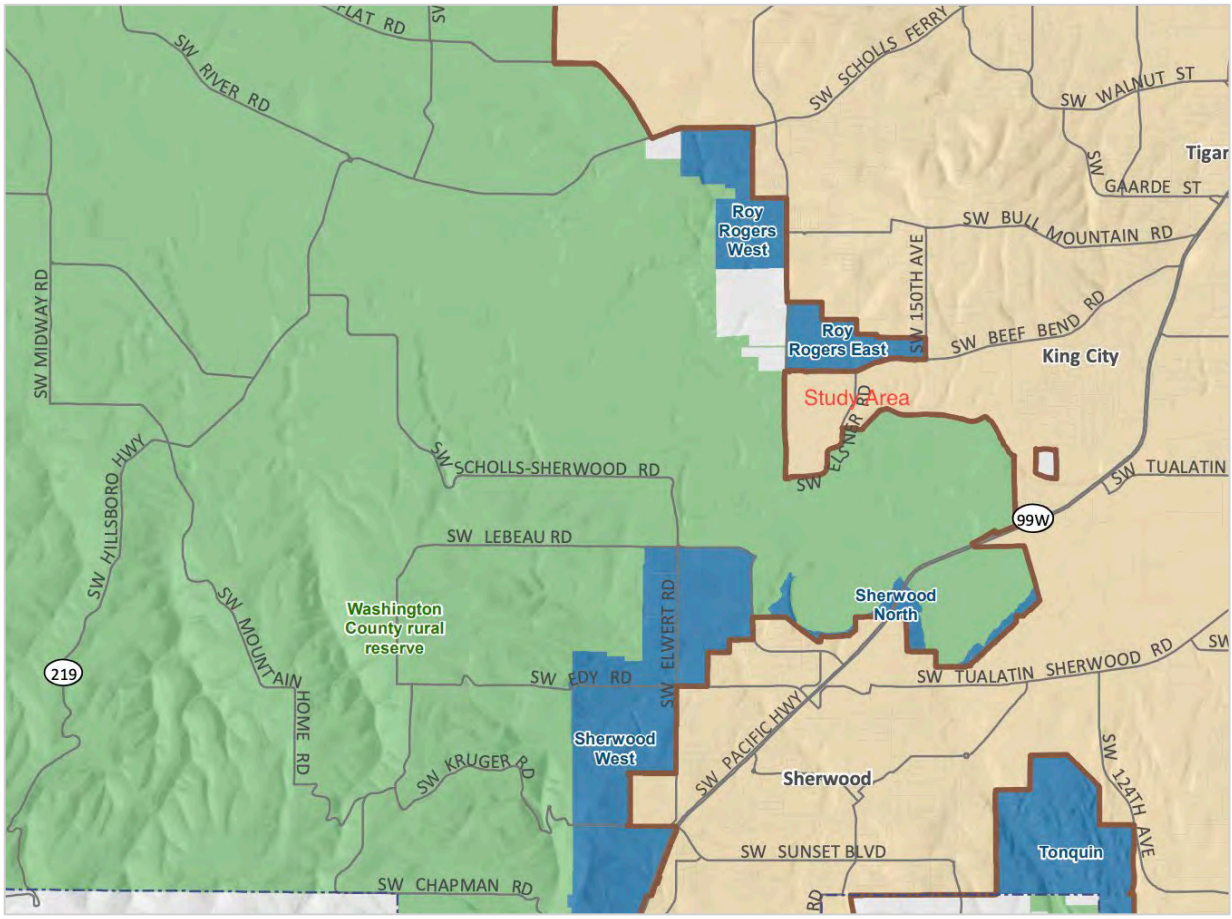
Exhibit 6 displays existing urban (URA) and rural reserve areas (RRA) in Washington County that are in proximity to URA 6D. The identified areas in Exhibit 6 are further discussed below.

- Directly adjacent and to the north of URA 6D sits **Roy Rogers East URA**, with **Roy Rogers West URA** further north. Both of these URAs are adjacent to Tigard's River Terrace, which is an existing expansion area currently being built-out. Roy Rogers West is a 303-acre area and Roy Rogers East is 205-acre area. In March of 2020,[9] the City approved a motion to enter into an intergovernmental agreement with Metro and accept a $300,000 grant targeted for a Title-11 compliant, concept planning project for these areas.
- Adjacent to Roy Rogers West and Roy Rogers East are two undesignated areas. These areas are technically unincorporated Washington County (i.e., the portion outside of Metro's Urban Growth Boundary). These areas may develop consistent with Washington County's zoning and development standards.
- Southwest of URA 6D sits **Sherwood West URA**. In 2016, the City developed a preliminary concept plan for the 1,291-acre area and in 2018, the City submitted a request to Metro to include this land in their Urban Growth Boundary as an expansion area. The City's preliminary concept plan for Sherwood West,[10] indicated that the area will have four, distinct districts. The north district and west district will function as mixed housing neighborhoods centered around a new school, park, and mixed-use node. The far west district will form a mixed residential neighborhood on more steep terrain, and the southwest district will feature residential development and include a "Gateway to Wine Country" node. Overall, the plan highlights district and infrastructure connections, phasing, and funding needs, but it does not yet quantify development scales and amounts. Metro is collecting information for their next urban growth report, which will inform the decision about converting Sherwood West into an expansion area.
- Surrounding URA 6D to the south and west is **Washington County RRA**. Unlike typical unincorporated areas, RRAs are protected from urbanization for the next 50 years because of their natural features and their suitability for high value farms and forests.

[9] City of Tigard. (March 3, 2020). Business Meeting One, Informational Memo. https://agendas.tigard-or.gov/agenda_publish.cfm?id=0&mt=ALL&get_month=3&get_year=2020&dsp=agm&seq=4097&rev=0&ag=1691&ln=28650&nseq=4103&nrev=0&pseq=&prev=#ReturnTo28650

[10] City of Sherwood. (February 4, 2016). Sherwood West Preliminary Concept Plan, A long range look at our future.

Exhibit 6. Nearby Urban and Rural Reserve Areas, Washington County
Source: Metro.

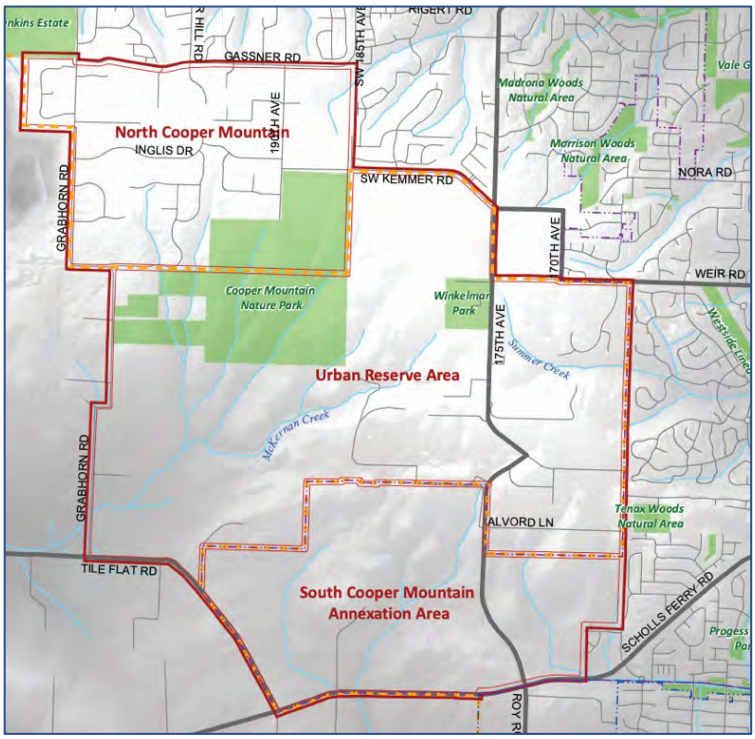


Planned Uses in Recent UGB Expansion Areas

Cooper Mountain Area in Beaverton is located roughly seven miles northwest of King City. The Area has three subareas: (1) South Cooper Mountain, (2) North Cooper Mountain, and an (3) Urban Reserve Area (Exhibit 7). The City of Beaverton annexed South Cooper Mountain[11] into the City in 2013. Per the South Cooper Mountain Concept Plan, the 544-acre area was proposed to comprise natural areas, trails, and parks; a 10-acre Main Street with neighborhood-scale commercial uses; a variety of housing types; and a well-connected transportation network that emphasizes walkability. The area is expected to have a capacity of 3,430 housing units at an average net density of 14.5 units/net acre.

North Cooper Mountain (510 acres) and the "Urban Reserve Area" are both within Washington County's jurisdiction. Washington County will take over planning efforts for North Cooper Mountain, per a 2014 intergovernmental agreement with the City of Beaverton. In January 2020, Metro approved the Cooper Mountain "urban reserve area" as an expansion area and the City of Beaverton hired a consultant team to begin addressing zoning, transportation, natural resource protection, housing, infrastructure and funding for this area. Efforts are underway as of February 2020 and the project is expected to take three years to complete.

Exhibit 7. Cooper Mountain Expansion Area
Source: City of Beaverton. (December 2014). South Cooper Mountain Concept Plan.



[11] City of Beaverton. (December 2014). South Cooper Mountain Concept Plan.

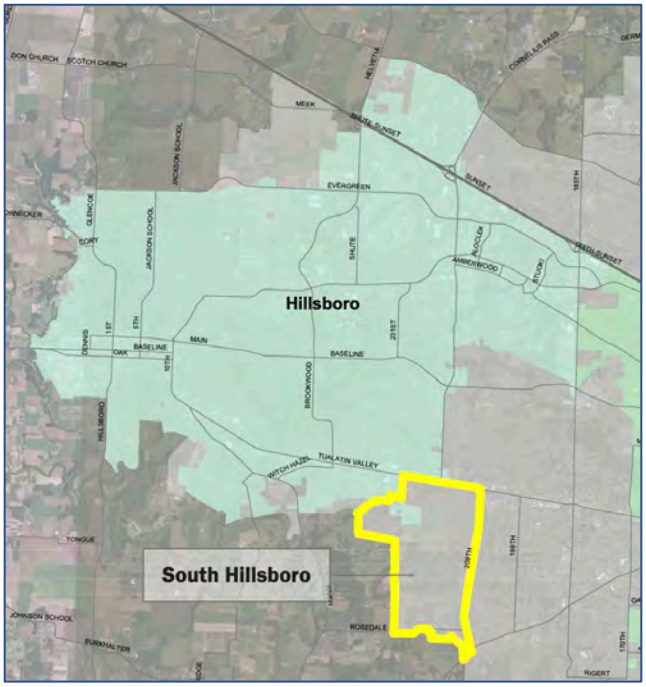
River Terrace in Tigard is located about two miles west of King City. The area is about 490 acres, of which 440 acres were added to Tigard's UGB in 2002 and 50 acres were added to the UGB in 2011. The City developed the Community Plan for the area in 2014, in tandem with five infrastructure master plans.

The area is envisioned with residential uses at various densities, primarily. The areas added to the city in 2002 are expected to accommodate a minimum of 10 dwelling units per acre. The area added in 2011 is expected to accommodate a minimum of 479 dwelling units, pursuant to Metro policy. Supporting uses include neighborhood-scale commercial to provide neighborhood residents with access to goods and services. Parks and trails will be distributed throughout the area and a mixed-use node will be centrally located.

Exhibit 8. River Terrace Expansion Area
Source: River Terrace 2014 Community Plan.

South Hillsboro in Hillsboro is located about 12 miles northwest of King City. The area is roughly 1,400 acres and has three sub-areas: (1) Reed's Crossing, (2) Butternut Creek, and (3) Vendage. South Hillsboro has capacity for 8,000 residential units. The area is also planned with both a Town and Village Center – each of which offers a range of services and shopping options. The master planning for this area took nearly two decades, with construction of the first homes beginning in 2018.

Exhibit 9. South Hillsboro Expansion Area
Source: South Hillsboro 2014 Community Plan.



Growth Forecasts

This section documents King City's growth forecasts for population, employment, households, and dwelling units.

Metro's 2040 distributed forecast[12] predicted that King City (city limits) would grow by 1,885 people from 3,425 people in 2015 to 5,310 people in 2040. In that same time period, King City (city limits) would grow by 434 employees, from 709 employees in 2015 to 1,143 employees in 2040.

King City's Housing Needs Analysis documented the city's forecast of household growth using the Metro's adopted 2040 household forecast. The analysis extrapolated the forecast for the 2018 to 2038 period and determined that the city would grow by 980 households, from 2,122 households in 2018 to 3,102 households in 2038.

The Housing Needs Analysis also established a housing forecast for the 20-year period. It used the extrapolated household growth forecast as a basis, concluding that King City would need 980 new dwelling units between 2018 and 2038. Key attributes of the housing forecast were:

- **Housing mix:** 50% single-family detached units, 15% single-family attached units, and 35% multifamily units (490, 147, and 343 units, respectively).

[12] Metro. (July 12, 2016). Exhibit A: 2040 Household Distributed Forecast, 2040 Population Distributed Forecast, and 2040 Employment Distributed Forecast.

- **Housing affordability:**[13] 16% affordable to ELI, 32% affordable to VLI, 16% affordable to LI, 16% to MI, and 20% affordable to HI households (158, 312, 161, 153, 197 units, respectively).

The analysis did allocate these units to residential plan designations, however, it noted that "the allocation of new units will likely change when the City identifies land to bring into the city limits and the King City Comprehensive Plan designations are applied to the land."

Development Capacity in Project Area

King City's 2017 Market Analysis found that the URA 6D area could accommodate 54,000 to 85,000 sq. ft. of retail demand in 10 years. Opportunities for retail cited in the analysis included a grocery store (16,000 to 25,000 sq. ft.), restaurant and drinking establishments (10,000 to 15,000 sq. ft.), and more general office / commercial uses. Acreage required to accommodate this retail demand was 4.6 to 5.5 acres. In addition, another 4.6 to 5.5 acres would be required to accommodate demand for roughly 40,000 to 60,000 sq. ft. of wine country lodging (with 70 rooms), event space, and dining.

In 2018, the King City's Housing Needs Analysis determined that the city had a deficit of housing capacity in most of its plan designations that allow housing outright. These were: Single-Family (SF) Plan Designation, Residential (R-9) Plan Designation, and MF Plan Designations (R-12, R-24, and AT). All told, citywide residential land deficits in 2018 were attributed to a deficit of future housing capacity of approximately 940 dwelling units. Analysis in King City's 2018 Concept Plan found that URA 6A could accommodate 3,576 dwelling units. As such, the estimated buildout program presented in the Concept Plan suggests that the area could *more than* accommodate the city's entire household/dwelling unit forecast (2018-2038), with surplus of 2,596 dwelling units. Capacity is consistent with the purpose of URA's generally (i.e. they are purposed to accommodate 50-years of growth).

[13] Refers to the share and number of forecasted housing units affordable to households in different income categories. The income categories are defined as: extremely low-income (ELI) households who earn less than 30% of MFI, very low income (VLI) households who earn 30-50% of MFI, low-income (LI) households who earn 50-80% of MFI, moderate income (MI) households who earn 80-120% of MFI, and high-income (HI) households who earn 120% of MFI or more. MFI is median family income.

APPENDIX E. URA 6D MARKET ANALYSIS

King City Market Analysis:
Urban Reserve Area 6D

May 14, 2020

Prepared for: City of King City

Revised Report

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Table of Contents

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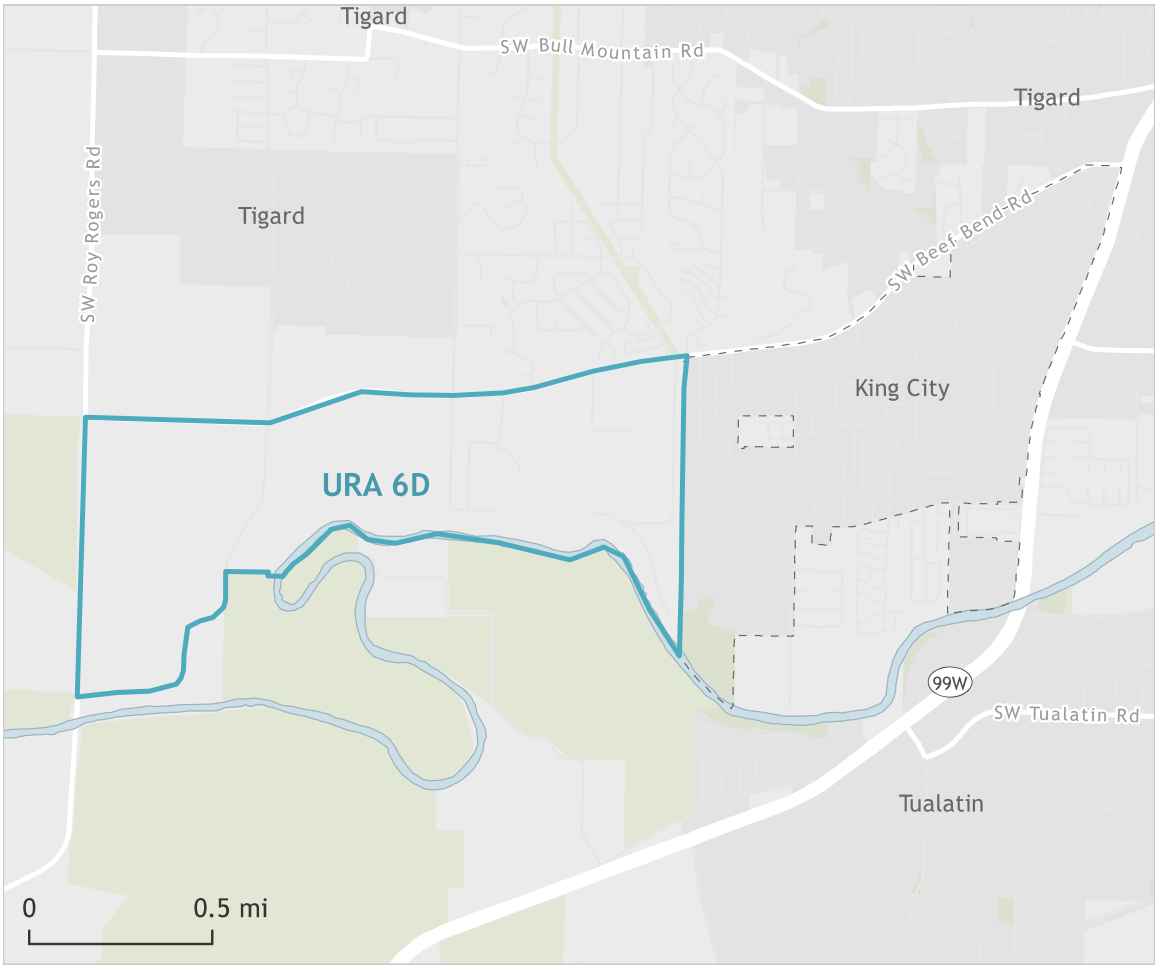
1. Introduction

This report presents King City's Market Analysis for Urban Reserve Area 6D (URA 6D) and its surrounding vicinity (Exhibit 1). This study generally pulls from recent work conducted for URA 6D (study area), modifying and adding to this work as necessary to further evaluate the market potential of the study area.

Exhibit 1. URA 6D Study Area
Source: ECONorthwest.



Purpose

The purpose of the report is to assess and refine the findings of the 2018 Concept Plan and 2017 Market Analysis for URA 6D by determining the market demand for commercial and residential uses in the study area. The analysis evaluates the market demand for various types of land uses as well as compatible businesses within the study area given current and projected future growth. Findings are measured against the community's vision for URA 6D, as described in the 2018 Concept Plan.

Ultimately, this report concludes with recommendations for an appropriate mix of housing types and densities and an evaluation of the type of businesses and services that are likely achievable given the area's locational advantages and disadvantages.

Background

A market analysis was produced for URA 6D in 2017[1]. The analysis defined a 525-acre study area to understand existing and likely future site conditions, economic and demographic indicators, and residential/commercial development trends, including pipeline activities. The analysis came to several determinations, such as:

- The hottest residential markets are walkable, in-town neighborhoods with cultural amenities and proximity to jobs.
- Millennial household formation should drive starter home demand.
- Seniors will drive active senior and assisted living demand.
- The URA 6D area could absorb 500-900 dwelling units and at least 54,000–85,000 sq. ft. of commercial retail space.

Opportunities for retail cited in the analysis were: grocery store (16,000 to 25,000 sq. ft.), restaurant and drinking establishments (10,000 to 15,000 sq. ft.), and more general office/commercial uses. Acreage required to accommodate this retail demand was 4.6 to 5.5 acres. In addition, another 4.6 to 5.5 acres would be required to accommodate demand for roughly 40,000 to 60,000 sq. ft. of wine country lodging (with 70 rooms), event space, and dining.

Then, with the assistance of several consultants, the City of King City developed a concept plan for URA 6D in 2018. The Concept Plan[2] was developed along the same timeline as King City's Housing Needs Analysis (2018). The Concept Plan, submitted to Metro, served as a request to expand King City's UGB so that it would include URA 6D. The Plan proposed land use designations, four neighborhoods (including a Main Street/Town Center), a residential buildout

[1]http://cms6.revize.com/revize/kingcityor/document_center/URA/Concept%20Plan%20Index/D.%20Market%20Analysis/20170307%20King%20City%20Market%20Analysis%20Memorandum,%20March%202017.pdf

[2] City of King City. (May 2018). King City Urban Reserve Area 6D Concept Plan.

program, transportation routes, and needed infrastructure (and costs) to support development. The Plan concluded that the mix of proposed uses would help address the city's residential land deficit and create a mix of amenities, employment, and educational opportunities to serve the area.

The King City's Housing Needs Analysis determined that the city had a deficit of housing capacity in most of its plan designations that allow housing outright. These plan designations were: Single-Family (SF) Plan Designation, Residential (R-9) Plan Designation, and MF Plan Designations (R-12, R-24, and AT). All told, citywide residential land deficits in 2018 were attributed to a deficit of future housing capacity of approximately 940 dwelling units.

The deficit of housing capacity further demonstrated the importance of URA 6D to accommodate growth in King City. Analysis in King City's 2018 Concept Plan found that URA 6D could accommodate 3,576 dwelling units. As such, the estimated buildout program presented in the Concept Plan suggests that the area could *more than* accommodate the city's entire household/dwelling unit forecast (2018–2038), with a surplus of 2,596 dwelling units. Capacity is consistent with the purpose of URA's generally (i.e., they are purposed to accommodate 50-years of growth).

Approach and Methods

The approach for this analysis was to build on past work (conducted as part of the concept planning process), while updating and including new, key data analyses where appropriate. We also use case studies and comparative analysis to understand the factors that influence expansion areas and commercial centers. We supplemented data analysis through interviews with local developers, City officials, and representatives at Metro.

Data Sources

Unless otherwise noted, we used the following data sources to inform this study:

- **US Decennial Census:** Completed every ten years, it is a survey of all households in the U.S. which is considered the best available data for information such as demographics, household characteristics, and housing occupancy characteristics. The analysis uses the 2000 and 2010 Decennial Census to better understand the socio-economic factors influencing King City and the larger region.
- **American Community Survey (ACS):** Completed every year, it is a sample of households in the U.S. The ACS collects detailed information about households, including demographics, household characteristics, housing, income and housing costs, and other characteristics. The analysis uses the 2014–2018 ACS to better understand the socio-economic factors influencing King City and the larger region.
- **Portland State University's (PSU) Population Research Center (PRC):** The PRC prepares population forecasts for cities and counties outside of Metro's UGB and

population estimates for all cities and counties across the state. The analysis uses PSU's official population estimates for King City and larger regions.

- **Metro 2040 Distributed Forecast:** This is the Metro region's official population, household, and employment forecast for cities and portions of counties within the Metro Urban Growth Boundary. We use Metro's projections where applicable to describe growth expectations in King City and the region.
- **ESRI Business Analyst:** A GIS-enabled program that provides market data for site-specific trade areas. We use Business Analyst to inform our case study analysis and commercial retail trends analysis for URA 6D.
- **CoStar:** An online platform that provides real estate data. We use Costar data to analyze commercial retail and multifamily residential market trends.

How does the COVID-19 Pandemic affect our analysis?

This report was drafted in the Spring of 2020. As of this draft, the COVID-19 virus has created a global pandemic that has resulted in entire sectors of the economy being put on pause. Short- to intermediate-term impacts on the economy remain uncertain, although disruptions in commercial and housing market fundamentals are expected. Over the long-term horizon, as the study area is built out, prevailing demographic and economic trajectories will have greater influence than cyclical variations or economic shocks. As such, in this analysis we assume a return to long-term economic stabilization.

Organization of the Report

The remainder of this document is organized as follows:

- **Chapter 2. Socio-Economic Analysis of Market Area** describes demographic and economic trends in King City and larger regions.
- **Chapter 3. Residential Real Estate Analysis of Market Area** presents information about the local, residential housing market. It presents residential real estate market trends that will likely influence development in URA 6D's primary, residential trade area.
- **Chapter 4. Commercial Real Estate Analysis of Market Area** summarizes the factors that influence commercial development and the competitive retail landscape for the primary, commercial trade area. It also summarizes several comparative analyses about commercial centers to assess the relationship between the scale of retail development to catchment areas.
- **Chapter 5. Market Potential in the Project Area** reflects on the King City's 2018 Concept Plan for URA 6D, summarizes URA 6D's competitive advantages and disadvantages, and presents findings about an appropriate mix of land use and development types in URA 6D.

In addition to these chapters, a series of appendices present additional details of our case study analysis.

- **Appendix A.** Villebois in Wilsonville, Oregon
- **Appendix B.** Northwest Crossing in Bend, Oregon
- **Appendix C.** Bethany in Washington County
- **Appendix D.** Progress Ridge in Beaverton, Oregon

2. Socio-Economic Analysis of Market Area

Chapter two provides analysis of demographic and economic trends in King City to better understand the makeup of, and factors that affect, the King City community. For some exhibits, we compare city trends to larger regional trends. In this analysis, King City refers to King City city limits.

Community Demographic Trends

King City's demographic makeup is different from the greater region. King City has a larger share of older residents and a relatively small share of younger people under 20 years of age. About 40 percent of the city is in retirement/at retirement age, compared to 13 percent for Washington County. King City's age distribution is largely due to the fact that it developed as a retirement community that strictly forbade homeowners under the age of 55.

Over the last two decades, King City's population more than doubled and as the city grew, its residents became more diverse. The community grew younger on average and gained a greater share of large households and family households with children. In addition, inflation-adjusted household incomes grew across the city, likely because more working-aged residents moved into the city. Given these changes, it is expected that the King City community will more closely resemble the Portland Region, as the city continues to grow and evolve.

The following subsections present and summarize the demographic data for King City and its comparative regions.

POPULATION · · · King City is growing at a faster rate than the region.

King City's population grew by 115 percent between 2000 and 2019, adding 2,245 new residents. Over this period, King City's population grew at an average annual growth rate of 4.1 percent, which is a rate faster than both the tri-county Portland Metro Region (1.3 percent) and Oregon (1.1 percent).

Based on Metro's forecast for future growth, King City's population is forecast to reach 5,310 people by 2040 (an increase of 1,120 new people between 2019 and 2040). Population growth will continue to drive future demand for housing in the city.

Exhibit 2. Historical Population Growth, King City (city limits), Portland Region (tri-county), and Oregon, 1990, 2000, 2010, and 2019
Source: Portland State University, Population Research Center Estimates.

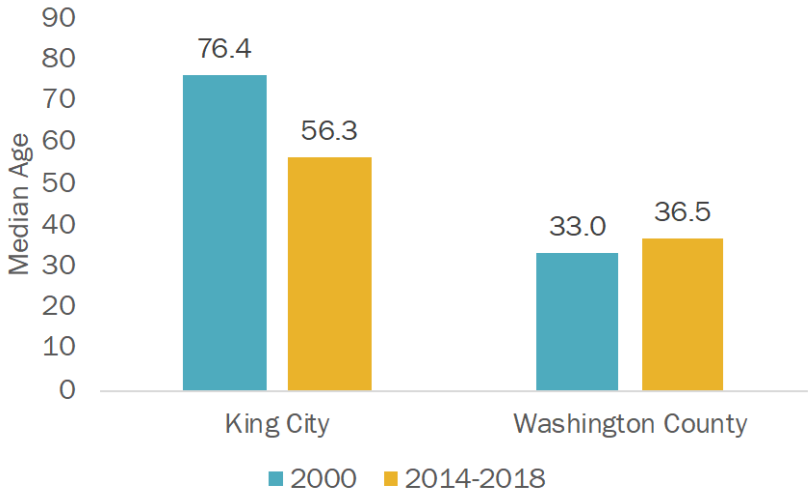
					Change 2000 to 2019		
	1990	2000	2010	2019	Number	Percent	AAGR
Oregon	2,842,337	3,421,399	3,844,195	4,236,400	815,001	24%	1.1%
Portland Region	1,174,291	1,444,219	1,644,535	1,858,560	414,341	29%	1.3%
King City	2,060	1,945	2,800	4,190	2,245	115%	4.1%

AGE · · · Residents of King City are typically older – but getting younger on average.

From 2000 to 2014–2018, King City's median age decreased by 20 years.

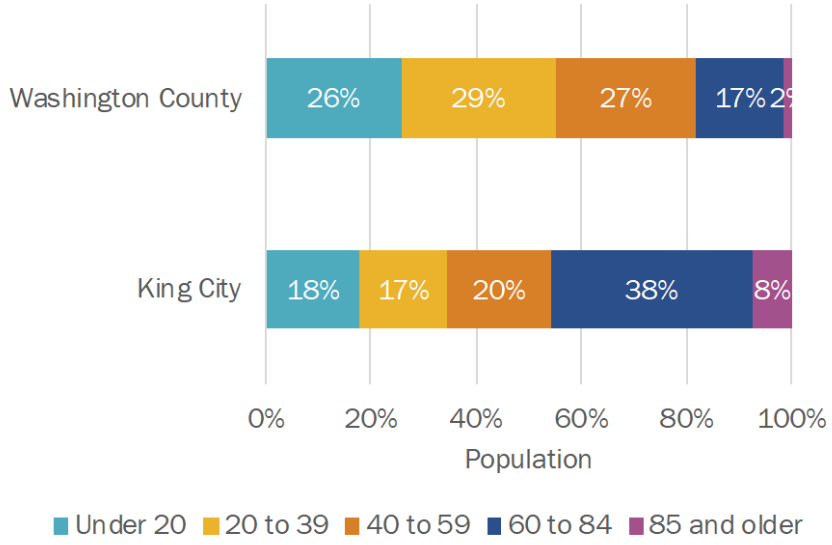
Despite this trend, King City's median age in 2018, was still 20 years older than the median age of Washington County residents.

Exhibit 3. Median Age, King City (city limits), Washington County, 2000 and 2014–2018
Source: U.S. Census Bureau, 2000 Census Table P013 and 2014–2018 ACS Table B01002.



In the 2014–2018 period, 46 percent of King City's population was aged 60 or older, compared to 18 percent of Washington County's population.

Exhibit 4. Age Distribution, King City (city limits), Washington Co., 2014–2018
Source: U.S. Census Bureau, 2014–2018 ACS Table S0101.



HOUSEHOLDS · · · Most of King City's households contain one or two people.

From 2010 to the 2014–2018 period, King City added 165 new households.

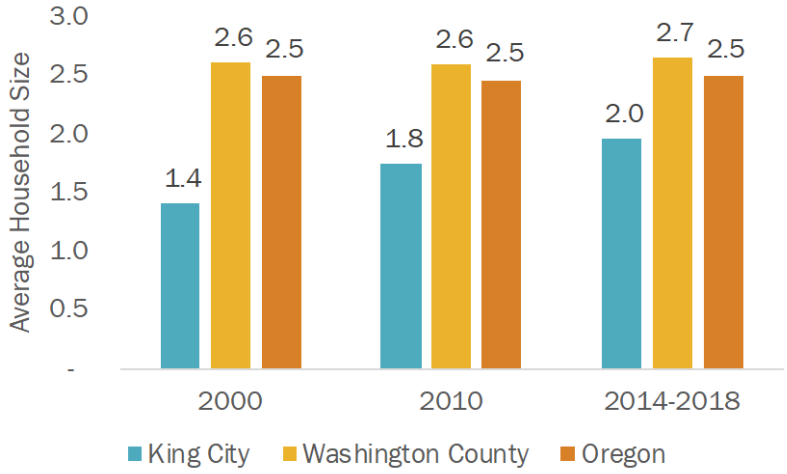
From 2018 to 2040, King City is forecast to grow by 1,322 households.

Exhibit 5. Household Formation, King City (city limits), 2010, 2014–2018, and 2040
Source: U.S. Census Bureau, 2010 Census Table P20, 2014–2018 ACS Table DP02. Metro 2040 Distributed Forecast.

1,735	1,900	3,222
(2010)	(2014–2018)	(2040)

King City's average household size was smaller than both the county's and state's average.

Exhibit 6. Average Household Size, King City (city limits), Washington County, and Oregon, 2000, 2010, and 2014–2018
Source: U.S. Census Bureau, 2000 Census Table H012, 2010 Census Table H12, and 2014–2018 ACS Table B25010.

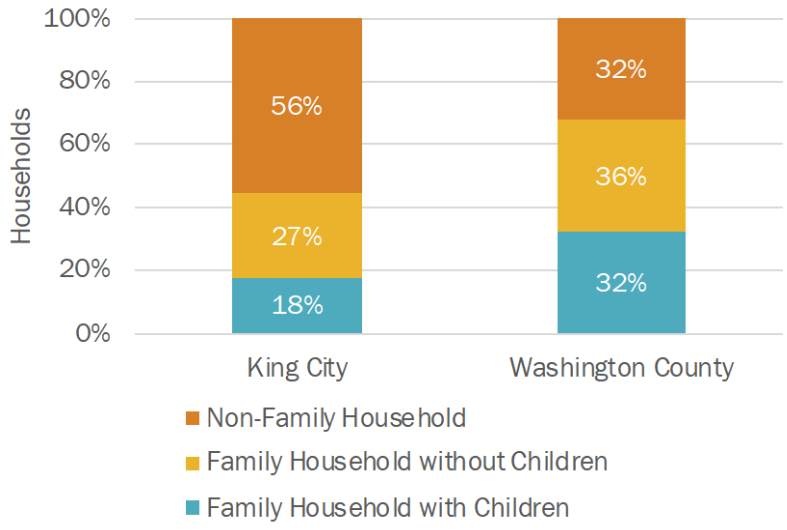


Over half of King City's households were non-family households (e.g., one-person households and unrelated roommates).

King City has a smaller share of family households (with and without children) than Washington County.

In 2010, 58 percent of King City's households were nonfamily households, 30 percent were family households without children, and 12 percent were family households with children.

Exhibit 7. Household Composition, King City (city limits), Washington County, and Oregon, 2014–2018
Source: U.S. Census Bureau, 2014–2018 ACS 5-year estimate, Table DP02.



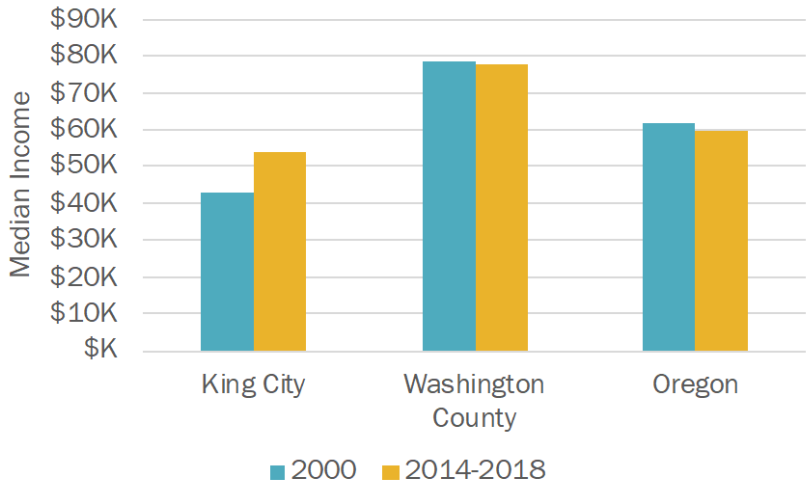
INCOME · · · The gap between King City's and regional income levels is closing.

After adjusting for inflation, King City's median household income (MHI) increased by $10,994 (26 percent) from 2000 to 2014–2018.

In contrast, over the same period, Washington County and Oregon's inflation adjusted MHI declined by 1 and 4 percent, respectively.

Exhibit 8. Change in Median Household Income, King City (city limits), Washington County, Oregon, 2000 to 2014–2018, Inflation-adjusted

Source: U.S. Census Bureau, 2000 Decennial Census, Table HCT012; 2014–2018 ACS 5-year estimate, Table B25119.

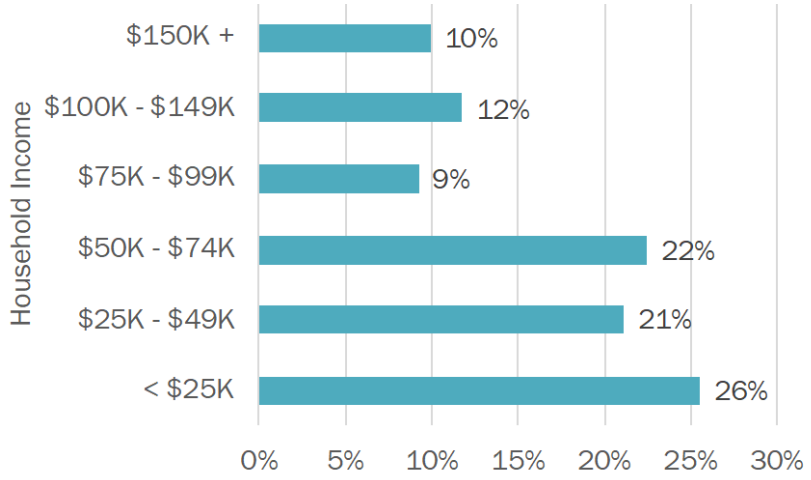


Almost half of King City's households earned less than $50,000.

The likely reason for the lower incomes is King City's older population, with more retirees in King City than the region.

Exhibit 9. Median Household Income by Household Size, King City (city limits), 2014–2018

Source: U.S. Census Bureau, 2014–2018 ACS 5-year estimate, Table B19001.



Community Economic Trends

King City exists as part of an interconnected economy in the Portland Region. However, King City's demographics include an above average concentration of retirees. In 2017 King City's labor force participation rate was 47.5 percent, compared to 66 percent regionally. Among King City's residents that do work, most (about 99 percent) commute outside of King City for work, most notably to Tigard, Portland, and Beaverton.[3]

Recent data shows that the unemployment rate for King City residents is relatively low, compared to Washington County.

The sectors that have primarily led to employment growth in King City, over the last decade, were professional and business services (adding 210 jobs); private education, health care, and social assistance services (adding 176 jobs); and retail trade (adding 151 jobs). In part, these same sectors are also expected to contribute to regional employment growth trajectories—adding 65,300 new jobs in the Portland Region between 2017 and 2027.[4]

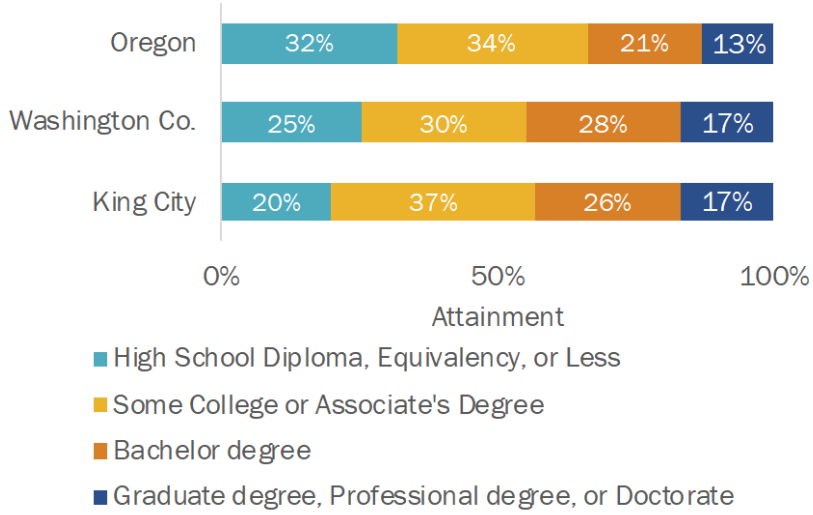
The following subsections present data about characteristics of King city's economy.

EDUCATIONAL ATTAINMENT · · · Less than half of residents have higher ed. degrees.

King City's population over 25 years of age is similarly educated relative to the county.

About 43 percent of King City's residents over the age of 25 attained a bachelor's degree or higher form of education, compared to 45 percent of Washington County's residents.

Exhibit 10. Educational Attainment, Population 25 Years or Older, King City (city limits), Washington County, and Oregon, 2014–2018
Source: U.S. Census Bureau, 2014–2018 ACS 5-year estimate, Table B15003.



[3] Census on the Map, primary jobs in 2017.

[4] Oregon Employment Department. Employment Projections by Industry 2017–2027 (Clackamas, Multnomah, and Washington County).

EMPLOYMENT · · · Employment in professional, service, and retail industries grew.

In the 2014–2018 period, King City's unemployment rate, for the civilian population 16 years and older was 2.9 percent.

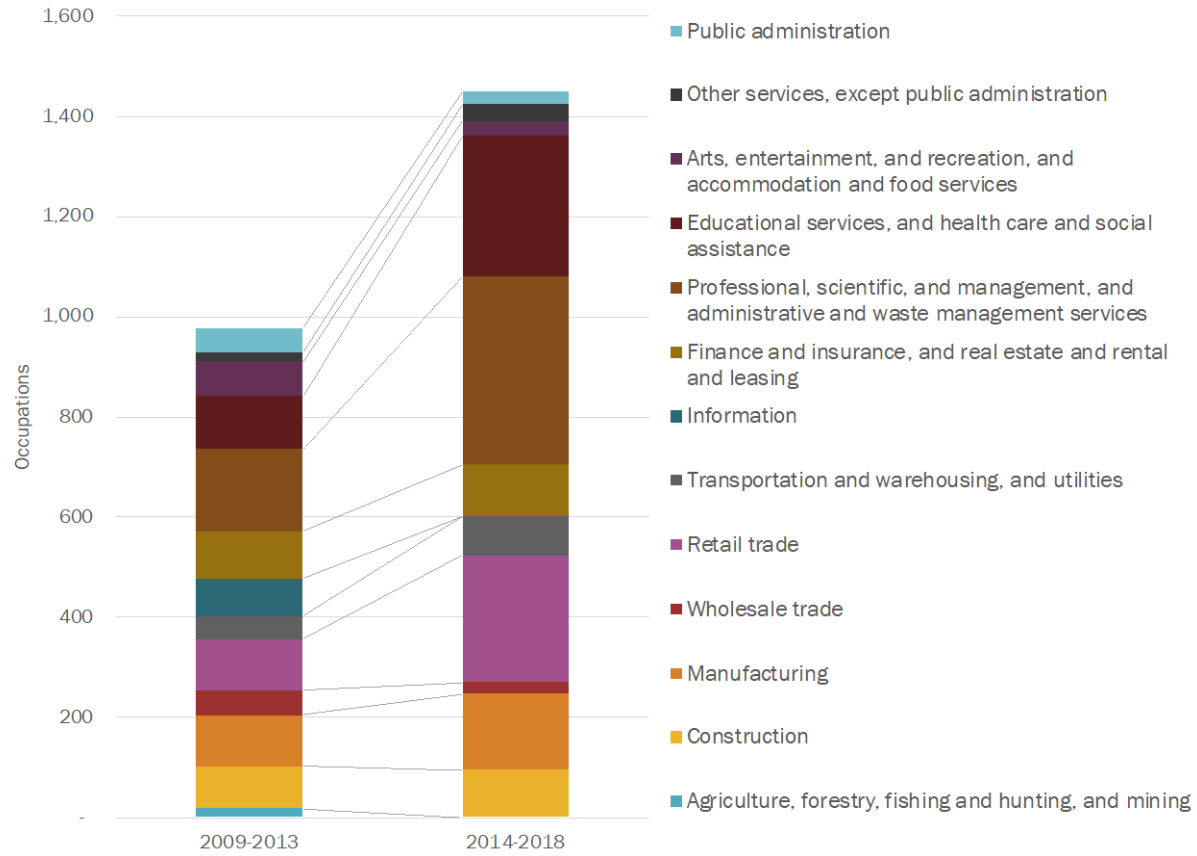
Exhibit 11. Unemployment Rate, King City (city limits) and Washington County, 2014-2018
Source: U.S. Census Bureau, 2014–2018 ACS Table S2301.

2.9%	5.0%
KING CITY	WASHINGTON COUNTY

Exhibit 12 shows that the total number of occupations in King City has grown. From the 2009–2013 to the 2014–2018 period, King City gained 471 jobs (a 48 percent change). The industries with the most employment growth in this time were:

- Professional, scientific, and management, administrative, and waste management services (210 new employees, 127 percent change)
- Educational services, and health care and social assistance (176 new employees, 168 percent change)
- Retail Trade (151 new employees, 147 percent change)

Exhibit 12. Change in Industry by Occupation for the civilian employed population 16 years and over, King City (city limits), 2009–2013 to 2014–2018
Source: U.S. Decennial Census, ACS 2009–2013 and 2014–2018, Table S2405.



King City is forecast to add 434 employees from 2015 to 2040.

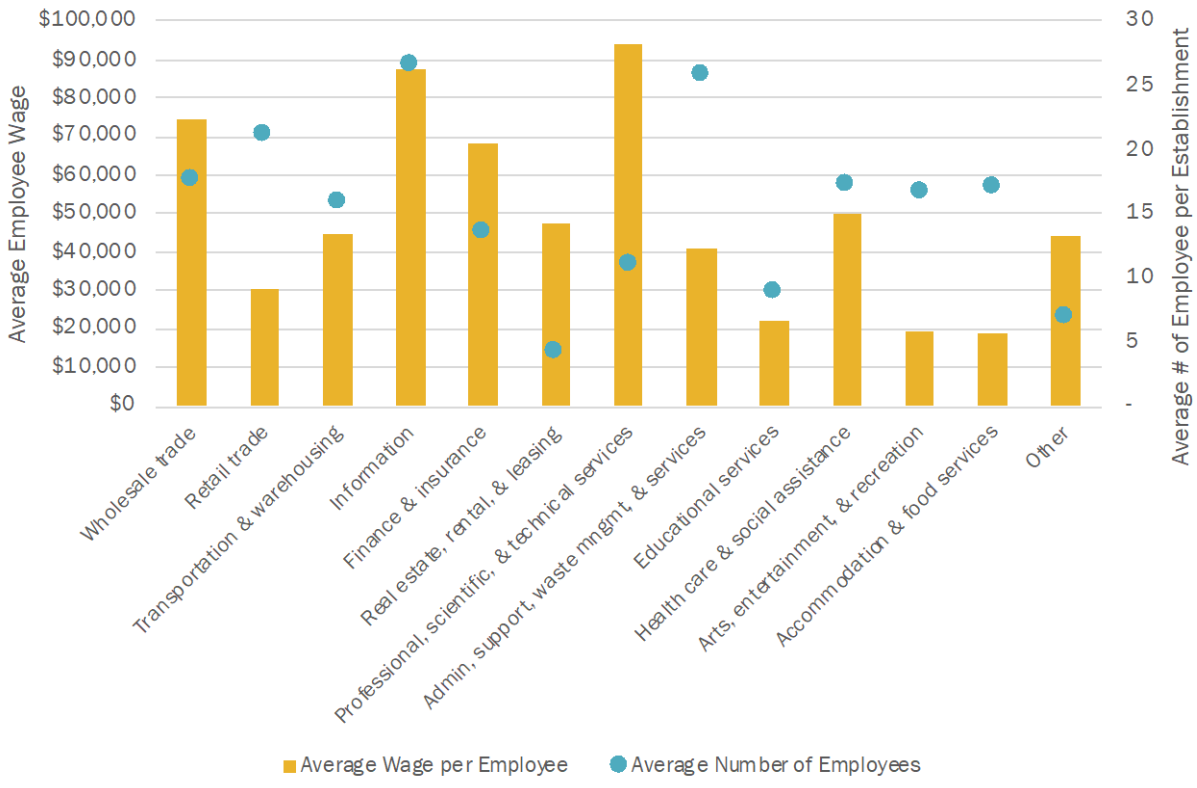
The 434 new employees would account for less than one percent of the employment growth expected in all of Washington County (portion inside Metro's UGB) in that same time.

Exhibit 13. Employee Growth Forecast, King City (city limits), 2015–2040
Source: Metro 2040 Employment Distributed Forecast, created July 12, 2016.

	King City	Washington County (inside Metro UGB)
2015	709	266,600
2040	1,143	398,484
Change (2015–2040)		
Number	434	131,884
Percent	61%	49%
Rate	1.9%	1.6%

On average, across Washington County and for all sectors, the average number of employees per business was 16 employees and the average wage was $49,600 (2017).

Exhibit 14. Business Size Distribution, Washington County, 2017
Source: U.S. Census Bureau, Economic Census 2017, Table EC1700BASIC.



3. Residential Real Estate Market Analysis

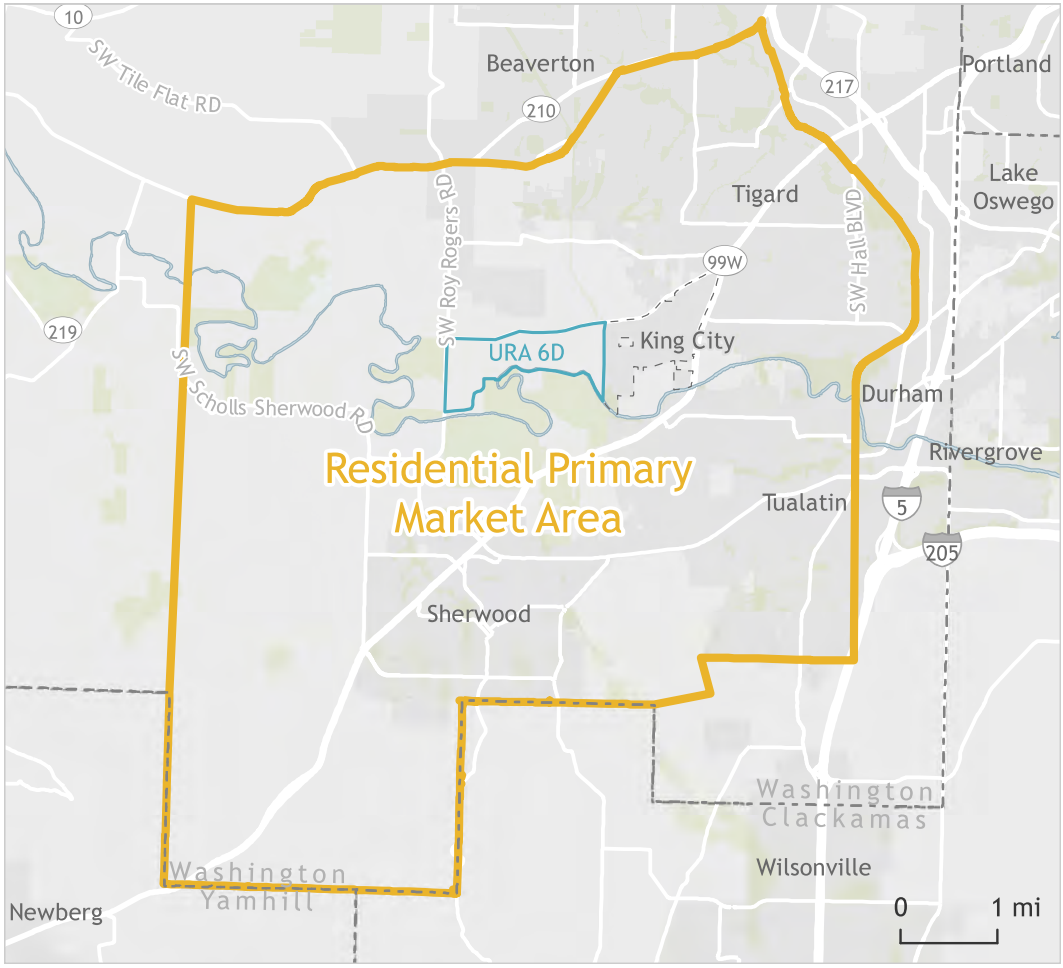
Chapter 3 presents ECONorthwest's analysis of the residential real estate market in the URA 6D market area.

Primary Market Area

A primary market area (PMA) for residential real estate is defined as the geographic region from which the majority of market support can be expected to originate. Total market depth for housing is a product of two components, net-new household growth, and turnover. Net-growth is an estimate of the number of new households that will move into an area over a specified period of time. An example of a net-new household would be a young couple moving out of an apartment in Portland and purchasing (or renting) a starter home in the market area. By contrast, turnover demand is the shuffling of existing households within the market area. An example of turnover would be a retired couple currently living in the market area selling their home and moving into a condominium also located within the market area. Turnover is a source of demand for new housing development capturing market share and it has an influence on the delineation of market areas.

In residential markets, physical factors influence the delineation of a market area, but to a lesser degree than other types of real estate. Factors such as housing choice, proximity to employment centers, tax structure, schools, and other factors play a larger role in the cross-shopping decisions of households. Our assessment of the 2017 Market Study is that the market area used for residential remains suitable. This study will continue to use this market area delineation, as summarized in Exhibit 15.

Exhibit 15. Residential Market Analysis Trade Area for King City URA 6D
Source: Leland Consulting. (March 2017). King City Market Analysis. Figure 2: Market Area for Competing Development and Retail Development, page 5.



Summary of Existing Housing Market Fundamentals

The Market Analysis completed for the King City URA 6D Concept Plan included an assessment of demographic factors influencing housing preferences and housing market fundamentals. Structural shifts in these factors tend to move slowly across larger geographies. For this reason, we are not duplicative in our efforts, and assume these findings continue to influence market conditions. Where appropriate, this analysis will add to and interpret previous efforts. In other areas, data is updated to reflect current market conditions. Original research on for-sale market conditions is also presented.

Population and Household Growth

Population growth was rapid from 2000 to 2019 at a rate of 2.1 percent, double the national growth rate. Growth dissipated in the period after 2010 to match the national rate of 0.9 percent. In 2016, 97,000 residents across 37,000 households were estimated to reside in the PMA. Over

the long-term, 1.7 percent annualized compound household growth is forecasted by Metro's Transportation Analysis Zone (TAZ) based model. The model indicates that the PMA will gain regional market share over the next 20 years.

Housing Preferences

Psychographic analysis is a market segmentation tool used to interpret consumer behavior across social and demographic cohorts. It is a commonly used method in establishing consumer preferences in market analyses. Psychographic data is produced and sold by consumer and demographic research companies. Qualitative insights are combined with demographic and proprietary consumer spending data to organize households into profiles based on shared traits and characteristics. The 2017 Market Analysis used psychographic profiles from ESRI called "Tapestry." Tapestry psychographics classify all households in the nation into one of 67 unique segments. The 2017 Market Analysis included this data as an input to help estimate housing preferences. Because changes in consumer behavior move slowly, we only revisit and interpret the data from the 2017 Market Analysis to confirm that preference assumptions remain valid.

Data in the 2017 Market Analysis found that over 73 percent of households in the PMA are represented by just seven Tapestry cohorts. While not fully comprehensive, these cohorts represent a large cross-section of the market, and for that reason, reasonably reflect housing choice in the market.

A brief summary of key socioeconomic characteristics for each Tapestry cohort is summarized below, followed by our insights into how these characteristics will influence housing choice in the study area. The concentration of local households relative to the national average is presented in parentheses.

A note about the ESRI Tapestry data:

Full demographic profiles for each Tapestry cohort with expanded qualitative narrative from ESRI can be found on their website linked here. We recognize that the labels used here are not particularly sensitive to some populations. We repeat them here to maintain consistency with the 2017 Market Analysis. For their part, ESRI has also tried to update their Tapestry descriptions to be more inclusive. Their latest Tapestry version has labels that are different than those presented here.

Soccer Moms – (8.0x U.S.)

This is the largest segment of the study area and represents eight times the proportion seen across the U.S. This group is affluent and includes a high composition of family households[5]. They prefer new housing located in the periphery of metropolitan areas with access to

[5] A Family is defined by the Census Bureau as a group of two people or more (one of whom is the householder) related by birth, marriage, or adoption and residing together.

professional job centers. More than 85 percent live in owner-occupied single-family homes with a median value of $226,000.

Bright Young Professionals – (5.5x U.S.)

This group is five and a half times more representative of the study area than the U.S. Members of this segment favor the urban outskirts of large metropolitan areas. One in three are under the age of 35. Roughly 56 percent are renters with an average monthly rent of $1,000. Over a third live in buildings with 5 or more units, while two-fifths live in single-family homes.

Professional Pride – (6.0x U.S.)

The third-largest segment of the study area is six times more represented here compared to the rest of the U.S. Members of the segment commute far and work long hours. They are about 41 years old. More than 80 percent are married, many with kids. They prefer newer neighborhoods with a median home value of $433,400. About 92 percent live in owner-occupied single-family homes.

Savvy Suburbanites – (2.9x U.S.)

This segment is highly educated, with more than 50 percent holding a college degree. About 91 percent live in owner-occupied single-family homes valued above $360,000.

The Elders – (10.1x U.S.)

This segment is also highly represented in the study area by more than 10 times the national average. Members are largely retirees, with only 21 percent still actively employed. They favor communities designed for senior living, which is congruent with their median age of 72. This group lives in a variety of housing types ranging from mobile homes to high-rise apartments. Still, more than 82 percent own their homes with a median value of $153,000.

Middleburg – (2.3x U.S.)

This segment is made up of young couples with children who live semirural lifestyles within metropolitan areas. Their neighborhoods rapidly transformed from country to subdivisions over the last decade. More than 74 percent own homes with median values of $158,000. These range from mobile homes to single-family houses.

Boomburbs – (4.1x U.S.)

This segment includes married couples with established wealth. Roughly 84 percent are homeowners with a median home value of $350,000.

Exhibit 16. Summary of Psychographic Segments, Primary Market Area, 2017
Source: 2017 King City URA 6D Market Analysis (from ESRI data)

Segment	Market Share	Homeownership Rate	Predominate Housing Preference
Soccer Moms	22.4%	84.9%	Single Family
Bright Young Professionals	12.2%	42.8%	Multi Family
Professional Pride	10.7%	91.6%	Single Family
Savvy Suburbanites	8.7%	90.6%	Single Family
The Elders	7.1%	81.4%	Mixed
Middleburg	6.5%	73.4%	Single Family
Boomburbs	6.1%	84.0%	Single Family

ESRI Tapestry Cohort Summary

- The large majority of households are expected to live in owner-occupied housing, with many expressing a preference for newer construction. Collectively, these seven cohorts have an average homeownership rate of 78 percent.
- All but Bright Young Professionals (12.1 percent) and The Elders (7.1 percent) are expected to consume single-family homes ranging in value from $153,000 to $433,000 plus.
- These two groups, that coincide with Millennial and Boomer age ranges, have a greater preference for higher density multifamily buildings. Only the Bright Young Professional segment lives in primarily rental housing.
- The ESRI data does not differentiate between single-family detached and single-family attached housing types. We expect both market and regulatory forces to lead to more single-family attached development than in previous cycles. Elevated housing costs have made homeownership for middle-income households prohibitive. Attached housing products can be constructed at a lower comparative price point and for that reason, they are more accessible to a wider range of households. Additional market support for attached housing comes from retirees downsizing to newer, lower maintenance homes. In other words, in recent years preferences among multiple market segments have become more accommodative to single-family attached housing products. Locally, this has been observed in development outcomes at River Terrace where well over 150 attached units have been purchased, most at price points between $280,000 and $350,000 per unit.

  From a regulatory perspective, the State of Oregon's new legislation—HB2001—removes some regulatory barriers to the development of attached housing. Where it is common for the return-on-investment for attached housing product to exceed detached development, developers will also prefer this product segment.

- The ESRI Tapestry psychographic segmentation points to a higher need for single-family neighborhoods—with detached and attached housing products—with some residual demand for multifamily rental units coming from Millennials and downsizing Boomers.

Household Size and Type

While the average household size in King City was 2.0 persons, in the more broadly defined PMA it is 2.61 persons. The PMA's smaller concentration of single-person households (25 percent) coupled with a larger share of family households with children (28 percent) drives this differential.

Multigenerational Households

Nationally, a growing family typology is the multigenerational household[6]. Estimates from the Pew Research Center suggest this market segment grew by 21.6 million households between 2000 and 2016.[7] The same research found Asian and Hispanic/Latino[8] households to be 35 percent to 45 percent more likely than average to be multigenerational. In Washington County, the Hispanic/Latino share of the population is roughly on par with the national average but the Asian population share is 83 percent higher.

To approximate multigenerational households in Washington County, we evaluated two metrics from the American Community Survey:

- The share of households with at least one grandparent and grandchild (4.5 percent).[9]
- The share of the population in family households with non-spouse, non-child relative (5.3 percent).[10]

Despite a proportionately small share of multigenerational households in the area currently, we expect this household typology to grow. Demographic, cultural, and economic forces will make multigenerational housing a necessary housing option for some, and a more attractive housing option for others.

Commuting Patterns

The 2017 Market Analysis reported that 26,000 workers commute into the market area each day, while more than 40,000 travel in the opposite direction from homes in the market area to a

[6] Defined by the Pew Research Center as households that include at least two adult generations or grandparents and grandchildren younger than 25.

[7] Pew Research Center (2018). Multigenerational Household Analysis. Retrieved from: https://www.pewresearch.org/fact-tank/2018/04/05/a-record-64-million-americans-live-in-multigenerational-households/

[8] When in reference to Census data, race classifications use terminology currently defined by the Census Bureau.

[9] Source: U.S. Census Bureau, 2014–2018 ACS 5-year estimate, Table S1002

[10] Source: U.S. Census Bureau, 2017 ACS 1-year estimate, Table DP02

workplace outside the area. The majority of these trips are to Portland, followed by "other" places, Tigard, and various nearby suburbs. Only 5,700 workers live and work within the market area, most of whom represent the manufacturing sector. The high proportion of workers traveling outside the market area is indicative of King City's role as a bedroom community.

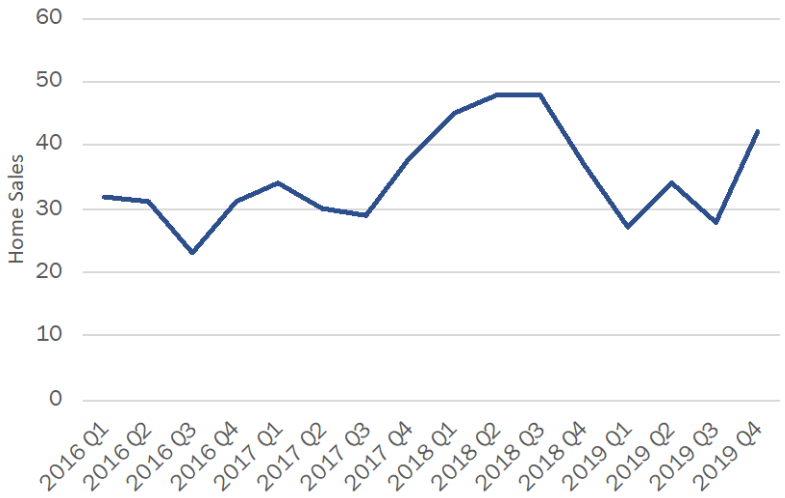
Residential Trends Analysis

The following exhibits demonstrate recent residential market trends in King City, the PMA, and in Washington County. Varying geographies were used in this analysis based on the availability of data, consistency with updating the 2017 market study, and the relative impact on local market conditions.

HOME SALES VELOCITY · · · Seasonal variance with a modest upward trend.

Home sales peaked at 50 per quarter in 2018, only to dip in the beginning of 2019. Sales increased in the final quarter of 2019.

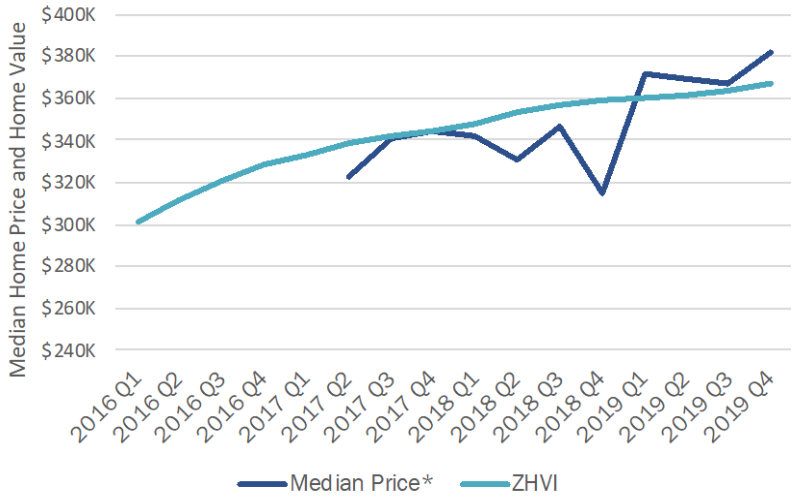
Exhibit 17. Quarterly Home Sales (#) in King City, 2016–2019
Source: Zillow.



MEDIAN PRICE · · · Price appreciation beginning to level off.

Between 2016 and 2019, median home prices have grown from $300,000 to over $366,000.

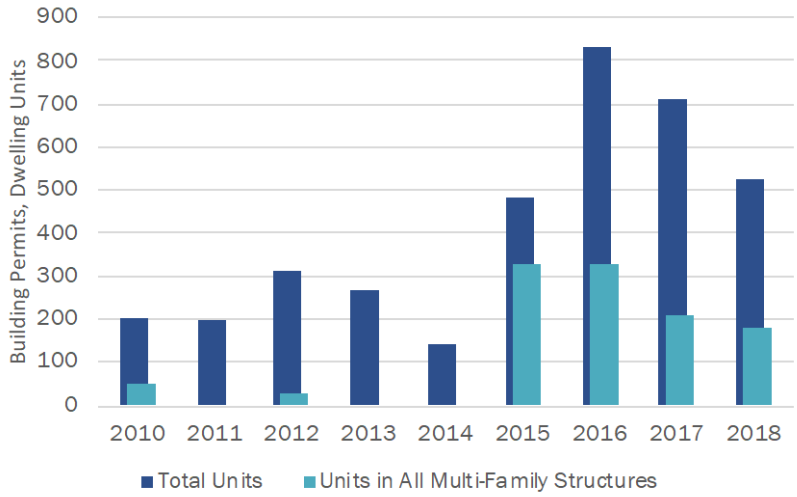
Exhibit 18. Median Home Price and Zillow Home Value Index (ZHVI) in King City, 2016–2019
Source: Zillow.



MARKET AREA CONSTRUCTION · · · Multifamily cycle begins in 2015.

Construction has accelerated over the last five years, peaking in 2016 with the delivery of 833 units. Multifamily units represent 41% of the market since 2015.

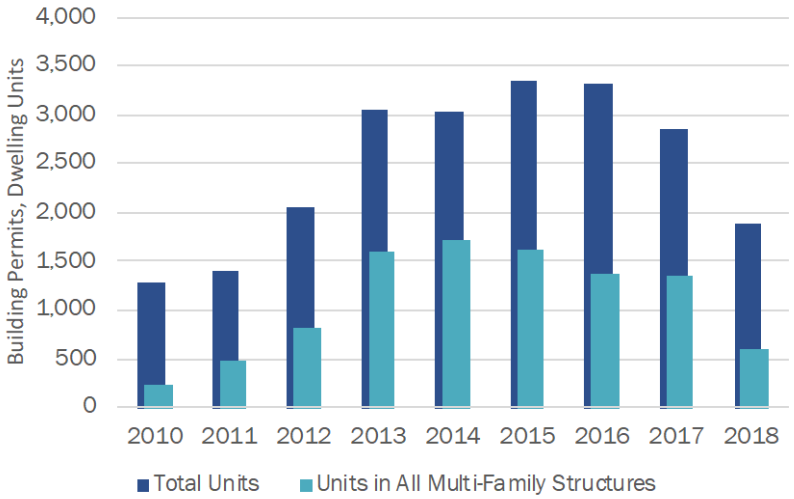
Exhibit 19. Residential Building Permits (Total and Multifamily Units), Market Area, 2010–2018
Source: HUD SOCDS Data.



WASHINGTON COUNTY CONSTRUCTION · · · Development activity moderating, supply constraints likely a factor.

Since 2010 over 22,200 units have been delivered in Washington County. Construction peaked in 2015, with 2018 development representing a 44% drop from the peak of the cycle.

Exhibit 20. Residential Building Permits (Total and Multifamily Units), Washington County, 2010–2018
Source: Zillow.



Rental Market Conditions

Exhibit 21 outlines rental apartment market conditions in the PMA. Ideally, this section would represent an apples-to-apples update to the 2017 Market Analysis. However, recent acquisitions and methodological shifts by CoStar, the data analytics company that supplies this information, have resulted in significant changes in data output. As such, the data presented in Exhibit 21 is reflective of current market conditions, which are not necessarily directly comparable to 2017 findings. Results from our overview of current data indicate:

- Robust construction activity underway with 78 properties in the construction pipeline.
- Higher than expected vacancy rates (6.5 percent) may be indicative of recent deliveries in the market.
- Rent escalation has been strong over the past two-years. Current rents average $1.71 per-square-foot.

Exhibit 21. Sub Regional Apartment Supply, Portland, King City, Tigard, Tualatin, Sherwood 2019
Source: Costar.

	Total
Properties	3,888
Unit Inventory	121,981
Under Construction Properties	78
Under Construction Units	7,518
Vacant Units	7,980
Vacancy Rate (%)	6.5%
Median Asking Rent	$1,313
Median Rent/sf	$1.71

Residential development considerations

All of these factors will continue to influence development patterns; however, it is important to note how patterns among groups have deviated in recent times. Previous age-based projections saw demand for apartments among those in their early 20s, starter homes for small families in their 30s, and "move-up" homes for higher-income families in their 40s and 50s. Older adults were expected to either remain in their homes or downsize for reduced maintenance. This is all in-line with the expectations laid out in the ESRI Tapestry psychographic segments.

Developer Interview Findings:
Insights from horizontal developers and homebuilders with active projects in nearby areas, like South Hillsboro and North Bethany.

- The area directly west of the Town Center should have high-medium density component that is more dense than rural
- 8–10 units per acre with 5,000–6,000 sq. ft. lots as you approach east. Furthest west should have largest lots of 5,000–7,000 sq. ft.
- Live/work units could be possible in Mixed Employment zones
- Overall, agree with existing plan
- Seeing demand for more dense housing – closer to 15 units per acre
- Lots of townhomes and small lot detached
- Transportation and infrastructure could pose challenges – Beef Bends alignment will dictate viability – funding infrastructure upfront through LID is essential.

Millennials, expected to seek starter single-family homes, were delayed due to the Great Recession, rent escalation, and increased debt burdens. Economic conditions drove a preference for preserving mobility. Their continued demand for apartments and rentals should sustain that higher-density industry for a few more years as they slowly begin to form households. The extent that economic repercussions of the COVID-19 crisis influences the timing of the Millennials' transition to ownership housing remains to be seen.

Boomers, often predicted to downsize, have also been slow to do so. This could be the result of several possible factors including: the need to house millennial children affected by the Great Recession, high housing costs, low vacancies, increased life expectancy, or delayed retirement. In any case, we can expect an increase in demand for assisted living, active senior multifamily, and multifamily over time.

Gen X is thought to have led the urban regeneration and will continue to show a preference for urban walkability. Some Gen X and Boomers may seek "move-up" single-family homes. Even as each of these generations reveal an openness to suburban locales, we can expect them to bring their fondness for cultural amenities and walkability. A propensity for these features above and beyond average create additional need for density.

A large share of King City's population is 60 years or older. In general, most retirees prefer to age in place by continuing to live in their current home and/or community as long as possible. This may result in lower than average turnover demand. As more Boomers and Retirees age in

place—and become a large share of growth in the household base, demand for housing unique to this segment will accelerate. A share of elderly households, with healthy physical and financial conditions, will continue to downsize and choose to live on their own for as long as possible. This segment will support small cottage homes and age-restricted active adult multifamily. For households where independent living is not feasible, the market will continue to see growth in assisted living and multigenerational households. The long-term impact of the COVID-19 pandemic on assisted living facilities remains to be seen. We can see a plausible scenario where—in the intermediate-term, households become more averse to assisted living formats, shifting demand to multigenerational formats and/or home health care. We currently estimate that five percent of households in Washington County are multigenerational. This is likely to increase two to three-fold over the next 20 years. Developers have already begun to plan for this market segment. For example, national homebuilders Lennar and DR Horton both have branded multigenerational floorplans. This market will also drive demand for attached and detached accessory dwelling units (ADUs).

The percentage of young people and Millennials is likely to grow in King City over the next 20 years, consistent with trends across the Portland Region. King City's ability to attract people in this age group will depend, in large part, on whether the city has opportunities for housing that both appeals to—and is affordable to—Millennials. Surveys show that Millennials prefer single-family detached housing, housing in an urban neighborhood or town center, and opportunities for both ownership and rental housing.

4. Commercial Real Estate Market Analysis

Chapter 4 presents our analysis of the commercial real estate market in the URA 6D market area.

Primary Trade Area

For retail development, we define a primary trade area (PTA) as the geographic region from which a retail development generates the majority of its customers (Exhibit 22). As a general rule-of-thumb, 75 percent of market support is derived from the PTA. Many variables factor into the delineation of a PTA, including:

- **Proximity and Access to Household Concentrations**. The study area is a new urban area on the periphery of the existing metropolitan region. Household concentrations will not exist to the immediate west and south of the study area in the foreseeable future. In the near-term, retail market support will be reliant on existing housing concentrations to the northeast. Over time, residential development within the study area will offer marginal growth in market support.
- **Planned/Zoned Retail Development Form.** The 2018 Concept Plan envisions retail development in the study area as a main street or town center format. This scale of development is classically defined as neighborhood or convenience retail. Tenants in this category generally serve local populations as opposed to regionally drawing retail formats. The neighborhood serving retail generally draws from a five- to ten-minute drive-time.
- **Size, Location, and Retail Mix of Competing Locations**. The theory of retail gravity asserts that time and distance are primary determinants of shoppers' willingness to patronize a particular center. *Households are not generally willing to travel past (or further than) a comparable or superior center.* Where competitive alternative centers exist, the ability to draw from a progressively larger geography is a function of tenant differentiation. For the study area, major arterials to the north, east, and south offer well-established retail concentrations. We would expect these centers to continue to draw their fair share of market support and will serve as primary competition for any retail that is developed in the study area.
- **Presence of Pass-through or Daytime Employment.** Although the Concept Plan includes some planned employment uses in the southwest portion of the study area, the study area is not envisioned or planned as a primary employment center. Therefore, the influence of daytime employment will be limited. Located on the periphery of the UGB, the study area is not positioned between housing concentrations or multiple employment centers. As housing concentrations continue to build-out, we would expect the commute flow south (along Roy Rodgers Road) to the Tualatin-Sherwood Corridor and east (along Beef Bend Road) toward Highway 99 to increase.

- **Presence of Physical or Manmade Barriers.** Physical barriers will have a significant impact on the study area's PTA, specifically the Tualatin River. Topography influences the road network and presence of through arterials north of Bull Mountain Road up to SW Barrows and SW Walnut Street. Highway 99 is a highly congested arterial that represents a considerable manmade barrier.

