City of Wilsonville

City Council Meeting

November 5, 2018

WILSONVILLE
OREGON

AGENDA

WILSONVILLE CITY COUNCIL MEETING
NOVEMBER 5, 2018
7:30 P.M.

CITY HALL
29799 SW TOWN CENTER LOOP
WILSONVILLE, OREGON

Mayor Tim Knapp

Council President Scott Starr — Councilor Kristin Akervall
Councilor Susie Stevens — Councilor Charlotte Lehan

CITY COUNCIL MISSION STATEMENT

To protect and enhance Wilsonville's livability by providing quality service to ensure a safe, attractive, economically vital community while preserving our natural environment and heritage.

Work Session is held in the Willamette River Room, City Hall, 2nd Floor

5:00 P.M.	**REVIEW OF AGENDA**	[5 min.]	
5:05 P.M.	**COUNCILORS' CONCERNS**	[5 min.]	
5:10 P.M.	**PRE-COUNCIL WORK SESSION**		
A.	5-G Technology (Jacobson)	[40 min.]	**Page 4**
B.	Citywide Signage and Wayfinding Plan (Neamtzu)	[15 min.]	**Page 27**
C.	Wilsonville Town Center Plan (Bateschell)	[25 min.]	**Page 121**
D.	Update to Water and Sewer System Development Charges (Rodocker/Weigel)	[35 min.]	**Page 247**
E.	Garden Acres Road – Funding Strategy (Vance/Kraushaar/Rodocker)	[15 min.]	**Page 249**
F.	5th Street / Kinsman Road Otak, Inc. PSA Change Order (Adams)	[10 min.]	
7:30 P.M.	**ADJOURN**		

CITY COUNCIL MEETING

The following is a summary of the legislative and other matters to come before the Wilsonville City Council a regular session to be held, Monday, November 5, 2018 at City Hall. Legislative matters must have been filed in the office of the City Recorder by 10 a.m. on October 23, 2018. Remonstrances and other documents pertaining to any matters listed in said summary filed at or prior to the time of the meeting may be considered there with except where a time limit for filing has been fixed.

7:30 P.M. CALL TO ORDER

A. Roll Call
B. Pledge of Allegiance
C. Motion to approve the following order of the agenda and to remove items from the consent agenda.

7:35 P.M. COMMUNICATIONS

A. TVF&R State of the District Presentation (Chief Deric Weiss) **Page 257**

7:50 P.M. CITIZEN INPUT & COMMUNITY ANNOUNCEMENTS

This is an opportunity for visitors to address the City Council on items ***not*** on the agenda. It is also the time to address items that are on the agenda but not scheduled for a public hearing. Staff and the City Council will make every effort to respond to questions raised during citizens input before tonight's meeting ends or as quickly as possible thereafter. Please limit your comments to three minutes.

7:55 P.M. MAYOR'S BUSINESS

A. Letter from Mayor of Kitakata, Japan **Page 269**
B. Upcoming Meetings **Page 270**

8:05 P.M. COUNCILOR COMMENTS

A. Council President Starr
B. Councilor Stevens
C. Councilor Lehan
D. Councilor Akervall

8:15 P.M. CONSENT AGENDA

A. Minutes of the September 17, 2018 Council Meeting. (Veliz) **Page 271**

8:20 P.M. PUBLIC HEARING **Page 277**

A. **Resolution No. 2702** - *Staff is requesting the public hearing be continued to December 17, 2018.* Boones Ferry Park Master Plan (McCarty)

8:25 P.M. CONTINUING BUSINESS

A. **Ordinance No. 829** – 2nd Reading **Page 280**
An Ordinance Of The City Of Wilsonville Amending Wilsonville Code Sections 7.418, 9.200, And 9.400. (Carlson/Guile-Hinman)

8:30 P.M. CITY MANAGER'S BUSINESS

8:35 P.M. LEGAL BUSINESS

8:40 P.M. ADJOURN

AN URBAN RENEWAL AGENCY MEETING
WILL IMMEDIATELY FOLLOW THE CITY COUNCIL MEETING

Time frames for agenda items are not time certain (i.e. Agenda items may be considered earlier than indicated.) Assistive Listening Devices (ALD) are available for persons with impaired hearing and can be scheduled for this meeting if required at least 48 hours prior to the meeting. The city will also endeavor to provide the following services, without cost, if requested at least 48 hours prior to the meeting: Qualified sign language interpreters for persons with speech or hearing impairments. Qualified bilingual interpreters. To obtain services, please contact the City Recorder, (503) 570-1506 or cityrecorder@ci.wilsonville.or.us.

CITY COUNCIL MEETING
STAFF REPORT

Meeting Date: November 5, 2018	**Subject:** 5-G Technology **Staff Member:** Chris Neamtzu, Planning Director; Barbara Jacobson, City Attorney **Department:** Planning / Legal
	Advisory Board/Commission Recommendation
☐ Motion ☐ Public Hearing Date: ☐ Ordinance 1st Reading Date: ☐ Ordinance 2nd Reading Date: ☐ Resolution ☐ Information or Direction ☒ Information Only ☐ Council Direction ☐ Consent Agenda	☐ Approval ☐ Denial ☐ None Forwarded ☒ Not Applicable **Comments:**
Staff Recommendation: Staff recommends that Council listen to the presentation by Jonathan Kramer and provide direction on implementation.	
Recommended Language for Motion: N/A	
Project / Issue Relates To:	
☐Council Goals/Priorities	☐Adopted Master Plan(s) ☒Not Applicable

ISSUE BEFORE COUNCIL:

Information regarding new regulations, restrictions and limitations on City authority with respect to deployment of new 5-G wireless technology.

EXECUTIVE SUMMARY:

Jonathan Kramer is a telecom IT and engineering expert, with more than 35 years of experience in consulting and advising on telecom matters. He also has more than 25 years of experience of wireless siting and planning experience. He will be presenting to City Council during work session on the challenges all cities will face in light of a recent FCC ruling and regulations aimed at making it easier, faster and less expensive for wireless communication companies to site numerous 5G antennas throughout US cities, including in residential neighborhoods.

Wilsonville was aware this technology was coming approximately two years ago and at that time Legal, IT and Planning staff revised our City Code with respect to wireless communication facilities in order to be prepared to respond to the new technology while protecting the aesthetics of the city and receiving just compensation for use of the public right-of –ways. The City Code has worked well and although we have had numerous inquiries from wireless providers, due to our high aesthetic standards and undergrounding requirements, we have not been one of the cities actively pursued. Given the new regulations, however, the Code may need to be adjusted due to limitation on cities' abilities to regulate this industry and to recover anything more than actual documented costs. At that same time we were revising the Code, Mr. Kramer gave a brief presentation to Council on what the future might look like when 5-G is ultimately deployed. This is an update on that presentation because the future is now.

EXPECTED RESULTS:

Council will have a better idea of what is to come in terms of impacts to public right-of-ways and neighborhoods, as well as additional costs and work load that the City will need to provide for.

TIMELINE:

Certain provisions must be in effect by January 2019.

CURRENT YEAR BUDGET IMPACTS:

To be determined.

FINANCIAL REVIEW / COMMENT:

Reviewed by: CAR Date: 10/29/2018

LEGAL REVIEW / COMMENT:

Reviewed by: BAJ Date: 10/24/2018

Author of report.

COMMUNITY INVOLVEMENT PROCESS:

The City Council will conduct public hearings on the revisions to the City Code affording all interested parties an opportunity to participate.

POTENTIAL IMPACTS or BENEFIT TO THE COMMUNITY:

5-G is touted as a major improvement for speed and data transmittal over the current 4-G technology but it requires many more shorter range antennas to be placed throughout cities, including throughout neighborhoods, which is not required by the larger 4-G towers that have a much wider band-width.

ALTERNATIVES:
As part of the adoption process, alternatives will be described.

CITY MANAGER COMMENT:
N/A

ATTACHMENTS:
A. Attachment A: Kramer materials

FCC Order on Small Cell Antennas and Cell Tower Shot Clocks, Gov't Fees

***Presenter*:**

Dr. Jonathan L. Kramer, Esq.
Managing Partner

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www.TelecomLawFirm.com
Los Angeles – San Diego

Jonathan L. Kramer, Esq., J.D., LL.M, LP.D

Kramer@TelecomLawFirm.com
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Los Angeles, California 90025
(310) 405-7333

- **Heads Telecom Law Firm, P.C. (Los Angeles & San Diego, California)**
  - Admitted to practice law in California and New Mexico
  - Licensed by FCC since early 70s (holds six licenses/certs)
- 35+ years in telecom engineering/safety reviews (RF, broadband, fiber, outside plant safety, code compliance, RF safety)
- 33 years consulting on telecom matters > 1,000 governments/firms; 25 years of wireless siting and planning >2,000 cases/matters
- Expert witness/trial advisor in 40+ wireless, wired telecom cases
- Co-author, Co-editor of FCC's "A Local Government Official's Guide to Transmitting Antenna RF Emission Safety: Rules, Procedures, and Practical Guidance"
- **Member**: IMLA; NATOA (Twice Member of the Year); Federal Communications Bar Association; Senior Member of the Society of Broadcast Engineers; ARRL Life member; Fellow, Society of Telecommunication Engineers (UK); Sr. Member, Society of Telecommunication Engineers (US).
- **Education**:
  Doctor of Law and Policy, Northeastern Univ., Boston (LP.D)
  Master of Law *with honors*, Strathclyde University School of Law, Glasgow (I.T. & Telecom Law) (LL.M)
  Juris Doctor *cum laude*, Abraham Lincoln School of Law, Los Angeles (JD)
- **Teaching**:
  Instructor, Regulatory Law and Policy, Northeastern University

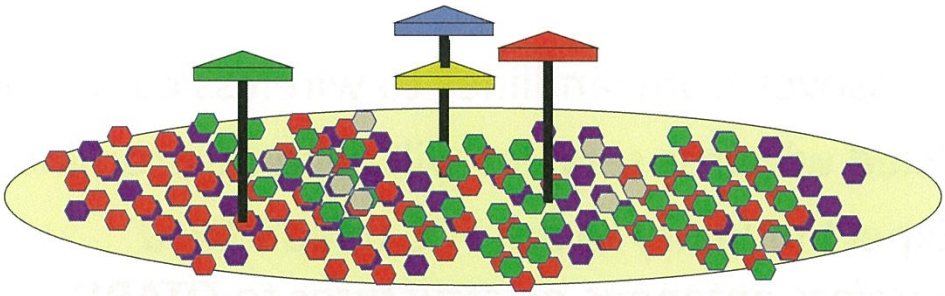
Why Now?

- Very Old: Area Coverage
- Old: Spot Coverage
- New: Capacity
- Future: Latency (speed of light matters)
- Future: Massive MIMO; 1-to-many Fixed Wireless
- Future: Increasing ↑ in GHz because of available bandwidth; Decreasing ↓ in GHz because for deeper building penetration (bathroom service)
- Future: Moving lots of gear to the 'edge'

Why Now?

- Not: 5G is here today
- Not: 5G will be here tomorrow
- Not: 4G is everywhere today
- Not that simple: 4G is old technology
- Not: All government property is fungible.
- Not: All carriers are working towards a common 5G design/deployment
- Not: Facilities builders will build the smallest footprint sites

How many?



- Old: **10-25ish small cells per sq. mile per carrier**
- New: **60ish small cell per sq. mile per carrier in the next 5ish years, plus ~8 mi new fiber in each sq. mile**
- Why: **Latency, capacity, limited coverage, fixed wireless**

How many?

- Example: Kansas City, MO

Land area: 314.95 sq. mi (land)

and 4 national carriers (today)

= 314.95 * 4 * 60 =

~75,588 small cells

...plus...

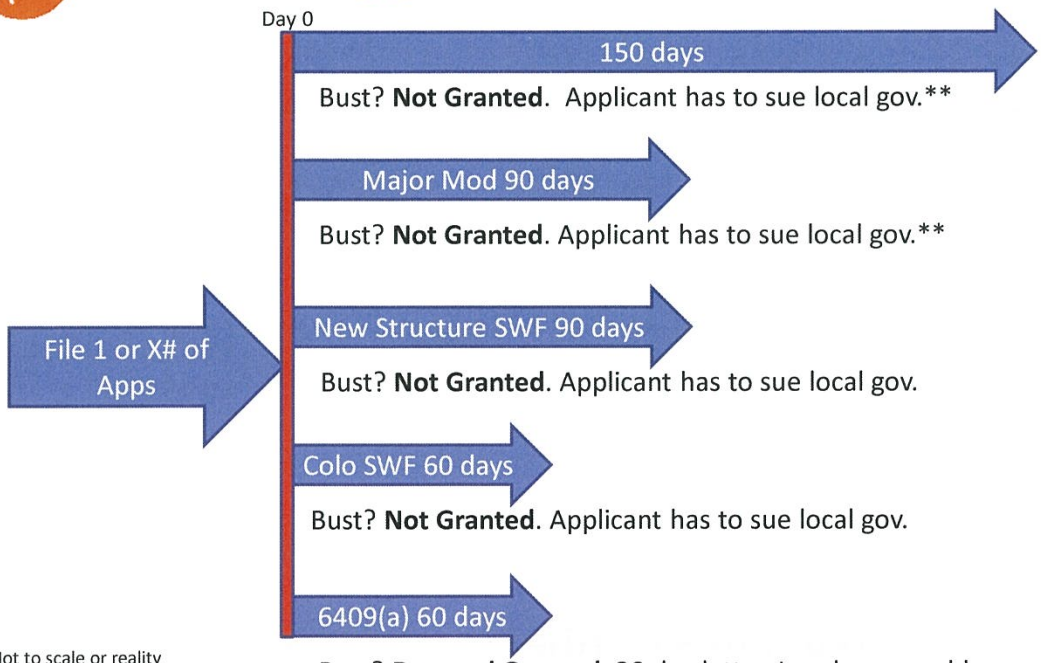
= 314.95 * 8 =

~2,520 miles of fiber

The Next Reality?

- Crossover from landlines to wireless **continues**
- **Fixed wireless** services will become prominent
- Expect industry to ask FCC to add *fixed wireless antennas on structures* to **OTARD** rules (see: https://www.fcc.gov/media/over-air-reception-devices-rule) [likely to happen]

The ~~3~~ 5 Shot Clocks*



* Not to scale or reality
** State law may differ (i.e., California)

Updated, Shortened Shot Clock

"...our decision is consistent with the BDAC's Model Code for Municipalities' recommended timeframes, which utilize this same 60-day and 90-day framework for collocation of Small Wireless Facilities and new structures and are similar to shot clocks enacted in state level small cell bills and the real world experience of many municipalities which further supports the reasonableness of our approach. The BDAC Model Municipal Code recommended, for certain types of facilities, shot clocks of 60 days for collocations and 90 days for new constructions on applications for siting Small Wireless Facilities. BDAC Model Municipal Code at §§ 2.2, 2.3, 3.2a(i)(B). Our approach utilizes the same timeframes set forth in the Model Municipal Code, and we disagree with comments that it is inconsistent with or ignores the work of the BDAC."

FCC 18-133 ¶105

It's Still a Pizza Box to the FCC

What is a SWF? *

(l) *Small wireless facilities*, consistent with section 1.1312(e)(2), are facilities that meet each of the following conditions:

(1) The facilities—

(i) are mounted on structures 50 feet or less in height including their antennas as defined in section 1.1320(d), or

(ii) are mounted on structures no more than 10 percent taller than other adjacent structures, or

(iii) do not extend existing structures on which they are located to a height of more than 50 feet or by more than 10 percent, whichever is greater;

(2) Each antenna associated with the deployment, excluding associated antenna equipment (as defined in the definition of antenna in section 1.1320(d)), is no more than three cubic feet in volume;

(3) All other wireless equipment associated with the structure, including the wireless equipment associated with the antenna and any pre-existing associated equipment on the structure, is no more than 28 cubic feet in volume;

(4) The facilities do not require antenna structure registration under part 17 of this chapter;

(5) The facilities are not located on Tribal lands, as defined under 36 CFR 800.16(x); and

(6) The facilities do not result in human exposure to radiofrequency radiation in excess of the applicable safety standards specified in section 1.1307(b).

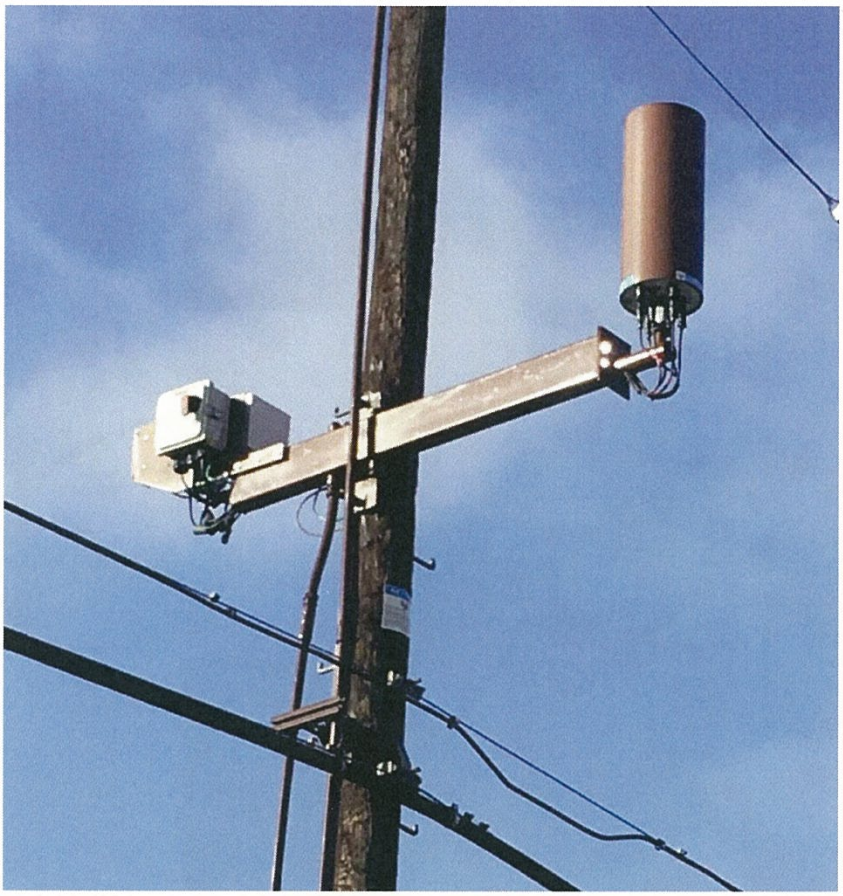
* Not a TLA for a 1992 movie that garnered 54% on Rotten Tomatoes

28 cubic feet? 50 feet tall? How many 3 cubic foot antennas? Nearby?

- Small wireless facility ("SWF") defined: Up to 3 cubic feet for antenna, up to 28 cubic feet for equipment, on 50' structure or <10% taller than that structure or nearby structures
- No single antenna larger than 3 cubic feet, and not more than ∞ antennas
- What's **nearby**? Not specifically defined or limited to structures in the PROW (for a good/bad reason)


SCHOOL
NO PARKING
TUESDAY


8AM to 10AM



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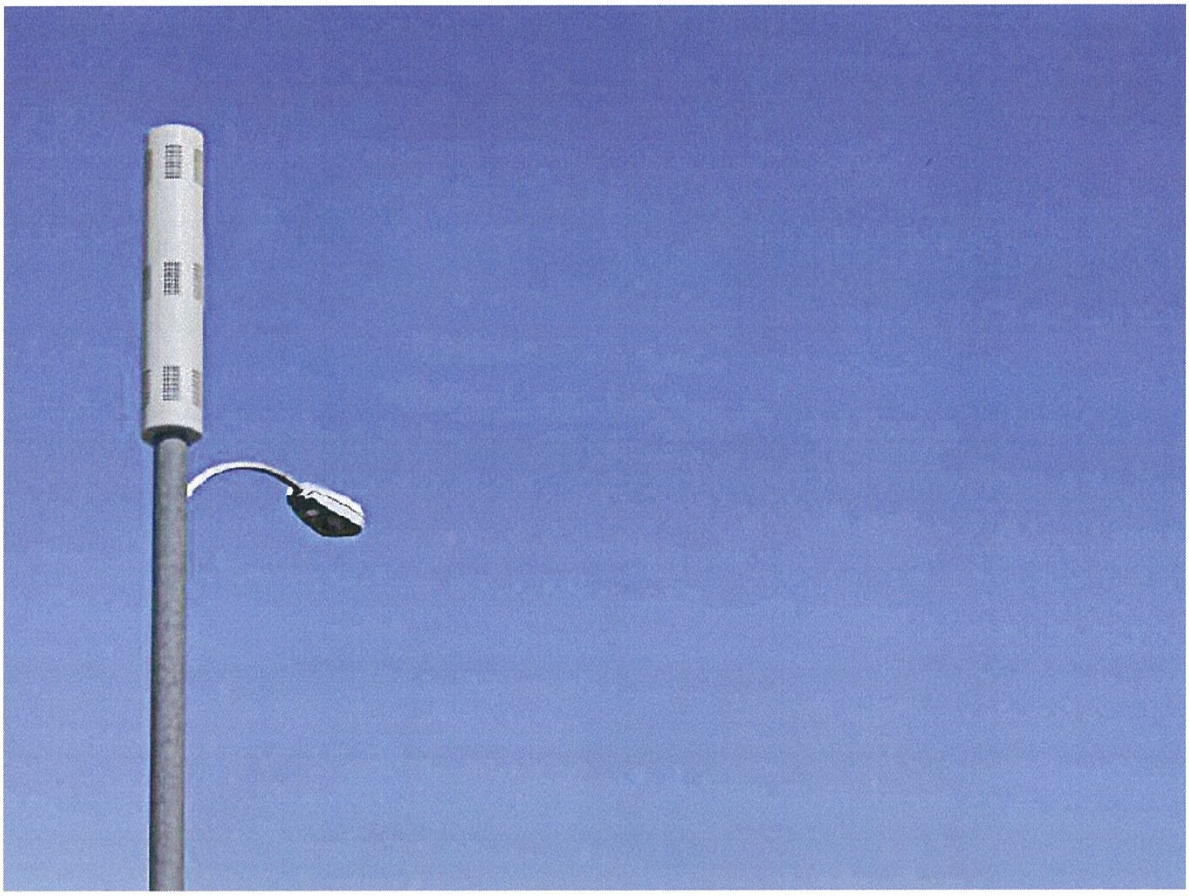
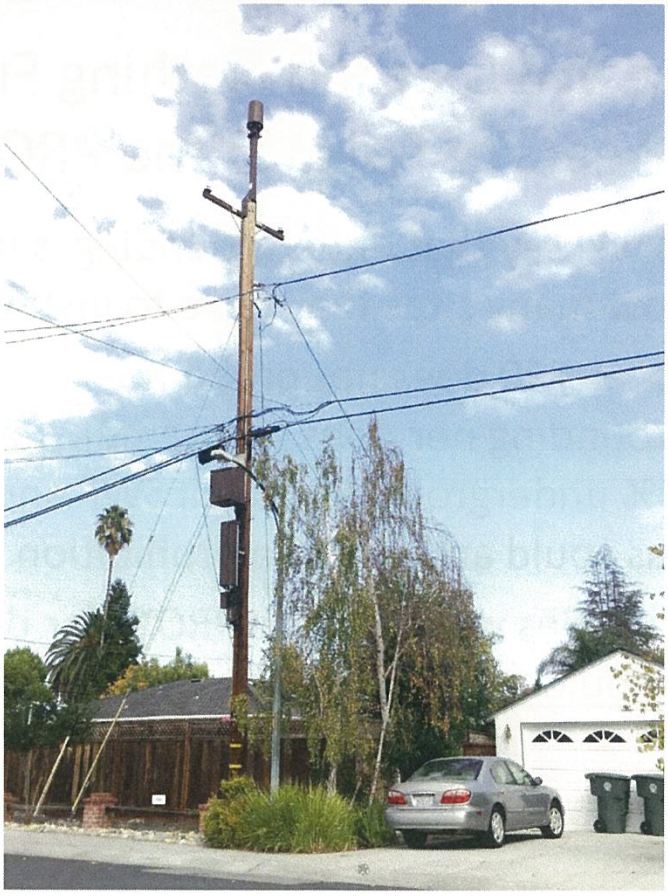



Corintia St


DO NOT
BLOCK
DELI
CLEANERS


Nebraska



Have We Learned Nothing From 150 Years of Poles in the PROW?

- Carriers will say that undergrounding is infeasible given how many sites they have to install
- The D.O. at ¶90 does not prohibit undergrounding nor does it preempt state laws, but 100% undergrounding of all SWF and antennas could amount to a prohibition
- These facilities will be in the PROW for decades (R.O.I. should be a balancing consideration)

What's this all Suggest?

- Ordinances are outdated…again.
- Applications must be revised…again. If you have a single application you're likely to want to have specific applications for each of the types of submittals you'll receive going forward
- Alert your elected that SWFs are coming…a lot of SWFs are coming
- Align your application acceptance processes

What's this all Suggest?

- Be prepared to dole out tough love to applicants
- Expect to issue more denials for lower level reasons until the applicants figure out that only truly complete applications will be approved
- Need to evaluate whether a bond-based facility is involved (lighting district, library bond, etc.)

What's this all Suggest?

- If an applicant asks to modify the FCC rules locally (extend time, for example) make sure you have documentation that it is solely their request
- Look for abrogation/termination of existing muni leases when the lease rent is higher that the FCC's published rate.
- Require the full removal and restoration of the facility
- Watch for the sucker punch about what they want to include in the replacement SWF

What's this all Suggest?

- Expect even less experienced permit runners
- In street overlay areas, look whether you need to require block-to-block resurfacing
- Every application will require 100% documentation through the building permit stage (i.e., not just ZDs but full wet-stamped CDs); don't agree to the 'we'll submit those when the design in final…' The design is final when they submit it!
- Remember to consider ADA, Costal, historic, etc.

What's this all Suggest?

- Double, triple check your fee schedules and document why they are 'reasonable'
- Where the local jurisdiction does not have the in-house expertise (or staff depth) to process wireless applications, consider outside help (tension between a hard/fast shot clock and a reasonable cost to process the applications)
- What's nearby? Perhaps the nearest structure? Perhaps something else?

Keep Calm and Stay Connected:
IMLA, NATOA, NLC, NACO, USCM, Others

Telecom Law Firm, P.C. Resources

Telecom Law Firm, P.C. web site:
http://TelecomLawFirm.com/

FCC RF Safety Page:
http://www.fcc.gov/encyclopedia/radio-frequency-safety

Jonathan Kramer's Wireless Blog:
Wireless.Blog.Law

2,800+ Cell Site Example Photographs:
http://www.CellTowerPhotos.com

"A Practical Guide to Radio Frequency Emissions Safety"
http://www.TelecomLawFirm.com

John Pestle's Blog:
http://www.varnumlaw.com/blogs/cell-phone-tower/

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CITY COUNCIL MEETING
STAFF REPORT

Meeting Date: November 5, 2018	**Subject:** Citywide Signage and Wayfinding Plan **Staff Member:** Chris Neamtzu, Planning Director **Department:** Community Development
Action Required	**Advisory Board/Commission Recommendation**
☐ Motion ☐ Public Hearing Date: ☐ Ordinance 1st Reading Date: ☐ Ordinance 2nd Reading Date: ☐ Resolution ☒ Information or Direction ☐ Information Only ☐ Council Direction ☐ Consent Agenda	☐ Approval ☐ Denial ☐ None Forwarded ☒ Not Applicable **Comments:** NA
Staff Recommendation: Staff recommends that the Council review and provide input on the draft signage and wayfinding plan.	
Recommended Language for Motion: N/A	
Project / Issue Relates To:	
☒Council Goals/Priorities Community Design and Livability – Develop a wayfinding program	☐Adopted Master Plan(s) / ☐Not Applicable

ISSUE BEFORE COUNCIL:

Review of the first draft of the Citywide Signage and Wayfinding Plan. The design team is seeking input on the overall design of the preferred sign family (Appendix A), as well as the draft report (Appendix B), specifically the destination list, implementation chapter, phasing and sign locations.

On October 10, the Planning Commission conducted a work session on the draft Plan. The Commission offered excellent input on the naming conventions for the destinations and sign locations. They also articulated support for the revised base design of the preferred sign family, which now shows a ledgestone rock veneer base to the signs as opposed to the river rock gabion baskets that were originally depicted.

EXECUTIVE SUMMARY:

The consultant, Alta Planning + Design, led the focus group of community members/leaders through visual identity exercises to generate abstract design themes. These themes were developed into concepts for three distinct sign types (ornate cast iron, undulating stone, weathered wood).

These concepts were presented at the June 26, 2018 open house and at the on-line open house (conducted over the period of July 2 – July 16). Nearly 200 people provided feedback on styles, colors, shapes and source materials of each of the three designs presented. Results revealed a public preference for the "undulating stone" (55%) design that features corten (treated metal) signage with a gabion rock base.

The design was inspired by and uses similar materials to the Murase Plaza sign at Memorial Park, among others. The corten sign received high marks for its shape and colors. The gabion (wire cage) style containment of the river rocks was one element that wasn't as well received as the main sign, so the design team "tested" a number of different bases with the preferred being a ledge stone veneer. Since the survey, the design team and internal staff have continued to evaluate additional design elements, including text, font styles, shapes, toppers, additions of color, and base materials. The preferred design contains many elements that were part of the initial survey, but the design has evolved slightly and has been refined to the proposal before you.

The objective of the plan is to better connect people walking, biking, or driving to destinations throughout Wilsonville with a cost-effective program that is easy to expand and maintain and a community supported design that reflects the City's unique identity.

The plan sets out to:

- Create wayfinding signage that will meet the needs of residents and visitors whether traveling through Wilsonville as a pedestrian, in a motor vehicle, or by transit or cycling.
- Establish a high-quality design that captures local character and is coherent and attractive.
- Consider graphic standards focused on local identity and aesthetic.
- Understand key entrances and gateways to Wilsonville, including decision points and sites where navigation information is suited.
- Give sign placement guidance for specific corridors or areas of the community

The Council identified the creation of a citywide signage and wayfinding plan as a City Council Goal and recognizes the importance of wayfinding for all modes of transportation and desires a Plan that will address the needs of vehicles, cyclists, and pedestrians while enhancing the visitor experience through strategically placed and well-designed wayfinding signage. The goal of the Plan is to develop a family-friendly wayfinding system that provides logical and safe connections between key destinations and commercial districts. Installation of unified wayfinding signage, informational kiosks, and enhanced gateways will strengthen the sense of place, increase foot traffic to businesses, ease congestion, and offer a more enjoyable visitor experience.

EXPECTED RESULTS:
Creation of a community-wide signage and wayfinding program will result in an enhanced visitor experience while promoting community identity. The creation of a citywide signage and wayfinding plan will complete a City Council goal.

TIMELINE:
Over the past two months, work was conducted on the preferred design and high priority routes in preparation for Commission and Council work sessions. Adoption of the Plan is anticipated to be in early 2019.

CURRENT YEAR BUDGET IMPACTS:
This project is currently funded in the FY 2018-19 Budget through CIP #3003-Citywide Signage and Wayfinding in the amount of $85,000. A supplemental request will be submitted in January to roll over unused funds from last fiscal year from the CIP# 8118 Monument Sign Replacement project in the amount of $50,000 for a project total of $135,000.

FINANCIAL REVIEW / COMMENT:
Reviewed by: CAR Date: 10/25/2018

LEGAL REVIEW / COMMENT:
Reviewed by: BAJ Date: 10/25/2018

COMMUNITY INVOLVEMENT PROCESS:
To date, a project web site has been created, a focus group has been convened, and an in-person and on-line open house conducted. A work session was held with the Commission on October 10th, with the Council work session scheduled for November 5th. The final plan will return for a review by the Commission over the next two months, with adoption via Resolution by the City Council in early 2019.

POTENTIAL IMPACTS or BENEFIT TO THE COMMUNITY:
Creation of the program would be beneficial to visitors of the community and the businesses that rely on them.

ALTERNATIVES:
There are endless alternatives for this Plan. It is hoped that the draft preferred design is in keeping with the image desired for Wilsonville.

CITY MANAGER COMMENT:
Once adopted the City will implement this program in future budget cycles. This project is a 2016-2017 Council goal.

ATTACHMENTS:
A. Appendix A – Preferred Sign Design
B. Appendix B – Draft Citywide Signage and Wayfinding Plan

WILSONVILLE WAYFINDING

Visual Identity Survey Results and Concept Designs 09.27.2018

Appendix A

PREFERRED CONCEPT

UNDULATING STONE

Soft, Flowing, Connected

The Undulating Stone concept is inspired by the shape, form, and natural features of the Willamette River that flows through Wilsonville. At the heart of the concept are round river stones and soft curves of corten steel accented by laser cut details that allow light through. A unique feature of this concept is the use of Architectural Gabions that contain river stone and create sturdy bases for the signs. The warm color of the corten compliments the City's branding colors.

LEDGESTONE

CORTEN OR PAINTED METAL

ADIRONDACK

Kiosk Plan View

Park Sign Plan View

Kiosk | *Kiosk Side View* | **Park Sign** | **Pedestrian Fingerboard** | **Sign Topper** | *Alternate Topper*

WILSONVILLE WAYFINDING

09.27.2018

PREFERRED CONCEPT: Undulating Stone

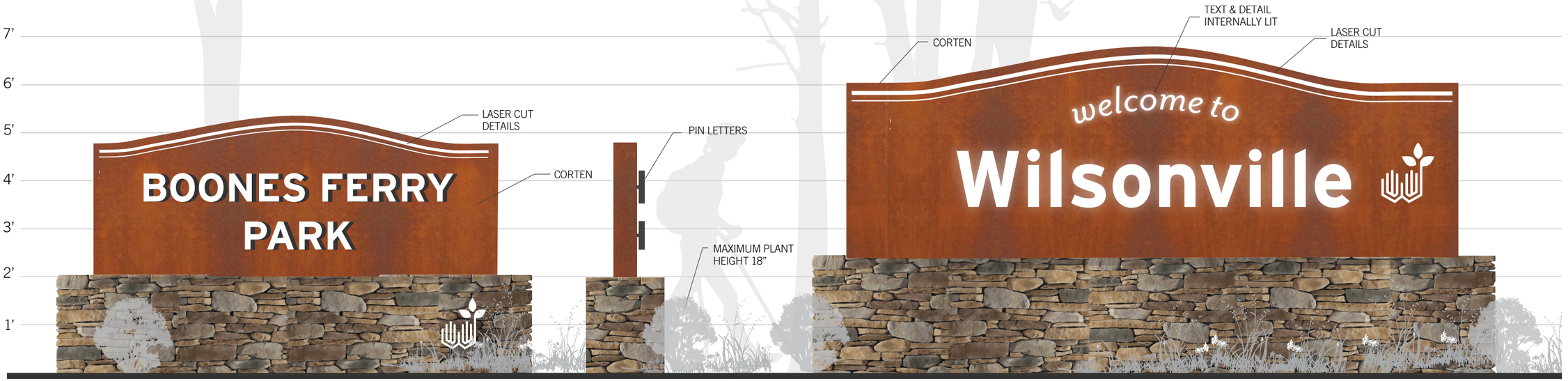
Soft, Flowing, Connected

SHEET 1

Enhanced Navigational Elements

Off-street signs

Large Park Sign Alternate I.



Large Park or City Building Sign

Gateway Sign

WILSONVILLE WAYFINDING

09.27.2018

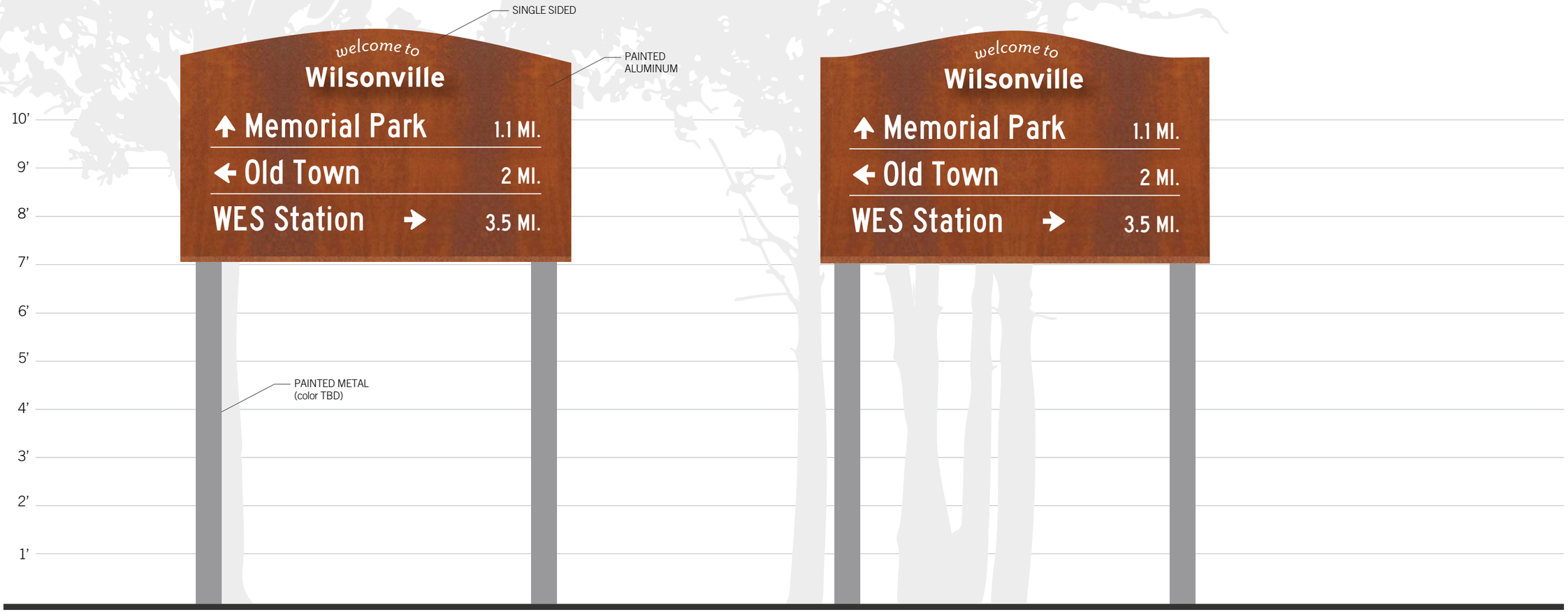
PREFERRED CONCEPT: Undulating Stone

Soft, Flowing, Connected

SHEET 2

Fundamental Navigational Elements

Park Sign & Gateway Sign



Vehicular Sign

Vehicular Sign Alternate I.

WILSONVILLE WAYFINDING

09.27.2018

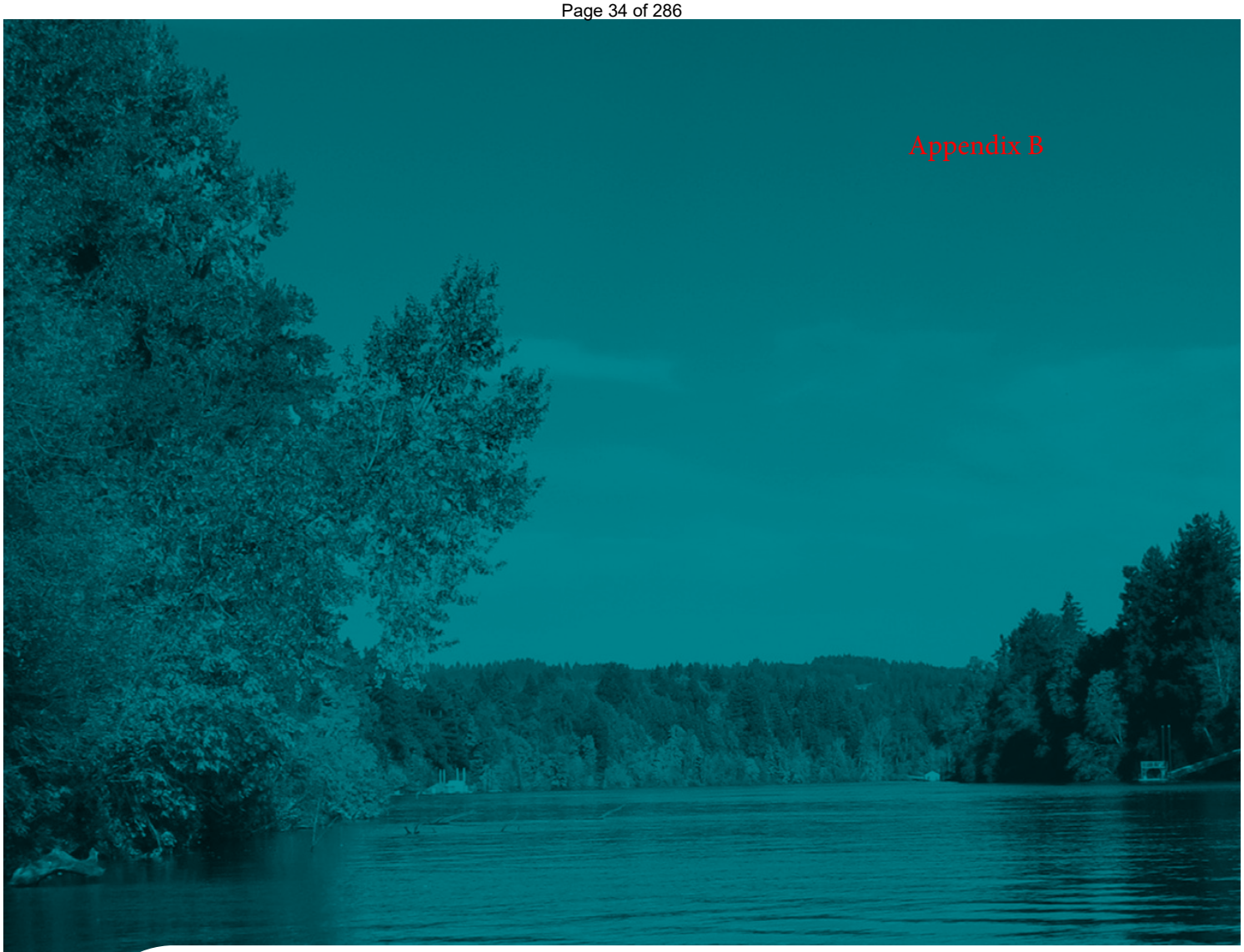
PREFERRED CONCEPT: Undulating Stone

Soft, Flowing, Connected

SHEET 3

Fundamental Navigational Elements

Vehicular Sign



Appendix B

CITY *of* WILSONVILLE

CITYWIDE SIGNAGE & WAYFINDING PLAN

RESOLUTION NO. 0000 | OCTOBER 2018

DRAFT

PREPARED BY:
Alta Planning + Design
711 SE Grand Avenue
Portland, Oregon 97214

WILSONVILLE
OREGON

ACKNOWLEDGEMENTS

Thank you to the community members who took time to participate in the community visioning, whose participation directly shaped the conceptual design that will continue to move forward into implementation. We also want to recognize the determination and effort contributed by the following people:

City Council

Tim Knapp, Mayor

Scott Starr, Council President

Kristin Akervall, Councilor

Susie Stevens, Councilor

Charlotte Lehan, Councilor

Planning Commission

Jerry Greenfield, Chair

Ron Heberlein

Peter Hurley

Kamran Mesbah

Phyllis Millan

Eric Postma, Vice Chair

Simon Springall

Focus Group Members

Tim Knapp, Mayor

Ben Altman

Demetra Auel

Kevin Ferrasci O'Malley

Martin Glastra van Loon

Charlotte Lehan, Councilor

Albert Levit

Sophia Lochner

Phyllis Millan, Planning Commissioner

City Staff

Chris Neamtzu, Planning Director

Steve Adams, Development Engineering Manager

Matt Baker, Facilities Maintenance Supervisor

Tod Blankenship, Parks Supervisor

Bill Evans, Communications and Marketing Manager

Angela Handran, Assistant to City Manager

Delora Kerber, Public Works Director

Preston Langeliers, Roads & Stormwater Maintenance Supervisor

Mark Ottenad, Public / Government Affairs Director

Dan Pauly, Senior Planner

Kimberly Rybold, Associate Planner

Charlie Tso, Assistant Planner

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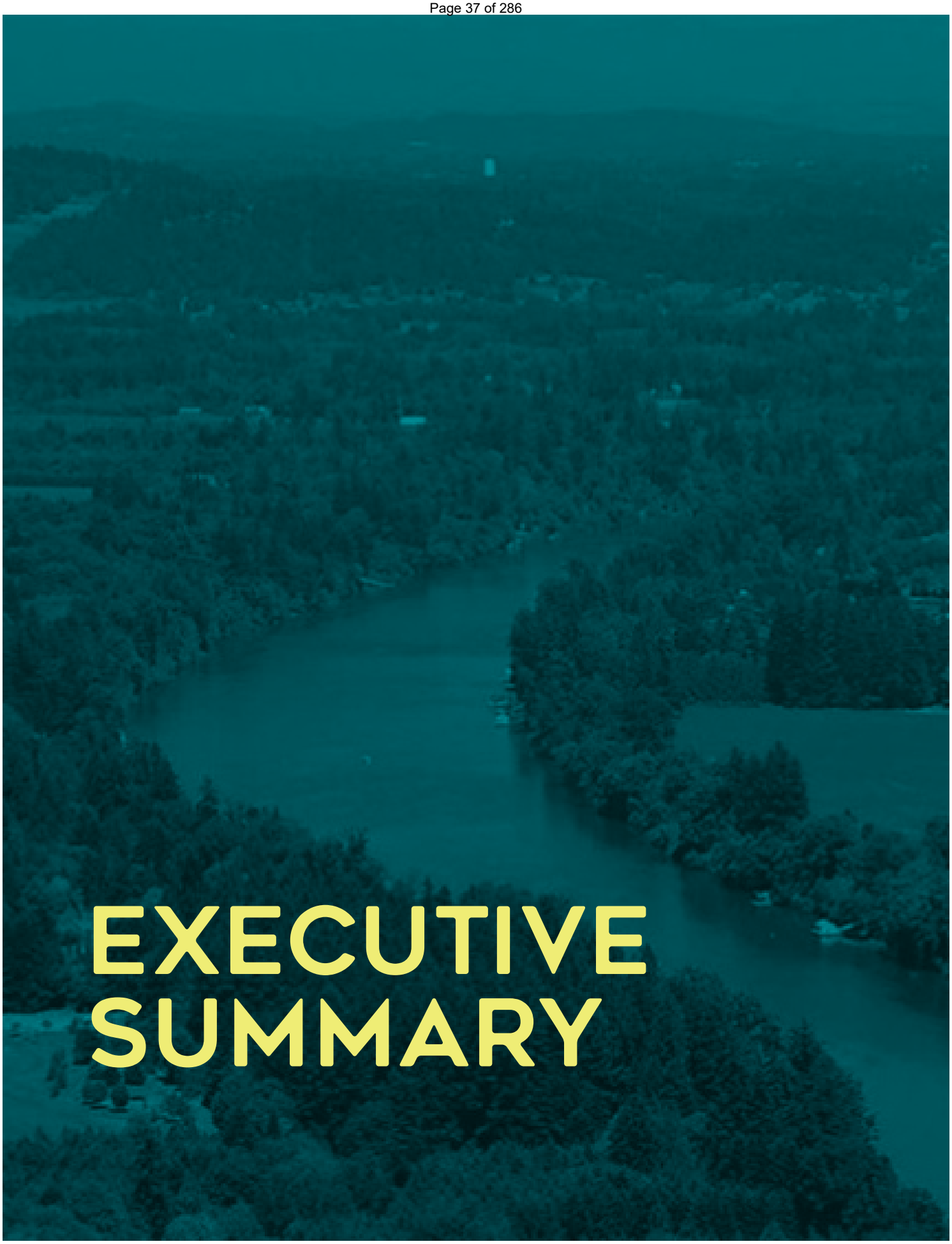