Defining URA 6D's Primary Trade Area

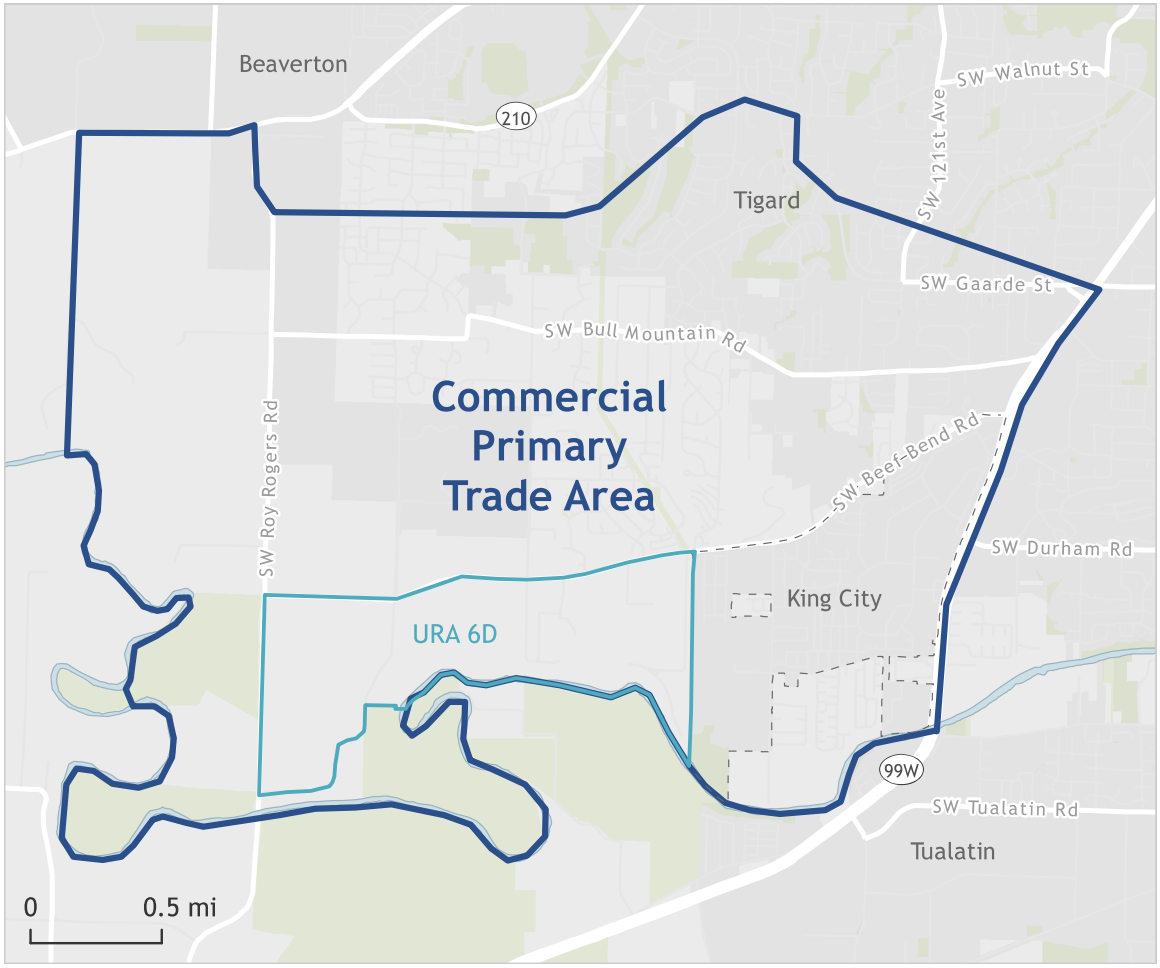
With consideration of the aforementioned factors and influences, we draw the following conclusions with respect to the PTA.

- **The Tualatin River will truncate the PTA to the south/southwest.** Households south and west of the river are more likely to gravitate toward retail concentrations in Sherwood and Tualatin.
- **Existing retail concentrations exist along Highway 99 from Main Street Tigard south to SW Durham Road.** These centers will continue to draw their fair share of retail patronage from households up to and including the project study area. However, the character of the Highway 99 tenant mix differs from what would be expected in the study area, allowing the PTA to extend up to Highway 99. Households east of Highway 99 are more likely to gravitate to retail concentrations in Tualatin (Nyberg Rivers) and Bridgeport Village.
- **To the north, development in the study area will compete directly with retail concentrations at the Murray Scholls and Progress Ridge Shopping Centers.** Both centers offer a competitive mix of specialty grocery, food and beverage, personal services, and other neighborhood convenience tenants. The topographical nature of the area will continue to support the diversion of households to these areas. These influences will limit the extent of the northern boundary of the PTA. Households north of SW Gaarde Street and roughly halfway between SW Bull Mountain Road and SW Barrows Road will most likely continue to gravitate north.

Divergence from the 2018 Concept Plan

The PTA delineation proposed for this analysis differs from what was utilized in the Concept Plan market study (completed in 2017). That market area was considerably larger and more reflective of a community or regionally serving retail center. It encompassed the City of Sherwood in its entirety, in addition to large swaths of Tigard and Tualatin. This larger geographic region is consistent with an area we consider appropriate to model housing market fundamentals, as it was also utilized in the market study. However, the factors influencing market choice for retail and housing are decidedly different. It is our opinion that a more compact trade area is more reflective of the locational and competitive dynamics present in the commercial real estate market for retail developments.

Exhibit 22. Commercial Market Analysis Trade Area for King City URA 6D, including Locations of Competitive Commercial Centers
Source: ECONorthwest.



Competitive Retail Landscape

The ability of the study area to attract commercial retail uses will be a function of the competitive landscape. Households in the PTA will cross-shop competitive alternatives, while market fundamentals will drive developer interest.

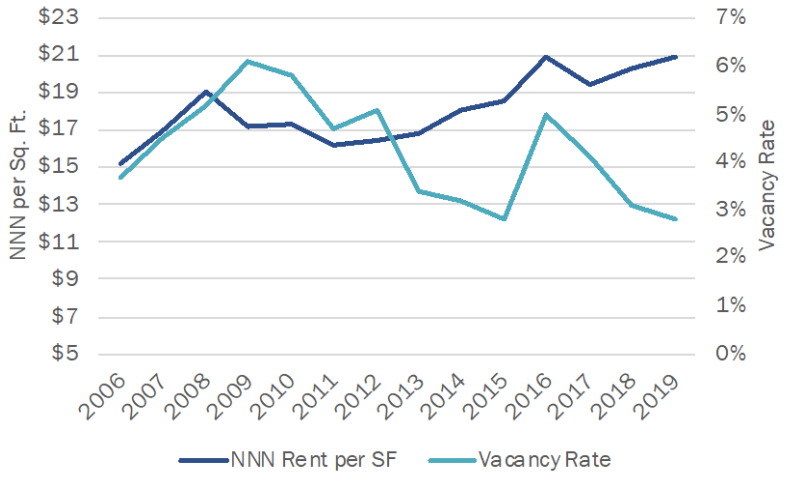
A backward look at how a commercial retail market has performed offers some indication of how it might perform in the near-term future. The following exhibits show the aggregate average rent, vacancy, and absorption and delivery trends for King City, Tigard, Tualatin, and Sherwood's retail real estate markets.

RETAIL RENT AND VACANCY · · · Falling vacancy rates creating rent pressure.

Retail rents per square foot were $21 in 2019, up from $17 a decade prior.

The retail vacancy rate was 3 percent in 2019, down from 6 percent in 2009.

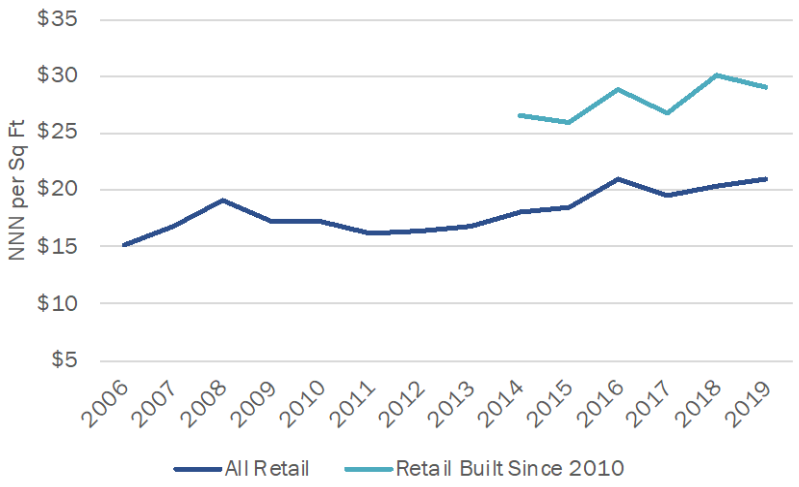
Exhibit 23. Retail Rent per Sq. Ft. and Vacancy Rate, Market Area (King City, Tigard, Tualatin, Sherwood), 2006 to 2019
Source: Costar.



PER SQ. FT. RENTS · · · New space commands a 40 to 50 percent premium.

Between 2014 and 2019, newer buildings (built in 2010 or later) rented at a premium—$7 to $10 higher per square foot than the market average.

Exhibit 24. Retail Rent per SF, Newer Buildings versus All Buildings, Market Area (King City, Tigard, Tualatin, Sherwood), 2006–2019
Source: Costar.

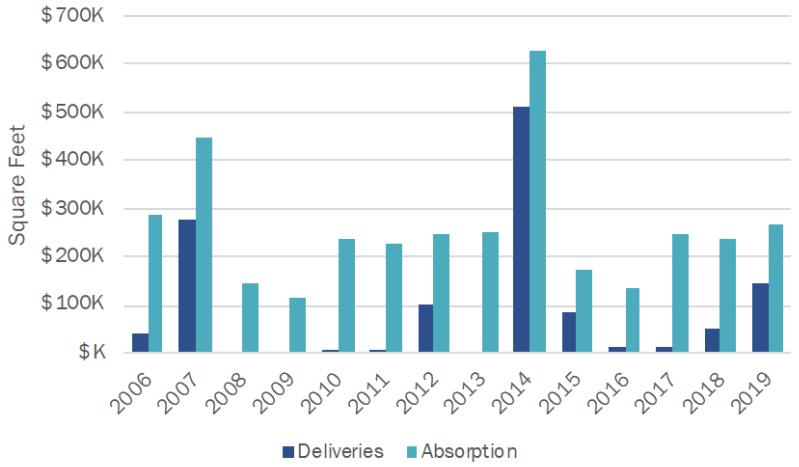


ABSORPTION AND DELIVERIES · · · Absorption is steady, deliveries not keeping pace.

From 2015 to 2019, about 813,505 sq. ft. of retail space was delivered in the market area. This accounts for about 66 percent of all retail space deliveries (sq. ft.) since 2006.

In this same time (2015–2019), about 1.7m sq. ft. of retail space was absorbed in the market area. This accounts for about 46 percent of all retail space absorptions (sq. ft.) since 2006.

Exhibit 25. Retail Deliveries and Absorption (SF), Market Area (King City, Tigard, Tualatin, Sherwood), 2006–2019
Source: CoStar.



Competitive Retail Centers

Exhibit 26 identifies some characteristics of URA 6D's primary competitive centers. Areas were selected for their proximity to URA 6D.

Taken together, the centers identified in Exhibit 26 total over 900,000 sq. ft. of commercial space. With the exception of Progress Ridge and Sherwood Parkway Village, retail centers with the greatest competitive influence on the study area were constructed pre-2005. Auto-centric formats, dated structures, and physical limitations will limit the marketability of these centers moving forward. This is evidenced in tenant positioning and achievable lease rates. Given strong demographics in the trade area, we would expect future commercial development in the study area to out-perform the competitive market.

Exhibit 26. Characteristics of Primary Competitive Centers
Source: Public info and Costar.

Center	Year Built	Anchor Tenants	Typical Lease Rate per Sq. Ft. (NNN)
Progress Ridge TownSquare	2008–2011	New Season, Ace Hardware, AMC, Big Al's	$11 - $47
Sherwood Market Center/Sherwood Crossroads/Parkway Village	1996–2014	Target, Safeway, Regal, Walmart	$15 - $34
Tigard Towne Square	1988	Marshalls, Dollar Tree, Rite Aid, Anytime Fitness	$17 - $31
Tigard Promenade	1995	Safeway, Petco	$19 - $34
King City Plaza	1978	Grocery Outlet	$17 - $26

Competitiveness with Alternative UGB Expansion Areas

Along with Beaverton's South Cooper Mountain and Tigard's River Terrace, King City's URA 6D is one of three new, major urban expansion areas in Washington County.[11] South Cooper Mountain and River Terrace are both located in direct proximity URA 6D. How and when these areas develop will directly impact the market in the study area. Both areas have commercial components in their concept plans that will directly compete with the study area. Along with an

[11] A fourth is located in South Hillsboro that is less likely to compete directly with King City.

assessment of relative competitiveness, Exhibit 27 summarizes the scale of planned development in each of these expansion areas.

Exhibit 27. Commercial Areas in UGB Expansion Areas: Competitive Advantages and Disadvantages
Source: River Terrace Community Plan (2014) and Funding Strategy (2014). South Cooper Mountain Community Plan (2014).

UGB Expansion Area	Planned Commercial Area	Advantages	Disadvantages
River Terrace, Tigard	40,000 Gross Sq. Ft. (developed space)	Residential Development currently underway, ability to draw from Bull Mountain Neighborhood and planned development to the north and south. Commercial area is located at the intersection of two collector streets.	No future development to the west.
South Cooper Mountain, Beaverton	10 Acres (of land to accommodate future developed space)	Residential Development currently underway, existing high school, future development at North Cooper Mountain. Limited competition.	Proximity to Murray Scholls competition, no future development to the west.
URA 6D King City	80,000 to 120,000 Sq. Ft. (developed space)	Presumed potential for tourism, limited immediate competition, ability to draw from River Terrace household growth.	Limited existing household support, physical barriers limit market area, last urban area to begin development.

Future commercial development in both River Terrace and South Cooper Mountain will compete for market support with the URA 6D Study Area. However, both competitive areas will provide new household growth that will support the collective sub regional commercial market. Both areas are planned for neighborhood scale commercial development. From a market perspective[12], River Terrace is best positioned for development in the near-term, with the ability to draw from existing household concentrations while facing limited competition.

As the "last area in," the URA 6D Study Area will be influenced by both the scale and tenant mix of competing expansion areas. The Study Area's strongest competition is likely to come from River Terrace. However, if properly scaled and with a differentiated tenant mix, URA 6D could offer a competitive alternative commercial area to those across its trade area. Collectively,

[12] Potential physical constraints are not considered here.

both areas could provide the synergies and scale to capture a greater share of resident spending than each area would on its own.

Commercial Retail Leakage

The 2017 Market Analysis provided an analysis of retail market supply and demand for a trade area surrounding URA 6D (i.e., the trade area consistent with the area delineated in Exhibit 15). Across several major categories of retail (General Merchandise, Foodservice and Drinking Places, Clothing and Accessories, Food and Beverage (grocery), Health and Personal Care, Sporting Goods/Hobby/Book/Music, Misc. Store Retailers, and Electronics and Appliances), the analysis found that the approximate retail leakage was roughly $520.2 million[13]. Retail leakage occurs when locals spend a larger amount of money on goods than the amount of sales reported by local businesses. Retail leakage implies that locals are traveling outside of the local market area to buy retail goods – suggesting unsatisfied demand within the PTA.

We remind the reader that the PTA used in the 2017 analysis (Exhibit 15) is different than the PTA used in this report's commercial real estate analysis (Exhibit 22). This report relies on a trade area that is more narrowly defined to consider the characteristics of neighborhood serving retail demand. Leakage rates in this case will be considerably higher as a calculation, because the PTA does not include as much competitive supply. For the PTA's nearly 9,000 households, leakage rates are likely across all retail categories, with an estimated $0.73 for every $1.00 spent outside the PTA.[14] From this data, we can assume that leakage recapture has the ability to provide market support in the PTA.

[13] Leland Consulting Group. (March 2017). King City Market Analysis. Figure 20, Page 31.

[14] ESRI Retail MarketPlace Profile (2017).

Factors Influencing Commercial Retail Demand

The demand for commercial retail space, and ultimately land that needs to be planned for future development is a function of many interrelated factors. Here we summarize these factors as they relate to the study area.

Existing Consumer Base

There are currently 8,964 households residing within the PTA, 67 percent of which are family households. These households will provide early market support for commercial development in the study area. Existing housing concentrations are located north and east of where commercial development is planned to go. Considering the distance of these housing concentrations from the planned commercial development, we would not expect this existing household base to provide sufficient market support for early-phase commercial development. Moreover, commercial development in the study area is only likely to see demand sufficient for its creation once a foundation of new households has formed in the study area.

Future Consumer Base

Building upon the existing household base, net-new household growth in the PTA will further influence commercial demand. Taken together, the Study Area and Tigard's River Terrace have a planned capacity for 7,320 housing units. The 2017 Market Study estimated 500 to 950 housing units could be absorbed within the first 10 years. It also assumed a 1.66 percent average annual household growth rate based on Metroscope data consolidated at the traffic analysis zone (TAZ) level.

Purchasing Power

Households with higher incomes generally have more disposable income, and by extension, consume more retail goods and services. In the PTA, the average household income is $119,298, well above the local and regional rates. Beyond a supportable scale, income levels will influence the mix and character of future commercial tenanting. For example, analysis of psychographics for the PTA finds that "buying American" was important to 40 percent of households and that 34 percent of households were likely to buy "brands that support charity." Commercial centers geared toward the existing market are more likely to absorb the purchasing power of the existing consumer base.

Consumer Behavior and Preferences

The historical shift in retail businesses, starting in the early 1960s, was the movement from one-off, 'mom and pop shops' toward superstores and the clustering of retail into centers or hubs. Notably, we still see this trend persist; for example, in 1997, the 50 largest retail firms accounted

for about 26 percent of retail sales, and by 2007, they accounted for about 33 percent.[15] The more recent shift in retail began in the late 1990s, where technological advances gave consumers the option to buy goods through e-commerce channels.

The trend toward e-commerce has become increasingly preferential to millennials and Generation X, who are easier to reach online and are more responsive to digital ads than older generations.[16] Since 2000, e-commerce sales grew from 0.9 percent to 6.4 percent (2014) and was forecast to reach 12 percent by 2020. It is reasonable to expect this trend to continue. With it has come closures of retail stores. By 2027 for example, an estimated 15 percent of about 1,050 U.S. malls in smaller markets will close, impacting local employment levels, local government revenue streams (tax dollars), and neighborhood character.

The draft 2018 Metro Urban Growth Report[17] describes the uneven impact on retail from e-commerce. Overall, e-commerce accounts for 9 percent of national retail sales, with online sales growing at a faster rate than retail sales growth overall. Nationally, non-store retailers are negatively affecting furniture stores, electronics, clothing, and recreational goods (e.g., sporting goods, hobby supplies, and books and music). The retail types that grew strongly in the Portland Region between 2007 and 2017 were grocery stores, general merchandise stores, and miscellaneous specialty retailers.

It seems probable that e-commerce sales will continue to grow, shifting business away from some types of retail. Over the next decades, communities must begin considering how to redevelop retail buildings and reimage shopping centers, commercial corridors, and urban centers.

Commercial Retail Space Utilization

Structural shifts in the retail industry are reducing the physical space that retail stores occupy. For institutional retailers, advances in logistics are allowing for less on-site inventory. For all users, even independent retailers, the ability to sell goods through e-commerce is making brick-and-mortar retail more "experiential," further reinforcing lower on-site inventory needs. Even in the restaurant business, the proliferation of food delivery services is driving an increasing share of restaurant sales outside of restaurants. Because restaurants operate on thin margins and delivery services command 20 percent or more of top-line sales, this trend is driving reductions in brick-and-mortar overhead among independent restaurants.

[15] Hortaçsu, Ali and Syverson, Chad. (2015). The Ongoing Evolution of US Retail: A Format Tug-of-War. Journal of Economic Perspectives, Volume 29, Number 4, Fall 2015, Pages 89-112.

[16] Pew Research Center (2010b). Generations 2010. Retrieved from: http://www.pewinternet.org/Reports/2010/Generations-2010.aspx.

[17] *Urban Growth Report*, Discussion Draft, Metro, July 3, 2018, Appendix 4.

From the perspective of land utilization, walkable neighborhoods combined with fewer trips, rideshare, and alternative transportation modes are allowing retail to develop at lower parking ratios than previous cycles.

Access and Visibility

All firms are heavily dependent upon surface transportation for efficient movement of goods, customers, and workers. Access to an adequate highway and arterial roadway network is needed for all industries. Close proximity to a highway or arterial roadway is critical for businesses that generate a large volume of truck/auto trips. It's also critical for businesses that rely on visibility from passing traffic to help generate business. Locations visible from the highway or major streets, or that receive a lot of foot traffic, are highly sought after; many retailers will pay a premium for these locations. In some instances, rent premiums are also associated with right-in, right-out access during the evening commute.

Literature and previous research conducted by ECONorthwest provide insight into the extent to which access to bus service is an important factor in successful commercial development. We find that low capacity transit (i.e., conventional bus, dial-a-ride, or shuttle bus services) has a negligible impact on commercial and residential marketability. Commercial properties near *rail transit* (LRT), (e.g., medium-capacity), have land value premiums, but those premiums diminish almost entirely for properties more than a quarter-mile away from rail stations.[18] Employment in some sectors (e.g., transportation and arts, entertainment, and recreation) does increase substantially between 0.25 and 0.50 miles of *bus rapid transit* (BRT) stations (160 percent and 130 percent) – as does retail, but then begins to decline outside of those distance bands.[19]

Commercial Centers in Oregon

As is the case with urban reserve areas in Portland's metropolitan region, URA 6D is essentially a blank slate for new development. A rural "greenfield," URA 6D will be, over the course of years, transformed into a suburban landscape.

The recent Concept Plan for the area indicated the area could accommodate the construction of 3,576 new homes—of various types and of ranging densities. It also presented a vision for a Main Street/Town Center style urban village. The Main Street/Town Center included proposed uses such as neighborhood retail (e.g., grocery store, restaurants, shops), a hospitality component (e.g., a 70-room lodge or event space), and campus-style mixed employment/institutional uses (e.g., education facilities or primary school, business incubator, health and wellness center, etc.).

[18] Cervero, Robert, and Michael Duncan. "Transit's Value-Added Effects: Light and Commuter Rail Services and Commercial Land Values." Transportation Research Record: Journal of the Transportation Research Board, No. 1805. Washington, D.C.: Transportation Research Board, 2002.

[19] Nelson, Arthur C., et al. "Bus Rapid Transit and Economic Development Case Study of the Eugene-Springfield BRT System." Journal of Public Transportation 16, no. 3 (2013): 41-57.

But how does one know that this vision is possible?

We sought to answer this question by evaluating a series of commercial centers in Oregon, using the factors that influence commercial retail demand documented in the previous section. We evaluated retail centers that are similar in scope to King City's vision for URA 6D. We used the findings to help determine a viable scale of commercial development—particularly retail development—that may be possible in URA 6D.

To understand how URA 6D's proposed commercial center may perform, and how policy can support it, it is essential to understand the nature of retail centers'—their similarities and differences. The case study approach allowed us to identify the characteristics/market realities that made each of the selected four centers successful.

The areas of study selected are Villebois, [20] Northwest Crossing, [21] Bethany, [22] and Progress Ridge.[23] The following pages present a summary and comparative analysis of the factors that affect retail demand using the four case study areas. Additional information is presented in a series of appendices.

Criteria for Selected the Areas of Study:

To conduct the analysis and draw comparisons to URA 6D, we selected areas that met the following criteria:

- Greenfield development with commercial center.
- Completed in the past two decades
- Newly developing residential area
- Similar in scale (relative to other selected areas)
- Similar locational characteristics (relation to urban core)

In addition, we selected areas that comprise varying magnitudes of retail, so that we could evaluate the relationships between retail scale to catchment area.

- Villebois and NW Crossing share similar trade area characteristics (roughly 35,000 people within a 10-minute drive) and support limited retail uses. Bethany and Murray Scholls share similarities (each with roughly 107,000 people within a 10-minute trade area) and support a more robust retail market. In each of these areas, housing was/will be the catalyst to development, and for that reason, population and household counts, including family household counts, are a clear indicator of retail scale and success.
- Neighboring areas will influence development. For example, in Villebois, retail uses have yet come to fruition as it does not draw from a broad residential base. Villebois will likely rely on Wilsonville's Town Center for retail support. In contrast, the commercial center in Murray Scholls (Progress Ridge TownSquare), has ample commercial options as it is located on the urban periphery with less commercial competition and surrounded by many established residential neighborhoods. In Northwest Crossing, commercial uses are limited, but residential occupancies are growing and development of a new residential neighborhood, just west of Northwest Crossing, is underway

[20] http://villebois.com/

[21] https://www.northwestcrossing.com/

[22] http://www.bethanyvillage.com/

[23] https://progressridgetownsquare.com/

(master planned in 2018). Northwest Crossing's expanded residential base has catalyzed nearly 64,000 sq. ft. of commercial space (including a market hall) and a 22,000 sq. ft. mixed-use building with office tenants above retail (expected delivery: end of 2020).

- Public transportation connections have a negligible influence on commercial development in these areas. With the exception of Bethany, these study areas have no transit connections within a quarter-mile of the primary retail center. Bethany's primary retail center is served by bus route 67, which only provides local weekday service.
- Existing ownership conditions may influence the timing of development. A key pillar of success for Northwest Crossing was that a single developer was willing to absorb early development costs. Further, the expansion of three public schools in Northwest Crossing helped to reduce typical infrastructure barriers. In general, greater parcelization (more property/landowners) will increase the complexity of development, introducing the risk that development will be piecemeal or intermittent.
- The timing of commercial development will be influenced by an area's ability to draw from existing household concentrations. Early development with phasing that is not adjacent to existing household concentrations will exhibit a delay in commercial development support.

Exhibit 28. Demographic Characteristics within a 5- and 10-minute Drive[24] of Villebois, Northwest Crossing, Bethany, and Progress Ridge
Source: ESRI Business Analyst.

	Villebois	NW Crossing	Bethany	Murray Scholls	URA 6D
Within a 5-minute drive					
Population	7,773	10,207	42,949	28,348	16,578
Households (HH)	3,150	4,223	15,020	11,420	6,207
Family HH Share	64%	60%	75%	64%	70%
Tenure Split	75% owner, 25% renter	63% owner, 37% renter	75% owner, 25% renter	61% owner, 39% renter	83% owner, 17% renter
Median HH Income	$103,956	$82,865	$116,241	$92,389	$100,550
Share of Population 65 Years and Older	11%	15%	11%	11%	17%
Within a 10-minute drive					
Population	36,311	31,037	106,984	106,911	99,661
Households (HH)	13,668	13,102	41,415	41,478	39,197
Family HH Share	66%	58%	66%	65%	65%
Tenure Split	62% owner, 38% renter	58% owner, 42% renter	60% owner, 40% renter	64% owner, 36% renter	66% owner, 34% renter
Median HH Income	$92,019	$75,656	$99,064	$86,926	$88,301
Share of Population 65 Years and Older	13%	16%	12%	14%	15%

[24] ECONorthwest conducted this analysis using the centroid of the commercial center for each case study area, for five-and ten-minute drive-times.

Exhibit 29. Retail Characteristics Villebois, Northwest Crossing, Bethany, and Murray Scholls
Source: Costar.

	Villebois	NW Crossing	Bethany	Murray Scholls
RETAIL CHARACTERISTICS				
Study Area	500 acres	486 acres	1,936 acres	N/A
Total Leasable Retail Space (sq. ft.)	N/A	55,431	525,032	330,407
Available Leasable Retail Space (sq. ft. [25]	N/A	0	93,196	17,865
Number of Retail Tenants	N/A	28	93	68
Commercial Anchors	N/A	La Rosa, Roundabout Books, The Grove (proposed)	QFC, Walgreens, Bethany Library, Bethany Athletic Club	New Seasons, Ace Hardware, AMC, Petco Unleashed, Gentle Dental
Transportation Connections[26]	None	None	Bus (Route 67)[27]	None
Number of Surface Parking Spaces	N/A	73	958	250

[25] As of April 1, 2020.

[26] Transit connection within a quarter mile of the primary retail center.

[27] Average weekday ridership in Fall 2019: 4.5 rides per hour.
https://trimet.org/about/pdf/route/2019fall/route_ridership_report_(sorted_by_route)_weekday.pdf

Commercial Office and Employment Uses

The 2017 Market Analysis identified that, "lack of nearby office employment will make new office development on the site highly unlikely during the buildout period." We agree with this assessment that higher density employment uses in sectors outside of personal services is not likely in the study area. This is further reinforced in our case study analysis above. With the exception of NW Crossing, which has unique cultural and market fundamentals, non-retail uses in these areas have been generally limited to personal service industries. The greatest opportunities for non-retail commercial development are summarized in Exhibit 30.

Exhibit 30. Opportunities for Non-Retail Commercial Development
Source: Summarized by ECONorthwest.

Non-retail Sector	Potential Uses	Typical Form
Medical/Health Services	Dental Office, Neighborhood Clinic, Optometrist, Veterinary Clinic	Standalone Pad, Retail/Mixed-Use Tenant, Single/Multi-story Medical Office Building. Medical Campus
Financial Services	Neighborhood Bank/Credit Union, Financial Advisory Services, Real Estate Brokerage, Insurance	Standalone Pad, Retail/Mixed-Use Tenant, low-rise campus
Personal Care	Salons, Fitness Centers	Standalone Pad, Retail/Mixed Use Tenant
Household Services/Other	Childcare Facilities, Education, Co-working Spaces	Standalone Pad, Retail/Mixed Use Tenant

5. Market Potential in the Project Area

The purpose of the market analysis was to assess and refine the findings of the 2018 Concept Plan and 2017 Market Analysis for URA 6D by determining the market demand for commercial and residential uses in the study area. This section presents the conclusions of market demand for various types of land uses, as well as compatible businesses within the study area given current and projected future growth. Findings were assessed against the community's vision for URA 6D, as described in the 2018 Concept Plan.

Reflection on the Concept Plan

The Concept Plan for URA 6D identified four distinct neighborhoods. The Concept Plan purposed two of the neighborhoods for lower density residential uses and one neighborhood for higher density residential with some mixed-use/neighborhood-scale commercial uses. The Concept Plan purposed a final neighborhood as a Main Street/Town Center, which could accommodate high-intensity commercial and mixed-use residential uses. Overall, the URA 6D Concept Plan proposed the following quantitative development targets:

- 3,576 residential units[28]
- 54,000 to 85,000 sq. ft. of retail (10-year demand), with opportunities to include: 16,000-25,000 sq. ft. grocery store and 10,000–15,000 sq. ft. restaurant/drinking establishments,
- 40,000 to 60,000 sq. ft. of wine country lodging, event space, and dining

The Metro 2040 Growth Concept has previously defined center types to include a characterization of both a Main Street and Town Center. For context, and to encourage consistent use of vocabulary, these centers are defined here:[29]

- **Regional Centers** are hubs of commerce and local government services serving hundreds of thousands of people. They are characterized by two- to four-story, compact employment and housing development served by high-quality transit.
- **Town Centers** provide services to tens of thousands within a two-to-three-mile radius. One- to three-story buildings for employment and housing are characteristic. Town centers have a strong sense of community identity and are well served by transit. Town Centers may include small city centers such as in Lake Oswego or Tualatin, or larger neighborhood centers such as in St. Johns or Hillsdale.

[28] Note: Per King City's Housing Needs Analysis, the 2018-2038 forecast for new dwelling units is 980.

[29] Definitions/descriptions are copied from Oregon Metro's 2040 Growth Concept: https://www.oregonmetro.gov/2040-growth-concept

- **Main Streets** are similar to town centers in that they encompass a traditional commercial identity, but on a smaller scale to tie better with the immediate neighborhood. Main Streets feature "good" access to transit.
- **Station Communities** are centered on a light-rail or high-capacity transit station that features a variety of shops and services. These communities are accessible to all modes of transportation.
- **Neighborhoods** include existing neighborhoods, where some redevelopment can occur to better use vacant land or under-used buildings, and new neighborhoods. New neighborhoods are likely to have smaller single-family lots, mixed uses, and a mix of housing types (such as row houses and accessory dwelling units). The growth concept distinguishes between slightly more compact inner neighborhoods and outer neighborhoods with slightly larger lots and fewer street connections.

Competitive Advantages and Disadvantages

This section is informed by the analysis presented in this report as well as the existing conditions research presented in the Land Use Refinement Memo (developed as part of this project). Relative to other UGB expansion areas nearby where Main Streets, Town Centers, and commercial hubs are planned, URA 6D's advantages are:

- **Location.** King City is located along a major transportation corridor (HWY 99W) and is 12 miles from downtown Portland. King City is not a large city, but it is in close proximity to the kinds of urban amenities and services one expects in a large metropolitan area. Residents of King City have access to cultural activities, employment centers, and outdoor recreational activities which are locational aspects that are attractive to prospective residents and businesses who prioritize quality of life.
- **Household Base.** URA 6D is proposed to have a Main Street/Town Center, which as defined by Metro, should accommodate a trade area of tens of thousands of people within a two-to-three-mile radius. As presented in this report, URA 6D is surrounded by 99,661 people within a 10-minute drive. This is more people than Villebois and Northwest Crossing has in their respective drive-time distances bands. In addition, within both a 5- and 10-minute drive of URA 6D, the existing household base maintains relatively high incomes; incomes are consistent with the median incomes in all four master planned case study communities evaluated in this analysis (Exhibit 28). Planned development in the study and development underway in River Terrace will provide growing market support.
- **Labor Market.** Prospective businesses that may locate in URA 6D in the future will need access to labor. At present, most of King City's residents who work commute outside of the city for employment. However, consistent with other cities in the region, King City has access to a regional labor pool, which presents opportunities for new/expanding businesses.

- **Greenfield Development.** Despite lack of infrastructure today, URA 6D is a blank canvas that developers often prefer to brownfield, infill, and redevelopment sites.
- **Retail Demand.** While existing commercial hubs near URA 6D (see Exhibit 26) do absorb some of the areas' needs, metrics suggest there is demand for retail space in the greater area. In looking at the competitive retail landscape of a four-city trade area (King City, Tigard, Tualatin, Sherwood), this analysis finds that absorption of retail sq. ft. has surpassed retail sq. ft. deliveries every year since 2006. Further, retail vacancies have declined since 2016 as retail rents per sq. ft. rise (Exhibit 23).

The area's disadvantages are:

- **Relative Competition and Timing.** Many nearby cities are going through similar planning efforts to accommodate growth in their respective expansion areas and urban reserve areas. Some of these plans present conceptually similar development intentions to what is proposed in the URA 6D Concept Plan. These alternatives have overlapping market areas, drawing from the same market as the URA 6D Concept Area. Competitive areas are also further along in the process, with development well underway or commencing. In this context, the market risks saturation within discrete development types.

  To better explain the relative competition that adds to URA 6D's locational disadvantages, this assessment compares key details of URA 6D's proposed development to competing expansion area positioning. For example, URA 6D proposes to have a "non-residential component, based on a "gateway to wine country" positioning [which] could add another 40–60,000 sq. ft. of campus-style employment or institutional uses." Meanwhile, the Preliminary Concept Plan for Sherwood West, an Urban Reserve Area southwest of URA 6D, proposes a "Gateway to Wine Country" node that is envisioned to capitalize on Sherwood's location and proximity to the surrounding wineries by providing opportunities for lodging, restaurants, tourism, and agriculture-related businesses.

Market Potential Findings and Conclusions

The demographic makeup of the area indicates that URA 6D will most closely compare with the smaller commercial area case studies, particularly Northwest Crossing. Based on the case study analysis and our assessment of supply and demand dynamics, URA 6D's commercial center is likely to function and look more like a Main Street and less like a Town Center.

Northwest Crossing zoning allows a variety of employment uses, "community commercial"[30] opportunities, and small-scale businesses in select locations to foster mixed-use residential neighborhoods. The area also permits live/work apartments, which provides distinct

[30] Community Commercial means establishments not exceeding 2,000 sq. ft. for retail, service, office, and food/beverage establishments, excluding drive-through.

opportunities for small, local businesses and sole proprietors. While commercial development is growing in Northwest Crossing, the area is currently served by 55,400 sq. ft. of commercial space, which includes both commercial retail and office tenants. This leasable area is slightly less than commercial targets proposed in the URA 6D Concept Plan.

Market conditions have been improving at both the local and regional level. Structural demographic trends, in terms of growth and composition, are supportive of development densities in the URA 6D Concept Plan. Recent development trends at River Terrace are indicative of market potential. However, limited differentiation at River Terrace, South Cooper Mountain, and URA 6D risks market saturation.

In the near- to intermediate-term, development is likely to be owner-occupied, consistent with patterns exhibited in the demographic analysis and ongoing development patterns in surrounding areas. Opportunities for multi-story attached housing will be limited to the for-sale market in the near-term. Apartment rents in the market area are not likely to support densities beyond surface parked, garden walk-ups.

Commercial establishments in Northwest Crossing's commercial area include various restaurants, an independent bookstore, a salon, and a Pilates studio. A certified accounting business, family dentist office, a law office, a community bank, an engineer office, and a cat clinic have also located in this area. These types of small-scale businesses have the potential for success in URA 6D's commercial hub.

We would characterize the URA 6D Concept Plan's estimation of 54,000–85,000 sq. ft. of supportable resident-driven commercial retail space to be an optimistic upper bound of likely outcomes. Approaching this upper bound of market support will be influenced by; 1) the extent that personal services and non-retail uses provide market support; and 2) if or where a neighborhood scaled grocer (approx. 20,000–25,000 sq. ft.) locates in the market. For example, if a grocer locates in River Terrace first, there is not likely to be support for a second grocer in the local market area.

At this time, dense retail is not likely achievable in URA 6D. In later phases of development dense retail is possible—once developers build enough housing to generate a critical mass of households to support greater scales of retail. As such, phasing is a critical factor for URA 6D's development trajectory over its build-out period. We note that this is not uncommon; Villebois took upwards of 13 years to build out, and to date, it has highly limited commercial and retail. Villebois remains on the periphery of urban development and does not draw from a broad residential base outside of the community. This limits the number of "rooftops" to support commercial development (there are only 3,150 households within a five-minute drive of the Villebois' Village Center).

Additional market support of 40,000–60,000 sq. ft. of tourism/wine-related commercial support was not supported by technical analysis in the 2017 Market Analysis and requires further study to be validated. From a competitiveness perspective, we do not find an inherent advantage of

the study area vis-à-vis alternatives. In our view, the study area is too close to the metro area and too removed from wine country to be considered a "destination." Some localized branding and tenanting are plausible, but market support for a thematic development at the scale proposed has not been established.

Recommendations

To conclude this analysis, a set of recommendations are offered to address URA 6D's market demand that the area can reasonably deliver.

- **Plan for 500 to 950 new residential units in URA 6D over the next 10 to 20 years.** This recommendation is partially aligned with residential demand projections in the 2017 Market Analysis (which found that URA 6D could accommodate 500 to 900 units in 10-years). Our analysis does deviate slightly in the time horizon in that King City's Housing Needs Analysis found that King City will need 980 new dwelling units to accommodate 20-years' worth of growth (2018 and 2038).
- **Plan for the mix of housing types and average density ranges as designated in the Concept Plan.** We agree with the suggestion made in the 2017 Market Analysis—that there is an opportunity to provide an amenity-rich, walkable neighborhood/main street area. This node will attract housing consumers that are priced out of the urban core, or housing consumers who simply prefer to raise a family outside of the city while remaining in proximity to urban services and amenities. Our analysis finds that the previously proposed residential development scheme is appropriate for URA 6D.
- **Plan for commercial development slightly below the scale planned in the URA 6D's Concept Plan.** A development scheme consistent with the form, scale, and type of commercial development in Northwest Crossing is advised. From a market perspective, Northwest Crossing is the most analogous case study area to the future realities of URA 6D. Accordingly, the development pattern in the commercial core should be concentrated along corridor(s), be neighborhood-serving, and smaller in scale.
- **Conduct further analysis to validate non-resident tourism/wine related market support.** Roughly half of the URA 6D Concept Plan's commercial market support was assumed to originate from this source. Limited technical analysis to substantiate this demand exists.
- **Establish a proactive economic development strategy** to encourage growth of business and service types in URA 6D consistent with the kinds of uses permitted in Northwest Crossing. These businesses and services are likely achievable given the area's locational advantages and disadvantages, but their development—especially in the near and mid-term—is likely contingent on thoughtful planning and proactive support from the public sector. The type of support offered could be determined through the development of an action-oriented economic development strategy, with input from the community and stakeholders. Examples focused on the needs of URA 6D may include: prioritize infrastructure projects that are necessary to support employment growth, evaluate

offering economic development incentives to support the Study Area's vision, and/or work with partners to resolve potential barriers to small business growth and expansion.

- **Consider deviating from phasing recommendations as presented in the URA 6D Concept Plan.** We find, consistent with the 2017 Market Analysis, that commercial development will require the build-out of rooftops in the market area to be viable. Moreover, a market for mixed-use development in the commercial core is not likely to materialize early on. Phasing strategies that encourage near-term growth of new homes (and the households that come with them) will improve the viability of commercial development in the mid to long-term.

Disclaimer

In this report, we rely on third-party data sources known to be reputable and industry-leading. ECONorthwest does not independently verify this data. Similarly, we draw conclusions from existing research and analysis as directed in our scope of work. We specifically leverage data produced in the 2017 Market Analysis that we assume to be reputable and accurate.

Appendix A: Villebois Case Study

Villebois is a European village-styled, master-planned neighborhood in Wilsonville, Oregon. It was conceptualized to "include residential neighborhoods with more than 2,300 homes, a viable commercial and employment core, an interconnected series of roads and trails, and a strong commitment to natural spaces and the environment."[31] Its primary locational advantages are that it is 16 miles from Portland and it is connected to I-5 and the commuter rail.

Villebois is approximately 500-acres, including 160-acres of parks and open space and a Village Center of approximately 48-acres. The community has three neighborhoods within a quarter-mile radius of Villebois' Village Center (Exhibit 32). Each neighborhood has a Neighborhood Commons which provides convenient retail uses that are small in scale. The Villebois Master Plan was adopted in in 2006, timing that was ill-fated in retrospect. Early phases of the development struggled through tough market conditions in the aftermath of the Great Recession. Today, the residential components of Villebois are mostly built-out, and the community functions as a complete community.

Villebois falls within the City of Wilsonville's comprehensive plan designation "Village." It is also zoned "Village," with a small, centralized area zoned "Public Facility (PF)." The Village zoning code permits most housing types outright. Many commercial uses, subject to standards, are also permitted outright. These include sales and servicing of consumer goods (e.g. bicycle shop, clothing or book stores, florists), food and sundries (e.g. bakery, butcher, drugstore, hardware store), lifestyle and recreation (e.g., art gallery, hair salon, restaurants and pubs), service commercial (banking, child care, dry cleaner), and general office (e.g. health services, professional services, real estate offices, insurance agencies).

The Village zoning allows single-family and duplexes up to 35 feet in height, multifamily buildings up to 45 feet in height, and mixed-use buildings up to 60 feet in height. Retail in the Neighborhood Commons may be no more than 3,500 sq. ft. in area. Larger retail development is permitted in the Village Center; commercial lots may be greater than 8,000 sq. ft. in area with an 80 percent maximum lot coverage ratio and commercial buildings may be up to 60 feet in height.

While residential development has succeeded in Villebois, commercial elements have struggled to gain critical mass. Villebois remains on the periphery of urban development and does not draw from a broad residential base outside of the community. This limits the number of "rooftops" to support commercial development. There are only 3,150 households within a five-minute drive of the Village Center. High construction costs coupled with low rents, parking restrictions, and small lot sizes that prohibit scale have further contributed to a challenging environment for commercial development.

[31] Villebois Concept Plan (2003).

Perhaps the greatest impediment to commercial development in Villebois is the proximity and access to viable commercial alternatives. Wilsonville Old Town Square is a Fred Meyer anchored community center located less than a five-minute drive-time from Villebois. Just beyond Old Town Square, Wilsonville Town Center even greater commercial diversity. Wilsonville Town Center is currently being planned for considerable redevelopment. The Wilsonville Town Center Plan, developed in 2019, is purposed to guide development and redevelopment of the subarea. The Plan's vision is to provide for a mix of uses, entertainment and community gathering opportunities, consolidated parking, walkability, and support for local businesses. Taken together, we suspect that the majority Villebois residents' commercial needs are being met by these commercial centers.

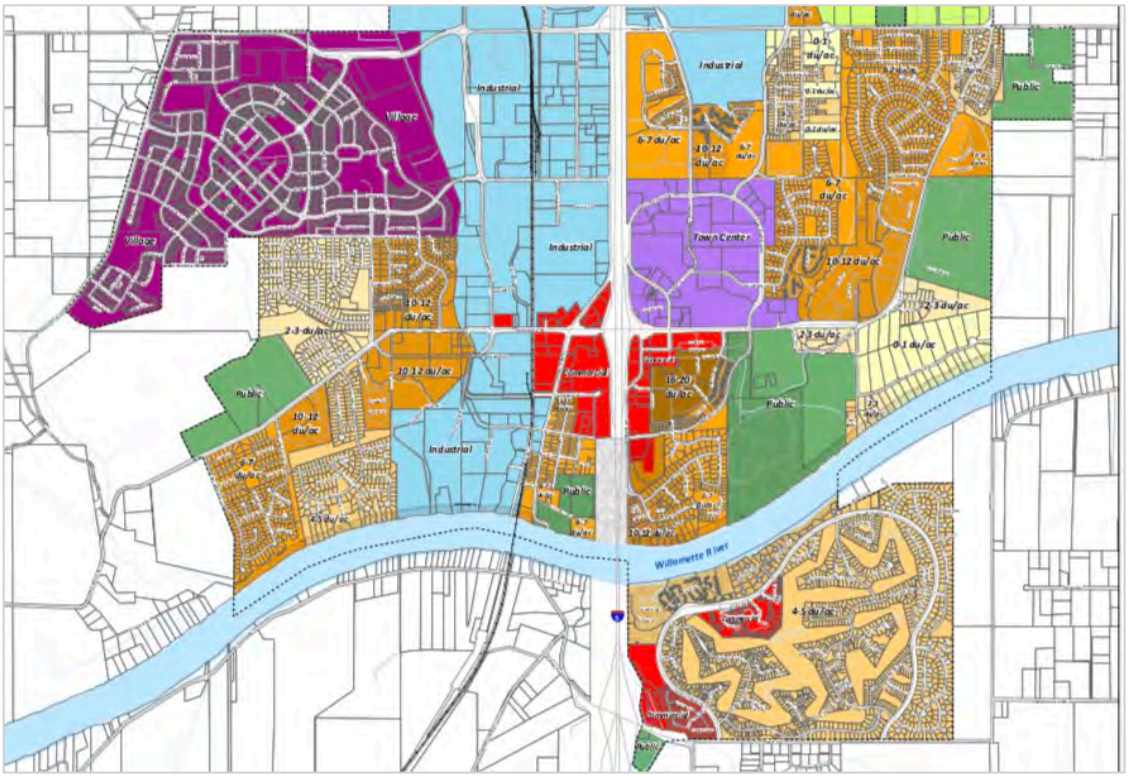
Exhibit 31. Villebois Community
Source: https://villebois.com and google maps.


SW Barbe


Villebois
COMMUNITY
CENTER

Exhibit 32. Villebois Original Land Use Map, Wilsonville
Source: Villebois Master Plan, 2013, Figure 2.

Exhibit 33. Subset of Wilsonville Zoning Map to include Villebois Plan Designation
Source: City of Wilsonville.



Appendix B: Northwest Crossing Case Study

Northwest Crossing is a master planned neighborhood in Bend, Oregon. The neighborhood is about 1.5 miles west of downtown Bend and caters to the "Central Oregon" aesthetic. It is composed of various residential uses (single family, cottages, townhomes, and apartments) and over 80 businesses representing a range of industries (manufacturing, medical, professional services, retail).

The community is roughly 486 acres with 32 acres of parks and an interconnected street and trail network. All of the area's open spaces (including parks and rights-of-way) were dedicated to the City of Bend and are now under public ownership. A majority of Northwest Crossing is purposed for residential use and there is an elementary, middle, and high school that support students in the area (Exhibit 35). Commercial uses primarily center around the high school in the southwest quadrant of Northwest Crossing, however, at this time the commercial/retail uses are not fully built out.

Ultimately, the area is composed of several zoning districts,[32] which are superseded or supplemented by the Northwest Crossing Overlay Zone. The overlay zone enables "compact, mixed-use development, along with areas of commercial and employment uses surrounded by higher density residential… [of] 7.2 to 19 units per acre, depending on the intended character of the particular subarea."[33]

In particular, the overlay zone on top of the Mixed Employment (ME) zoned areas enable consolidated parking areas and special setbacks to create a pedestrian-oriented environment. ME and the overlay zone both allow several uses outright including auto-oriented retail sales and services, restaurants, offices and clinics, lodging, and entertainment – at no more than 45 ft in height. The overlay zone on top of the Industrial Light (IL) zoned area limits the kinds of industrial uses typically permitted in that district to *compatible* light manufacturing. It further ensures industrial uses are delivered in a park-like setting at reduced heights of no more than 45 ft.

Current activity in Northwest Crossing is focused on development of the "Grove" – a new mixed-use development, on a 1.8-acre vacant site in the neighborhood's commercial core. The Grove will accommodate up to 64,000 sq. ft. offering a public market hall and commercial building; a 22,000 sq. ft. mixed-use building with a suite of office spaces (ranging from 500 to

[32] Underlying zoning includes RS – Residential Urban Standard Density, CL - Commercial Limited, PF – Public Facilities, and ME – Mixed Employment, and IL – Industrial Light.

[33] ODOT (n.d.). Oregon Greenhouse Gas Reduction Toolkit: Case Study, Northwest Crossing. Oregon Sustainable Transportation Initiative.

4,000 sq. ft.) above ground floor retail; and 33 new condominiums.[34] The development team will deliver the condominiums as a *second* phase, once the commercial uses are delivered.

The success of Northwest Crossing has encouraged Northwest Crossings' development team to sets their sights on a 10- to 15-year build-out of a new neighborhood west of Northwest Crossing. The new neighborhood is called "Discovery West." This area is expected to accommodate an additional 40 acres of park and a mix of missing middle residential uses including single-family homes, townhomes, cottages, and apartments. The additional residential volume will continue to catalyze commercial development envisioned in Northwest Crossing's core.

Northwest Crossing has benefited from strong market positioning. Commercial development accelerated in the current economic cycle that has brought and influx of new higher-income households to the region. Northwest Crossing has a strong geographic location. With commercial development limited on the westside, the commercial area likely draws from an atypically large market area that includes most of West Bend. Demographic growth in Bend remains robust, translating into strong demand for housing development to support scale in commercial development. A primary developer willing to absorb early development costs, coupled with three schools has lowered typical infrastructure barriers in developing new urban areas.

Outside of commercial retail, Northwest Crossing has had relative success in attracting employment uses beyond personal services. Capitalizing on Bend's quality of lives characteristics, concentration in outdoor recreation and "maker" industries, and emerging start-up culture, Northwest Crossing has been able to attract several small manufacturing and mid-size headquarters to its employment area.

[34] Northwest Crossing. https://www.northwestcrossing.com/2019/09/plans-for-grove/

Exhibit 34. Northwest Crossing Community
Source: https://www.northwestcrossing.com/

BIRDSEYE VIEW GROVE_NW CROSSING

BIRDSEYE VIEW GROVE_NW CROSSING

Exhibit 35. Northwest Crossing Property Map, Bend

Source: Harcourts The Garner Group Real Estate, 2017.

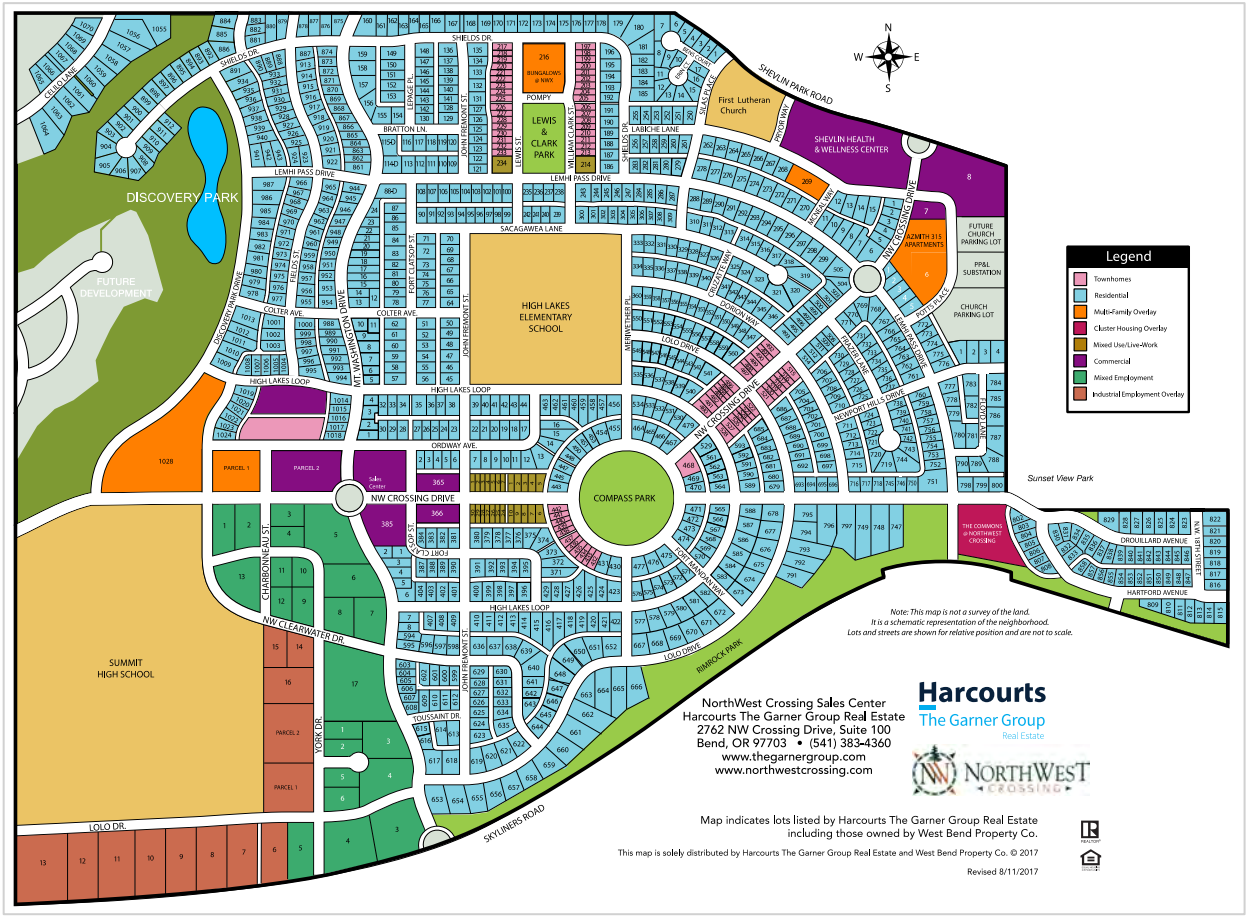
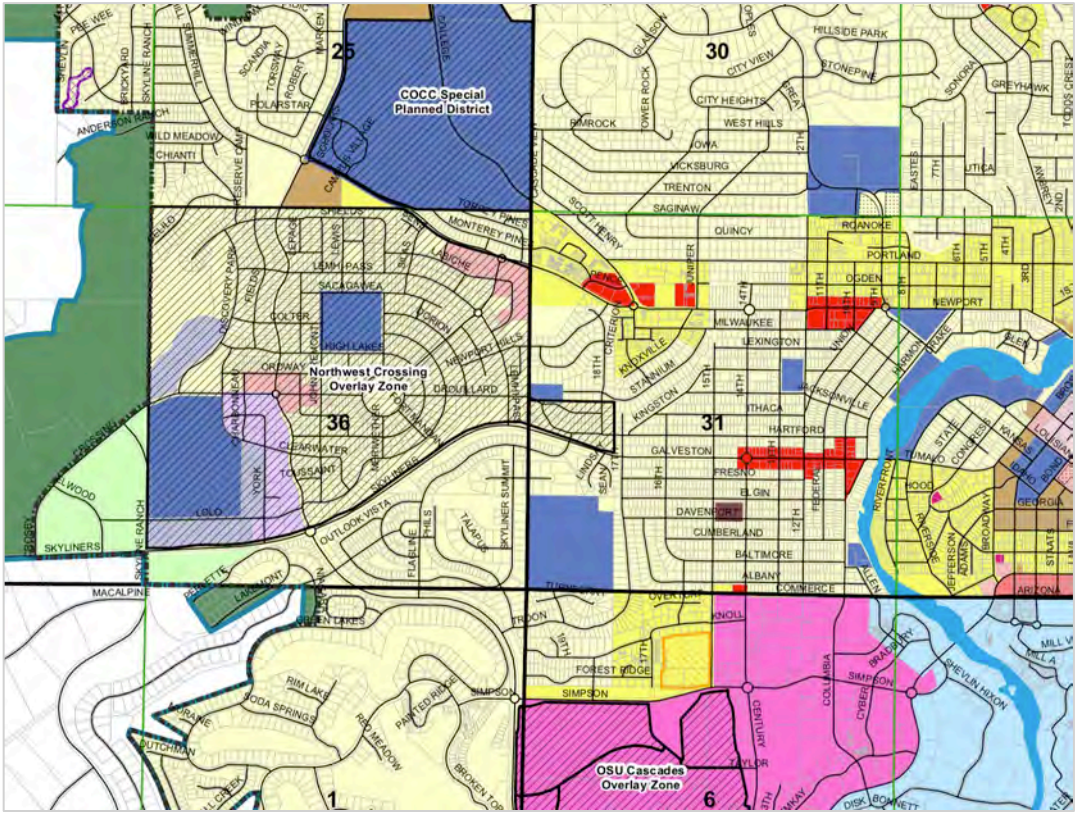


Exhibit 36. Subset of Bend Zoning Map to display Northwest Crossing Zoning
Source: City of Bend.



Appendix C: Bethany Case Study

Bethany is a master-planned development in unincorporated Washington County. The area is north of U.S. Route 26 and is located within 10 miles of downtown Portland, Hillsboro, and Beaverton. The area is composed of six subareas: North Bethany, West Bethany, Central Bethany, Arbor Oaks, Springville, and Thompson (Exhibit 38). Initial planning of Bethany began in the 1980s with the adoption of the Bethany Community Plan. Then, planning efforts in 2006–2010 resulted in the adoption of updated plan language and maps for the North Bethany Subarea Plan.

Despite Bethany's location in unincorporated county, the area is a relatively dense suburb. The area has a central commercial core surrounded by residential subdivisions. Portland Community College is located in the North Bethany subarea. Several parks, including a golf course, comprise the area and an open space/bicycle pathway provides connectivity between subareas.

Several land use districts comprise the study area to accommodate a community business district, a range of residential densities (from six to 24 dwelling units per acre), institutional uses, and commercial uses. The commercial core zoned as the Community Business District (CBD) was envisioned to provide a community-village atmosphere. Metro and Washington County formally designated this area as the Bethany Town Center.

Accordingly, the Bethany Town Center, or CBD, allows a mix of retail, service, and business establishments (e.g. grocery; restaurant; financial, real estate, institutional services; offices; entertainment; etc.) at medium-to-large-scales. The CBD also permits residential uses, in conjunction with commercial uses, of 20 to 40 units per acre. In some cases, when additional open space standards are met, residential densities are permitted up to 100 units per acre. The minimum lot area for uses in the CBD is 8,500 sq. ft. and the maximum height is 100 ft.

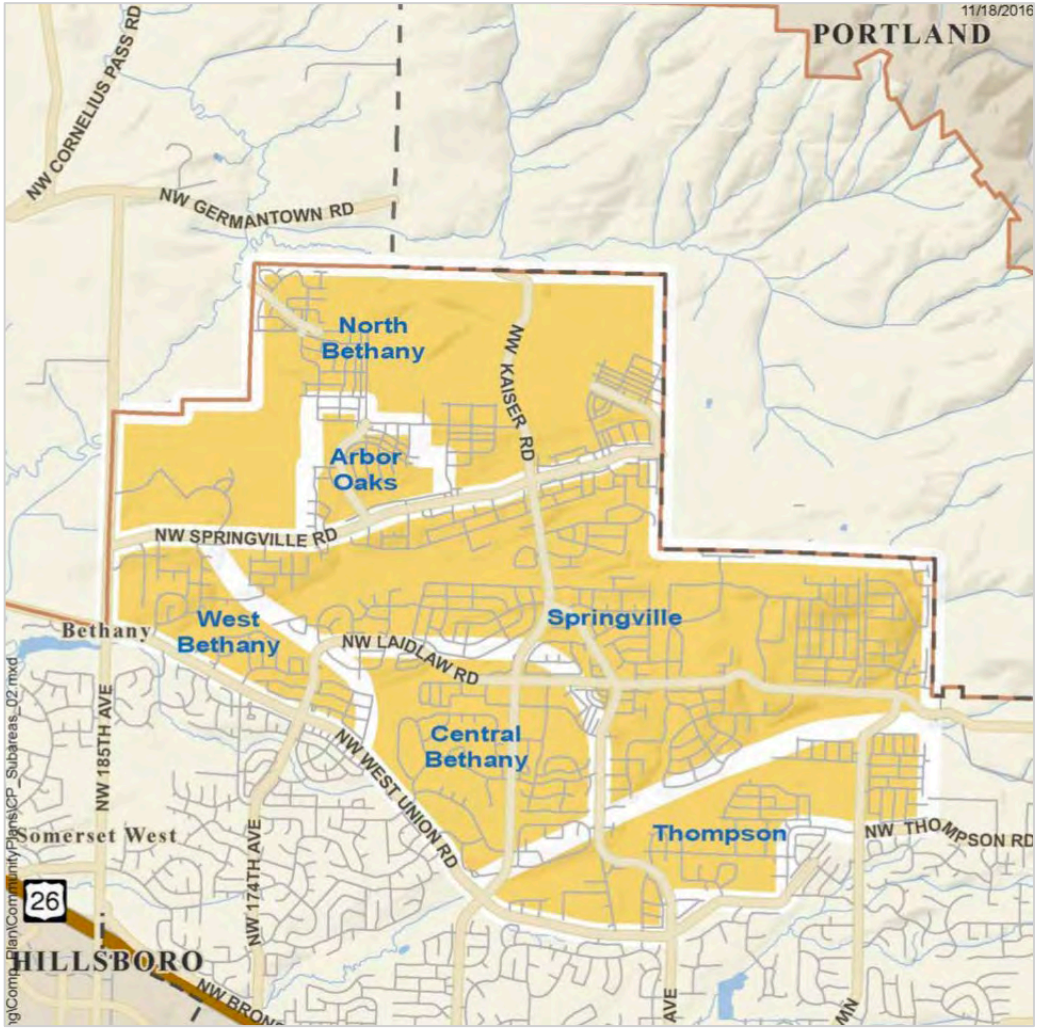
Areas designed for neighborhood commercial use, outside of the Bethany's CBD, allow many of the same uses as the CBD, but at small-to-medium-scales. In these areas, residential uses above ground floor retail are allowed, but at densities of 15 units per acre or less. The minimum lot area remains 8,500 sq. ft., but maximum heights are reduced to 35 ft. for all structures.

Bethany's principal commercial hub, Bethany Village Centre, was developed in 2002, only after the community had reached a critical mass of rooftops to sufficient to support commercial development. Today over 15,000 households are located within a five-minute drive of the center. Central Bethany benefits from very limited competition as the only retail center within a 1.5-mile radius. In real estate terms, Central Bethany is characterized as a community center, with over 225,000 sq. ft. and a trade area that extend beyond a ten-minute drive-time. Strong income demographics, limited competition, and land use allowing appropriate scale have all contributed to the success of commercial development in Central Bethany.

Exhibit 37. Bethany Community Business District
Source: https://www.portlandonthemarket.com/bethany-oregon-homes/ and https://www.facebook.com/pg/bethanyvillagecentre/photos/?ref=page_internal.


STARBUCKS
COFFEE

Exhibit 38. Bethany Subarea Vicinity Map, Washington County
Source: Washington County Comprehensive Plan, Bethany Community Plan.



Appendix D: Murray Scholls Case Study

Murray Scholls neighborhood is zoned Town Center – High Density Residential (TC-HDR) and Town Center – Multiple Use (TC-MU). *TC-HDR* permits residential uses (24 to 36 dwelling units per acre); it also permits commercial uses, parks, (small) free-standing offices, and limited retail in mixed-use buildings. In this zone, structures are permitted up to 50 ft in height. *TC-MU* allows office, retail, and service uses as well as light manufacturing uses. Residential uses (of 24 to 40 units per acre) are also allowed in mixed-use structures. In this this zone, the maximum building height is 60 ft.

The Community Plan for the Town Center was developed in adopted in 2005. Policies in that plan established residential targets – a minimum of 1,050 units and a maximum of 2,500 units (more units when improved public infrastructure can accommodate more households).

The primary commercial hub in the Town Center is Progress Ridge TownSquare. Developed in 2008, Progress Ridge was envisioned to be a pedestrian-oriented, civic hub offering a variety of commercial and employment uses to serve the growing region. Today it operates as somewhat auto-centric boutique, destination shopping center providing roughly 280,000 sq. ft. of shopping, dining, beauty and healthy, entertainment, and service options. It is anchored by a New Seasons Market and an AMC Theater.

Significant rooftop support outside of the Murray Scholls Town Center pre-existed development of Progress Ridge. Over 100,000 people live within a ten-minute drive of the center. Drawing in part from established neighborhoods, competitive commercial development exists in close proximity. From a competitiveness perspective, the success of Progress Ridge can be attributed to product differentiation and the recruitment of regionally drawing tenants. The most proximate commercial center at the time, ironically named Murray Scholls Town Center (but not located within the Murray Scholls Town Center Plan area), was owned and developed by Gramor, the same developers as Progress Ridge. Gramor had a deep understanding of the market, and their experience in the area led them to identify demand for premium tenants and existing voids in the market. Regionally drawing entertainment users Cinetopia (now AMC theaters) and Big Al's extended Progress Ridge's market support.

Exhibit 39. Progress Ridge TownSquare
Source https://progressridgetownsquare.com/

Exhibit 40. Murray Schools Vicinity Map
Source: Murray Scholls Town Center Community Plan, Index Map.

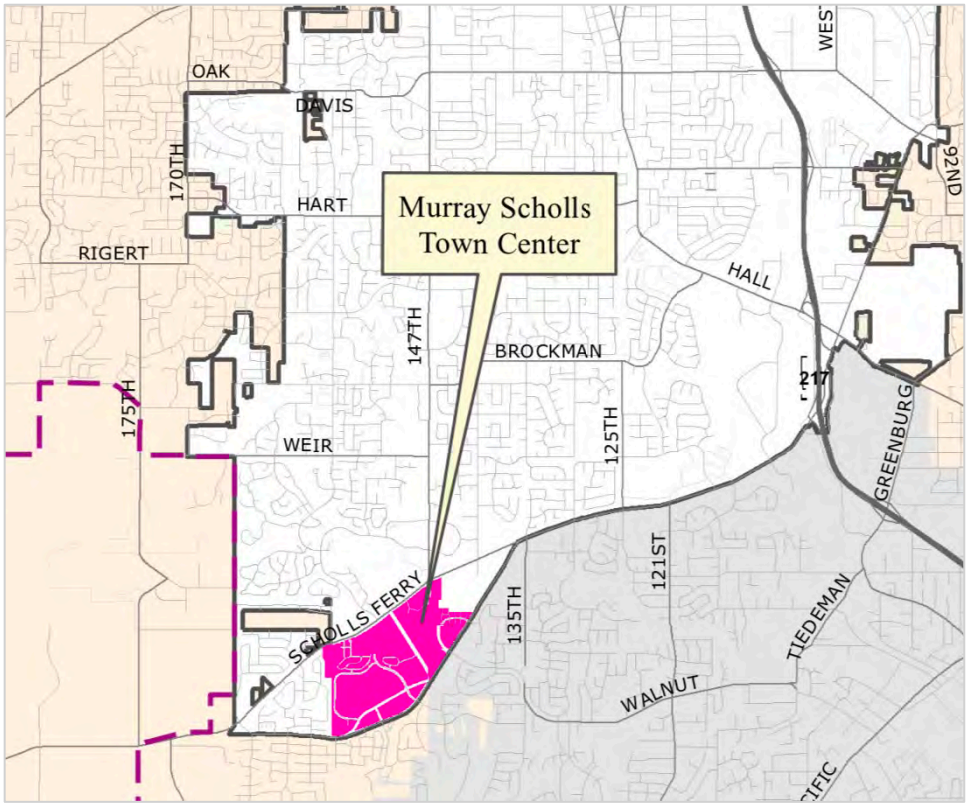
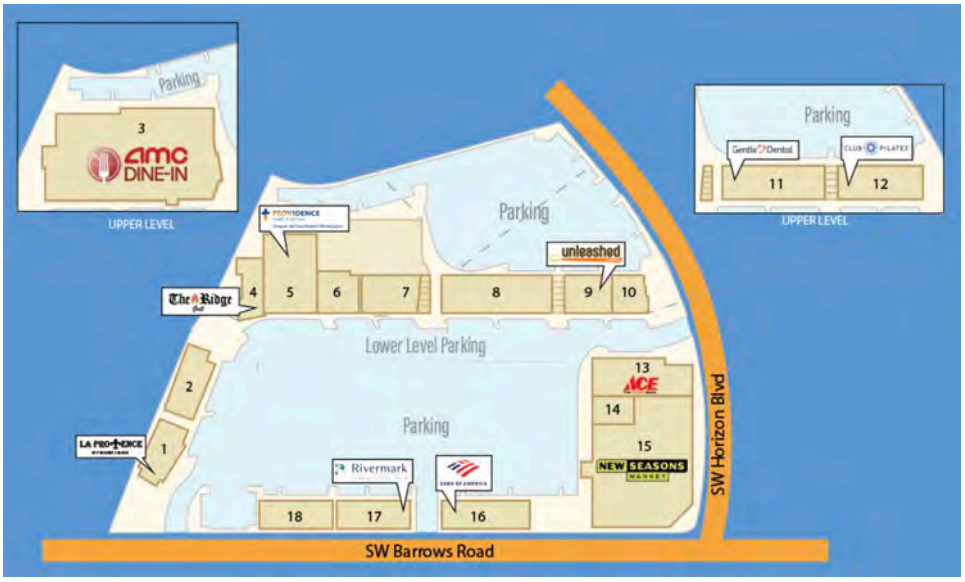


Exhibit 41. Commercial Directory and Layout, Progress Ridge TownSquare
Source: https://progressridgetownsquare.com/



APPENDIX F. URBAN DESIGN GUIDEBOOK AND ACTION PLAN

Urban Design Guidebook

Beef Bend South | King City, Oregon

November 2020

Table of Contents

Introduction

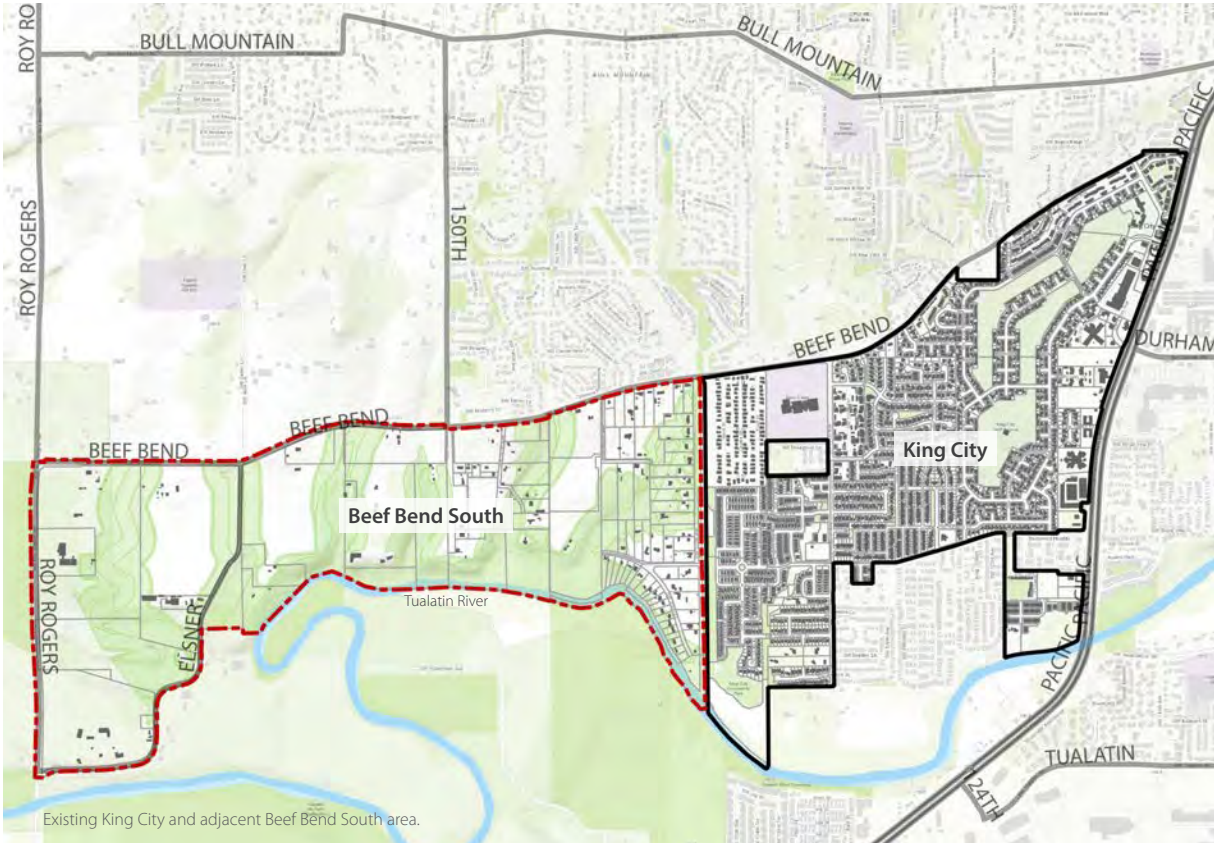
Purpose of the guidebook

This guidebook is part of the King City Transportation System Planning process. It is intended to serve as a bridge between the URA 6D Concept Plan, the City's first Transportation System Plan, and the forthcoming Beef Bend South Master Plan. It builds on comparable developments (case studies) evaluated as part of the 2020 Market Analysis report to understand details around land use, transportation, urban design, and implementation. The case studies provide lessons learned and recommended actions for King City.

King City Beef Bend South Vision

The 2018 Concept Plan for King City articulated a community vision for the area called Urban Reserve Area 6D (URA 6D). In 2019, based on its review of the Concept Plan, the Portland Metro Regional Government approved King City's application for an expansion to the Urban Growth Boundary (UGB) to create an extension of King City.

URA 6D, also known as Beef Bend South, is 528 acres located to the west of King City, at the foot of Bull Mountain, on the north shore of the Tualatin River. For this new area, King City envisions a community of distinct neighborhoods tucked between the five stream corridors that carry water from the mountain to the river. The highest density neighborhood with the greatest mix of uses will be located closest to Roy Rogers Road, at the western edge of the city (and the UGB). This neighborhood is envisioned to be home to a new town center with a main street, which will include commercial and civic uses, and employment uses.



Existing King City and adjacent Beef Bend South area.

The other three neighborhoods will vary in density but all will accommodate a full range of middle housing types, offering a variety of sizes and affordability intermixed within small urban-scaled blocks. Just north of Beef Bend Road, the City of Tigard is planning a series of new neighborhoods (South River Terrace) with a similar vision for mixed housing neighborhoods. In the future, several streets running north-south—River Terrace Boulevard in Tigard and Elsner Road in Beef Bend South—could connect these two communities to each other.

At its narrowest, the area between Beef Bend Road and the Tualatin River is about 3,000 feet and interrupted by streams. Creating an east-west street connection is necessary but it will be challenging. The purpose of this east-west street will be to accommodate local traffic and to provide a link between the four neighborhoods. It will be a King City signature street that changes character from east to west, reflecting the personality of each neighborhood it serves, while protecting each stream it traverses or crosses.

The street and path network will be a fine-grained network of local streets, green streets, alleys, and paths. The network will provide seamless connections for community, accessing services, shopping, recreating, and experiencing nature; it will do so in a way that works for people on foot, in a car, on a bike, or in small electric-powered vehicles.

Relationship of this document to the TSP

This document flags several design strategies that are important for the Beef Bend South Master Plan to follow up on in order to achieve the goals and vision of the community and to fulfill earlier planning efforts such as the URA 6D Concept Plan. Detailing specific design approaches within the context of the King City Transportation System Plan will help ensure that the TSP does not preclude these actions or strategies from being implemented in the future; it may in fact promote some of these concepts.

Relationship of this document to other documents

2020 King City Market Analysis

The 2020 King City Market Analysis for Urban Reserve Area 6D was conducted in an earlier TSP task. For the three case studies— Villebois, NorthWest Crossing, and Bethany—the market analysis quantified the amount of existing residential development and commercial and industrial square footage. As a complement to the market analysis, this document details *where and how* the residential, commercial, and industrial development are arranged and configured. It also details other aspects of the development, such as the integration of open space, walkability, street network, access, and visibility of commercial uses. It analyzes how all these characteristics work together and how well each case study performs when compared with goals for Beef Bend South.

Metro's State of the Centers 2011 Report

In 1995 Metro adopted the 2040 Growth Concept to guide growth and development in the Portland metropolitan area. It designates regional and town centers, in addition to downtown Portland, as the focus for redevelopment and concentration of homes and jobs. The Metro 2040 system categorizes these mixed use areas as main streets, town centers, regional centers, and station communities. In 2011 Metro updated their State of the Centers report with analysis measuring the performance of more

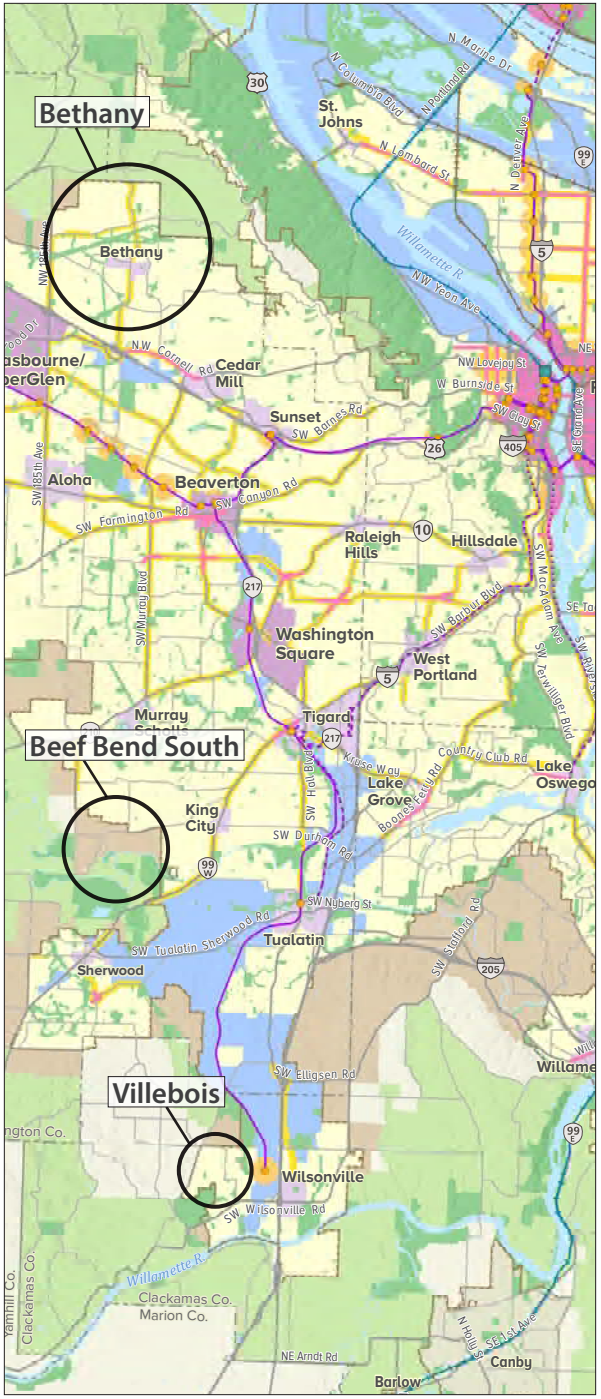
than 40 of these centers in terms of vibrancy, economic prosperity, and equity, among other measures (https://www.oregonmetro.gov/state-centers-report).

Together these metrics indicate development patterns that combine households, jobs, walkability, and transit supportive development. Similar performance metrics were selected to evaluate the case studies for this document and allow the reader to compare the case study communities with each other.

It is interesting to compare the case studies with Metro-designated activity centers, which use similar performance metrics. For example, the table to the right compares the dwelling densities for two Metro activity centers (Hillsdale and Northwest Portland Nob Hill), with the three case studies.

Dwelling Density Comparison Table

Metro-designated activity center	
Activity center	**Dwelling units per acre (average density)**
Hillsdale	6
Northwest Portland Nob Hill	27
Case Study planned dwelling unit density	
Case Study	**Dwelling units per acre (average density)**
Villebois	4.6
NorthWest Crossing	3
North Bethany	4.6



"A city is not an accident but the result of coherent visions and aims."

Leon Krier, "Architecture of Community"

Why these case studies

Three case studies similarly-scaled, master-planned communities were used for a comparative analysis of land use, urban design, transportation networks, and implementation strategies. The objective in studying these case studies was to identify characteristics that made them successful. The three case studies examined were Bethany and Villebois in the Portland metro area and NorthWest Crossing in Bend, Oregon.

Each case study represents a planned community that employed one or more specific planning or urban design techniques. These planning techniques are derived from timeless urban design principles and traditional town planning and were established in reaction to suburban sprawl and to mitigate the domination of the automobile.

The planning and design of each of the case studies required applying alternative planning techniques to large areas of land (500 - 875 acres). Given the scale of these planned areas compared to smaller projects, the traditional tools of default Euclidean zoning (addressing land use) and county or rural highway standards (addressing street network and streetscape) were not preferred. Instead alternative techniques, including zoning overlays, zoning districts, and/or other zoning mechanisms such as new rules and alternative rules, were used to replace or augment the typical planning and regulatory approach.

Two case studies—Villebois and NorthWest Crossing—are on land owned by a single property owner, and the master plan was executed by a single developer. North Bethany was rural land under multiple ownerships that was brought into the county through an urban growth boundary expansion. The county has overseen master planning, and development has been executed by different developers. It is more similar to what is expected to occur in King City Beef Bend South (formerly Urban Reserve Area 6D).

In each case, however, the same master planning design principles have been used. Together the case studies represent a number of exemplary approaches to planning a new community, from the layout of neighborhoods, to the design of streets, blocks, and lots; from mixing land uses and housing types to the integration of natural areas.

Terms and concepts referred to in this document

- Urban design metrics
- Ecological site planning and design
- New urbanism
- Context sensitive design
- Master Plan

Urban design metrics

Urban design metrics are measurements used to characterize the built environment, e.g. the qualities that make one street more inviting than another or one mixed-use center more economically vibrant than another. A useful reference is "Measuring Urban Design: Metrics for Livable Places," written by Reid Ewing and Otto Clemente, and published by Island Press in 2013.

Ecological site planning and design

Ecological site planning and design is the practice of planning for cities in collaboration with nature in order to avoid overloading the limits of land, air, and water resources. This a very broad and evolving practice incorporating the mid-century work of landscape architect Ian L. McHarg (author of *Design with Nature* originally published in 1969) and continuing today with efforts to incorporate more recent definitions of environmental sustainability into urban development. One such effort is LEED-ND (Leadership in Energy and Environmental Design for Neighborhood Development).

New urbanism

New Urbanism is an urban design movement that promotes walkable environments, mixed-use communities, middle housing, and the use of form based codes. The main organizing body for the movement is the Congress for the New Urbanism (CNU) founded in1993 (https://www.cnu.org). In the early 2000s, the CNU joined forces with the Institute of Transportation Engineers (ITE) and drafted the first document devoted to reforming engineering practice and standards so that federal highway standards could be customized within urban areas. This document (*Designing Walkable Urban Throughfares: A Context Sensitive Approach*) initiated a new movement picked up by other organizations such as NACTO (National Association for City Transportation Officials). New approaches allow cities to give equal or greater priority to transit serviceability, walking, and biking while engineering major streets with federal highway funding. (See also: Context sensitive design.)

Context sensitive design

Functional Classification of "roads," or streets, was a system established in the 1960s and '70s, through the Federal-Aid Highway Act. It required the classification of all roads in the country in order to establish funding priorities. Functional Classification tells planners and engineers what types of roads to design and how they should or should not connect, e.g. that Collectors can only connect to Arterials for example. Functional Classification is based on the philosophy of "mobility," which is prioritized for motor vehicle drivers. Highways have limited access, arterial roads have fewer intersections, and local roads are considered optimal when they are cul-de-sacs.

In 2006, CNU worked with ITE to create the manual "*Designing Walkable Urban Throughfares: A Context Sensitive Approach*." In contrast with the Functional Classification system, the CNU ITE manual emphasizes connectivity and placemaking; intersections are encouraged; narrow traffic lanes and on-street parking are permitted; and walkable, multimodal streets are favored over maintaining high-grade Level of Service (LOS), which rewards the free flow of the automobile.

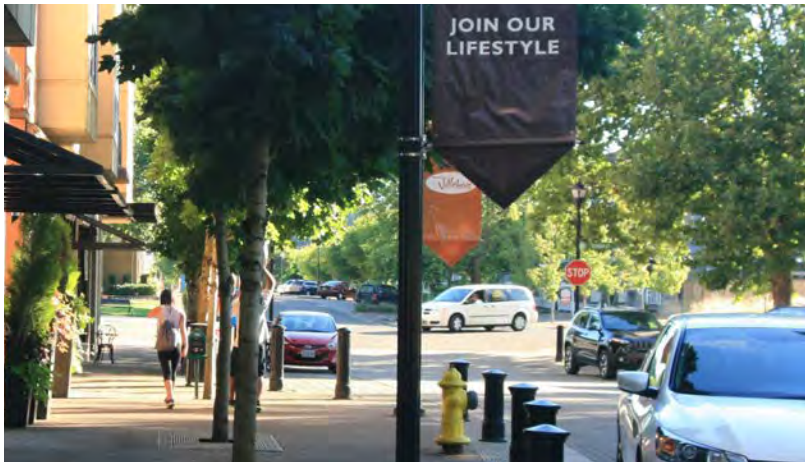
Download and read about the CNU ITE document at https://www.ite.org/pub/?id=E1CFF43C-2354-D714-51D9-D82B39D4DBAD, and https://www.cnu.org/our-projects/cnu-ite-manual. Another helpful reference is *Street Design, The Secret to Great Cities and Towns*, by Victor Dover and John Massengale, (Wiley, 2014).

Master Plan

A master plan is both a planning process and a document that provide comprehensive guidance on policies and design actions that can be taken over time to lead to a particular, physical outcome.

DOCUMENT ORGANIZATION

Each case study gives an overview of the history of the development and provides maps and metrics that can be compared across case studies. Key design and implementation features are highlighted along with lessons learned.



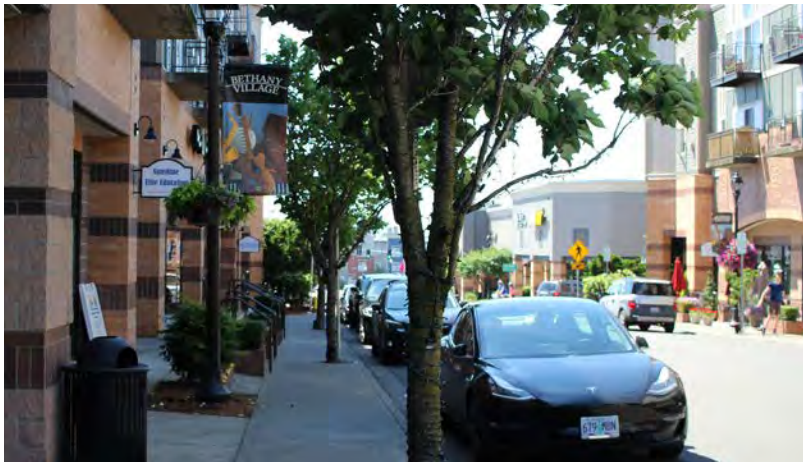
1 | Case Study: Villebois

Section 1 is a case study of the Villebois development in Wisonville, Oregon.

2 | Case Study: NorthWest Crossing

Section 2 is a case study of the NorthWest Crossing development in Bend, Oregon.

DOCUMENT ORGANIZATION



3 | Case Study: Bethany

Section 3 is a case study of the Bethany development in unincorporated Washington County, Oregon.

4 | Critical Success Factors

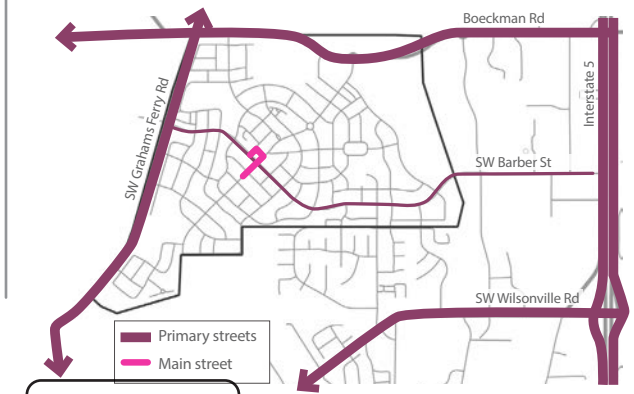
Section 4 builds upon lessons learned from the case studies and details urban vitality elements that work together to create a successful community, neighborhood, and main street or town center.

Critical success factors are organized around four major categories— whole community design, planning at the neighborhood scale, neighborhood design, and main street and town center design—each with a checklist of primary success factors.

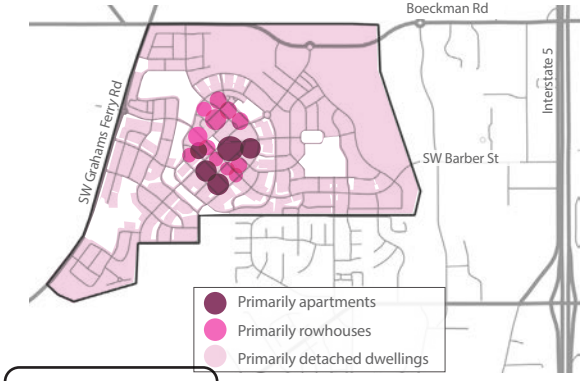
INTRODUCTION TO CASE STUDY METRICS

Case studies by the numbers. A successful, vibrant center needs a critical mass of people, both residents and workers to sustain local business and support efficient transit and other services. For each case study several common metrics demonstrating urban vibrancy have been assembled.

Sample Page



NETWORK



DWELLINGS

Street network metrics

More compact and **connected street networks** tend to have significantly higher levels of people walking and biking and fewer vehicle miles traveled as compared to sparser, tree-like designs, such as those dictated by functional classification hierarchy.

Intersection density is commonly measured by number per square mile, as in Reid Ewing and Robert Cervero's studies for transit and walkability.

American street network intersection densities typically range from as little as 60 intersections per square mile (as in downtown Salt Lake City) to more than 500 (such as the network in downtown Portland, Oregon).

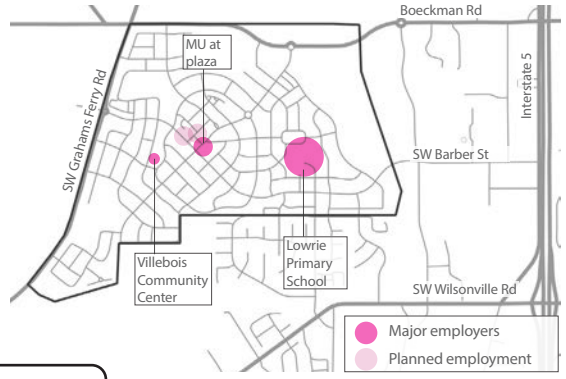
For more information, see https://www.cnu.org/our-projects/street-networks/street-networks-101

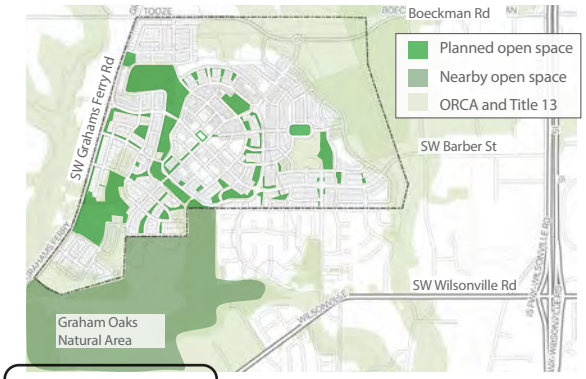
Dwelling metrics

Dwelling density, or the number of dwelling units per acre, is helpful in understanding both the number of households that can support commercial and civic uses and the potential activity level of public amenities, such as parks and schools.

For reference, Metro's approval of the URA 6D urban expansion area stipulated that the new Metro designated neighborhood would ultimately be home to 3,300 dwelling units, at a minimum.

Sample Page





JOBS

OPEN SPACES

Jobs metrics

The **number and distribution of jobs** is a measure of economic prosperity and urban vibrancy. For reference, the 2017 King City market analysis projected that 54,000 to 85,000 square feet of commercial uses were possible within 10 years as part of a neighborhood retail center. The 2020 market analysis identified about 55,000 square feet as more realistic, and recommended a "development scheme consistent with the form, scale, and type of commercial development in Northwest Crossing is advised. From a market perspective, Northwest Crossing is the most analogous case study area to the future realities of URA 6D."

Open space metrics

The URA 6D Concept Plan and King City community vision prioritize the **integration of open spaces** and a variety of open spaces throughout the Beef Bend South area. Programming, variety and physical distribution of open space and natural resource areas is a major differentiating characteristic in each case study, and these metrics and diagrams are intended for comparison purposes.

CASE STUDY 1

Villebois

Location: Wilsonville, Oregon

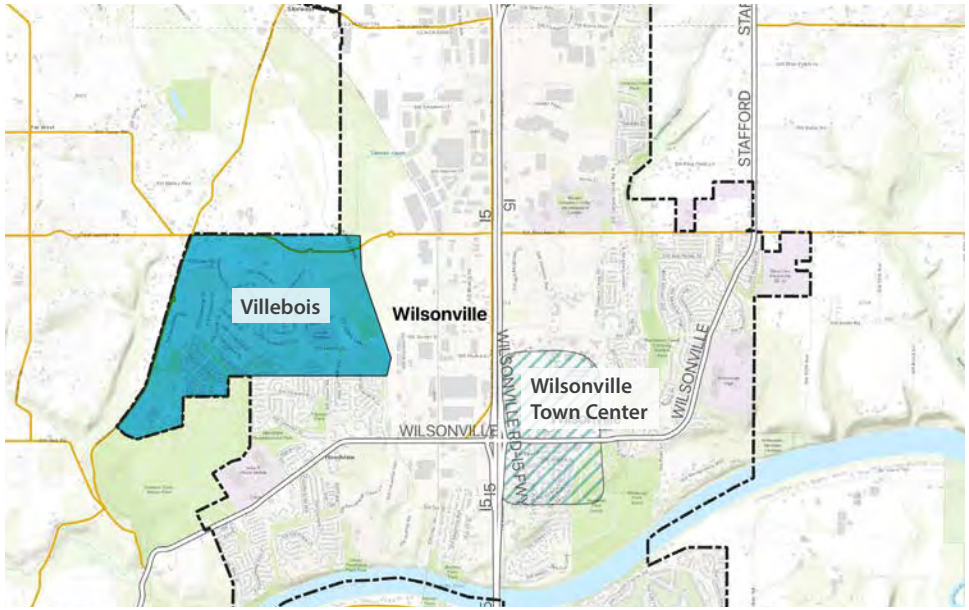
Size: 500 Acres

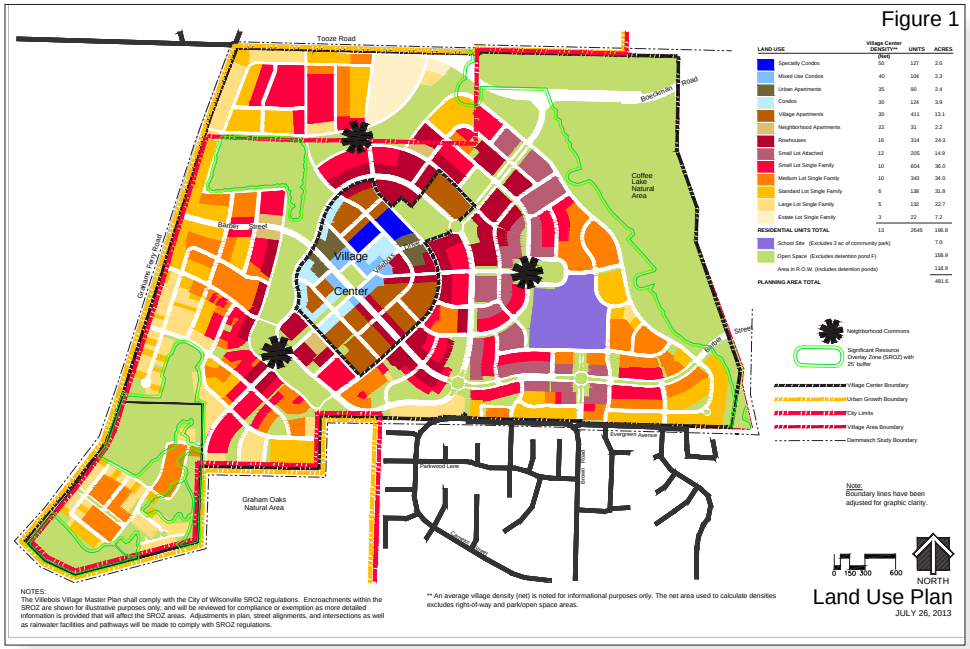
Context: Geographically separated from major streets and employment areas. Surrounding areas are rural or natural in character.

Housing mix: Main street apartment over retail, apartment, boulevard apartment, rowhouse, detached dwelling

Neighborhood design: Interconnected roads and trails link range of housing styles with ample open spaces, protected natural resources, and commercial/employment core

Character of main street / town center: Limited mixed use commercial and higher density residential surrounding an urban plaza.





Introduction

Initial Planning

The Villebois development was the result of city and community advocacy to re-appropriate land slated for a new prison as a planned residential development with small scale commercial. Villebois sits on the site of the former Dammasch State Hospital, which was in operation from 1961 to the mid-90s. After the closure of the hospital the site was identified by the state as the site of a new prison. After pushback from the community due to its close proximity to existing residential neighborhoods and Wilsonville's town center, the prison's location was moved north to what is now the Coffee Creek Correctional Facility. In its place a vision emerged for a mixed-use development integrated into the existing natural areas that surround the site. As part of an inter-governmental agreement with the state, 10 acres were reserved for community housing for people with mental illness.

From the beginning, urban renewal was a major driver of funding and development of Villebois. In 2003, voters overwhelmingly approved the new urban renewal district created by the city. The new district, called the West Side Plan, integrated the majority of the Villebois site and helped fund development and infrastructure improvements. Costa Pacific, the sole developer, had a vision for a mixed-use community with diverse housing types that was well connected to nature and open space. Modeled after designs of European villages, Villebois was planned with a central plaza with commercial uses and dense residential living at the core, surrounded by larger lots towards the edges.

Concept Plan

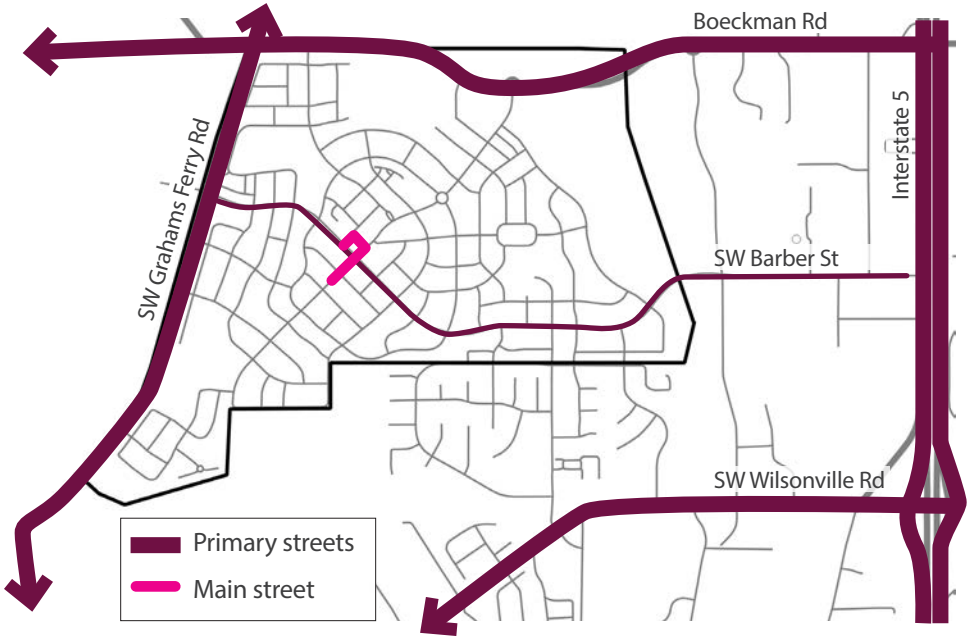
The planning of Villebois began in 2003 when Costa Pacific produced the concept plan. Shortly after the master plan and architectural pattern book, which specifies architectural styles and suitable site and building designs, were produced. These documents built on the initial vision and detailed a diverse community with a mix of housing types at different income levels and the incorporation of nature throughout. A mixed use, dense village center with ground floor commercial spaces surrounding an urban-style plaza was to be the heart of the community. The integration of nature and a connected system of trails and paths was baked into the development concept from the beginning. Villebois sits just north of Graham Oaks Nature Park, a 250-acre regional park with miles of trails which was purchased by Metro just before development of Villebois began. Within Villebois there are a variety of types of open spaces, from pocket parks that help preserve mature trees to a linear park and, most recently, a skate park with linkages to Graham Oaks.

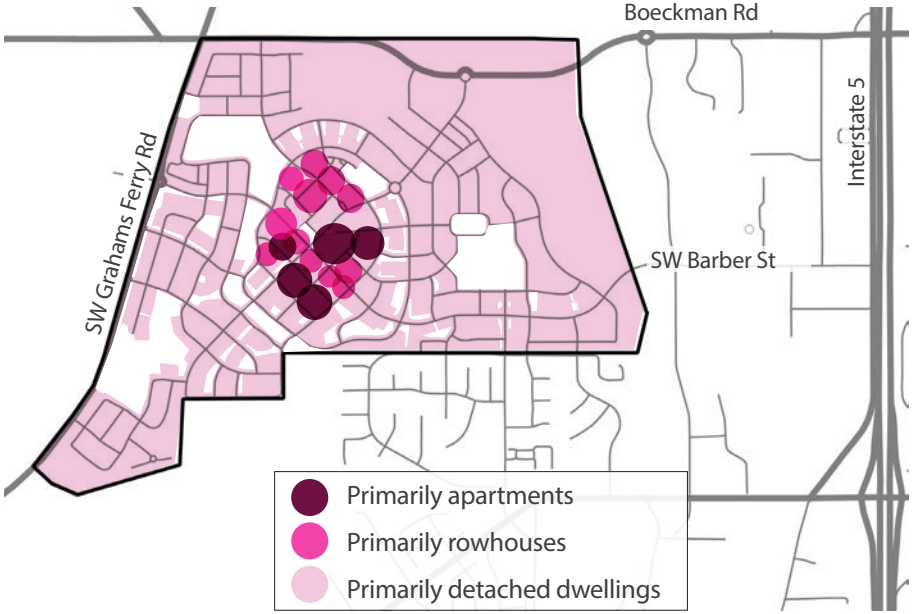
Villebois is mostly built-out, though mixed use commercial development at the Village Center has never been fully realized. By 2010, 700 homes had been built. Though there was some slowing during the 2008 recession, the development has been largely built-out to 2,600 homes.

While residential development succeeded, commercial development has been slow. Villebois has struggled to attract mixed use development in part because the Village center is disconnected from main arterials and lacks visibility from any major street.

To help incentivize development around the plaza, the City of Wilsonville is considering adopting a Vertical Housing Development Zone program which would provide developers with a 10-year partial property tax exemption for mixed use developments. Costa Pacific is hoping to build three mixed use buildings that include ground floor retail and affordable housing above. Villebois has struggled to attract mixed use development in part because the Village center is disconnected from main arterials and lacks visibility from any major street.

Despite the undeveloped commercial areas, Villebois is seen as a desirable place to live. The combination of well-designed streets and homes, and the preservation and incorporation of trees and natural areas have made for a successful development.





NETWORK

INTERSECTIONS PER SQUARE MILE (APPROX.)

200

BLOCK LENGTH

240 x 300 feet average

BLOCK PERIMETER

1,080 feet

WALK SCORE*

36

*walkscore.com

ALLEYS, THROUGH CONNECTIONS, OR PATHS

16 - 18 foot alleys throughout; pocket parks and linear paths throughout

ARTERIALS

SW Grahams Ferry Road (west boundary); Boeckman Road (north boundary)

ARTERIAL CHARACTER

One lane in each direction with intermittent median. Roundabouts and bike lanes on Boeckman Road.

TRANSIT SERVICE

South Metro Area Regional Transit (SMART); one bus line with frequent AM/PM weekday service to transit center

DWELLINGS

PLANNED DWELLINGS

2,300 minimum

DWELLING DENSITY PLANNED

4.6 dwelling units per acre

HIGHEST DENSITY PLANNED

50 dwelling units per acre

LOWEST DENSITY PLANNED

5 dwelling units per acre

HOUSING MIX

Main street apartment over retail, apartment, boulevard apartment, rowhouse, detached dwelling

JOBS

COMMERCIAL

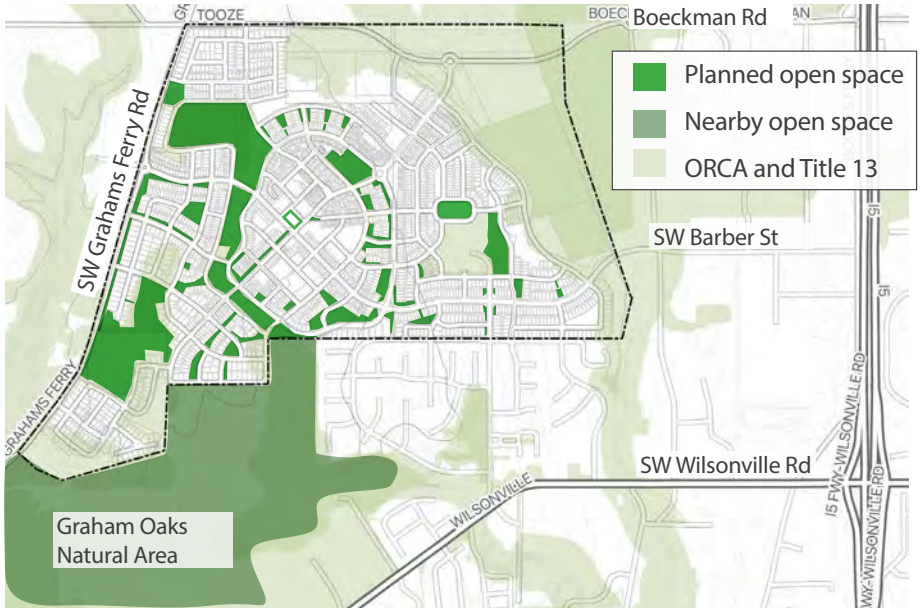
15,000 square feet

LIGHT INDUSTRIAL

0 square feet

CIVIC USES AND MAJOR EMPLOYERS

Lowrie Primary School (10 acre site)



OPEN SPACES

PLANNED OPEN SPACE

60.5

OPEN SPACE TYPES

Trail, linear, community, neighborhood, private, pocket, and urban parks

MUNICIPAL CONTROL

City of Wilsonville, Wilsonville School District, Homeowner's Associations

NEARBY OPEN SPACE

Graham Oaks Natural Area, Tonquin Regional Trail, and Coffee Creek Wetlands

Design

Incorporation of natural areas

Open space is a critical element and defining aspect of vision. Linear parks surround the village center and connect significant open spaces within and adjacent to plan area. Open spaces range from urban style parks to wooded natural areas.

Connectivity to surrounding areas

The Villebois Greenway connects regionally significant open spaces in Coffee Creek Wetlands and Graham Oaks Natural Area, forming the Tonquin Regional Trail. The entire development has 130-acres of trails and open green spaces that function as a linked network.

Diversity of housing

A broad range of homes are permitted to offer residents choice in housing type, style, and price. Housing types include single dwellings of various sizes, attached/ cottage dwellings, rowhouses, and neighborhood, village, and urban apartments. High-quality of designs stem from architectural pattern book.

Varied housing design

Homes have compatible yet varied designs. An architectural pattern book details design features and standards establish elements of architectural styles. All buildings are reviewed by the Planning Director. The Pattern Book addresses the appearance of dwellings from the street and open spaces and includes rules on the scale and proportions for adjacent land uses.

Rigorous streetscape standards

Multiple sources contribute to attractive and functional streets including city zoning regulations, the Villebois Pattern Book and the Community Elements book. The Community Elements book provides the most fine-grained detail by establishing type and location of elements including lighting, street trees, site furnishings, and tree protection standards. Arterial designs include roundabouts, bike lanes, sidewalks, and on-street parking to slow traffic and prioritize a range of users. Neighborhood streets are alley-loaded, allowing for a continuous green strip with regular street trees and on-street parking.

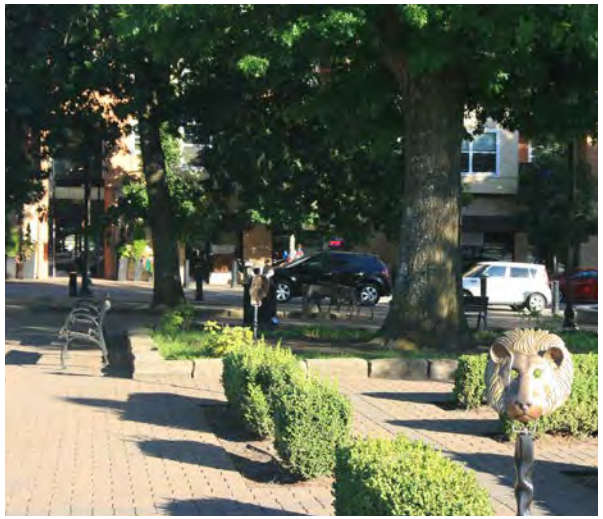
Festival street at the town center

A festival (curbless) street surrounds a central plaza and can serve as a seamless gathering space. During special events the street can be closed to car traffic, allowing activity to spill into the street. This special street is delineated by bollards and pavers to set it apart from nearby streets.

Villebois

Town Center

A central urban-style plaza sits at the heart of the town center. The plaza functions as the social center of the village with an inviting festival street (described on previous page). Large canopied trees provide shade and desirable places to gather, complete with benches, a fountain, and bocce ball court. In the summer concerts and other small community festivals bring larger groups. A mixed use development with ground floor retail and apartments above creates an enclosure on one side of the plaza. Two blocks of diagonal parking allow for easy access to the site while pedestrian-scaled lighting and ample street trees create a walkable urban environment. Housing is most dense at the village center, with a combination of stacked flats and townhomes in the blocks surrounding the center.



The mixed use development at the plaza.

Higher density apartments are a block from the plaza.

Modern rowhouses leading to the town center and plaza.

Implementation

Urban Renewal

From the beginning, urban renewal was an integral tool for the development of Villebois, making it possible to pay for infrastructure improvements. The West Side Urban Renewal Plan which encompasses almost all of Villebois, was created in 2003 after voters approved the development of the community. Primary goals of the West Side Plan included creating a robust transportation network that was internally connected and connected to rest of the city; supporting diverse housing types; and robust natural areas and parks. The district was so successful that in 2016 the area was expanded to included additional lands.

This public/private partnership model added substantial value with the assessed value of the area increasing 22-fold in its first thirteen years. The city anticipates that the West Side Urban Renewal Area will close by 2024.

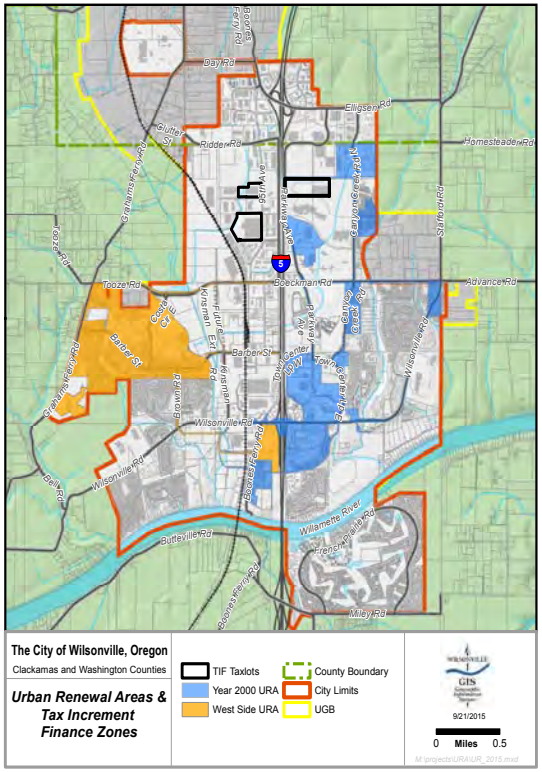
Development and Design

Villebois has its own zoning designation in Wilsonville's development code. Zone "V" permits many housing types including cottage clusters, row houses, duplex, accessory dwelling units, community housing, apartments, and single dwellings. Commercial uses are permitted in the village center, and more limited commercial uses are permitted in "neighborhood centers".

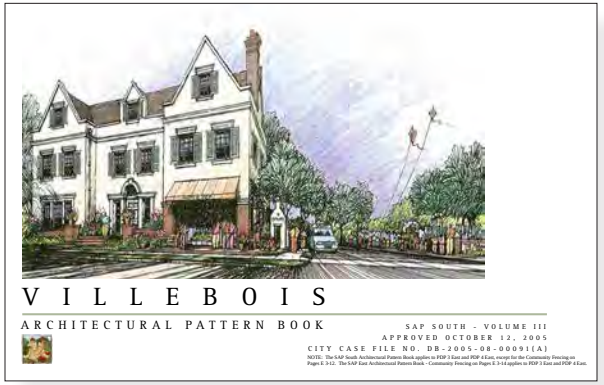
Neighborhood and building design is seen as a success in Villebois, in part because of the cohesive design elements. Two design manuals help ensure high-quality design that meets the goals and vision for Villebois: the Architectural Pattern Book and Community Elements book.

The Architectural Pattern Book includes guidance on site design, how buildings face the street, scale and proportions, as well as a list of appropriate architectural styles. The land use patterns chapter covers land use types and specifies setbacks and building placement by land use type. The architectural styles section illustrates examples from a range of historical and modern styles including French Revival to American Modern. It has detailed imagery of specific exemplary buildings that show how to achieve the required diversity established for the development. A compliance checklist is included to help builders and city officials determine if the building meets all required standards.

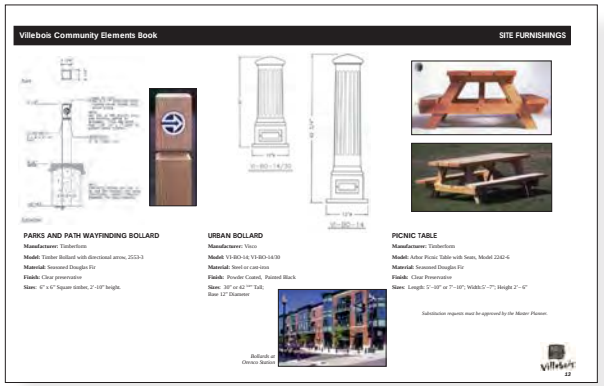
The Community Elements Book is created for each Specific Area Plan, of which there are four total. It serves as the plan for neighborhood design by addressing elements such as street trees, tree preservation, site furnishings and play structures, curb extensions and lighting. These elements establish a cohesive identity and fulfill the goals of diversity, connectivity, and sustainability set forth in Villebois' Master Plan.



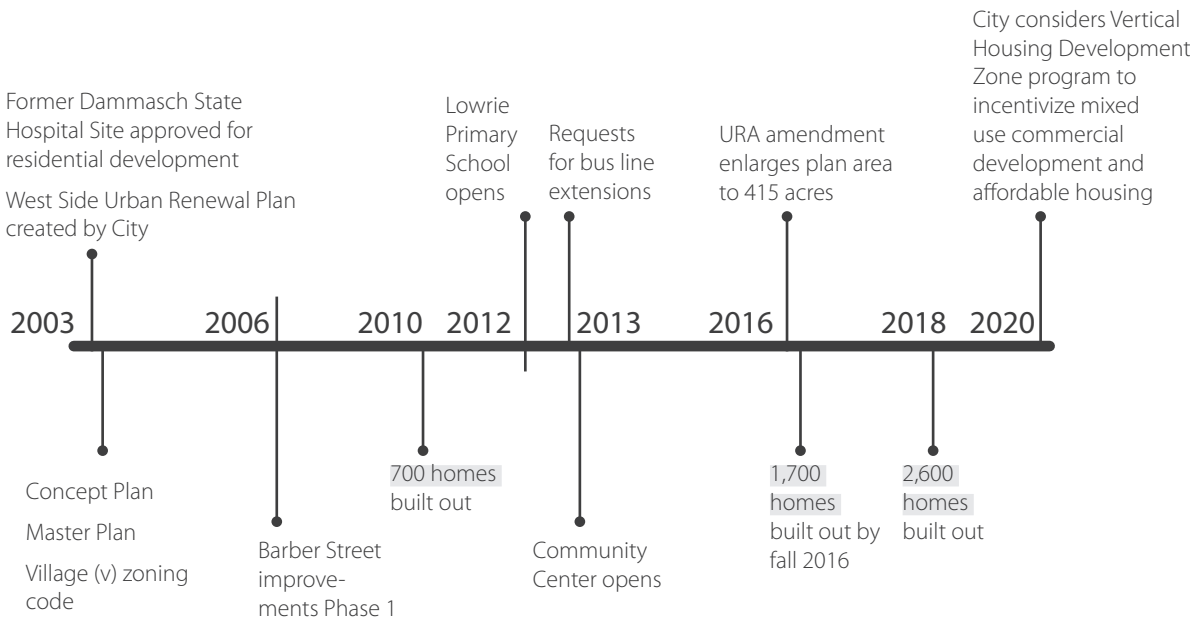
Wilsonville's urban renewal map showing the West Side URA in gold.



Villebois Architectural Pattern Book



Community Elements Book detailing streetscape furnishings.



Incentivizing Commercial Development

While the Villebois Master Plan intended for dense mixed use development surrounding the central plaza, it has yet to take off. High construction costs, low foot-traffic, and lack of visibility from any major arterials are factors that have made mixed use development difficult. The city is still strategizing about ways to realize the initial vision for the Village Center. As part of the Equitable Housing Strategic Plan released in June 2020, the city is considering tax abatement programs that would incentives developers to build affordable housing. A Vertical Housing Development Zone is recommended for the Villebois Village Center to create affordable housing and ground floor retail all at once.

LESSONS LEARNED

» A broad range of natural areas, parks, and trails increases livability, mobility, and home values.

» Connect trails and open spaces to surrounding trails and open spaces to integrate new development with existing region.

» Alleys improve walkability, create opportunities for more street trees, give residents front yards, and allow for more on-street parking for residents and visitors.

» The commercial portion of a development needs to be easily visible and accessible from a major arterial to attract users beyond residents or supported with additional users from nearby employers.

» Consider adaptability of retail spaces so they don't sit vacant. For example, design retail spaces so they can be subdivided (or enlarged) to meet the needs of retailers or office tenants over time. Common service areas, e.g. restrooms, can serve multiple tenants, lower improvement costs, and enable small or startup businesses to establish a presence. Don't preclude office uses in early phases; encourage low or no rent pop-up businesses; occupy storefront spaces with city offices or civic uses (like a library), or developer showrooms.

» Achieving higher density mixed use development at the center may require developer incentives.

» Rigorous tree preservation standards lead to pocket parks that homes can front. These pocket parks provide shade, places to recreate, and increase the overall desirability of the development.

» Urban renewal is a powerful tool that secures funding for regionally significant infrastructure such as street improvements and utilities without burdening developers or homeowners with these costs.

CASE STUDY 2

NorthWest Crossing

Location: Bend, Oregon

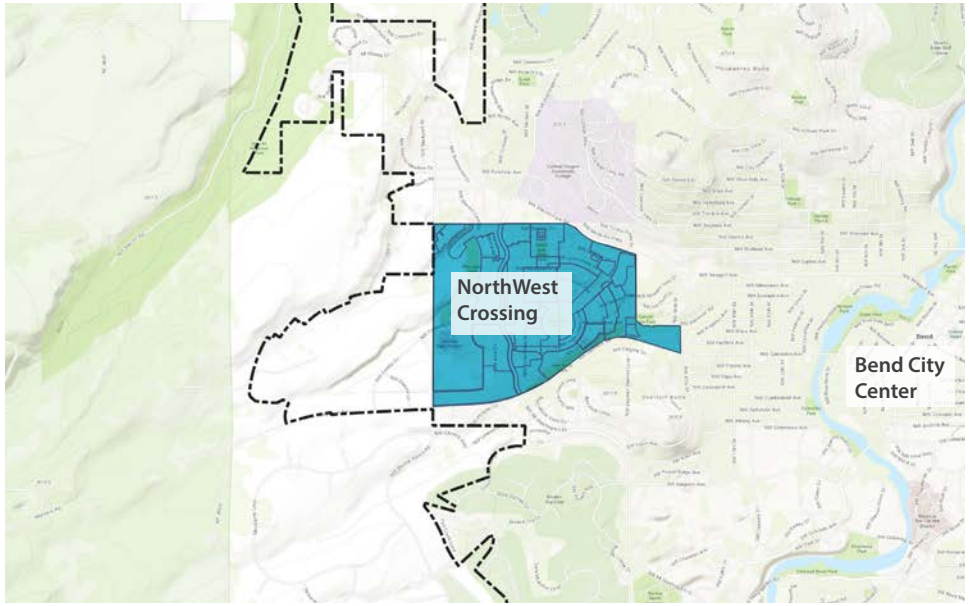
Size: 486 acres

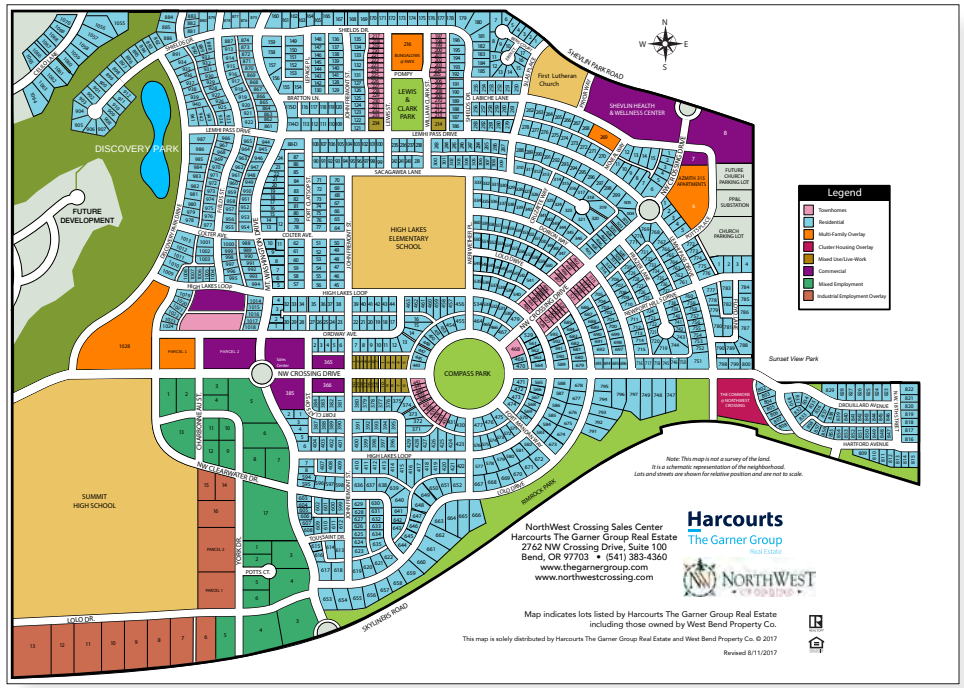
Context: Connected to adjacent residential areas and the commercial/employment areas of west Bend.

Housing mix: Detached dwellings, cottages, cottage cluster, duplexes, live/work units, main street apartment over retail, boulevard apartment, apartment

Neighborhood design: Large range of dwelling types spread throughout connected network of preserved high desert landscapes with town center and employment/light manufacturing uses and neighborhood schools.

Character of main street / town center: Limited mixed use commercial and higher density residential.





Introduction

As private landowners closed the last of their timber mills, they looked to capitalize on the large population growth underway in Bend, Oregon to retain value for their land. Beginning in 1998 the West Bend Property Group (West Bend PC) advocated for a new neighborhood as development extended outward from Bend. They engaged consultants to develop a concept plan and began conversations with the city and community. In the early stages the developer identified the need to design a community of the highest quality to not only differentiate their product in a highly competitive residential market but also to ensure approval from the city and the community. Facing initial stiff resistance to perceived "suburban sprawl," West Bend PC sponsored lectures by national speakers on smart growth topics and a public charrette to gather input.

Design Vision

A design vision emerged for a concept building off the existing character of the high desert landscape. A mixed-use neighborhood was laid out based on the mapping of large ponderosa pines and outcroppings of rimrock with the locations of roads, lots, and sidewalks determined by these preserved natural elements. Another defining feature is its radial layout. In response to concerns over the speed and character of large regional connectors linking NorthWest Crossing to Bend, the developer worked with city engineers to design roundabouts. Three roundabouts control the flow and speed of traffic into and out of NorthWest Crossing; there are no stop lights in the development, and even the largest streets have parallel parking, street trees, and bike lanes.

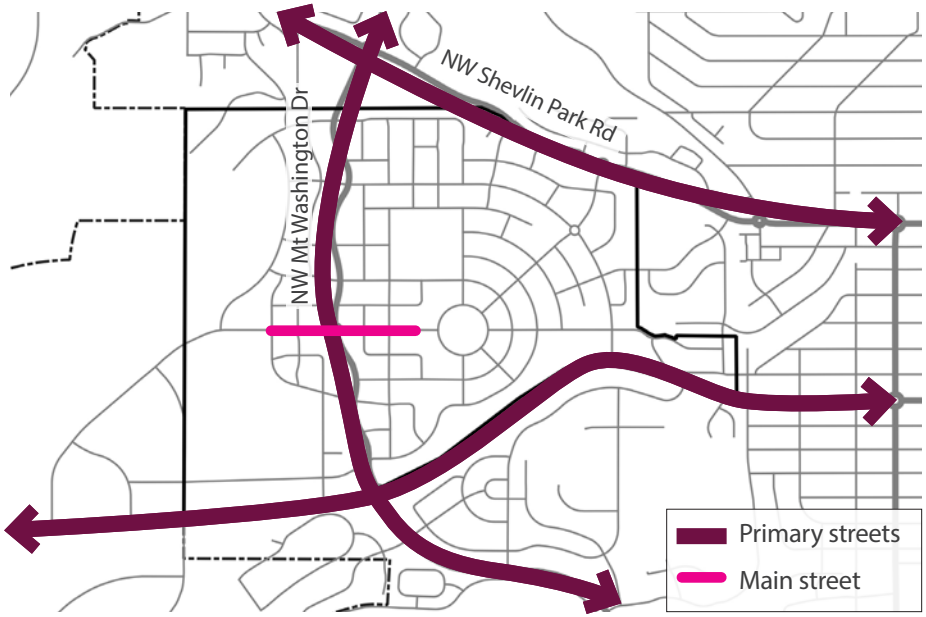
The overall vision for NorthWest Crossing is a mixed-use community that looks and functions like a complete community. A broad range of uses including two schools, open spaces, employment uses, commercial spaces, and a mixed-use town center are connected with a mile and a half of paved trails that also link in to surrounding regional open spaces and trails. All roads (including alleys and mid block crossings) and parks were developed by West Bend PC and dedicated to the City of Bend. An overlay zone was approved by the city to permit a broader range of uses, special street standards, and consolidated parking for employment uses.

Master Planning

Fundamental to the vision was the desire to have a development that did not look like it was built by one builder. The master plan arrayed different housing types using a transect concept that arrays housing types from most dense in and adjacent to the town center to least dense along the edges of the rural surrounding land. Lots were auctioned off in small phases to pre-approved builders in a lottery system. Detailed development guidelines and design standards for residential and commercial uses and a prototype book based on historic catalog plans guide builders' designs. An architectural review committee designated by West Bend PC reviews all designs. The building quality and diversity is a key feature of NorthWest Crossing.

The town center with main street surrounded by employment uses, commercial buildings, two-story mixed-use buildings with ground floor retail, and attached dwellings at higher densities. Fundamental to its success are the design of its streetscapes and the large number of adjacent office uses. West Bend PC sold several lots to another developer who built office spaces and marketed them based on the lifestyle of NorthWest Crossing. Several high profile light industrial and software companies have located there, including the head quarters of HydroFlask and Ruffwear. Other commercial development includes a communal office space targeted to the high rate of people working from home in Bend, professional offices within and adjacent to the town center, and a large medical campus at the NE entry to the neighborhood.

The last phases of construction at NorthWest Crossing are being developed this year with construction spanning from 2001 to 2021. The final phase of the town center is being constructed with a public market hall, mixed-use commercial building, and 33-unit building. This is on the heels of the development of 132 apartment units, a cottage cluster, and other narrower-lot detached dwellings. Building off the success of NorthWest Crossing, the West Bend Property Co. is planning to develop an additional 1,750 housing units to the west as a second development. The development has been very successful with homes retaining high values even during the height of the recession.



NETWORK

INTERSECTIONS PER SQUARE MILE (APPROX.)

225

BLOCK LENGTH

230 x 320 feet average

BLOCK PERIMETER

1,100 feet

WALK SCORE*

47

*walkscore.com

ALLEYS, THROUGH CONNECTIONS, OR PATHS

14 - 16 foot alleys throughout; pocket parks and linear paths throughout

ARTERIALS

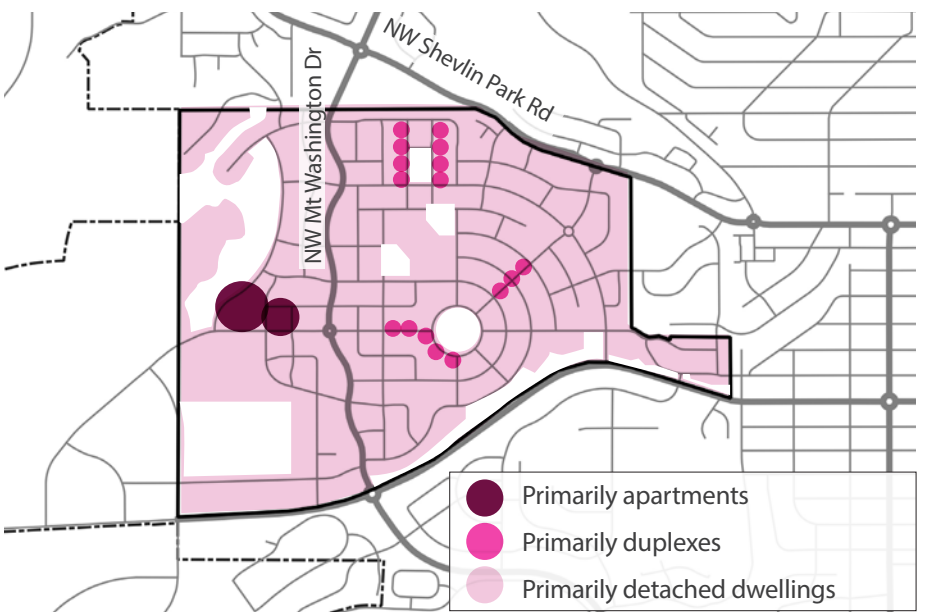
NW Shevlin Park Rd (partial north boundary); Skyliners Rd (south boundary); NW Mount Washington Drive (bisect)

ARTERIAL CHARACTER

Roundabouts throughout. Bike lanes and on-street parking on NW Mount Washington Drive.

TRANSIT SERVICE

Cascades East Transit (CET); one bus line along Shevlin Park Rd with frequent service to transit center.



DWELLINGS

PLANNED DWELLINGS

1,500

DWELLING DENSITY PLANNED

3 dwelling units per acre

HIGHEST DENSITY PLANNED

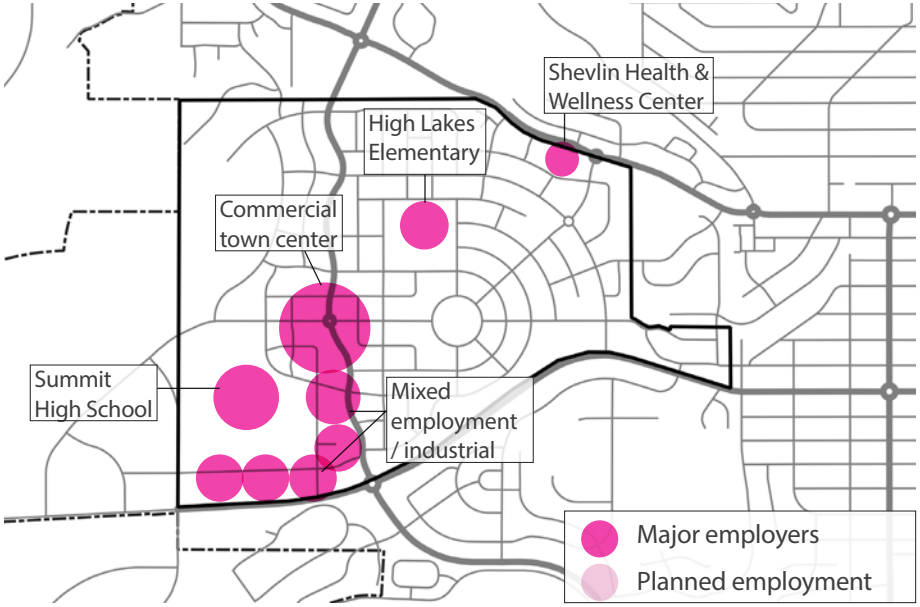
19 dwelling units per acre

LOWEST DENSITY PLANNED

7.2 dwelling units per acre

HOUSING MIX

Main Street apartment over retail, boulevard apartment, apartment, live/work units, duplex, cottages, cottage cluster, detached dwelling



JOBS

COMMERCIAL

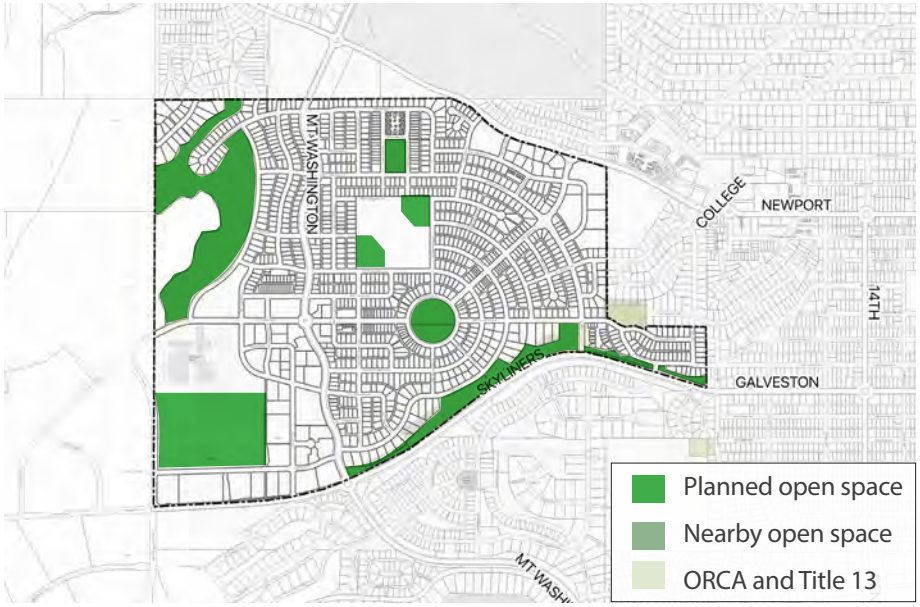
55,400 square feet

LIGHT INDUSTRIAL

43,000 square feet

CIVIC USES AND MAJOR EMPLOYERS

Summit High School (48 acres), High Lakes Elementary School (15 acres)



OPEN SPACES

PLANNED OPEN SPACE

75 acres

OPEN SPACE TYPES

Trail, linear, community, neighborhood

MUNICIPAL CONTROL

City of Bend, Bend School District

NEARBY OPEN SPACE

Shevlin Park, Deschutes National Forest, Phil's Complex

Design

Varied housing design

By pre-approving builders and distributing lots through a lottery system, the developers dispersed building styles throughout the community. Widely varying housing styles make NorthWest Crossing look and feel like an established neighborhood rather than a subdivision. This approach also increased competition among builders to differentiate their product to increase sales. Builders submit individual designs to an Architectural Review Committee that reviews designs using the Residential and Commercial Architectural Standards.

Preserved high desert landscape

The design started with detailed mapping of natural resources and significant trees. Streets, sidewalks, and lots were laid out to preserve and showcase these elements as resources. The high desert landscape is a defining attribute of the design of NorthWest Crossing.

Diversity of housing

A broad range of housing types are dispersed throughout the neighborhood using a transect of established prototypes. Higher density housing is located near the two commercial centers or adjacent to parks. Detached housing has varying lot sizes with different prototypes intermixed throughout the district in subdistricts based on setbacks and lot widths. The range in housing types translates into choice, a range of price points, and the ability to age in place.

Mix of uses

The neighborhood was designed with a full range of uses,15-acres of mixed-use employment, 40-acres of industrial uses, and the high school are clustered south of the town center. The added activity of people who work and go to school in NorthWest Crossing translates into a viable town center that is a functional center of gravity for the community.

Circulation/Roundabouts

Four roundabouts define the layout of streets and blocks in NorthWest Crossing. There are no streetlights needed in the neighborhood. The roundabouts slow down cars while handling traffic safely and efficiently. Their design and use were critical in winning public support for the project, and the city has subsequently adopted their use in other neighborhoods. Additionally blocks were designed to be small with frequent intersections including mid-block crossings and alleys. The block size in neighborhoods ranges from 300 to 500 feet with block sizes decreasing to rouhgly 275 feet in the town center.

Network of connections

The neighborhood is designed with a dense network of intersections and narrow neighborhood streets with curb extensions, sidewalks, street trees, and on-street parking. All blocks are alley-loaded. Mid-block pedestrian crossings and a mile and a half of paved trails offer alternate ways to connect through the neighborhood and are linked to surrounding regional trails/resources and a network of mountain bike trails. Slower traffic speeds and attractive streetscapes with street trees, grates, seating, and lighting reinforce the pedestrian orientation of streets.

NW Crossing

Town Center

A four-block concentrated mixed-use center of retail, commercial, and second floor residences and offices is located on the western edge of the neighborhood. Wide sidewalks with attractive streetscapes frame a narrow main street lined with 2-3 story buildings. More dense types of housing including apartments and live/work units surround and support activity in the town center. Buildings form a streetwall with mid-block pedestrian passageways. Outdoor dining and plazas are located in setback areas. The intersection frequency, mid-block passageways, and appealing streetscapes translate into high levels of activity within and leading to the town center. Parking is available on-street and in shared lots behind buildings that are managed collectively. The focus of retail uses is on community-serving uses, with no large anchors. Main Street hosts a weekly farmers market and other events throughout the year and functions as a heart of the neighborhood.

Buildings in town center form street wall or are set back for plazas/outdoor dining

Employment uses adjacent to the town center have attracted a range of tenants including anchor tenants such as HydroFlask.

Higher density apartment and mixed-use projects in the town center were built in later phases.

Implementation

Public engagement

The developer sponsored public charrettes to present concepts and solicit feedback. There was significant opposition to perceived suburban sprawl of new development. The developer responded to these concerns by engaging in conversations and sponsoring lectures by national leaders in Smart Growth to educate about design concepts. A turning point was the design of roundabouts to lessen traffic speeds and avoid large, regional connector roads. The developer partnered with city engineers to design a solution that would meet dual objectives. The roundabouts in NorthWest Crossing were the first roundabouts constructed in Oregon.

Overlay zone

The master plan was adopted and codified in an overlay zone. The NorthWest Crossing Overlay Zone permits different densities and a mix of uses. It also permits consolidated parking (particularly for employment uses) and limits industrial uses to light manufacturing. Smaller lots were permitted to increase density levels and additional types of housing were allowed.

Use of prototypes

The master plan is zoned according to four prototypes that determine scale, character, use, and construction type along a transect from urban to less urban.

» Town Prototype – 2-3 story façade built to sidewalk line; attached commercial, mixed-use, apartment or townhome; 12 - 19 dua

» Village Prototype – 2-3 story façade permits 10-foot landscaped dooryard setback; ; attached commercial, mixed-use, apartment, townhome, duplex or cottage; 12 - 19 dua

» Neighborhood Prototype – detached dwellings with range of lot sizes (4,000 – 8,000 SF) mixed throughout the district in subdistrict with alley-loaded parking; permits ADUs; 7.3 max dua

» Edge Prototype – irregular or extra deep lots or near designated natural areas; detached residential or industrial; max 2 dua

A Prototype Handbook provides detailed development standards for both residential and commercial development. These development standards are codified in the City's overlay zone. Architectural standards for residential and commercial uses address topics including decks and porches, driveways, duplication of building designs, exterior colors and design treatments, lighting, walls and trims, fences, garages, landscaping, and tree preservation. A pattern book of preferred architectural styles based on historic catalog of plans helps builders interpret traditional styles while meeting the design standards. Together, these regulatory tools establish a rhythm and scale for buildings while promoting both overall harmony and distinction between individual buildings.

Street types

The neighborhood was designed with small blocks and frequent intersections. Street types from the master plan were codified as Special Street Standards in the Overlay Zone. Street types tentative locations and alignments were mapped with standards corresponding to street types. Alternate standards are permitted through an approval process. Language permits the use of any lesser street standards adopted later. Street tree guidelines apply to designated areas defined by distinct types of trees.

Employment and light industrial

Commercial development includes a communal office space targeted to the high rate of people working from home in Bend, professional offices within and adjacent to the town center, and a large medical campus at the NE entry to the neighborhood.

LESSONS LEARNED

» Excellence in the overall neighborhood design and design of open spaces and streetscapes and range of housing types has translated into market value. Sales have remained strong, even during the 2008 recession, with steady home values.

» Compared to Villebois, the town center has succeeded due to high visibility from a primary arterial and roundabout, limited number of commercial spaces phased over time, and close proximity of employment uses.

» All parks and streets (including alleys) were developed by the developer but transferred to the City of Bend for public ownership. There is no homeowners association.

» More intensive mixed-use development and higher density residential uses were not developed until the final phases. This minimized the amount of time spaces sat empty.

» Using roundabouts to reduce the traffic speed on arterials allowed design that emphasizes other modes and avoids the use of street lights and regional connector lane widths. Even arterials have a pedestrian-oriented character with street trees, green strip, bike lane, and on-street parking. Frequent intersections and shorter block lengths improve walkability and prioritize pedestrians over vehicles.

» Shared parking district for commercial uses reduces the amount of area needed for off-street parking. Community commercial uses limited to 5 parking spaces.

» Architectural Review Committee established to review and approve all development for consistency with residential architectural standards.

» Lottery system for allocating lots to builders promoted authentic variety in building forms and promoted competition for higher quality products.

» Phases were small and discrete so construction zones were confined. Any inconveniences to residents was reduced. Potential buyers could see how development would look and feel given incremental progress toward achieving the vision.

» Affordable housing was not identified as a critical need in early stages of development. As a result, there is a limited amount of affordable housing. Average home prices for single dwellings range from $465,000 - $895,00. A recent workforce housing project attempts to address this lack with 50 new apartment units. The developer has also donated eight lots to a local land trust and developed 53-unit senior apartment building.

» Planning for two schools (elementary and high school) improved marketability of development.

» Design for transit even if transit service does not yet exist. Densities in NorthWest Crossing are between 10 and 20 dwelling units per acre. Over the years a few transit service agencies have provided fixed route service to NorthWest Crossing. In early 2020, the OSU-Cascades Microtransit Pilot Project started serving the portion of NorthWest Crossing east of Mt Washington Drive on an app-driven, on-demand basis. When the region permanently addresses transit service, NorthWest Crossing will continue to accommodate transit.

CASE STUDY 3

Bethany

Location: Unincorporated Washington County, Oregon

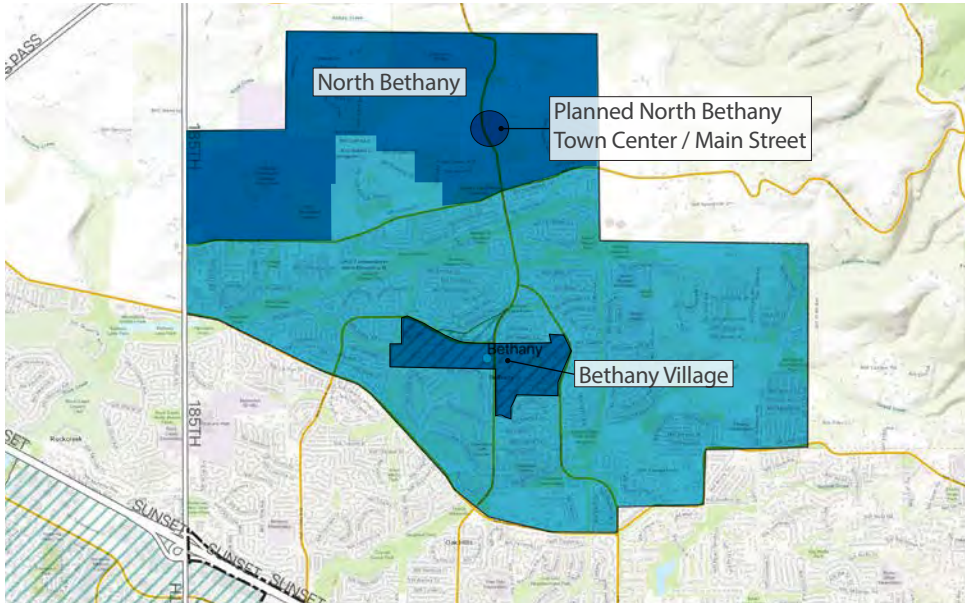
Size: 1,936 acres (875 acre North Bethany subarea)

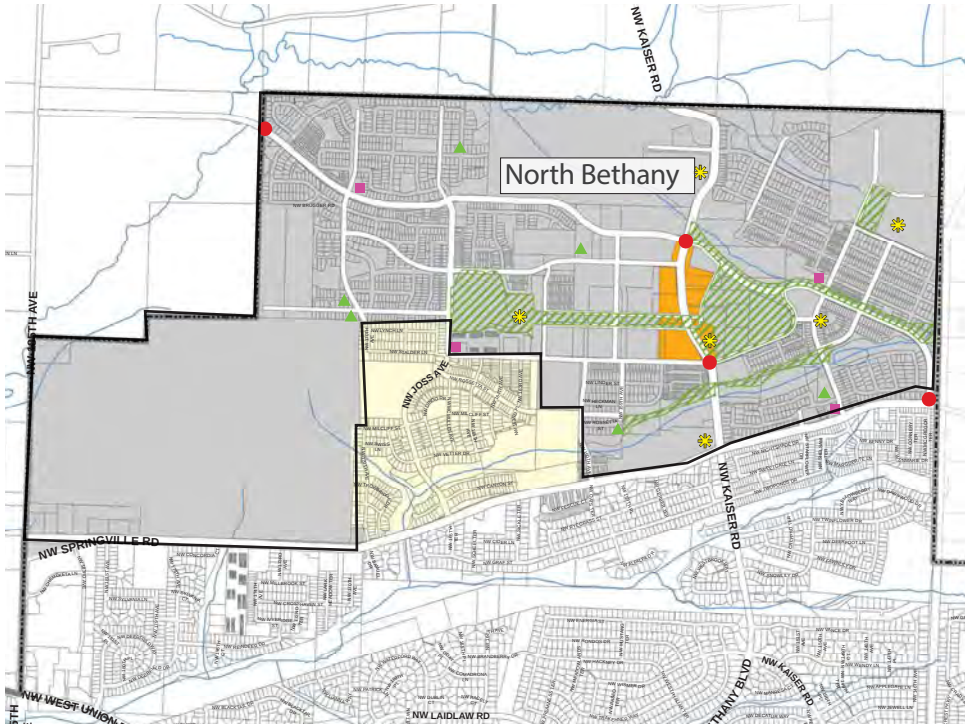
Context: Geographically separated from Bethany Village. Surrounding areas to the north, east, and west are undeveloped and rural in character.

Housing mix: Detached dwellings, duplexes, rowhouses, main street apartment over retail, apartments

Neighborhood design: Different housing types centered around neighborhood town centers with focal points of civic uses and large natural stormwater treatment areas and powerline corridors.

Character of main street / town center: Limited mixed-use retail with apartments above surrounded by larger retail uses. North Bethany planned for mixed-use retail/ commercial linking higher-density housing with parks/park block.





Introduction

Bethany Community Plan

The 1,936-acre Bethany subarea was added to the UGB in several installments to address the need for more housing in Washington County. The initial Bethany Community Plan identified five subareas within Bethany and designated a town center. The Community Plan designated comprehensive plan policies with maps and land uses for each of the five areas. Adopted in 1983, the Community Plan served as the basis for UGB expansions in 1992, 2000, and 2002. The County subsequently adopted a Unified Capital Improvement Plan to direct investments in public facilities and services to support new growth. A second community planning effort for the 875-acre North Bethany Subarea took place between 2006 – 2010 and was adopted as an additional chapter to the Bethany Community Plan in an effort to update the original vision and planning practices.

The vision for development identified residential neighborhoods set in the context of a few key natural features (Rock Creek, Bronson Creek, and Bales Pond). Primarily detached residential uses were spread throughout subareas, with a smaller concentration of commercial and retail uses and higher density attached dwelling units in the town center. Broad guidelines called for pedestrian and bicycle pathways allowing public access through neighborhoods. Individual design elements for each subarea articulated aspects of the vision.

Construction began in the 1990s. Since then the area has gone from 554 residents to roughly 22,350 residents. Washington County is the approval body, using Comprehensive Plan land use designations, the Community Development Code, and the Community Plan vision to guide development. As part of their projects, developers funded and constructed needed road improvements. Land was annexed by the Beaverton School District and Tualatin Parks and Recreation District to provide services to new residents.

Bethany Village Town Center

The 16.46-acre town center was developed in 2002 by Central Bethany Development Company. Construction has continued until 2016 with one vacant lot remaining at a prime corner. The core of the town center is a block and a half main street lined with 3-story mixed-use buildings and a plaza with a fountain and tiered seating. The vision was of a walkable center with an urban lifestyle in a small-town atmosphere. The anchor tenant is the public library with a cluster of supportive educational and after-school uses in adjacent commercial spaces. Surrounding the main street are commercial and retail uses, including large format retail spaces and small commercial spaces. Higher density projects surround the main street, bridging NW Bethany Boulevard. The Town Center is served by one bus line offering weekday service. While the Bethany Village Town Center does serve as the civic core of the larger subarea, its prime function is as a regional shopping and service destination.