EXECUTIVE SUMMARY

Fig. 1 Aerial of Wilsonville and the Willamette River

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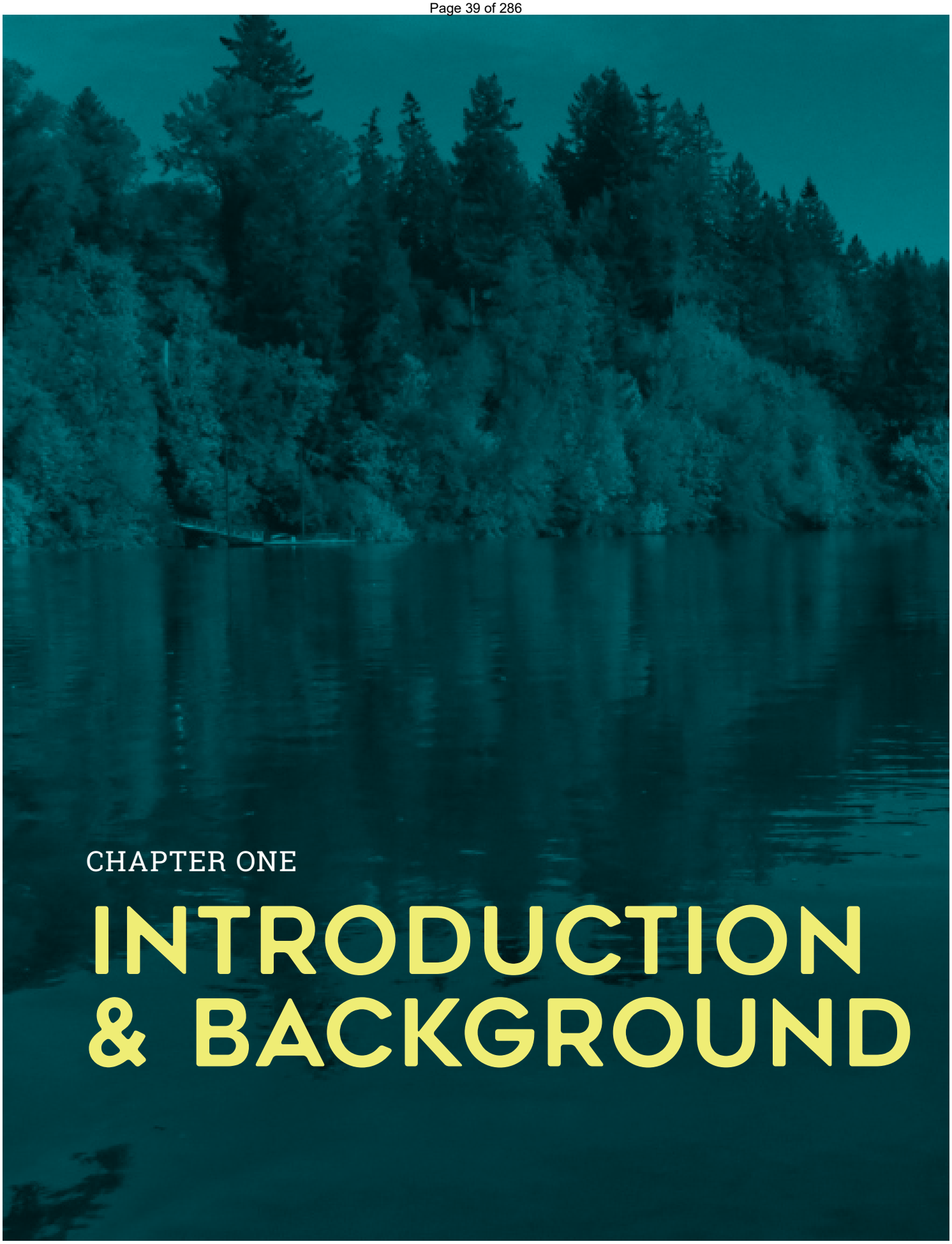


CHAPTER ONE

INTRODUCTION & BACKGROUND

OVERVIEW & SETTING

LOCAL CHARACTER & IDENTIFYING ELEMENTS

The City of Wilsonville Signage and Wayfinding Plan provides a strategy for the City to implement a citywide wayfinding system. The plan is a product of the community's goals to connect residents and visitors to city services and destinations such as transit centers, existing trails and recreation facilities, to support and enhance tourism, and to encourage travel off Interstate 5 and into commercial areas other areas of interest.

The City of Wilsonville (resident population of approximately 24,300) is situated along the Willamette River, just south of Portland, Oregon. Wilsonville has a rich history as a gateway between communities and a link between urban and rural landscapes. Wilsonville is located in both Clackamas County and Washington County, and is part of the greater Portland metropolitan area. The city is served by commuter rail and is bisected by Interstate 5 (I-5), connecting Portland to the north, Salem to the south, and the agricultural lands of the Willamette Valley to the southwest.

Numerous opportunities exist to enhance wayfinding, particularly across the Willamette River and I-5 corridors which break Wilsonville into distinct areas. Effective wayfinding is important as residents and visitors explore Wilsonville through different modes of transportation, including walking, biking, and driving, and from different entry points. Strategically placed and well designed wayfinding signage will help both visitors and residents navigate to key points of interest in the City.

Unified directional signage, informational kiosks, and gateways will enliven business districts by making them easier to locate from I-5, increasing foot traffic, and encouraging visitors to explore different parts of the City once they have arrived. Clean and concise navigation information creates a welcoming experience and signage is an effective investment to encourage tourism and improve access to local destinations.

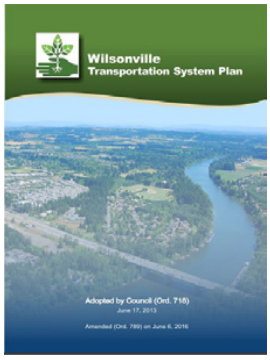
The City of Wilsonville Citywide Signage and Wayfinding Plan provides a strategy for the City to implement a citywide wayfinding system. This plan provides guidance on sign placement and route prioritization, in addition to a preferred design for a family of wayfinding signs. The preferred design incorporates national best practices, community input, local materials, and distinctive architectural details to create a unique wayfinding identity rooted in the history and landscape of Wilsonville.

Fig. 2 Historic church in the Old Town District of Wilsonville.

BACKGROUND REVIEW

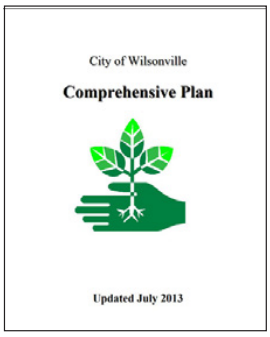
In developing the Citywide Signage and Wayfinding Plan, municipal plans and policies were reviewed in relation to multi-modal transportation and wayfinding signage.

WILSONVILLE TRANSPORTATION SYSTEM PLAN



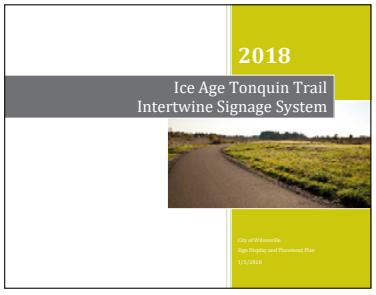
The Wilsonville Transportation System Plan (2016) lists the establishment of a comprehensive signage and wayfinding system as an essential implementation measure to achieve its stated policy to "Provide a safe, well-connected, and efficient system of streets and supporting infrastructure for all travel modes" (p. 2-3). The Plan also includes wayfinding signage as a high priority project to support bikeways and walkways (project BW-14). In particular, the project aims to provide multimodal wayfinding signage to and from the Ice Age Tonquin Trail, the SMART Central at Wilsonville Station, and other points of interest throughout the city.

CITY OF WILSONVILLE COMPREHENSIVE PLAN



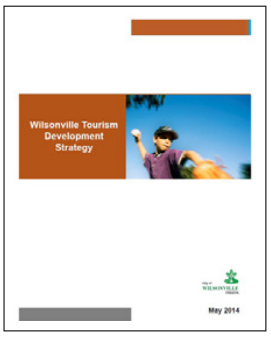
The City of Wilsonville Comprehensive Plan (updated July 2013) notes that for future City development goals, specifically as it relates to the Metro-designated green corridor, is to "limit signage in such a way as to maintain the rural character of the green corridor." Additionally, Implementation Measure 4.1.1.n states that the Development Review Board will require high standards of signage when it comes to renovation of existing businesses and new construction.

ICE AGE TONQUIN TRAIL INTERTWINE SIGNAGE SYSTEM



The City of Wilsonville Sign Display and Placement Plan for the Ice Age Tonquin Trail (January 2018) describes and illustrates the proposed signage plan for the Tonquin Trail, an important recreation destination within the City of Wilsonville.

WILSONVILLE TOURISM DEVELOPMENT STRATEGY



The Wilsonville Tourism Development Strategy (2014) indicates that insufficient signage and wayfinding is a "critical weakness" affecting visitor experiences (p. 14). Action 4.16 in the strategy calls to implement a comprehensive wayfinding signage system, elaborating that "in addition to providing clear directions, signage is important for wayfinding, identity and the creation of attractions by linking venues to form coherent and attractive trails and touring routes".

CITY OF WILSONVILLE BRANDING STYLE GUIDE

The City of Wilsonville Branding Style Guide (January 2017) denotes specific color palettes, proper logo usage, and recommended fonts that directly influence the wayfinding signage strategy.

CITY OF WILSONVILLE BICYCLE AND PEDESTRIAN MASTER PLAN

The City of Wilsonville Bicycle and Pedestrian Master Plan (December 2006) identifies a wayfinding/signing program as one of the key plan recommendations. These specific recommendations directly influenced the route prioritization and placement in this plan. Additionally, the bicycle and pedestrian signage that was implemented with this plan will be utilized as a base for future sign toppers that will enhance the identity of Wilsonville.

CITY COUNCIL 2017-2018 GOALS

The City of Wilsonville 2017-2018 Work Plan describes the 20 council goals, including goal 13 of developing a wayfinding program. This goal includes "a unified signage design that is reflective of the city's identity and consistent in color, font, materials, architectural elements and graphics."

PLAN OBJECTIVES

The objective of the plan is to better connect people walking, biking, or driving to destinations throughout Wilsonville with a cost-effective program that is easy to expand and maintain and a community supported design that reflects the city's unique identity.

The plan sets out to:

- Create wayfinding signage that will meet the needs of residents and visitors whether traveling through Wilsonville as a pedestrian, in a motor vehicle, or by transit or cycling.
- Establish a high quality design that captures local character and is coherent and attractive.
- Consider graphic standards focused on local identity and aesthetic.
- Understand key entrances and gateways to Wilsonville, including decision points and sites where navigation information is suited.
- Give sign placement guidance for specific corridors or areas of the community.

Fig. 3 Wilsonville has many important destinations that draw both local residents and visitors.

WAYFINDING PRINCIPLES

The "legibility" of a place describes how easy it is to understand. Places are more legible when they are arranged so people can intuitively determine the location of destinations, identify routes, and recognize areas of different character. A wayfinding system helps to make places more legible by better enabling individuals to:

- Easily and successfully find their destination.
- Understand where they are with respect to other key locations.
- Orient themselves in an appropriate direction with little misunderstanding or stress.
- Discover new places and services.

The following guiding principles, based on best practices from around North America, will help create the most effective wayfinding systems. Together, these wayfinding principles create a wayfinding system plan that is both legible and easy to navigate. These principles should be applied in Wilsonville's wayfinding sign placement and destination logic to effectively enhance the legibility of the community.

Places are more legible when they are arranged so people can intuitively determine the location of destinations, identify routes, and recognize areas of different character.

Be Predictable

Effective wayfinding networks are predictable. When information is predictable, patterns emerge, and users of the network are able to rely on the system to provide information when they expect it. Predictability also helps users understand new situations quickly, whether it be navigating a new intersection or traveling to a destination for the first time.

Users come to trust a predictable wayfinding network, making new journeys easier to attempt and complete. Every time a new trip is completed, users' confidence in the wayfinding network will be sustained or increased.

Predictability should relate to all aspects of wayfinding placement and design (i.e., sign materials, dimensions, colors, forms, and placement). Similarly, maps should employ consistent symbology, fonts, colors, and style. The system must be designed in accordance with local, state, and federal guidelines to ensure funding eligibility through state and federal sources.

Keep Information Simple

For a wayfinding network to be effective, information needs to be presented clearly and logically. The presentation of information needs to be balanced: too much information can be difficult to understand; too little and decision-making becomes impossible. The placement of signs and the information provided at each placement are also critical. To be successful, wayfinding information must be provided in advance of where major changes occur and confirmed when the maneuver is complete.

Wayfinding signage design should be accessible and comprehensible by a wide range of users, including people of all ages and ability levels. Special consideration should be taken for those without high educational attainment, English language proficiency, or spatial reasoning skills. In areas with high rates of users with English as a second language, the wayfinding should use text and symbols that will be understood by non-English speakers. Designers should minimize the use of bilingual text or separate-language signs, as including these elements can make signs cluttered and reduce overall legibility.

It is important to provide information in manageable amounts. Too much information can be difficult to understand; too little and decision-making becomes impossible.

Maintain Motion

Bicycling and walking require physical effort, and frequently pausing to check directions may lead to frustration and discouragement. Consistent, clear, and visible wayfinding elements allow pedestrians and bicyclists to navigate while maintaining their state of motion. To help users maintain motion, wayfinding information must be quickly read and easily comprehended.

Promote Active Travel

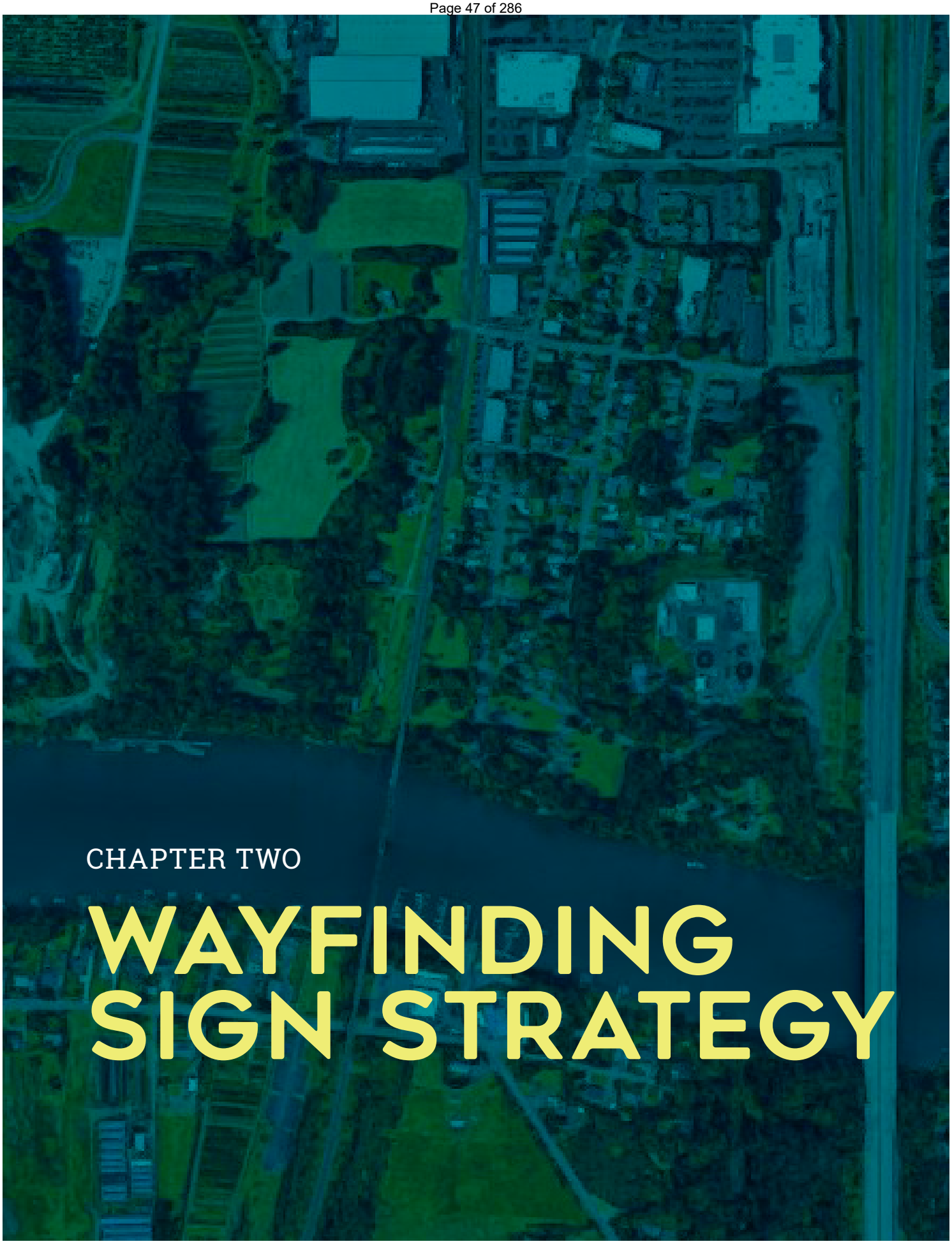
A wayfinding network should encourage increased rates of active transportation by creating a clear and attractive system that is easy to understand and navigate. The presence of wayfinding signs should communicate that walking and bicycling to many destinations is convenient

An effective wayfinding system makes active transportation facilities more visible and helps to increase use of both on-street and off-street facilities. Wayfinding improvements are a cost-effective way of drawing attention to existing facilities and how they connect people to the places they want to go.

Connect Places

An effective wayfinding system enables residents and visitors alike to travel between destinations and discover new destinations and services. Wayfinding connects neighborhoods and provides navigational assistance to both local and regional destinations. Effective wayfinding is an extension of the transportation network and provides a seamless travel experience for people walking, biking, or driving.

Wayfinding connectivity goes beyond physical signage. Wayfinding signage elements can create a deeper connection to a place, cultivate a sense of pride by reflecting community values and identity, and support local economic development by encouraging residents and visitors to use services.



CHAPTER TWO

WAYFINDING SIGN STRATEGY

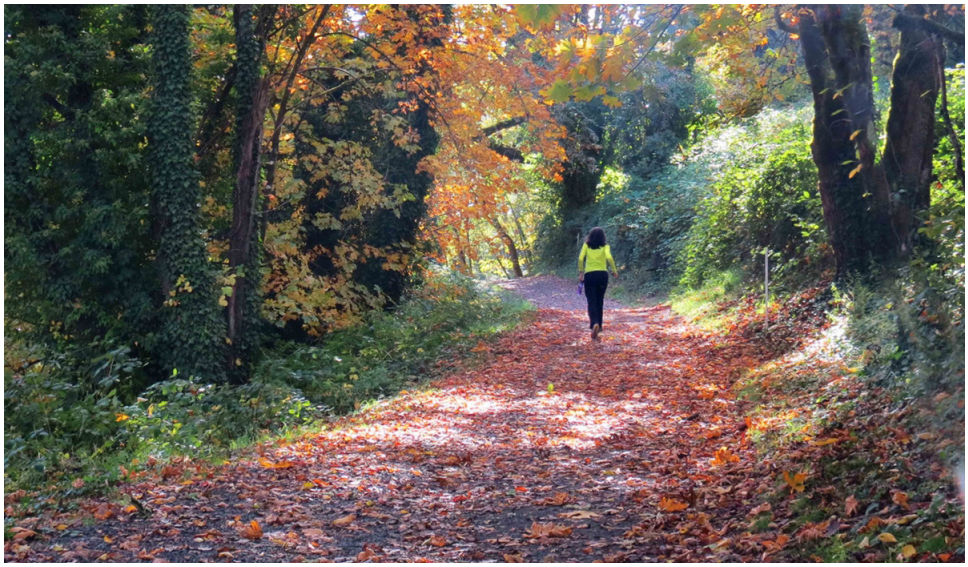


Fig. 4 Wilsonville has numerous public parks that are important to both visitors and residents.

WAYFINDING SIGN PLACEMENT GUIDANCE

Thoughtful and strategic wayfinding sign placement will guide Wilsonville's visitors and residents as they navigate between regional and local destinations using existing roadway, transit, bicycle, and pedestrian transportation networks and infrastructure. A hierarchy of destinations is established to consistently select and arrange destination names for inclusion on signs. It is not possible to name all places on signs, therefore a system of prioritization is used to stagger signs along a route.

Developing a wayfinding system follows a process that includes identifying and prioritizing destinations; identifying common routes that link to major destinations; identifying important transfer locations or decision points along these routes; and finally determining the best location to place signage.

STRATEGIC PLANNING FOR MULTIMODAL CITY WAYFINDING PLAN

❶ *Identifying Destinations.*

A system of prioritized destinations allows Wilsonville to effectively sign to destinations along a route, with consistent use of place names that are recognizable and legible.

❷ *Identifying Routes.*

Common routes to destinations are identified in order to determine appropriate and logical placement of signs along the route of travel. Different modes of travel use different routes and require varying levels of information on signs.

❸ *Identifying Key Intersections.*

Travel decisions are made at different stages along a route. Intersections and decision points are identified for placement of decision, turn, and confirmation signs.

❹ *Sign Placement.*

Consistent placement of signs creates a reliable path or route of travel, allowing a user to easily locate and read signs. Signs and destination information provided along a path inform navigation decisions and indicate intersections. Consistent placement of signs at decision points provide users reassurance and contributes to increase user confidence.

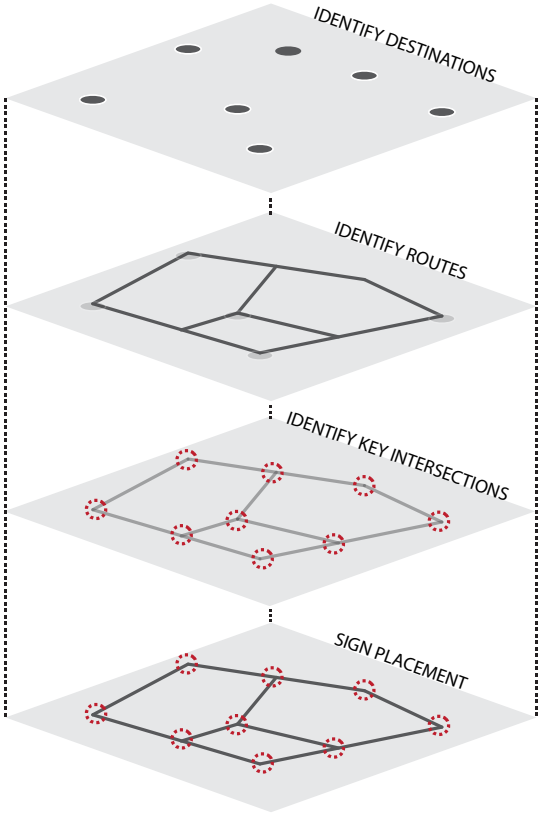


Fig. 5 Wayfinding System Logic

DESTINATION SELECTION AND PRIORITIZATION

Wayfinding relies on clear communication and on use of names that are consistent, recognizable, and legible. The number of destinations that may be listed on a wayfinding sign is limited, therefore a system of progressive disclosure is used to stagger information along a journey. Disclosing information in stages relies on an agreed hierarchy of destinations.

This guidance describes an approach for selecting and prioritizing potential destinations to which pedestrians and cyclists may want to travel. Signs should follow the same approach throughout the City so that the system is clear and predictable. Once a destination is named on a sign, it should be included on subsequent signs until the destination has been reached. Destinations for the City of Wilsonville were generated by prioritization scores and input from the Focus Group and City staff.

Level 1 destinations receive first priority on wayfinding signs on local routes and corridors, followed by Level 2 and Level 3.

Motorists, transit users, and cyclists are typically signed to level 1 and level 2 destinations, whereas level 3 destinations are most often included on pedestrian oriented signs or maps. Motorists and transit users travel at higher speeds and over greater distances, therefore signed destinations match this scale of travel by providing larger signs, limitations on the number of destinations, and the length of destination names. Cyclists may travel greater distances at higher speeds than pedestrians, and therefore signed destinations will be located at different intervals. Pedestrians travel at a lower speed and can stop and read detailed signs or maps, of a smaller scale or size, that would be inappropriate for those traveling at higher speeds. Destination categories and named locations should be reviewed and updated regularly.

Table 1 Destination Level Categories

Level 1 - City Centers & Districts
Level 1 destination include city centers, districts, and universities. Highlighting these types of destinations helps orient intra and inter-municipal trips. These may be historic, commercial, cultural districts or neighborhoods with a distinct name and character. Emphasis is placed on areas that provide a mix of popular attractions and services. Local neighborhoods that do not offer services or attractions should not be included.
Level 2 - Regional Parks
Level 2 destinations provide a finer grain of navigational information than level 1 destinations by directing users to regoinal parks and well known businesses.
Level 3 - Local Destinations
Level 3 destinations are specific major attractions within the City which generate a high amount of traffic. Local attractions include: community centers and major civic institutions, transit stations, schools, hospitals and visitor centers.

SIGNAGE DISTANCE AND DISTANCE ORDER

Signing distances, the distance between sign and destination, focus on the maximum distances that destinations should appear on directional signs. This process allows information to be provided in a timely manner and in manageable amounts, according to a traveler's needs.

The four levels of destinations provide signing distances for each mode of travel:

- Level 1 should appear on signs up to 5 miles away for cyclists and longer distances for transit riders and motor vehicle operators.
- Level 2 should appear on signs up to 2.5 miles away when they are a primary destination and up to 1 mile away when a level 1 destination is available.
- Level 3 are signed up to half a mile to represent a scale that is appropriate for walking.

Signing distances to and from transit stations or major exchanges is based on destinations in proximity to the station or exchange.

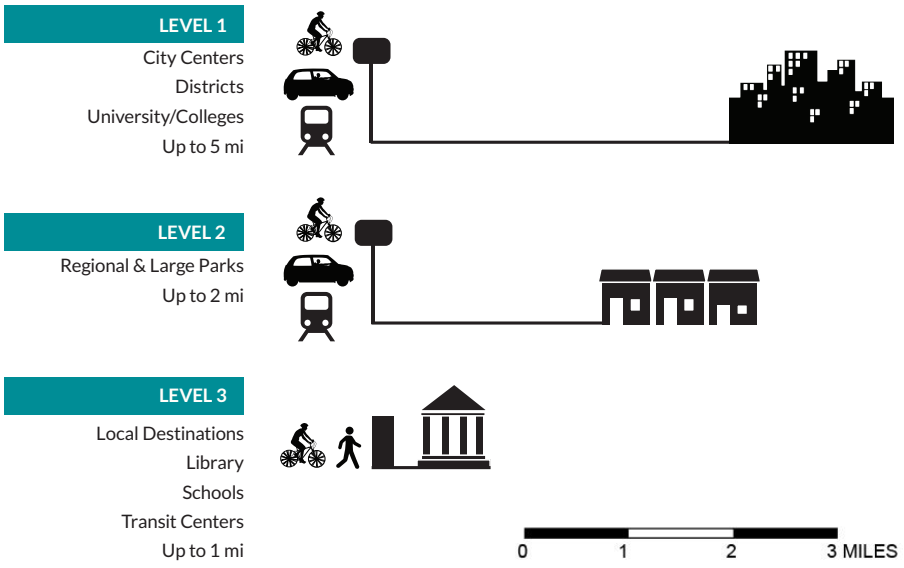
Signing distances for motor vehicles is available in the Manual of Uniform Traffic Control Devices (MUTCD). Detailed signing requirements including appropriate distances, are available in MUTCD.

Once a destination list is established, the next stage is to determine the best location or placement of signs along a route.

NAMING GUIDANCE

Sign guidance outlines a standard approach for names of destinations that can reasonably fit on signage. Typically, 14-15 characters (including spaces) is the ideal length for destination names, and 19 characters is roughly the longest that will fit on a sign.

Fig. 6 Signage Distance Guidance



APPROVED DESTINATIONS

For Wilsonville, level 1 destinations are Old Town, Town Center, and Argyle Square. Level 2 destinations are major parks or landmarks and level 3 destinations are local attractions. The approved destinations were derived from the City's previous bicycle wayfinding plan with important destinations for all modes of travel added with guidance from the focus group. Finally, City staff provided feedback before the project team assembled the final approved destination list.

Table 2. Destination List

Destination Name	Abbreviation	Destination Level
Argyle Square	Argyle Square	1
Town Center	Town Center	1
Old Town	Old Town	1
Oregon Institute of Technology	Oregon Tech	1
Clackamas Community College	Clackamas CC	1
City Hall	City Hall	1
SMART Central Station	Transit Center	1
Villebois	Villebois	1
Willamette River Water Treatment Plant Park	Arrowhead Ck Pk	2
Boones Ferry Park	Boones Fry Pk	2
Graham Oaks Nature Park	Graham Oaks Pk	2
Memorial Park	Memorial Park	2
Town Center Park	Town Ctr Park	2
Oregon Korean War Memorial	War Memorial	3
Ice Age Tonquin Trail	Tonquin Trail	3
Wilsonville Waterfront Trail	Waterfront Trail	3
French Prairie Road Trail	French Pr Trail	3
Memorial Park City Trail	Memorial Pk Trails	3
Villebois Piazza	Piazza	3
Wilsonville Community Center	Comm Center	3
Library	Library	3
Police Station	Police Station	3
Post Office	Post Office	3
Wilsonville High / Boeckman Creek Primary School	Wilsonville H.S. Boeckman Ck P.S	3
Inza R Wood Middle / Boones Ferry Primary School	Wood M.S. Boones Ferry P.S.	3
Lowrie Primary School	Lowrie P.S.	3
Meridian Creek Middle School	Meridian Ck M.S.	3

ROUTE PRIORITIZATION

As part of the planning process, the project team prioritized routes based on readiness, proximity to destinations, and overall need and gap closure as they relate to navigational challenges in the city. The results of the prioritization process helped to select and prioritize locations for wayfinding improvements. The results of this analysis process are visualized in the initial vehicle route prioritization (Map 1) the initial bicycle route prioritization (Map 2) and the pedestrian route prioritization (Map 3), which aided in he development of the final route prioritization (Map 4 on page 46).

WAYFINDING ROUTE PRIORITIZATION METHODOLOGY

The project team assigned a route prioritization score to each street segment in the project area. The prioritization criteria focus on identifying routes that people will rely on to find community destinations. The criteria were used to produce two separate scores, one for bicycle wayfinding and one for motor vehicle wayfinding.

PRIORITIZATION CRITERIA

Bicycle Facilities

The project team scored the segments on the presence or absence of an existing bicycle facility. This criterion was only used for the bicycle wayfinding score.

Pedestrian Facilities

The project team scored the segments on the presence or absence of an existing pedestrian facility (sidewalks and shared use paths). This criterion was only used for the pedestrian wayfinding score.

Proximity to Destinations

When there are more destinations near a given roadway segment, there is a greater need for wayfinding improvements. This criterion scores segments on the number and importance of destinations within a half mile. The relationship of a roadway or trail to destinations is a key aspect of wayfinding, thus this criterion was weighted higher than the others. The destinations included in the analysis are listed in Table 2.

Population and Employment Density

Each segment received a score based on the number of people who live and work nearby (within 0.25 miles). The population score was drawn from the 2010 Census, at the Census Block level. The employment score was derived from 2014 Longitudinal Employer–Household Dynamics (LEHD) data. A composite score was created by totaling the population and employment scores for each segment. The composite scores were converted to a scale from 2-10, with 10 representing the greatest number of people living and working near the segment.

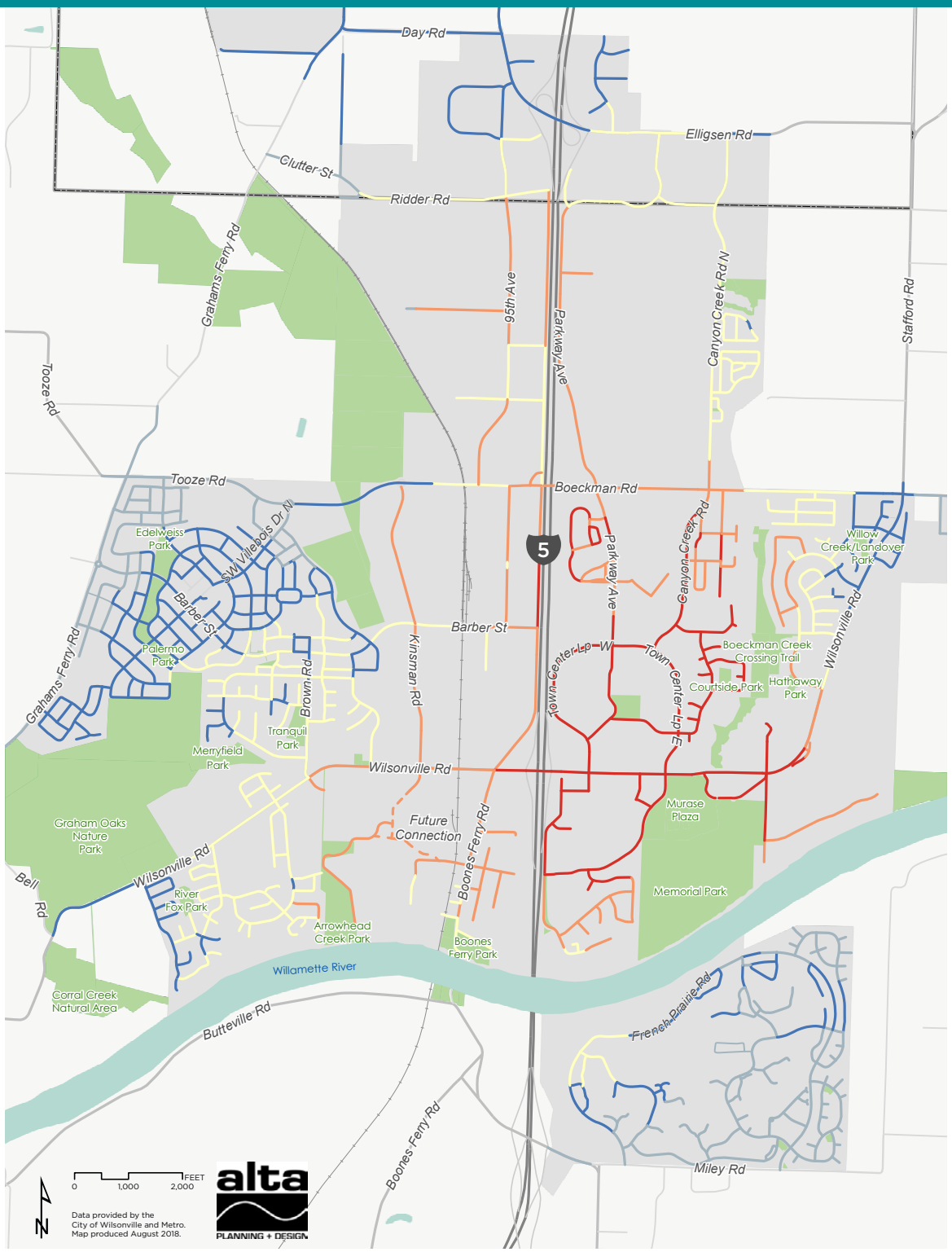
Next Steps

This prioritization exercise provides a citywide look at the relative need for wayfinding based on population, employment, major destinations, and existing facilities. It does not prescribe specific locations or routes for wayfinding signage. Rather, it is intended as one input to be used in combination with public input, city staff expertise, and general wayfinding principles. See Map 4 on page 46 for the final route prioritization map.

Route Prioritization Scoring Evaluation Matrix

Prioritization Criteria	Variable	Score
Proximity to Destinations	The destination score is calculated based on the number and importance of destinations within 0.5 miles of the segment. Destinations were divided into four levels and given the following weights: Level 1 Destinations: 10 Level 2 Destinations: 7 Level 3 Destinations: 4 Level 4 Destinations: 1 The weighed destination scores were calculated for each segment and then normalized from 0 to 20.	0-20
Population and Employment Density	Composite score of population and employment totals within 0.25 miles. Each segment was then scored on these values, relative to the City of Wilsonville as a whole.	2-10
Pedestrian Facilities (only included in the pedestrian wayfinding score)	Complete sidewalks on both sides of the street or existing shared use path Complete sidewalks on one side of the street No existing or planned facility	10 5 0
Bicycle Facilities (only included in the bicycle wayfinding score)	Existing Bike Facility No Existing or Planned Facility	10 0

Table 3. Evaluation Matrix



Map 1 Initial Vehicle Route Prioritization

INITIAL VEHICLE ROUTE PRIORITIZATION

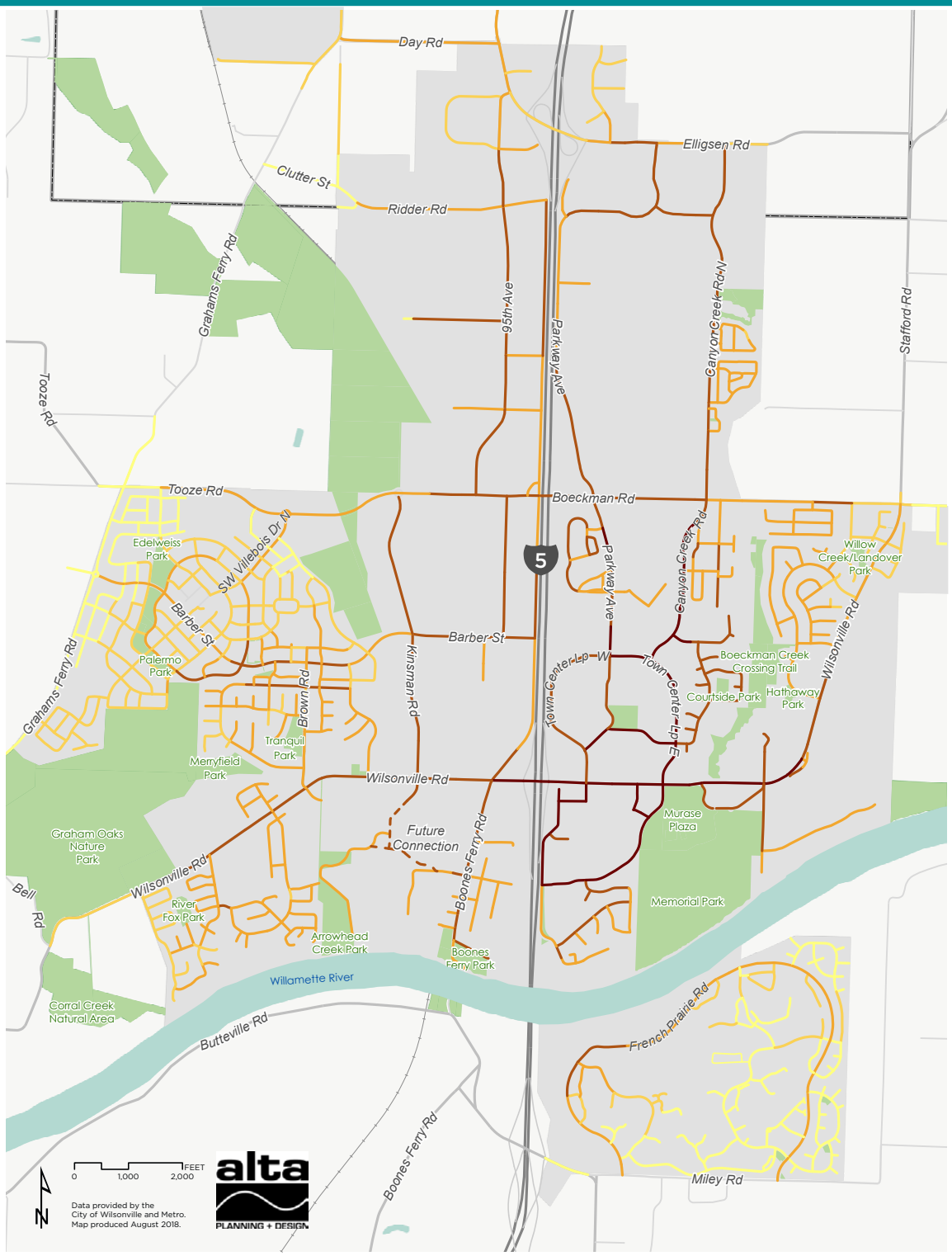
CITY OF WILSONVILLE WAYFINDING PLAN

PRIORITIZATION SCORE

- 0 - 5
- 5 - 10
- 11 - 15
- 15 - 20
- 21 - 30

INPUTS:

- DESTINATIONS
- POPULATION
- EMPLOYMENT



Map 2 Initial Bicycle Route Prioritization

INITIAL BICYCLE ROUTE PRIORITIZATION

CITY OF WILSONVILLE WAYFINDING PLAN

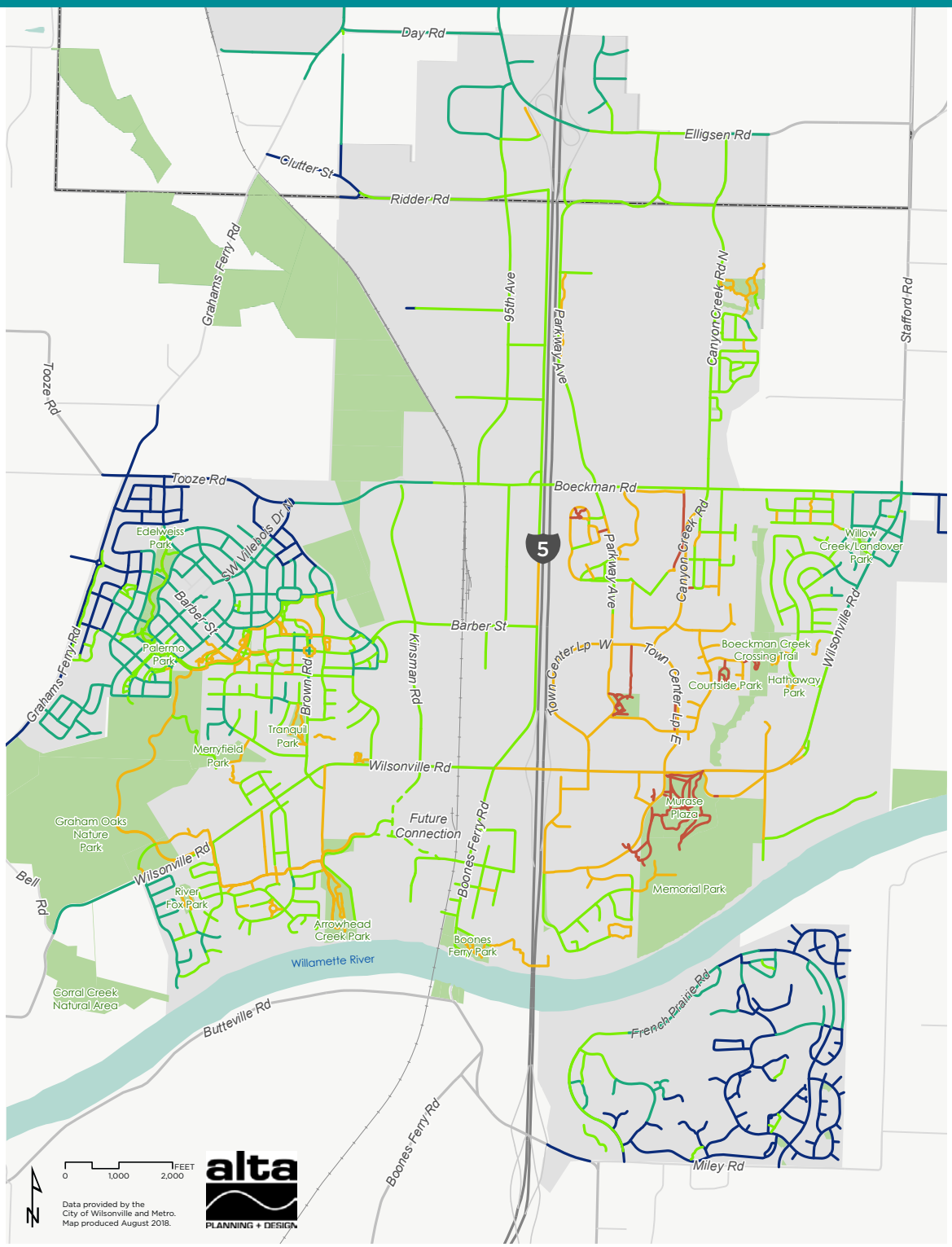
*Shared Use Paths are included in the Pedestrian Prioritization