North Bethany Subarea Plan

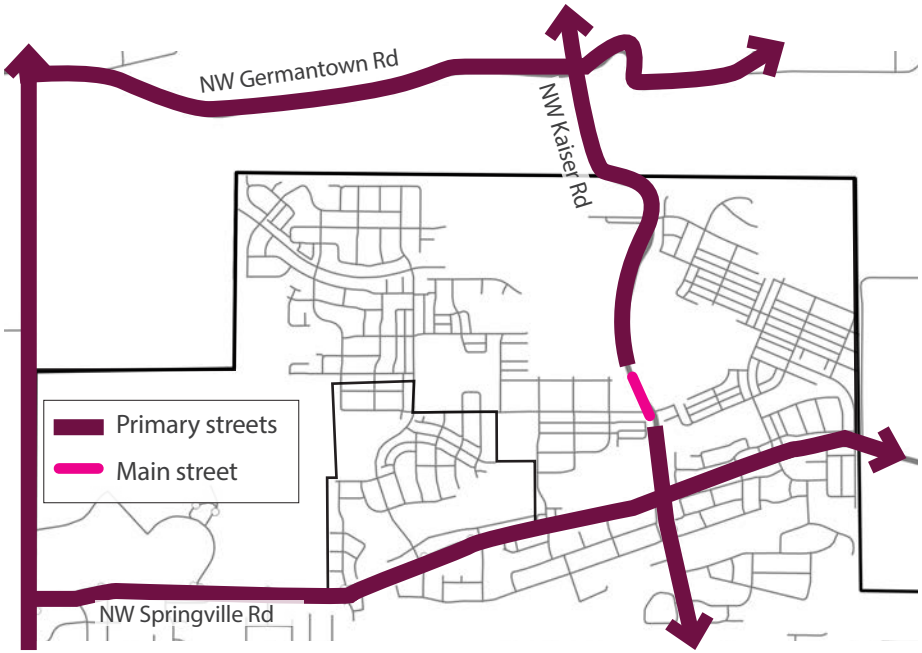
Given that several different private developers built parts of Bethany with limited design guidance, the primary form of development has been isolated suburban neighborhoods. In response to these limitations, Metro sponsored the North Bethany Subarea Plan. Given the state of urban design practice, we have focused our analysis primarily on North Bethany.

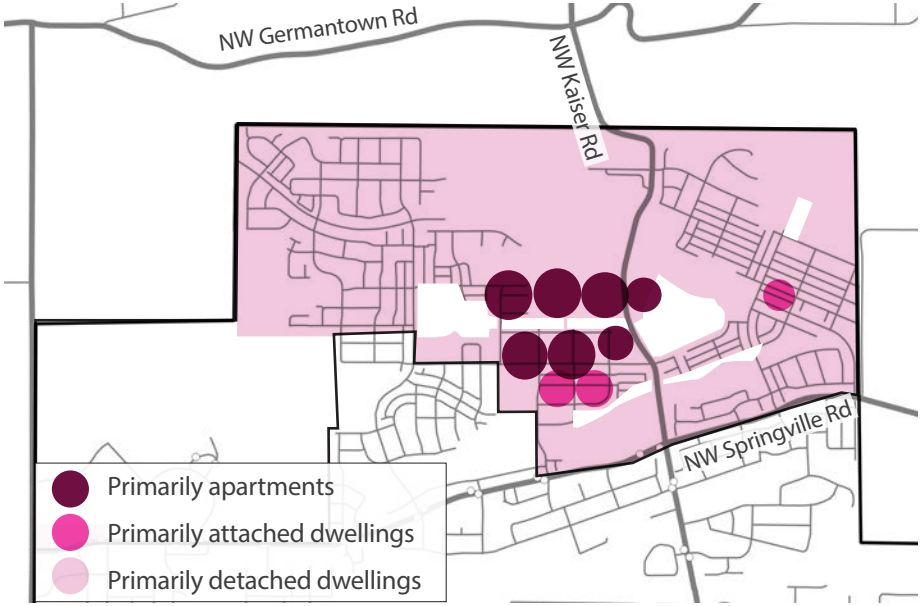
Located in the NE corner of Bethany, the vision for North Bethany is a more densely developed complete community with urban services. This includes several neighborhoods arrayed based on landforms (primarily hilltop ridges) organized around two community parks and a neighborhood center. The design takes advantage of natural features and integrates stormwater treatment areas as defining open spaces that connect residents and users.

Key to the vision for North Bethany is a neighborhood center as a center of gravity along NW Kaiser Road. This 4-block long node is envisioned as a dense commercial district. The main street will be lined with mixed-use and high-density residential buildings. Prominent corner design elements will frame gateways, and a planned park block leading to a large community park will link residents through the neighborhood to the center. Given the importance of the center to the vision and its location on a high-speed regional arterial, the county led an urban design plan for the main street. Through several public charrettes the county developed detailed guidance that was amended to the North Bethany Plan. No retail has been constructed yet. It is anticipated that construction will begin in the next several years. Any new development will need to meet design standards for the main street area.

The vision is for 10,000 residents living in 4,000 dwellings. A range of housing types are permitted in base zones with minimum and maximum densities that include a bonus in the main street area of up to 32-40 units per acre. Development and design standards address building location and design. Standards are limited in scope though and no pattern books or typologies are used to implement the vision for a broad range of housing types and price points.

Construction began in 2013, with the first subdivisions beginning construction in 2015 and 2017. New street cross sections were adopted as part of the North Bethany Plan to introduce additional streetscape amenities while still meeting the minimum width of County Road Standards. Some developments have private streets however. The majority of neighborhoods are alley loaded with parallel parking on all roads but arterials. Bike lanes are limited to a few areas.





NETWORK

INTERSECTIONS PER SQUARE MILE (APPROX)

NA

BLOCK LENGTH

220 x 400 feet average

BLOCK PERIMETER

1,240 feet

WALK SCORE*

NA

*walkscore.com

ALLEYS, THROUGH CONNECTIONS, OR PATHS

18 - 20 foot alleys throughout; pocket parks and linear paths throughout

ARTERIALS

NW 185th Avenue (west boundary); NW Springville Road (south boundary); NW Kaiser Rd (bisect)

ARTERIAL CHARACTER

One lane in each direction with no shoulder. Bike lanes on NW Springville Road

TRANSIT SERVICE

Trimet Service Line 67 with frequent service to PCC along NW Springville Rd

DWELLINGS

PLANNED DWELLINGS

4,000

DWELLING DENSITY PLANNED

4.6 dwelling units per acre

HIGHEST DENSITY PLANNED

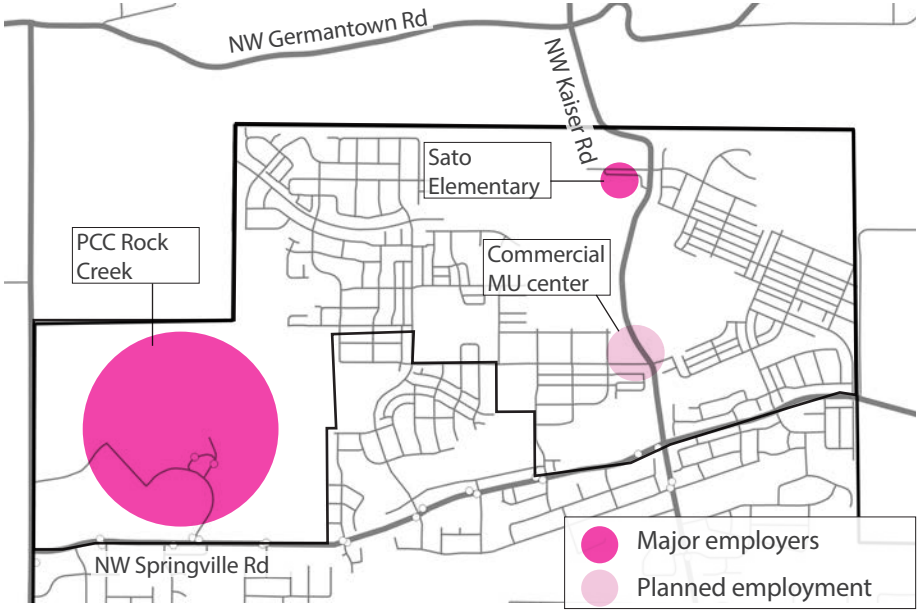
24 dwelling units per acre

LOWEST DENSITY PLANNED

5 dwelling units per acre

HOUSING MIX

Apartment, boulevard apartment, rowhouse, detached dwelling



JOBS

COMMERCIAL

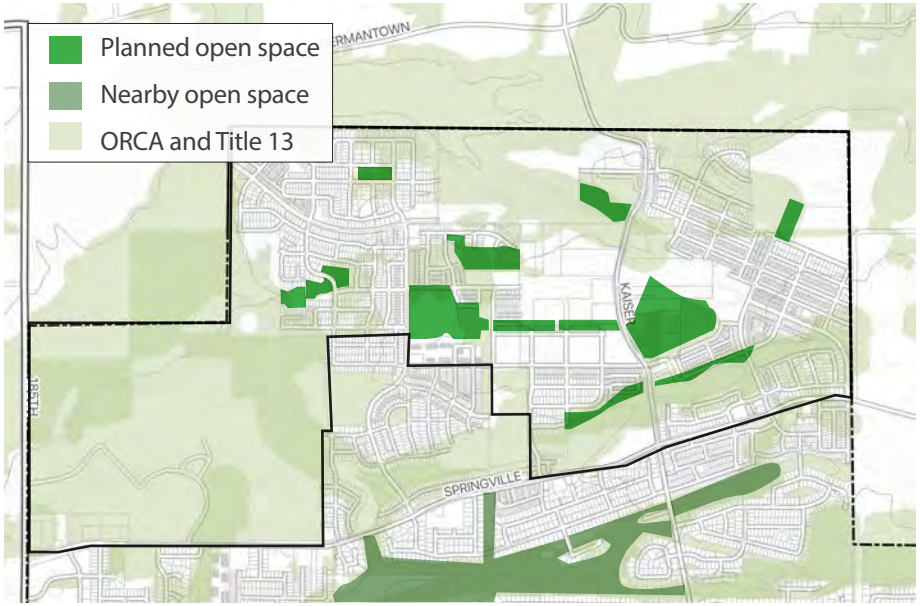
0 square feet

LIGHT INDUSTRIAL

0 square feet

CIVIC USES AND MAJOR EMPLOYERS

PCC Rock Creek (260 acres), Sato Elementary School (9.5 acres)



OPEN SPACES

PLANNED OPEN SPACE

29 acres minimum

OPEN SPACE TYPES

Open space, trail, linear, community, neighborhood

MUNICIPAL CONTROL

THPRD

NEARBY OPEN SPACE

Forest Park, Rock Creek, Bethany Lake Park

Design

Incorporation of natural areas

Critical to the design vision is the integration of "natural" open areas and parks and trail corridors. These pre-planned elements are two-fold - treating stormwater and offering open space areas. Large stormwater facilities buffer neighborhoods from one another while also functioning as secondary pathways. Links across arterials are limited however, as are connections to other regional trails and natural areas.

Diversity of housing

A broad range of housing types offer residents choice. Different types are designated through different land use zones with minimum and maximum densities. Density bonuses are available in the North Bethany neighborhood center. Housing types include detached homes (including narrow lots), duplexes, triplexes, quadplexes, rowhouses, and apartments. Variations in the placement and design of different types is primarily dictated by private developers.

Walkable, pedestrian-oriented streets

Streets are planned in a connected network. Neighborhood streets are alley-loaded with a continuous green strip, street trees, and parallel parking buffering the sidewalk. Adopted street design cross sections identify how to meet pedestrian and bicycle needs while still meeting county standards around travel width.

Focused community points of activity

Civic uses including the library, elementary schools, and parks serve as nodes. They define the center of activity in different neighborhoods while also serving as points where different areas are connected to make a larger community.

Connecting trail corridors

Multi-use trail corridors provide a secondary way for residents to connect between different neighborhoods east/west. They also offer a valuable recreational asset. New development in North Bethany will add additional trails, although connections to the existing system are limited given development patterns.

Parking design and amount

Parking for new higher density developments is located behind buildings. Development standards require seperated pedestrian pathways that connect to entries. Parking standards are 1 per detached unit and 1.5 spaces per 2 or more bedroom units. Parallel parking is provided on all neighborhood streets.

Bethany

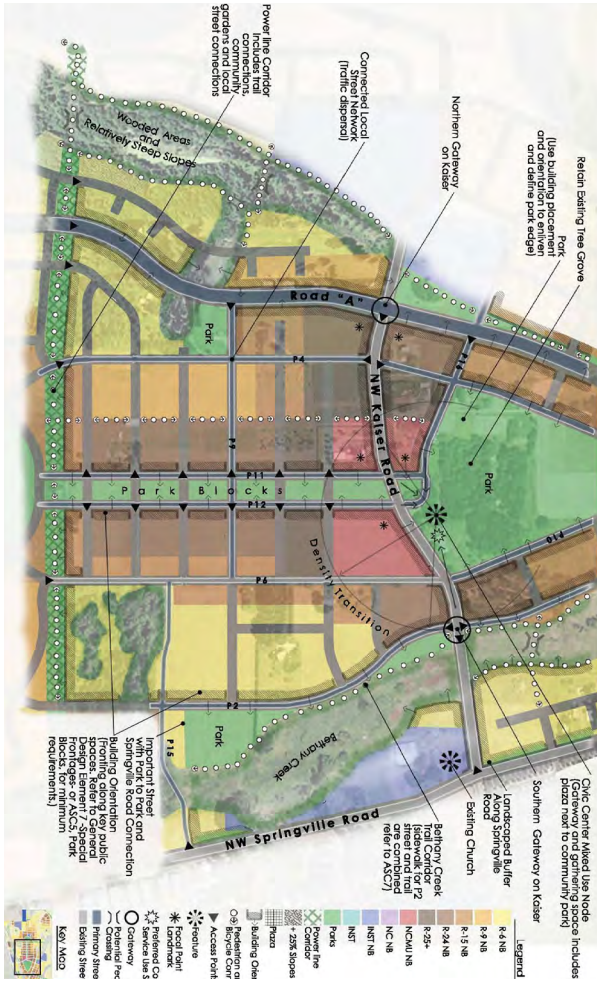
Town Center

The Bethany Town Center is a Metro-designated Town Center with retail and commercial uses serving the entire community of 22,000+ residents as well as the larger region. Large anchors include QFC and Walgreens. The town center was envisioned as a walkable village with a small town character. The core is a block-long main street lined with 3-story mixed use buildings with Main Street apartments over retail spaces. The town center serves as a civic heart with the library and plaza and fountain as gathering places. The development bridges both sides of NW Bethany Boulevard with commercial, retail, and residential spaces. Additional open spaces are planned for the west side of the town center. A wide range of housing types are provided. Roughly 1,500 residents live in the town center while 1,125 people work there. Despite its main street design, the primary function of the town center is as a retail destination.

In contrast, the North Bethany Neighborhood Center is envisioned as a community-serving center connected to the surrounding neighborhoods. Community destinations include a park block, civic spaces/ buildings, and high-quality pedestrian environment. The commercial center will be located in a highly visible spot along the arterial NW Kaiser Road. Smaller retail and office uses will fill mixed-use buildings and apartment buildings in a density range of 19 – 50 DUA. Key to implementation are adopted street sections for the main street area with wide sidewalks, bike lanes, and attractive streetscapes to mitigate the 102-foot width of NW Kaiser Road and facilitate crossing. A transit service plaza has been identified for future development if TriMet extends service.

Mixed-use buildings form a limited dense core in Bethany Town Center.

The plaza serves as a civic gathering space. Paths of all users cross, sometimes in competition with one another.



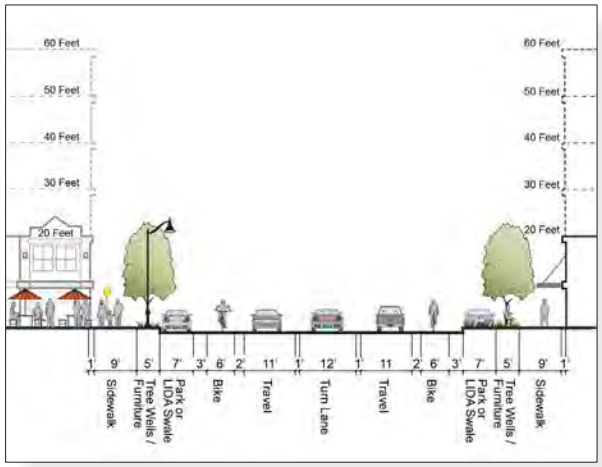
Plans for North Bethany's neighborhood center include linear park blocks and a revised cross section for the arterial serving as its spine.

Implementation

Adopted Street Cross Sections

The vision for North Bethany is a highly walkable and bikeable neighborhood with wide sidewalks, bike lanes, and attractive streetscapes. The plan balanced accommodating vehicles by targeting priority streets for the most pedestrian friendly design. These include the main street spine along NW Kaiser Road, the east-west streets running through the park blocks, NW Brugger Rd, and two future roads adjacent to the planned community park. A street design plan keys planned streets to specific design cross section types that were approved for the entire subarea. These cross sections meet the dual goals of the design vision for North Bethany and Washington County engineering concerns about public streets. They incorporate Low Impact Development Approaches (LIDA) to emphasize the role of stormwater treatment and green spaces throughout the subarea. A street tree program was also developed for all streets in the subarea with street trees classified based upon each neighborhood.

Fundamental to the success of the main street is a cross section that humanizes and bridges the large regional arterial. Cross sections for NW Kaiser Rd show a total right-of-way width of 102 feet. Different cross sections in the core of the neighborhood center, at the park, and on the periphery show variations in minimum building height to frame the space. Setbacks to accommodate plazas and building entrances to stacked apartments are also shown.



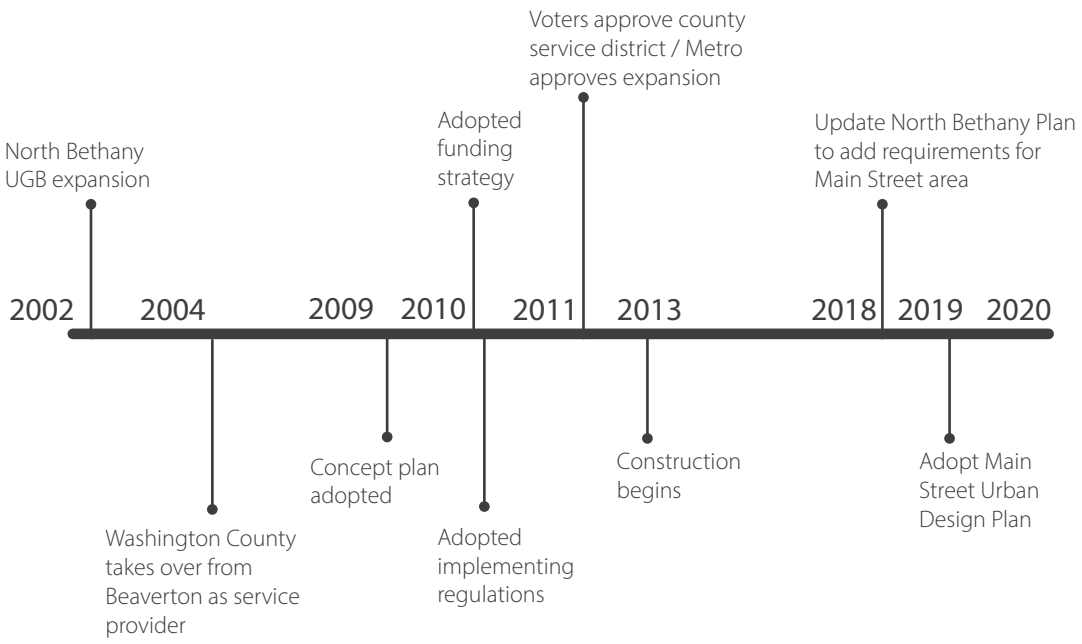
Adopted Main Street cross section

Land use zones and designated priority streets subject to design standards

Main Street Urban Design Plan

Through a planning effort that included several public charrettes, the county led an urban design plan for the North Bethany Main Street area. The intent was to guide how future development in this mixed-use area will look, feel, and function. As an outcome of this planning process, an urban design plan was adopted to amend the North Bethany Subarea Plan. Clear and objective design standards support zoned areas of Neighborhood Commercial Mixed Use (NCMU NB) and multi-dwelling zones (R-25+ and R-24) along designated priority streets. Development and design standards require buildings more urban in character that frame the street and encourage pedestrian activity. Buildings must have minimal setbacks, meet street frontage requirements, locate parking behind the building, have high levels of transparency, and driveways are limited or prohibited.

Urban design guidance recommends street design elements including a street furnishing palette, gateway treatments, and trail and park design. Cross sections (discussed above) illustrate what development could look like and include design guidelines. All development within the Main Street area will be reviewed at a public hearing and require at least one public design workshop.



Funding Strategy

Given the enormous increase in residents in North Bethany, the County faced the challenge of how to fund new infrastructure and services such as upgrading rural roads and extending water and sewer lines. According to an economic study, the estimated capital costs for North Bethany are $520 - $540 million in capital costs. After using bonds, grants, SDCs, and dedications by developers, a $320 million gap remained. The County adopted a funding strategy establishing four revenue sources: 1) a county service district; 2) System Development Charges (SDCs); 3) a transportation development tax; and 4) a countywide property tax. This strategy splits the responsibility for costs across the county government, new residents, and private developers. The County subsequently adopted a Unified Capital Improvement Plan to direct investments.

THPRD waives SDC fees for developers building public park and trail facilities at their cost. The County likewise waives SDC fees for transportation upgrades. There has been some dissatisfaction expressed by developers that they are not reimbursed adequately. Developers and lenders have perceived this lack of certainty negatively and argue that SDC fees have been quite high per housing unit. Initial estimates by ECONorthwest put the cost at $93,000 in SDC fees per house compared to average SDC fees in Washington County of $14,600. These increases in costs to developers, along with higher property taxes for owners, have driven up the cost of individual homes and impacted affordability.

LESSONS LEARNED

- If affordable housing is a desired outcome; targets and funding strategies must be identified and implemented to support its development.
- Zoning for different densities does not ensure a range of housing types spread throughout a district. More specificity may be required by using prototypes or another tool.
- A network of trails and paths needs to be connected throughout an entire development and to adjacent existing neighborhoods in order to successfully offer an alternative means to traveling by car.
- Despite rigorous guidelines and development standards, it is challenging to create a main street spine along a regional connector given its width and traffic speeds.
- Lacking more frequent intersection spacing, private development will continue to turn inward away from regional connectors.
- Critical to town center success is a knowledgeable partner who has developed mixed-use centers
- If parking for retail and commercial uses is not centrally managed and used as a shared resource, off-street parking may exceed the actual need and define the built form as auto-centric.
- Stormwater management facilities can function as natural open areas and linear connections if integrated with trail system. Such a design not only provides a high quality public realm but also a distinctive identity for development.

Critical Success Factors

Purpose of this section

All of the case studies are examples of critical success factors at work. This section details several critical success factors and how they improve the performance of the case studies.

Whole community design

When planning the entire community and connecting it to the surrounding context, there are a number of larger networks or patterns to consider. The three most commonly considered ones are the street network, the natural systems network, and the scale of nearby or historic patterns of development. Connecting to the adjacent network, whatever it is, is key to having the planned development look, feel, and function as an extension of what is already there. This is key to creating a new development that is rooted to the location and feels like a place, not a project.

Planning at the neighborhood scale

When neighborhood blocks are smaller and woven together with a fine-grained network of streets, alleys, and paths, the walkability quotient goes up. This is a "metric for livability" that has been quantified by Walkscore and real estate professionals for the value that it adds to development. It has been codified by others, such as LEED for Neighborhood Development (a sustainability rating system managed by the US Green Building Council). Walkability is often measured by the number of intersections per square mile. Beyond the quantifiable value it adds to development, it also makes it possible to achieve a number of other goals such as: incorporating a wide variety of housing types, serving neighborhoods with transit, and increasing the number of street trees and citywide tree canopy. When jobs, housing, and open spaces are arranged within a walkable block-street structure, other urban vibrancy measures increase as well.

Neighborhood design

A critical success factor realized by all three case studies, but exemplified in Villebois and NorthWest Crossing, is the harmony achieved when there is an intentional relationship between buildings and nature, and when cars are present, but don't dominate. There are a number of building, site, and urban design moves that can make a neighborhood feel more timeless. One is varied housing designs. Likewise preserving trees can make a new neighborhood feel like it has always been there. The value of mature trees has been measured by data experts in a wide variety of disciplines, from those in health and equity to real estate experts.

Main Street and Town Center design

As with neighborhood design, there are a number of building, site, and urban design moves that can make a main street or town center feel more timeless. These include traditional storefront design, pedestrian-oriented street design, care about where parking is located, and coordinated streetscape and street furniture. The importance of managing parking in a town center or main street cannot be overstated. Every extra place for a car means less space for people. In a town center the majority of public space should be dedicated to use by people, or the level of urban vitality goes down. More people attract more people. Managing parking means housing can be more affordable, as can retail spaces, and mixed-use development becomes financially feasible. As cities have discovered through the COVID-19 pandemic, flexible street space that can be converted from use by automobiles to use by people and businesses can help the local economy while keeping people healthy.

Whole community design

- Bringing nature in
- Integration of open space
- Feathering of edges
- Neighborhood units
- The way housing faces major streets (doesn't turn its back)
- Context sensitive design of major streets
- Variety of street types and a context sensitive design approach
- A complete street and path network
- Prioritizing non-auto modes of travel
- Accommodating regional transit

Main Street and Town Center design

- Main street character
- Managing parking
- Signage, lighting, street furniture and town center identity

Neighborhood design

- Varied designs of housing
- Preserving older trees
- Alleys
- Universal block (to accommodate all forms of middle housing)
- Feels like a neighborhood not a subdivision
- Natural environment reflected in the materials and design of the public realm

Planning at the neighborhood scale

- Block size, block permeability
- Walkability (and universal design)
- Arrangement of land uses
- Vital uses in proximity
- Mix of housing / housing choice
- Considering the entire tree canopy

Critical success factors:

- Main street character
- Block size, block permeability
- Walkability (and universal design)
- The way housing faces major streets (doesn't turn its back)
- Context sensitive design of major streets
- Variety of street types and a context sensitive design approach
- A complete street and path network
- Prioritizing non-auto modes of travel
- Accommodating regional transit

Variety of street types and a context sensitive design approach

Each of the case studies employs the technique of creating a network of new streets and paths within the planned development that are not subject to the state or county regulations. State and county regulations tend to prioritize auto and transit travel on regional arterials and highways. They are often at odds with local goals for walkability; bikeability; small block size; use of curb space for parking; and sidewalks for retail, outdoor dining, or merchandising. Since internal street types are not subject to the same rules which apply to arterials, they are able to accommodate frequent intersections, frequent pedestrian crossings, continuous plant strips and streets trees, and even on-street parking.

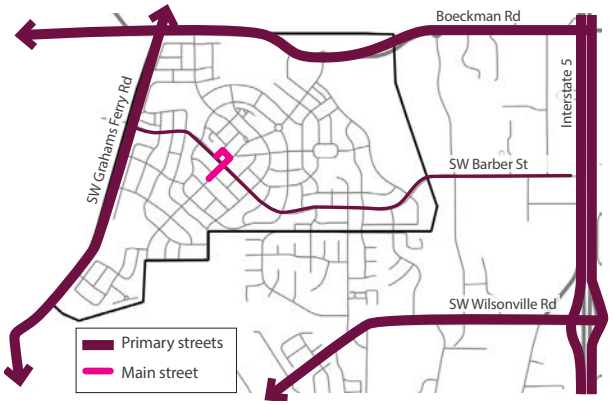
In each Case Study one of these interior streets functions as a community oriented "main street." In North Bethany it is NW Kaiser Rd; in NorthWest Crossing it is NW Crossing Drive; and in Villebois it is Villebois Drive.

Typically the main street design looks and feels like a traditional small town downtown street, and everything about the scale of the streetscape is designed with the pedestrian in mind. The Villebois main street goes further and employs a curbless street design where the plaza and the street blend seamlessly, and bollards, not curbs, mark off the area for cars. The exception to this practice is North Bethany, where the "main street" is roughly a quarter mile-long segment of NW Kaiser Road, which is a Washington County Arterial.

When a street is subject to county or state regulations, strive to make the street a connection rather than a barrier. In NorthWest Crossing, Mt Washington Drive is a good example of a major region-serving thoroughfare that has a human scale and is walkable and attractive. High value real estate addresses Mt. Washington rather than backing on to it. In King City, SW Beef Bend Road may never be a "main street," and it may serve high volumes of traffic, however it can still be designed to connect Tigard River Terrace South and King City rather than separate them.

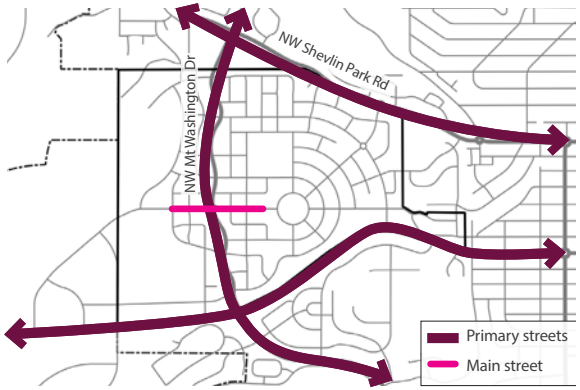
Keep vehicle speeds low through design measures, not by posting speed limits. Provide frequent protected crossings for pedestrians and bicyclists, create an environment that development is interested in facing, rather than turning away from, and provide generous landscape buffers, including street trees. Separate and buffer the walking and bicycle lanes from the vehicle lanes. Where there is a center turn lane, minimize the lane length at intersections. Landscape or eliminate the center lane when there is no need for turning movements. When crossing a slope, separate and terrace paved lanes to minimize cut and fill. The URA 6D Concept Plan promoted a number of context sensitive design strategies for SW Beef Bend Road. These are equally applicable to SW Roy Rogers Road within the vicinity of King City and Tigard future urban areas.

Villebois Drive (Villebois)



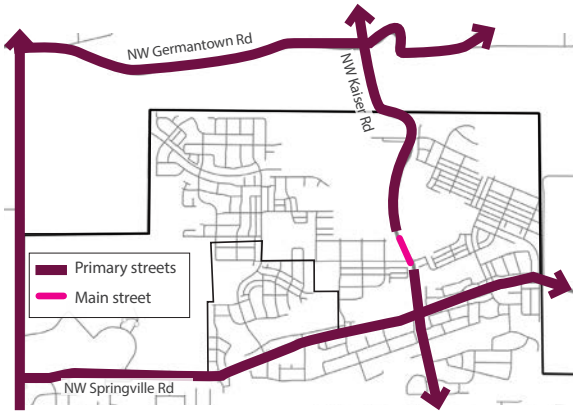
Villebois' main street employs a curbless street design where the plaza and the street blend seamlessly and bollards, not curbs, mark off the area for cars.

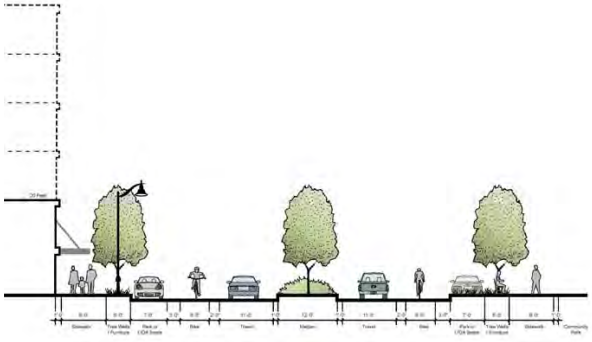
NW Crossing Drive (NorthWest Crossing)



NorthWest Crossing's main street looks and feels like a traditional small town downtown street, designed with the pedestrian in mind.

NW Kaiser Road (North Bethany)





In North Bethany, the planned "main street" is a roughly quarter mile-long segment of NW Kaiser Road, which is a Washington County Arterial.

Critical success factors:

» Integration of open space

» Feathering of edges

Bringing nature in

Each of the case studies incorporates natural areas into the planned development. North Bethany, with its promenade park along the stormwater facility, is an especially good example of making natural systems a focus of the community. However, the best example of full integration of natural areas is Villebois. The development is designed around a flowing series of open spaces that connect to the larger regional natural areas such as Coffee Creek and Coffee Lake wetlands. Of all the green space that has been incorporated into the community, the greatest share is in natural areas.

> "While restoring the historic drainage pattern of the predevelopment site, the plan also adapts the form and organization of the landscape and urban design elements (e..g., parks, street medians, and planting strips) and natural areas to serve stormwater management functions, including conveyance, infiltration and detention."
>
> (*Skinny Streets & Green Neighborhoods, Design for Environment and Community*, Cynthia Girling and Ronald Kellett, 2005)

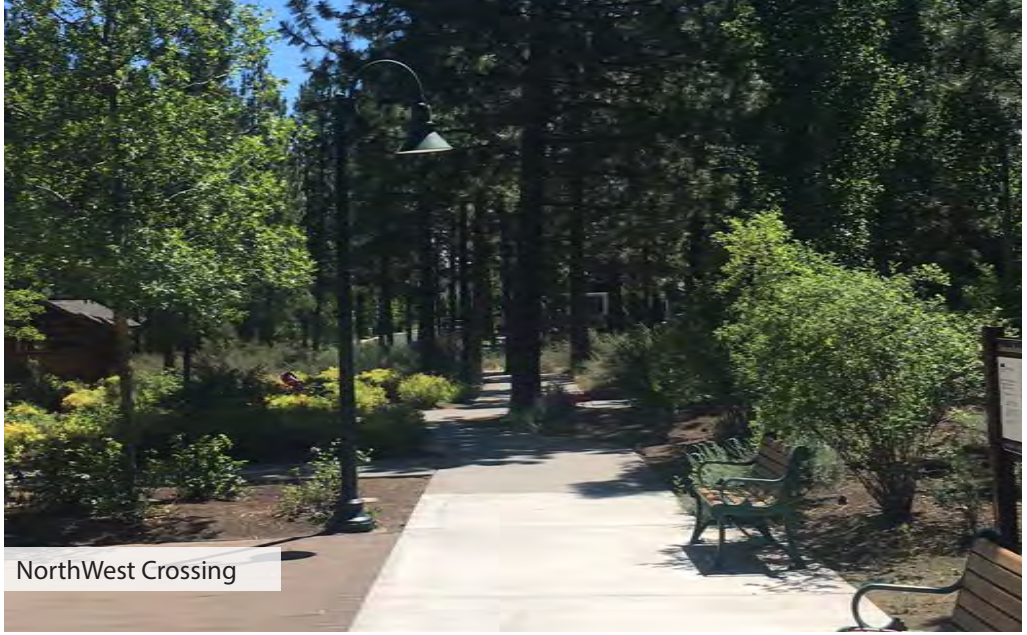
One of the key features of Villebois are the common greens. Homes front onto and share a green space rather than a street. This was considered a highly unusual design at the time of development in the mid-2000's. Homebuilders overcame their skepticism and common greens are now found in many new subdivisions and neighborhoods, and cities have amended land division requirements to permit them.

Figure 5

NOTES:
The Villebois Village Master Plan shall comply with the City of Wilsonville SROZ regulations. Encroachments within the SROZ and flood plain are shown for illustrative purposes only, and will be reviewed for compliance or exemption as more detailed information is provided that will affect the SROZ areas. Adjustments in plan, street alignments, and intersections as well as rainwater facilities and pathways will be made to comply with SROZ regulations. Flood Insurance Rate Map 410025-0004-C dated February 19, 1987 shows the northerly limit of the detailed study area having an elevation of 143 (Ft. NGVD). This elevation has been used to approximate the flood plain limits within the project limits. Development in and around wetlands will be done per all applicable federal, state and local wetland regulations.

Parks and Open Space Plan
AUGUST 30, 2013

NorthWest Crossing



NorthWest Crossing

Bringing nature in

Villebois

Bethany

Bethany

NorthWest Crossing

Critical success factors:

» Context sensitive design of major streets

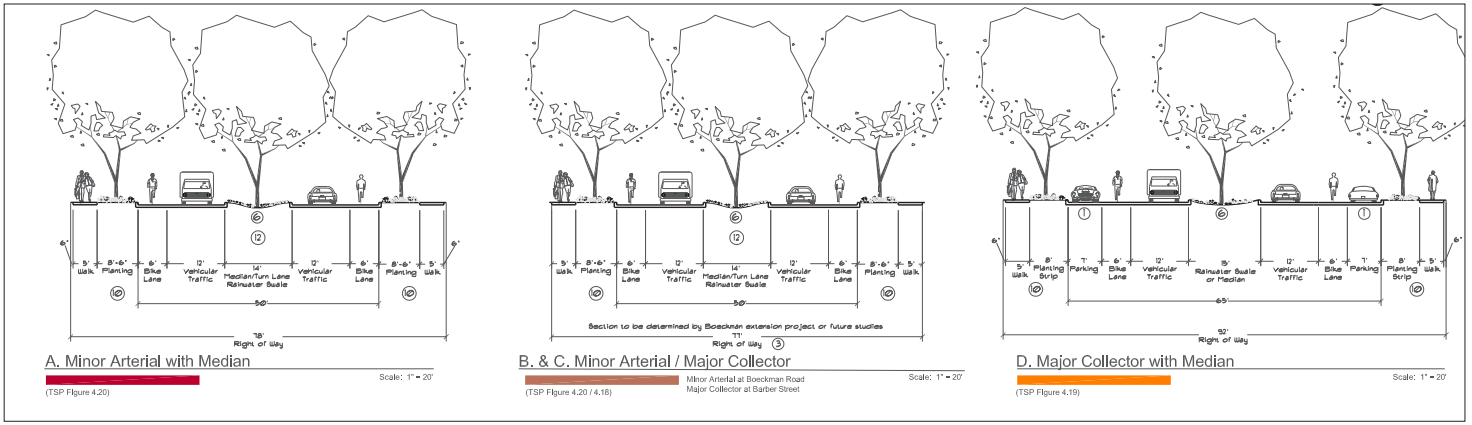
» The way housing faces major streets (doesn't turn its back)

Major streets are attractors not barriers

In each Case Study, communities' major streets — where they run along or within the planned development —are designed like streets rather than highways. They become a contributing part of the neighborhood and city rather than an impassible barrier or border. Housing and active retail front on and are oriented toward the street, instead of turning away.

A major region-serving street in Bend, Mt Washington Drive, runs north-south through NorthWest Crossing. The design of the street makes it possible for homes to front on the arterial. Enfronting blocks have alleys rather than driveways. Each block face on Mt Washington has a parking pocket that allows limited on-street parking. In addition, regular intersections and pedestrian crossings are essential in preventing this major street from acting as a barrier. Intersections are every 300 - 500 feet and mid block crossings with protected places to stand at the median create safe options for pedestrians.

Arterials and collectors in Villebois have a planted median, full sidewalks, plant strips, and bike lanes. In certain areas the street design trades the planted median for on-street parking. In both Villebois and NorthWest Crossing where major streets intersect, roundabouts are used to manage auto traffic instead of signalized intersections.



Arterial and collector street sections, Villebois.

Houses fronting on Mt. Washington Drive, NorthWest Crossing.

Street variety

Variety of street types and context sensitive design approach

Villebois

NorthWest Crossing

NorthWest Crossing

Bethany

Town Center identity

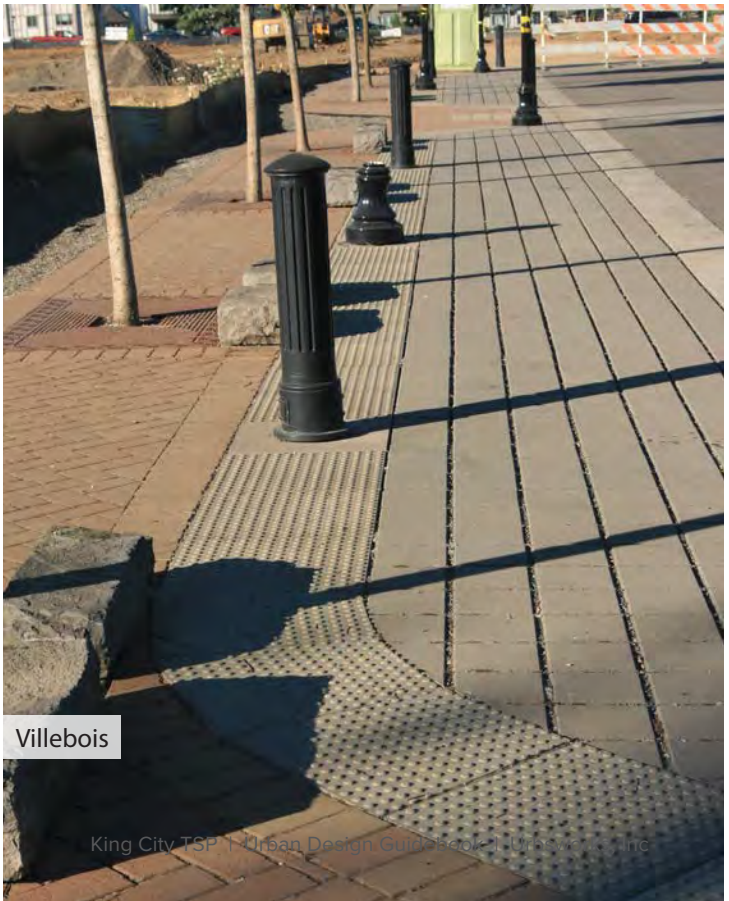

NorthWest Crossing

Bethany

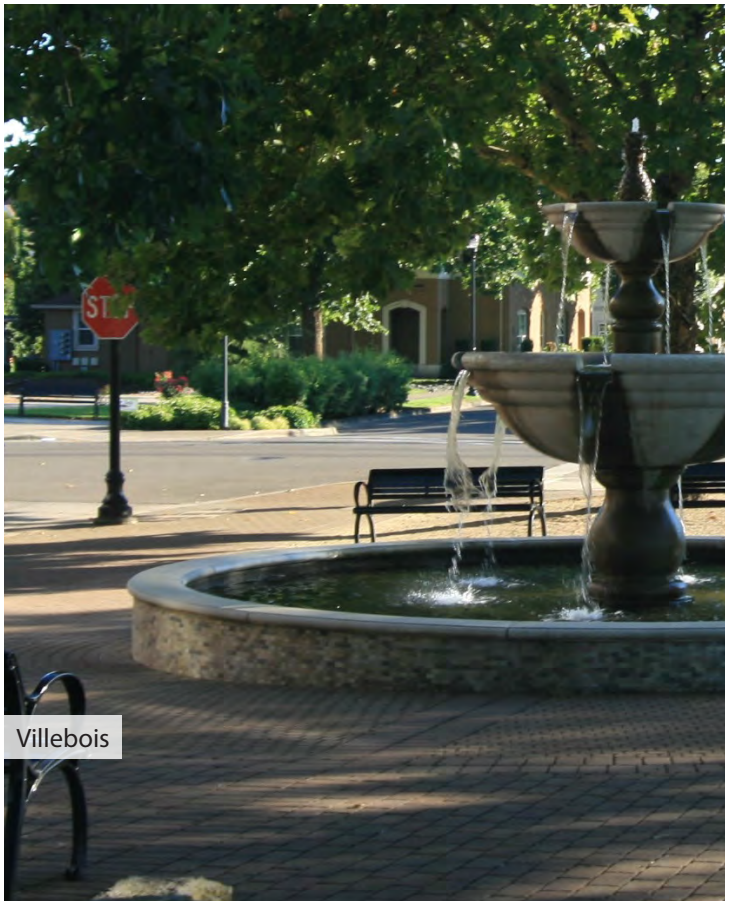
NorthWest Crossing

Signage, lighting, street furniture and town center identity

NorthWest Crossing



Villebois



Villebois

NorthWest Crossing

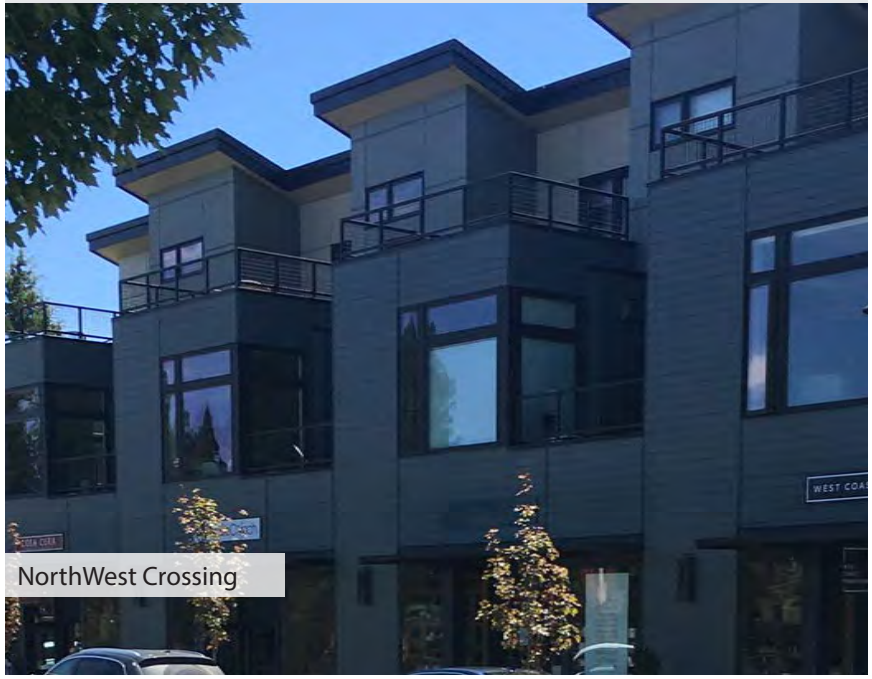
Housing variety

Villebois

Bethany

Bethany

A mix of housing types and varied designs of housing



NorthWest Crossing

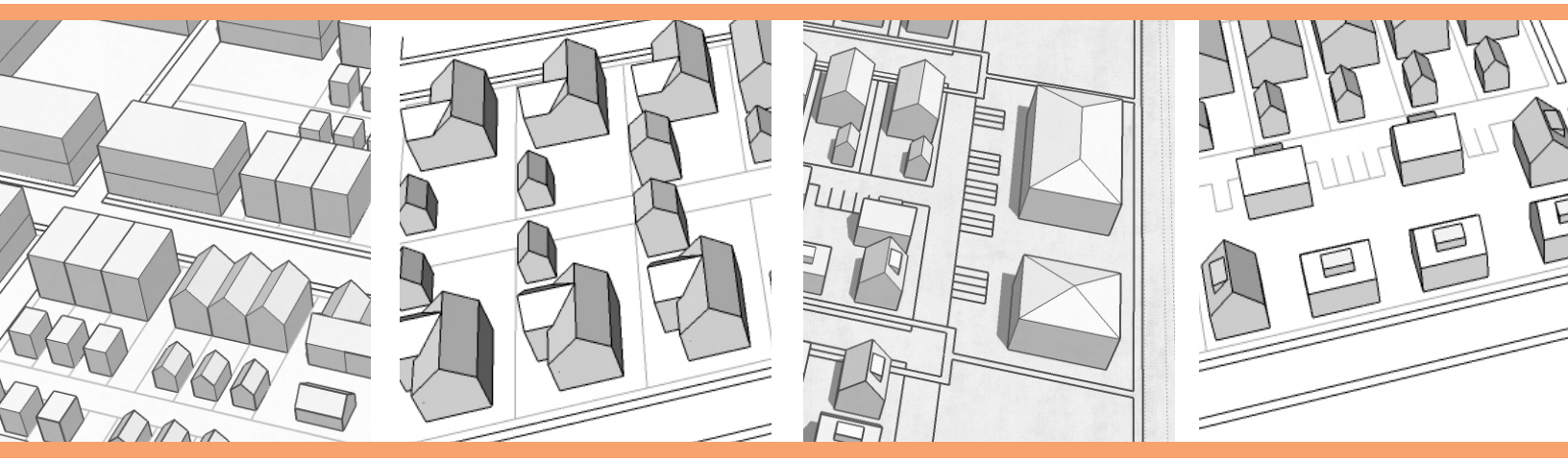
NorthWest Crossing

NorthWest Crossing

APPENDIX G. URA 6D LAND USE ASSUMPTIONS REPORT

Land Use Assumptions Report

King City Beef Bend South



September 2020

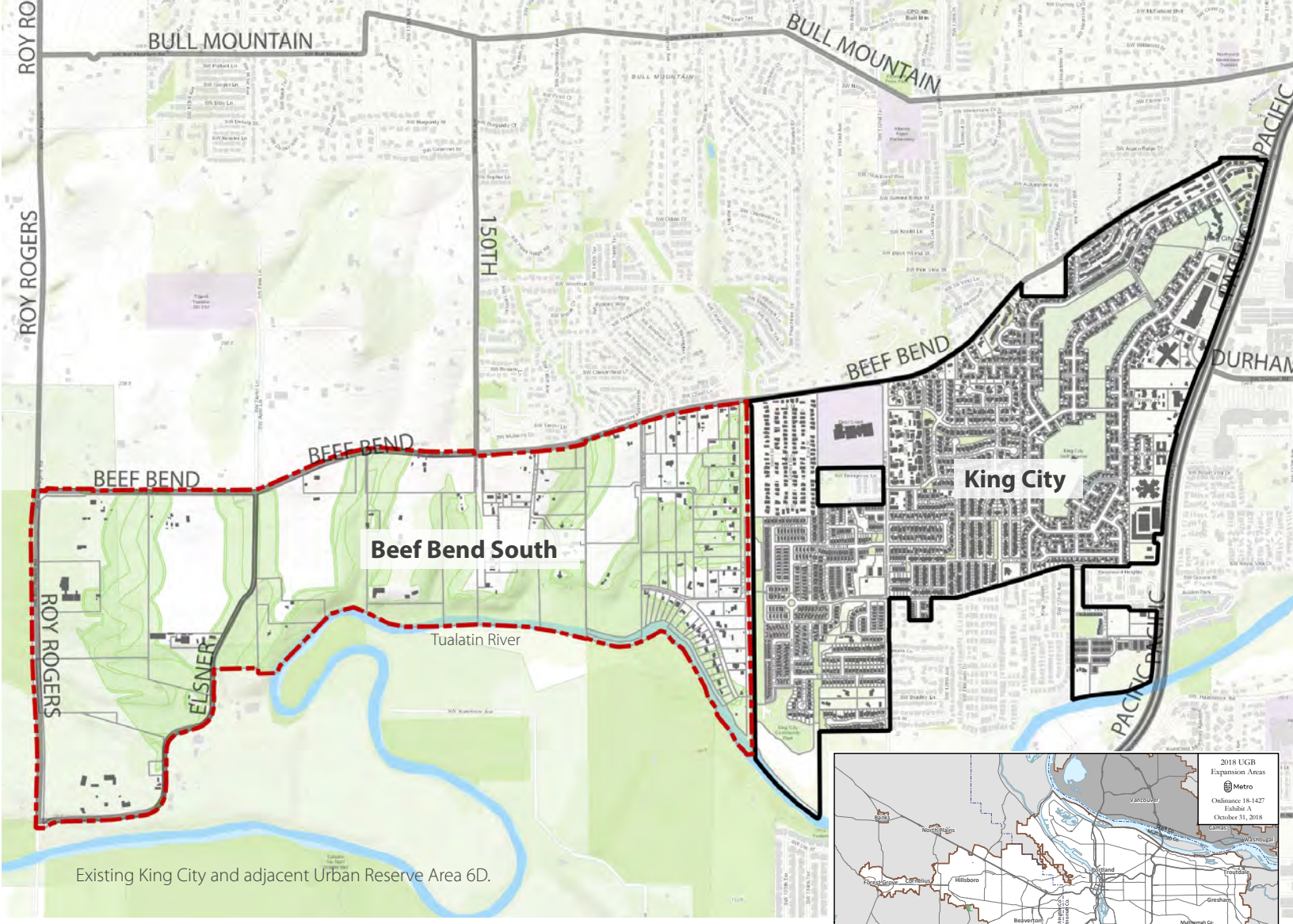
Prepared as part of the King City
Transportation System Plan

urbsworks

Purpose of this memorandum

Task description from the scope of work for Task 4.4 – URA 6D Land Use Assumptions Report:

Based on the results of ~~Task 4.2A and 4.2B~~, previous tasks (4.1 and 4.2), TAC input, and PMT direction, Consultant shall recommend land use typologies and an associated refined map for URA 6D consistent with Metro conditions for the UGB amendment. These land use typologies must reflect the overall land use vision of the 2018 Concept Plan and build upon URA 6D Market Analysis and Financial Feasibility Report to include densities, uses, and development types that are reasonably attainable. Consultant shall collaborate with City, Metro, County, and Department of Land Conservation and Development to translate land use typologies into zoning assumptions suitable for use in subsequent modeling and analysis tasks. Zoning Assumptions will be used as the planned land use for URA 6D for the remainder of Project.



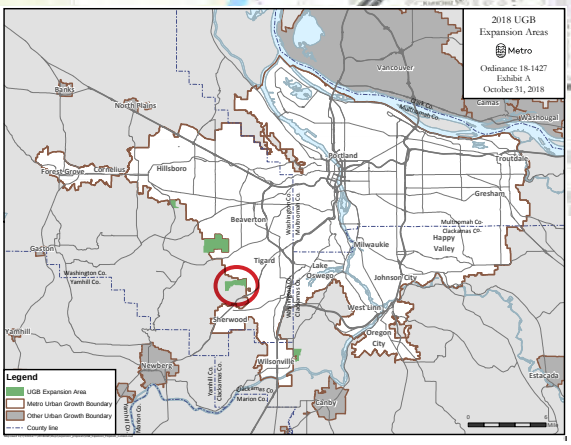
Existing King City and adjacent Urban Reserve Area 6D.

1. Introduction

Physical description of the area

Beef Bend South (formerly URA 6D) is a 528-acre area to the west of existing King City. It is bounded by SW Beef Bend Road to the north, SW Roy Rogers Road to the west, SW Elsner Road and the Tualatin River to the south, and SW 137th Avenue to the east. The Tualatin River Wildlife refuge sits directly south, on the opposite side of the Tualatin River.

Beef Bend South is a mix of relatively flat farmlands and deep ravines and riparian areas that serve as drainages from Bull Mountain to the north. These wooded areas are sensitive natural resources that are critical to the overall ecosystem of the region and, as such, help to define where and how development should occur.



2018 Urban Growth Boundary (UGB) Expansion Areas Map, Metro. King City's expansion area is circled.

Previous planning work

In 2017 the City of King City sponsored concept planning for the area called Urban Reserve Area 6D (URA 6D). In 2009 this area had been identified by Metro as a suitable for future urbanization, and the region's cities and counties began a planning and public engagement process involving Washington County, cities, Metro, and the Oregon Land Conservation and Development Commission. It was determined that the existing UGB could not accommodate all of the anticipated future urban development and that additional land would be necessary for homes, businesses, and public facilities. Because of its overall suitability to support urban development, URA 6D was designated as an Urban Reserve Area in 2011.

URA 6D Concept Planning took place between in 2017 and 2018. In September 2018, King City presented an application to Metro Council for inclusion of URA 6D into the Urban Growth Boundary. King City's application was approved by Metro Council in December 2018, along with applications from Wilsonville, Hillsboro, and Beaverton.

Previous tasks completed for this project

Task 4.1 – Existing Land Use Conditions

Provides land use context for King City's Transportation System Plan (TSP), and explains the historic, present, and likely future land use conditions of King City's urban expansion area (Beef Bend South) and its immediate vicinity to inform the market analysis component of the TSP project. It is a summary of previous analyses, reports and studies; it does not present new analysis.

Task 4.2 – King City Market Analysis

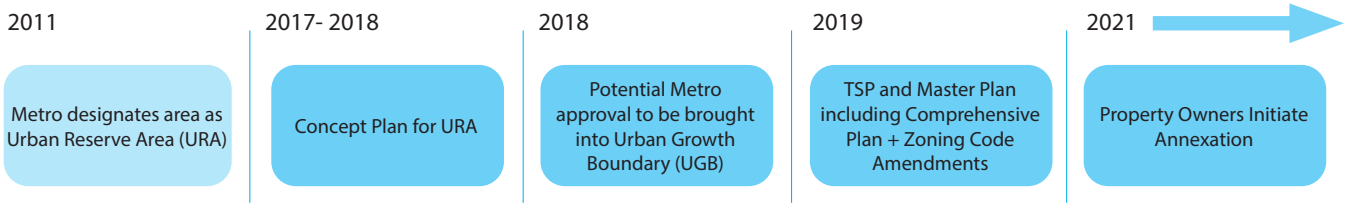
Presents King City's Market Analysis for Beef Bend South and its surrounding vicinity. It generally pulls from the concept planning effort, modifying and adding to it as necessary to further evaluate the market potential of the study area.

*** This document**

Task 4.4 – Land Use Assumptions for the TSP

Summarizes previous planning efforts, refers to previous tasks conducted as part of the TSP work to date, and makes recommendations for the land use assumptions that should be used to inform the Transportation System Plan.

Overall Planning Time Line



Planning timeline as depicted in Concept Planning documents.

Summary of Metro direction based on the approval of the Concept Plan

Metro placed a number of conditions on the King City UGB expansion. Those that affect land use assumptions task 4.4 are excerpted below.

For the purpose of expanding the urban growth boundary to provide capacity for housing to the year 2038, King City shall:

» Conduct additional market analysis to better understand the feasibility of creating a new mixed-use town center.

» Pending the results of the market analysis of a new town center, King City shall plan for at least 3,300 homes in the Beef Bend South expansion area. If the market analysis indicates that this housing target is infeasible, King City shall work with Metro to determine an appropriate housing target for the expansion area.

» The expansion area shall be designated Neighborhood on the 2040 Growth Concept map.

» Pending the results of the market analysis of a new town center, Metro will work with King City to make necessary changes to the 2040 Growth Concept map.

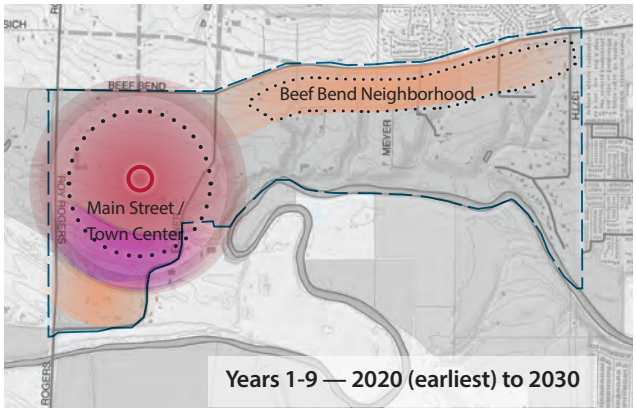
There were two additional conditions related specifically to housing types. One requires King City to explore ways to encourage the construction of accessory dwelling units, and the other requires the city to explore ways to encourage the use of manufactured housing in the expansion area.

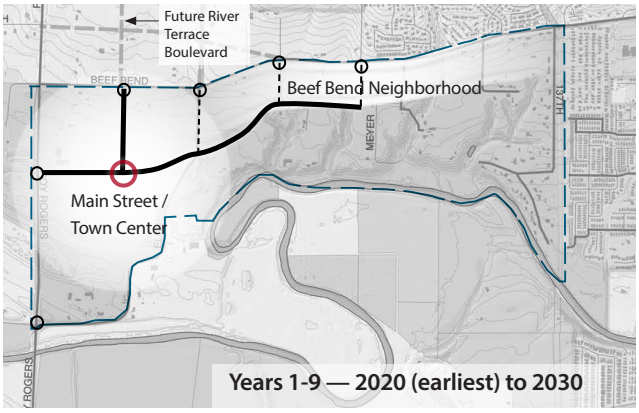
King City Town Center

The current King City Town Center is located on the east side of King City on OR-99W and adjacent to the City of Tigard. The area is a Metro-designated Town Center, and is served by high frequency transit on OR-99W. Together with the Tigard commercial malls on the opposite side of OR-99W, the area provides a significant amount of region-serving commercial services. There is room for some city functions (City Hall, Library) but the area is challenged by the nature of OR-99W, and a general lack of space for civic uses to expand. There are no residential uses within the town center area, and there is very little land available for new development. The area dates from King City's inception in the 1960's and was set up around the automobile. Walkability is difficult to establish in an area that is dominated by parking lots and where the property owners are not interested in redevelopment or neighborhood improvement. Improvements are beginning to strengthen walkability in the area, however, OR-99W remains an issue.

In 2014, King City conducted a Town Center Charrette with the community and identified a number of actions to improve the area for town center look, feel and function. To date, Fischer Road improvements including continuous sidewalks and bike lanes have been completed. Modest improvements have been made to add sidewalks to OR-99W, but safer crossings and other improvements have been gradual. The City Hall was recently remodeled within its original footprint.

There is no question that a more functional Town Center could be accommodated on greenfield development within the Beef Bend South area, one that would be more consistent with the Metro growth designation, with a complete mix of land uses, including housing, parks, and room for more civic facilities to co-locate and expand. Compared to what is possible in the existing town center, it is easier to build new development in the greenfield, and to meet walkability and transit oriented design objectives for the city and the region. And TriMet is expanding service to this part of the region: high frequency transit service is slated for SW Scholls Ferry Road from Portland to SW 175th, as early as 2022. There is also great potential for this town center area to complement and be strengthened by the planned development north of SW Beef Bend Road, in the River Terrace area.

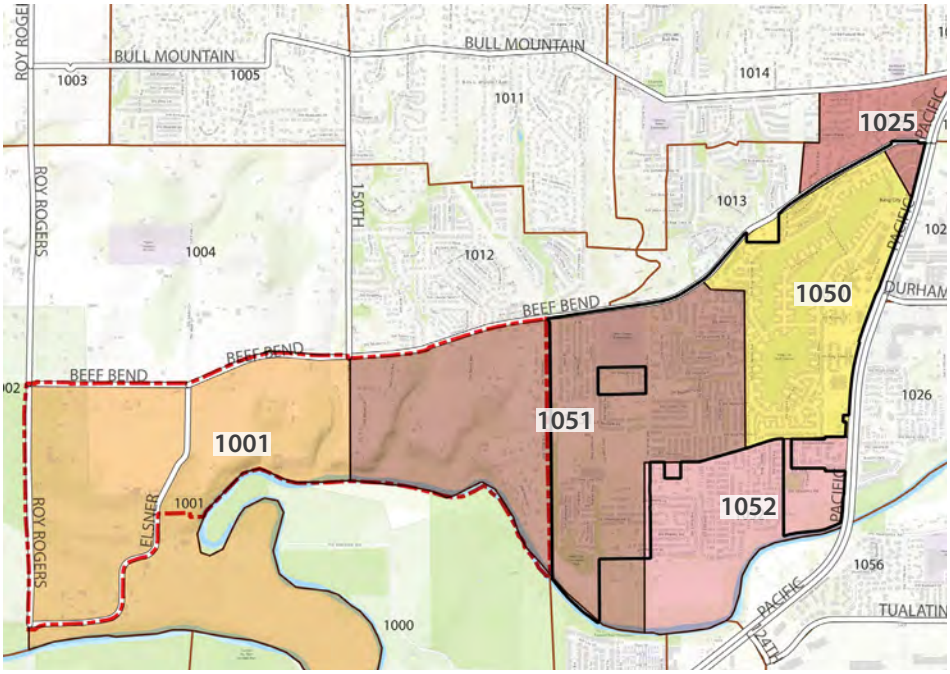




2018 Concept Traffic Analysis

The traffic analysis that was conducted for Beef Bend South, in tandem with the 2018 Concept Plan, modeled land uses in a first phase (through future 2035 traffic conditions). Consistent with the Concept Plan, the analysis assumed that Fischer Road would serve the first phase of development only to SW 150th. After the Meyer Airfield and Fischer Road extension through the east side of Beef Bend South (Rivermeade) are resolved, in a future phase, Fischer Road would continue eastward to connect with the existing eastern segment of Fischer Road at 137th.

SW 150th is also the boundary between Metro TAZ 1001 and Metro TAZ 1051.



TAZ boundaries for King City, Beef Bend South, and the surrounding area.

Metro Transportation Analysis Zones

Metro uses Transportation Analysis Zones (TAZ) as a way to break down regional growth forecasts into smaller geographic areas. Data from each TAZ is entered into Metro's real estate and land use allocation model (MetroScope).

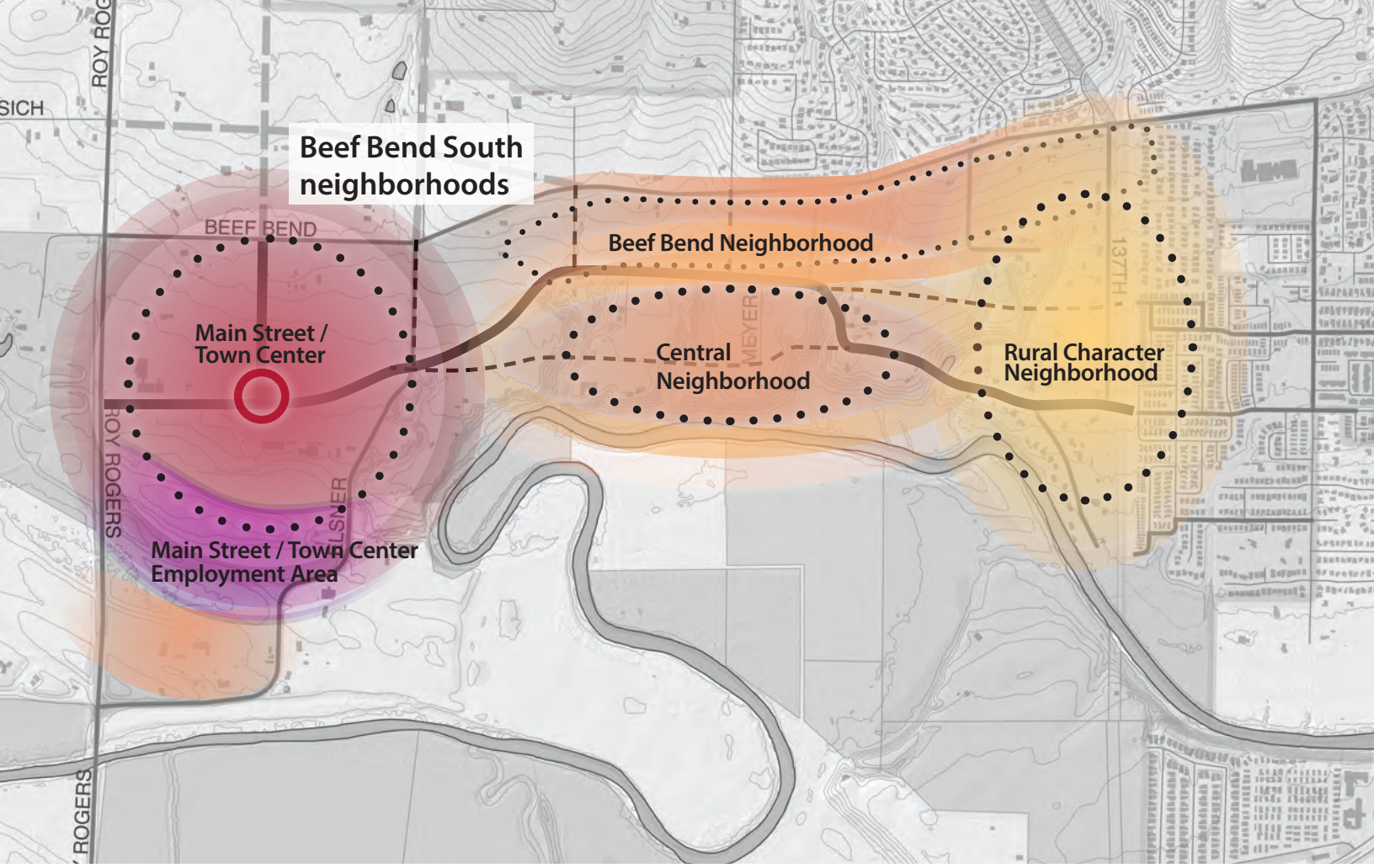


Diagram from the King City Concept Plan showing location of neighborhoods in Beef Bend South.

2. Land Use Assumptions

Land use assumptions for Beef Bend South

Land use assumptions for the Transportation System Plan draw from two main planning efforts: The 2017-2018 Concept Plan with its associated Market Analysis, and the 2020 Market Analysis completed for the TSP earlier in 2020.

Both planning efforts generally agree on the amount of commercial and housing potential. The market analyses agree that upwards of 50,000 square feet of commercial could be accommodated within a 10- to 20-year horizon as part of a new neighborhood retail center. Both market analyses agree that about 500-950 dwelling units could be accommodated within the same time horizon.

The Concept Plan identifies dwelling units beyond the 10- to 20-year horizon and proposes that an overall total of 3,576 dwelling units could be accommodated on Beef Bend South land. These numbers were tested and confirmed through conceptual, mapped designs of typical neighborhood layouts or master planning prototypes. Four neighborhood master planning prototypes were developed for each of the neighborhood areas:

» Main Street / Town Center

» Beef Bend Neighborhood

» Central Neighborhood

» Rural Character Neighborhood

The residential program or specific mix of housing types for each neighborhood was developed to demonstrate how Beef Bend South could meet city, regional, and state goals. These are:

» Accommodate needed housing as identified in King City's 2018 Housing Needs Analysis

» Evenly distribute affordable housing in each neighborhood

» Provide a range of housing choices in each neighborhood

» In anticipation of Oregon House Bill 2001 for middle housing, ensure that each of the required housing types could be accommodated in each neighborhood.

Through these studies, it was determined that the entire Beef Bend South area could more than accommodate the city's entire household/dwelling unit forecast (2018–2038), and could accommodate 50-years of growth, in a way that is consistent with the King City vision detailed in the 2018 Concept Plan.

Comparison of market analysis findings

As described above, two market analyses have been conducted for the King City Beef Bend South area (formerly URA 6D). The 2017 Market Analysis was authored by Leland Consulting Group as part of the Concept Plan. The most recent market analysis was prepared by ECONorthwest in 2020 as part of this TSP effort.

Commercial uses

The two reports have slightly different recommendations for commercial development. The 2017 report found that 54,000 to 85,000 square feet of commercial uses were possible within 10 years as part of a neighborhood retail center. The 2020 report found that commercial was possible within 10 years without citing an exact square footage; rather, it stated "plan for commercial development slightly below the scale planned in the URA 6D's Concept Plan."

The 2020 market analysis recommended that an analogous development could be seen in Bend's Northwest Crossing, which has retail square footage of 55,431 (Exhibit 29, page 43). Further, the 2020 report says "A development scheme consistent with the form, scale, and type of commercial development in Northwest Crossing is advised. From a market perspective, Northwest Crossing is the most analogous case study area to the future realities of URA 6D. Accordingly, the development pattern in the commercial core should be concentrated along corridor(s), be neighborhood-serving, and smaller in scale." Also "URA 6D's commercial center is likely to function and look more like a Main Street and less like a Town Center."

The 2017 report proposed that a non-residential "gateway to wine country" might result in an additional 40-60,000 square feet of commercial space; however, technical analysis to validate the proposal was not part of the study. Regarding the "gateway to wine country" concept, the 2020 report adds that Sherwood may provide a more competitive location, noting that the Preliminary Concept Plan for Sherwood West includes the idea.

Dwelling units

The 2017 and 2020 market analyses agree that 500 to 950 new residential units are possible but differ on the timing, with the 2017 report projecting housing growth in 10 years, while the 2020 report says it will take 20 years.

Phasing

The 2020 report cites the importance of residential development in early phases in order to support the Main Street / Town Center commercial: "We find, consistent with the 2017 Market Analysis, that commercial development will require the build-out of rooftops in the market area to be viable. Moreover, a market for mixed-use development in the commercial core is not likely to materialize early on. Phasing strategies that encourage near-term growth of new homes (and the households that come with them) will improve the viability of commercial development in the mid to long-term."

> *It should be noted that the Concept Plan envisioned that a significant amount of early development within the Main Street / Town Center would be standalone residential, representing a wide range of dwelling types (including stacked flats or apartments, duplexes, and other "plex" housing). This was in anticipation of state mandated Middle Housing legislation (HB 2001). It also assumed that vertical mixed use development would lag behind early-phase market-driven development.*

Land Use Assumptions for the TSP and the role of market analysis projections

The market analyses have been particularly useful in validating the Concept Plan land use assumptions regarding commercial uses in the Main Street / Town Center. Regarding the number of dwelling units, this document relies on the development capacity analysis completed as part of the Concept Plan—not on the market analysis projections.

Master planning prototypes

As described above the four neighborhood master planning prototypes were developed to test and illustrate the land use densities, uses, and development types that are reasonably attainable on land within Beef Bend South. The exercise detailed land use typologies in scaled, 3D models, using recognizable regional development or precedents. The four master planning prototypes are summarized below.

	Main Street / Town Center	Beef Bend	Central	Rural Character
Approximate acreage (net)	150	60	60	50
Commercial, employment, and institutional uses				
	» Residential over retail » Single-story retail and restaurant » Civic uses, such as library, city hall, school » Campus-style employment or institutional uses	» Potential neighborhood commercial activity	» None	» None
Residential uses				
Reasonably attainable # of units	2,120	666	558	232
Average density (dwelling units per acre)	40	18	18	15
Density range	8 - 100**	12 - 24	8 -20	8 -18
Percent multidwellings*	50%	30%	25%	0%
Housing types	Main street apartment over retail, apartments (standalone), live-work, rowhouse, duplex	Boulevard apartment, cottage cluster, detached narrow lot single dwelling	Live-work, rowhouse, duplex, cottage cluster, detached single dwelling with accessory dwelling unit (ADU)	Duplexes, cottage clusters, detached dwelling with or without accessory dwelling units, mid-sized lot detached dwellings

• Metro RLIS (metroscope) has revised the way that it counts dwelling units to be consistent with housing types required by HB 2001. During the master planning process, the number of multidwellings in this row will be revised to reflect the new definition of multidwelling (or multfamily) as "multiple dwellings on a common taxlot."

** The wide range of density is the result of the variety of housing types envisioned for the Main Street / Town Center neighborhood, from stacked flats in standalone residential building (i.e. an apartment building) to duplexes.