BIKE PRIORITIZATION SCORE

- 0 - 5
- 6 - 10
- 10 - 20
- 20 - 30
- 30 - 40

INPUTS:

- DESTINATIONS
- POPULATION
- EMPLOYMENT
- BICYCLE FACILITIES*



Map 3 Initial Pedestrian Route Prioritization

INITIAL PEDESTRIAN ROUTE PRIORITIZATION

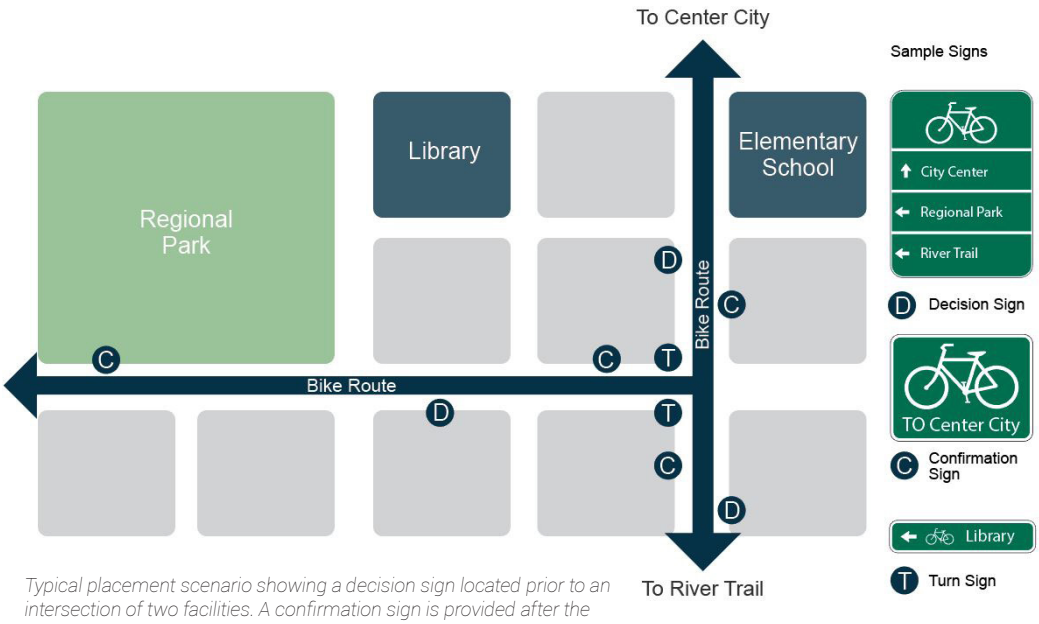
CITY OF WILSONVILLE WAYFINDING PLAN

PEDESTRIAN ROUTE PRIORITIZATION

- 0 - 5
- 6 - 10
- 10 - 20
- 20 - 30
- 30 - 40

INPUTS:
- DESTINATIONS
- POPULATION
- EMPLOYMENT
- PEDESTRIAN FACILITIES

Fig. 7 Typical Sign Placement



Typical placement scenario showing a decision sign located prior to an intersection of two facilities. A confirmation sign is provided after the turn movement as well as periodically along the route for reassurance.

SIGNING INTERSECTIONS

Decision Signs: are placed in advance of the intersection between routes that access different destinations. These signs list destinations and provide arrows that identify turns necessary to reach a particular destination. Distances and travel times are optional but recommended.

For faster moving vehicles, signage should be placed in advance of a turn according to stopping sight line distance guidance found in the MUTCD. For walking, advance signage is not required, and considerably more information can be presented. While signage aimed at cyclists and motorists is limited to three lines of text in most circumstances, walking information may include a map as well as up to ten destination directions.

On routes where speed is likely to be high, decision signs can be repeated ahead of the turn. Repeated decision signs should be located according to the design speed.

Turn Signs: are optional signs used to highlight turns. Turn signs are often used to emphasize a turn in a busy built up area where there are many distractions and to indicate unusual turn geometry such as acute angles. They are located at the intersection between two routes.

Confirmation Signs: reassure users that they are on the correct route and provide information regarding destinations in the direction of travel. Confirmation signs are placed after a turn and can be repeated periodically, with increasing frequency should there be changes in the direction of the route and where there are side routes that could be confusing. Normally three and up to four destinations would be shown in ascending order of distance.

SIGN PLACEMENT PROGRAM

The placement of wayfinding signage should achieve three critical aims:

1. Creating reliable paths

Route hierarchy provides the framework to prioritize signage. Signage should mark the beginning, end and key nodes along each route. Signage guidance recommends that signs should be placed in the same orientation, height and relative position so that a user can easily locate and read signs.

2. Informing decisions

Wayfinding information is used for navigation and developing mental maps of places. Navigational signage may be needed along a path to provide early warning of an intersection, to mark a turn and to confirm direction.

3. Providing reassurance

Signage confirm directions in order to reduce doubt as a user makes their way along a route to a destination. Consistent placement of signage at decision points, provides users reassurance and contributes to increasing user confidence.

Consistent sign placement is preferable so it is reliable. This is not always possible as signs must be located within designated road right-of-way or within the furnishing zone of the roadside, as well as, located proximate to other signs.

General sign placement guidance should consider:

- Signs should be within a users' field of vision.
- Travel speed must be a factor so a user has time to comprehend the sign information and has time to make informed travel decisions.
- Sight lines should not be obstructed.

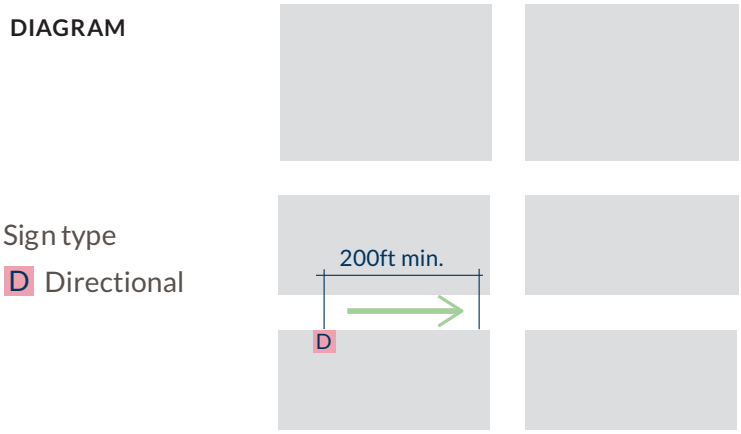
The following pages provide guidance for placement of signs to serve motorists, cyclists, transit users and pedestrians using generic situations and particular examples, specific to Wilsonville.

VEHICULAR ORIENTED SIGNS

Automobile oriented signs include larger directional wayfinding signs mounted on poles along roadways, custom parking signs, and potentially facility signs to mark places such as parking garages.

Directional signs are located at or near gateways to the city, pointing toward level 1-3 destinations where drivers are faced with routing decisions and may be provided along routes to confirm the route or to provide an indication of distance. The placement of the sign is dependent upon transportation authority posted design speeds.

Upon arrival at destinations, parking and facility signs may be provided as well as pedestrian oriented signs, such as map kiosks, to support the driver once they become a pedestrian.



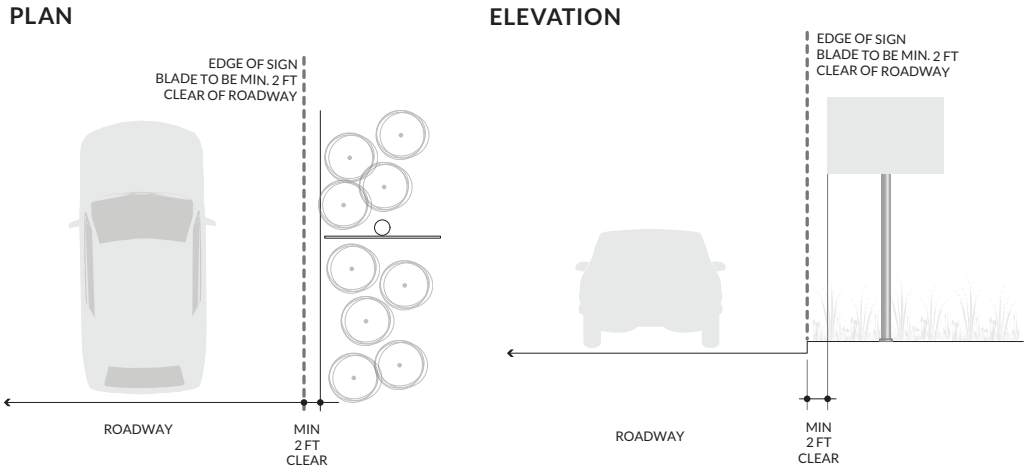


Fig. 8 Vehicular Oriented Wayfinding Sign Guidance

MULTI-USE PATHWAY SIGNS

Multi-use pathway signs include both map kiosks, pedestrian fingerboards, and trail markers located adjacent to the path of travel.

Map kiosks are placed near intersections, activity centers or can be located outside of transit stations. Kiosks are often placed along a linear route where a primary route is adjacent to multiple level 1-3 destinations.

Placement of the map kiosks is designed for universal accessibility, readable at varying heights and allowing wheelchair turning radius.

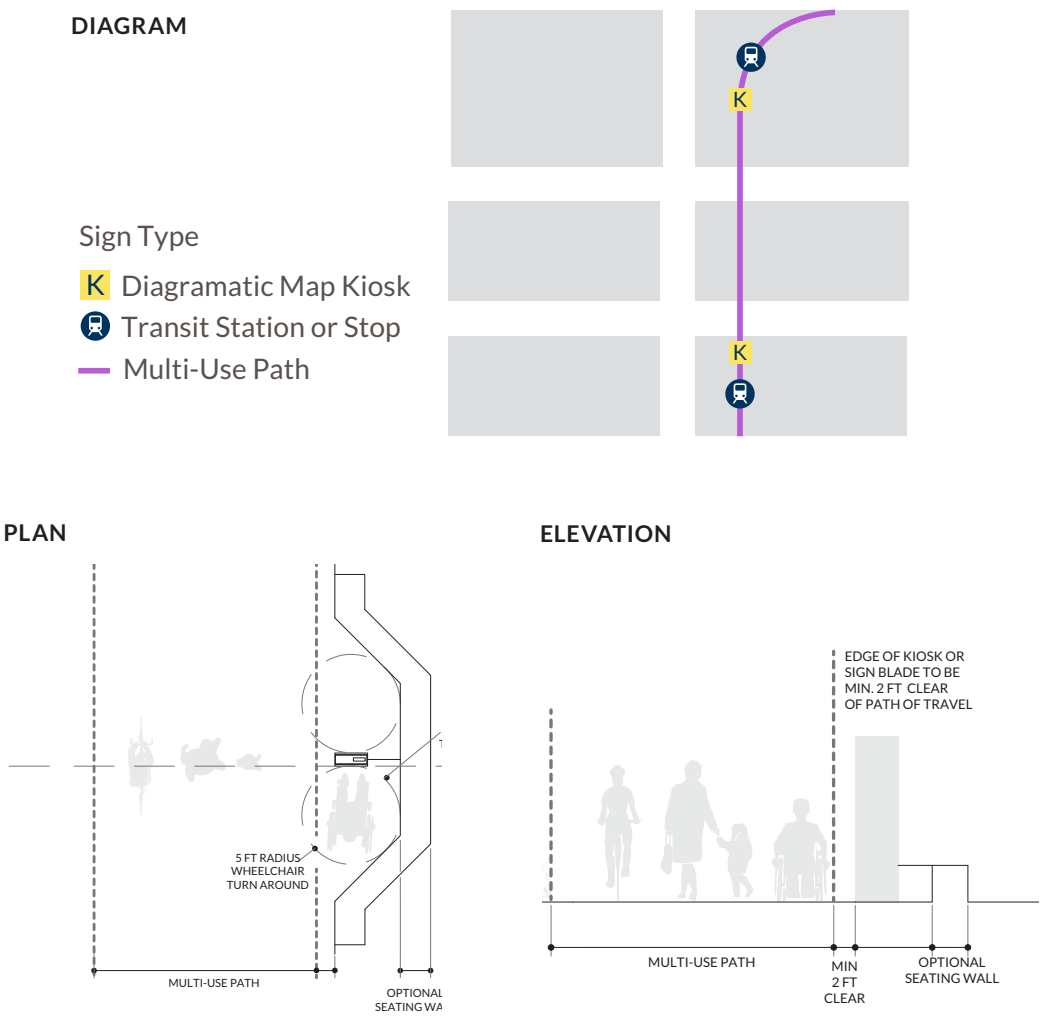
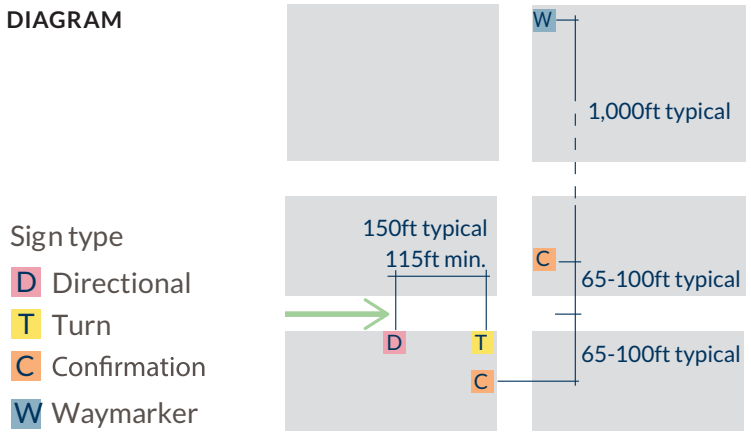


Fig. 9 Multi-Use Pathway Wayfinding Sign Guidance

BICYCLE ORIENTED SIGNS

On-street bicycle oriented signs include Decision Signs, Turn Signs, Confirmation Signs and Waymarkers (or trail markers).

Decision signs are placed in advance of an intersection or at the approach of a decision point. Decision signs identify the route name followed by level 1 to 3 destinations. Turn Signs are optional signs placed at the intersection or decision point to provide additional direction when there are uncommon or often missed turns. Confirmation Signs are placed after a directional decision sign to provide assurance to cyclists and confirms the next or additional destinations.



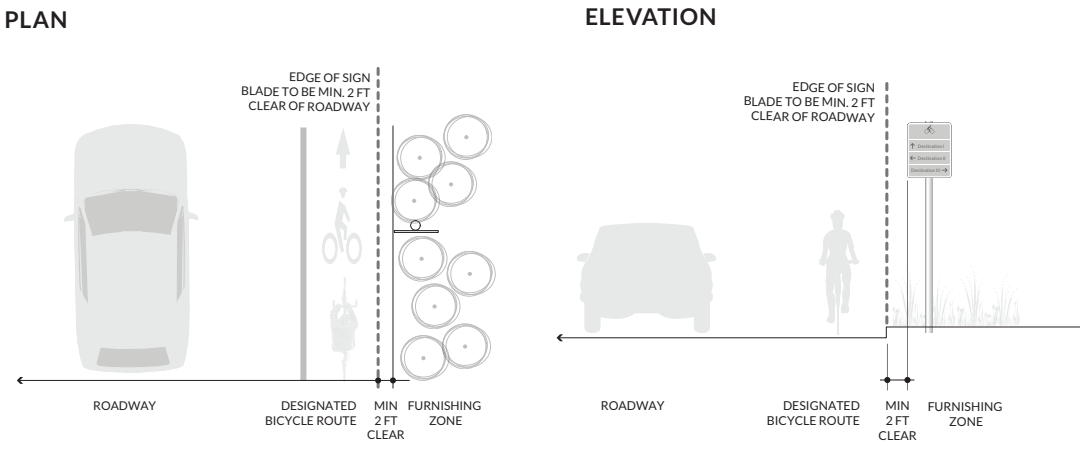


Fig. 10 Bicycle Oriented Wayfinding Sign Guidance

PEDESTRIAN ORIENTED SIGNS

Pedestrian oriented signs include directional fingerboards and map kiosks.

Map kiosks are placed on linear routes such as major streets or corridors, where a primary route is flanked by multiple level 1-3 destinations. Pedestrian directional signs may include level 2 to 4 destinations with directional arrows and/or travel time or travel distance. Pedestrian directional signs are placed in proximity to major activity centers or destinations. Pedestrian signs may be used with existing poles where necessary. Signs should be located in the furnishing zone of the sidewalk, outside the pedestrian path of travel so as not to obstruct clear movement.

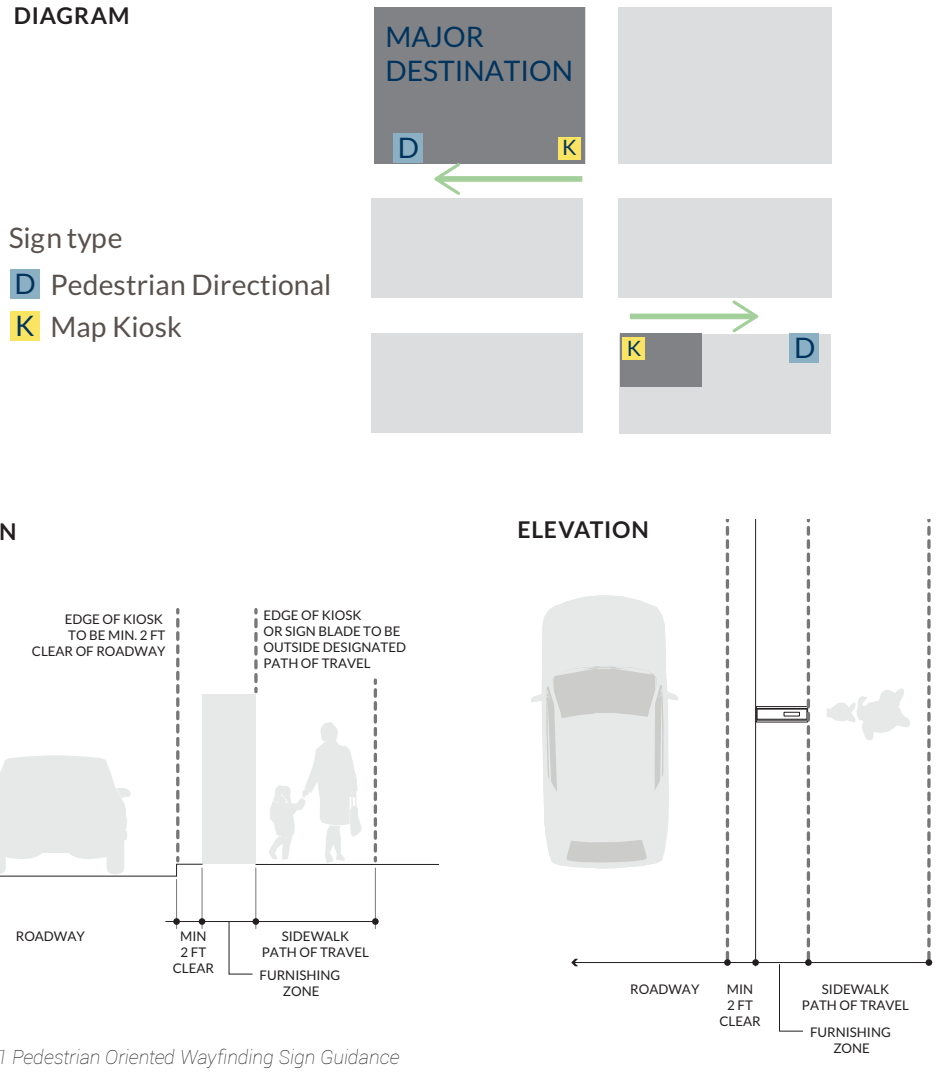


Fig. 11 Pedestrian Oriented Wayfinding Sign Guidance

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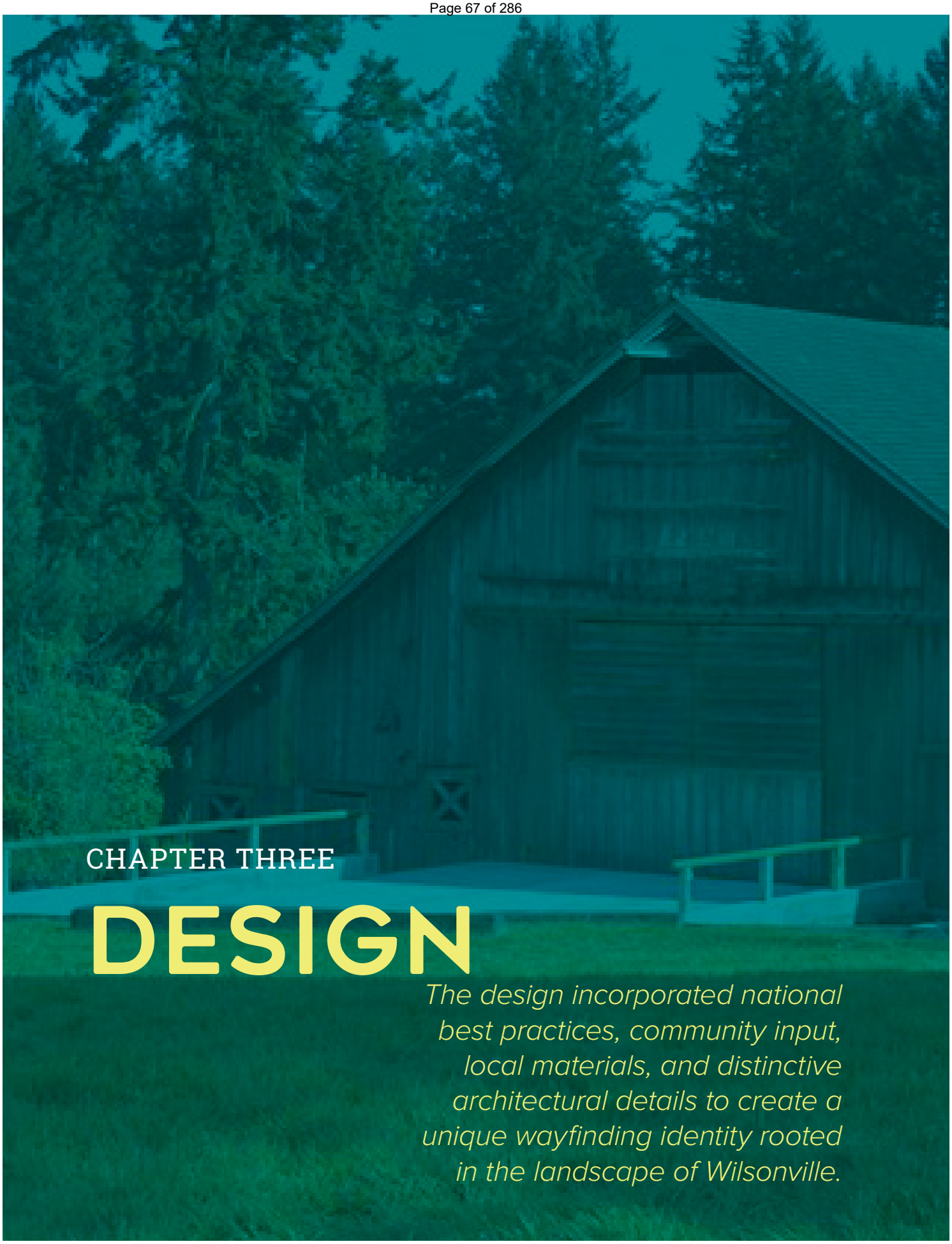


CHAPTER THREE

DESIGN

The design incorporated national best practices, community input, local materials, and distinctive architectural details to create a unique wayfinding identity rooted in the landscape of Wilsonville.

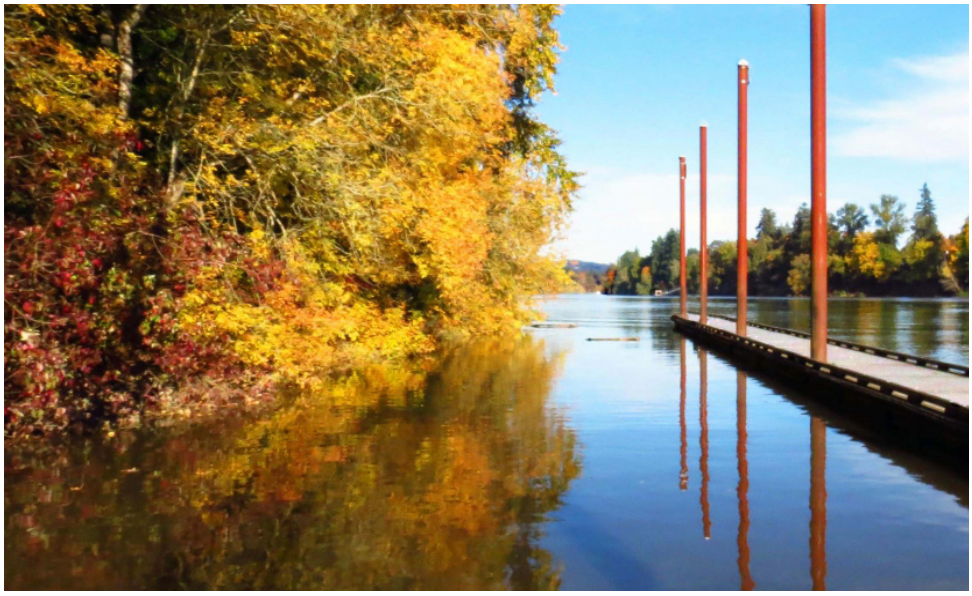


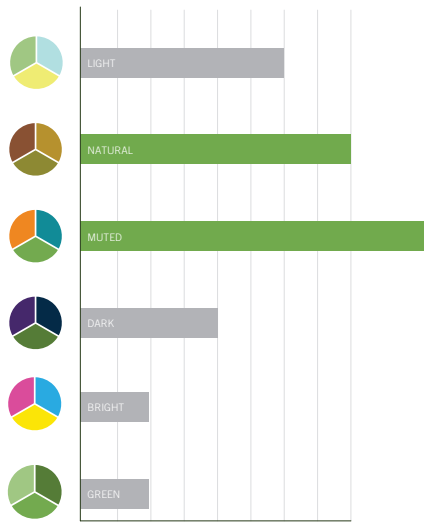
Fig. 12 The City of Wilsonville provides pedestrian access to the Willamette River - one inspirational element for the sign family design.

DESIGN PROCESS

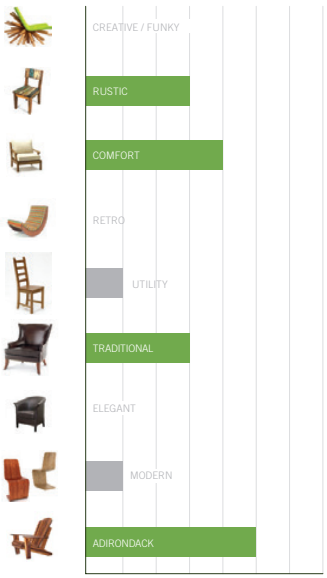
Consultation with City staff and a community Focus Group provided the design team with valuable information to guide the City of Wilsonville Citywide Signage & Wayfinding Plan.

The project team shared a visual preference survey (Fig. 13) with the Focus Group to gain a better understanding of the preferred design aesthetic of Wilsonville, and the potential direction for the design concepts of the wayfinding sign family.

By asking what words, colors, icons, fonts, typology, materials, and patterns best convey the desired experience and qualities of Wilsonville, the design team was able to prepare a series of preliminary conceptual designs (Appendix B), which were later finalized into the preferred design (Fig. 14).

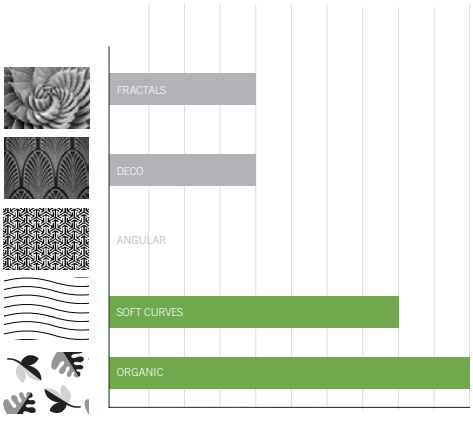


Color

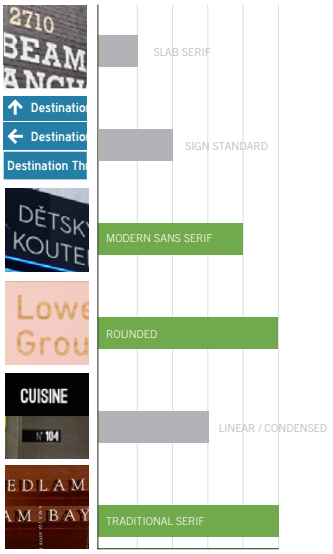


Typology

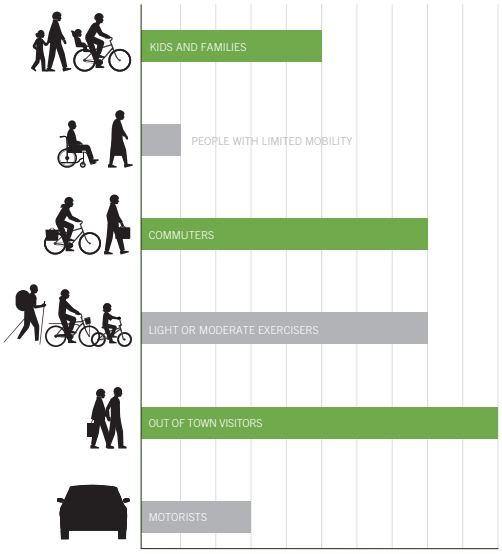
Materials



Pattern



Fonts



Intended Audience

FRIENDLY
HISTORIC
SIMPLE
CONNECTED
HEALTHY
ORGANIC
TIMELESS
REFLECTIVE
SOPHISTICATED
SAFE
INVITING
ACCESSIBLE

Themes

SMALL TOWN

Environment

Fig. 13 Visual Preference Survey Results

COMMUNITY VISION

The community vision was formed by integrating the ideas that were significant for the individual and consistent throughout the majority of the Focus Group. The design process included an open house as well as a public online survey, both of which are documented and discussed in Appendix D: Public Outreach.

FOCUS GROUP VISIONS

"A friendly community that is easy and safe to navigate and get where you want to go without getting lost."

"Accessible and friendly"

"A diverse, nature and tech-oriented community navigation system."

"Multi-modal connected community with parks, open spaces, as well as education and employment opportunities."

"Efficient wayfinding system to get people to where they want to go."

"A multi-use, family friendly public path which creates opportunities for active transportation and relaxing leisure activities."

"A well-connected clear, and concise path meant to foster safety and accessibility for all ages and abilities."

"Simple system to guide multi-modal visitors to main destinations and districts, and a logical connection to the geographic/man made legibility of the city in the landscape."

A family friendly wayfinding system that provides logical and safe connections between key destinations and commercial districts.

PREFERRED DESIGN: UNDULATING STONE

Soft, Flowing, Connected

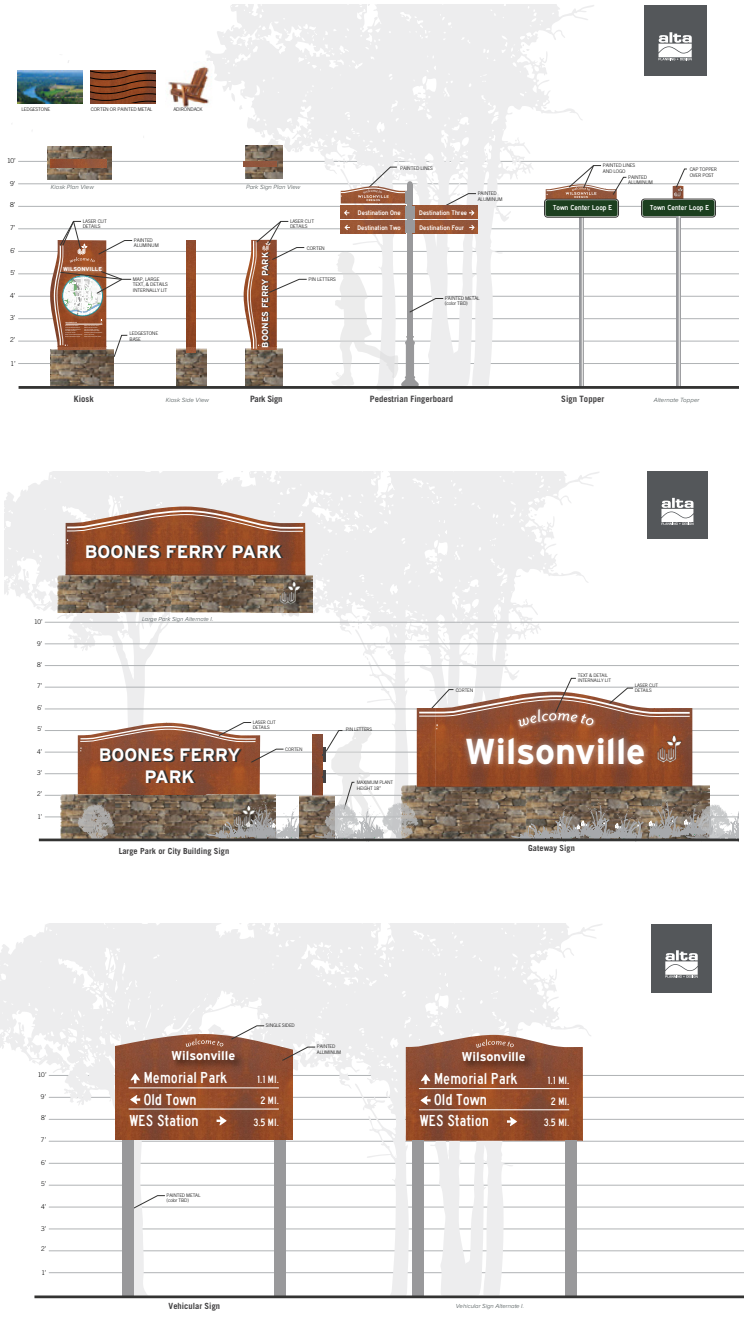


Fig. 14 Design family preferred design

GRAPHIC STANDARDS

COLOR PALETTE (FROM CITY OF WILSONVILLE BRAND COLORS)

PANTONE 321	PANTONE 7489	PANTONE 393	PANTONE 317	PANTONE 423	PANTONE 400	PANTONE 7463

MPC MATTHEWS PAINT TO BE APPLIED TO SIGN SURFACES USING COLOUR SPECIFICATIONS THAT CONFORM TO THE CITY OF WILSONVILLE'S CURRENT GRAPHIC STANDARDS. ALL PAINT TO BE COATED WITH 3M UV, GRAFFITI RESISTANT CLEAR COAT. THE PROPOSED USE SHALL CONSIDER AND ADHERE TO GUIDANCE FOR THOSE AFFECTED BY COLOR BLINDNESS INCLUDING BUT NOT LIMITED TO PROTANOPIA, DEUTERANOPES, AND TRITANOPES.

ICONOGRAPHY

HOSPITAL · CENTRAL STATION · POST SECONDARY SCHOOL · PARK · INFORMATION · PARKING · PLAYGROUND · TENNIS COURTS · SPORTS FIELD · SWIMMING POOL

FONTS

GEOMETOS ROUNDED

abcdefghijklmnopqrstuvwxyz

ABCDEFGHIJKLMNOPQRSTUVWXYZ

FOR ADDITIONAL LOGOS NEEDED BEYOND THE SCOPE OF THIS DESIGN INTENT PACKAGE PLEASE REFERENCE USDOT AIGA. ADDITIONAL ICONS ARE AVAILABLE FROM THE NATIONAL PARK SERVICE AT WWW.NPS.GOV/HFC/CARTO/MAP-SYMBOLS.CFM

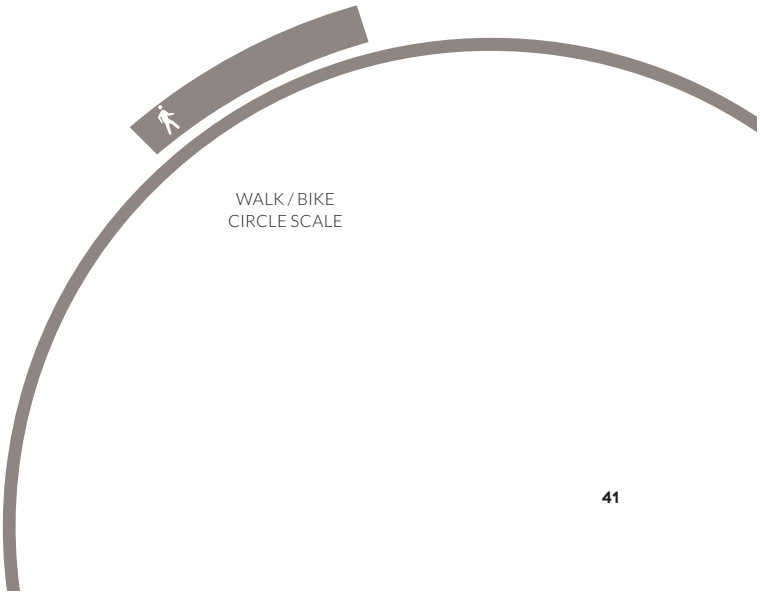
YOU

YOU ARE HERE MARKER

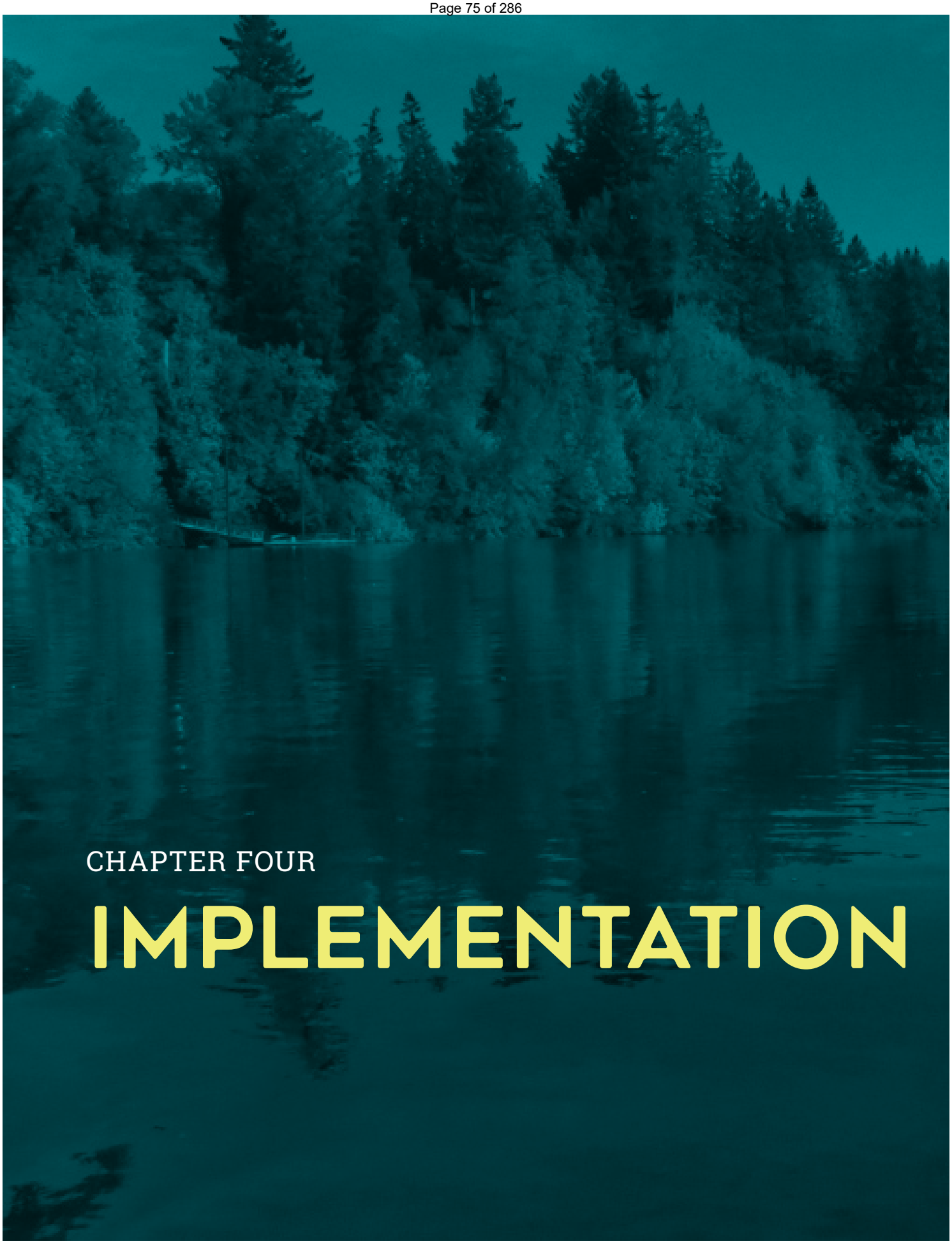
NORTH MARKER

O mi — XX mi

SCALE BAR



WALK / BIKE CIRCLE SCALE



CHAPTER FOUR

IMPLEMENTATION

PHASING

The implementation plan for the Citywide Signage & Wayfinding Plan aligns with the City's existing prioritized neighborhood areas and corridors as outlined in the Transportation System Plan, Tourism Development Strategy and Comprehensive Plan.

Implementation will occur in three initial phases, with future phases associated with local or neighborhood development. Phase One will focus on major corridors that serve the most people, whether traveling by car, bike, or foot.

These three phases are the result of compiling the data driven analysis from the three initial prioritization maps (Map 1,2 and 3) with input from the focus group and City staff on priority routes. Together, these three phases form the final prioritization route map (page 46).

In the future, the City will incorporate wayfinding into other initiatives, such as pedestrian and cycling improvement projects, facility and park development projects, redevelopment, and community plans. Wayfinding signs should be included in the City's maintenance budgets as well, so that as existing signs become outdated or in poor condition, they can be replaced.