Summary of Dwelling Unit Type and Density by Neighborhood

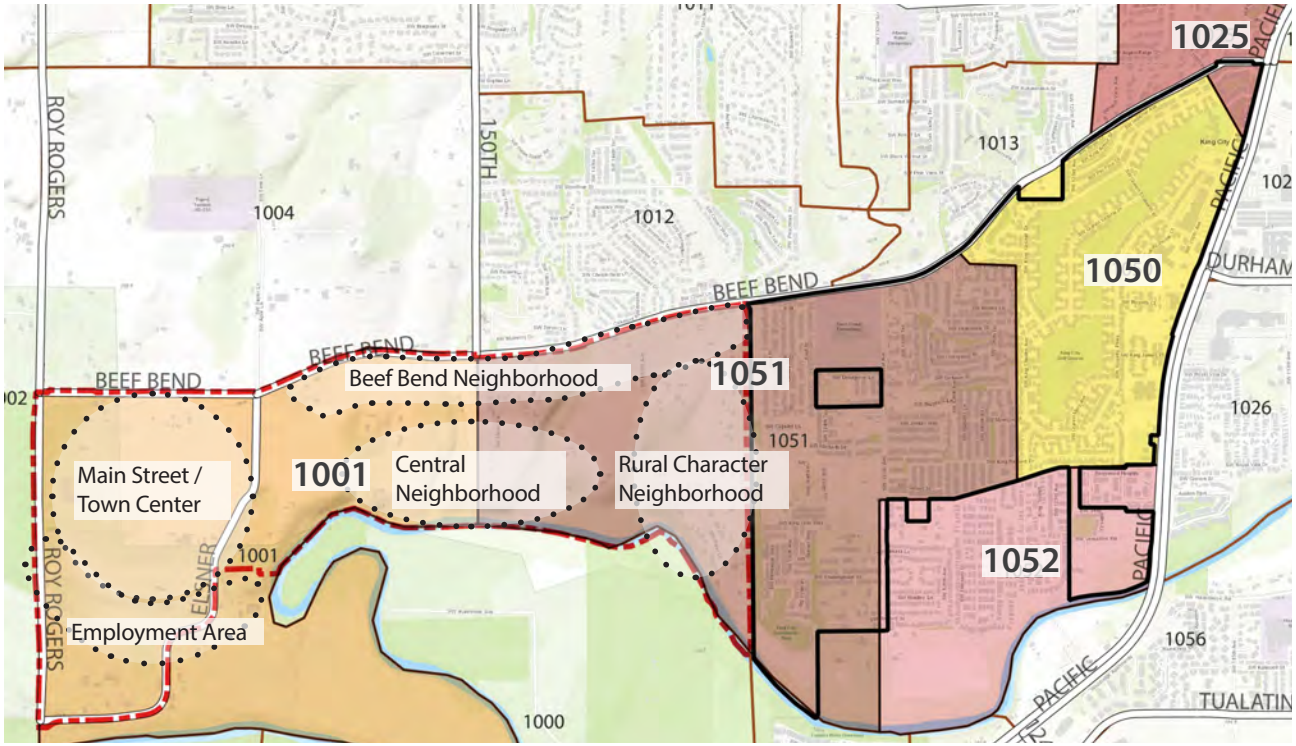
Dwelling Type Category	Dwelling Type	Main Street /Town Center		Beef Bend		Central Neighborhood		Rural Character		Totals	
		Subtotal by dwelling type	Subtotal by dwelling category	Subtotal by dwelling type	Subtotal by dwelling category	Subtotal by dwelling type	Subtotal by dwelling category	Subtotal by dwelling type	Subtotal by dwelling category	Subtotal by dwelling type	Subtotal by dwelling category
Multidwelling	Flats over retail	400	1,000	0	222	0	0	0	0	400	1,222
	Flats in standalone building (Main Street)	500		0		0		0		500	
	Flats in standalone building (Boulevard)	100		222		0		0		322	
Single dwelling, attached	Live-work or rowhouse	300	500	0	0	30	60	0	0	330	560
	Duplex	200		0		30		0		230	
Single dwelling, detached	Cottage cluster	66	620	50	444	24	498	50	232	190	1,794
	Narrow lot	199		250		30		0		479	
	Mid lot with ADU	249		144		144		82		619	
	Mid lot, no ADU	106		0		300		100		506	
Totals		**2,120**		**666**		**558**		**232**		**3,576**	

The amount of housing in the plan area at full build out has been estimated by Urbsworks to be approximately 3,500 units. During the Concept Plan phase, Urbsworks calculated 3,816 units were achievable. As Main Street/Town Center planning progressed, 20 acres of employment were added to the development program. This caused a reduction of housing numbers, to 3,576 total units. Traffic analysis (in a separate report) is based on a lower residential build out.

Table of dwelling unit type and density by neighborhood, King City Concept Plan.

3. Recommendations

The following numbers have been compiled for use in the TSP. They align with the 2018 Concept Plan projections for land use and development build out, are consistent with the 2017 and 2020 market analyses for commercial uses, and will be reflected in Metro's Transportation Analysis Zones for the year 2045.



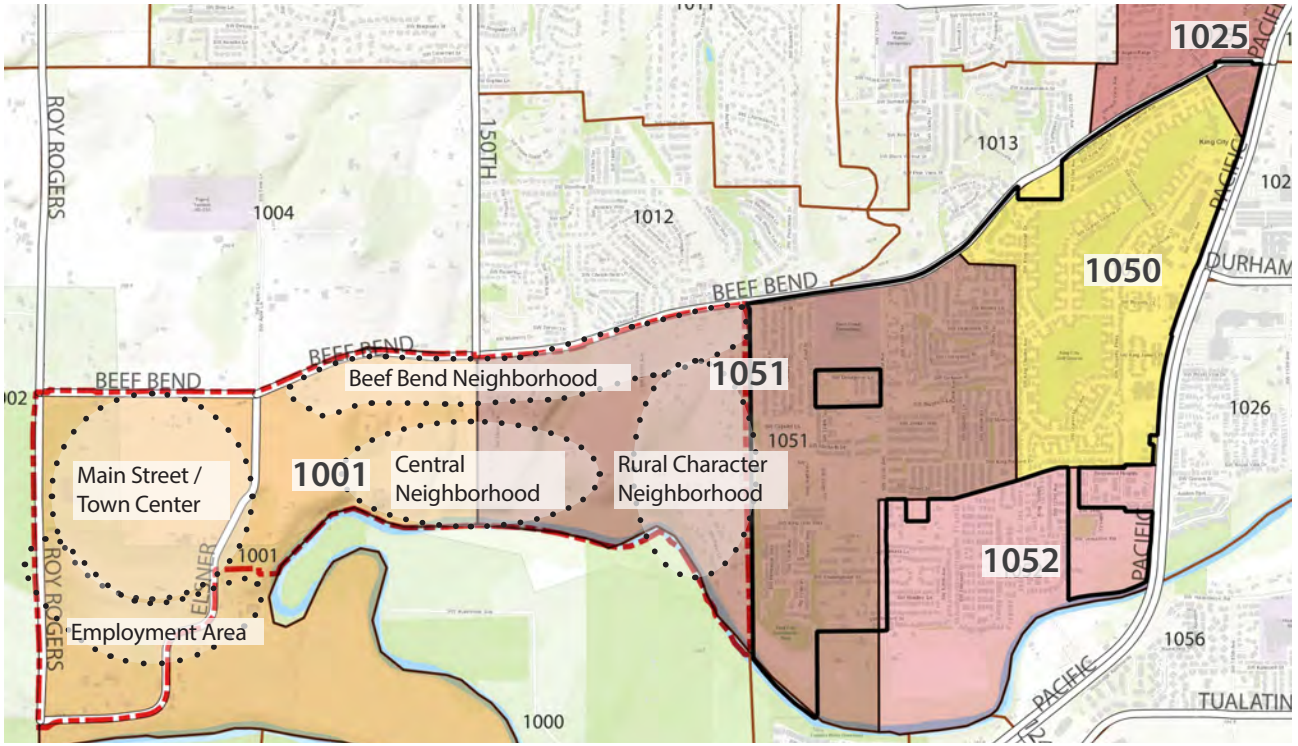
Recommended land use counts (employees and households) for all King City Transportation Analysis Zones (TAZs) for 2045

	TAZs within King City Beef Bend South			TAZs within King City (current city limit)					All King City total
TAZ Number	**1001**	**1051 (West)**	**All BB South**	**1051 (East)**	**1052**	**1050**	**1025**	**All current King City**	
Employees	265	10	**275**	162	49	671	0	**882**	**1,157**
Dwellings (households)	2,295	796	**3,091**	1,440	147	1,072	92	**2,751**	**5,842**
Total employees and households per TAZ	2,560	806	**3,366**	1,602	196	1,743	92	**3,633**	**6,999**

Based on direction from the Technical Advisory Committee, the TAC recommended applying the full development capacity for housing units for the TSP, since they are not significantly more than the 2045 dwelling unit estimate.

The TAC thinks this assumption will align better with the Washington County Urban Reserve Transportation Study and Tigard River Terrace concept planning work.

Below are the recommended land use counts for 2050.



Recommended land use counts (employees and households) for all King City Transportation Analysis Zones (TAZs) for 2050

	TAZs within King City Beef Bend South			TAZs within King City (current city limit)					All King City total
TAZ Number	**1001**	**1051 (West)**	**All BB South**	**1051 (East)**	**1052**	**1050**	**1025**	**All current King City**	
Employees	265	10	**275**	165	50	718	0	**933**	**1,208**
Dwellings (households)	2,750	931	**3,681**	1,440	147	1,072	92	**2,751**	**6,432**
Total employees and households per TAZ	3,015	941	**3,956**	1,605	197	1,790	92	**3,684**	**7,640**

APPENDIX H. TRANSPORTATION VISION AND GOALS

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

TRANSPORTATION VISION AND GOALS

DATE: December 4, 2020

TO: Project Management Team

FROM: Carl Springer and Kevin Chewuk | DKS Associates

SUBJECT: King City Transportation System Plan and Land Use Refinement
Transportation Vision and Goals (Task 5.1; Deliverable 5A) #20020-002

This memorandum provides a recommended transportation vision and set of goals. The recommended vision and goals may be modified, removed, or added to through the planning process, shaped by input received from the project team, advisory committees, and the general public. This feedback process will be used to develop a final vision and set of goals for the TSP. After this process is complete, the vision and goals will be tied into the performance-based planning and programming framework, including Task 5.2 Transportation Objectives (Deliverable 5B), Task 5.3 Transportation Infrastructure Standards (Deliverable 5C), and 5.4 Transportation Performance Measures (Deliverable 5D).

SETTING DIRECTION FOR TRANSPORTATION PLANNING

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 must be 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, **performance measures** are based on the goals and objectives will be developed. For the King City TSP, they will be used to inform the selection and prioritization of projects and policies for the plan by describing how well the alternatives considered support goal areas.

RECOMMENDED TRANSPORTATION VISION

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 allows 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.

RECOMMENDED TRANSPORTATION GOALS AND OBJECTIVES

ACCESSIBILITY AND CONNECTIVITY

The transportation system is convenient and accessible and connects people to destinations throughout the city and beyond.

SAFETY AND SECURITY

The transportation system is safe and secure for people of all ages and abilities.

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.

EQUITY

The transportation system eliminates transportation related disparities and barriers and is affordable for all users.

RELIABILITY AND EFFICIENCY

Manage and optimize the transportation system to ease congestion so people and goods can affordably, reliably, and efficiently reach their destinations.

FISCAL RESPONSIBILITY

Strategically design, operate and maintain the transportation system to maximize assets, minimize costs, and enhance the surrounding community through right sized infrastructure.

COLLABORATION

The transportation system decisions are made in a transparent and collaborative manner, and the benefits and burdens of investments are distributed equally along all users.

APPENDIX I. TRANSPORTATION OBJECTIVES

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

TRANSPORTATION OBJECTIVES

DATE: December 4, 2020

TO: Project Management Team

FROM: Carl Springer and Kevin Chewuk | DKS Associates

SUBJECT: King City Transportation System Plan and Land Use Refinement
Transportation Objectives (Task 5.2; Deliverable 5B) #20020-002

This memorandum provides recommended transportation objectives, and also incorporates the recommended transportation vision and goals from Deliverable 5A. The recommended vision, goals, and objectives may be modified, removed, or added to through the planning process, shaped by input received from the project team, advisory committees, and the general public. This feedback process will be used to develop a final vision, and set of goals and objectives for the TSP. The vision, goals, and objectives will be tied into the performance-based planning and programming framework, including Task 5.3 Transportation Infrastructure Standards (Deliverable 5C), and 5.4 Transportation Performance Measures (Deliverable 5D).

SETTING DIRECTION FOR TRANSPORTATION PLANNING

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 must be 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, **performance measures** based on the goals and objectives will be developed. For the King City TSP, they will be used to inform the selection and prioritization of projects and policies for the plan by describing how well the alternatives considered support goal areas.

RECOMMENDED TRANSPORTATION VISION

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 allows 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.

RECOMMENDED TRANSPORTATION GOALS AND OBJECTIVES

ACCESSIBILITY AND CONNECTIVITY

The transportation system is convenient and accessible and connects people to destinations throughout the city and beyond.

OBJECTIVES FOR CONSIDERATION

- Provide direct, continuous, and connected transportation facilities to minimize out-of-direction travel and decrease travel times for all users.
- Increase the proportion of trips made by walking, bicycling, transit and carpooling.
- Complete all gaps in the bicycle and pedestrian networks, including trails.
- Increase household and job access to transit.
- Increase household and job access to low stress bike and walk networks.
- Increase travel options that serve popular destinations, such as schools, services and parks.
- Increase the number of jobs that households can reach within a reasonable travel time.

SAFETY AND SECURITY

The transportation system is safe and secure for people of all ages and abilities.

OBJECTIVES FOR CONSIDERATION

- Reduce fatal and serious injury crashes for all modes of travel.
- Reduce crashes involving pedestrians and bicyclists by improving conditions along and across streets and at other conflict points with motor vehicles.
- Ensure the pedestrian and bike throughways are well maintained and clear of debris, obstacles and obstructions.
- Provide attractive streetscapes that encourage active transportation, appropriate traffic volumes, vehicle speeds, and safety for all users.

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

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.

OBJECTIVES FOR CONSIDERATION

- Reduce vehicle miles traveled per capita.
- Improve public health by promoting and providing safe, comfortable, and convenient active transportation options to meet daily needs and access services.
- Design all transportation facilities to be welcoming and attractive for all people walking and bicycling.
- Increase household access to parks, open spaces and natural areas.
- Use sensitive design and mitigation approaches to natural, cultural, and developed resources.
- Reduce transportation-related air pollutants.

EQUITY

The transportation system eliminates transportation related disparities and barriers and is affordable for all users.

OBJECTIVES FOR CONSIDERATION

- Reduce household transportation costs by providing walkable neighborhoods, active transportation options, and reduced reliance on motor vehicle travel.
- Develop a multimodal transportation system that allows all users to access employment, education and services.
- Develop a low stress bike and walk network for users of all ages and abilities.
- Promote transportation investments that offer system connectivity and efficiency benefits and avoid, minimize, and mitigate negative impacts.
- Prioritize infrastructure investments that serve those with the least access to transportation resources and with the greatest mobility needs.

RELIABILITY AND EFFICIENCY

Manage and optimize the transportation system to ease congestion so people and goods can affordably, reliably, and efficiently reach their destinations.

OBJECTIVES FOR CONSIDERATION

- Build an integrated and connected system of roadways, freight routes, transit and bicycle and pedestrian facilities.
- Build infrastructure and capacity to support electric vehicles and other emerging technologies to increase travel options.
- Leverage technological advances to increase efficiency of travel across all modes for all road users.

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

FISCAL RESPONSIBILITY

Strategically design, operate and maintain the transportation system to maximize assets, minimize costs, and enhance the surrounding community through right sized infrastructure.

OBJECTIVES FOR CONSIDERATION

- Preserve and maintain transportation system assets to maximize their useful life and minimize project construction and maintenance costs.
- Build transportation infrastructure that is sized appropriately and that encourages economical operation and maintenance.
- 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.
- Develop new revenue sources to prepare for increased travel demand, that balance fairness and equity across the community.

COLLABORATION

The transportation system decisions are made in a transparent and collaborative manner, and the benefits and burdens of investments are distributed equally along all users.

OBJECTIVES FOR CONSIDERATION

- Create a multimodal transportation system that seamlessly connects to existing and planned infrastructure in surrounding communities.
- 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.
- Improve coordination and cooperation among the owners and operators of the transportation system to enhance the efficiency of roadways and multimodal facilities and encourage improved transit service.
- Engage a wider diversity of people to provide input at all stages of developing and maintaining the transportation system and services.

APPENDIX J. TRANSPORTATION PERFORMANCE MEASURES AND PROJECT PRIORITIZATION FRAMEWORK

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TRANSPORTATION PERFORMANCE MEASURES AND PROJECT PRIORITIZATION FRAMEWORK

DATE: December 6, 2020

TO: Project Management Team

FROM: Carl Springer and Kevin Chewuk | DKS Associates

SUBJECT: King City Transportation System Plan and Land Use Refinement

Transportation Performance Measures and Project Prioritization Framework (Task 5.4; Deliverable 5D and 5E) #20020-002

This memorandum details the performance-based planning and programming framework for King City. It summarizes how the performance of the transportation system investments will be evaluated and monitored towards attainment of the long-term goals and objectives of the city and region and provides a framework for prioritizing transportation projects.

RECOMMENDED PERFORMANCE MEASURES

The King City TSP employs a performance-based approach, focusing on measurable outcomes of the investments the City chooses to make to the transportation system. The approach allows the City to measure the degree to which its investments support City-wide and regional priorities. In this manner, the City is able to track how its investment decisions impact a set of performance measures through 2040. While the performance measures do not represent the complete picture, they do offer a baseline against which to assess how the policies, investments and planning decisions made in this plan may affect the future. The measures help translate investment decisions to the community priorities of the TSP and also allow the City to show progress towards meeting the regional performance measures in the Metro Regional Transportation Plan and Regional Transportation Functional Plan.

Table 1 provides recommended performance measures for the TSP. The performance measures will be used in different ways to support the City's transportation planning and decision-making process, including to assess performance as part of the evaluation process at the system level, and to provide a basis for on-going monitoring of transportation investments.

In addition, the performance measures are intended to assess the transportation system in a more holistic way by:

- Reviewing access to essential services and destinations that play important roles in the physical and economic health of an individual,
- Focusing on the movement of people over vehicles, and
- Focusing on equal investments throughout the plan, particularly in areas with greater barriers

TABLE 1: RECOMMENDED PERFORMANCE MEASURES

PERFORMANCE MEASURE	MILES TRAVELED
Description	System-wide number of miles traveled (total and share of overall travel) within King City
Sample Measures	• Vehicle miles traveled (VMT) (total, per capita)
Potential Target	• By 2040, reduce vehicle miles traveled per person by 10 percent compared to 2020
Local / Regional Connection	• TSP Goal(s): Accessibility and Connectivity; Healthy People and Environment; Reliability and Efficiency; Fiscal Responsibility • RTP/RTFP Performance Measure(s): Multimodal Travel; Climate Change; Clean Air
PERFORMANCE MEASURE	**MULTIMODAL LEVEL OF TRAFFIC STRESS**
Description	Locations on the roadway network that operate above thresholds for multimodal level of traffic stress
Sample Measures	• Pedestrian level of traffic stress • Bicycle level of traffic stress
Potential Target	Meet the local thresholds for multimodal level of traffic stress
Local / Regional Connection	• TSP Goal(s): Accessibility and Connectivity; Safety and Security; Healthy People and Environment; Equity • RTP Performance Measure(s): Multimodal Travel; Mode Share
PERFORMANCE MEASURE	**CONGESTION**
Description	Locations on the roadway network that operate above thresholds for congestion
Sample Measures	• Vehicle volume to capacity ratios
Potential Target	Meet the local and regional thresholds for congestion; Reduce vehicle hours of delay per truck by 10% by 2040
Local / Regional Connection	• TSP Goal(s): Reliability and Efficiency • RTP/RTFP Performance Measure(s): Congestion; Freight Delay

PERFORMANCE MEASURE	MODE SHARE
Description	Percent of non-drive alone trips (walking, bicycling, transit and shared ride trips) within King City, and regionally designated Town Centers, Corridors and Neighborhoods
Sample Measures	• Walking, Bicycling, Transit and Shared Ride usage (total and share)
Potential Target	• By 2040, achieve regional non-drive alone modal targets for Town Centers and Corridors of 45 to 55 percent, and for Neighborhoods of 40 to 45 percent
Local / Regional Connection	• TSP Goal(s): Accessibility and Connectivity; Healthy People and Environment; Equity • RTP Performance Measure(s): Affordability; Multimodal Travel; Mode Share; Climate Change; Clean Air
PERFORMANCE MEASURE	**SYSTEM COMPLETENESS**
Description	Completeness of sidewalks, bikeways and trails within the city
Sample Measures	• Total miles and percentage of pedestrian, bicycle and trail networks completed • Percentage of pedestrian and bicycle facilities completed within ¼ mile of transit stops
Potential Target	Complete the sidewalk, bikeway and trail networks by 2040
Local / Regional Connection	• TSP Goal(s): Accessibility and Connectivity; Safety and Security; Healthy People and Environment; Equity; Reliability and Efficiency • RTP Performance Measure(s): Affordability; Multimodal Travel; Mode Share; System Completion; Climate Change
PERFORMANCE MEASURE	**ACCESS TO JOBS**
Description	Number and percent change of jobs accessible within a reasonable travel time by driving, transit, bicycling, and walking
Sample Measures	• Number and percentage of jobs reached by driving in 20 mins • Number and percentage of jobs reached by bicycling in 20 mins (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 mins (including beginning and end of trip)
Potential Target	Desired direction is to increase the number of jobs accessible within a reasonable commute
Local / Regional Connection	• TSP Goal(s): Accessibility and Connectivity; Healthy People and Environment; Equity • RTP Performance Measure(s): Affordability; Multimodal Travel; Mode Share

PERFORMANCE MEASURE	ACCESS TO COMMUNITY AMENITIES
Description	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
Sample Measures	• 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)
Potential Target	Desired direction is to increase the number of community amenities accessible
Local / Regional Connection	• TSP Goal(s): Accessibility and Connectivity; Healthy People and Environment; Equity • RTP Performance Measure(s): Affordability; Multimodal Travel; Mode Share
PERFORMANCE MEASURE	**ACCESS TO TRANSIT**
Description	Number and share of households with access to transit within King City
Sample Measures	• Number and percent of households within ¼ mile of transit stops
Potential Target	Desired direction is to increase the number of households accessible to transit
Local / Regional Connection	• TSP Goal(s): Accessibility and Connectivity; Healthy People and Environment; Equity • RTP Performance Measure(s): Affordability; Multimodal Travel; Mode Share
PERFORMANCE MEASURE	**SAFETY**
Description	Transportation related collisions (total, per capita and per VMT) within King City, and pedestrian districts (i.e., King City Town Center and URA 6D Town Center)
Sample Measures	• 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)
Potential Target	By 2040 eliminate transportation related fatalities and serious injuries for all users
Local / Regional Connection	• TSP Goal(s): Safety and Security • RTP/RTFP Performance Measure(s): Safety

PROJECT PRIORITIZATION FRAMEWORK

Contrary to the performance measures which assess the system wide impact of plan investments, the proposed approach to prioritize individual transportation projects in King City will be based on criteria associated with each TSP goal. A prioritization score will be calculated for each project using the following seven criteria (i.e., each TSP goal):

- Accessibility and Connectivity
- Safety and Security
- Healthy People and Environment
- Equity
- Reliability and Efficiency
- Fiscal Responsibility
- Collaboration

The projects will be scored on each criterion from 1 (low) to 10 (high). The criteria will be weighted equally, resulting in overall possible scores ranging from 7 to 70. The following sections describe the methodology for calculating the scores for each criterion.

ACCESSIBILITY AND CONNECTIVITY

Pedestrian, bicycle and transit demand serves as the basis for this criterion. Projects along Major Pedestrian or Bicycle Streets, or Transit Corridors, and Neighborhood Pedestrian or Bicycle Streets will be assigned the scores shown in Table 2. Projects located in a Pedestrian or Bicycle District have three points added to their respective scores.

TABLE 2: PROPOSED PRIORITIZATION APPROACH FOR ACCESSIBILITY AND CONNECTIVITY CRITERIA

NETWORK CLASSIFICATION	SCORE IN PEDESTRIAN OR BICYCLE DISTRICT	SCORE OUTSIDE OF PEDESTRIAN OR BICYCLE DISTRICT
Major Pedestrian Street, Major Bicycle Street, or Transit Corridor	10	7
Neighborhood Pedestrian Street or Neighborhood Bicycle Street	7	4
Other Street	4	1

SAFETY AND SECURITY

This criterion is intended to account for both crash history and crash risk factors. The following factors will be scored for prioritization as shown in Table 3:

- Locations along the low stress pedestrian and bicycle network.

- Locations with a high density of pedestrian or bicyclist collisions.
- Streets with three or more travel lanes.
- Locations with posted speeds of 30 mph or higher.

TABLE 3: PROPOSED PRIORITIZATION APPROACH FOR SAFETY AND SECURITY CRITERIA

CONDITION	SCORE
Locations along the low stress pedestrian and bicycle network	4
Locations with a high density of pedestrian or bicyclist collisions	2
Locations with three or more travel lanes	2
Locations with posted speeds of 30 mph or higher	2
None	1

HEALTHY PEOPLE AND ENVIRONMENT

A projects distance from community amenities (i.e., education, critical services, parks, open spaces and natural areas) serves as the basis for this criterion. Scores will be assigned based on the location of a project as shown in Table 4.

TABLE 4: PROPOSED PRIORITIZATION APPROACH FOR HEALTHY PEOPLE AND ENVIRONMENT CRITERIA

LOCATION	SCORE
Located within 1/4 mile from a school	4
Located within 1/4 mile of a pedestrian district or commercial corridor	4
Located within 1/4 mile from a park, open space or natural area	2
None	1

EQUITY

The demographic variables of income and age will be used to evaluate the equity implications of project needs. The scoring also considers race, but it was not included in score due to its relative equal distribution among the block groups in the city. To calculate the scores, Census Block Groups in King City will be given scores for income and age from 1 to 5. For each demographic variable, '5' equals the top grouping in the city (i.e., lowest median income or highest median age), '3' the

citywide average, and '1' the bottom grouping in the city (i.e., highest median income or lowest median age). The scores for each demographic variable will be totaled and applied for each project in that block group. The block group with the lowest total will receive a score of '1', regardless of the total.

RELIABILITY AND EFFICIENCY

A projects impact on the movement of people and goods serves as the basis for this criterion. Scores will be assigned based on the location of projects as shown in Table 5.

TABLE 5: PROPOSED PRIORITIZATION APPROACH FOR RELIABILITY AND EFFICIENCY CRITERIA

LOCATION	SCORE
Location of significant delay for people	4
Location along a freight route	4
Location along the arterial and collector roadway network	2
None	1

FISCAL RESPONSIBILITY

The total estimated construction and maintenance cost will be used to evaluate the fiscal responsibility of projects. To calculate the scores, each project will be given scores for construction and maintenance costs from 1 to 5. For each cost variable, '5' equals the lowest cost, '3' the average cost, and '1' the highest cost. The scores for each cost variable will be totaled and applied for each project. Any project with a total cost variable score of '2' will receive a score of '1', regardless of the total.

COLLABORATION

This criterion is intended to capture how well a project is aligned with the nine regional performance measures. Each project will be given a value from 1 to 10 for how well it is perceived to work towards the outcome of each regional performance measure. For each regional performance measure, '10' equals significant progress towards the outcome, '5' indicates some progress towards the outcome, and '1' indicates no progress towards the outcome. The values for each project will be totaled and compared to the highest possible value of '90'. That ratio will be applied to the highest criterion score of '10' to determine the final project score, ranging from 1 to 10.

APPENDIX K. TSP EVALUATION METHODOLOGY MEMO

TSP EVALUATION METHODOLOGY

DATE: September 28, 2020

TO: Project Management Team

FROM: Carl Springer, Kevin Chewuk and Rochelle Starrett | DKS Associates

SUBJECT: King City Transportation System Plan and Land Use Refinement
TSP Evaluation Methodology Memo (Task 5.5; Deliverable 5F) #20020-002

The following memorandum establishes the methods and assumptions that will be used to develop the existing and future conditions transportation analysis for the King City Transportation System Plan (TSP). This memorandum summarizes the study intersections, describes the proposed methodology to calculate the peak hour, 2020 30th highest annual hour of traffic (30 HV), forecasted 2040 volumes, and the safety analysis.

STUDY INTERSECTIONS

Study intersections were identified for the King City TSP with input from the project team. Since travel patterns have been impacted by COVID-19, precluding the collection of new count data, historical counts were obtained. Identified study intersections and characteristics of each count are summarized below in Table 1 and summarized in Figure 1.

TABLE 1: IDENTIFIED STUDY INTERSECTIONS

#	STUDY INTERSECTION	CONTROL	HISTORICAL COUNT DATES	SOURCE
1	SW Roy Rogers Road/SW Beef Bend Road	Signal	4/11/2013, 2/13/2018, 10/22/2019	River Terrace Community Plan, King City URA 6D Study, Urban Reserve Transportation Study
2	SW Roy Rogers Road/SW Scholls-Sherwood Road	Signal	4/11/2013	River Terrace Community Plan
3	SW Elsner Road/SW Beef Bend Road	Two-Way Stop Control	11/19/2013, 2/13/2018	River Terrace Community Plan, King City URA 6D Study
4	SW 150th Avenue/SW Beef Bend Road	All-Way Stop Control	11/19/2013, 2/13/2018	River Terrace Community Plan, King City URA 6D Study

5	SW 137th Avenue/SW Beef Bend Road	Two-Way Stop Control	2/13/2018	King City URA 6D Study
6	SW 131st Avenue/SW Beef Bend Road	Signal	2/13/2018	King City URA 6D Study
7	SW Roy Rogers Road/SW Elsner Road	Two-Way Stop Control	2/13/2018	King City URA 6D Study
8	SW 131st Avenue/SW Fischer Road	All-Way Stop Control	2/13/2018	King City URA 6D Study
9	OR 99W/SW Beef Bend Road	Signal	11/19/2013, 2/13/2018	River Terrace Community Plan, King City URA 6D Study
10	OR 99W/SW Bull Mountain Road	Signal	2017	Traffic Impact Studies
11	OR 99W/SW Royalty Parkway	Signal	3/9/2016	Historical Data
12	OR 99W/SW 116th Avenue/SW Durham Road	Signal	11/19/2013, 2/13/2018	River Terrace Community Plan, King City URA 6D Study
13	OR 99W/SW Fischer Road	Signal	2/13/2018	King City URA 6D Study
14	OR 99W/SW 124th Avenue	Signal	2/13/2018	King City URA 6D Study
15	OR 99W/SW Roy Rogers Road	Signal	2/13/2018	King City URA 6D Study

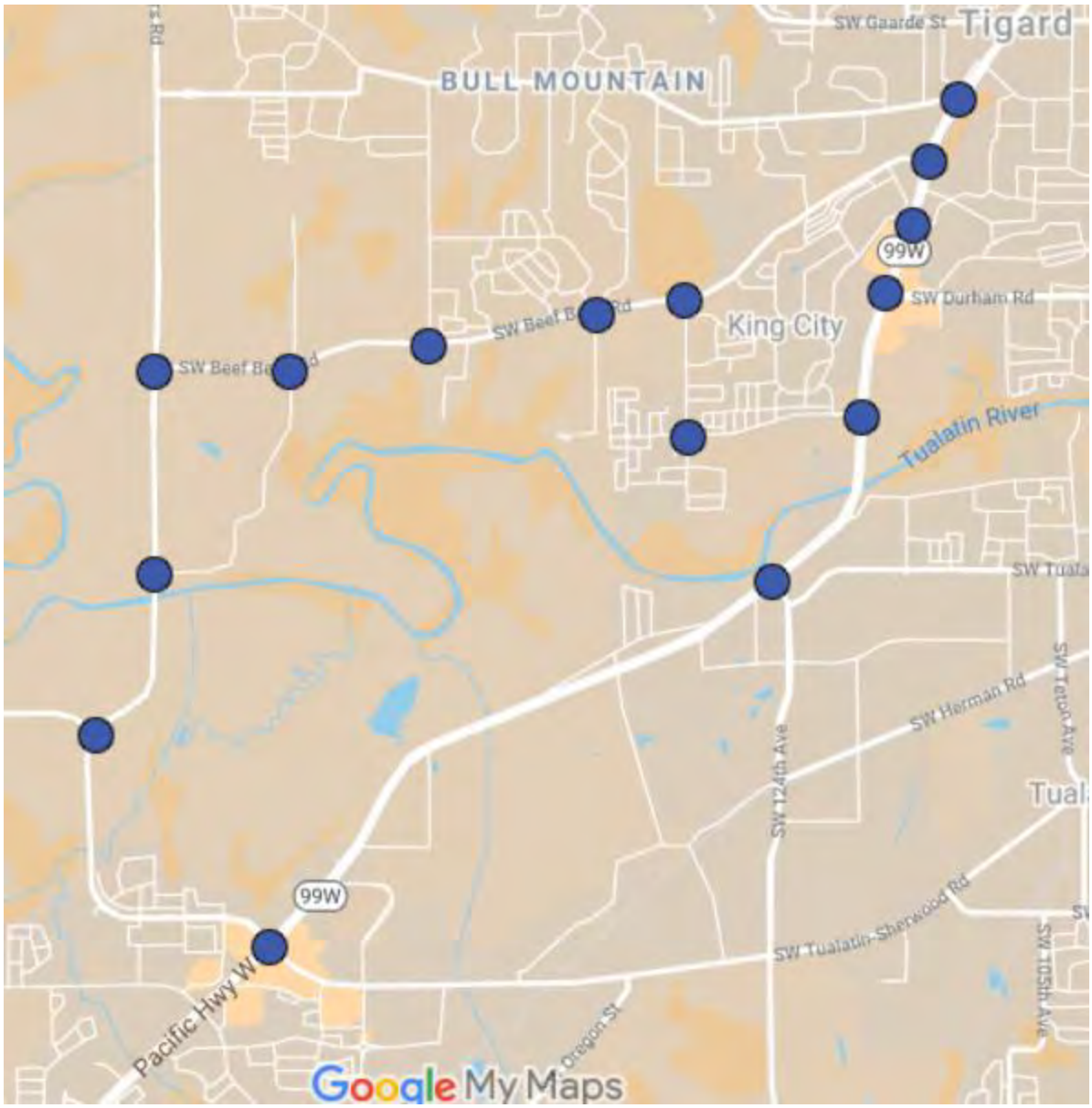

FIGURE 1: IDENTIFIED STUDY INTERSECTIONS (SOURCE: GOOGLE MAPS)

VOLUME DEVELOPMENT

Historical counts must be adjusted to a common count year and month to represent typical 30th highest hour (30 HV) traffic conditions. These adjustments include seasonal adjustments to a common month and historical adjustments to a common year (2020).

PEAK HOUR SELECTION

The historical count data was taken over a range of different dates at distinct study intersection locations. The individual intersection peak hour will be used at each study intersection to capture

the distinct traffic conditions that could have occurred on each count date and to capture citywide variation in traffic volumes over the PM peak.

SEASONAL FACTORS

King City is located within Metro's urban growth boundary (UGB), so typical PM peak traffic conditions follow a commuter seasonal trend. Seasonal adjustments, summarized below in Table 2, will be applied to the counts for highway to highway movements on OR 99W.

TABLE 2: RECOMMENDED SEASONAL FACTORS

COUNT MONTH	SEASONAL FACTOR[1]
February	1.13
March	1.08
April	1.04
November	1.08

HISTORICAL ADJUSTMENTS

Counts taken in different years prior to 2020 will require adjustment to the common base year (2020) prior to analysis. A range of methods can be used to develop factors for historical adjustments, including ODOT's Future Volume Tables[2], Washington County's Traffic Count Program[3], historical counts, and the Washington County Westside Regional Travel Demand Model.

The recommended annual growth rate and the applicable movements is summarized below in Table 3 along with the source used to develop the growth rate. Growth rates developed from historical counts, where applicable, ODOT's Future Volume Tables, and from Washington County's Westside travel demand models were compared for their consistency and applicability to the counts. Generally, historic growth rates were consistent with or lower than model growth rates. Using historic growth rates better represents the existing change in traffic volumes on these corridors since the 2040 financially constrained travel demand model includes a five-lane cross section for SW Roy Rogers Road. This widening project will contribute to higher traffic volumes on this corridor or adjacent roadways in the future and overestimate growth in the short-term.

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[1] ODOT. *Seasonal Trend Table.* 2018.
[2] ODOT. *Future Volume Table.* 2018.
[3] Washington County. *Traffic Counts.* 2017.
https://www.co.washington.or.us/LUT/Divisions/TrafficEngineering/Programs/traffic-counts.cfm

Traffic counts at each study intersection will be forecast from the most recent count date to 2020 using linear growth as noted in Table 3. More recent counts from 2019 are available at the intersection of SW Roy Rogers Road and SW Beef Bend Road. However, the 2019 count recorded a lower total entering traffic volume, so the 2018 count will be used at this location to be more conservative.

TABLE 3: RECOMMENDED ANNUAL PERCENT GROWTH RATES

CORRIDOR	ANNUAL PERCENT GROWTH	APPLICATION	SOURCE
SW Roy Rogers Road	2%	All movements from SW Roy Rogers Road	Washington County Traffic Count Program[1]
OR 99W	1%	All movements from OR 99W	ODOT Future Volume Tables
SW Beef Bend Road	3%	All movements from SW Beef Bend Road	Washington County Traffic Count Program
Other Local Roads	5%	All movements from other roads not specified	Washington County Traffic Count Program[2]

1. Annual percent growth rate based on the average of three count locations on Roy Rogers Road: 3500 ft. south of Scholls Ferry Road, 2000 ft. north of Scholls-Sherwood Road, and 500 ft. south of Scholls-Sherwood Road
2. Annual percent growth rate based on the average of two count locations: Fischer Road, 500 ft. west of OR 99W, and 131st Avenue, 750 ft. south of Beef Bend Road

TRAFFIC ANALYSIS

Traffic operations (delay, LOS, and v/c) will be analyzed for all study intersections under existing (2020) and future (2040) conditions. The Highway Capacity Manual (HCM) 6th Edition methodology will be used for signalized and unsignalized intersection analyses, where possible; signalized intersection v/c ratios will be post-processed to obtain intersection v/c ratios. If HCM 6th Edition results cannot be reported due to intersection geometry or other limitations, the capacity results will be based on HCM 2000. Washington County's version of Metro's Regional Travel Demand Forecast Model will be used to evaluate future conditions.

INTERSECTION MOBILITY TARGETS

The state and region have adopted vehicle mobility targets to ensure that the transportation system will have adequate capacity to support planned growth (see Table 4). ODOT standards are consistent with the regional standards. Regional standards require a volume to capacity (v/c) ratio of 1.10 during the peak first hour, and 0.99 during the peak second hour[4] in designated Town

[4] Second hour defined as the single 60-minute period either before or after the peak 60-minute period, whichever is highest

Centers and 0.99 during the highest two consecutive hours of the day along designated "Corridors," including OR 99W outside of the Town Center and within designated "Neighborhoods," including Beef Bend Road.

All Washington County streets in the area, including Roy Rogers Road and Beef Bend Road, are designated on the Regional Motor Vehicle Network and subject to the regional targets. King City does not currently have adopted performance standards for motor vehicles. For comparison purposes, the regional mobility target for "Neighborhoods," a v/c ratio of 0.99 during the peak hour, will be applied as an interim performance measure for City streets.

TABLE 4: STUDY INTERSECTION MOBILITY TARGETS

#	STUDY INTERSECTION	JURISDICTION	CONTROL	PERFORMANCE MEASURE[1]
1	SW Roy Rogers Road/SW Beef Bend Road	County	Signal	0.99
2	SW Roy Rogers Road/SW Scholls-Sherwood Road	County	Signal	0.99
3	SW Elsner Road/SW Beef Bend Road	County	Two-Way Stop Control	0.99
4	SW 150th Avenue/SW Beef Bend Road	County	All-Way Stop Control	0.99
5	SW 137th Avenue/SW Beef Bend Road	County	Two-Way Stop Control	0.99
6	SW 131st Avenue/SW Beef Bend Road	County	Signal	0.99
7	SW Roy Rogers Road/SW Elsner Road	County	Two-Way Stop Control	0.99
8	SW 131st Avenue/SW Fischer Road	King City	All-Way Stop Control	0.99
9	OR 99W/SW Beef Bend Road	ODOT	Signal	0.99
10	OR 99W/SW Royalty Parkway	ODOT	Signal	1.10
11	OR 99W/SW 116th Avenue/SW Durham Road	ODOT	Signal	1.10
12	OR 99W/SW Fischer Road	ODOT	Signal	0.99
13	OR 99W/SW 124th Avenue	ODOT	Signal	0.99
14	OR 99W/SW Roy Rogers Road	ODOT	Signal	0.99
15	OR 99W/SW Bull Mountain Road	ODOT	Signal	0.99

SAFETY ANALYSIS

Collision trends will be identified by analyzing the most recent five years of available crash data (2014-2018) for roadways within King City. Analysis will include calculation of critical crash rates and excess proportion of specific crash types at all study intersections, as outlined in Chapter 4 of ODOT's Analysis Procedures Manual (APM)[5]. For reference populations with less than 5 intersections, intersection crash rates will be compared to the published 90th percentile crash rates

[5] Analysis Procedures Manual Version 2, Oregon Department of Transportation, March 2016.

in Table 4-1 of the APM. Any intersection with a collision rate that exceeds its critical rate or the 90th percentile crash rate will be flagged for further review. Special consideration will be given to potential causes of collisions at locations with high bicycle/pedestrian crash frequencies.

ODOT's State Highway Crash Rate Tables will be reviewed and used to identify highway segments experiencing crash rates greater than the statewide average for similar facilities. Top 10% ODOT Safety Priority Index System (SPIS) sites will also be identified.

The collision analysis shall be used to identify crash patterns and suggest potential countermeasures at locations that exceed the published intersection or segment crash rates, or the calculated critical crash rate, and identify low cost systemic safety measures that could be considered later in Task 6 to reduce fatal and serious injury crashes.

MULTIMODAL ANALYSIS

Pedestrian and bicycle volumes from the historical traffic data will be analyzed to identify areas with high multimodal activity. Transit service characteristics, including TriMet's routes, stops, and usage will also be reviewed. The OR 99W corridor and other major roadways surrounding King City (*e.g.* Beef Bend Road) will receive a special emphasis to identify potential crossing improvements for multimodal users.

APPENDIX L. EXISTING CONDITIONS AND NEEDS REPORT

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

TRANSPORTATION EXISTING CONDITIONS AND NEEDS REPORT

DATE: February 18, 2021

TO: Project Management Team

FROM: Carl Springer, Kevin Chewuk, and Rochelle Starrett | DKS

SUBJECT: King City Transportation System Plan

Transportation Existing Conditions and Needs Report (Task 6.1; Deliverable 6A) #20020-002

This memorandum summarizes King City's existing and future transportation system needs as identified through the transportation performance evaluation. A review of the existing transportation facilities for each travel mode is also included.

TRANSPORTATION SYSTEM INVENTORY

To address changing transportation needs within the City though 2040, we must first look at the existing and future travel conditions. The transportation system review documented the existing pedestrian, bicycle, transit, and motor vehicle infrastructure. It also identified shortfalls and limitations into how people can travel within the City (such as lack of bike lanes or sidewalks). Solutions for the transportation infrastructure that are determined to not maintain acceptable service levels for residents will be considered later in the process.

PEDESTRIAN NETWORK

Walking plays a key role in King City's transportation network and planning for pedestrians helps the City provide a complete multi-modal transportation system. It also supports healthy lifestyles and addresses a social equity issue ensuring that the young, the elderly, and those not financially able to afford motorized transport have access to goods, services, employment, and education.

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 trip1. In addition to the work commute trips, walking trips are made to and from recreational areas, shopping areas, schools, or other activity generators. Continuous and direct sidewalk connections to all activity generators and along all streets, in addition to safe crossing opportunities along major roadways, are desirable to encourage non-motorized travel options.

The existing pedestrian network in King City, shown in Figure 1, is composed of sidewalks and pedestrian trails, and is fairly well developed.

- **Sidewalks** provide for pedestrian movement and access and enhance connectivity and promote walking. A large part of the eastern portion of King City was developed with sidewalks incorporated into the design of neighborhoods and streets. Although many areas have sidewalk coverage, a few do not have complete sidewalks on one side of the street, or even on both sides. These gaps are most significant along OR 99W, SW Beef Bend Road, neighborhoods just to the east of SW 131st Avenue, and on roadway segments in the undeveloped areas west of SW 137th Avenue.
- **Pedestrian Trails** can serve both recreational and transportation needs for pedestrians. Some 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. Pedestrian trails exist within King City Community Park and scattered throughout the residential neighborhoods providing accessways between disconnected streets or localized recreational walking and biking opportunities.

STREET CROSSINGS

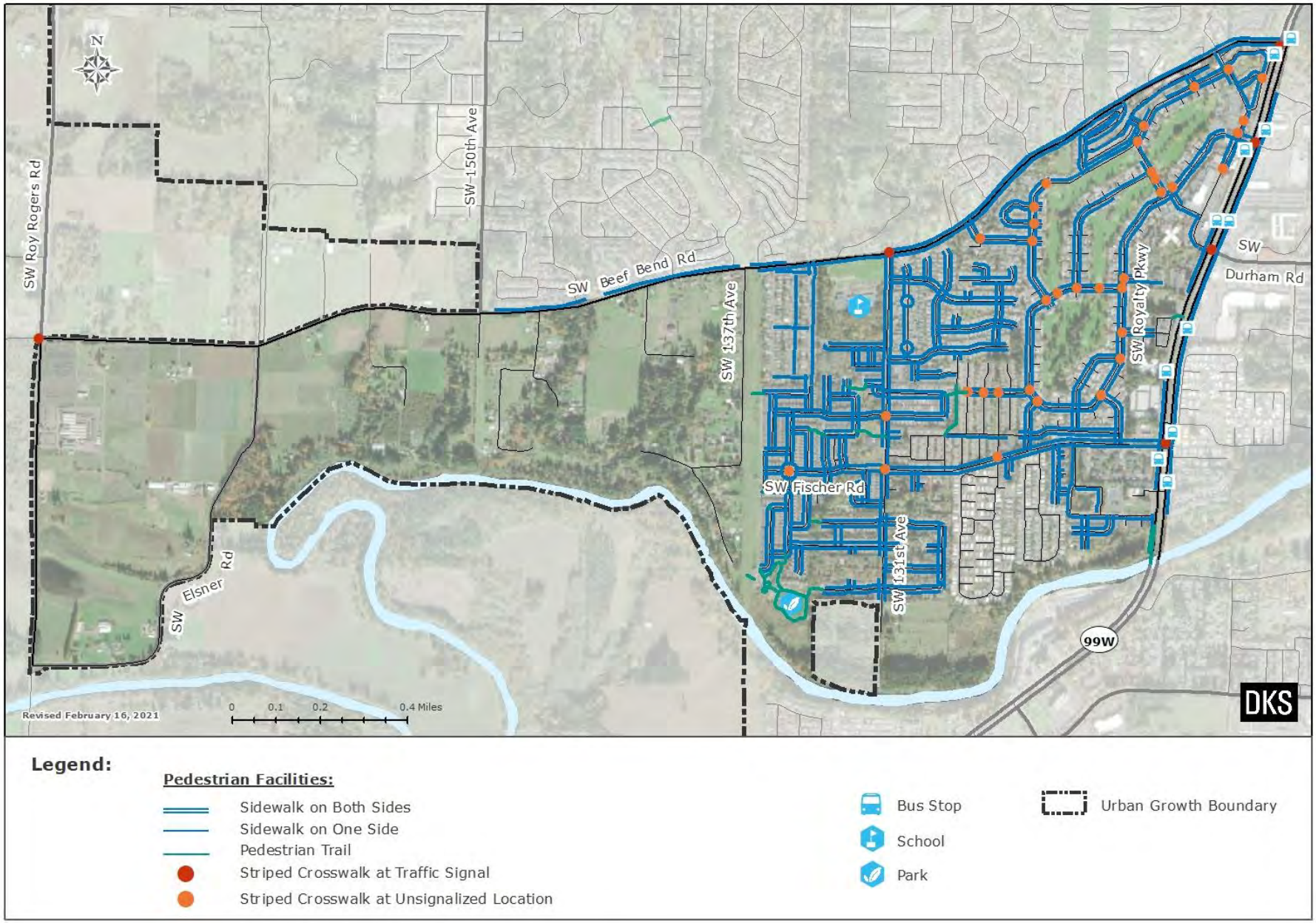
Marked crosswalks are located at the four traffic signals along OR 99W through King City, although they are spaced at intervals of at least 0.25 miles. This is greater than the typical distance a pedestrian will walk and could result in out of direction travel for pedestrians wishing to cross OR 99W. Only one marked crossing is currently available along SW Beef Bend Road between OR 99W and SW Roy Rogers Road, at the SW 131st Avenue signalized intersection near Deer Creek Elementary School. Additional marked crosswalks are available throughout King City at unsignalized intersections.

Curb Ramps

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 have been installed recently in many of these locations. The presence of curb ramps is fairly consistent along streets near the King City Town Center, and in the newer neighborhoods in the City.

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

FIGURE 1: PEDESTRIAN FACILITIES



PEDESTRIAN CLASSIFICATIONS

The recommended pedestrian classifications for King City are shown in Figure 2. For more information, see the Transportation Infrastructure Standards Memorandum- Deliverable 5C. The pedestrian classifications for streets helps support pedestrian movement and access to adjacent land use. It is recommended to determine the pedestrian facilities along streets, including the width of the throughway for pedestrians, and the buffer between the vehicle travel way. The recommended classifications in King City, including Multimodal Area, Major Pedestrian, Neighborhood Pedestrian and Local Pedestrian Streets, and Pedestrian Trails.

MULTIMODAL AREA STREET

A Multimodal Area Street reflects the areas of the city where high pedestrian and bicycle activity is expected or planned. All streets in the Multimodal areas shown on Figure 2 are Multimodal Area Streets. Non-vehicle movement takes the highest priority in these areas. Multimodal Area Streets must include a high-quality pedestrian environment, with wide sidewalks and a pedestrian realm that can accommodate high volumes of pedestrian activity.

MAJOR PEDESTRIAN STREET

A Major Pedestrian Street includes corridors linking different parts of the city, and those providing access to Multimodal Areas or Transit Corridors. These are typically located along Arterial or Collector Streets and must include safe, convenient, and attractive facilities for pedestrians.

NEIGHBORHOOD PEDESTRIAN STREET

A Neighborhood Pedestrian Street includes those connecting to Major Pedestrian Streets and those providing access to schools, pedestrian trails, parks, open spaces, and other significant destinations. These are typically located along streets with a low volume of traffic and must include safe and convenient facilities for pedestrians.

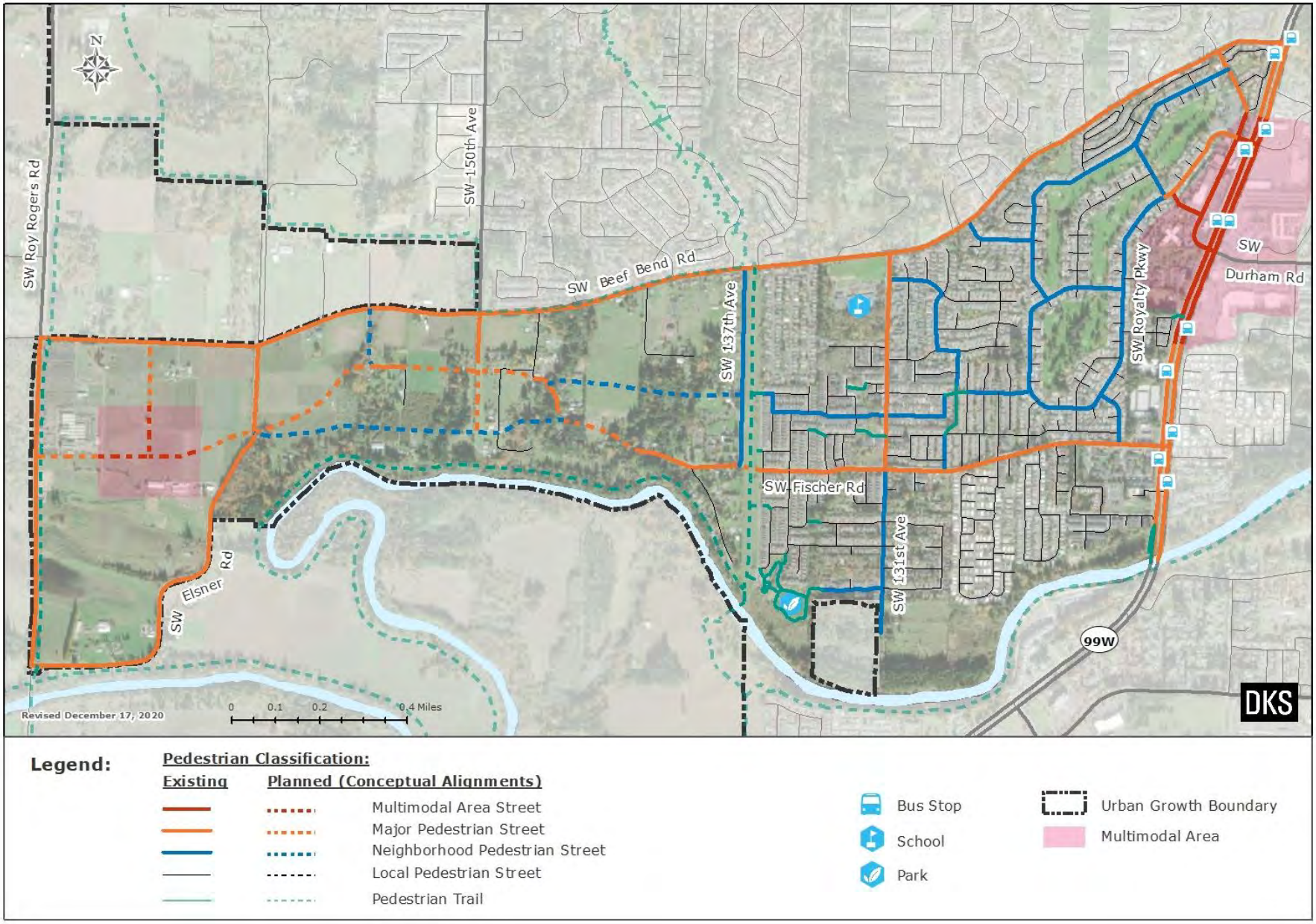
LOCAL PEDESTRIAN STREET

All streets not classified as Multimodal Area, Major Pedestrian, or Neighborhood Pedestrian Streets are classified as Local Pedestrian Streets. Local Pedestrian Streets provide local access and circulation for pedestrians and must include safe and convenient facilities for pedestrians.

PEDESTRIAN TRAIL

Pedestrian Trails can serve both recreational and transportation needs for pedestrians. Some 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. Figure 2 shows several planned and conceptual trails around King City, including the Westside, Tualatin River Greenway, Roy Rogers Road and River Terrace Trails.

FIGURE 1: PEDESTRIAN CLASSIFICATIONS



BICYCLE NETWORK

Riding bicycles also plays a key role in the transportation system's ability to support healthy and active lifestyles and provide alternative travel choices 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. Bicycle trips can often work well for distances between a half mile and three miles. King City's relatively compact size makes biking a great choice for many trips, with local jobs and housing typically in bikeable proximity. Despite this, only about one percent of King City's commuters currently travel by bicycle[2]. In addition to the work commute trips, bicycle trips are made to and from recreational or shopping areas, schools, or other activity generators. Continuous bicycle connections between all activity generators and arterial/collector roadways are desirable to allow for safe and attractive non-motorized travel options.

The bicycle network in King City, shown in Figure 3, is composed of bike lanes, roadway shoulders, shared roadways, and bicycle paths.

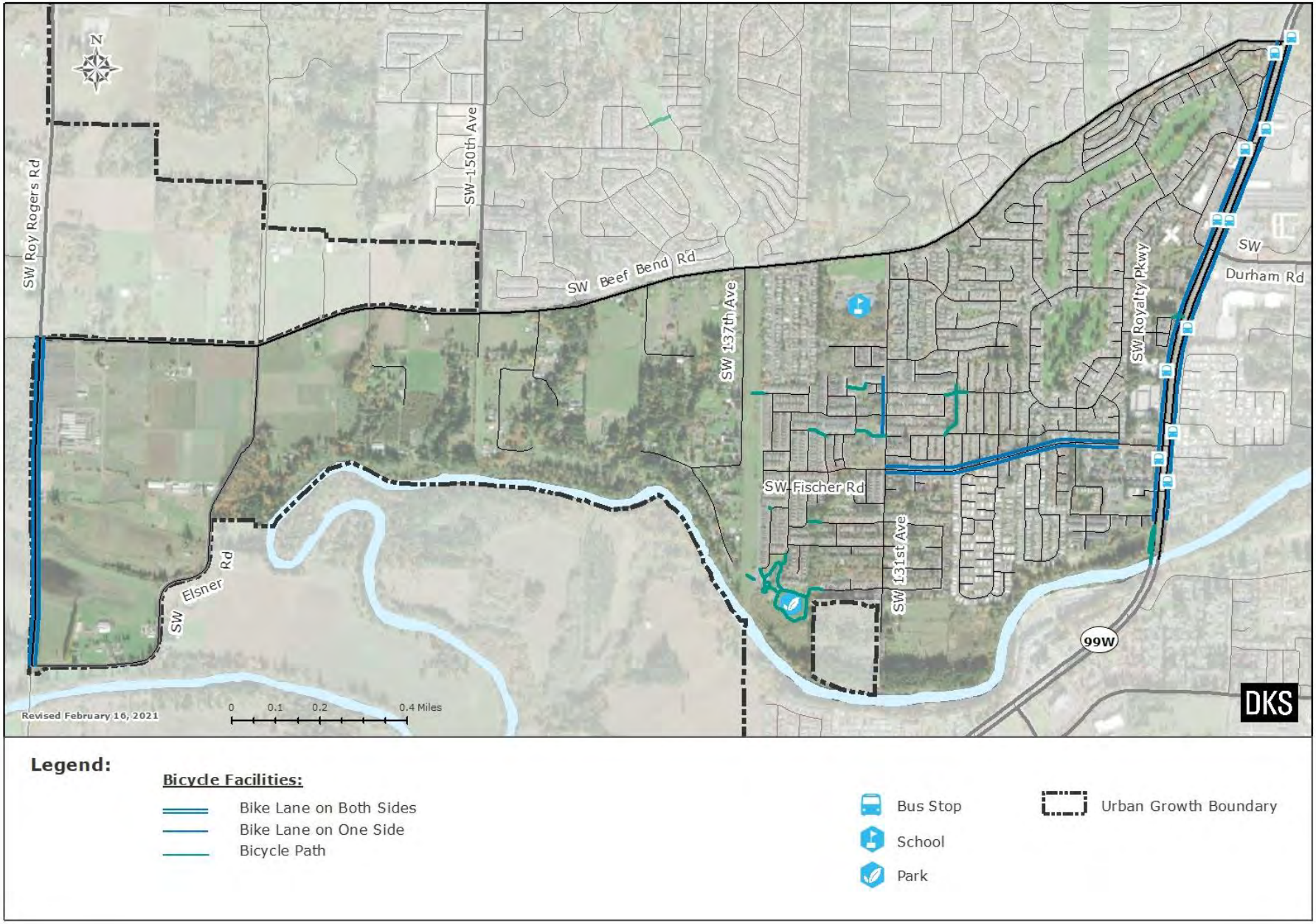
- **Bike lanes** are portions of the roadway designated specifically for bicycle travel via a striped lane and pavement stencils. Standard width for a bicycle lane is six feet. Bike lanes are most appropriate on arterials and collectors, where high traffic volumes and speeds warrant greater separation of the travel modes. Significant segments of continuous bicycle lanes exist along portions of OR 99W and SW Fischer Road, while one side of SW 131st Avenue has a bike lane for a short segment.
- **Shoulder bikeways** are paved with striped shoulders wide enough for bicycle travel. A six-foot paved shoulder is desired to adequately provide for bicyclists, with a four-foot minimum width in constrained areas. Roadways with shoulders less than four feet are considered shared roadways. Some shoulder bikeways are signed to alert motorists to expect bicycle travel along the roadway. A shoulder bikeway exists along the segment of SW Roy Rogers Road between SW Beef Bend Road and SW Elsner Road.
- **Shared roadways** include those on which bicyclists and motorists share the same travel lane. The most suitable roadways for shared bicycle use are those with low speeds (25 mph or less) and low traffic volumes (3,000 vehicles or fewer per day). Shared roadways, often signed as bicycle routes, serve to provide continuity to other bicycle facilities (e.g., bicycle lanes) or can be designated as a preferred route through the community. Common practice is to sign a route with standard Manual on Uniform Traffic Control Devices (MUTCD) green bicycle route signs with directional arrows and/or pavement markings. Shared roadways can have signs that highlight a special route or provide directional information in bicycling minutes or distance. Most local roadways in the City are considered shared roadways, but do not have signs or pavement markings.
- **Bicycle Paths** can serve both recreational and transportation needs. They include shared use paths, which allow for citywide pedestrian and bicycle travel, and short path segments providing accessways between disconnected streets or localized recreational biking opportunities. They can be separated or adjacent to the streets right-of-way and provide linear park facilities for bicycle travel.

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

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.

FIGURE 3: BICYCLE FACILITIES



BICYCLE CLASSIFICATIONS

The recommended bicycle classifications for King City are shown in Figure 4. For more information, see the Transportation Infrastructure Standards Memorandum- Deliverable 5C. The bicycle classifications for streets helps support the movement of people riding bikes. It is recommended to determine the bicycle facilities along streets, including the type and width. The recommended classifications in King City, including Major Bicycle, Neighborhood Bicycle and Local Bicycle Streets, and Bicycle Paths.

MAJOR BICYCLE STREET

A Major Bicycle Street includes corridors linking different parts of the city, and those providing primary access to Multimodal Areas or Transit Corridors. These are typically located along Arterial or Collector Streets. The bike facilities should be high quality and emphasize safe, convenient, and comfortable bicycle travel, and are often protected or separate from the vehicle travel way.

NEIGHBORHOOD BICYCLE STREET

A Neighborhood Bicycle Street includes those connecting to Major Bicycle Streets and those providing access to schools, bicycle paths, parks, open spaces, and other significant destinations. These routes establish direct and convenient bicycle routes and provide bicycle facility coverage within ¼ of a mile of any given point in the city. The highest quality bike facility should be provided given other street classifications, and may include bicycle lanes, shared roadways (with shared lane markings), bike route wayfinding, traffic volume and speed management, and extra-wide curb lanes.

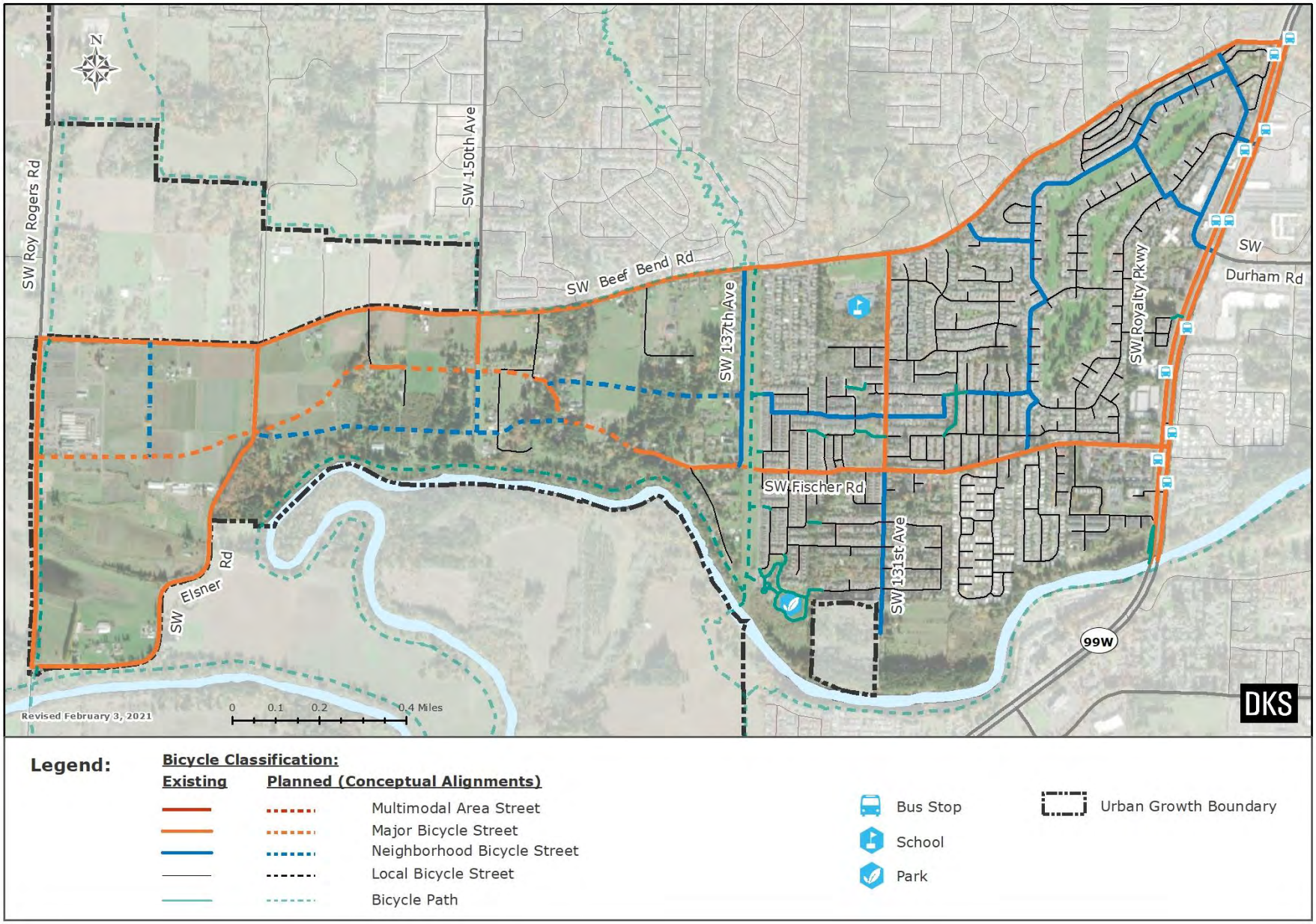
LOCAL BICYCLE STREET

All streets not classified as Major Bicycle, or Neighborhood Bicycle Streets are classified as Local Bicycle Streets. Local Bicycle Streets provide local access and circulation for bicyclists and typically include shared roadways (without shared lane markings).

BICYCLE PATH

Bicycle Paths can serve both recreational and transportation needs. They include shared use paths, which allow for citywide pedestrian and bicycle travel, and short path segments providing accessways between disconnected streets or localized recreational biking opportunities. They can be separated or adjacent to the streets right-of-way and provide linear park facilities for bicycle travel. Figure 4 shows several planned and conceptual bicycle paths around King City, including the Westside, Tualatin River Greenway, Roy Rogers Road and River Terrace Trails.

FIGURE 4: BICYCLE CLASSIFICATIONS



TRANSIT NETWORK

Transit service is provided in King City via three fixed bus routes (see Figure 5), a deviated route service, and an Americans with Disabilities Act (ADA) paratransit service.

FIXED BUS ROUTES

TriMet provides transit service in King City via two fixed bus routes connecting the City with Downtown Portland, Tigard, and Sherwood. 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.

Transit riders can transfer to other TriMet routes at the Tigard Transit Center and within Downtown Portland. Bus stops in King City are located along OR 99W 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. A park-and-ride facility that 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.

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.

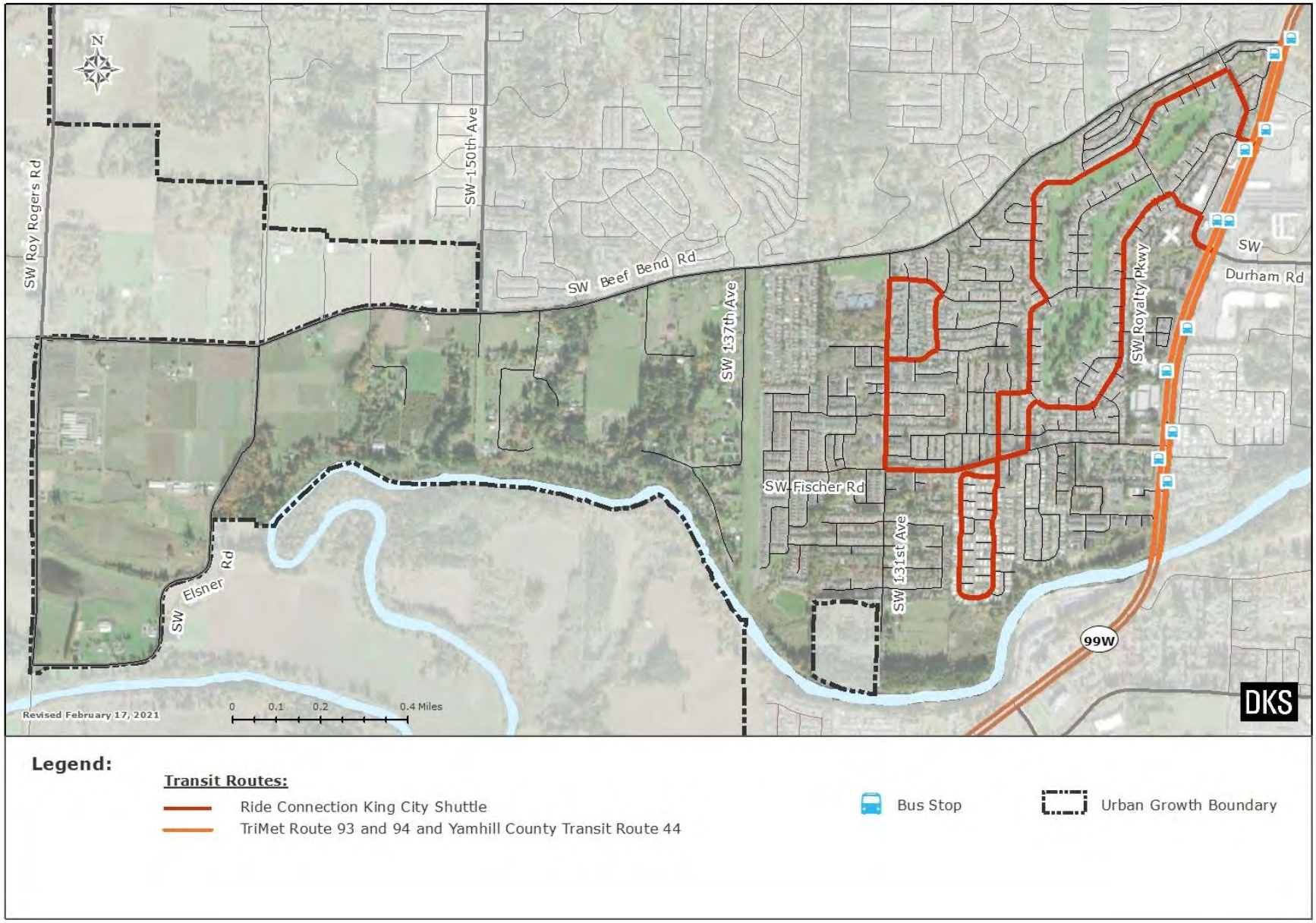
DEVIATED ROUTE SERVICE

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.

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.

FIGURE 5: TRANSIT ROUTES



MOTOR VEHICLE NETWORK

King City streets are generally disconnected and follow an inconsistent pattern of development with large blocks, although the City has required more connectivity in the newest neighborhoods. Street connectivity to the King City Town Center is also limited by the King City Public Golf Course. Major streets that surround King City include OR 99W to the east, SW Beef Bend Road to the north, and SW Roy Rogers Road to the west.

- OR 99W runs north-south at the east end of King City, connecting the City to Tigard and Portland to the north, and Sherwood and McMinnville to the south.
- SW Roy Rogers Road runs north-south at the west end of the City's Urban Growth Boundary, connecting SW Scholls Ferry Road north of the City with OR 99W to the south in Sherwood.
- SW Beef Bend Road runs east-west at the north end of the City, connecting OR 99W with SW Roy Rogers Road.

Key streets that connect to OR 99W and provide access to neighborhoods in King City 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, while existing connections to SW Roy Rogers Road are limited to SW Beef Bend Road and SW Elsner Road.

VEHICLE CLASSIFICATIONS

The recommended vehicle classifications for King City are shown in Figure 6. For more information, see the Transportation Infrastructure Standards Memorandum- Deliverable 5C. Vehicle classifications for streets helps support the movement of vehicles. It is recommended to determine the level of mobility, access, and use for vehicles. The vehicle classification system recognizes that individual streets do not act independently, but instead form a network that serves travel needs on a regional, citywide, neighborhood and local level. From highest to lowest intended use, the recommended classifications are Arterial, Collector, Neighborhood, and Local Streets. Streets with higher intended usage generally limit access to adjacent property in favor of more efficient motor vehicle traffic movement (i.e., mobility). Local roadways with lower intended usage have more driveway access and intersections, and generally accommodate shorter trips to nearby destinations.

Arterial Street

Arterial Streets include Major or Minor Arterials. Major Arterial Streets are primarily intended to serve regional traffic movement, while Minor Arterial Streets are intended to serve citywide traffic movement. Safety should be the highest priority on Arterial Streets and separation should be provided between motor vehicles and people walking, and bicycling, and safe multimodal crossings provided to destinations. Arterials provide the primary connection to other Arterial Streets or Collector Streets. Where an Arterial Street intersects with a Neighborhood or Local Street, access management and/or turn restrictions may be employed to reduce traffic delay.

Collector Street

Collector Streets are intended to distribute traffic from Arterials Streets to streets of the same or lower classification. Safety should be the highest priority on Collectors. Where a Collector Street intersects with a Neighborhood or Local Street, access management and/or turn restrictions may be employed to reduce traffic delay.

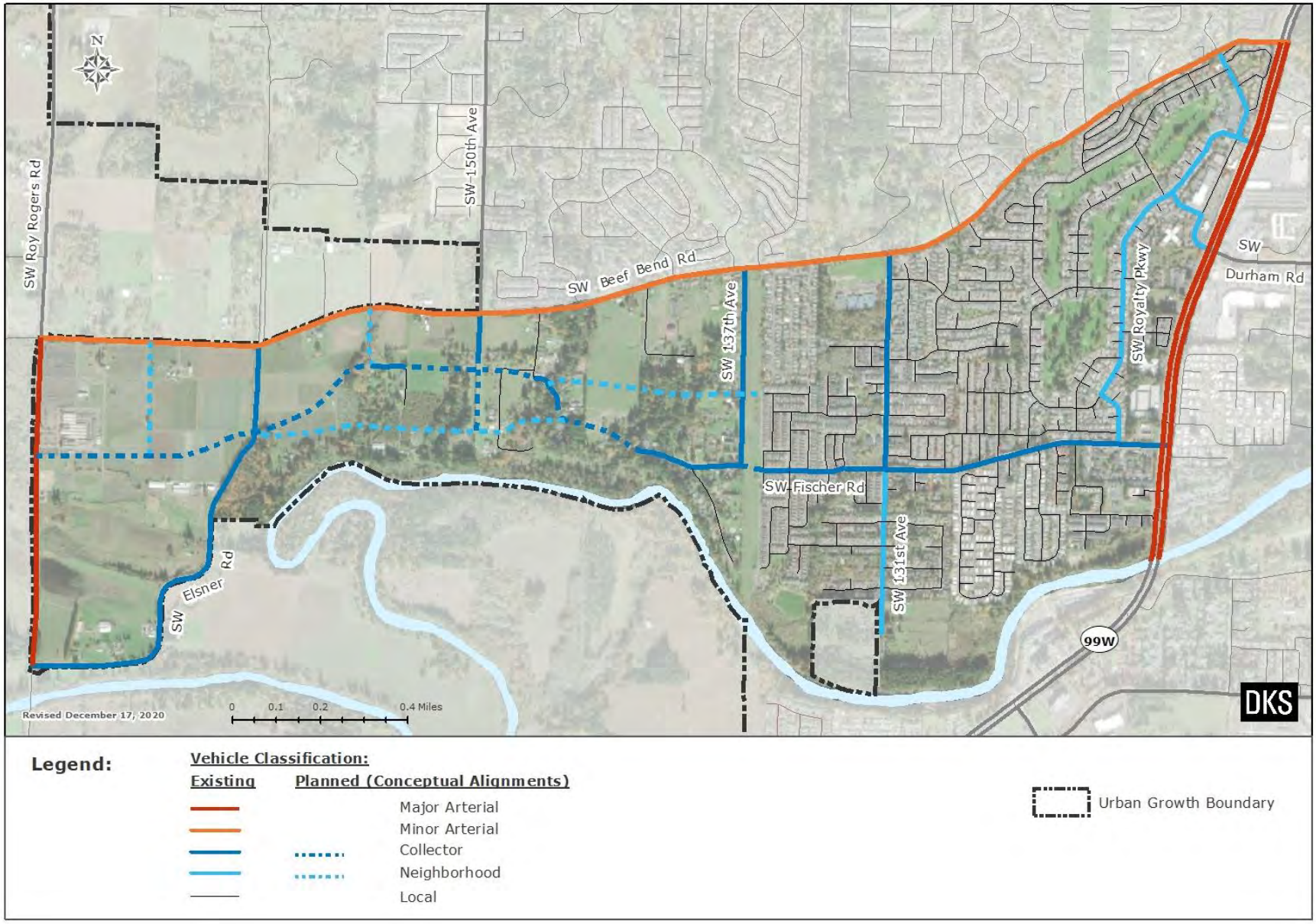
Neighborhood Street

Neighborhood Streets distribute traffic from Arterial or Collector Streets to Local Streets. Neighborhood Streets should maintain slow vehicle operating speeds to accommodate safe use by all modes and through traffic should be discouraged. Where a Neighborhood Street intersects with a higher-classified street, access management and/or turn restrictions may be employed to reduce traffic delay and discourage through traffic.