PHASE ONE

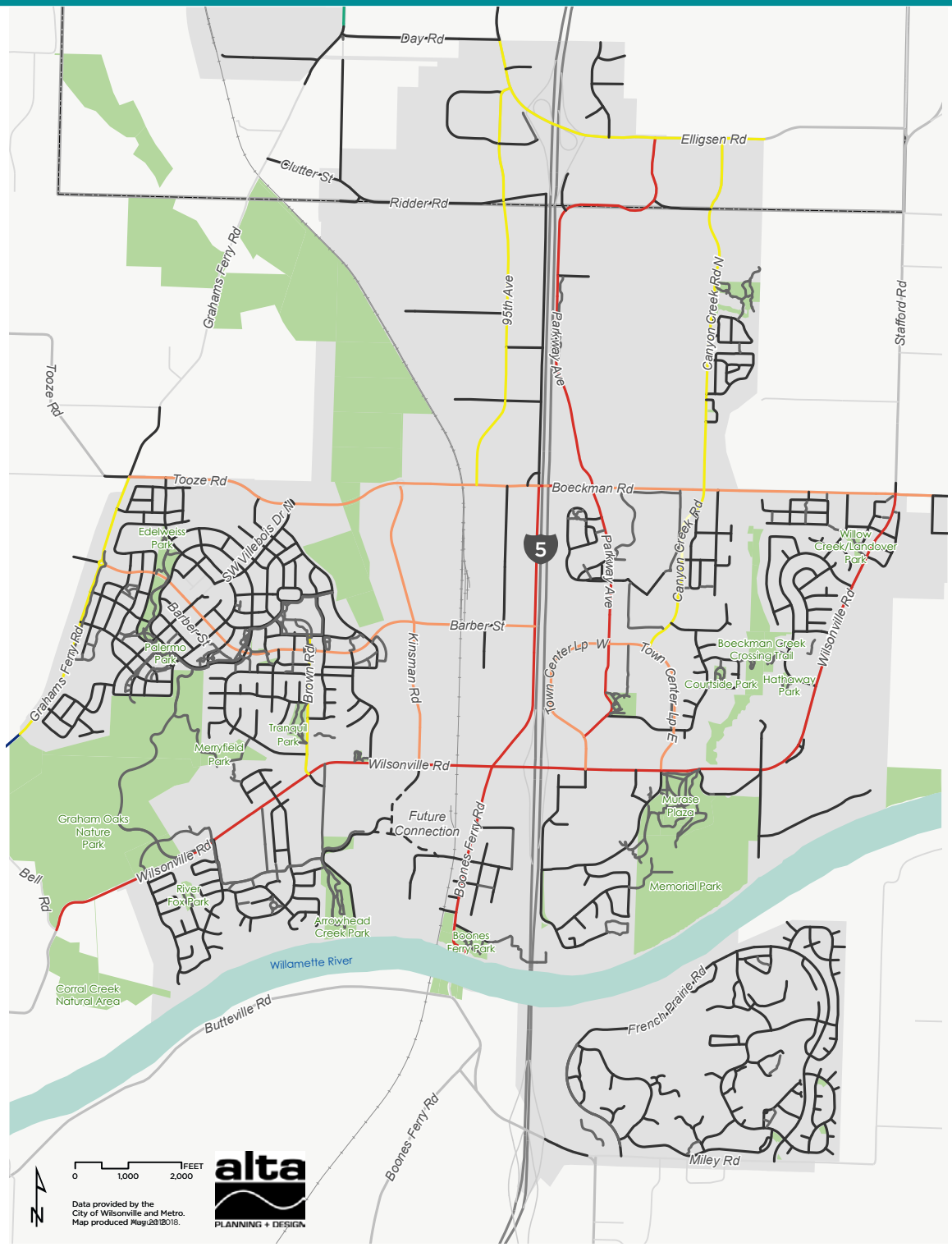
- Wilsonville Road
- Boones Ferry Road
- Parkway Ave, from Elligsen Road to Town Center Loop

PHASE TWO

- Boeckman Road
- Town Center Loop
- Barber Street
- Kinsman Road

PHASE THREE

- Grahams Ferry Road
- Brown Road
- 95th Ave
- Canyon Creek Road
- Elligsen Road



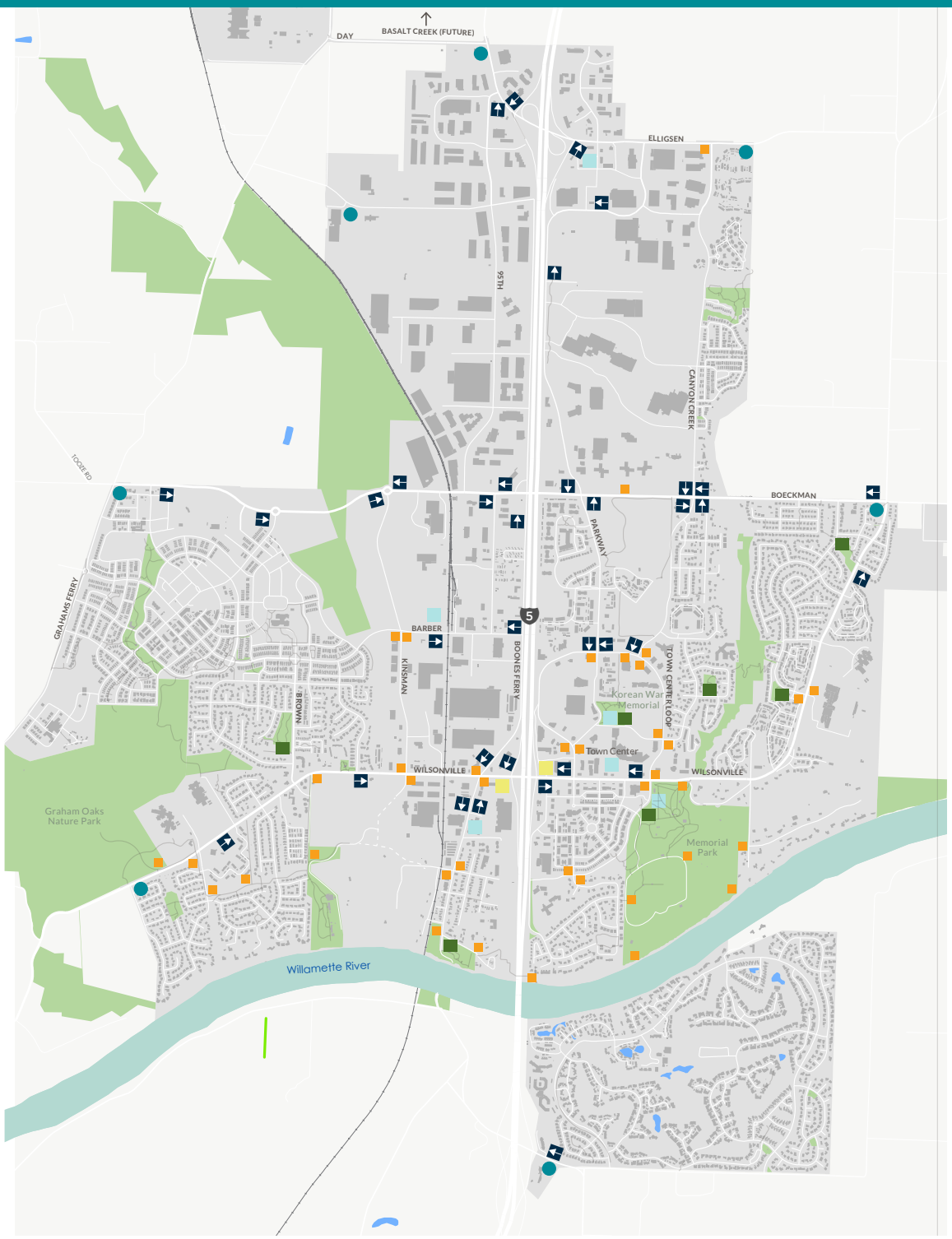
Map 4 Final Route Prioritization

FINAL ROUTE PRIORITIZATION

CITY OF WILSONVILLE WAYFINDING PLAN

IMPLEMENTATION PHASES

- PHASE ONE
- PHASE TWO
- PHASE THREE



Map 5 Sign Placement

SIGN PLACEMENT

CITY OF WILSONVILLE
WAYFINDING PLAN

SIGN TYPES

- VEHICULAR SIGN
- WELCOME SIGN
- KIOSK
- PARK SIGN *(LARGE OR SMALL)*
- GATEWAY SIGN
- PEDESTRIAN SIGN

* ALL SIGNS SHOWN OUTSIDE CITY LIMITS TO BE PLACED IF RIGHT-OF-WAY ALLOWS.

PHASE 1 SIGN PLACEMENT QUANTITIES

Phase One of sign implementation includes pedestrian and vehicular signage on Wilsonville Road, Boones Ferry Road, and Parkway Avenue.

	Phase One
Kiosk	2
Pedestrian Fingerboard Sign	28
Park Sign (Small or Large)	4
Welcome Sign	2
Vehicular Sign	14
Gateway Sign	2
	52

Table 4. Phase One Sign Quantities

PHASE 2 SIGN PLACEMENT QUANTITIES

Phase Two of sign implementation includes pedestrian and vehicular signage on Boeckman Road, Town Center Loop, Barber Street, and Kinsman Road.

	Phase Two
Kiosk	3
Pedestrian Fingerboard Sign	11
Park Sign (Small or Large)	1
Welcome Sign	2
Vehicular Sign	17
Gateway Sign	0
	34

Table 5. Phase Two Sign Quantities

PHASE 3 SIGN PLACEMENT QUANTITIES

Phase Three of sign implementation includes pedestrian and vehicular signage on Grahams Ferry Road, Brown Road, 95th Avenue, Canyon Creek Road, and Ellingsen Road.

	Phase Three
Kiosk	0
Pedestrian Fingerboard Sign	1
Park Sign (Small or Large)	1
Welcome Sign	2
Vehicular Sign	4
Gateway Sign	0
	8

Table 6. Phase Three Sign Quantities

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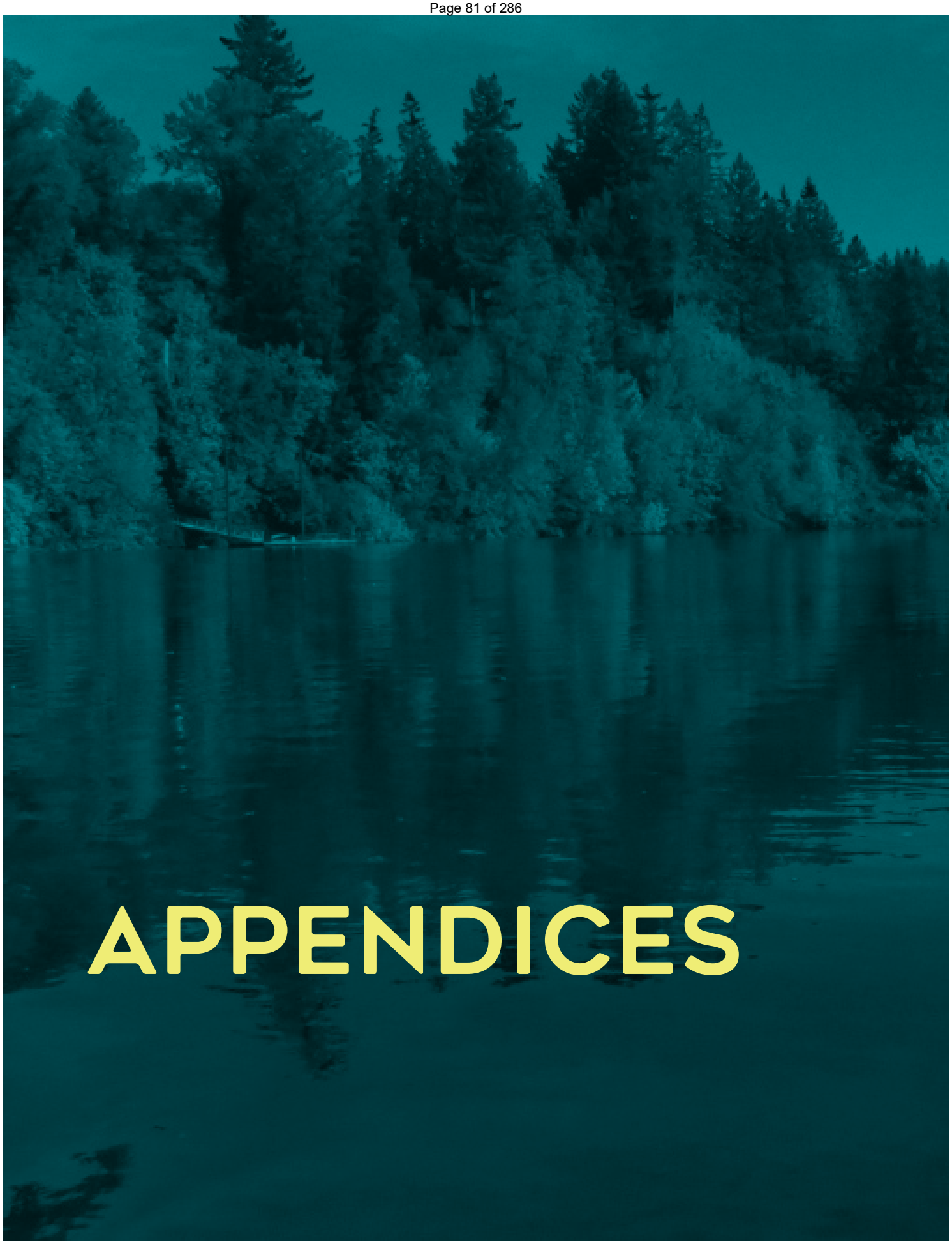


APPENDICES

APPENDIX A

LIST OF FIGURES

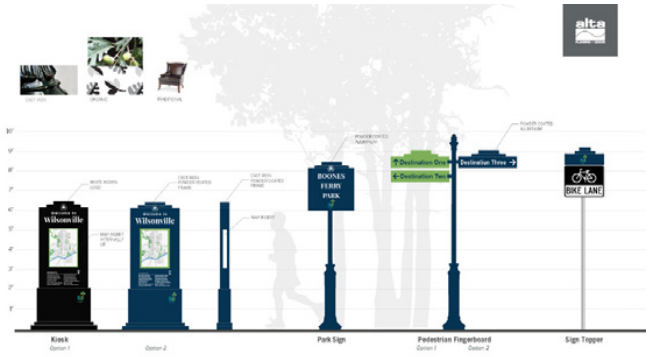
APPENDIX B

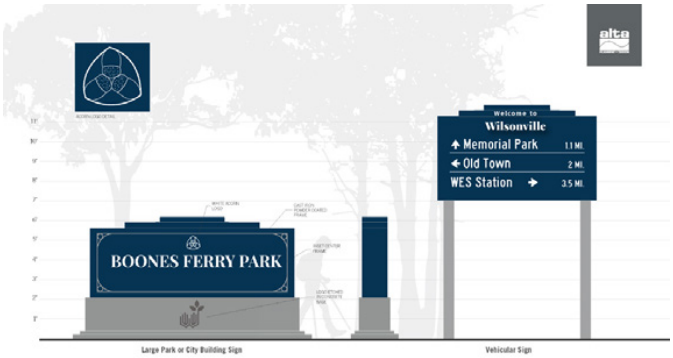
PRELIMINARY SIGN FAMILIES

Concept 1: Ornate Cast Iron

Traditional, Sophisticated, Timeless, Iconic

The Ornate Cast Iron concept is inspired by the architectural details in the older areas of Wilsonville. At the heart of the concept is bold navy colored cast iron that coordinates well with the City logo and brand colors. The ornate acorn logo included in this concept is a nod to the landscape of Wilsonville and the plentiful White Oak trees.

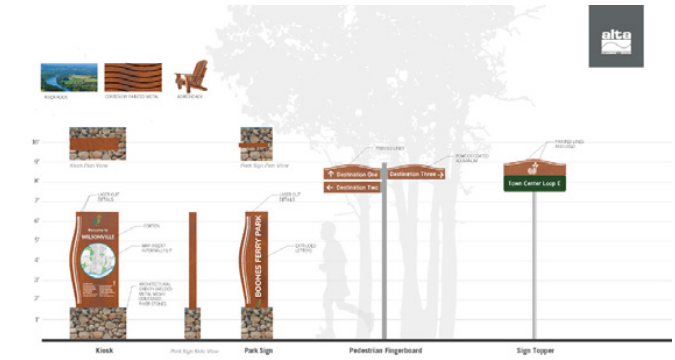


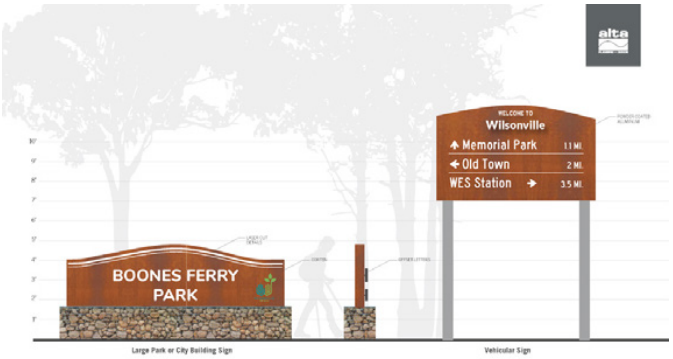


Concept 2: Undulating Stone

Soft, Flowing, Connected

The Undulating Stone concept is inspired by the shape, form, and natural features of the Willamette River that flows through Wilsonville. At the heart of the concept are round river stones and soft curves of corten steel accented by laser cut details that allow light through. A unique feature of this concept is the use of Architectural Gabions that contain river stone and create sturdy bases for the signs. The warm color of the corten compliments the City's branding colors.

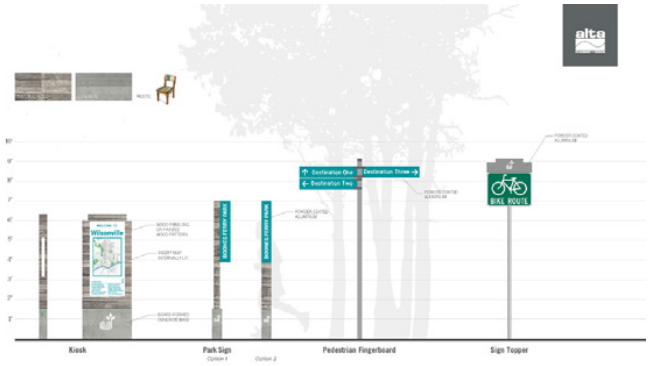


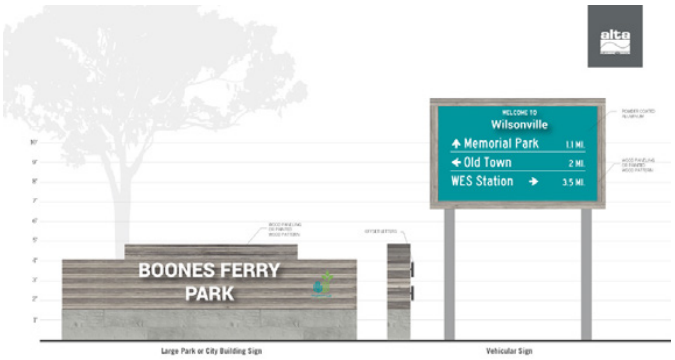


Concept 3: Weathered Wood

Historic, Friendly, Reflective, Fractals

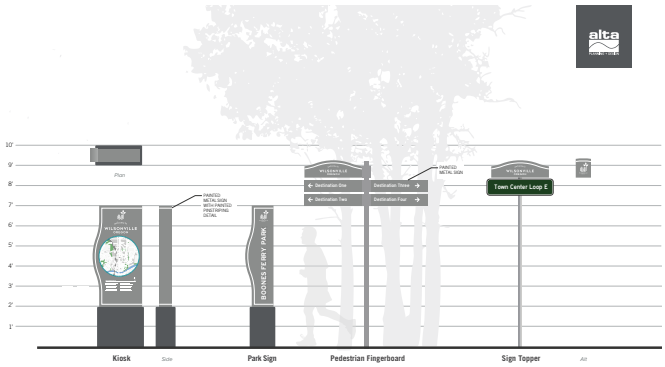
The Weathered Wood concept is inspired by the rich agricultural history of Wilsonville. At the heart of the concept are weathered wood boards that echo the historic architecture of Wilsonville that can still be seen throughout town. This simple yet contemporary design is accented by rough board formed concrete. This color pallette most closely aligns with the City's logo and brand colors.

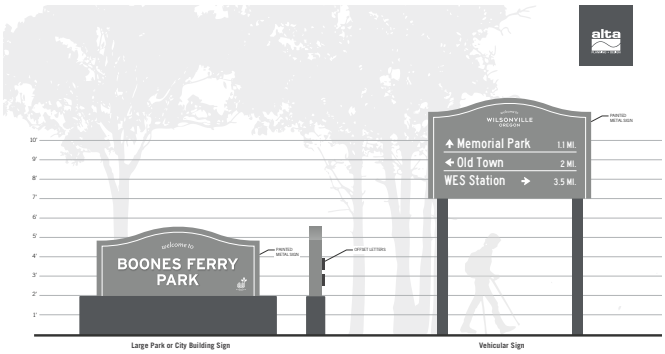




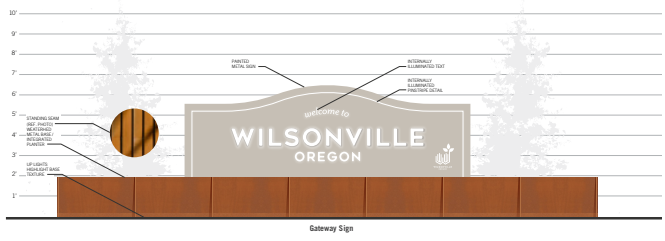
PREFERRED DESIGN REFINEMENTS

Shape Refinements

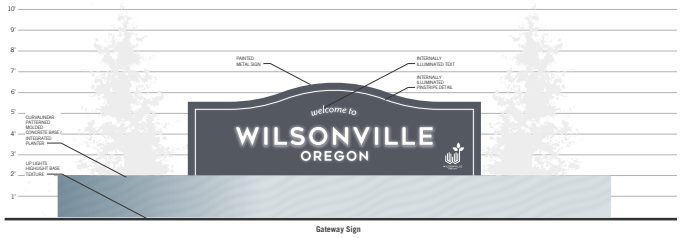




Color & Base Material Refinements



Color & Base Material Refinements

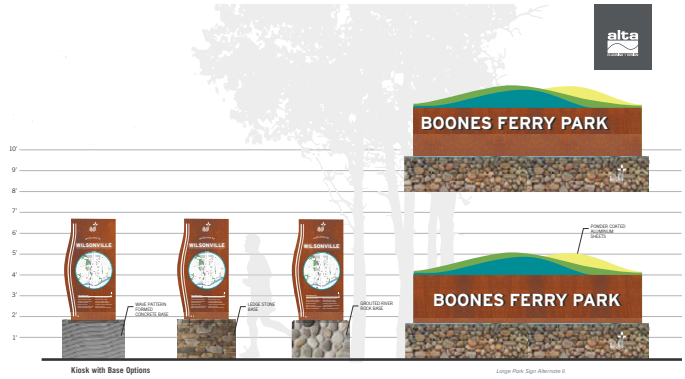


Gateway Sign

Gateway Sign

Gateway Sign

Base Material & Style Refinements



APPENDIX C

DESIGN INTENT DRAWINGS

Content to be added after design intent is complete

APPENDIX D

PUBLIC OUTREACH

City of Wilsonville

SIGNAGE & WAYFINDING PROJECT FOCUS GROUP
Meeting Summary

DATE:	**APRIL 18, 2018**
LOCATION:	29799 SW TOWN CENTER LOOP EAST, WILSONVILLE, OR
TIME START:	**6:00 PM** **TIME END: 8:05 PM**

ATTENDANCE LOG

FOCUS GROUP MEMBERS		STAFF
Councilor Charlotte Lehan	Albert Levit	Chris Neamtzu
Ben Altman	Sophia Lochner	Mark Ottenad
Mayor Tim Knapp	Kevin Ferrasci O'Malley	Tod Blankenship
Planning Commissioner Phyllis Millan	Demetra Auel	
Martin Glastra van Loon		
		OTHER
Not in attendance: Marie Alaniz, Zaly Pantoja, Curt Kipp		Mary Stewart, Alta Planning (Consultant)

AGENDA SUMMARY

AGENDA	ACTIONS
Welcome and Introductions	Chris Neamtzu, Planning Director, introduced himself and the project. He mentioned that this project had been started a few years ago but was delayed due to the process of changing City logos. This project is now on the Council's objectives for this year. Chris introduced Mary Stewart, project manager from Alta Planning + Design, LLC. Mary showed a PowerPoint presentation that introduced the Alta Staff and she gave a little background of their company and expertise.
Project Orientation and Background	Mary introduced the project schedule. (See PP slide #3) for specific deadlines. She noted we are on Task 2: Wayfinding Signage Strategy with next tasks being Sign Design and Specifications, and Wayfinding Sign Demonstration Project review and implementation. Chris added that there is money in the budget to build some of the new signs as a part of this project. Thereafter, the plan is to request budget funding for new signs as needed.
Best Practices Presentation	Wayfinding Principles: (see slide) 1. Connect People to Places 2. Maintain Motion 3. Be Predictable: color coded signs, 4. Keep information Simple: clear and simple text, limit character numbers, Wayfinding Elements: • Some elements are governed by Federal Government: fonts, colors, size, etc. • Fundamental: Navigational signs for people driving and biking

	• Enhanced Navigational Elements: neighborhood gateway signs, pedestrian wayfinding, kiosk, pavement marking on trails, • Sign Placement and sign codes with a same legend • Color: Fed agency dictates colors of particular signs that are used already for specific signs (red/stop sign) that we cannot use for wayfinding signs; there are only a few specific pantone colors we can't use • ODOT Requirements for Fonts of signs (within ODOT right-of-way, or if funded with State or Federal dollars)
Visual Identity Exercise & Discussion	Mary handed out an exercise work booklet. She asked the group to read through the handout and offer suggestions that she would write down ideas on the flip charts as the back of the room. **INTENDED AUDIENCE:** Mary asked for feedback as to which of the three Intended Priorities (below) would be priorities for Wilsonville Citizens • Kids and Families – 1 vote (see note at end of this section) • People with Limited Mobility – 1 vote • Commuters – 8 votes • Light or Moderate Exercisers - • Serious Athletes - • Out of Town Visitors – 10 votes • Motorists – 3 votes Based on the preferences noted, Mary surmised that there might not need to be large vehicular directional signs around the city (it wasn't a preference). Mayor Knapp said that he has heard various conversations over the past years that have said that people who come to Wilsonville really don't know where to go and what is here once they arrive. Mary believes that we should group the "Commuters" "Out of Town Visitors" and "Motorists" into one group. This will eliminate the issue of trying to determine the specific definition of each of these categories. Al believes that if you have good signage, it doesn't matter what category you are in. It will make your journey more precise and less traffic could result. Mark said that Wilsonville has a unique characteristic as we have approximately the same number of residents as we have in commuters here for work. He said Wilsonville has almost every one of the categories noted above which would make it difficult then to serve all. Martin interjected that he is very seldom lost since he has a smart phone. He asked how that plays into the need for wayfinding. Mary asked that with the discussion, does the group want to conduct a revote of those key groups noted above? Charlotte said that there needs to be another category – the "unattached children" group. This is the kids that are traveling alone and may be walking, biking or may have parents dropping off and picking up (more traffic). We need to consider this subset which requires safe routes that kids can travel on their own.