Local Street

All streets not classified as Arterial, Collector, or Neighborhood Streets are classified as Local Streets. Local Streets provide local access and circulation for traffic, connect neighborhoods, and often function as through routes for pedestrians and bicyclists. Local Streets should maintain slow vehicle operating speeds to accommodate safe use by all modes.

FIGURE 6: VEHICLE CLASSIFICATIONS



FREIGHT NETWORK

Efficient truck movement plays a vital role in the economical movement of raw materials and finished products. The designation of through truck routes provides for this efficient movement, while maintaining neighborhood livability, public safety, and minimizing maintenance costs of the roadway system. Through King City, OR 99W and SW Roy Rogers Road have various freight destinations by the State and Region, as summarized below.

- **State Highway Freight System:** OHP Goal 1, Policy 1C addresses the need to balance the movement of goods and services with other uses. It states that the timeliness of freight movements should be considered when developing and implementing plans and projects on freight routes. Through King City, OR 99W is classified as an Oregon Freight Route and Federal Truck Route.
- **Reduction Review Routes:** ORS 366.215 requires review of all potential actions that will alter, relocate, change or realign a Reduction Review Route that could result in permanent reductions in vehicle-carrying capacity. Reduction of vehicle-carrying capacity means a permanent reduction in the horizontal or vertical clearance of a highway section, by a permanent physical obstruction to motor vehicles located on useable right-of-way subject to Commission jurisdiction, unless such changes are supported by the Stakeholder Forum. If ODOT identifies that an action may result in a reduction of vehicle-carrying capacity, a Stakeholder Forum (consisting of at a minimum, a bicycle representative, pedestrian representative, a trucking industry representative, a mobile home manufacturing representative, an oversize load freight representative, a representative of automobile users, and a representative from any affected city, county or Metropolitan Planning Organization) will be convened to help advise ODOT regarding the effect of the proposed action on the ability to move motor vehicles through a section of highway. Through King City, OR 99W is classified as a Reduction Review Route.
- **Regional Freight Network:** OR 99W is a Main Roadway Route, which connect major activity centers in the region to other areas in Oregon. Roy Rogers Road is a Roadway Connector, which connects other freight facilities, industrial areas, and 2040 centers to a main roadway route.

RAIL NETWORK

There are no existing freight or passenger rail facilities in King City.

AIR NETWORK

The Meyer Riverside Airpark (FAA LID: OG34) is located south of SW Beef Bend Road, near SW 147th Avenue. This is a private use airport.

Regional and international air service for passengers and freight is provided via Portland International Airport (PDX). The airport is located approximately 25 miles (around 30 minutes) to the northeast of King City and is connected via I-5, I-84 and I-205.

WATERWAY NETWORK

King City is bordered by the Tualatin River on the south side of the City. This waterway generally only serves recreational boating needs and is not navigable for marine freight facilities.

PIPELINE NETWORK

Northwest Natural Gas operates a transmission pipeline that runs west of SW Roy Rogers Road. In addition, Kinder-Morgan has a gas pipeline that travels under King City near SW 137th Avenue. There are no other major regional water or oil pipelines within the City limits.

TRANSPORTATION SYSTEM CONDITIONS

The King City TSP employs a performance-based approach, focusing on measurable outcomes of the investments the City chooses to make to the transportation system. The approach allows the City to measure the degree to which its investments support City-wide and regional priorities. In this manner, the City is able to track how its investment decisions impact a set of performance measures through 2040. While the performance measures do not represent the complete picture, they do offer a baseline against which to assess how the policies, investments and planning decisions made in this plan may affect the future. The measures help translate investment decisions to the community priorities of the TSP and also allow the City to show progress towards meeting the regional performance measures in the Metro Regional Transportation Plan.

PERFORMANCE MEASURES

The performance measures serve as the link between TSP goals and plan implementation. This section summarizes the baseline performance evaluation that will be used to compare plan performance with the recommended transportation system projects and programs. Through an evaluation and comparison to baseline performance of the transportation system the City can better understand the extent to which investments in the transportation system will achieve desired outcomes and provide the best return on public investments. Table 1 provides performance measures used for the evaluation, and links them to the TSP goals they support.

TABLE 1: CONNECTION OF PERFORMANCE MEASURES TO TSP GOALS

PERFORMANCE MEASURE	TSP GOALS						
	ACCESSIBILITY AND CONNECTIVITY	SAFETY AND SECURITY	HEALTHY PEOPLE AND ENVIRONMENT	EQUITY	RELIABILITY AND EFFICIENCY	FISCAL RESPONSIBILITY	COLLABORATION
HOW MUCH DO PEOPLE TRAVEL IN THE CITY?							
MILES TRAVELED	●		●	◒	●	●	◒
MODE SHARE	●		●	●	◒	●	◒
HOW EFFICIENT IS TRAVEL IN THE CITY?							
MULTIMODAL LEVEL OF TRAFFIC STRESS	●	●	●	●	◒	◒	◒
CONGESTION	◒	◒	◒	◒	●		◒
HOW EASILY, COMFORTABLY AND DIRECTLY CAN PEOPLE ACCESS DESTINATIONS IN THE CITY?							
SYSTEM COMPLETENESS	●	●	●	●	●	◒	◒
ACCESS TO JOBS	●	◒	●	◒	◒		◒
ACCESS TO COMMUNITY AMENITIES	●	◒	●	◒	◒		◒
ACCESS TO TRANSIT	●	◒	●	◒	◒		◒
HOW SAFE IS TRAVEL IN THE CITY?							
SAFETY	◒	●		◒	◒	◒	◒

Notes:

● = Measure highly connected with achieving goal

◒ = Measure somewhat connected with achieving goal

PERFORMANCE EVALUATION

This section provides the results of the performance measure evaluation for both the existing and the future 2040 Baseline transportation system. This evaluation provides information that will be used to understand the baseline operating characteristics for King City's transportation system, and does not yet reflect the investments and decisions the City will make regarding its future transportation system. The 2040 Baseline scenario assumes the population and employment growth in the City through 2040, does not include any assumed network improvements that will occur with the growth. The impact of these improvements will be assessed with analysis of the Build scenarios that will occur later in the TSP process.

VEHICLE MILES TRAVELED

This measure is used to identify how the transportation investments impact travel by motor vehicles. As shown in Table 2, vehicle miles traveled per capita is expected to increase about 18 percent between 2015 and the 2040, meaning that people are driving more, or for longer distances. However, this represents the baseline condition for 2040 and is reflective of the high amount of growth expected and does not yet reflect the investments and decisions the City will make regarding its future transportation system.

TABLE 2: VEHICLE MILES TRAVELED PER PERSON LIVING WITHIN KING CITY

PM PEAK HOUR VEHICLE MILES TRAVELED	2015 BASE YEAR	2040 BASELINE	CHANGE
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 Traffic Analysis Zone (TAZ). For per capita calculations these trip distances are divided by the City population.

TRAVEL MODE SHARE

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). Increasing the non-drive alone mode share reduces the impact that each person trip has on the transportation system by shifting users to more space-efficient travel options. The base year (2015) and future Baseline (2040) mode share estimates for King City are summarized in Table 3. Through 2040, the non-single occupant vehicle (SOV) trip share is expected to increase about two percent, as more users are expected to utilize transit, walk, or bike during an average weekday.

TABLE 3: CITYWIDE TRAVEL MODE SHARE

AVERAGE WEEKDAY TRIPS BY MODE	2015 BASE YEAR		2040 BASELINE	
	TRIPS	SHARE	TRIPS	SHARE
DRIVE ALONE TRIPS	12,044	52.4%	17,220	50.4%
SHARED RIDE TRIPS	8,559	37.3%	12,925	37.8%
TRANSIT TRIPS	1,210	5.3%	2,110	6.2%
WALK TRIPS	846	3.7%	1,324	3.9%
BIKE TRIPS	317	1.4%	569	1.7%
TOTAL PERSON TRIPS	**22,976**		**34,148**	
TOTAL NON-SOV TRIPS	**10,932**	**47.6%**	**16,928**	**49.6%**
TOTAL BIKE, WALK, TRANSIT TRIPS	**2,373**	**10.3%**	**4,003**	**11.7%**

Source: Washington County 2015 and 2040 Westside Focus Area Travel Demand Models. 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

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.

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 for all users. Refer to the Transportation Infrastructure Standards (Task 5.3; Deliverable 5C) document for more information on the LTS rankings.

Results of the multimodal LTS evaluations are summarized in Table 4, and Figures 7 and 8 for pedestrians and bicyclists respectively. As redevelopment and frontage improvements occur through 2040, the multimodal LTS ratings will improve. Additional pedestrian and bicycle investments and decisions identified through the TSP process will also contribute towards a new, low-stress bicycle and pedestrian network.

Overall, around 60 percent of the pedestrian network facility miles (i.e., edge of each street), and 75 percent of the bicycle network facility miles have a low or moderate level of stress. This is generally representative of the many low volume and low speed streets in the City. However, around 40 percent of the pedestrian network facility miles and 25 percent of the bicycle network facility miles have an extreme or high level of stress. In most cases, these include high speed and high volumes streets (e.g., OR 99W, SW Beef Bend Road, and SW Roy Rogers Road), but also include several streets that lack adequate facilities. Of the extreme or high stress segments, most are along streets with a recommended pedestrian classification of Multimodal Area Street and Major Pedestrian Street, and recommended bicycle classification of Major Bicycle Street. These streets are important for pedestrian and bicycle travel and should be a higher priority for improvement projects with high-quality facilities, and an emphasis on safe, convenient, and comfortable travel for these users.

TABLE 4: MULTIMODAL LEVEL OF TRAFFIC STRESS

MULTIMODAL LEVEL OF TRAFFIC STRESS	PEDESTRIAN NETWORK		BICYCLE NETWORK	
	MILES	SHARE	MILES	SHARE
EXTREME STRESS FACILITY MILES	**20.41**	**36%**	**10.25**	**18%**
HIGH STRESS FACILITY MILES	**2.77**	**5%**	**3.92**	**7%**
MODERATE STRESS FACILITY MILES	**2.86**	**5%**	**2.19**	**4%**
LOW STRESS FACILITY MILES	**31.36**	**55%**	**41.04**	**71%**
TOTAL FACILITY MILES	57.40	100%	57.40	100%
TOTAL EXTREME OR HIGH STRESS MILES	23.18	40%	14.17	25%
*EXTREME OR HIGH STRESS MILES ALONG MAJOR MULTIMODAL STREETS **	*12.64*	*55%*	*14.01*	*99%*
EXTREME OR HIGH STRESS MILES ALONG OTHER STREETS	*10.54*	*45%*	*0.16*	*1%*

Notes: * Includes streets with a recommended pedestrian classification of Multimodal Area Street and Major Pedestrian Street, and recommended bicycle classification of Major Bicycle Street.

FIGURE 7: PEDESTRIAN LEVEL OF TRAFFIC STRESS

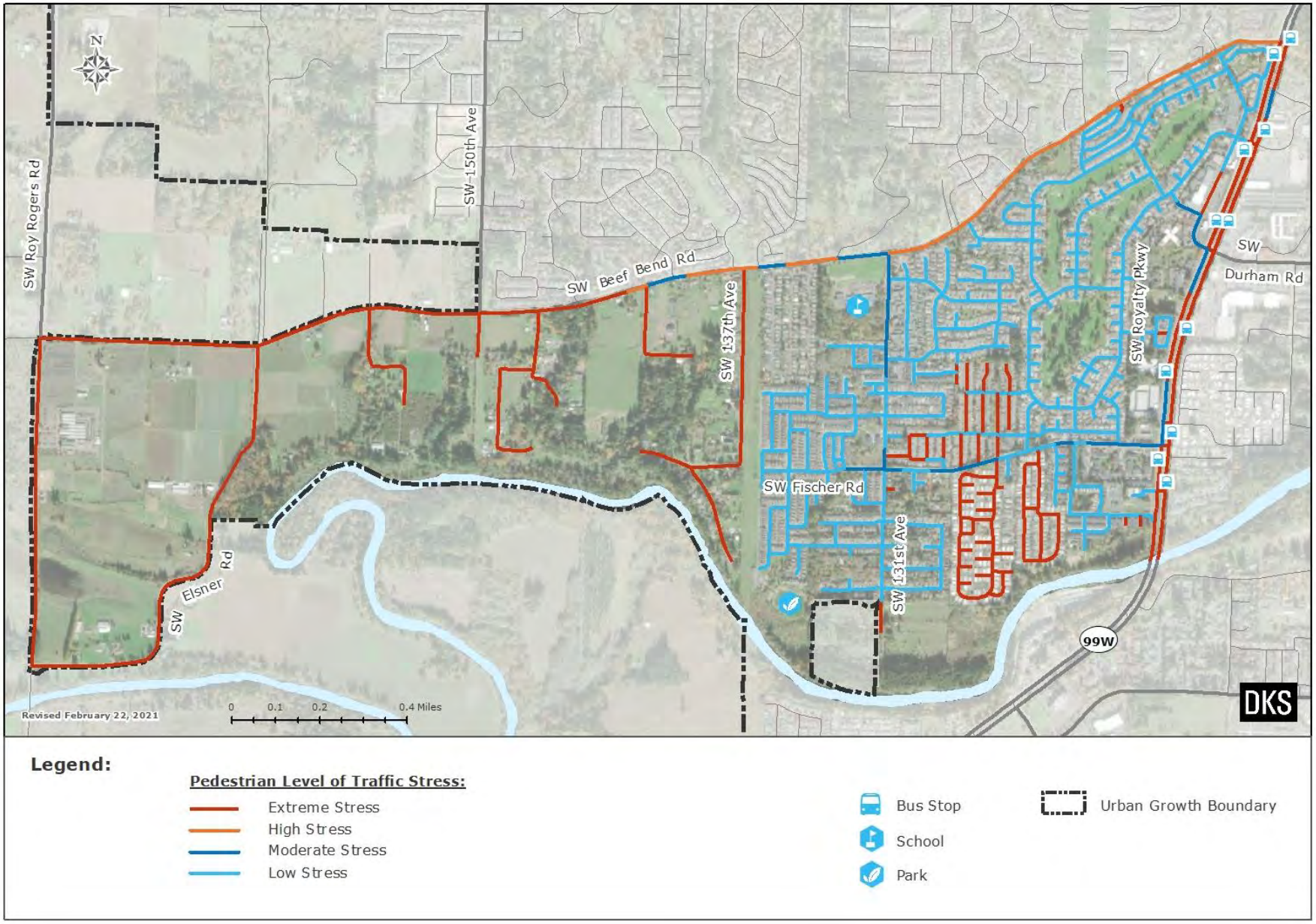
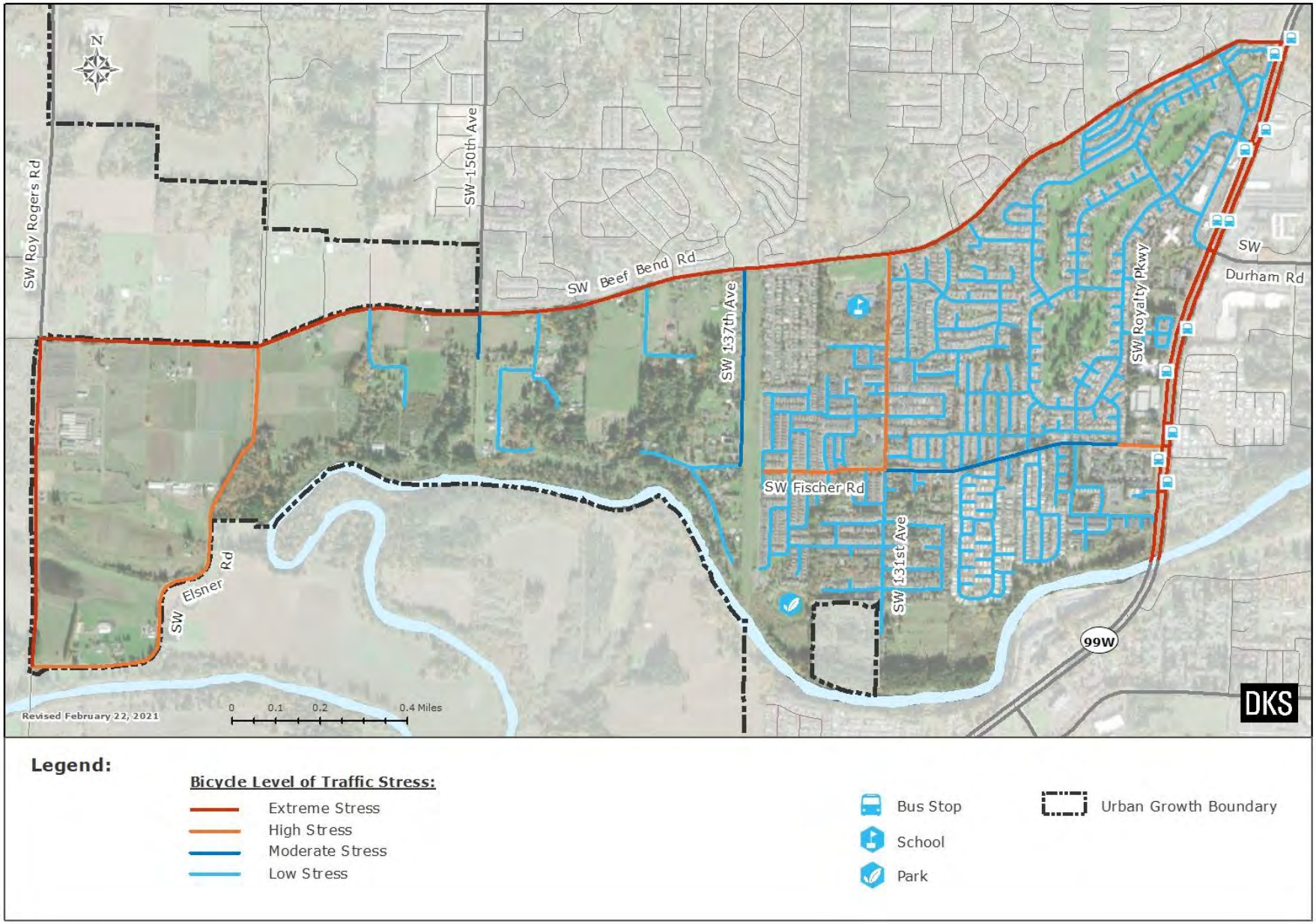


FIGURE 8: BICYCLE LEVEL OF TRAFFIC STRESS



CONGESTION

This measure helps identify the locations along streets that do not meet applicable vehicle congestion thresholds in the weekday pm peak hour. 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. Refer to the Transportation Infrastructure Standards (Task 5.3; Deliverable 5C) document for more information on the vehicle congestion thresholds.

The method used to gauge operational conditions for motor vehicles in King City are volume-to-capacity (v/c) ratios. The following two thresholds were considered:

- **Severe congestion** defined as streets and intersections operating with a v/c ratio of 0.99 or higher during the P.M. peak hour.
- **Congestion** defined as streets and intersections operating with a v/c ratio between 0.90 and 0.99 during the P.M. peak hour.

Figure 9 and Table 5 summarize the results of the vehicle congestion analysis. Note that the mileage calculation is based on the length of the modeled network link associated with the point of congestion and does not include the length of the queuing that may occur as a result of the congested link. As shown, nearly 13 lane miles, or about 19 percent of the total street network lane miles in King City are expected to be congested by 2040. Of these congested lane miles, about 11 percent are expected to be severely congested by 2040. The severely congested segments are all along Arterials streets, including OR 99W, SW Beef Bend Road and SW Roy Rogers Road.

TABLE 5: VEHICLE CONGESTION

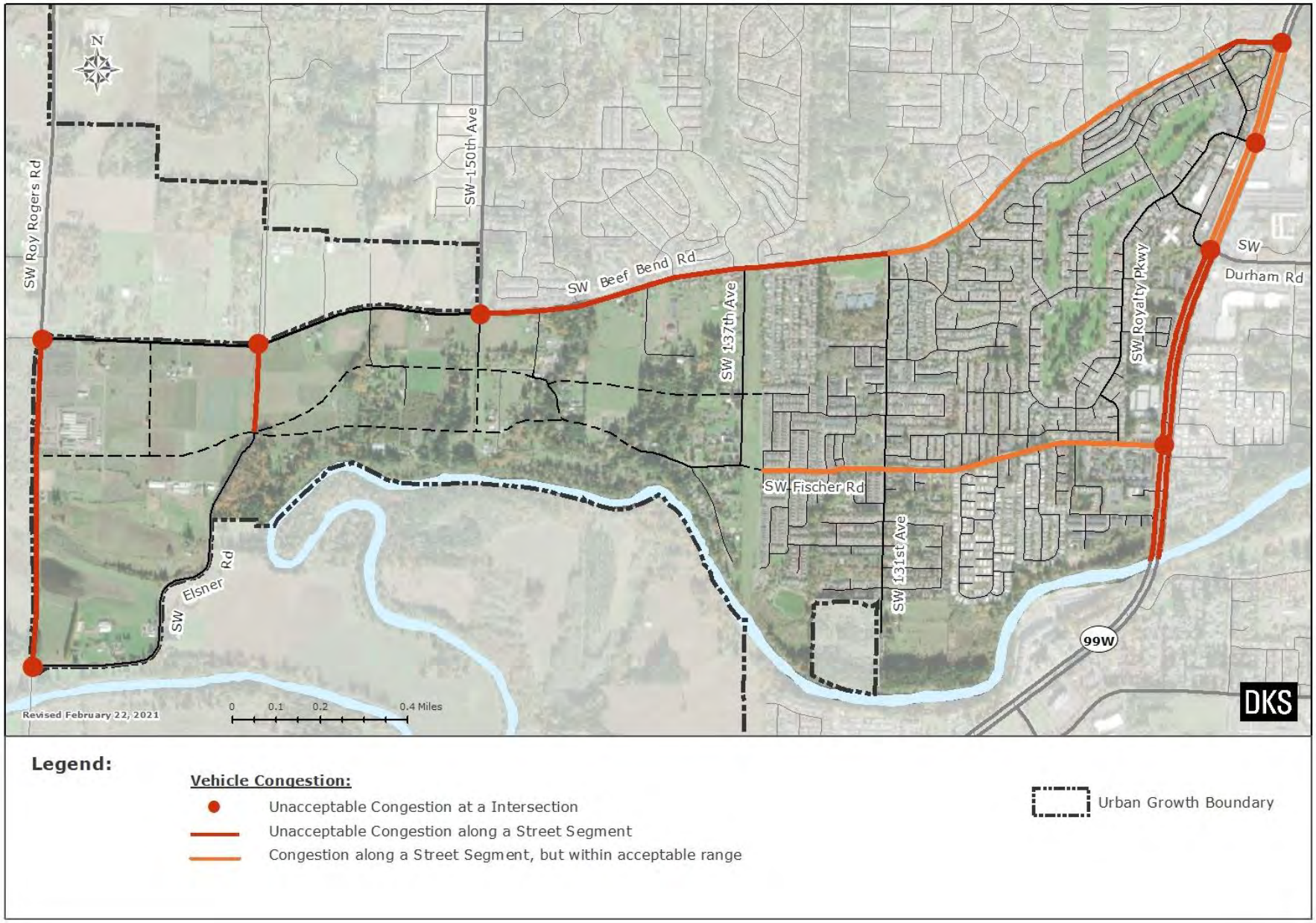
PM PEAK CONGESTED VEHICLE LANE MILES	2015 BASE YEAR		2040 BASELINE	
	TOTAL MILES	SHARE OF TOTAL NETWORK MILES	TOTAL MILES	SHARE OF TOTAL NETWORK MILES
TOTAL LANE MILES	59.87	100%	66.01	100%
TOTAL CONGESTED LANE MILES	**1.49**	**2%**	**12.72**	**19%**
SEVERELY CONGESTED MILES (>0.99)	**0.00**	**0%**	**7.02**	**11%**
CONGESTED MILES (0.90 <= V/C <= 0.99)	**1.49**	**2%**	**5.69**	**9%**

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.

In addition, several intersections along these Arterial streets are expected to be severely congested by 2040. 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 City where high growth is expected through 2040 (see Figure 9). These conditions will likely change as the network connections planned with the growth are completed, however these results do provide a point of comparison to illustrate the overall need for such improvements. The intersection operational results and vehicle traffic volumes are summarized in the appendix. The following intersections are expected to exceed the vehicle congestion threshold by 2040:

- SW Roy Rogers Road/SW Beef Bend Road
- SW Elsner Road/SW Beef Bend Road
- SW 150th Avenue/SW Beef Bend Road
- SW Roy Rogers Road/SW Elsner Road
- OR 99W/SW Beef Bend Road
- OR 99W/SW Royalty Parkway
- OR 99W/SW 116th Avenue/SW Durham Road
- OR 99W/SW Fischer Road

FIGURE 9: VEHICLE CONGESTION (2040 PM PEAK)



SYSTEM COMPLETENESS

This measure evaluates the completeness of the pedestrian and bicycle networks in King City. Table 6 shows the existing completeness of sidewalks and bikeways in the City. This represents the baseline condition and does not yet reflect the investments and decisions the City will make regarding its future transportation system.

Sidewalks include any facilities along all streets, regardless of the quality. As shown in Table 6, sidewalks are about 55 percent complete on all streets citywide and 65 percent complete on streets near transit stops. The east and north parts of the City (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 rural west part of the City (i.e., west of SW 150th Avenue) has no existing sidewalk coverage. Sidewalks along recommended Major Pedestrian streets are just under 50 percent complete citywide, but roughly 76 percent complete near transit stops.

Bikeways include any facilities along streets with a recommended bicycle classification of Major Bicycle Street and Neighborhood Bicycle Street, regardless of the quality. As shown in Table 6, just over 20 percent of bikeways in the City are complete. The south part of the City (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 recommended Major Bicycle streets are just over 30 percent complete citywide, and again highest in the south part of the City.

TABLE 6: PEDESTRIAN AND BICYCLE NETWORK COMPLETENESS

EXISTING FACILITY COMPLETENESS	AREA OF KING CITY ***					
	CITYWIDE	NEAR ALL TRANSIT STOPS	WEST KING CITY	NORTH KING CITY	SOUTH KING CITY	EAST KING CITY
SIDEWALKS						
TOTAL MILES COMPLETE *	31.73	27.04	0.00	16.75	4.92	13.65
PERCENT COMPLETE	55%	65%	0%	70%	47%	73%
TOTAL MILES COMPLETE ALONG MAJOR PEDESTRIAN STREETS **	8.07	7.23	0.00	2.98	1.66	3.85
PERCENT COMPLETE	47%	76%	0%	63%	90%	63%
BIKEWAYS						
TOTAL MILES COMPLETE *	5.01	3.51	1.50	0.80	1.43	2.37
PERCENT COMPLETE	22%	26%	25%	11%	55%	27%

EXISTING FACILITY COMPLETENESS	AREA OF KING CITY ***					
	CITYWIDE	NEAR ALL TRANSIT STOPS	WEST KING CITY	NORTH KING CITY	SOUTH KING CITY	EAST KING CITY
TOTAL MILES COMPLETE ALONG MAJOR BICYCLE STREETS	5.01	3.51	1.50	0.80	1.43	2.37
PERCENT COMPLETE	33%	45%	25%	17%	78%	55%

Notes: * Includes all streets for sidewalks; bikeways include streets with a recommended bicycle classification of Major Bicycle Street and Neighborhood Bicycle Street.

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

*** Transit stops includes areas within 1/4 of bus routes; West King City includes areas west of SW 150th Avenue; North includes areas between SW 150th Avenue and SW 131st Avenue; South includes areas east of SW 131st Avenue and south of SW Fischer Road; East includes areas east of SW 131st Avenue and north of SW Fischer Road.

ACCESS TO JOBS

This measure evaluates the number of jobs accessible by driving, bicycling, walking, and transit in the City within the specified commute times for each mode. The following commute times were used:

- **Driving:** Number of jobs reached in 20 minutes.
- **Bicycling:** Number of jobs reached in 20 mins (using average biking speed of 10 miles per hour)
- **Walking:** Number of jobs reached in 15 minutes (using average walking speed of 3 miles per hour)
- **Transit:** Number of jobs reached in 30 mins within 1/4 mile from a transit stop (including 5 minutes at the beginning and 5 minutes at the end of trip)

As shown in Table 7, currently the average household in King City has access to about 140,000 jobs when driving, 1,000 when using transit, 37,000 via a bike ride, and about 1,500 when walking. Job accessibility by non-driving modes increases in the City the further east a household is located, mainly due to the better transit service and shorter distances to nearby employment. By 2040, the average household in the City will have access to about 40,000 more jobs when driving, but slightly fewer jobs when utilizing non-driving modes. This is largely a result of the high growth forecasted for the west end of the City, with future residents of this area being further than households at the north, south, and east sides of the City from other nearby employment areas. Households in these areas of the City will see in increase in jobs accessible by all modes. It should also be noted that the 2040 Baseline scenario does not include any assumed network improvements that will occur associated with growth in the City, including potential expansion of

transit service further west through the City. The impact of these improvements will be assessed with analysis of the Build scenarios that will occur later in the TSP process.

TABLE 7: ACCESS TO JOBS FROM KING CITY BY TRAVEL MODE

JOBS ACCESSIBLE (BY AVERAGE HOUSEHOLD)	AREA OF KING CITY **				
	CITYWIDE	WEST KING CITY	NORTH KING CITY	SOUTH KING CITY	EAST KING CITY
2015 BASE YEAR					
BY MOTOR VEHICLE	141,948	122,058	132,544	137,884	159,226
BY TRANSIT	1,048	0	476	1,331	1,664
BY BIKING	36,939	6,599	25,878	41,335	49,921
BY WALKING	1,779	322	1,254	1,441	2,840
2040 BASELINE*					
BY MOTOR VEHICLE	183,162	168,843	184,030	189,748	218,092
BY TRANSIT	944	0	924	2,200	2,751
BY BIKING	33,198	10,189	37,409	57,165	69,951
BY WALKING	1,483	660	1,481	2,054	3,464
CHANGE (2040-2015)					
BY MOTOR VEHICLE	**41,214**	**46,785**	**51,486**	**51,864**	**58,866**
BY TRANSIT	**-104**	**0**	**448**	**869**	**1,086**
BY BIKING	**-3,741**	**3,590**	**11,531**	**15,830**	**20,030**
BY WALKING	**-297**	**338**	**227**	**613**	**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.

Notes: * The 2040 Baseline scenario does not include any assumed network improvements that will occur associated with growth in the City. The impact of these improvements will be assessed with analysis of the Build scenarios that will occur later in the TSP process.

** West King City includes areas west of SW 150th Avenue; North includes areas between SW 150th Avenue and SW 131st Avenue; South includes areas east of SW 131st Avenue and south of SW Fischer Road; East includes areas east of SW 131st Avenue and north of SW Fischer Road.

ACCESS TO COMMUNITY AMENITIES

This measure evaluates the number of community amenities accessible by bicycling, walking, and transit in the City within the specified travel times for each mode. The following travel times were used:

- **Bicycling:** Number of community amenities reached in 15 mins (using average biking speed of 10 miles per hour)
- **Walking:** Number of community amenities reached in 10 minutes (using average walking speed of 3 miles per hour)
- **Transit:** Number of community amenities reached in 20 mins within 1/4 mile from a transit stop (including 5 minutes at the beginning and 5 minutes at the end of trip)

Community amenities include parks, civic (e.g., schools, libraries, community centers), essential retail and services (e.g., grocery stores, pharmacies) and medical uses. As shown in Table 8, currently the average household in King City has access to about 6 community amenities when using transit, 12 when biking and 2 when walking. Access to community amenity increases in the City 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 Baseline scenario assumes planned parks associated with growth in and around the west end of the City. No additional community amenities were assumed beyond these planned parks. As shown in Table 8, the average household in the west end of the City will have access to more services when walking and biking due to this assumption. Transit service expansion to the west was not assumed, thus no change to community amenity accessibility via transit was estimated for all areas of the City. Although it is worth noting that the average household in the City will have access to fewer community amenities when using transit due to the high growth at the west end of the City weighting the overall average. The average household in the north, south, and east sides of the City will have access to more services when biking, but not when walking by 2040. This is due to the travel times to the planned parks at the west end of the City being outside of the walking distance, but not the biking distance for the average household in these areas.

TABLE 8: ACCESS TO COMMUNITY AMENITIES

COMMUNITY AMENITIES ACCESSIBLE (BY AVERAGE HOUSEHOLD)	AREA OF KING CITY **				
	CITYWIDE	WEST KING CITY	NORTH KING CITY	SOUTH KING CITY	EAST KING CITY
2015 BASE YEAR					
BY TRANSIT	6	0	4	6	8
BY BIKING	12	1	11	11	13
BY WALKING	2	0	1	0	4
2040 BASELINE*					
BY TRANSIT	3	0	4	6	8
BY BIKING	14	9	17	15	16
BY WALKING	2	2	1	0	4
CHANGE (2040-2015)					
BY TRANSIT	**-3**	**0**	**0**	**0**	**0**
BY BIKING	**2**	**8**	**6**	**4**	**3**
BY WALKING	**0**	**2**	**0**	**0**	**0**

Source: The projections of travel distances are based on ArcGIS network analysis. Travel times are based on the P.M. peak hour.

Notes: * The 2040 Baseline scenario assumes planned parks associated with growth in and around the City. No additional community amenities were assumed beyond the planned parks.

** West King City includes areas west of SW 150th Avenue; North includes areas between SW 150th Avenue and SW 131st Avenue; South includes areas east of SW 131st Avenue and south of SW Fischer Road; East includes areas east of SW 131st Avenue and north of SW Fischer Road.

ACCESS TO TRANSIT

This measure evaluates the number and percent of households with access to transit service. It includes all households within 1/4 mile of the bus stops along the TriMet routes that currently run along OR 99W and areas of the City within 1/4 mile of the King City Shuttle Route.

As shown in Table 9, currently about 13 percent of the total households in the City have access to TriMet routes. These households are located near OR 99W in the south and east parts of the City, accounting for 20 and 25 percent of households in these areas respectively. About 77 percent of households in the City have access to the King City Shuttle Route, including all households in the east end of the City (i.e., King City Town Center), and most households in the north and south parts of the City. No households in the west part of the City have transit access, although the area currently only represents a small portion of total households in the City.

By 2040, about 6 percent of the total households in the City will have access to TriMet routes, representing about half of the share today. In addition, only about 44 percent of households will have access to the King City Shuttle Route, down from 77 percent today. Since no expansion of transit service was assumed for the 2040 Baseline scenario, and with a high amount of household growth forecasted for the west end of the City where no current transit service is available, the overall Citywide transit accessibility is weighted downward. Despite this, more households in the north, south, and east ends of the City will be within 1/4 mile of the existing transit service by 2040. The impact on accessibility resulting from the potential expansion of transit service further west through the City will be assessed with analysis of the Build scenarios later in the TSP process.

TABLE 9: ACCESS TO TRANSIT

TRANSIT ACCESS (BY TOTAL HOUSEHOLDS)	AREA OF KING CITY **				
	CITYWIDE	WEST KING CITY	NORTH KING CITY	SOUTH KING CITY	EAST KING CITY
2015 BASE YEAR					
HOUSEHOLDS WITHIN 1/4 MILE OF A TRIMET BUS STOP	361	0	0	142	219
PERCENT OF HOUSEHOLDS	13%	0%	0%	20%	25%
HOUSEHOLDS WITHIN 1/4 MILE OF THE KING CITY SHUTTLE ROUTE	2,201	0	757	570	874
PERCENT OF HOUSEHOLDS	77%	0%	60%	80%	100%
2040 BASELINE*					
HOUSEHOLDS WITHIN 1/4 MILE OF A TRIMET BUS STOP	387	0	0	158	229
PERCENT OF HOUSEHOLDS	6%	0%	0%	20%	25%
HOUSEHOLDS WITHIN 1/4 MILE OF THE KING CITY SHUTTLE ROUTE	3,068	0	1,520	634	915
PERCENT OF HOUSEHOLDS	44%	0%	60%	80%	100%
CHANGE (2040-2015)					
HOUSEHOLDS WITHIN 1/4 MILE OF A TRIMET BUS STOP	**26**	**0**	**0**	**16**	**10**
PERCENT OF HOUSEHOLDS	**-7%**	**0%**	**0%**	**0%**	**0%**
HOUSEHOLDS WITHIN 1/4 MILE OF THE KING CITY SHUTTLE ROUTE	**868**	**0**	**763**	**64**	**41**
PERCENT OF HOUSEHOLDS	**-33%**	**0%**	**0%**	**0%**	**0%**

Source: The projections of travel distances are based on ArcGIS network analysis.

Notes: * The 2040 Baseline scenario does not include any assumed transit network improvements. The impact of these improvements will be assessed with analysis of the Build scenarios that will occur later in the TSP process.

** West King City includes areas west of SW 150th Avenue; North includes areas between SW 150th Avenue and SW 131st Avenue; South includes areas east of SW 131st Avenue and south of SW Fischer Road; East includes areas east of SW 131st Avenue and north of SW Fischer Road.

SAFETY

This measure monitors the safety of travel in the City. It will be used to track collision data 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. Figure 10 and Table 10 summarizes data for the 5-year period between 2014 and 2018, with 384 collisions occurring in King City. Of these collisions, 9 involved a pedestrian, 2 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 8 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 10: COLLISION SUMMARY IN KING CITY

	ALL COLLISIONS	COLLISIONS INVOLVING VEHICLE(S) ONLY	COLLISIONS INVOLVING PEDESTRIANS	COLLISIONS INVOLVING BICYCLISTS
TOTAL COLLISIONS (2014 TO 2018)	384	373	9	2
COLLISIONS WITH FATALITIES	3	0	3	0
FATALITIES	3	0	3	0
COLLISIONS WITH SEVERE INJURIES	8	6	2	0
SEVERE INJURIES	8	6	2	0

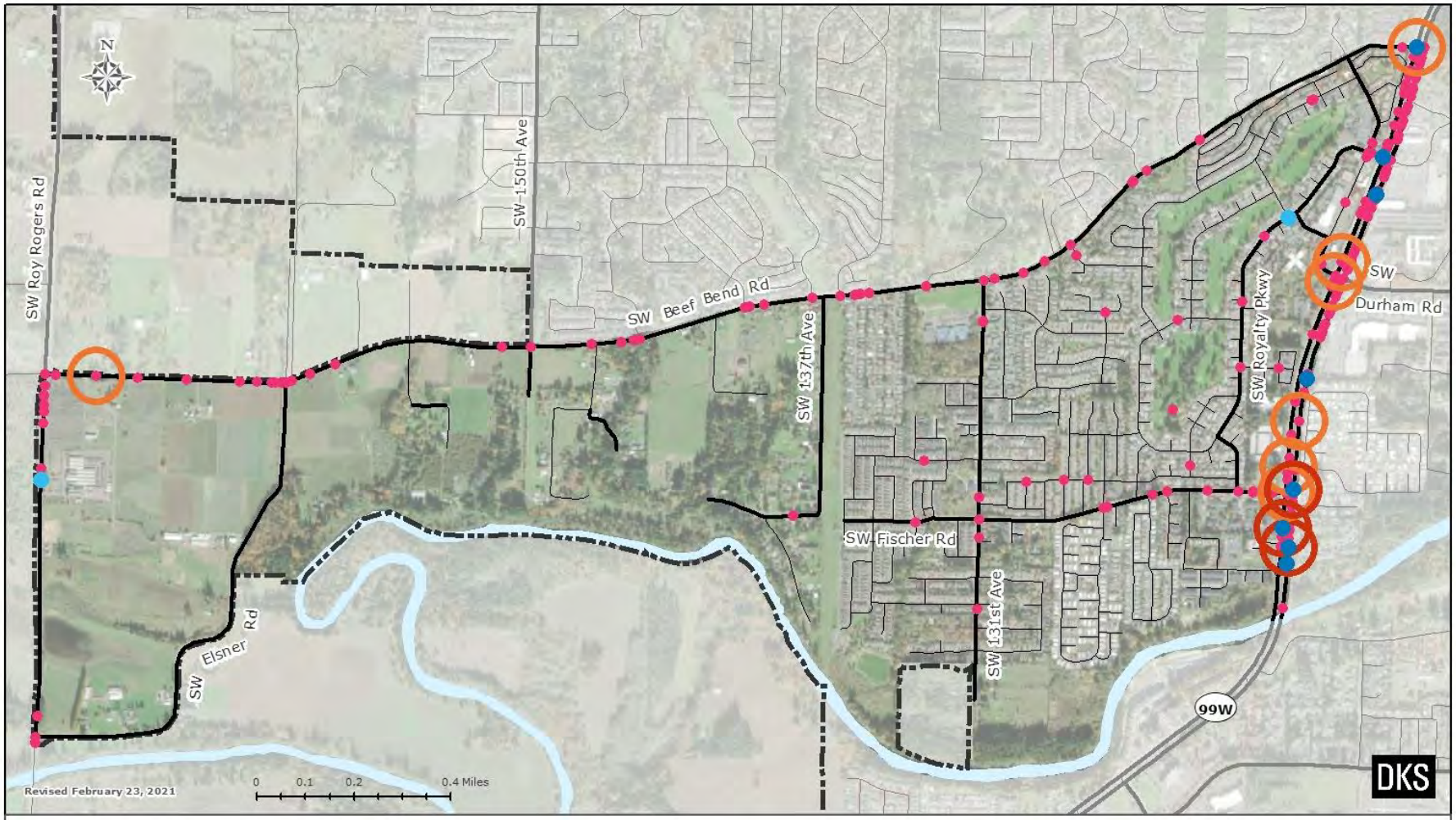
Source: ODOT Crash Analysis and Reporting Unit. Reported collision data from 2014 to 2018.

In addition, a safety analysis was completed for streets in King City. This included an analysis of collision rates at intersections and along street segments, and an identification of any top 10% ODOT Safety Priority Index System (SPIS) sites in the City. The result of this analysis is summarized below, with full details provided in the appendix.

The entire segment of OR 99W through King City exceeded the statewide collision rate for similar facilities, and the following intersections were identified as safety focus areas, and warrant further review when TSP solutions are considered:

- OR 99W/SW Beef Bend Road
- OR 99W/SW 116th Avenue/SW Durham Road
- OR 99W/SW Fischer Road

FIGURE 10: COLLISIONS IN KING CITY (2014 TO 2018)



KEY NETWORK RECOMMENDATIONS

Key recommendations from the evaluation of the existing and future no-build transportation system are summarized below. These recommendations provide guidance to help establish areas of focus for future investments to build upon the positive attributes and address the shortcomings of the baseline transportation system.

PEDESTRIAN NETWORK RECOMMENDATIONS

- Develop a Citywide low-stress walking network that corresponds with the recommended pedestrian classifications.
- Increase low stress pedestrian facility miles, while decreasing extreme or high stress miles through new or enhanced existing facilities.
- Increase the completeness of the Citywide pedestrian network, with a focus along Multimodal area and Major Pedestrian Streets.
- Install ADA compliant pedestrian curb ramps at all intersections.
- Evaluate potential protected crossing opportunities along major streets, including OR 99W and SW Beef Bend Road.
- Review locations of pedestrian collisions for potential improvements.

BICYCLE NETWORK RECOMMENDATIONS

- Develop a Citywide low-stress bicycle network that corresponds with the recommended pedestrian classifications.
- Increase low stress bicycle facility miles, while decreasing extreme or high stress miles through new or enhanced existing facilities.
- Increase the completeness of the Citywide bicycle network, with a focus along Major Bicycle Streets.
- Evaluate potential protected crossing opportunities along major streets, including OR 99W and SW Beef Bend Road.
- Review locations of bicycle collisions for potential improvements.

TRANSIT NETWORK RECOMMENDATIONS

- Increase the completeness of pedestrian and bicycle facilities near transit stops.
- Evaluate potential improved crossing opportunities on OR 99W near existing transit stops and consider options to relocate stops.
- Consider potential alignments for transit expansion and ensure network designs that can adequately serve it.
- Focus on opportunities to improve transit stop amenities (e.g., shelters, benches).

VEHICLE NETWORK RECOMMENDATIONS

- Decrease the amount of severely congested and congested lane miles through strategic vehicle network improvements, and investments in non-driving modes (e.g., expanded transit service).

- Explore improvements at intersections along Arterial streets that are expected to be severely congested.
- Explore improvements along OR 99W to address identified safety focus areas.
- Improve connectivity of streets in the City through implementation of recommended transportation facility and access spacing standards.

APPENDIX FOR TRANSPORTATION EXISTING CONDITIONS AND NEEDS REPORT

Contents:

- Future Traffic Volumes
- Existing (2020) Intersection Operations
- Future Baseline (2040) Intersection Operations
- HCM Reports
- Safety Analysis

FIGURE A: FUTURE TRAFFIC VOLUMES

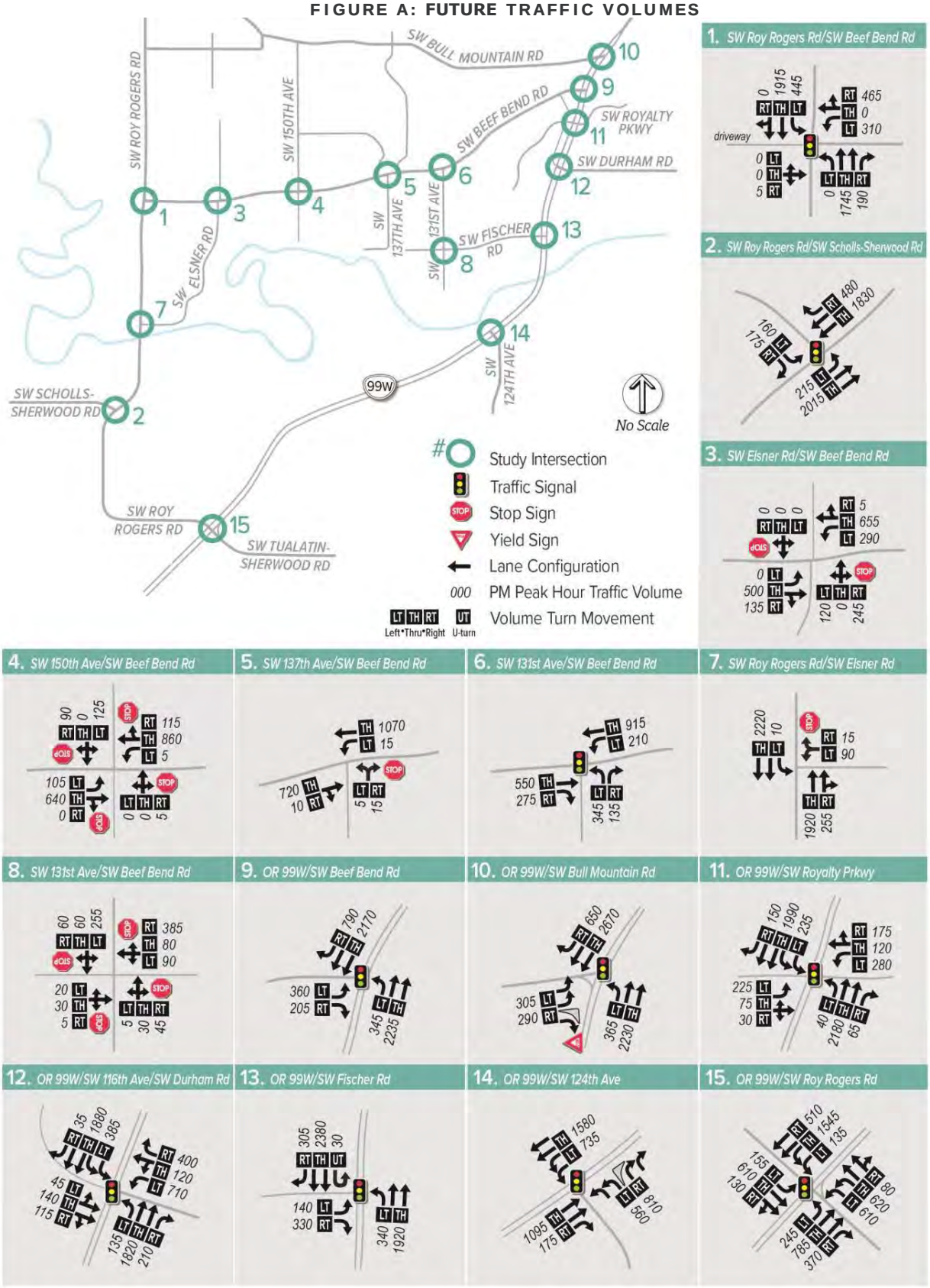
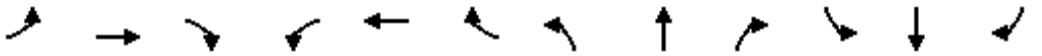


TABLE A: EXISTING (2020) INTERSECTION OPERATIONS

#	STUDY INTERSECTION	JURISDICTION	CONTROL	PERFORMANCE MEASURE[1]	LOS	DELAY	V/C
1	SW Roy Rogers Road/SW Beef Bend Road	County	Signal	0.99	A	6	0.83
2	SW Roy Rogers Road/SW Scholls-Sherwood Road	County	Signal	0.99	B	16	0.79
3	SW Elsner Road/SW Beef Bend Road	County	Two-Way Stop Control	0.99	A/B	8/12	0.29/0.14
4	SW 150th Avenue/SW Beef Bend Road	County	All-Way Stop Control	0.99	C	20	0.72
5	SW 137th Avenue/SW Beef Bend Road	County	Two-Way Stop Control	0.99	A/B	8/13	0.38/0.02
6	SW 131st Avenue/SW Beef Bend Road	County	Signal	0.99	A	10	0.58
7	SW Roy Rogers Road/SW Elsner Road	County	Two-Way Stop Control	0.99	B/F	11/129	0.79/0.23
8	SW 131st Avenue/SW Fischer Road	King City	All-Way Stop Control	0.99	C	17	0.65
9	OR 99W/SW Beef Bend Road	ODOT	Signal	0.99	C	24	0.90
10	OR 99W/SW Royalty Parkway	ODOT	Signal	1.10	D	41	0.94
11	OR 99W/SW 116th Avenue/SW Durham Road	ODOT	Signal	1.10	F	91	1.05
12	OR 99W/SW Fischer Road	ODOT	Signal	0.99	E	72	**1.13**
13	OR 99W/SW 124th Avenue	ODOT	Signal	0.99	C	28	0.98
14	OR 99W/SW Roy Rogers Road	ODOT	Signal	0.99	E	70	**0.99**
15	OR 99W/SW Bull Mountain Road	ODOT	Signal	0.99	C	30	0.95

TABLE B: FUTURE BASELINE (2040) INTERSECTION OPERATIONS

#	STUDY INTERSECTION	JURISDICTION	CONTROL	PERFORMANCE MEASURE[1]	LOS	DELAY	V/C
1	SW Roy Rogers Road/SW Beef Bend Road	County	Signal	0.99	A	9.8	0.88
2	SW Roy Rogers Road/SW Scholls-Sherwood Road	County	Signal	0.99	B	18.4	0.88
3	SW Elsner Road/SW Beef Bend Road	County	Two-Way Stop Control	0.99	B/F	11/1562	0.42/**4.27**
4	SW 150th Avenue/SW Beef Bend Road	County	All-Way Stop Control	0.99	F	398.5	**1.89**
5	SW 137th Avenue/SW Beef Bend Road	County	Two-Way Stop Control	0.99	A/C	9/17	0.65/0.06
6	SW 131st Avenue/SW Beef Bend Road	County	Signal	0.99	B	18.0	0.86
7	SW Roy Rogers Road/SW Elsner Road	County	Two-Way Stop Control	0.99	C/F	22/532	0.69/**1.81**
8	SW 131st Avenue/SW Fischer Road	King City	All-Way Stop Control	0.99	D	30	0.85
9	OR 99W/SW Beef Bend Road	ODOT	Signal	0.99	E	71.2	**1.15**
10	OR 99W/SW Royalty Parkway	ODOT	Signal	1.10	F	81.4	**1.10**
11	OR 99W/SW 116th Avenue/SW Durham Road	ODOT	Signal	1.10	F	134.3	**1.13**
12	OR 99W/SW Fischer Road	ODOT	Signal	0.99	F	100	**1.23**
13	OR 99W/SW 124th Avenue	ODOT	Signal	0.99	C	30	**1.03**
14	OR 99W/SW Roy Rogers Road	ODOT	Signal	0.99	F	91	**1.12**
15	OR 99W/SW Bull Mountain Road	ODOT	Signal	0.99	E	76.3	**1.22**



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	162	0	282	0	978	88	246	1112	0
Future Volume (veh/h)	0	0	1	162	0	282	0	978	88	246	1112	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	0	1856	0	1885	1841	1856	1841	1900
Adj Flow Rate, veh/h	0	0	1	182	0	317	0	1099	99	276	1249	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	0	2	0	3	0	1	4	3	4	0
Cap, veh/h	0	0	3	0	0	0	0	1349	1068	398	1592	0
Arrive On Green	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.72	0.69	0.08	0.86	0.00
Sat Flow, veh/h	0	0	1610		0		0	1885	1528	1767	1841	0
Grp Volume(v), veh/h	0	0	1		0.0		0	1099	99	276	1249	0
Grp Sat Flow(s),veh/h/ln	0	0	1610				0	1885	1528	1767	1841	0
Q Serve(g_s), s	0.0	0.0	0.0				0.0	23.8	1.2	2.2	17.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0				0.0	23.8	1.2	2.2	17.1	0.0
Prop In Lane	0.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	3				0	1349	1068	398	1592	0
V/C Ratio(X)	0.00	0.00	0.37				0.00	0.81	0.09	0.69	0.78	0.00
Avail Cap(c_a), veh/h	0	0	215				0	2584	2069	843	2523	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	29.8				0.0	5.8	2.9	12.7	1.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	28.7				0.0	1.5	0.0	0.8	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0				0.0	2.5	0.1	2.3	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	58.6				0.0	7.3	3.0	13.5	2.8	0.0
LnGrp LOS	A	A	E				A	A	A	B	A	A
Approach Vol, veh/h		1						1198			1525	
Approach Delay, s/veh		58.6						7.0			4.7	
Approach LOS		E						A			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	8.9	46.8		4.1		55.8						
Change Period (Y+Rc), s	4.0	6.0		4.0		6.0						
Max Green Setting (Gmax), s	20.0	80.0		8.0		80.0						
Max Q Clear Time (g_c+I1), s	4.2	25.8		2.0		19.1						
Green Ext Time (p_c), s	0.2	15.0		0.0		20.6						

Intersection Summary												
HCM 6th Ctrl Delay			5.7									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	333	1	7	435	1	9	0	62	0	0	0
Future Vol, veh/h	0	333	1	7	435	1	9	0	62	0	0	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	2	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	370	1	8	483	1	10	0	69	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	484	0	0	372	0	0	872	872	372	905	872	484
Stage 1	-	-	-	-	-	-	372	372	-	500	500	-
Stage 2	-	-	-	-	-	-	500	500	-	405	372	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	1089	-	-	1198	-	-	273	291	674	260	291	587
Stage 1	-	-	-	-	-	-	653	622	-	557	546	-
Stage 2	-	-	-	-	-	-	557	546	-	626	622	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1089	-	-	1197	-	-	271	288	673	232	288	587
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	288	-	232	288	-
Stage 1	-	-	-	-	-	-	652	621	-	557	541	-
Stage 2	-	-	-	-	-	-	552	541	-	562	621	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	12.4	0
HCM LOS			B	A

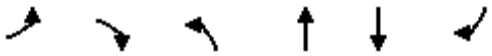
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	566	1089	-	-	1197	-	-	-
HCM Lane V/C Ratio	0.139	-	-	-	0.006	-	-	-
HCM Control Delay (s)	12.4	0	-	-	8	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	-

Intersection	
Intersection Delay, s/veh	17.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	81	314	0	1	390	80	0	0	1	75	0	53
Future Vol, veh/h	81	314	0	1	390	80	0	0	1	75	0	53
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	1	2	0	0	2	1	0	0	0	6	0	4
Mvmt Flow	92	357	0	1	443	91	0	0	1	85	0	60
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16.7	19.8	9.1	11.3
HCM LOS	C	C	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	21%	0%	59%
Vol Thru, %	0%	79%	83%	0%
Vol Right, %	100%	0%	17%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1	395	471	128
LT Vol	0	81	1	75
Through Vol	0	314	390	0
RT Vol	1	0	80	53
Lane Flow Rate	1	449	535	145
Geometry Grp	1	1	1	1
Degree of Util (X)	0.002	0.637	0.727	0.25
Departure Headway (Hd)	6.04	5.107	4.892	6.181
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	590	709	744	580
Service Time	4.106	3.138	2.892	4.228
HCM Lane V/C Ratio	0.002	0.633	0.719	0.25
HCM Control Delay	9.1	16.7	19.8	11.3
HCM Lane LOS	A	C	C	B
HCM 95th-tile Q	0	4.6	6.4	1



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	249	240	265	1855	2090	437
Future Volume (veh/h)	249	240	265	1855	2090	437
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1856	1900	1856	1870	1885
Adj Flow Rate, veh/h	259	0	276	1932	2177	455
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	3	0	3	2	1
Cap, veh/h	262		312	2971	2183	981
Arrive On Green	0.08	0.00	0.23	1.00	0.61	0.61
Sat Flow, veh/h	3483	1572	1810	3618	3647	1598
Grp Volume(v), veh/h	259	0	276	1932	2177	455
Grp Sat Flow(s),veh/h/ln	1742	1572	1810	1763	1777	1598
Q Serve(g_s), s	10.4	0.0	20.6	0.0	85.4	21.5
Cycle Q Clear(g_c), s	10.4	0.0	20.6	0.0	85.4	21.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	262		312	2971	2183	981
V/C Ratio(X)	0.99		0.88	0.65	1.00	0.46
Avail Cap(c_a), veh/h	311		312	2971	2183	981
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.61	0.61	1.00	1.00
Uniform Delay (d), s/veh	64.7	0.0	52.6	0.0	26.9	14.6
Incr Delay (d2), s/veh	44.1	0.0	16.2	0.7	18.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	0.0	10.2	0.3	38.4	7.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	108.8	0.0	68.8	0.7	45.5	16.1
LnGrp LOS	F		E	A	D	B
Approach Vol, veh/h	259	A		2208	2632	
Approach Delay, s/veh	108.8			9.2	40.4	
Approach LOS	F			A	D	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		122.0		18.0	32.0	90.0
Change Period (Y+Rc), s		4.8		4.5	4.8	* 4.8
Max Green Setting (Gmax), s		115.2		15.5	26.0	* 85
Max Q Clear Time (g_c+I1), s		2.0		13.4	23.6	87.4
Green Ext Time (p_c), s		71.8		0.1	0.1	0.0

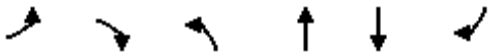
Intersection Summary	
HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	141	138	164	945	867	414
Future Volume (vph)	141	138	164	945	867	414
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1568	1752	1881	1810	1572
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1568	1752	1881	1810	1572
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	144	141	167	964	885	422
RTOR Reduction (vph)	0	97	0	0	0	94
Lane Group Flow (vph)	144	44	167	964	885	328
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	2%	3%	3%	1%	5%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6
Actuated Green, G (s)	13.9	34.2	15.8	85.9	66.1	80.0
Effective Green, g (s)	14.4	34.2	15.8	87.9	68.1	81.0
Actuated g/C Ratio	0.13	0.31	0.14	0.80	0.62	0.73
Clearance Time (s)	4.5		4.0	6.0	6.0	4.5
Vehicle Extension (s)	1.5		1.5	3.5	3.5	1.5
Lane Grp Cap (vph)	231	486	250	1499	1117	1154
v/s Ratio Prot	c0.08	0.03	0.10	c0.51	c0.49	0.04
v/s Ratio Perm						0.17
v/c Ratio	0.62	0.09	0.67	0.64	0.79	0.28
Uniform Delay, d1	45.4	27.0	44.8	4.7	15.8	4.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.7	0.0	5.2	1.0	4.0	0.0
Delay (s)	49.1	27.0	49.9	5.7	19.8	5.0
Level of Service	D	C	D	A	B	A
Approach Delay (s)	38.2			12.2	15.0	
Approach LOS	D			B	B	

Intersection Summary			
HCM 2000 Control Delay	16.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	419	6	12	615	2	8
Future Vol, veh/h	419	6	12	615	2	8
Conflicting Peds, #/hr	0	4	4	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	1	0	0
Mvmt Flow	432	6	12	634	2	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	442	0	1101	439
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	662	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1129	-	237	622
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	517	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1125	-	231	620
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	507	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	464	-	-	1125	-
HCM Lane V/C Ratio	0.022	-	-	0.011	-
HCM Control Delay (s)	12.9	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	252	247	190	471	277	95
Future Volume (vph)	252	247	190	471	277	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1565	1786	1881	1787	1578
Flt Permitted	1.00	1.00	0.51	1.00	0.95	1.00
Satd. Flow (perm)	1863	1565	964	1881	1787	1578
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	271	266	204	506	298	102
RTOR Reduction (vph)	0	114	0	0	0	57
Lane Group Flow (vph)	271	152	204	506	298	45
Confl. Peds. (#/hr)		2	2		1	
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	NA	pm+ov	D.P+P	NA	Prot	pm+ov
Protected Phases	2	8	1	6	8	1
Permitted Phases		2	2			8
Actuated Green, G (s)	14.1	27.6	21.9	25.9	13.5	21.3
Effective Green, g (s)	15.1	27.6	21.9	26.9	13.5	21.3
Actuated g/C Ratio	0.31	0.57	0.45	0.56	0.28	0.44
Clearance Time (s)	5.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	2.5	1.5	3.0	2.5	1.5
Lane Grp Cap (vph)	581	892	568	1045	498	824
v/s Ratio Prot	0.15	0.05	0.06	c0.27	c0.17	0.01
v/s Ratio Perm		0.05	0.10			0.02
v/c Ratio	0.47	0.17	0.36	0.48	0.60	0.05
Uniform Delay, d1	13.4	4.9	8.2	6.5	15.1	7.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.1	0.4	1.6	0.0
Delay (s)	14.0	5.0	8.4	6.9	16.7	7.8
Level of Service	B	A	A	A	B	A
Approach Delay (s)	9.5			7.3	14.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	48.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	1	1065	21	1	1274
Future Vol, veh/h	7	1	1065	21	1	1274
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	7	1	1121	22	1	1341

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2475	1132	0	0	1143	0
Stage 1	1132	-	-	-	-	-
Stage 2	1343	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	33	250	-	-	619	-
Stage 1	311	-	-	-	-	-
Stage 2	246	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	33	250	-	-	619	-
Mov Cap-2 Maneuver	33	-	-	-	-	-
Stage 1	311	-	-	-	-	-
Stage 2	245	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	128.9	0	0
HCM LOS	F		

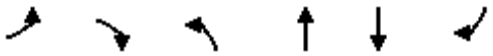
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	37	619	-
HCM Lane V/C Ratio	-	-	0.228	0.002	-
HCM Control Delay (s)	-	-	128.9	10.8	0
HCM Lane LOS	-	-	F	B	A
HCM 95th %tile Q(veh)	-	-	0.7	0	-

Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	26	1	86	76	280	1	26	42	231	59	59
Future Vol, veh/h	20	26	1	86	76	280	1	26	42	231	59	59
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	6	8	0	0	0	2	0	0	0	3	2	0
Mvmt Flow	22	28	1	92	82	301	1	28	45	248	63	63
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	16.6	9.4	15.6
HCM LOS	A	C	A	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	43%	19%	66%
Vol Thru, %	38%	55%	17%	17%
Vol Right, %	61%	2%	63%	17%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	47	442	349
LT Vol	1	20	86	231
Through Vol	26	26	76	59
RT Vol	42	1	280	59
Lane Flow Rate	74	51	475	375
Geometry Grp	1	1	1	1
Degree of Util (X)	0.115	0.086	0.649	0.572
Departure Headway (Hd)	5.568	6.096	4.919	5.487
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	641	586	732	657
Service Time	3.623	4.155	2.958	3.524
HCM Lane V/C Ratio	0.115	0.087	0.649	0.571
HCM Control Delay	9.4	9.7	16.6	15.6
HCM Lane LOS	A	A	C	C
HCM 95th-tile Q	0.4	0.3	4.8	3.6



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	177	129	239	1943	1898	432
Future Volume (veh/h)	177	129	239	1943	1898	432
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1870	1841	1870
Adj Flow Rate, veh/h	190	139	257	2089	2041	465
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	2	2	2	4	2
Cap, veh/h	205	181	298	3028	2298	1190
Arrive On Green	0.11	0.11	0.22	1.00	0.44	0.44
Sat Flow, veh/h	1795	1585	1781	3647	3589	1544
Grp Volume(v), veh/h	190	139	257	2089	2041	465
Grp Sat Flow(s),veh/h/ln	1795	1585	1781	1777	1749	1544
Q Serve(g_s), s	14.7	11.9	19.4	0.0	75.1	19.9
Cycle Q Clear(g_c), s	14.7	11.9	19.4	0.0	75.1	19.9
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	205	181	298	3028	2298	1190
V/C Ratio(X)	0.93	0.77	0.86	0.69	0.89	0.39
Avail Cap(c_a), veh/h	205	181	298	3028	2298	1190
HCM Platoon Ratio	1.00	1.00	1.33	1.33	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.16	0.16	0.18	0.18
Uniform Delay (d), s/veh	61.4	60.2	52.9	0.0	34.4	9.9
Incr Delay (d2), s/veh	42.2	16.8	4.3	0.2	1.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	11.0	8.6	0.1	33.1	11.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	103.6	77.0	57.2	0.2	35.5	10.0
LnGrp LOS	F	E	E	A	D	B
Approach Vol, veh/h	329			2346	2506	
Approach Delay, s/veh	92.4			6.5	30.8	
Approach LOS	F			A	C	

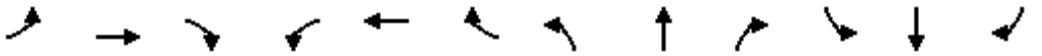
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		123.5		20.0	27.5	96.0
Change Period (Y+Rc), s		* 5.4		* 5.4	5.4	* 5.9
Max Green Setting (Gmax), s		* 1.1E2		* 15	18.6	* 90
Max Q Clear Time (g_c+I1), s		2.0		16.7	21.4	77.1
Green Ext Time (p_c), s		81.3		0.0	0.0	12.6

Intersection Summary	
HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

Notes

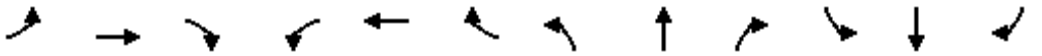
User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



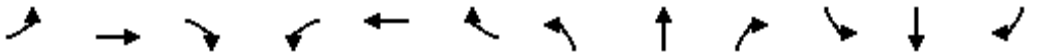
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	71	20	230	92	141	35	1907	64	234	1681	112
Future Volume (vph)	146	71	20	230	92	141	35	1907	64	234	1681	112
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1686		1770	1707		1703	3505	1548	3502	3505	1546
Flt Permitted	0.95	0.99		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1686		1770	1707		1703	3505	1548	3502	3505	1546
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	151	73	21	237	95	145	36	1966	66	241	1733	115
RTOR Reduction (vph)	0	5	0	0	39	0	0	0	28	0	0	38
Lane Group Flow (vph)	122	118	0	237	201	0	36	1966	38	241	1733	77
Confl. Peds. (#/hr)			8	8			1		6	6		1
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	2%	0%	12%	2%	0%	2%	6%	3%	2%	0%	3%	2%
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	13.6	13.6		15.0	15.0		6.7	78.6	78.6	12.3	84.2	84.2
Effective Green, g (s)	14.6	14.6		16.0	16.0		8.2	79.6	79.6	13.8	85.2	85.2
Actuated g/C Ratio	0.10	0.10		0.11	0.11		0.06	0.57	0.57	0.10	0.61	0.61
Clearance Time (s)	5.0	5.0		5.0	5.0		5.5	5.0	5.0	5.5	5.0	5.0
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.3	4.8	4.8	2.3	4.8	4.8
Lane Grp Cap (vph)	175	175		202	195		99	1992	880	345	2133	940
v/s Ratio Prot	c0.07	0.07		c0.13	0.12		0.02	c0.56		c0.07	0.49	
v/s Ratio Perm									0.02			0.05
v/c Ratio	0.70	0.67		1.17	1.03		0.36	0.99	0.04	0.70	0.81	0.08
Uniform Delay, d1	60.6	60.4		62.0	62.0		63.4	29.7	13.4	61.1	21.2	11.3
Progression Factor	1.00	1.00		1.00	1.00		0.86	1.09	5.04	1.27	0.23	0.13
Incremental Delay, d2	10.1	8.4		117.9	72.8		0.1	3.8	0.0	2.6	1.7	0.1
Delay (s)	70.7	68.8		179.9	134.8		54.4	36.0	67.3	80.1	6.7	1.5
Level of Service	E	E		F	F		D	D	E	F	A	A
Approach Delay (s)		69.7			157.2			37.3			14.9	
Approach LOS		E			F			D			B	

Intersection Summary			
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	139	111	707	119	399	135	1640	206	368	1532	31
Future Volume (vph)	42	139	111	707	119	399	135	1640	206	368	1532	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.96	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3324		1698	1730	1521	1805	3539	1526	3467	3438	1578
Flt Permitted		0.99		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3324		1698	1730	1521	1805	3539	1526	3467	3438	1578
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	44	145	116	736	124	416	141	1708	215	383	1596	32
RTOR Reduction (vph)	0	67	0	0	0	265	0	0	45	0	0	17
Lane Group Flow (vph)	0	238	0	427	433	151	141	1708	170	383	1596	15
Confl. Peds. (#/hr)	17					17	1		9	9		1
Confl. Bikes (#/hr)						3			2			
Heavy Vehicles (%)	3%	1%	2%	1%	0%	2%	0%	2%	4%	1%	5%	0%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	8	8		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		13.3		27.0	27.0	27.0	12.9	57.4	84.4	19.6	64.4	64.4
Effective Green, g (s)		15.3		29.0	29.0	29.0	14.3	58.8	88.4	20.9	65.4	65.4
Actuated g/C Ratio		0.11		0.21	0.21	0.21	0.10	0.42	0.63	0.15	0.47	0.47
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		363		351	358	315	184	1486	963	517	1606	737
v/s Ratio Prot		c0.07		c0.25	0.25		0.08	c0.48	0.04	c0.11	c0.46	
v/s Ratio Perm						0.10			0.07			0.01
v/c Ratio		0.66		1.22	1.21	0.48	0.77	1.15	0.18	0.74	0.99	0.02
Uniform Delay, d1		59.8		55.5	55.5	48.9	61.2	40.6	10.7	57.0	37.1	20.1
Progression Factor		1.00		1.00	1.00	1.00	0.88	1.19	1.41	1.34	0.84	1.00
Incremental Delay, d2		3.6		120.7	117.6	0.7	11.4	73.0	0.0	2.8	14.8	0.0
Delay (s)		63.4		176.2	173.1	49.5	65.5	121.3	15.1	78.9	45.9	20.1
Level of Service		E		F	F	D	E	F	B	E	D	C
Approach Delay (s)		63.4			133.8			106.5			51.8	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM 2000 Control Delay	90.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	0	326	0	0	0	338	1917	0	29	2082	268
Future Volume (veh/h)	136	0	326	0	0	0	338	1917	0	29	2082	268
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	0	1841				1870	1870	0	1870	1841	1885
Adj Flow Rate, veh/h	142	0	340				352	1997	0	30	2169	279
Peak Hour Factor	0.96	0.92	0.96				0.96	0.96	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	1	0	4				2	2	0	2	4	1
Cap, veh/h	205	0	178				388	2754	0	45	2036	909
Arrive On Green	0.11	0.00	0.11				0.22	0.78	0.00	0.02	0.58	0.58
Sat Flow, veh/h	1795	0	1560				1781	3647	0	1781	3497	1562
Grp Volume(v), veh/h	142	0	340				352	1997	0	30	2169	279
Grp Sat Flow(s),veh/h/ln	1795	0	1560				1781	1777	0	1781	1749	1562
Q Serve(g_s), s	10.6	0.0	16.0				27.0	40.4	0.0	2.3	81.5	12.7
Cycle Q Clear(g_c), s	10.6	0.0	16.0				27.0	40.4	0.0	2.3	81.5	12.7
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	0	178				388	2754	0	45	2036	909
V/C Ratio(X)	0.69	0.00	1.91				0.91	0.73	0.00	0.67	1.07	0.31
Avail Cap(c_a), veh/h	205	0	178				394	2754	0	204	2036	909
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.6	0.0	62.0				53.4	8.1	0.0	67.7	29.3	14.9
Incr Delay (d2), s/veh	8.9	0.0	428.4				23.5	1.7	0.0	10.3	40.1	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	0.0	34.3				14.3	12.5	0.0	1.2	42.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.6	0.0	490.4				76.9	9.8	0.0	78.0	69.3	15.8
LnGrp LOS	E	A	F				E	A	A	E	F	B
Approach Vol, veh/h		482						2349			2478	
Approach Delay, s/veh		366.2						19.8			63.4	
Approach LOS		F						B			E	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	7.5	112.5		20.0	34.5	85.5
Change Period (Y+Rc), s	4.5	6.0		5.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	94.0		15.0	29.5	79.0
Max Q Clear Time (g_c+I1), s	4.3	42.4		18.0	29.0	83.5
Green Ext Time (p_c), s	0.0	39.8		0.0	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		71.6
HCM 6th LOS		E

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1077	172	646	1533	557	714
Future Volume (veh/h)	1077	172	646	1533	557	714
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1796	1826	1841	1885	1885
Adj Flow Rate, veh/h	1146	183	687	1631	593	760
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	7	5	4	1	1
Cap, veh/h	1558	657	791	2482	780	1280
Arrive On Green	0.44	0.44	0.23	0.71	0.22	0.22
Sat Flow, veh/h	3618	1487	3374	3589	3483	2812
Grp Volume(v), veh/h	1146	183	687	1631	593	760
Grp Sat Flow(s),veh/h/ln	1763	1487	1687	1749	1742	1406
Q Serve(g_s), s	32.4	9.4	23.6	30.6	19.2	24.3
Cycle Q Clear(g_c), s	32.4	9.4	23.6	30.6	19.2	24.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1558	657	791	2482	780	1280
V/C Ratio(X)	0.74	0.28	0.87	0.66	0.76	0.59
Avail Cap(c_a), veh/h	1813	765	940	2482	780	1280
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.8	21.4	44.4	9.5	43.8	24.5
Incr Delay (d2), s/veh	2.1	0.6	7.1	1.0	4.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.9	3.2	10.3	9.8	8.7	8.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.9	22.0	51.5	10.5	47.9	25.1
LnGrp LOS	C	C	D	B	D	C
Approach Vol, veh/h	1329			2318	1353	
Approach Delay, s/veh	28.9			22.6	35.1	
Approach LOS	C			C	D	

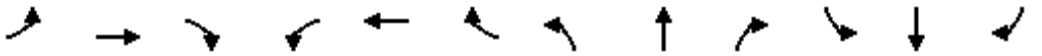
Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	32.3	57.3				89.6	31.0
Change Period (Y+Rc), s	* 5.6	6.0				6.0	6.0
Max Green Setting (Gmax), s	* 32	60.0				60.0	25.0
Max Q Clear Time (g_c+I1), s	25.6	34.4				32.6	26.3
Green Ext Time (p_c), s	1.1	16.9				22.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	27.7
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	427	93	525	403	69	182	784	357	131	1538	375
Future Volume (veh/h)	112	427	93	525	403	69	182	784	357	131	1538	375
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1841	1767	1841	1841	1752	1856	1826	1856	1767	1870	1900
Adj Flow Rate, veh/h	114	436	95	536	411	0	186	800	364	134	1569	383
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	4	9	4	4	10	3	5	3	9	2	0
Cap, veh/h	300	505	109	706	382		265	2086	656	169	1479	357
Arrive On Green	0.18	0.18	0.17	0.21	0.21	0.00	0.15	0.42	0.42	0.10	0.36	0.35
Sat Flow, veh/h	1697	2858	618	3401	1841	1485	1767	4985	1569	1682	4091	989
Grp Volume(v), veh/h	114	265	266	536	411	0	186	800	364	134	1303	649
Grp Sat Flow(s),veh/h/ln	1697	1749	1727	1700	1841	1485	1767	1662	1569	1682	1702	1675
Q Serve(g_s), s	7.7	19.2	19.5	19.3	27.0	0.0	13.0	14.5	22.8	10.1	47.0	47.0
Cycle Q Clear(g_c), s	7.7	19.2	19.5	19.3	27.0	0.0	13.0	14.5	22.8	10.1	47.0	47.0
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.59
Lane Grp Cap(c), veh/h	300	309	305	706	382		265	2086	656	169	1231	606
V/C Ratio(X)	0.38	0.86	0.87	0.76	1.08		0.70	0.38	0.55	0.79	1.06	1.07
Avail Cap(c_a), veh/h	300	309	306	706	382		265	2086	656	207	1231	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	51.9	52.3	48.4	51.5	0.0	52.5	26.2	28.6	57.1	41.5	42.1
Incr Delay (d2), s/veh	0.5	20.3	22.1	4.8	67.5	0.0	8.1	0.5	3.4	13.7	42.7	57.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	10.1	10.3	8.6	19.6	0.0	6.2	5.6	8.9	4.9	26.1	28.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.7	72.2	74.5	53.2	119.0	0.0	60.6	26.7	32.0	70.8	84.2	99.3
LnGrp LOS	D	E	E	D	F		E	C	C	E	F	F
Approach Vol, veh/h		645			947	A		1350			2086	
Approach Delay, s/veh		68.8			81.8			32.8			88.1	
Approach LOS		E			F			C			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.5	51.0		27.0	17.1	58.4		31.0				
Change Period (Y+Rc), s	6.0	* 6		5.5	5.0	6.0		6.0				
Max Green Setting (Gmax), s	16.0	* 45		21.5	15.0	46.0		25.0				
Max Q Clear Time (g_c+I1), s	15.0	49.0		21.5	12.1	24.8		29.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.1	10.2		0.0				

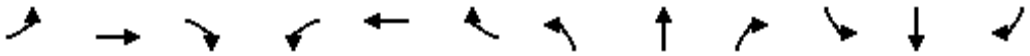
Intersection Summary			
HCM 6th Ctrl Delay		69.6	
HCM 6th LOS		E	

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	310	0	465	0	1745	190	445	1915	0
Future Volume (veh/h)	0	0	5	310	0	465	0	1745	190	445	1915	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1870	0	1856	1900	1885	1841	1856	1841	1900
Adj Flow Rate, veh/h	0	0	5	326	0	489	0	1837	200	468	2016	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	2	0	3	0	1	4	3	4	0
Cap, veh/h	0	0	11	0	0	0	85	2306	966	503	3145	0
Arrive On Green	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.64	0.63	0.21	0.90	0.00
Sat Flow, veh/h	0	0	1610		0		215	3582	1528	1767	3589	0
Grp Volume(v), veh/h	0	0	5		0.0		0	1837	200	468	2016	0
Grp Sat Flow(s),veh/h/ln	0	0	1610				215	1791	1528	1767	1749	0
Q Serve(g_s), s	0.0	0.0	0.3				0.0	31.8	4.7	15.4	11.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.3				0.0	31.8	4.7	15.4	11.6	0.0
Prop In Lane	0.00		1.00				1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	11				85	2306	966	503	3145	0
V/C Ratio(X)	0.00	0.00	0.47				0.00	0.80	0.21	0.93	0.64	0.00
Avail Cap(c_a), veh/h	0	0	152				106	2657	1116	760	3995	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	42.0				0.0	11.1	6.6	25.7	1.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	11.7				0.0	1.6	0.1	10.4	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1				0.0	8.8	1.1	9.6	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	53.8				0.0	12.7	6.7	36.1	1.3	0.0
LnGrp LOS	A	A	D				A	B	A	D	A	A
Approach Vol, veh/h		5						2037			2484	
Approach Delay, s/veh		53.8						12.1			7.9	
Approach LOS		D						B			A	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.7	58.7		4.6		80.4						
Change Period (Y+Rc), s	4.0	6.0		4.0		6.0						
Max Green Setting (Gmax), s	30.0	61.0		8.0		95.0						
Max Q Clear Time (g_c+I1), s	17.4	33.8		2.3		13.6						
Green Ext Time (p_c), s	0.3	18.8		0.0		37.9						

Intersection Summary			
HCM 6th Ctrl Delay		9.8	
HCM 6th LOS		A	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	294.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	500	135	290	655	5	120	0	245	0	0	0
Future Vol, veh/h	0	500	135	290	655	5	120	0	245	0	0	0
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	2	0	0	2	0	0	0	2	0	0	0
Mvmt Flow	0	543	147	315	712	5	130	0	266	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	717	0	0	691	0	0	1963	1965	618	2095	2036	715
Stage 1	-	-	-	-	-	-	618	618	-	1345	1345	-
Stage 2	-	-	-	-	-	-	1345	1347	-	750	691	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.22	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.318	3.5	4	3.3
Pot Cap-1 Maneuver	893	-	-	913	-	-	~ 48	64	489	39	58	434
Stage 1	-	-	-	-	-	-	480	484	-	189	222	-
Stage 2	-	-	-	-	-	-	189	222	-	407	449	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	893	-	-	912	-	-	~ 35	42	489	13	38	434
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 35	42	-	13	38	-
Stage 1	-	-	-	-	-	-	480	484	-	189	145	-
Stage 2	-	-	-	-	-	-	~ 124	145	-	185	449	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	3.4	$ 1562.3	0
HCM LOS			F	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	93	893	-	-	912	-	-	-
HCM Lane V/C Ratio	4.266	-	-	-	0.346	-	-	-
HCM Control Delay (s)	$ 1562.3	0	-	-	11	-	-	0
HCM Lane LOS	F	A	-	-	B	-	-	A
HCM 95th %tile Q(veh)	41.5	0	-	-	1.6	-	-	-

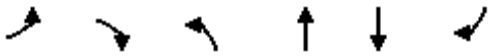
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	244.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	640	0	5	860	115	0	0	5	125	0	90
Future Vol, veh/h	105	640	0	5	860	115	0	0	5	125	0	90
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	1	2	0	0	2	1	0	0	0	6	0	4
Mvmt Flow	114	696	0	5	935	125	0	0	5	136	0	98
Number of Lanes	1	1	0	1	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	2	2
HCM Control Delay	112.1	396.5	12.7	18
HCM LOS	F	F	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	100%	0%	58%
Vol Thru, %	0%	0%	100%	0%	88%	0%
Vol Right, %	100%	0%	0%	0%	12%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	105	640	5	975	215
LT Vol	0	105	0	5	0	125
Through Vol	0	0	640	0	860	0
RT Vol	5	0	0	0	115	90
Lane Flow Rate	5	114	696	5	1060	234
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.011	0.211	1.193	0.01	1.834	0.453
Departure Headway (Hd)	9.563	7.562	7.065	7.124	6.564	8.321
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	377	478	522	505	562	437
Service Time	7.563	5.262	4.765	4.824	4.264	6.321
HCM Lane V/C Ratio	0.013	0.238	1.333	0.01	1.886	0.535
HCM Control Delay	12.7	12.3	128.5	9.9	398.5	18
HCM Lane LOS	B	B	F	A	F	C
HCM 95th-tile Q	0	0.8	22.4	0	63.1	2.3



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	305	290	365	2230	2670	650
Future Volume (veh/h)	305	290	365	2230	2670	650
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1856	1900	1856	1870	1885
Adj Flow Rate, veh/h	318	0	380	2323	2781	677
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	3	0	3	2	1
Cap, veh/h	311		608	3547	2183	981
Arrive On Green	0.09	0.00	0.45	1.00	0.61	0.61
Sat Flow, veh/h	3483	1572	1810	3618	3647	1598
Grp Volume(v), veh/h	318	0	380	2323	2781	677
Grp Sat Flow(s),veh/h/ln	1742	1572	1810	1763	1777	1598
Q Serve(g_s), s	12.5	0.0	22.6	0.0	86.0	39.7
Cycle Q Clear(g_c), s	12.5	0.0	22.6	0.0	86.0	39.7
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	311		608	3547	2183	981
V/C Ratio(X)	1.02		0.62	0.65	1.27	0.69
Avail Cap(c_a), veh/h	311		608	3547	2183	981
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.28	0.28	1.00	1.00
Uniform Delay (d), s/veh	63.8	0.0	31.9	0.0	27.0	18.1
Incr Delay (d2), s/veh	56.9	0.0	0.5	0.3	127.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	9.1	0.1	71.5	14.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	120.7	0.0	32.4	0.3	154.0	22.0
LnGrp LOS	F		C	A	F	C
Approach Vol, veh/h	318	A		2703	3458	
Approach Delay, s/veh	120.7			4.8	128.2	
Approach LOS	F			A	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		145.3		20.0	55.3	90.0
Change Period (Y+Rc), s		4.8		4.5	4.8	* 4.8
Max Green Setting (Gmax), s		115.2		15.5	26.0	* 85
Max Q Clear Time (g_c+I1), s		2.0		15.5	25.6	88.0
Green Ext Time (p_c), s		93.7		0.0	0.0	0.0

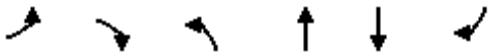
Intersection Summary	
HCM 6th Ctrl Delay	76.3
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	160	175	215	2015	1830	480
Future Volume (vph)	160	175	215	2015	1830	480
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	1568	1752	3574	3438	1572
Flt Permitted	0.95	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	1568	1752	3574	3438	1572
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	163	179	219	2056	1867	490
RTOR Reduction (vph)	0	121	0	0	0	91
Lane Group Flow (vph)	163	58	219	2056	1867	399
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	2%	3%	3%	1%	5%	1%
Turn Type	Prot	pt+ov	Prot	NA	NA	pm+ov
Protected Phases	4	4 5	5	2	6	4
Permitted Phases						6
Actuated Green, G (s)	15.4	39.5	19.6	96.0	72.4	87.8
Effective Green, g (s)	15.9	39.5	19.6	98.0	74.4	88.8
Actuated g/C Ratio	0.13	0.32	0.16	0.80	0.61	0.73
Clearance Time (s)	4.5		4.0	6.0	6.0	4.5
Vehicle Extension (s)	1.5		1.5	3.5	3.5	1.5
Lane Grp Cap (vph)	230	508	281	2873	2098	1145
v/s Ratio Prot	c0.09	0.04	c0.12	0.58	c0.54	0.05
v/s Ratio Perm						0.21
v/c Ratio	0.71	0.11	0.78	0.72	0.89	0.35
Uniform Delay, d1	50.8	28.9	49.1	5.5	20.3	6.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	7.9	0.0	11.7	0.9	5.2	0.1
Delay (s)	58.7	29.0	60.8	6.4	25.5	6.1
Level of Service	E	C	E	A	C	A
Approach Delay (s)	43.1			11.7	21.4	
Approach LOS	D			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	121.9	Sum of lost time (s)	16.5
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	720	10	15	1070	5	15
Future Vol, veh/h	720	10	15	1070	5	15
Conflicting Peds, #/hr	0	4	4	0	4	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	3	0	0	1	0	0
Mvmt Flow	742	10	15	1103	5	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	756	0	1888	751
Stage 1	-	-	-	-	751	-
Stage 2	-	-	-	-	1137	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	864	-	78	414
Stage 1	-	-	-	-	470	-
Stage 2	-	-	-	-	309	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	861	-	76	412
Mov Cap-2 Maneuver	-	-	-	-	201	-
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	303	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	326	-	-	861	-
HCM Lane V/C Ratio	0.063	-	-	0.018	-
HCM Control Delay (s)	16.8	-	-	9.3	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	550	275	210	915	345	135
Future Volume (vph)	550	275	210	915	345	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1560	1787	1881	1787	1575
Flt Permitted	1.00	1.00	0.23	1.00	0.95	1.00
Satd. Flow (perm)	1863	1560	429	1881	1787	1575
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	591	296	226	984	371	145
RTOR Reduction (vph)	0	82	0	0	0	88
Lane Group Flow (vph)	591	214	226	984	371	57
Confl. Peds. (#/hr)		2	2		1	
Confl. Bikes (#/hr)						1
Heavy Vehicles (%)	2%	2%	1%	1%	1%	1%
Turn Type	NA	pm+ov	D.P+P	NA	Prot	pm+ov
Protected Phases	2	8	1	6	8	1
Permitted Phases		2	2			8
Actuated Green, G (s)	35.5	57.7	44.6	48.6	22.2	31.3
Effective Green, g (s)	36.5	57.7	44.6	49.6	22.2	31.3
Actuated g/C Ratio	0.46	0.72	0.56	0.62	0.28	0.39
Clearance Time (s)	5.0	4.0	4.0	5.0	4.0	4.0
Vehicle Extension (s)	3.0	2.5	1.5	3.0	2.5	1.5
Lane Grp Cap (vph)	852	1127	394	1169	497	696
v/s Ratio Prot	0.32	0.05	0.07	c0.52	c0.21	0.01
v/s Ratio Perm		0.08	0.25			0.03
v/c Ratio	0.69	0.19	0.57	0.84	0.75	0.08
Uniform Delay, d1	17.2	3.5	11.4	12.0	26.2	15.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.5	0.1	1.3	5.6	5.7	0.0
Delay (s)	19.7	3.6	12.7	17.6	32.0	15.2
Level of Service	B	A	B	B	C	B
Approach Delay (s)	14.3			16.7	27.3	
Approach LOS	B			B	C	

Intersection Summary			
HCM 2000 Control Delay	18.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	79.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	12.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	90	15	1920	255	10	2220
Future Vol, veh/h	90	15	1920	255	10	2220
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	95	16	2021	268	11	2337

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3346	1145	0	0	2289	0
Stage 1	2155	-	-	-	-	-
Stage 2	1191	-	-	-	-	-
Critical Hdwy	6.8	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	~ 6	196	-	-	224	-
Stage 1	~ 76	-	-	-	-	-
Stage 2	255	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 6	196	-	-	224	-
Mov Cap-2 Maneuver	~ 55	-	-	-	-	-
Stage 1	~ 76	-	-	-	-	-
Stage 2	243	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 532.2	0	0.1
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	61	224	-
HCM Lane V/C Ratio	-	-	1.812	0.047	-
HCM Control Delay (s)	-	-	$ 532.2	21.9	-
HCM Lane LOS	-	-	F	C	-
HCM 95th %tile Q(veh)	-	-	10.2	0.1	-

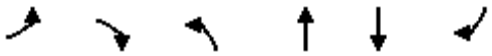
Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	20	30	5	90	80	385	5	30	45	255	60	60
Future Vol, veh/h	20	30	5	90	80	385	5	30	45	255	60	60
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles, %	6	8	0	0	0	2	0	0	0	3	2	0
Mvmt Flow	22	32	5	97	86	414	5	32	48	274	65	65
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	10.4	29.8	10.4	20.1
HCM LOS	B	D	B	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	36%	16%	68%
Vol Thru, %	38%	55%	14%	16%
Vol Right, %	56%	9%	69%	16%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	55	555	375
LT Vol	5	20	90	255
Through Vol	30	30	80	60
RT Vol	45	5	385	60
Lane Flow Rate	86	59	597	403
Geometry Grp	1	1	1	1
Degree of Util (X)	0.15	0.109	0.846	0.664
Departure Headway (Hd)	6.259	6.629	5.104	5.926
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	576	543	704	605
Service Time	4.263	4.636	3.177	4.002
HCM Lane V/C Ratio	0.149	0.109	0.848	0.666
HCM Control Delay	10.4	10.4	29.8	20.1
HCM Lane LOS	B	B	D	C
HCM 95th-tile Q	0.5	0.4	9.6	5



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	360	205	345	2235	2170	790
Future Volume (veh/h)	360	205	345	2235	2170	790
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1870	1870	1870	1841	1870
Adj Flow Rate, veh/h	379	216	363	2353	2284	832
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	2	2	4	2
Cap, veh/h	269	238	336	2901	2098	1158
Arrive On Green	0.15	0.15	0.06	0.27	0.40	0.40
Sat Flow, veh/h	1795	1585	1781	3647	3589	1543
Grp Volume(v), veh/h	379	216	363	2353	2284	832
Grp Sat Flow(s),veh/h/ln	1795	1585	1781	1777	1749	1543
Q Serve(g_s), s	21.0	18.8	26.4	86.7	84.0	44.6
Cycle Q Clear(g_c), s	21.0	18.8	26.4	86.7	84.0	44.6
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	269	238	336	2901	2098	1158
V/C Ratio(X)	1.41	0.91	1.08	0.81	1.09	0.72
Avail Cap(c_a), veh/h	269	238	336	2901	2098	1158
HCM Platoon Ratio	1.00	1.00	0.33	0.33	0.67	0.67
Upstream Filter(I)	1.00	1.00	0.09	0.09	0.09	0.09
Uniform Delay (d), s/veh	59.5	58.6	65.6	41.0	41.9	15.1
Incr Delay (d2), s/veh	204.0	34.4	41.9	0.2	40.7	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	24.7	17.8	16.6	41.1	48.7	27.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	263.5	93.0	107.5	41.3	82.6	15.5
LnGrp LOS	F	F	F	D	F	B
Approach Vol, veh/h	595			2716	3116	
Approach Delay, s/veh	201.6			50.1	64.7	
Approach LOS	F			D	E	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		118.5		25.0	30.5	88.0
Change Period (Y+Rc), s		* 5.4		* 5.4	5.4	* 5.9
Max Green Setting (Gmax), s		* 1.1E2		* 20	21.6	* 82
Max Q Clear Time (g_c+I1), s		88.7		23.0	28.4	86.0
Green Ext Time (p_c), s		20.2		0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	71.2
HCM 6th LOS	E

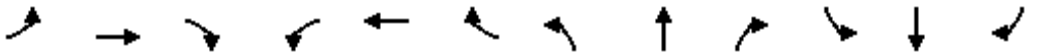
Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

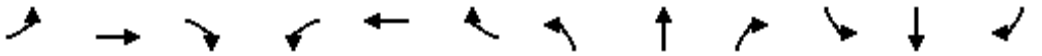
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	75	30	280	120	175	40	2180	65	235	1990	150
Future Volume (vph)	225	75	30	280	120	175	40	2180	65	235	1990	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.95	0.95		1.00	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.91		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	0.98		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1681	1666		1770	1711		1703	3505	1548	3502	3505	1546
Flt Permitted	0.95	0.98		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1681	1666		1770	1711		1703	3505	1548	3502	3505	1546
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	232	77	31	289	124	180	41	2247	67	242	2052	155
RTOR Reduction (vph)	0	5	0	0	37	0	0	0	30	0	0	39
Lane Group Flow (vph)	169	166	0	289	267	0	41	2247	37	242	2052	116
Confl. Peds. (#/hr)			8	8			1		6	6		1
Confl. Bikes (#/hr)									1			2
Heavy Vehicles (%)	2%	0%	12%	2%	0%	2%	6%	3%	2%	0%	3%	2%
Turn Type	Split	NA		Split	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	8	8		4	4		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	15.4	15.4		15.0	15.0		6.9	77.0	77.0	12.1	82.2	82.2
Effective Green, g (s)	16.4	16.4		16.0	16.0		8.4	78.0	78.0	13.6	83.2	83.2
Actuated g/C Ratio	0.12	0.12		0.11	0.11		0.06	0.56	0.56	0.10	0.59	0.59
Clearance Time (s)	5.0	5.0		5.0	5.0		5.5	5.0	5.0	5.5	5.0	5.0
Vehicle Extension (s)	2.3	2.3		2.3	2.3		2.3	4.8	4.8	2.3	4.8	4.8
Lane Grp Cap (vph)	196	195		202	195		102	1952	862	340	2082	918
v/s Ratio Prot	c0.10	0.10		c0.16	0.16		0.02	c0.64		c0.07	c0.59	
v/s Ratio Perm									0.02			0.07
v/c Ratio	0.86	0.85		1.43	1.37		0.40	1.15	0.04	0.71	0.99	0.13
Uniform Delay, d1	60.7	60.6		62.0	62.0		63.4	31.0	14.1	61.3	27.8	12.5
Progression Factor	1.00	1.00		1.00	1.00		0.86	1.13	5.05	1.37	0.17	0.02
Incremental Delay, d2	29.6	27.0		219.9	194.9		0.1	68.6	0.0	0.6	3.5	0.0
Delay (s)	90.3	87.6		281.9	256.9		54.6	103.6	71.1	84.8	8.1	0.3
Level of Service	F	F		F	F		D	F	E	F	A	A
Approach Delay (s)		88.9			269.1			101.8			15.2	
Approach LOS		F			F			F			B	

Intersection Summary			
HCM 2000 Control Delay	81.4	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	106.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	140	115	710	120	400	135	1820	210	385	1880	35
Future Volume (vph)	45	140	115	710	120	400	135	1820	210	385	1880	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.96	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3321		1698	1730	1521	1805	3539	1526	3467	3438	1578
Flt Permitted		0.99		0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3321		1698	1730	1521	1805	3539	1526	3467	3438	1578
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	47	146	120	740	125	417	141	1896	219	401	1958	36
RTOR Reduction (vph)	0	69	0	0	0	261	0	0	44	0	0	19
Lane Group Flow (vph)	0	244	0	429	436	156	141	1896	175	401	1958	17
Confl. Peds. (#/hr)	17					17	1		9	9		1
Confl. Bikes (#/hr)						3			2			
Heavy Vehicles (%)	3%	1%	2%	1%	0%	2%	0%	2%	4%	1%	5%	0%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	8	8		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		13.4		27.0	27.0	27.0	12.9	56.8	83.8	20.1	64.3	64.3
Effective Green, g (s)		15.4		29.0	29.0	29.0	14.3	58.2	87.8	21.4	65.3	65.3
Actuated g/C Ratio		0.11		0.21	0.21	0.21	0.10	0.42	0.63	0.15	0.47	0.47
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		365		351	358	315	184	1471	957	529	1603	736
v/s Ratio Prot		c0.07		c0.25	0.25		0.08	c0.54	0.04	c0.12	c0.57	
v/s Ratio Perm						0.10			0.08			0.01
v/c Ratio		0.67		1.22	1.22	0.50	0.77	1.29	0.18	0.76	1.22	0.02
Uniform Delay, d1		59.9		55.5	55.5	49.0	61.2	40.9	11.0	56.8	37.4	20.1
Progression Factor		1.00		1.00	1.00	1.00	0.89	1.17	1.35	1.30	0.83	1.00
Incremental Delay, d2		3.9		122.9	120.8	0.7	12.0	133.8	0.0	0.5	100.2	0.0
Delay (s)		63.8		178.4	176.3	49.8	66.5	181.7	14.9	74.5	131.4	20.1
Level of Service		E		F	F	D	E	F	B	E	F	C
Approach Delay (s)		63.8			135.9			158.3			120.2	
Approach LOS		E			F			F			F	

Intersection Summary			
HCM 2000 Control Delay	134.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	0	330	0	0	0	340	1920	0	30	2380	305
Future Volume (veh/h)	140	0	330	0	0	0	340	1920	0	30	2380	305
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	0	1841				1870	1870	0	1870	1841	1885
Adj Flow Rate, veh/h	146	0	344				354	2000	0	31	2479	318
Peak Hour Factor	0.96	0.92	0.96				0.96	0.96	0.92	0.96	0.96	0.96
Percent Heavy Veh, %	1	0	4				2	2	0	2	4	1
Cap, veh/h	205	0	178				390	2751	0	46	2032	908
Arrive On Green	0.11	0.00	0.11				0.22	0.77	0.00	0.03	0.58	0.58
Sat Flow, veh/h	1795	0	1560				1781	3647	0	1781	3497	1562
Grp Volume(v), veh/h	146	0	344				354	2000	0	31	2479	318
Grp Sat Flow(s),veh/h/ln	1795	0	1560				1781	1777	0	1781	1749	1562
Q Serve(g_s), s	11.0	0.0	16.0				27.1	40.7	0.0	2.4	81.3	15.0
Cycle Q Clear(g_c), s	11.0	0.0	16.0				27.1	40.7	0.0	2.4	81.3	15.0
Prop In Lane	1.00		1.00				1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	0	178				390	2751	0	46	2032	908
V/C Ratio(X)	0.71	0.00	1.93				0.91	0.73	0.00	0.68	1.22	0.35
Avail Cap(c_a), veh/h	205	0	178				394	2751	0	204	2032	908
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.8	0.0	62.0				53.3	8.2	0.0	67.6	29.3	15.4
Incr Delay (d2), s/veh	10.3	0.0	438.3				23.7	1.7	0.0	10.1	103.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	0.0	34.8				14.4	12.7	0.0	1.2	60.1	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.1	0.0	500.3				77.0	9.9	0.0	77.7	133.0	16.5
LnGrp LOS	E	A	F				E	A	A	E	F	B
Approach Vol, veh/h		490						2354			2828	
Approach Delay, s/veh		372.1						20.0			119.3	
Approach LOS		F						B			F	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	7.6	112.4		20.0	34.7	85.3
Change Period (Y+Rc), s	4.5	6.0		5.0	5.5	6.0
Max Green Setting (Gmax), s	15.5	94.0		15.0	29.5	79.0
Max Q Clear Time (g_c+I1), s	4.4	42.7		18.0	29.1	83.3
Green Ext Time (p_c), s	0.0	39.7		0.0	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		99.9
HCM 6th LOS		F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1095	175	735	1580	560	810
Future Volume (veh/h)	1095	175	735	1580	560	810
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1796	1826	1841	1885	1885
Adj Flow Rate, veh/h	1153	184	774	1663	589	853
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	7	5	4	1	1
Cap, veh/h	1531	646	860	2522	750	1313
Arrive On Green	0.43	0.43	0.26	0.72	0.22	0.21
Sat Flow, veh/h	3618	1487	3374	3589	3483	2812
Grp Volume(v), veh/h	1153	184	774	1663	589	853
Grp Sat Flow(s),veh/h/ln	1763	1487	1687	1749	1742	1406
Q Serve(g_s), s	34.5	10.0	27.8	31.7	20.0	26.6
Cycle Q Clear(g_c), s	34.5	10.0	27.8	31.7	20.0	26.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1531	646	860	2522	750	1313
V/C Ratio(X)	0.75	0.28	0.90	0.66	0.79	0.65
Avail Cap(c_a), veh/h	1742	735	903	2522	750	1313
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	22.9	45.2	9.3	46.5	25.6
Incr Delay (d2), s/veh	2.5	0.6	11.3	1.0	5.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	3.4	12.6	10.1	9.2	9.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.3	23.6	56.5	10.3	51.8	26.6
LnGrp LOS	C	C	E	B	D	C
Approach Vol, veh/h	1337			2437	1442	
Approach Delay, s/veh	31.1			24.9	36.9	
Approach LOS	C			C	D	

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	36.0	58.5				94.5	31.0
Change Period (Y+Rc), s	* 5.6	6.0				6.0	6.0
Max Green Setting (Gmax), s	* 32	60.0				60.0	25.0
Max Q Clear Time (g_c+I1), s	29.8	36.5				33.7	28.6
Green Ext Time (p_c), s	0.6	16.0				22.1	0.0

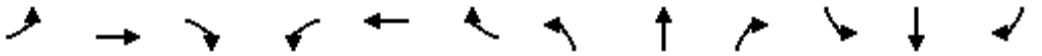
Intersection Summary	
HCM 6th Ctrl Delay	29.8
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	155	610	130	610	620	80	245	785	370	135	1545	510
Future Volume (veh/h)	155	610	130	610	620	80	245	785	370	135	1545	510
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1781	1841	1767	1841	1841	1752	1856	1826	1856	1767	1870	1900
Adj Flow Rate, veh/h	158	622	133	622	633	82	250	801	378	138	1577	520
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	8	4	9	4	4	10	3	5	3	9	2	0
Cap, veh/h	300	507	108	706	647	84	662	3195	1007	173	1376	444
Arrive On Green	0.18	0.18	0.17	0.21	0.21	0.21	0.37	0.64	0.64	0.10	0.36	0.35
Sat Flow, veh/h	1697	2865	612	3401	3113	403	1767	4985	1571	1682	3805	1227
Grp Volume(v), veh/h	158	379	376	622	355	360	250	801	378	138	1407	690
Grp Sat Flow(s),veh/h/ln	1697	1749	1728	1700	1749	1767	1767	1662	1571	1682	1702	1628
Q Serve(g_s), s	11.0	23.0	23.0	23.1	26.2	26.3	13.4	8.9	14.8	10.4	47.0	47.0
Cycle Q Clear(g_c), s	11.0	23.0	23.0	23.1	26.2	26.3	13.4	8.9	14.8	10.4	47.0	47.0
Prop In Lane	1.00		0.35	1.00		0.23	1.00		1.00	1.00		0.75
Lane Grp Cap(c), veh/h	300	309	306	706	363	367	662	3195	1007	173	1231	589
V/C Ratio(X)	0.53	1.23	1.23	0.88	0.98	0.98	0.38	0.25	0.38	0.80	1.14	1.17
Avail Cap(c_a), veh/h	300	309	306	706	363	367	662	3195	1007	207	1231	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.6	53.5	53.8	49.9	51.2	51.2	29.6	10.0	11.0	57.0	41.5	42.3
Incr Delay (d2), s/veh	1.2	126.8	128.5	12.4	41.2	41.7	0.4	0.2	1.1	14.8	74.5	94.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	20.9	20.8	11.0	15.6	15.9	5.6	3.0	5.0	5.0	31.5	33.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.7	180.3	182.3	62.3	92.4	92.9	30.0	10.2	12.1	71.7	116.0	136.8
LnGrp LOS	D	F	F	E	F	F	C	B	B	E	F	F
Approach Vol, veh/h		913			1337			1429			2235	
Approach Delay, s/veh		158.5			78.5			14.1			119.7	
Approach LOS		F			E			B			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	54.1	51.0		27.0	17.4	87.8		31.0				
Change Period (Y+Rc), s	6.0	* 6		5.5	5.0	6.0		6.0				
Max Green Setting (Gmax), s	16.0	* 45		21.5	15.0	46.0		25.0				
Max Q Clear Time (g_c+I1), s	15.4	49.0		25.0	12.4	16.8		28.3				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	12.2		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		90.9
HCM 6th LOS		F

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

SAFETY ANALYSIS

A comprehensive safety analysis was conducted within the study area using crash data from 2014-2018 obtained from ODOT's Crash Analysis and Reporting Unit, in addition to information from ODOT's Safety Implementation Plan. A summary of the key findings is provided below, with the detailed analysis included in the appendix.

CRASH TRENDS

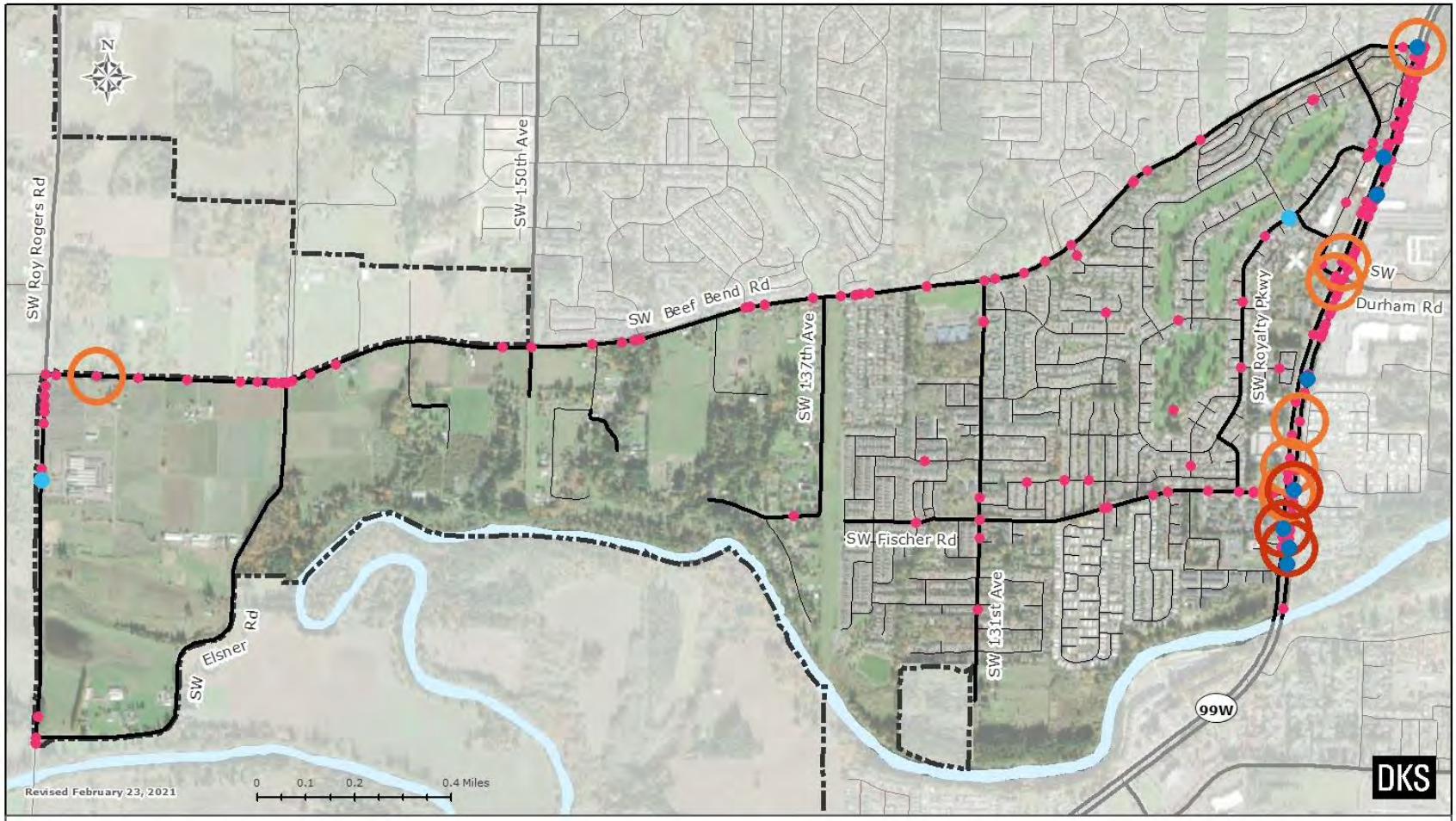
Figure B and Tables C and D summarize data for the 5-year period between 2014 and 2018, with 384 collisions occurring in King City. Of these collisions, 9 involved a pedestrian, 2 involved a bicyclist, and 373 involved a vehicle or multiple vehicles. All of the pedestrian collisions occurred along OR 99W, while the bicycle collisions occurred along SW Roy Rogers Road and SW Royalty Parkway. There were three fatalities, all pedestrians, and 8 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 C: COLLISION SUMMARY IN KING CITY

	ALL COLLISIONS	COLLISIONS INVOLVING VEHICLE(S) ONLY	COLLISIONS INVOLVING PEDESTRIANS	COLLISIONS INVOLVING BICYCLISTS
TOTAL COLLISIONS (2014 TO 2018)	384	373	9	2
COLLISIONS WITH FATALITIES	3	0	3	0
FATALITIES	3	0	3	0
COLLISIONS WITH SEVERE INJURIES	8	6	2	0
SEVERE INJURIES	8	6	2	0

Source: ODOT Crash Analysis and Reporting Unit. Reported collision data from 2014 to 2018.

FIGURE B: COLLISIONS IN KING CITY (2014 TO 2018)



Legend:

Collisions (2014 to 2018):

- Collision involving a Pedestrian (9)
- Collision involving a Bicyclist (2)
- Collision Involving a Vehicle(s) (373)

Collision Severity (2014 to 2018):

- Collision with Fatal Injury (3)
- Collision with Severe Injury (8)

Urban Growth Boundary

TABLE D: INTERSECTION CRASH RATES* (2014-2018)

Intersection	Collision Type			Severity			Total Crashes
	Angle or Turn	Rear-End	OTher[1]	PDO[2]	Minor Injury	Serious /Fatal	
ROY ROGERS RD & BEEF BEND RD	2	12	1	5	10	0	15
BEEF BEND RD & TAYLOR LN/ ELSNER RD	1	0	1	0	2	0	2
BEEF BEND RD & 150TH AVE	4	1	0	2	3	0	5
BEEF BEND RD & 137TH AVE	0	0	0	0	0	0	0
BEEF BEND RD & 131ST AVE	2	0	0	1	1	0	2
ROY ROGERS RD & AL'S GARDEN	2	4	0	2	4	0	6
ROY ROGERS RD & ELSNER RD	0	3	0	1	2	0	3
131ST AVE & FISCHER RD	2	1	0	2	1	0	3
OR 99W & BEEF BEND RD	8	13	4	16	7	2	25
OR 99W & BULL MOUNTAIN RD	9	36	2	23	24	0	47
OR 99W & DURHAM RD	12	25	4	17	24	0	41
OR 99W & FISCHER RD	8	14	4	17	7	2	26
OR 99W & 124TH AVE	4	11	0	4	11	0	15
OR 99W & TUALATIN-SHERWOOD RD	11	51	3	27	38	0	65

*Crash rates are crashes per million vehicles entering this intersection.
**All crashes occurred before Phase 1 was completed.
[1] Other crash types include fixed-object, SS-O, Non-Collision, Ped crashes.
[2] PDO = Property Damage Only

As can be seen above, the intersection of OR 99W and Tualatin-Sherwood Road had the highest number of crashes with 65 crashes. The majority of crashes were rear-end crashes followed by angle or turn crashes. None of these crashes resulted in a serious injury or fatality. The intersections of OR 99W and Beef Bend Road and OR 99W and Fischer Road did have two crashes each resulting in a serious injury or fatality. The two fatalities were pedestrian crashes caused by the drivers disregarding the signals. The two serious injury crashes were fixed object crashes caused by reckless driving.

CRASH RATE ANALYSIS

Crash rate analysis was completed for each study intersection and segments along OR 99W. These crash rates are compared to crash rates that would be expected for similar facilities within the state. Intersections and segments were flagged as safety focus locations if observed crash rates surpassed the critical and 90th percentile rates described below. The following crash rate analysis were performed:

- Intersection Crash Rate Analysis: Compares performance of intersection to other similar intersections throughout the state.
- Segment Crash Rate Analysis: Similar to intersection crash rate analysis, pre-defined highway segments are compared against statewide average crash rates with similar facilities.
- Safety Priority Index System: Provides another method for identifying potential safety problems and crash patterns on state highways.

INTERSECTION CRASH RATE ANALYSIS

The observed crash rate for intersections is a function of the number of crashes and the annual average daily traffic (AADT). Each intersection is grouped into a reference population based on intersection control. The crash rates (crashes per million entering vehicles) for each intersection were compared to two different standards:

- A critical crash rate, which compares performance to other similar intersections being studied in the project area, and
- A 90th percentile crash rate, which is based on similar intersections throughout the state (obtained from ODOT's Analysis Procedures Manual Exhibit 4-1).

Table E shows the crash rates for each study intersection where crashes were recorded. Intersections that have observed crash rates greater than either the critical or 90th percentile crash rate were flagged as safety focus areas for further consideration. Full calculations are provided in the appendix.

TABLE E: INTERSECTION CRASH RATES* (2014-2018)

Intersection Name	Safety Focus Area	Observed Crash Rate	Critical Crash Rate	90th Percentile Crash Rate
ROY ROGERS RD & BEEF BEND RD		0.41	0.68	0.86
BEEF BEND RD & TAYLOR LN/ ELSNER RD		0.23	0.51	0.41
BEEF BEND RD & 150TH AVE		0.32	0.42	0.41
BEEF BEND RD & 137TH AVE		0.00	0.31	0.29
BEEF BEND RD & 131ST AVE		0.13	0.70	0.51
ROY ROGERS RD & FISCHER RD EXTENSION		0.17	0.24	0.29
ROY ROGERS RD & ELSNER RD		0.10	0.26	0.29
131ST AVE & FISCHER RD		0.37	0.52	0.41
OR 99W & BEEF BEND RD		0.36	0.54	0.51
OR 99W & BULL MOUNTAIN RD	Yes	0.67	0.54	0.51
OR 99W & DURHAM RD		0.59	0.62	0.86
OR 99W & FISCHER RD		0.37	0.54	0.51
OR 99W & 124TH AVE		0.26	0.55	0.51
OR 99W & TUALATIN-SHERWOOD RD	Yes	1.09	0.63	0.86

*Crash rates are crashes per million vehicles entering this intersection.

As can be seen in the table above, two intersections were flagged as safety focus areas. The intersection of OR 99W and Bull Mountain Road and OR 99W and Tualatin-Sherwood Road.

SEGMENT CRASH RATE ANALYSIS

In addition to individual intersections, crash rates for segments of OR 99W were analyzed to identify potential safety focus areas along the corridor. Pre-defined highway segments along OR 99W and their crash rates were obtained from the 2018 ODOT State Highway Crash Book. Crash rates experienced for each of the last reported five years (between 2014-2018) were compared against the statewide average crash rate for similar facilities using Crash Rate Table II in the Crash Book.

This analysis led to the flagging of two segments as safety focus areas for further investigation and potential mitigation through alternatives considered (see Table F). These included the segments of SW Bull Mountain Road to SW 116th Avenue and SW 116th Avenue to the Tualatin River.

TABLE F: SEGMENT CRASH RATES

Start Milepoint	End Milepoint	Segment Name	Safety Focus Area	Area Type	Observed Crash Rate	Statewide Average Crash Rate
10.71	11.47	SW Bull Mt Rd to SW 116th Ave	YES	Urban City	3.84	2.96
11.47	12.20	SW 116th Ave to Tualatin River	YES	Urban Fringe	1.74	1.43
12.20	13.33	Tualatin River to South City Limit		Urban City	0.71	2.96
13.33	14.54	South City Limit to Sherwood North City Limit		Urban Fringe	0.47	1.43
14.54	15.23	Sherwood North City Limit to Six Corners		Urban City	1.99	2.96

As can be seen in the table above, two segments have been identified as safety focus areas. The two segments connect together running from SW Bull Mountain Road to the Tualatin River. Crashes tend to run along the entire segment with heavier concentrations near major intersections. It should be noted that the majority of crashes were rear-end crashes and could be related to standing queues. Further consideration should be made to enhance the safety of these segments.

SAFETY PRIORITY INDEX SYSTEM

The Safety Priority Index System (SPIS) provides another method for identifying potential safety problems and crash patterns on state highways. The SPIS is a method developed by ODOT and is a scoring system based on three years of crash data and considers crash rates, severities, and frequencies. The highest rated sites are considered for potential safety improvements.

The 2018 SPIS ratings for OR 99W within the study area were obtained from ODOT to screen for locations with SPIS ratings among the state's top 10 percent. The following locations within the study area were identified among the top 10 percent SPIS sites:

- Intersection of OR 99W and Beef Bend Road
- Intersection of OR 99W and Durham Road
- Intersection of OR 99W and Fischer Road
- Intersection of OR 99W and Roy Rogers Road/Tualatin Sherwood Road

APPENDIX M. ASPIRATIONAL PROJECT LIST AND NETWORK MAPS

PROPOSED MULTIMODAL NETWORK MAPS AND DRAFT LONG-RANGE CAPITAL PROJECT LIST

DATE: June 11, 2021

TO: Project Management Team

FROM: Carl Springer and Kevin Chewuk | DKS Associates

SUBJECT: King City Transportation System Plan and Land Use Refinement

Proposed Multimodal Network Maps and Draft Long-Range Capital Project List (Task 7.1 and 7.2; Deliverable 7A and 7B) #20020-002

This document presents the draft list of transportation system investments to address all the identified City needs, regardless of the ability to fund them. The complete list of projects is referred to as Aspirational Projects. This draft project list will be further refined based on Project Management Team, public and stakeholder, Planning Commission and City Council input, and on-going Master Plan work in the Kingston Terrace area.

The final steps in the TSP process include developing planning level cost-estimates and applying measurable evaluation criteria for each project to arrive at a Financially Constrained list of projects (Deliverable 7D: Draft Financially Constrained Capital Project List) and assessing system performance of the long-range capital project and financially constrained capital project lists (Deliverable 7E: Evaluation Report on Transportation Network Alternatives).

PROPOSED MULTIMODAL NETWORK MAPS

The following sections include the proposed network maps for vehicles, pedestrians, bicyclists and transit riders. The proposed networks are consistent with the standards and policies established in Task 5 and address the gaps and deficiencies identified in Task 6 of this TSP effort.

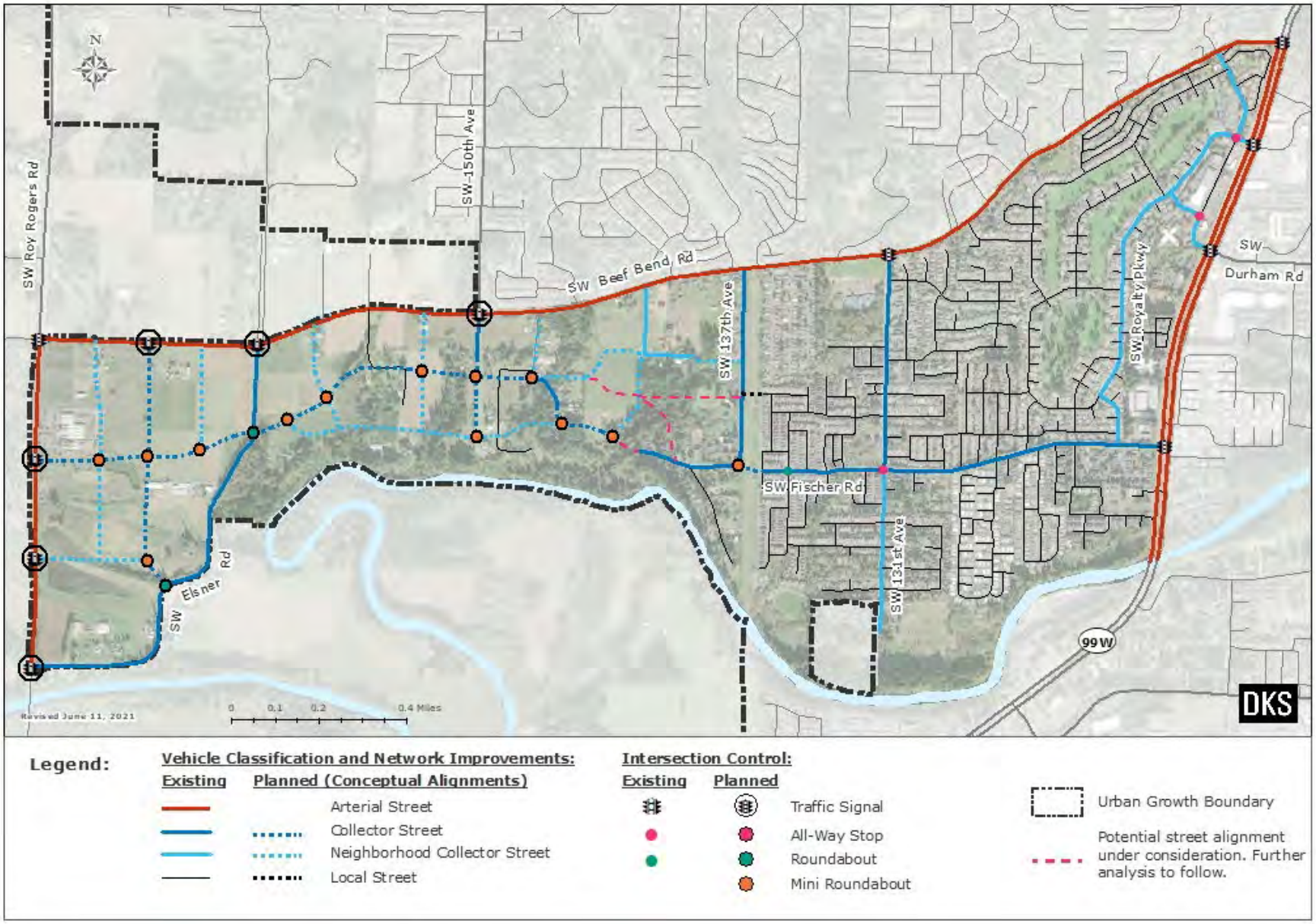
VEHICLE NETWORK

The proposed vehicle network improvements and intersection control can be seen in Figure 1. See Table 1 later in this document for more detail on the proposed improvements. Most of the vehicle network projects include street improvements, extensions, and new streets to accommodate future growth in the Kingston Terrace area. The alignments shown for these streets are preliminary and will continue to be refined through the Kingston Terrace Master Planning process and through the typical development review process. The proposed vehicle network includes two large scale

widening projects along arterial streets taken from the current Metro Regional Transportation Plan, including that of SW Roy Rogers Road to five-lanes from SW Elsner Road to SW Beef Bend Road, and widening of SW Beef Bend Road to three-lanes from SW Roy Rogers Road to SW 131st Avenue.

Another critical project is a study of the OR 99W Corridor through King City, along with 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 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 were proposed along the highway through King City, although those will likely be further refined in the future corridor study.

FIGURE 1: PROPOSED VEHICLE CLASSIFICATIONS AND NETWORK IMPROVEMENTS



PEDESTRIAN NETWORK

The proposed pedestrian overlays can be seen in Figure 2. The pedestrian overlays were used to develop the proposed network improvements shown in Figure 3. As shown, the proposed network includes a connected system of sidewalks, shared-use paths and pedestrian crossings. See Table 1 later in this document for more detail on the proposed improvements.

FIGURE 2: PROPOSED PEDESTRIAN OVERLAYS

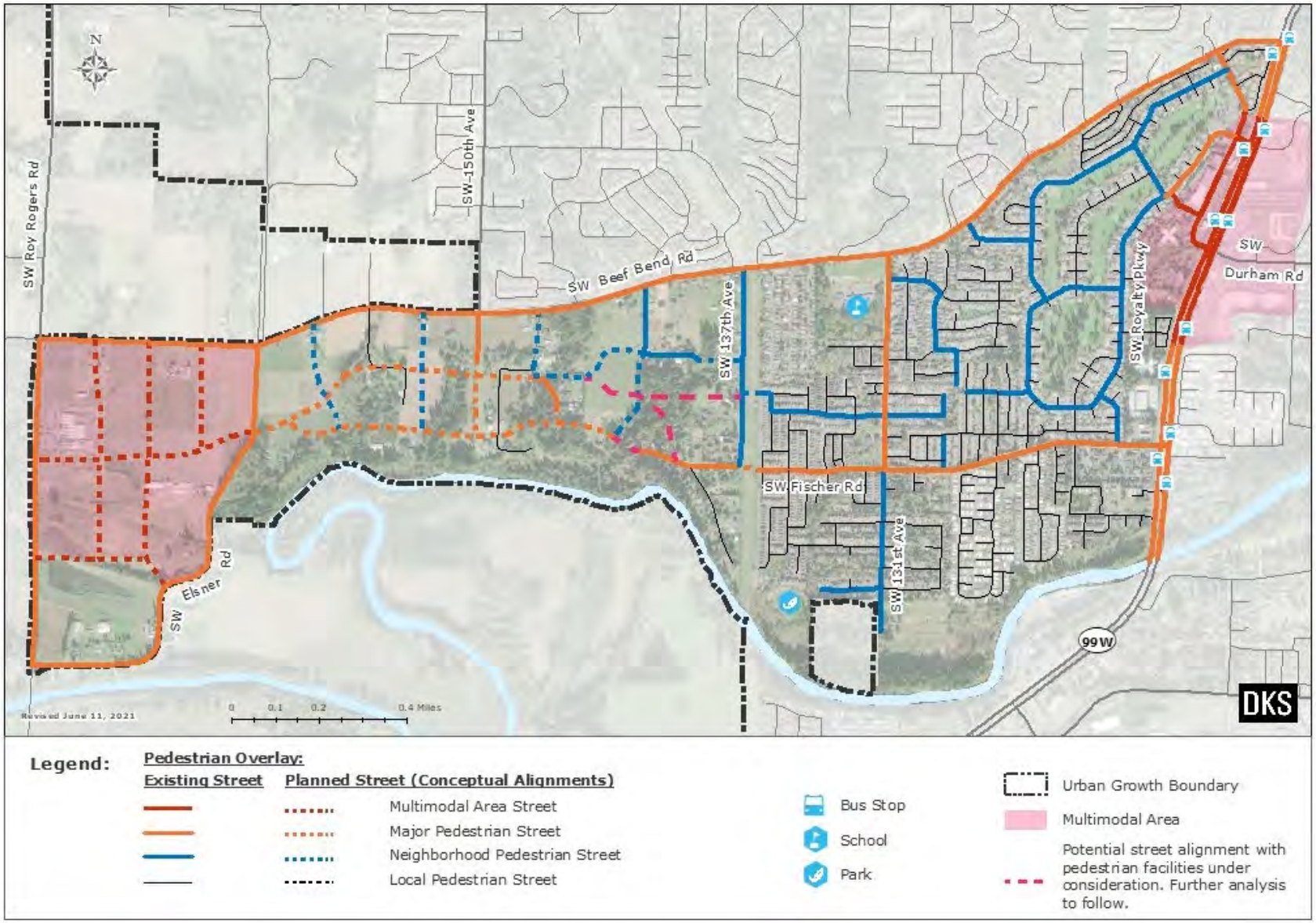
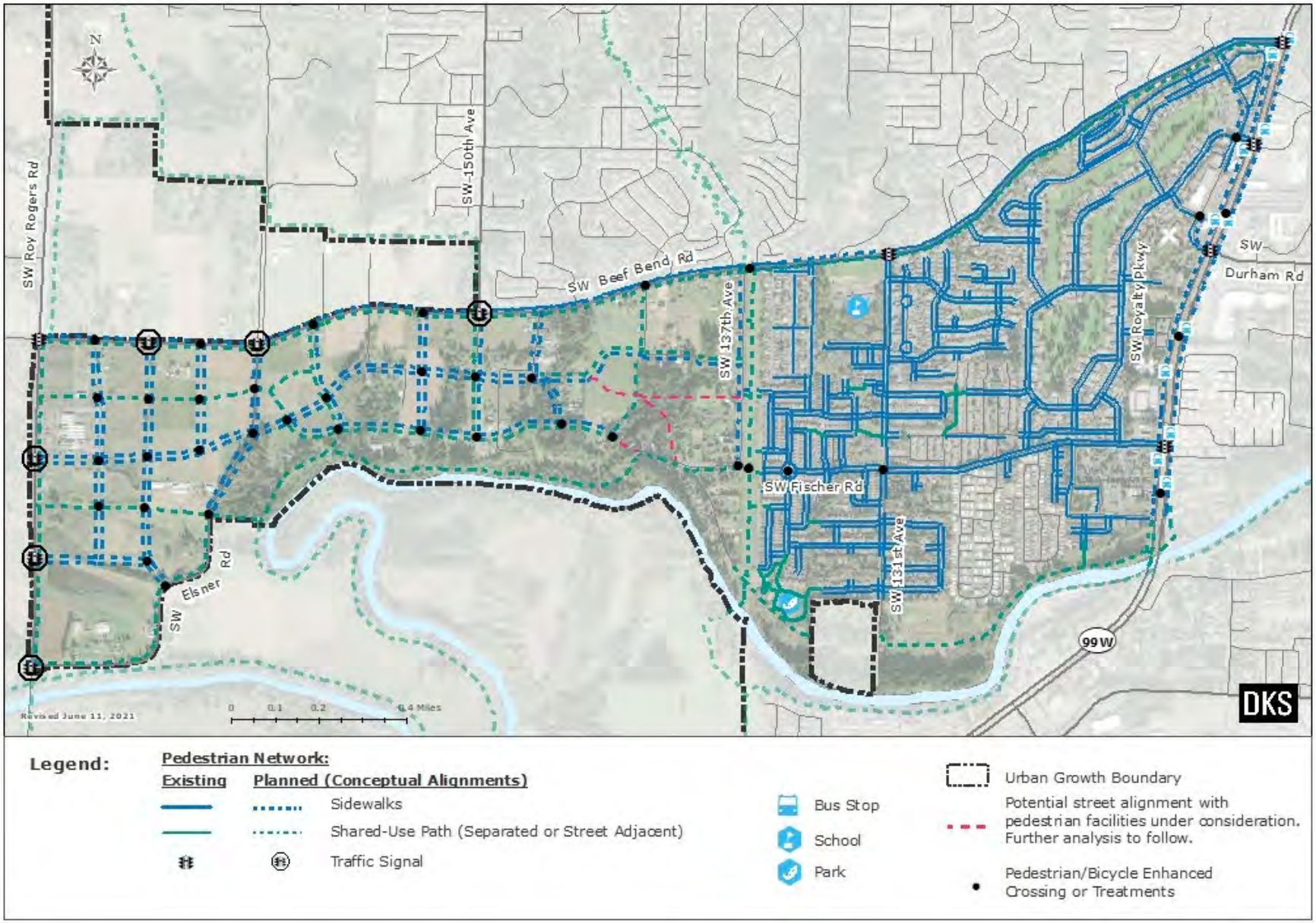


FIGURE 3: PROPOSED PEDESTRIAN NETWORK IMPROVEMENTS



BICYCLE NETWORK

The proposed bicycle overlays can be seen in Figure 4. The bicycle overlays were used to develop the proposed network improvements shown in Figure 5. As shown, the proposed network includes a connected system of on-street bike lanes, protected and separated bike lanes, shared-use paths and street crossings. See Table 1 later in this document for more detail on the proposed improvements.

FIGURE 4: PROPOSED BICYCLE OVERLAYS

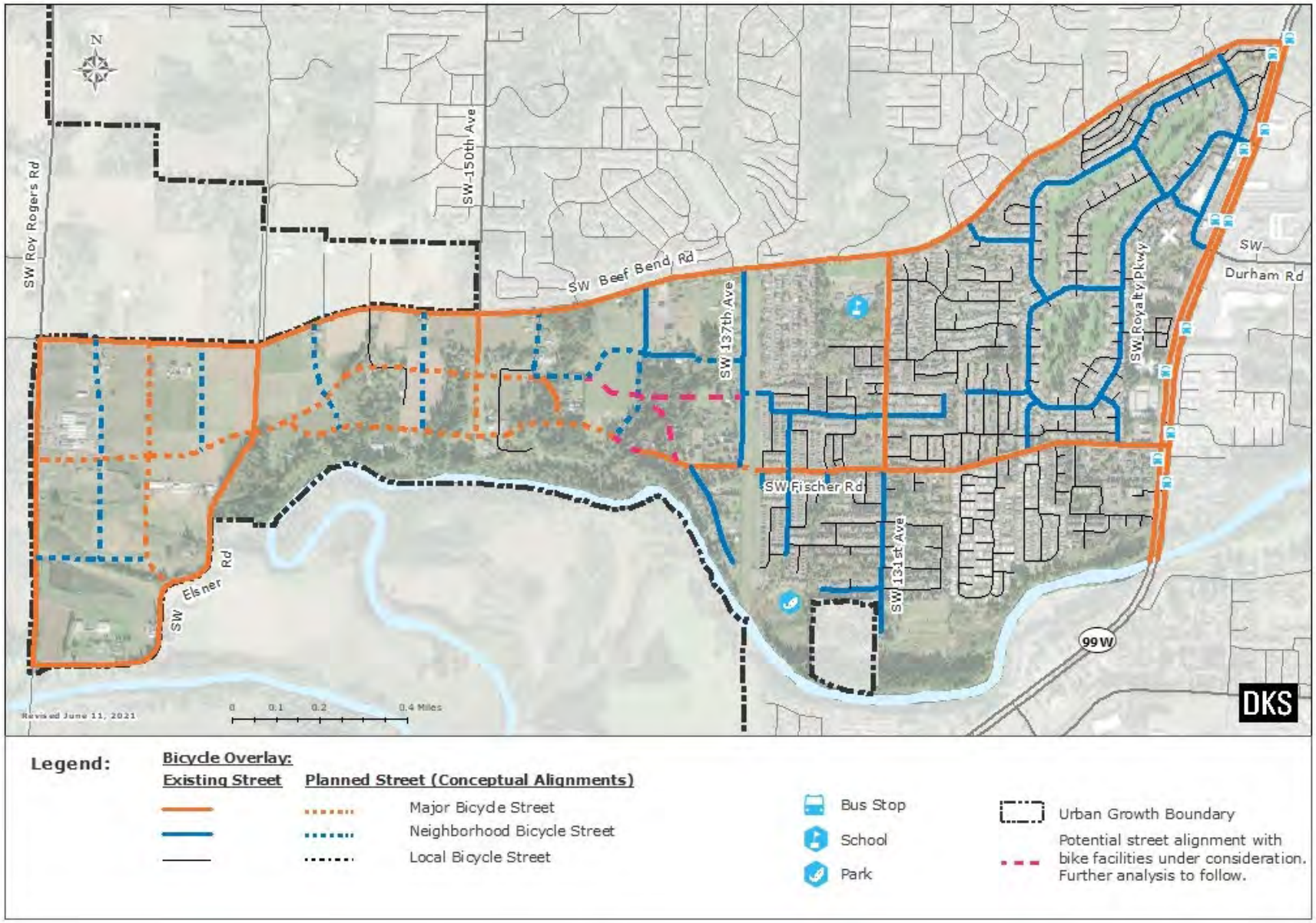
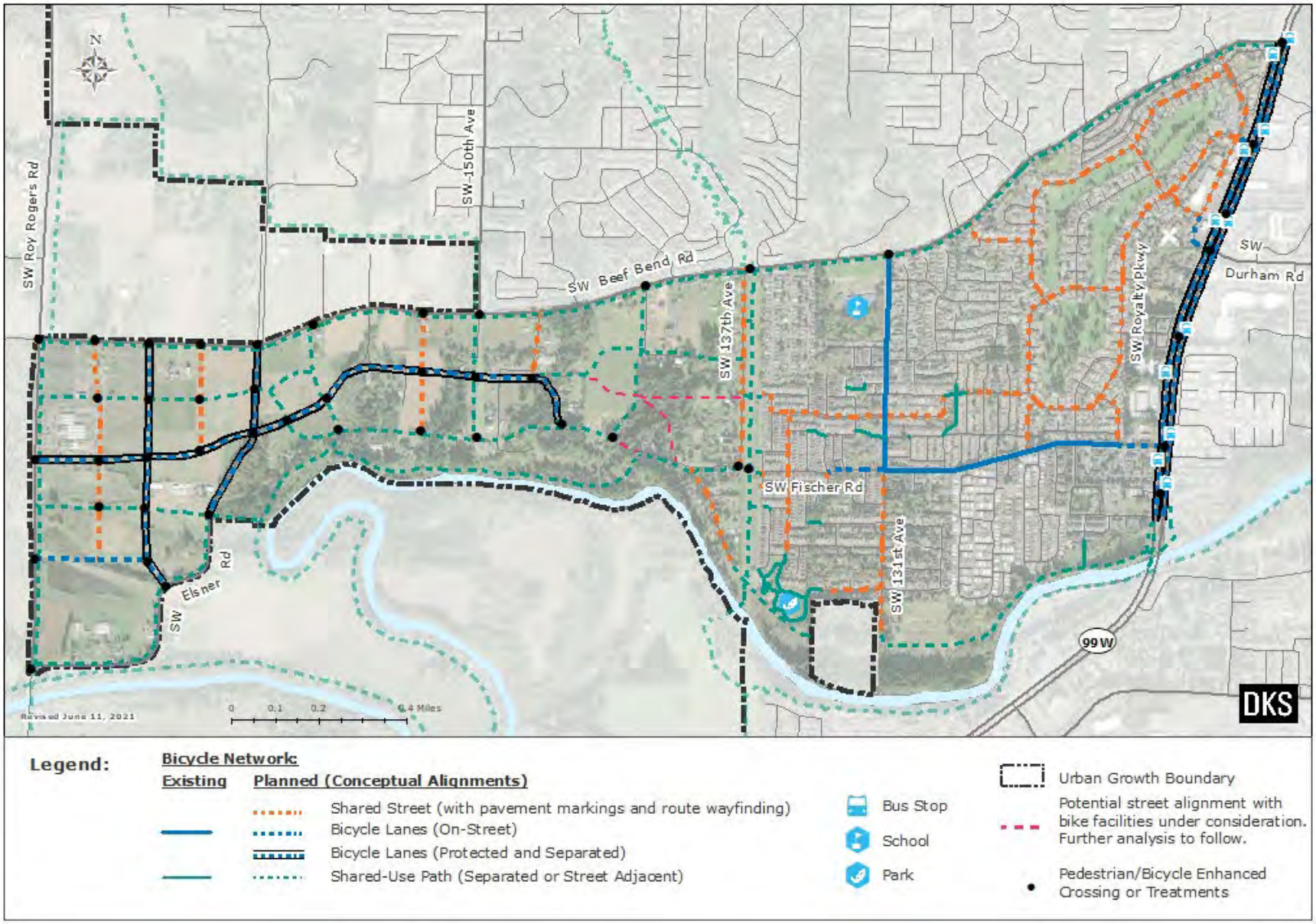


FIGURE 5: PROPOSED BICYCLE NETWORK IMPROVEMENTS



TRANSIT NETWORK

A potential approach to the expanding transit circulation into Kingston Terrace is shown in Figure 6. The SW River Terrace Boulevard extension, SW Elsner Road, and the SW Fischer Road extension are recommended to serve as the 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. Within the King City Town Center and what would be a reasonable bus ride from Kingston Terrace, pedestrians and cyclists can access two TriMet fixed bus routes connecting the City with Downtown Portland, Tigard, and Sherwood. The King City Town Center is also a potential location for a transit hub for riders in the City. 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.

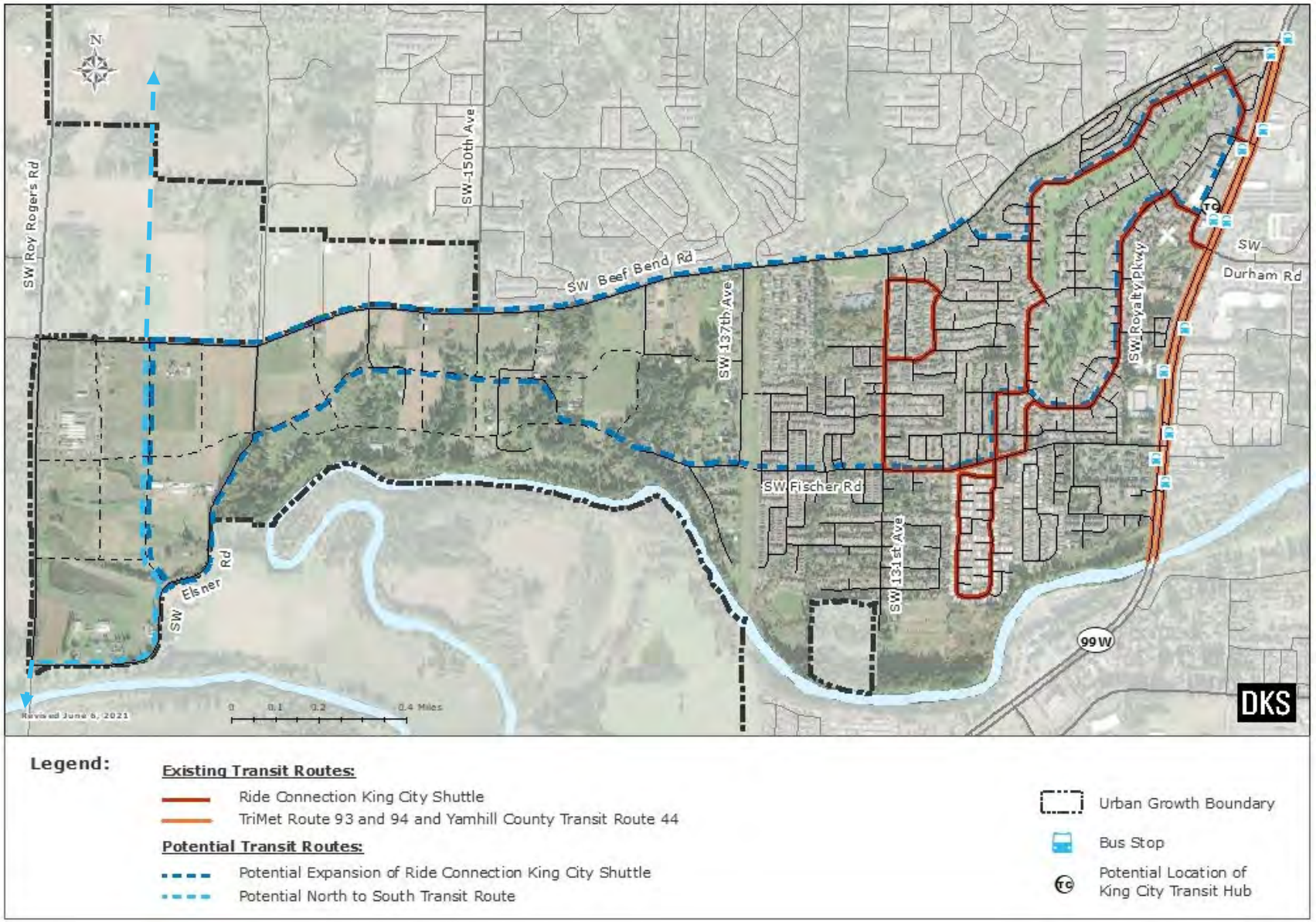
A few options to consider for bus service include:

- 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.
- Enhancing existing bus stops along OR 99W in King City.
- Improving pedestrian and bicycle access to existing bus stops along OR 99W, including new and/or improved street crossings.

Proposed streets will provide adequate right-of-way to support the King City Shuttle bus access via the suggested routes. On-street parking will need to be 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 the potential route.

Kingston Terrace will be served by high quality pedestrian/bicycle connections. The fine grain of blocks will be oriented towards pedestrian and bicycle users, with active and inviting public walkways and shared-use paths proposed to connect neighborhoods to the Tualatin River and areas to the east in King City. It is the intended that the area will also include a supportive mix of uses and amenities for encouraging transit ridership. A key strategy of the King City TSP is to extend bus service and ensure necessary infrastructure (e.g., shelter, signage) is implemented to support ridership.

FIGURE 6: POTENTIAL TRANSIT ROUTES



DRAFT ASPIRATIONAL PROJECT LIST

The draft Aspirational Project list is included in Table 1 and shown on Figure 7. Projects are grouped by corridors, with each project summarized under the segment.

TABLE 1: DRAFT ASPIRATIONAL PROJECT LIST

PROJECT ID		PROJECT DESCRIPTION
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 Overlay) and bicycle facilities (Major Bicycle Overlay). Cost assumes a shared-use path on the east side.
	1b	Improve the SW Elsner Road intersection. Cost assumes installation of a traffic signal.
2		**New Corridor (#2) between SW Roy Rogers Road and SW Elsner Road.**
	2a	Construct a Neighborhood Collector Street with pedestrian (Multimodal Area Overlay) and bicycle facilities (Neighborhood Bicycle Overlay). Cost assumes 2-lane street with parking, and sidewalks and on-street bike lanes on each side, with 3-lanes at the SW Roy Rogers Road intersection.
	2b	Improve the SW Roy Rogers Road intersection. Cost assumes installation of a traffic signal.
3		**New Corridor (#3) between SW Beef Bend Road and the planned Corridor 2.**
	3a	Construct a Neighborhood Collector Street with pedestrian (Multimodal Area Overlay) and bicycle facilities (Neighborhood Bicycle Overlay). 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.
	3b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.
	3c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.
4		**SW River Terrace Boulevard Corridor (#4) Extension between SW Beef Bend Road and SW Elsner Road.**
	4a	Construct a Collector Street with pedestrian (Multimodal Area Overlay) and bike facilities (Major Bicycle Overlay). 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.
	4b	Improve the SW Beef Bend Road intersection. Cost assumes installation of a traffic signal.
	4c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.
	4d	Improve the planned Corridor 2 intersection. Cost assumes installation of a mini roundabout.
	4e	Improve the SW Elsner Road intersection. Cost assumes installation of a roundabout.
5		**New Corridor (#5) between SW Beef Bend Road and the SW Fischer Road extension.**
	5a	Construct a Neighborhood Collector Street with pedestrian (Multimodal Area Overlay) and bicycle facilities (Neighborhood Bicycle Overlay). 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.
	5b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.
	5c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.

PROJECT ID		PROJECT DESCRIPTION
6		**SW Elsner Road Corridor (#6) Improvements from SW Roy Rogers Road to SW Beef Bend Road.**
	6a	Improve to a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from SW Roy Rogers Road to the planned Tualatin River Trail crossing. Cost assumes a 2-lane street with a shared-use path on the west side and left-turn lanes where needed.
	6b	Improve to a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from SW Beef Bend Road to the planned Tualatin River Trail crossing. Cost assumes a 2-lane street with sidewalks and a one-way cycle track on each side and left-turn lanes where needed.
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 Overlay) and bike facilities (Major Bicycle Overlay) from SW Roy Rogers Road to SW Elsner Road. Cost assumes a 2-lane street with parking, sidewalks, and a one-way cycle track on each side.
	7b	Extend/Improve SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from SW Elsner Road to the planned Corridor #9. Cost assumes a 2-lane street with parking, sidewalks, and a one-way cycle track on each side.
	7c	Extend SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from the planned Corridor #9 to the SW Myrtle Avenue extension. Cost assumes a 2-lane street, with a sidewalk on the north side and a shared-use path on the south side.
	7d	Improve SW River Lane to include pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from SW River Lane to SW 137th Avenue. Cost assumes a 2-lane street, with a shared-use path on the south side.
	7e	Extend SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) 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.
	7f	Improve SW King Lear Way to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay).
	7g	Reconfigure SW Fischer Road as a 2-lane street with bike lanes (Major Bicycle Overlay) on each side from SW King Lear Way to SW 131st Avenue.
	7h	Reconfigure SW Fischer Road as a 3-lane street with bike lanes (Major Bicycle Overlay) on each side from SW Queen Anne Avenue to OR 99W.
	7i	Improve the SW Roy Rogers Road intersection. Cost assumes installation of a traffic signal.
	7j	Improve the SW Elsner Road intersection. Cost assumes installation of a roundabout.
	7k	Improve the SW 150th Avenue intersection. Cost assumes installation of a mini roundabout.
	7l	Improve the SW 137th Avenue intersection. Cost assumes installation of mini roundabout.
8		**SW Beef Bend Road Corridor (#8) Improvements from SW Roy Rogers Road to OR 99W.**

PROJECT ID		PROJECT DESCRIPTION
	8a	Widen to three lanes (Arterial Street), with pedestrian (Major Pedestrian Overlay) and bicycle facilities (Major Bicycle Overlay) 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.
	8b	Widen to three lanes (Arterial Street), complete sidewalk gaps (Major Pedestrian Overlay), and add separated/protected bike facilities (Major Bicycle Overlay) 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.
	8c	Add separated/protected bike facilities (Major Bicycle Overlay) and complete sidewalk gaps (Major Pedestrian Overlay) between SW 131st Avenue and OR 99W. Cost assumes a shared-use path on the south side.
	8d	Improve the SW Elsner Road intersection. Cost assumes installation of a traffic signal.
	8e	Improve the SW 150th Avenue intersection. Cost assumes installation of a traffic signal.
	8f	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.
9		**New Corridor (#9) between SW Fischer Road extension (near SW Elsner Road) to the SW Fischer Road extension (near SW Myrtle Avenue).**
	9a	Construct a Neighborhood Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay). Cost assumes a 2-lane street with parking, a sidewalk on the north side and a shared-use path on the south side.
	9b	Improve the SW Fischer Road extension intersection (west intersection). Cost assumes installation of a mini roundabout.
	9c	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #10 intersection.
	9d	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #11 intersection.
	9e	Improve the SW 150th Avenue intersection. Cost assumes installation of a mini roundabout.
	9f	Improve the SW Fischer Road extension intersection (east intersection). Cost assumes installation of a mini roundabout.
10		**New Corridor (#10) between SW Beef Bend Road and the planned Corridor #9.**
	10a	Construct a Neighborhood Collector Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay). Cost assumes a 2-lane street with parking, a shared-use path on the west side, and a sidewalk on the east side.
	10b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.
	10c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.
11		**New Corridor (#11) between SW Beef Bend Road and the planned Corridor #9.**
	11a	Construct a Neighborhood Collector Street 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.

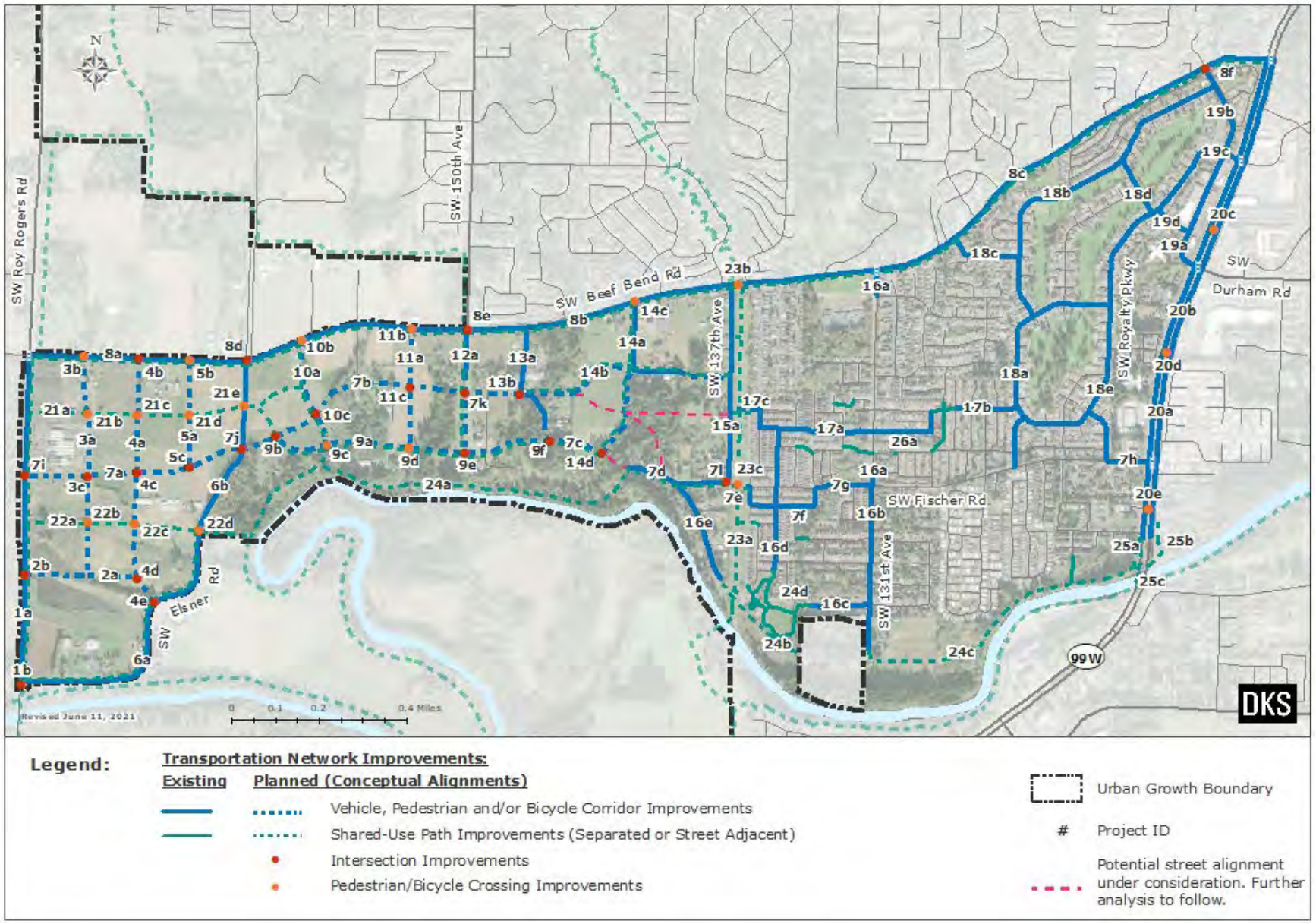
PROJECT ID		PROJECT DESCRIPTION
	11b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.
	11c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.
12		**SW 150th Avenue Corridor (#12) Improvements from SW Beef Bend Road to the planned Corridor #9.**
	12a	Construct a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay). 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.
13		**SW 147th Avenue Corridor (#13) Improvements from SW Beef Bend Road to the SW Fischer Road extension.**
	13a	Construct a Neighborhood Collector Street 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.
	13b	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.
14		**SW Myrtle Avenue Corridor (#14) Extension/Improvements from SW Beef Bend Road to the SW Fischer Road extension and SW 147th Avenue to SW 137th Avenue.**
	14a	Construct a Neighborhood Collector Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay) from SW Beef Bend Road to the SW Fischer Road extension. Cost assumes a 2-lane street with parking, a shared-use path on the west side, with 3-lanes provided at the SW Beef Bend intersection.
	14b	Construct a Neighborhood Collector Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay) from SW 147th Avenue to SW 137th Avenue. Cost assumes a 2-lane street, a shared-use path on the north side and a sidewalk on the south side
	14c	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.
	14d	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.
15		**SW 137th Avenue Corridor (#15) Improvements from SW Beef Bend Road to the SW Fischer Road extension.**
	15a	Improve to include pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay). 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.
16		**SW 131st Avenue/SW Bedford Street/SW 136th Avenue/SW King Lear Way/SW River Lane Bike Route Improvements.**
	16a	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.
	16b	Improve SW 131st Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) south of SW Fischer Road.
	16c	Improve SW Bedford Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) west of SW 131st Street.
	16d	Improve SW 136th Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay).

PROJECT ID		PROJECT DESCRIPTION
	16e	Improve SW River Lane to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) south of SW Watson.
17		**SW Cordelia Terrace to SW King Charles Avenue Improvements.**
	17a	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 Overlay) between SW Cordelia Terrace and SW Matador Lane.
	17b	Improve SW Morocco Drive to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Matador Lane and SW King Charles Avenue.
	17c	Extend SW Capulet Lane as a Local Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay). Cost assumes a 2-lane street, with a sidewalk on the north side and a shared-use path on the south side.
18		**SW Fischer Road to SW Beef Bend Road Bike Route Improvements.**
	18a	Improve SW 124th Avenue and SW King Charles Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Fischer Road and SW Royalty Parkway.
	18b	Improve SW King George Drive to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW King Charles Avenue and SW 116th Avenue.
	18c	Improve SW Prince Albert Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW King George Drive and SW Beef Bend Road.
	18d	Improve SW Queen Elizabeth Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW King George Drive and SW Royalty Parkway.
	18e	Improve SW Royalty Parkway and SW Queen Anne Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Queen Elizabeth Street and SW Fischer Road.
19		**King City Town Center Improvements from SW Beef Bend Road to OR 99W.**
	19a	Improve SW 116th Avenue to enhance the streetscape, improve ADA compliance and widen existing sidewalks, complete sidewalk gaps (Multimodal Area Overlay) and reconfigure to include bike lanes (Neighborhood Bicycle Overlay) between SW Queen Elizabeth Street and OR 99W.
	19b	Improve SW 116th Avenue to enhance the streetscape and widen existing sidewalks, improve ADA compliance, complete sidewalk gaps (Multimodal Area Overlay) and include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Queen Elizabeth Street and SW Beef Bend Road. Note a portion of this street segment is currently private.
	19c	Improve SW Royalty Parkway to include shared lane markings and route wayfinding for bikes between OR 99W and SW Queen Elizabeth Street.
	19d	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.
20		**OR 99W Corridor Plan from SW Beef Bend Road to the Tualatin River.**

PROJECT ID		PROJECT DESCRIPTION
	20a	Study the OR 99W Corridor through King City, along with 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 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.
	20b	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.
	20c	Provide an enhanced pedestrian/bicycle crossing between SW 116th Avenue and SW Royalty Parkway, the TriMet bus stops.
	20d	Provide an enhanced pedestrian/bicycle crossing between SW 116th Avenue and SW Fischer Road, near the SW King James Place intersection.
	20e	Provide an enhanced pedestrian/bicycle crossing between SW Fischer Road and SW Versailles Road, near the fire signal.
21		**North Kingston Terrace Trail from SW Roy Rogers Road to the planned South Kingston Terrace Trail.**
	21a	Construct a shared-use path for pedestrian and bicycle travel.
	21b	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #3 intersection.
	21c	Provide an enhanced pedestrian/bicycle crossing at the planned SW River Terrace Boulevard intersection.
	21d	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #5 intersection.
	21e	Provide an enhanced pedestrian/bicycle crossing at the SW Elsner Road intersection.
22		**South Kingston Terrace Trail from SW Roy Rogers Road to the planned North Kingston Terrace Trail.**
	22a	Construct a shared-use path for pedestrian and bicycle travel.
	22b	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #3 intersection.
	22c	Provide an enhanced pedestrian/bicycle crossing at the planned SW River Terrace Boulevard intersection.
	22d	Provide an enhanced pedestrian/bicycle crossing at the SW Elsner Road intersection.
23		**Westside Trail from SW Beef Bend Road to south side of Tualatin River.**
	23a	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.
	23b	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.
	23c	Install an enhanced pedestrian/bicycle crossing at the SW Fischer Road intersection.

PROJECT ID		PROJECT DESCRIPTION
24		**Tualatin River Trail from SW River Lane to King City Community Park and SW 131st Avenue to OR 99W.**
	24a	Construct a shared-use path for pedestrian and bicycle travel from the planned South Kingston Terrace Trail to SW River Lane.
	24b	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).
	24c	Construct a shared-use path for pedestrian and bicycle travel from OR 99W to SW 131st Avenue.
	24d	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.
25		**OR 99W Connector Trail from OR 99W to south side of Tualatin River.**
	25a	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.
	25b	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.
	25c	Construct a pedestrian and bicycle crossing of the Tualatin River along the west side of OR 99W.
26		**New Shared-Use Path from SW Fitzwilliam Court to SW King Richard Drive.**
	26a	Construct a shared-use path for pedestrian and bicycle travel.

FIGURE 7: DRAFT ASPIRATIONAL PROJECTS



APPENDIX N. FINANCIAL FEASIBILITY REPORT

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

TRANSPORTATION FINANCIAL FEASIBILITY ASSESSMENT REPORT

DATE: June 8, 2021

TO: Project Management Team

FROM: Carl Springer, Kevin Chewuk and Kayla Fleskes | DKS

SUBJECT: King City Transportation System Plan
Transportation Financial Feasibility Assessment Report
(Task 7.3; Deliverable 7C)

#20020-002

This memorandum details the transportation funding that can reasonably be expected to be available through 2040. The funding assumptions will help prioritize the investments the City can make in the transportation system and will be utilized to develop reasonable budgeting assumptions when selecting a set of transportation improvements to meet identified needs through 2040.

CURRENT FUNDING SOURCES

The City uses a few primary funds for transportation, including the State Highway Trust, County Transportation Development Tax and Vehicle Registration Fees in addition to other miscellaneous funds.

- **State Highway Trust Fund**

  The State Highway Trust Fund makes distributions from the state motor vehicle fuel tax, vehicle registration and title fees, driver license fees and truck weight-mile taxes. Cities and counties receive a share of State Highway Trust Fund monies, and by statute may use the money for any road-related purpose, including walking, biking, bridge, street, signal, and safety improvements.

- **Transportation Development Tax**

  The Transportation Development Tax (TDT) is a one-time tax assessed on all new development and some redevelopment occurring within Washington County. In King City, the only roadways currently authorized to receive TDT funds include 131st Avenue, Beef Bend Road, and Fischer Road, while SW Roy Rogers Road is eligible in the Kingston Terrace area. The TDT list may be modified in the future to include additional projects from the TSP, particularly in the Kingston Terrace area.

- **Vehicle Registration Fees**

  Washington County established a $30 per year vehicle registration fee (VRF) for new renewals/registrations starting July 2018 to offset maintenance funding shortfalls and improve transportation safety. Forty percent of the VRF is allocated to cities within the county, which equates to approximately $90,000 annually for King City[1].

REVENUES AND EXPENDITURES

The following sections detail the revenue and expenditure forecasts.

REVENUES

Annual revenues include $350,000 from the State Highway Trust Fund, $1.6 million from the County TDT and $115,000 from other miscellaneous revenue sources including grants, service charges and earned interest (see Table 1). In addition, the recently adopted County VRF is anticipated to provide approximately $90,000 annually for King City.

Assuming, as a conservative estimate[2], the same levels of funding occur in the future, King City can expect to receive approximately $10.5 million in State Highway Trust Fund, County VRF, and miscellaneous fee revenue through 2040. In addition, the County TDT is expected to provide approximately $30.0 million in revenue through 2040.

EXPENDITURES

Expenditures include personnel services, roadway striping, traffic control, vegetation trimming, street sweeping, maintenance, and roadway engineering. The City estimates that it spends approximately $360,000 per year (or $6.8 million through 2040) to maintain and operate its streets. In addition, approximately $30,000 per year (or $570,000 through 2040) is needed to administer the TDT.

This includes an escalation rate of 4.5 percent[3] on the current expenditures to account for rising costs and ensure that needed roadway maintenance and repair work will not be deferred through 2040. Deferring necessary repair and preservation means spending much more to fix the same streets later, and repair costs rise exponentially as streets are left unmaintained. Every $1 spent to keep a street in good condition avoids $6 to $14 needed later to rebuild the same street once it has deteriorated significantly[4].

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[1] https://www.co.washington.or.us/LUT/TransportationFunding/2016-vehicle-registration-fee.cfm

[2] This assumes the population growth rate in King City will be roughly the same as the cost inflation rate, therefore, maintaining existing revenues through 2040.

[3] Escalation rate of 4.5 percent based on the Construction Cost Index.

[4] Smart Growth America, American Association of State Highway Officials (AASHTO)

Heavy truck traffic and wet weather comprise two of the most critical factors in pavement deterioration[5]. Heavy trucks (particularly those hauling gravel, logs, construction materials, overseas containers, agricultural products, garbage) flex the pavement and create spaces underneath. Wet weather, with cracked pavement or poor drainage, can lead to water undermining pavement.

FUNDING SUMMARY

Through 2040, the City is expected to have approximately $3.7 million for general street improvement needs (e.g., construction of new facilities) with an additional $29.8 million in TDT revenue specifically for projects on 131st Avenue, Beef Bend Road, and Fischer Road (or other projects that may be added to the TDT list in the future), as shown in Table 1.

TABLE 1: KING CITY TRANSPORTATION REVENUE AND EXPENDITURES

STREET OPERATIONS FUNDS	AVERAGE ANNUAL AMOUNT (2021)	ESTIMATED AMOUNT THROUGH 2040
REVENUES		
STATE HIGHWAY TRUST FUND	$350,000	$6,650,000
VEHICLE REGISTRATION FEES	$90,000	$1,710,000
MISCELLANEOUS REVENUE AND FEES	$115,000	$2,185,000
TOTAL STREET OPERATIONS REVENUES	**$555,000**	**$10,545,000**
EXPENDITURES		
PERSONNEL SERVICES	$60,000	$1,140,000
MATERIALS AND SERVICES	$100,000	$1,900,000
CAPITAL OUTLAY/MAINTENANCE	$200,000	$3,800,000
TOTAL STREET OPERATIONS EXPENDITURES	**$360,000**	**$6,840,000**
FUNDING SUMMARY (REVENUE–EXPENDITURES)	**$195,000**	**$3,705,000**
TRANSPORTATION DEVELOPOMENT TAX [A]		
REVENUE	$1,600,000	$30,400,000
EXPENDITURE	$30,000	$570,000
FUNDING SUMMARY (REVENUE-EXEPNDITURES)	**$1,570,000**	**$29,830,000**

[A] Transportation development tax revenues and expenditures listed separately as only 131st Avenue, Beef Bend Road, and Fischer Road are currently eligible for funds. The TDT list may be modified in the future to include additional projects from the TSP, particularly in the Kingston Terrace area.

[5] Long-Term Pavement Performance, U.S. Department of Transportation, Federal Highway Administration

POTENTIAL ADDITIONAL FUNDING SOURCES

New transportation funding options include local taxes, assessments and charges, and state and federal appropriations, grants, and loans. Factors that constrain these resources, include the willingness of local leadership and the electorate to burden residents and businesses with taxes and fees; the portion of available local funds dedicated or diverted to transportation issues from other competing city programs; and the availability of State and Federal funds. The City should consider all opportunities for providing or enhancing funding for the transportation improvements included in the TSP. It is also worth noting that many of the TSP projects will be implemented with partner agencies (i.e., Metro, ODOT, Washington County, Tigard), and some will also likely be built in coordination with land use actions and future development.

Counties and cities have used the following sources to fund the capital and maintenance aspects of their transportation programs. As described below and summarized in Table 2, they may help to address existing or new needs identified in King City's TSP.

TRANSPORTATION SYSTEM DEVELOPMENT CHARGE

System development charges (SDC) are fees collected from new development and used as a funding source for all capacity adding projects for the transportation system. The fee is based on the proposed land use and size and is proportional to each land use's potential PM peak hour vehicle trip generation.

The City may wish to establish an SDC rate for transportation facilities based on the transportation needs established in the TSP. As an example, 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.

TRANSPORTATION UTILITY FEE

A transportation utility fee is a recurring monthly charge that could be paid by all residences and businesses within the City. The City can base the fee on the estimated number of trips a particular land use generates or as a flat fee per residence or business. This fee is typically collected through regular utility billing; however, it could be collected as a separate stand-alone bill. Existing law places no express restrictions on the use of transportation utility fee funds, other than the restrictions that normally apply to the use of government funds. Some local agencies utilize the revenue for any transportation related project, including construction, improvements and repairs; however, many choose self-imposed restrictions or parameters on the use of the funds.

For every $1.00 per month in charged rates for residential units and $0.01 per month per 1,000 square feet of non-residential uses in the City, the City could expect to collect an average of $100,000 annually or $1.9 million through 2040. Oregon City, for example, charges a fee ranging

from $4.50 to $11 per month for single family residential units, $3.15 to $7.70 per month for multi-family units, and between $0.154 and $19.20 (based on type and size of the land use) per month for non-residential uses[6].

LOCAL FUEL TAX

To estimate the potential revenue generated from implementing a local fuel tax in King City, the monthly gallons of fuel utilized per capita in Tigard and Washington County was obtained. Using an average rate from the two jurisdictions, King City fuel distributors could collect revenue on approximately 540,000 gallons of fuel per month. A local fuel tax of three cents per gallon year could generate an additional $190,000 annually or $3.6 million through 2040. Note that this simplified calculation does not assume improved fuel economy of the vehicle fleet (which can cause falling fuel tax revenues) and is only based on the current King City population.

PROPERTY TAX LEVY

Property tax levies are another funding option available to cities. Voter approval is required to enact a local option tax, and the tax may be imposed for up to five years at a time, at which time a city will need voter approval if it desires to renew the levy. The only exception is that a levy for a specific capital project may be imposed for the expected useful life of the capital project up to a maximum of 10 years. Assuming a rate of $0.20 per $1,000 in assessed value as a five-year levy for the City, the City could expect to collect around $550,000 over five years.

LOCAL IMPROVEMENT DISTRICTS

Local Improvement Districts (LIDs) can fund capital transportation projects that benefit a specific group of property owners. LIDs require owner/voter approval and a specific project definition. Assessments against benefiting properties pay for improvements. LIDs can supply match for other funds where a project has system wide benefit beyond benefiting the adjacent properties. LIDs are often used for sidewalks and pedestrian amenities that provide local benefit to residents along the subject street. Property owners are assessed a proportional share of the cost at the end of the project, or the City may elect to allow for installment payments with interest.

DEBT FINANCING

While not a direct funding source, debt financing is another funding method. Through debt financing, available funds can be leveraged, and the cost can be spread over the project's useful life. Though interest costs are incurred, the use of debt financing can serve not only as a practical means of funding major improvements, but it is also viewed as an equitable funding source for

[6] https://www.orcity.org/publicworks/transporation-utility-fee

larger projects because it spreads the burden of repayment over existing and future customers who will benefit from the projects. One caution in relying on debt service is that a funding source must still be identified to fulfill annual repayment obligations. Three methods of debt financing are listed below:

- General Obligation (GO) Bonds – Subject to voter approval, a city can issue GO bonds to debt finance capital improvement projects. GO bonds are backed by the increased taxing authority of the City, and the annual principal and interest repayment is funded through a new, voter-approved assessment on property throughout the City (i.e., a property tax increase). Depending on the critical nature of projects identified in the TSP and the willingness of the electorate to accept increased taxation for transportation improvements, voter approved GO bonds may be a feasible funding option for specific projects. Proceeds may not be used for ongoing maintenance.
- Limited Tax General Obligation (LTGO) Bonds – Limited Tax General Obligation (LTGO) Bonds are similar to General Obligation (GO) bonds; however, they do not have to be voted on by constituents. A city pledges its general revenues to bondholders along with the utility revenues. LTGO Bonds do not require reserves or coverage (such as Revenue bonds) and does not require a vote.
- Revenue Bonds – Revenue bonds are debt instruments secured by rate revenue. For a city to issue revenue bonds for transportation projects, it would need to identify a stable source of ongoing rate funding. Interest costs for revenue bonds are slightly higher than for general obligation bonds due to the perceived stability offered by the “full faith and credit” of a jurisdiction.

GRANT OPPORTUNITIES

Grant opportunities could also provide additional funding for the City. Several major grant opportunities are listed below.

ODOT STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP) FUNDING

ODOT has modified the process for selecting projects that receive STIP funding to allow local agencies to receive funding for projects off the state system. Projects that enhance system connectivity and improve multi-modal travel options are the focus. The TSP prepares the City to apply for STIP funding.

ODOT ALL ROADS TRANSPORTATION SAFETY PROGRAM (ARTS) FUNDING

The All Roads Transportation Safety Program (ARTS) is a statewide safety program that addresses safety for all public roads in the state of Oregon. The program is a competitive program with a focus on implementation of cost-effective and proven safety countermeasures. It is supported through federal and state funds based on the federal Highway Safety Improvement Program. HSIP adopts a data-driven approach that uses crash data, risk factors, and other supported methods to identify the best possible locations to achieve the greatest benefits. The first and second round of ARTS selected projects scheduled for delivery in years 2017-2021 and 2022-2024. The third round of the ARTS project selection will begin in the fall of 2020 and extend through the spring of 2021. During this period, projects will be selected for the Statewide Transportation Improvement Program (STIP) and delivered in years 2025 through 2027. During the period of 2025 through 2027,

approximately $30 million per year will likely be available for the ARTS program. Funds will be allocated to each ODOT region based on the proportion of fatalities and serious injuries that occurred within the region during the last five years. ODOT Region 1 (where King City is located) allocations during the last round of ARTS funding was approximately 32 percent, which would amount to around $9.6 million available for Region 1 if that were to remain the case during this round.

MULTIMODAL ACTIVE TRANSPORTATION FUND

In 2017, the Oregon Legislature passed Keep Oregon Moving (House Bill 2017), which includes changes to the existing Connect Oregon Grant Fund program that necessitates aligning the implementing rules with the new statutes. The legislation bifurcated the program into two new parts, with a separate allocation of 7 percent for multimodal active transportation projects.

In 2019, the Oregon Legislature passed House Bill 2592 to clarify and amend House Bill 2017. The legislation establishes the Multimodal Active Transportation (MAT) Fund for bicycle and pedestrian projects, consisting of 7 percent of the Connect Oregon Fund plus revenues from Oregon's bicycle excise tax. The MAT is a separate grant program from Connect Oregon. In addition to state MAT funding, federal funding is provided through Transportation Alternative (TA) funds. The state of Oregon restricts the use of TA funds to planning and design expenses, development, construction, reconstruction, major resurfacing, or other capital improvements of multiuse paths, bicycle paths and footpaths.

The Oregon Community Paths (OCP) program combines funds from the Multimodal Active Transportation Fund (formerly Connect Oregon Bike/Ped), Oregon Bicycle Excise Tax, and federal Transportation Alternatives Program to fund grants for project development, construction, reconstruction, major resurfacing or other improvements of multiuse paths that improve access and safety for people walking and bicycling. The Community Path Fund will start awarding grants in 2021, with amount up to $750,000 for planning and design, and up to $4 million for construction.

SAFE ROUTES TO SCHOOL PROGRAMS

Safe Routes to School refers to efforts that improve, educate, or encourage children safely walking (by foot or mobility device) or biking to school. ODOT has two main types of Safe Routes to School programs: infrastructure and non-infrastructure. Infrastructure programs focus on making sure safe walking and biking routes exist through investments in crossings, sidewalks, bike lanes, flashing beacons, and the like. Non-infrastructure programs focus on education and outreach to assure awareness and safe use of walking and biking routes. ODOT manages statewide funding competitions for both infrastructure and non-infrastructure programs at the annual levels of $10 million (increasing to $15 million in 2023) and $300,000 respectively.

TABLE 2: POTENTIAL FUNDING OPTIONS

FUNDING OPTION	ALLOWED USE OF FUNDS	ACTION REQUIRED TO IMPLEMENT	EXAMPLE CHARGE	POTENTIAL ADDITIONAL ANNUAL REVENUE
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
LOCAL IMPROVEMENT DISTRICTS	Capital improvements	Affected Property Owners	n/a	n/a
DEBT FINANCING	Capital improvements	Varies	n/a	n/a
GRANT OPPORTUNITIES	Capital improvements or maintenance	Varies	n/a	n/a

APPENDIX O. FINANCIALLY CONSTRAINED CAPITAL PROJECT LIST AND NETWORK EVALUATION

DKS 720 SW WASHINGTON STREET, SUITE 500, PORTLAND, OR 97205 • 503.243.3500 • DKSASSOCIATES.COM

FINANCIALLY CONSTRAINED CAPITAL PROJECT LIST AND NETWORK EVALUATION

DATE: August 16, 2021

TO: Project Management Team

FROM: Carl Springer and Kevin Chewuk | DKS Associates

SUBJECT: King City Transportation System Plan and Land Use Refinement
Financially Constrained Capital Project List and Network Evaluation
(Deliverable 7D and 7E) #20020-002

This document summarizes how the Financially Constrained Plan was developed, including a summary of the prioritization process, a detailed listing of the Financially Constrained and Long-Term Projects, and an evaluation of the transportation network alternatives.

ASPIRATIONAL PROJECTS

Aspirational projects include all identified projects for improving King City's transportation system, regardless of their priority or their likelihood to be funded. 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.

The full aspirational list includes 102 projects totaling nearly $180 million in total investments (see Table 1). For the purposes of initial cost estimates, project design elements are identified in this document, 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 and/or other partner agency approval. The Aspirational projects were assigned to one of several categories:

- **Multi-Modal Street Improvement** – projects to improve or construct new multi-modal streets throughout the City, each with facilities for motorists, pedestrians and bicyclists. A total of 23 projects were identified, that, as originally proposed, would cost an estimated $123 million to complete.
- **Intersection Improvement** – projects to improve safety and mobility at intersections throughout the City. A total of 22 projects were identified to construct new or improve existing intersections that, as originally proposed, would cost an estimated $15 million to complete.
- **Pedestrian/ Bike Improvement** – 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 52 pedestrian and bicycle projects were identified that, as originally proposed, would cost an estimated $36 million to complete.

- **Transit Enhancement** – projects to enhance the quality and convenience for transit passengers. A total of three transit projects, as originally proposed, would cost an estimated $6 million.
- **Demand/ System Management** – projects to encourage more efficient usage of the transportation system. A total of two projects, as originally proposed, would cost an estimated $150,000.

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. It is important to note that these funding assumptions do not obligate any agency to commit to these projects.

The TSP will present the high priority City projects that are constrained to a level of funding available for the next 20 years. In addition, the TSP will identify priority County projects that the City could use to inform its decisions for applying Washington County Transportation Development Tax (TDT) revenues. 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 city, especially 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.

As detailed in the Transportation Financial Feasibility Assessment Report (Deliverable 7C), the City can expect to have around $3.7 million to spend on locally funded improvements over the next 20 years. About $10 million of the total project costs are assumed to be City responsibility (see Table 1). The TSP has identified about $68 million worth of needed investments along County 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 $33 million for other partner agencies, and around $69 million funded through private development.

TABLE 1: ASSUMED ASPIRATIONAL PROJECT FUNDING

FUNDING SOURCE	TOTAL FUNDING NEED	EXPECTED FUNDING AVAILABLE
King City	$10,122,500	$3,705,000
Washington County	$68,290,000	$29,830,000
Partner Agency	$35,722,500	N/A
Private Development	$70,115,000	N/A
Total	**$184,250,000**	**$33,535,000**

PRIORITIZING INVESTMENTS

Unless the City expands its funding options, most of the Aspirational projects identified are not reasonably likely to be funded by 2040 (as shown in Table 1). For this reason, projects from the Aspirational list were divided into two improvement packages, referred to as Financially Constrained and Long-Term.

- **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 and $29.8 million from the County TDT. The projects included in the Financially Constrained list (shown in Table 2) 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.

- **Long-Term projects** are those remaining from the Aspirational list that likely will not include funding by 2040. These projects (shown in Table 2) were recommended within the following priority horizons, based on the project evaluation score:
    - Long-term Tier 1: Projects with the highest priority for implementation beyond the projects included on the Financially Constrained list, should additional funding become available.
    - Long-term Tier 2: Projects with the next highest priority for implementation beyond the projects included on the Financially Constrained list, should additional funding become available.
    - Long-term Tier 3: The last phase of projects to be implemented, should additional funding become available.

A process for evaluating and ranking projects was utilized to help identify which transportation investments would be most valued by the community. Measurable evaluation criteria associated with each TSP goal were used to prioritize individual transportation projects in King City (see

Deliverable 5E: Project Prioritization Framework). The prioritization score was calculated for each project and used to develop a Financially Constrained and Long-Term list of projects. Projects deemed to contribute more towards achieving the transportation goals of King City ranked higher and were assigned a higher priority for implementation.

Although the TSP identifies priorities for the investments, the City does not have to implement the projects in that order. Future circumstances could allow or require the City to fund projects not on the Financially Constrained project list to address an unanticipated transportation need or take advantage of opportunities as they arise.

TABLE 2: FINANCIALLY CONSTRAINED AND LONG-TERM PROJECTS

PROJECT ID		PROJECT DESCRIPTION	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2021 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 Overlay) and bicycle facilities (Major Bicycle Overlay). Cost assumes a shared-use path on the east side.	Washington County	Metro	County Transportation Development Tax/ Regional Funds	$16,050,000	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	$1,200,000	Medium	Unconstrained	Unconstrained Tier 2
2		**New Corridor (#2) between SW Roy Rogers Road and SW Elsner Road.**							
	2a	Construct a Neighborhood Collector Street with pedestrian (Multimodal Area Overlay) and bicycle facilities (Neighborhood Bicycle Overlay). Cost assumes 2-lane street with parking, and sidewalks and on-street bike lanes on each side, with 3-lanes at the SW Roy Rogers Road intersection.	King City		New Development	$3,500,000	Low	Unconstrained	Unconstrained Tier 3
	2b	Improve the SW Roy Rogers Road intersection. Cost assumes installation of a traffic signal.	Washington County	King City	County Transportation Development Tax / New Development	$1,200,000	Low	Unconstrained	Unconstrained Tier 3
3		**New Corridor (#3) between SW Beef Bend Road and the planned Corridor 2.**							
	3a	Construct a Neighborhood Collector Street with pedestrian (Multimodal Area Overlay) and bicycle facilities (Neighborhood Bicycle Overlay). 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	$5,475,000	Low	Unconstrained	Unconstrained Tier 3
	3b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County / Tigard	New Development	$75,000	Medium	Unconstrained	Unconstrained Tier 2
	3c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Medium	Unconstrained	Unconstrained Tier 3
4		**SW River Terrace Boulevard Corridor (#4) Extension between SW Beef Bend Road and SW Elsner Road.**							
	4a	Construct a Collector Street with pedestrian (Multimodal Area Overlay) and bike facilities (Major Bicycle Overlay). 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	$7,550,000	Medium	Unconstrained	Unconstrained Tier 2
	4b	Improve the SW Beef Bend Road intersection. Cost assumes installation of a traffic signal.	Washington County	King City / Tigard	County Transportation Development Tax / New Development	$1,200,000	High	Unconstrained	Unconstrained Tier 1
	4c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$400,000	High	Unconstrained	Unconstrained Tier 1
	4d	Improve the planned Corridor 2 intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Medium	Unconstrained	Unconstrained Tier 3

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	4e	Improve the SW Elsner Road intersection. Cost assumes installation of a roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$1,975,000	Medium	Unconstrained	Unconstrained Tier 2
5		**New Corridor (#5) between SW Beef Bend Road and the SW Fischer Road extension.**							
	5a	Construct a Neighborhood Collector Street with pedestrian (Multimodal Area Overlay) and bicycle facilities (Neighborhood Bicycle Overlay). 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	$2,650,000	Low	Unconstrained	Unconstrained Tier 3
	5b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County / Tigard	New Development	$75,000	Medium	Unconstrained	Unconstrained Tier 2
	5c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Medium	Unconstrained	Unconstrained Tier 3
6		**SW Elsner Road Corridor (#6) Improvements from SW Roy Rogers Road to SW Beef Bend Road.**							
	6a	Improve to a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from SW Roy Rogers Road to the planned Tualatin River Trail crossing. 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	$5,025,000	Medium	Unconstrained	Unconstrained Tier 2
	6b	Improve to a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from SW Beef Bend Road to the planned Tualatin River Trail crossing. 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	$3,375,000	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 Overlay) and bike facilities (Major Bicycle Overlay) from SW Roy Rogers Road to SW Elsner Road. 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	$6,950,000	Medium	Financially Constrained	Tier 1
	7b	Extend/Improve SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from SW Elsner Road to the planned Corridor #9. 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	$11,150,000	Medium	Financially Constrained	Tier 2
	7c	Extend SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) from the planned Corridor #9 to the SW Myrtle Avenue extension. 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	$1,150,000	Medium	Financially Constrained	Tier 2
	7d	Improve SW River Lane to include pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) 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	$1,050,000	Medium	Unconstrained	Unconstrained Tier 3
	7e	Extend SW Fischer Road as a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay) 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	$600,000	Medium	Financially Constrained	Tier 2
	7f	Improve SW King Lear Way to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay).	King City		City Funds	$25,000	Medium	Unconstrained	Unconstrained Tier 3

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	7g	Reconfigure SW Fischer Road as a 2-lane street with bike lanes (Major Bicycle Overlay) on each side from SW King Lear Way to SW 131st Avenue.	King City		City Funds	$25,000	Medium	Unconstrained	Unconstrained Tier 3
	7h	Reconfigure SW Fischer Road as a 3-lane street with bike lanes (Major Bicycle Overlay) on each side from SW Queen Anne Avenue to OR 99W.	King City	Washington County	City Funds	$225,000	High	Financially Constrained	Tier 1
	7i	Improve the SW Roy Rogers Road intersection. Cost assumes installation of a traffic signal.	Washington County	King City	County Transportation Development Tax / New Development	$1,200,000	High	Unconstrained	Unconstrained Tier 1
	7j	Improve the SW Elsner Road intersection. Cost assumes installation of a roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$1,975,000	Medium	Unconstrained	Unconstrained Tier 2
	7k	Improve the SW 150th Avenue intersection. Cost assumes installation of a mini roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$400,000	Medium	Unconstrained	Unconstrained Tier 2
	7l	Improve the SW 137th Avenue intersection. Cost assumes installation of mini roundabout.	Washington County	King City	County Transportation Development Tax / New Development	$400,000	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 Overlay) and bicycle facilities (Major Bicycle Overlay) 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	$11,425,000	High	Financially Constrained	Tier 2
	8b	Widen to three lanes (Arterial Street), complete sidewalk gaps (Major Pedestrian Overlay), and add separated/protected bike facilities (Major Bicycle Overlay) 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	$10,975,000	High	Unconstrained	Unconstrained Tier 1
	8c	Add separated/protected bike facilities (Major Bicycle Overlay) and complete sidewalk gaps (Major Pedestrian Overlay) between SW 131st Avenue and OR 99W. Cost assumes a shared-use path on the south side.	Washington County	Metro	County Transportation Development Tax/ Regional Funds	$4,900,000	High	Unconstrained	Unconstrained Tier 1
	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	$1,200,000	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	$1,200,000	Medium	Unconstrained	Unconstrained Tier 2
	8f	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 SW Fischer Road extension (near SW Elsner Road) to the SW Fischer Road extension (near SW Myrtle Avenue).**							

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	9a	Construct a Neighborhood Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay). Cost assumes a 2-lane street with parking, a sidewalk on the north side and a shared-use path on the south side.	King City		New Development	$11,575,000	Low	Unconstrained	Unconstrained Tier 3
	9b	Improve the SW Fischer Road extension intersection (west intersection). Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Low	Unconstrained	Unconstrained Tier 3
	9c	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #10 intersection.	King City		New Development	$125,000	Low	Unconstrained	Unconstrained Tier 3
	9d	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #11 intersection.	King City		New Development	$125,000	Low	Unconstrained	Unconstrained Tier 3
	9e	Improve the SW 150th Avenue intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Low	Unconstrained	Unconstrained Tier 3
	9f	Improve the SW Fischer Road extension intersection (east intersection). Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Low	Unconstrained	Unconstrained Tier 3
10		**New Corridor (#10) between SW Beef Bend Road and the planned Corridor #9.**							
	10a	Construct a Neighborhood Collector Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay). Cost assumes a 2-lane street with parking, a shared-use path on the west side, and a sidewalk on the east side.	King City		New Development	$3,725,000	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	$75,000	Medium	Unconstrained	Unconstrained Tier 2
	10c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Low	Unconstrained	Unconstrained Tier 3
11		**New Corridor (#11) between SW Beef Bend Road and the planned Corridor #9.**							
	11a	Construct a Neighborhood Collector Street 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	$3,550,000	Low	Unconstrained	Unconstrained Tier 3
	11b	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County / Tigard	New Development	$75,000	Low	Unconstrained	Unconstrained Tier 3
	11c	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Low	Unconstrained	Unconstrained Tier 3
12		**SW 150th Avenue Corridor (#12) Improvements from SW Beef Bend Road to the planned Corridor #9.**							
	12a	Construct a Collector Street with pedestrian (Major Pedestrian Overlay) and bike facilities (Major Bicycle Overlay). 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	$4,375,000	Medium	Unconstrained	Unconstrained Tier 2
13		**SW 147th Avenue Corridor (#13) Improvements from SW Beef Bend Road to the SW Fischer Road extension.**							

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	13a	Construct a Neighborhood Collector Street 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	$1,650,000	Low	Unconstrained	Unconstrained Tier 3
	13b	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Low	Unconstrained	Unconstrained Tier 3
14		**SW Myrtle Avenue Corridor (#14) Extension/Improvements from SW Beef Bend Road to the SW Fischer Road extension and SW 147th Avenue to SW 137th Avenue.**							
	14a	Construct a Neighborhood Collector Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay) from SW Beef Bend Road to the SW Fischer Road extension. Cost assumes a 2-lane street with parking, a shared-use path on the west side, with 3-lanes provided at the SW Beef Bend intersection.	King City		New Development	$3,525,000	Low	Unconstrained	Unconstrained Tier 3
	14b	Construct a Neighborhood Collector Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay) from SW 147th Avenue to SW 137th Avenue. Cost assumes a 2-lane street, a shared-use path on the north side and a sidewalk on the south side	King City		New Development	$7,075,000	Low	Unconstrained	Unconstrained Tier 3
	14c	Provide an enhanced pedestrian/bicycle crossing at the SW Beef Bend Road intersection.	King City	Washington County	New Development	$75,000	Medium	Unconstrained	Unconstrained Tier 2
	14d	Improve the SW Fischer Road extension intersection. Cost assumes installation of a mini roundabout.	King City		New Development	$400,000	Low	Unconstrained	Unconstrained Tier 3
15		**SW 137th Avenue Corridor (#15) Improvements from SW Beef Bend Road to the SW Fischer Road extension.**							
	15a	Improve to include pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay). 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	$975,000	Low	Unconstrained	Unconstrained Tier 3
16		**SW 131st Avenue/SW Bedford Street/SW 136th Avenue/SW King Lear Way/SW River Lane Bike Route Improvements.**							
	16a	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	$400,000	High	Financially Constrained	Tier 2
	16b	Improve SW 131st Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) south of SW Fischer Road.	King City		City Funds	$50,000	Low	Unconstrained	Unconstrained Tier 3
	16c	Improve SW Bedford Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) west of SW 131st Street.	King City		City Funds	$25,000	Low	Unconstrained	Unconstrained Tier 3
	16d	Improve SW 136th Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay).	King City		City Funds	$25,000	Low	Unconstrained	Unconstrained Tier 3
	16e	Improve SW River Lane to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) south of SW Watson.	King City		City Funds	$25,000	Low	Unconstrained	Unconstrained Tier 3
17		**SW Cordelia Terrace to SW King Charles Avenue Improvements.**							
	17a	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 Overlay) between SW Cordelia Terrace and SW Matador Lane.	King City		City Funds	$50,000	Low	Unconstrained	Unconstrained Tier 3

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	17b	Improve SW Morocco Drive to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Matador Lane and SW King Charles Avenue.	King City		City Funds	$25,000	Medium	Unconstrained	Unconstrained Tier 2
	17c	Extend SW Capulet Lane as a Local Street with pedestrian (Neighborhood Pedestrian Overlay) and bike facilities (Neighborhood Bicycle Overlay). 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	$250,000	Low	Unconstrained	Unconstrained Tier 3
18		**SW Fischer Road to SW Beef Bend Road Bike Route Improvements.**							
	18a	Improve SW 124th Avenue and SW King Charles Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Fischer Road and SW Royalty Parkway.	King City		City Funds	$50,000	High	Financially Constrained	Tier 2
	18b	Improve SW King George Drive to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW King Charles Avenue and SW 116th Avenue.	King City		City Funds	$75,000	High	Financially Constrained	Tier 2
	18c	Improve SW Prince Albert Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW King George Drive and SW Beef Bend Road.	King City		City Funds	$25,000	High	Financially Constrained	Tier 2
	18d	Improve SW Queen Elizabeth Street to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW King George Drive and SW Royalty Parkway.	King City		City Funds	$25,000	High	Financially Constrained	Tier 2
	18e	Improve SW Royalty Parkway and SW Queen Anne Avenue to include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Queen Elizabeth Street and SW Fischer Road.	King City		City Funds	$75,000	High	Financially Constrained	Tier 2
19		**King City Town Center Improvements from SW Beef Bend Road to OR 99W.**							
	19a	Improve SW 116th Avenue to enhance the streetscape, improve ADA compliance and widen existing sidewalks, complete sidewalk gaps (Multimodal Area Overlay) and reconfigure to include bike lanes (Neighborhood Bicycle Overlay) between SW Queen Elizabeth Street and OR 99W.	King City	Private Development	City Funds / New Development	$475,000	High	Financially Constrained	Tier 1
	19b	Improve SW 116th Avenue to enhance the streetscape and widen existing sidewalks, improve ADA compliance, complete sidewalk gaps (Multimodal Area Overlay) and include shared lane markings and route wayfinding for bikes (Neighborhood Bicycle Overlay) between SW Queen Elizabeth Street and SW Beef Bend Road. Note a portion of this street segment is currently private.	King City		City Funds	$1,725,000	High	Financially Constrained	Tier 1
	19c	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	$25,000	High	Financially Constrained	Tier 1
	19d	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	$500,000	High	Financially Constrained	Tier 1
20		**OR 99W Corridor Plan from SW Beef Bend Road to the Tualatin River.**							
	20a	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 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.	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 (2021 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
	20b	Construct pedestrian facilities and buffer from the vehicle travel way. Cost assumes sidewalks and a buffer on each side.	ODOT	Metro	State/ Regional Funds	$2,075,000	High	Unconstrained	Unconstrained Tier 1
	20c	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	$6,300,000	High	Unconstrained	Unconstrained Tier 1
	20d	Improve the pedestrian/bicycle crossing at the SW Royalty Parkway intersection.	ODOT		State Funds	$150,000	High	Unconstrained	Unconstrained Tier 1
	20e	Provide an enhanced pedestrian/bicycle crossing between SW 116th Avenue and SW Royalty Parkway, near the TriMet bus stops.	ODOT		State Funds	$225,000	High	Unconstrained	Unconstrained Tier 1
	20f	Improve the pedestrian/bicycle crossing at the SW 116th Avenue and SW Durham Road intersection.	ODOT		State Funds	$150,000	High	Unconstrained	Unconstrained Tier 1
	20g	Provide an enhanced pedestrian/bicycle crossing between SW 116th Avenue and SW Fischer Road, near the SW King James Place intersection.	ODOT		State Funds	$225,000	High	Unconstrained	Unconstrained Tier 1
	20h	Provide an enhanced pedestrian/bicycle crossing between SW Fischer Road and SW Versailles Road, near the fire signal.	ODOT		State Funds	$225,000	High	Unconstrained	Unconstrained Tier 1
21		**North Kingston Terrace Trail from SW Roy Rogers Road to the planned South Kingston Terrace Trail.**							
	21a	Construct a shared-use path for pedestrian and bicycle travel.	King City		New Development	$2,125,000	High	Unconstrained	Unconstrained Tier 1
	21b	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #3 intersection.	King City		New Development	$75,000	Medium	Unconstrained	Unconstrained Tier 2
	21c	Provide an enhanced pedestrian/bicycle crossing at the planned SW River Terrace Boulevard intersection.	King City		New Development	$75,000	High	Unconstrained	Unconstrained Tier 1
	21d	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #5 intersection.	King City		New Development	$75,000	Medium	Unconstrained	Unconstrained Tier 2
	21e	Provide an enhanced pedestrian/bicycle crossing at the SW Elsner Road intersection.	King City	Washington County	New Development	$75,000	High	Unconstrained	Unconstrained Tier 1
22		**South Kingston Terrace Trail from SW Roy Rogers Road to the planned North Kingston Terrace Trail.**							
	22a	Construct a shared-use path for pedestrian and bicycle travel.	King City		New Development	$2,875,000	Medium	Unconstrained	Unconstrained Tier 2
	22b	Provide an enhanced pedestrian/bicycle crossing at the planned Corridor #3 intersection.	King City		New Development	$75,000	Medium	Unconstrained	Unconstrained Tier 2
	22c	Provide an enhanced pedestrian/bicycle crossing at the planned SW River Terrace Boulevard intersection.	King City		New Development	$75,000	High	Unconstrained	Unconstrained Tier 1
	22d	Provide an enhanced pedestrian/bicycle crossing at the SW Elsner Road intersection.	King City	Washington County	New Development	$75,000	High	Unconstrained	Unconstrained Tier 1
23		**Westside Trail from SW Beef Bend Road to south side of Tualatin River.**							
	23a	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	$2,950,000	Medium	Unconstrained	Unconstrained Tier 2
	23b	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	$1,750,000	High	Unconstrained	Unconstrained Tier 1

PROJECT ID		PROJECT DESCRIPTION	PRIMARY FUNDING AGENCY	POTENTIAL FUNDING PARTNER(S)	POTENTIAL FUNDING SOURCE	ESTIMATED PROJECT COST (2021 DOLLARS)	PROJECT EVALUATION SCORE	PACKAGE	PRIORITY HORIZON
	23c	Install an enhanced pedestrian/bicycle crossing at the SW Fischer Road intersection.	King City		City Funds	$75,000	Medium	Unconstrained	Unconstrained Tier 2
24		**Tualatin River Trail from SW River Lane to King City Community Park and SW 131st Avenue to OR 99W.**							
	24a	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	$3,475,000	Low	Unconstrained	Unconstrained Tier 3
	24b	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	$700,000	Medium	Unconstrained	Unconstrained Tier 2
	24c	Construct a shared-use path for pedestrian and bicycle travel from OR 99W to SW 131st Avenue.	Metro	King City	Regional Funds/ City Funds	$2,450,000	High	Unconstrained	Unconstrained Tier 1
	24d	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	$175,000	Low	Unconstrained	Unconstrained Tier 3
25		**OR 99W Connector Trail from OR 99W to south side of Tualatin River.**							
	25a	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	$200,000	High	Unconstrained	Unconstrained Tier 1
	25b	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	$425,000	High	Unconstrained	Unconstrained Tier 1
	25c	Construct a pedestrian and bicycle crossing of the Tualatin River along the west side of OR 99W.	ODOT	Metro	State/ Regional Funds	$1,100,000	High	Unconstrained	Unconstrained Tier 1
26		**New Shared-Use Path from SW Fitzwilliam Court to SW King Richard Drive.**							
	26a	Construct a shared-use path for pedestrian and bicycle travel.	King City		City Funds	$75,000	Low	Unconstrained	Unconstrained Tier 3
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**							
	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

NETWORK EVALUATION

The following sections summarize motor vehicle operations under the three major scenarios included in the TSP and provide details on several potential alignments that are still under consideration for a new east to west street with pedestrian and bicycle facilities connecting Kingston Terrace with the east end of King City.

2040 MOTOR VEHICLE OPERATIONS

Future traffic forecasts were prepared for 2040 for three major scenarios:

- **2040 Baseline** – this scenario assumes the population and employment growth in the City through 2040, but does not include any assumed network improvements that will occur with the growth.
- **2040 with Aspirational Projects** – this scenario assumes the population and employment growth in the City through 2040, but with the Aspirational projects shown in Table 2.
- **2040 with Financially Constrained Projects** – this scenario assumes the population and employment growth in the City through 2040, but with only the Financially Constrained projects shown in Table 2.

Motor vehicle conditions were evaluated during the 2040 p.m. peak hour at the study intersections (shown in Table 3) under each scenario. As shown, several intersections along Arterial streets are expected to exceed current mobility targets by 2040 under the Baseline scenario. This includes most intersections along OR 99W through King City, and several intersections along SW Beef Bend Road and SW Roy Rogers Road in Kingston Terrace where high growth is expected. After assuming the Aspirational projects, several intersections will no longer be expected to exceed mobility targets. The Aspirational project list includes several intersection improvements and street extensions that will redistribute traffic throughout the City and improve operating conditions. However, it should be noted that the Financially Constrained project list does not include any projects that will be expected to drastically change traffic patterns, therefore the intersection operating conditions are consistent with the 2040 Baseline results. In reality, many of the Aspirational projects will be constructed with new development, particularly in Kingston Terrace, despite not be included on the Financially Constrained list, so forecasted intersection operating conditions will likely be better in that scenario.

OR 99W Intersections

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, up from 1,800 to 1,900 today. These intersections were tested with additional turn lanes, but the improvements only had a minimal benefit to operations and are not recommended. Intersection operations for vehicles can be improved by widening OR 99W, but that requires a significant investment and should be more extensively studied to ensure the needs of all users of the corridor are addressed, and all possible options are considered. 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.

SW Roy Rogers Road Intersections

All unsignalized intersections (existing and proposed) with SW Roy Rogers Road are expected to have unacceptable levels of congestion under the 2040 Baseline conditions due to high traffic volumes along SW Roy Rogers Road. New traffic signals are recommended at these locations once signal warrants are met, including at the SW Elsner Road (Project 1b), Corridor #2 (Project 2b) and SW Fischer Road (Project 7i) intersections.

SW Beef Bend Road Intersections

In addition to the intersection of OR 99W/SW Beef Bend Road, two other intersections were identified as exceeding mobility targets under the 2040 Baseline scenario: SW 150th Avenue and SW Elsner Road. Under the Aspirational scenario, the new intersection of SW River Terrace Boulevard/SW Beef Bend Road was also analyzed. Traffic signals are recommended at both SW 150th Avenue and SW Elsner Road. At SW River Terrace Boulevard, either a traffic signal or roundabout would allow the intersection to meet current mobility targets. However, while the preliminary street alignment for River Terrace Road may be refined through the Kingston Terrace Master Planning process, given the proximity to the adjacent intersections (approximately 1,300 feet to SW Roy Rogers Road/SW Beef Bend Road and SW Elsner Road/SW Beef Bend Road), a traffic signal at SW River Terrace Boulevard would allow for coordination between traffic signals and would likely function better than a roundabout.

SW Fischer Road/SW Elsner Road Intersection

The new intersection of SW Fischer Road and SW Elsner Road is expected to operate with significant delay as a two-way stop control intersection. The Aspirational project list includes a recommended intersection control improvement here, with either a single lane roundabout or traffic signal allowing the intersection to meet current mobility targets.

TABLE 3: 2040 MOTOR VEHICLE OPERATIONS (PM PEAK)

#	STUDY INTERSECTION	CONTROL	V/C TARGET	2040 BASELINE		RECOMMENDED IMPROVEMENT (PACKAGE)	2040 ASPIRATIONAL		2040 FINANCIALLY CONSTRAINED	
				LOS	V/C		LOS	V/C	LOS	V/C
1	SW Roy Rogers Road/SW Beef Bend Road	Signal	0.99	A	0.88	N/A	A	0.76	A	0.88
2	SW Roy Rogers Road/SW Scholls-Sherwood Road	Signal	0.99	B	0.88	N/A	B	0.88	B	0.88
3	SW Elsner Road/SW Beef Bend Road	Two-Way Stop Control	0.99	B/F	0.42/ **4.27**	Traffic Signal (Aspirational)	B	0.82	B/F	0.42/ **4.27**
4	SW 150th Avenue/SW Beef Bend Road	All-Way Stop Control	0.99	F	**1.89**	Traffic Signal (Aspirational)	C	0.85	F	**1.89**
5	SW 137th Avenue/SW Beef Bend Road	Two-Way Stop Control	0.99	A/C	0.65/ 0.06	N/A	A/C	0.65/ 0.06	A/C	0.65/ 0.06
6	SW 131st Avenue/SW Beef Bend Road	Signal	0.99	B	0.86	N/A	B	0.86	B	0.86
7	SW Roy Rogers Road/SW Elsner Road	Two-Way Stop Control	0.99	C/F	0.69/ **1.81**	Traffic Signal (Aspirational)	A	0.75	C/F	0.69/ **1.81**
8	SW 131st Avenue/SW Fischer Road	All-Way Stop Control	0.99	D	0.85	N/A	D	0.85	D	0.85
9	OR 99W/SW Beef Bend Road	Signal	0.99	E	**1.15**	Corridor Study (Financially Constrained) *	F	**1.08**	E	**1.15**
10	OR 99W/SW Royalty Parkway	Signal	1.10	F	1.10	Corridor Study (Financially Constrained) *	F	1.02	F	1.10
11	OR 99W/SW 116th Avenue/SW Durham Road	Signal	1.10	F	**1.13**	Corridor Study (Financially Constrained) *	F	**1.11**	F	**1.13**

#	STUDY INTERSECTION	CONTROL	V/C TARGET	2040 BASELINE		RECOMMENDED IMPROVEMENT (PACKAGE)	2040 ASPIRATIONAL		2040 FINANCIALLY CONSTRAINED	
				LOS	V/C		LOS	V/C	LOS	V/C
12	OR 99W/SW Fischer Road	Signal	0.99	F	**1.23**	Corridor Study (Financially Constrained) *	C	**1.06**	F	**1.23**
13	OR 99W/SW 124th Avenue	Signal	0.99	C	**1.03**	Corridor Study (Financially Constrained) *	C	**1.03**	C	**1.03**
14	OR 99W/SW Roy Rogers Road	Signal	0.99	F	**1.12**	Corridor Study (Financially Constrained) *	F	**1.12**	F	**1.12**
15	OR 99W/SW Bull Mountain Road	Signal	0.99	E	**1.22**	Corridor Study (Financially Constrained) *	E	**1.22**	E	**1.22**

Notes: **Bold and red** indicates mobility target is not met.

Volume-to-capacity (V/C) ratio and level of service (LOS) reported as worst major street/minor street movement at two-way stop-controlled (TWSC) intersections, and average intersection for all-way stop-controlled (AWSC) and signalized intersections.

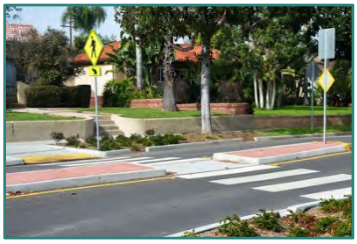
* The OR 99W Corridor Study has no impact on intersection operations.

EAST-WEST STREET ALTERNATIVES

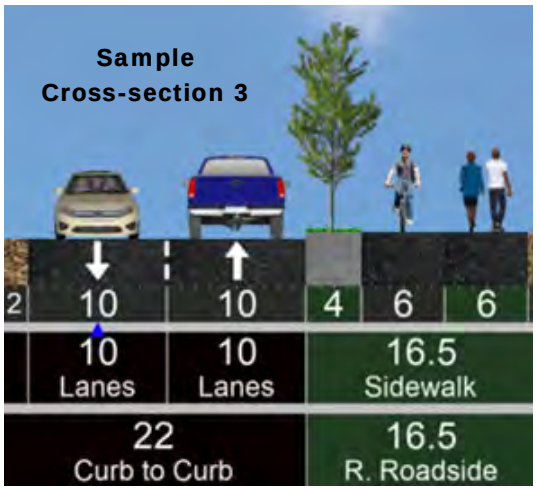
Several potential alignments are under consideration for a new east to west street with pedestrian and bicycle facilities connecting SW Roy Rogers Road with SW 137th Avenue. The alignments and design elements depicted are identified for the purpose of creating a reasonable cost estimate for planning purposes. The actual alignments and design elements for any project are subject to change and will ultimately be determined through a preliminary and final design process.

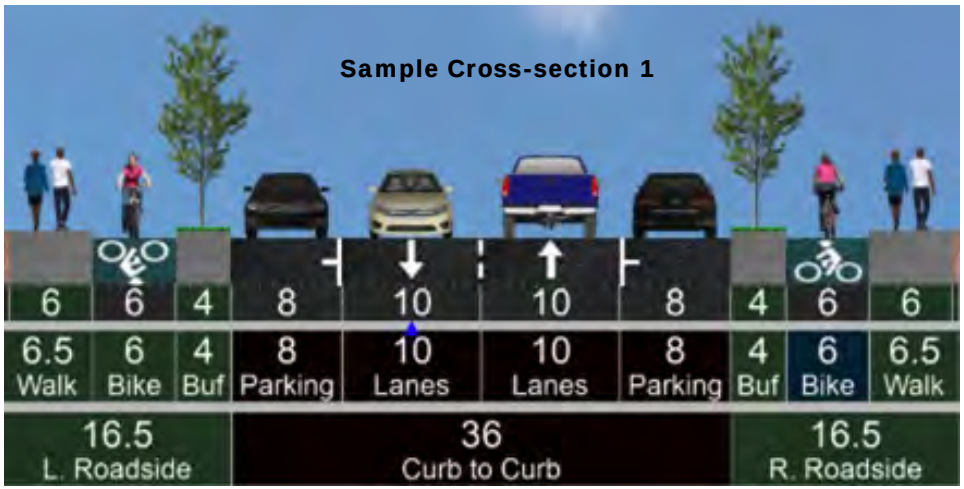
Overall, this corridor is expected to be designed for slow motor vehicle travel speeds between 20 and 25 miles per hour and will include treatments (shown in Table 4) to manage traffic volumes and travel speeds and discourage through travel, while prioritizing pedestrian and bicycle travel.

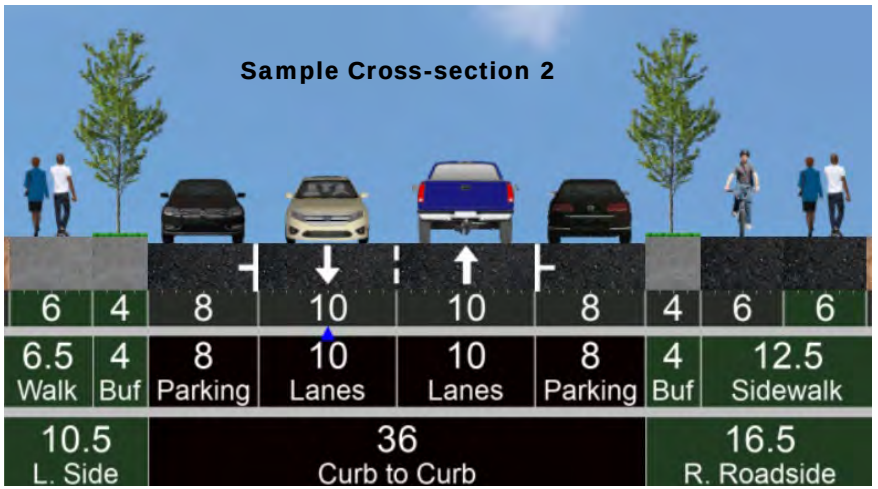
TABLE 4: SAMPLE TOOLS TO MANAGE TRAFFIC VOLUMES AND TRAVEL SPEEDS

Narrowing travel lanes	Roundabouts	Curb Extensions or Bulb outs
		
Placing buildings, street trees, on-street parking, and landscaping closer to the street	Mini-Roundabouts	Medians and Pedestrian Islands
		

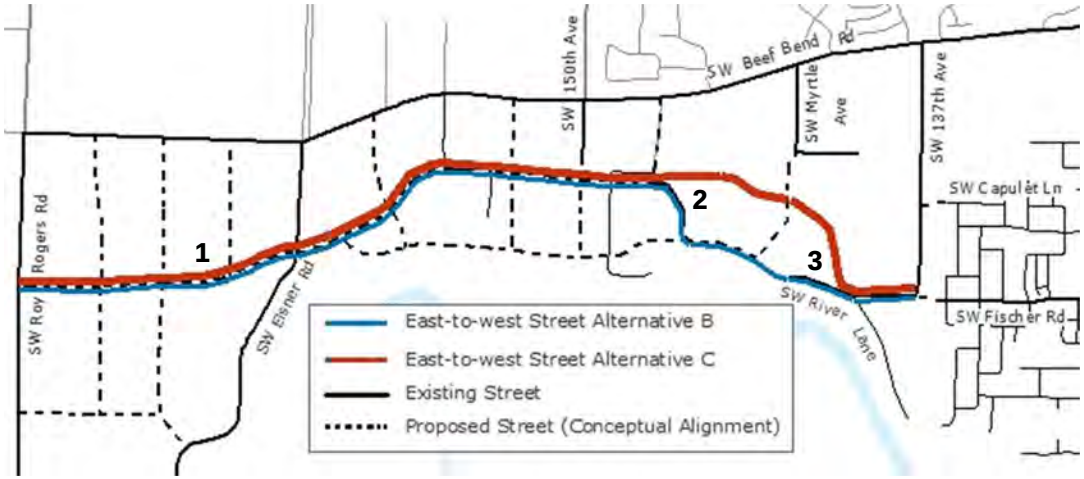
Alternative A

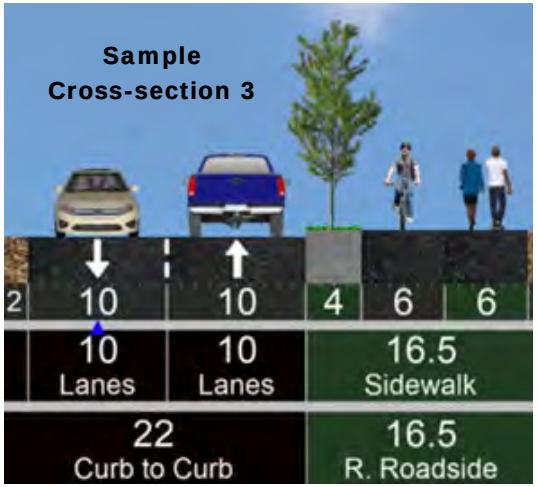


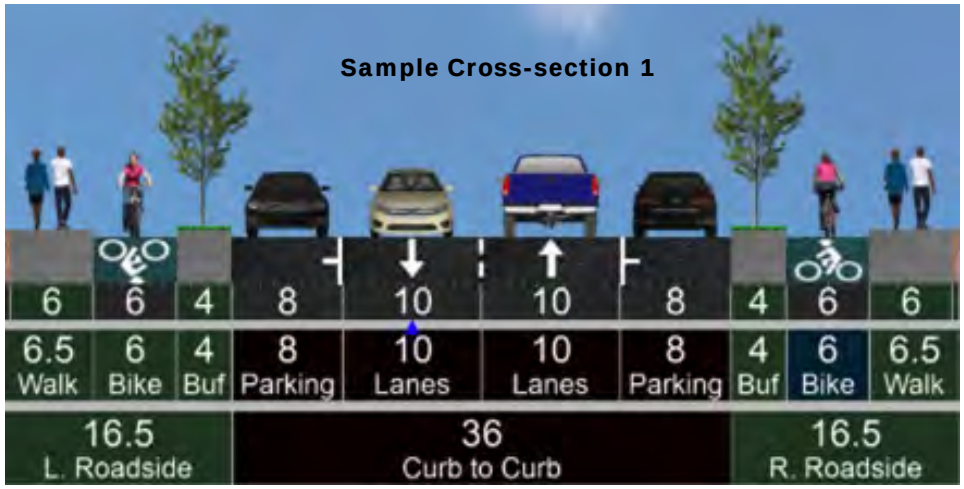


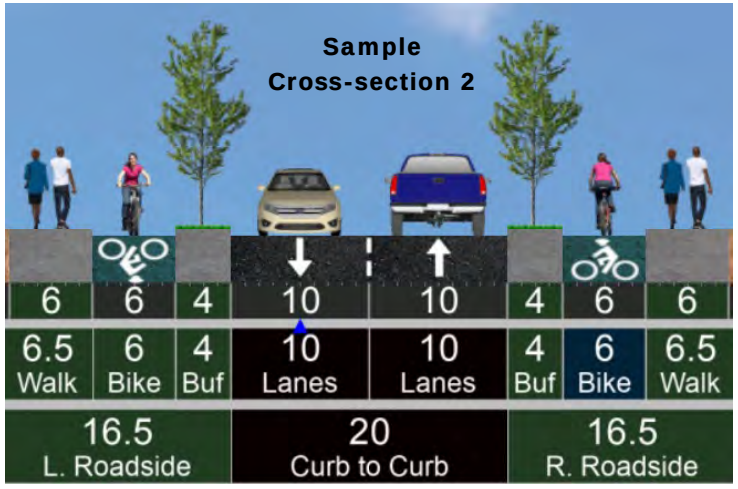


Alternatives B and C

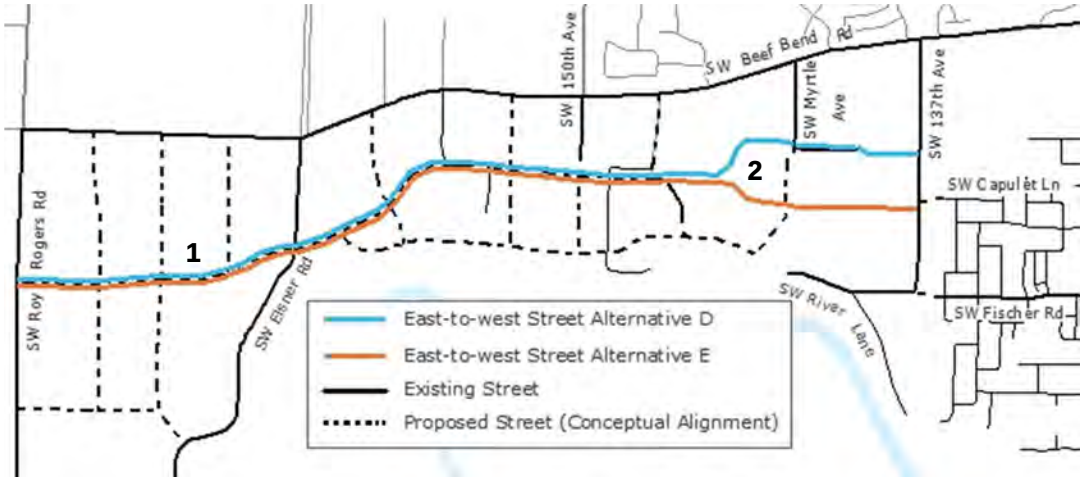


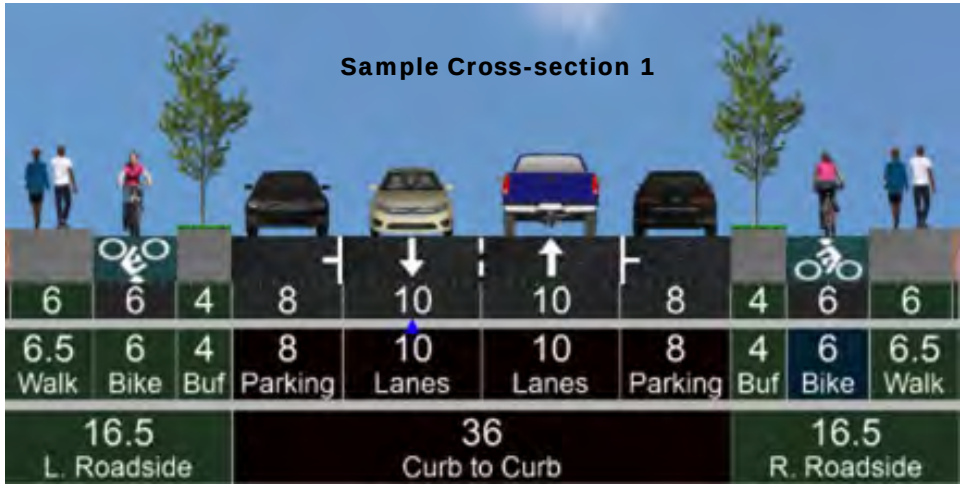






Alternatives D and E





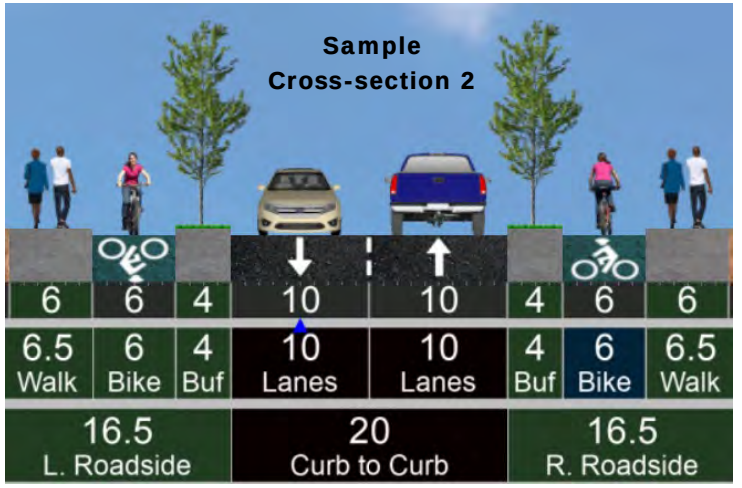


Table 5 summarizes a high-level evaluation of the east-west street alternatives. As shown, the biggest factor is the overall cost, as the estimates range from $30 million for Alternative B to $65 million for Alternative A. The alternatives are very similar for motor vehicles, with Alternatives A and B providing the most direct route, but also result in the highest forecasted traffic volumes along the segment of SW Fischer Road, east SW 137th Avenue (between 8,000-10,000 vehicles per day). While Alternatives C, D and E provide for an indirect route and would be expected to result in a lower level of traffic along the segment of SW Fischer Road, east SW 137th Avenue (between 6,000-8,000 vehicles per day). More detailed analysis, including environmental, topographic, neighborhood and right-of-way impacts, will need to be considered outside of this TSP before any alternative can be advanced. This TSP does not include a recommendation.

TABLE 5: EAST-WEST STREET ALTERNATIVES EVALUATION SUMMARY

ALTERNATIVES	EVALUATION CRITERIA					
	Minimizes Right-of-way Needed	Direct and Convenient Pedestrian and Bicycle Route	Effective Motor Vehicle Route for Local Trips	Minimizes Neighborhood Impacts	Minimizes Environmental Impacts	Estimated Cost (with Contingencies)
A	◒	●	●	○	○	$65 million
B	●	●	●	○	◒	$30 million
C	○	◒	◒	○	◒	$50 million
D	○	○	◒	●	◒	$40 million
E	◒	○	◒	●	●	$50 million

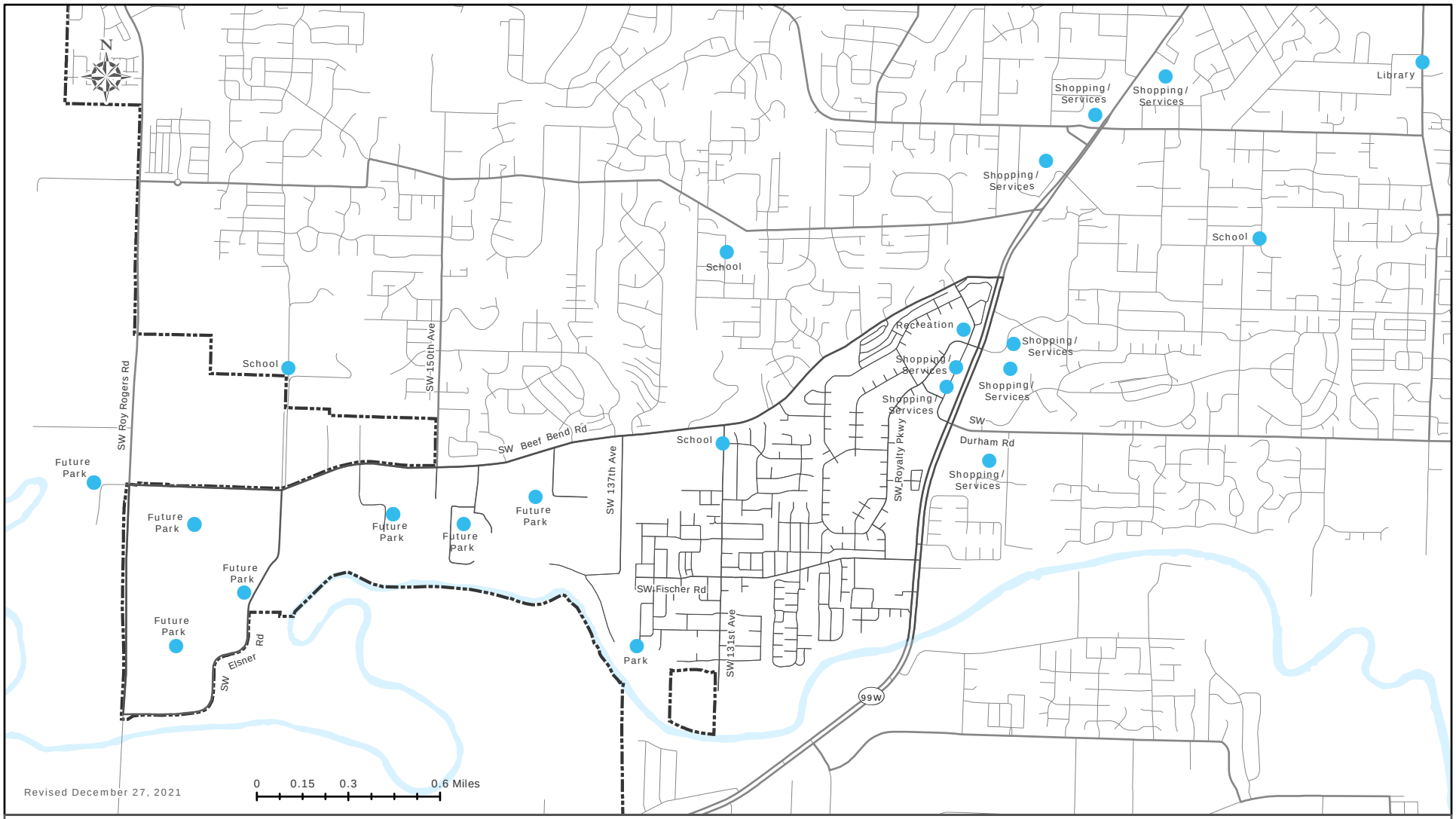
Notes:

● = Most effective at achieving evaluation criteria

◒ = Somewhat effective at achieving evaluation criteria

○ = Least effective at achieving evaluation criteria

APPENDIX P. MAP OF COMMUNITY AMENITIES



Legend:

- Community Amenity
- Urban Growth Boundary