	Mary said that it might be good when we form our vision and goals to ensure that we prioritize signing the safest routes for all ages, all abilities, all languages, vulnerabilities. Ben said he would like to see a safe, efficient route. He said he has traveled to other towns and they have sigs for the street you're traveling on and for cross streets. Mary said that the public street signs are not really part of this project as that would be covered by the public works and could be addressed through revisions to City code. **ENVIRONMENT:** Mary asked what type of town citizens feel that Wilsonville is? • Busy/Urban • **Small Town – most votes** • Suburban – 2nd most votes • Rural • Wilderness • Other Phyllis chimed in and said we used to see ourselves as a small town. Things have changed and it really isn't rural but the town itself is suburban. Kevin said he doesn't think that the wayfinding signs would be affected by what type of town we are defined as. Al said that some people drive the routes they do because of routine. The wayfinding signage could help them see that there is a more efficient route. Al believes that there should be signage to and around the industrial area as there are business visitors that stay in our hotels and don't know where to go in town. Mark brought up that because Wilsonville is constantly changing, Chris' job of wayfinding may never be done. There needs to be wayfinding to the tech center area of town – we need to devise a name for the area. Mayor Knapp asked to circle back on the environment definition of Wilsonville. Are we to define Wilsonville based on what we want it to be, what it is based on what we know it isn't? Mary asked for a revote. A nearly unanimous revote shows Wilsonville is a **small town**. **TYPOLOGY:** Mary asked *"If Wilsonville was a chair, what type of chair would it be?"* Mary said everyone gets three (3) votes – which is their favorite chair depicting Wilsonville? • Creative/Funky - • **Rustic - 3** • **Comfort -4** • Retro - • Utility - • **Traditional - 3**

- Elegant -
- Modern
- Other –
  - Folding Chair – 2
  - Chase lounge – 1
  - **Adirondack – 5**
  - Office chair - 2

Census was somewhere between a rustic, traditional, Adirondack chair.

PATTERN:

Which patterns resonate with the vision/character of Wilsonville? Mary asked for the group to vote on their three top choices.

- **Organic - 10**
- Grid
- Deco - 4
- Angular
- Retro
- Dots - 1
- Optical Art
- **Soft Curves - 8**
- Other –
  - Flowing - 6
  - Fractals 4

COLORS:

Mary asked if the group could vote on the color palettes with the vision/character of the wayfinding system for Wilsonville. Mary clarified that these colors would be the sign background. Each person gets three votes.

- Primary
- Bright - 2
- **Light - 6**
- **Muted - 10**
- **Natural - 8**
- Dark - 4
- Monochrome -2
- Neutral -1
- Other
  - Green - 1

Kevin asked if the logos and colors therein will be changing if we were to coordinate colors with the City's logo. The mayor said the City's newest logo is here to stay.

Mary confirmed that the light, muted and dark would complement the color of the City's logo colors.

FONTS/TYPOGRAPHY:

What fonts or type treatments are appropriate to this community? Mary asked the group to vote for their top three.

	Mayor Knapp said he doesn't see a font that depicts the "historic/antique" or small town feel that was described as the town's earlier description.
	
	• Sign Standard
	• Modern Sans Serif - 3
	• **Rounded - 5**
	• Linear/condensed - 3
	• **Traditional Serif - 5**
	• Slab Serif - 1
	• Block/angular
	• Script/Artistic
	• Other
	  ○ **Historic/Antique - 4**
	
	Charlotte asked if we should consider the font choices if they are upper/lower case and not all capitalized. Mary asked if people want **upper/lower case** or all caps.
	
	THEMES:
	
	Should the signs portray:
	
	• Energetic
	• Trendy
	• Bold
	• **Friendly - 7**
	• Inviting - 1
	• Fun
	• Sophisticated
	• Peaceful
	• Enduring
	• Simple - 4
	• Safe
	• Adventurous
	• Reflective
	• Healthy - 3
	• Connected - 4
	• Organic - 3
	• Relaxed
	• Timeless
	• **Historic - 7**
	• Ornate
	• Direct
	• Accessible - 1
	
	MATERIAL SELECTION:
	
	Are there building materials that are especially representative in the area or are meaningful to the community? Vote for **all that apply** for this category.
	
	• Stone
	  ○ Rough -1
	  ○ Polished - 0
	• Concrete
	  ○ Rough -3

	○ Polished - 3 • Metal ○ Brushed - 3 ○ Polished - 0 • Painted Metal ○ Plain - 3 ○ Filigree - 0 • **Weathered Metal** ○ **Plain - 5** ○ Perforated - 0 • **Wood** ○ **Rough - 6** ○ Polished - 0 • Brick - 3 • Plastic / Acrylic - 0 • Other ○ **Cast Metals (iron/aluminum) - 7** ○ **River Stone - 6** ○ Basalt - 4 Mayor Knapp said the "historic" feel of a town lends itself to cast elements. He would like that category of material added to the above choices. Kevin said that brick is used a lot in the area – maybe too much. He asked whether the brick use would be able to be updated in the future easily enough. Kevin said one of our larger employers offers stone with a brick look and would that be easier? Al asked if you can carve brick. Mary said she wasn't sure and hadn't seen that. Al said that a sandblasted brick sign on Boones Ferry Road looks nice and might be a likely option.
Mental Mapping Exercise & Discussion	Mary asked the group to think about their favorite destination in Wilsonville (see list below). Do we want to point out other regional destinations and if so, how far do we go until we stop? • Graham Oaks • Chamber of Commerce • World of Speed • Memorial - Murasse Park • The library • Wilsonville High School • Transit Center • Charbonneau Boat Ramp • Oregon Institute of Technology • Charbonneau Golf Course • The Villebois Parks • Langdon Farms Golf Club • The spash parks • Community Center • City Hall • Korean War Memorial Mary said a regional park sign but within the park we could have a kiosk that depicts the various park amenities.

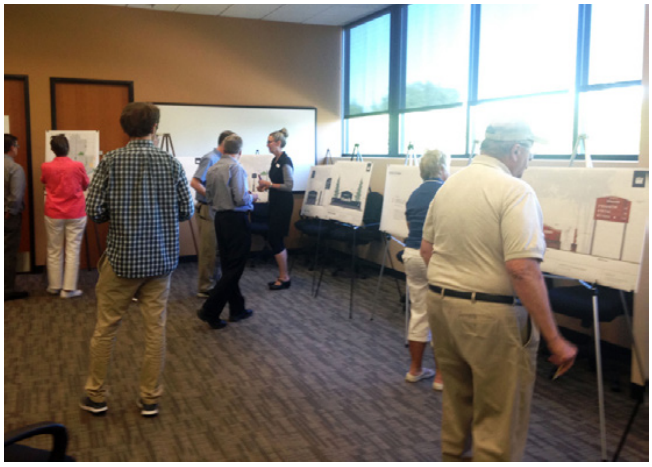
Destination Selection and Programming	Level 1 Destinations: Districts and Neighborhoods – City Centers, districts, neighborhoods Level 2 Destinations: Landmarks - transit stations, tourist venues, regional parks, open spaces Level 3 Destinations: Local Destinations – parks, Library, schools, shopping center (no specific businesses – would be the shopping center)
Next Steps and Adjourn	Public Open House (to share concept alternatives) Possible dates: June 26 or 27 or July 10 or 12

Scribes: Tami Bergeron

PUBLIC OUTREACH - OPEN HOUSE & ONLINE SURVEY

On June 26, 2018 an open house was held at City Hall to gather public input on the three sign family concepts, route prioritization, and priority destinations. The three design options were presented to the group, then the public had an opportunity to speak and write their preference for the designs.

Similar to the feedback received from the online survey that was available to the public in July 2018 (Appendix C), there was a general preference for Concept 2: Undulating Stone. Specific feedback ranged from providing alternate base materials to experimenting with details and colors. The feedback from the public and focus group directly influenced the final design concept.



WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

About the Wayfinding Project

Thank you for interest and participation in the Wilsonville Signage & Wayfinding project to develop unified directional signage, informational kiosks, and monument signs.

This survey is your opportunity to provide input on a number of wayfinding design concepts. The concepts were developed from feedback received during a kick off meeting and visual preferences workshop with the Wilsonville Wayfinding Stakeholder Group. The City's goal is to develop a family friendly wayfinding system that provides logical and safe connections between key destinations and commercial districts.

Your feedback on elements like themes, shapes, colors, and materials will help us incorporate the preferred elements from each option into the final wayfinding sign designs.

We estimate the survey will take approximately 10 minutes to complete.

Click here for more information.

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

The Three Design Concepts

The design team has developed three concepts. Each design concept has a certain look and feel—with a specific theme, inspiration, shape, colors, and building materials. Below you'll find some information about the basic elements of each concept, which would be incorporated into map kiosks, building or directional signage, or monument signs in Wilsonville.

On the next pages, we'll ask you questions about the specific design elements.

Three Design Concepts:

1: The **Ornate Cast Iron** concept is inspired by the architectural details in the older areas of Wilsonville. At the heart of the concept is bold navy colored cast iron that coordinates well with the City logo and brand colors. The ornate acorn logo included in this concept is a nod to the landscape of Wilsonville and the plentiful Oregon White Oak trees.

PALETTE

MATERIAL: CAST IRON

ACORN LOGO

2: The **Undulating Stone** concept is inspired by the shape, form, and natural features of the Willamette River that flows through Wilsonville. At the heart of the concept are round river stones and soft curves of corten steel accented by laser cut details that allow light through. A unique feature of this concept is the use of Architectural Gabions that contain river stone and create sturdy bases for the signs. The warm color of the corten complements the City's branding colors.

PALETTE

MATERIAL: RIVER ROCK

CORTEN STEEL

3: The Weathered Wood concept is inspired by the rich agricultural history of Wilsonville. At the heart of the concept are weathered wood boards that echo the historic architecture of Wilsonville that can still be seen throughout town. This simple yet contemporary design is accented by rough board formed concrete. This color palette most closely aligns with the City's logo and brand colors.

PALETTE | MATERIAL: WEATHERED WOOD | FORMED CONCRETE

Click here for a PDF of all Design Concepts (Opens in separate window.)

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

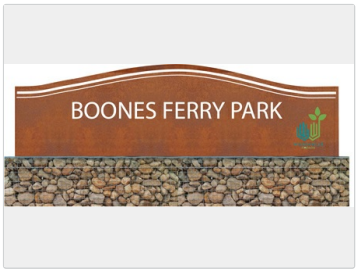
What Design Elements Do You Like?

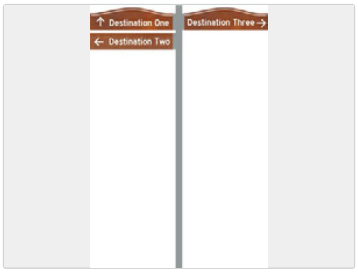
The final sign family design will likely incorporate elements of other concepts. The design team wants your input on basic design elements to incorporate into final design.

1. Which themes do you like as a guiding principle for sign design? (select as many as you like)

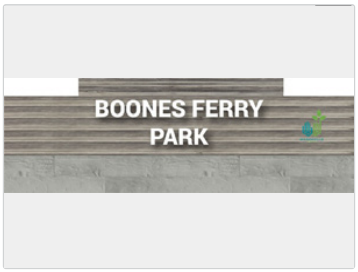
- [ ] 1: **"ORNATE CAST IRON"** theme - Traditional, Sophisticated, Timeless, Iconic
- [ ] 2: **"UNDULATING STONE"** theme - Soft, Flowing, Connected
- [ ] 3: **"WEATHERED WOOD"** theme - Historic, Friendly, Reflective

2. Which sign shapes do you like? (select as many as you like)


BOONES FERRY PARK


Destination One
Destination Two
Destination Three

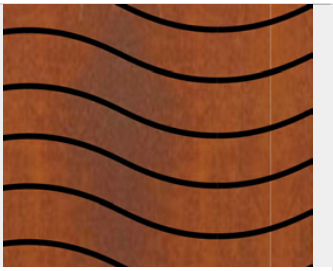

WELCOME TO
Wilsonville


BOONES FERRY
PARK


Destination One
Destination Two
Destination Three

3. What type of building material do you like? (select as many as you like)

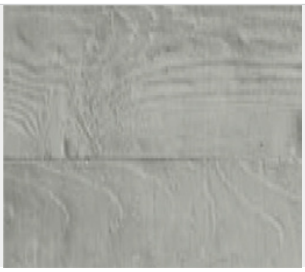
River Stone



Corten Steel

Architectural Formed Concrete

Weathered Wood



Board Formed Concrete

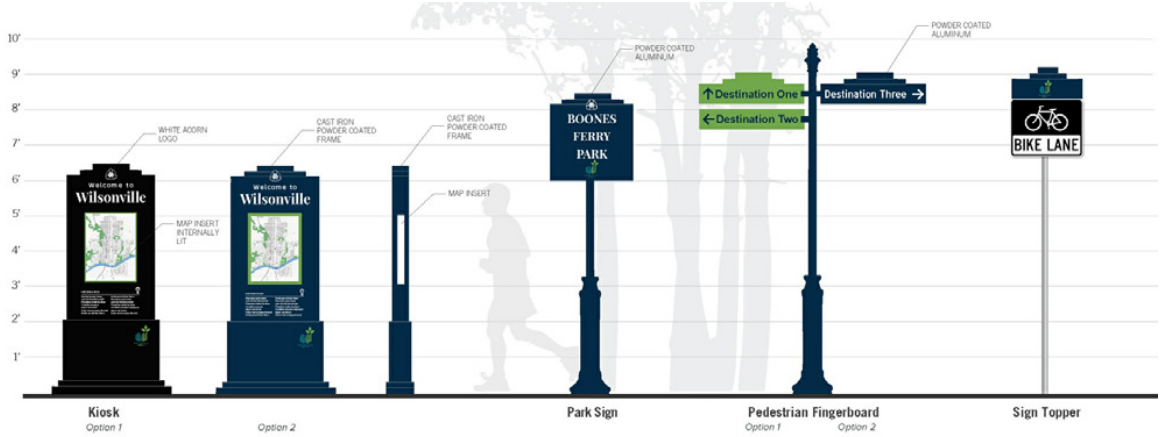
Cast Iron

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

Concept 1: ORNATE CAST IRON

The Ornate Cast Iron concept is inspired by the architectural details in the older areas of Wilsonville. At the heart of the concept is bold navy colored cast iron that coordinates well with the City logo and brand colors. The ornate acorn logo included in this concept is a nod to the landscape of Wilsonville and the plentiful Oregon White Oak trees.

The signs, kiosks, and monuments using this design concept would look like:



Large Park or City Building Sign

Vehicular Sign

Gateway Sign

4. We show two color options on the kiosk that could be used for the entire sign family. Which sign color do you prefer?

Option 1 - Standard Black

Option 2 - Wilsonville Navy

5. Which pedestrian fingerboard color do you prefer?

Option 1 - Wilsonville Green

Option 2 - Wilsonville Navy

6. What do you specifically like about this option (e.g. color, shape, font, materials)?

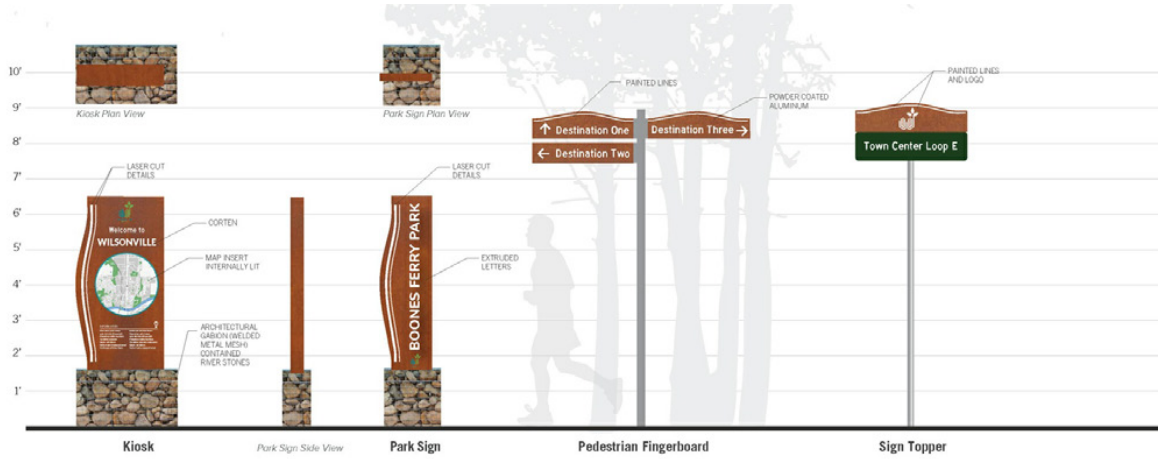
7. What would you change?

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

Concept 2: UNDULATING STONE

The **Undulating Stone** concept is inspired by the shape, form, and natural features of the Willamette River that flows through Wilsonville. At the heart of the concept are round river stones and soft curves of corten steel accented by laser cut details that allow light through. A unique feature of this concept is the use of Architectural Gabions that contain river stone and create sturdy bases for the signs. The warm color of the corten compliments the City's branding colors.

The signs, kiosks, and monuments using this design concept would look like:



Large Park or City Building Sign

Vehicular Sign

Gateway Sign

8. The vehicular sign has a **simpler curve** than the other signs. do you prefer the vehicular sign curve to the other signs?

Yes, I prefer the simple curve

No, I prefer the other signs.

9. What do you specifically like about this option (e.g. color, shape, font, materials)?

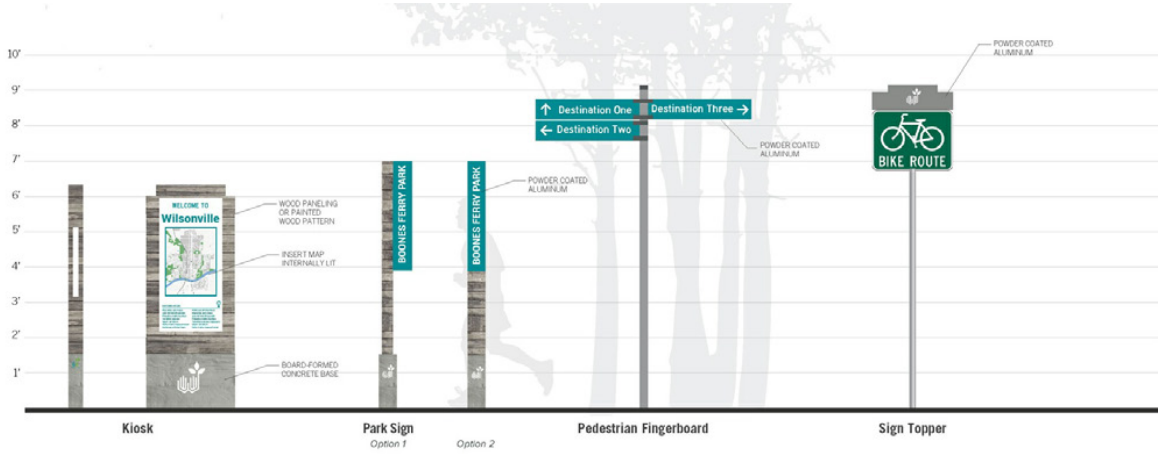
10. What would you change?

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

Concept 3: WEATHERED WOOD

The Weathered Wood concept is inspired by the rich agricultural history of Wilsonville. At the heart of the concept are weathered wood boards that echo the historic architecture of Wilsonville that can still be seen throughout town. This simple yet contemporary design is accented by rough board formed concrete. This color palette most closely aligns with the City's logo and brand colors.

The signs, kiosks, and monuments using this design concept would look like:



Large Park or City Building Sign

Vehicular Sign

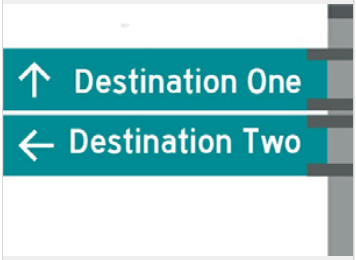
Gateway Sign

11. There are two small Park Sign options, which do you prefer?

Option 1

Option 2

12. The sign colors for this family could be either cyan with white text or white with cyan text, which do you prefer?



Cyan with white text

White with cyan text

13. What do you specifically like about this option (e.g. color, shape, font, materials)?

14. What would you change?

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

General Questions about Sign Families

15. Do you think we should include lighting on the Building or Monument signs or Map Kiosk? (select all that apply)

- [ ] Yes, include lighting on the Monument Sign
- [ ] Yes, include lighting on the Building Sign
- [ ] Yes, include lighting on the Map Kiosk
- [ ] Do not include any lighting

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

Tell us About You

Thank you for your interest in the Wilsonville Wayfinding project. Your input will help guide the design team in development of the preferred wayfinding sign style and the first priority routes to be implemented.

Demographic Information (Optional)

These next questions help us know if we are hearing from people across all races/ethnicities, ages and income levels on these important decisions.

16. Mailing List (Optional)

Provide the following optional contact information if you would like to be added to the project mailing list.

Name	
Company	
Email Address	

17. What is your Age?

- [ ] 18 to 24
- [ ] 25 to 34
- [ ] 35 to 44
- [ ] 45 to 54
- [ ] 55 to 64
- [ ] 65 to 74
- [ ] 75 or older

18. When asked to identify your racial or ethnic identity, how do you identify? (Pick all that apply.)

- [ ] American Indian/Native American or Alaskan Native
- [ ] Asian or Asian American
- [ ] Pacific Islander
- [ ] Black or African American
- [ ] Hispanic, Latino or Spanish origin
- [ ] White / Caucasian
- [ ] Multiple ethnicity / Other (please specify)

19. Which of the following best represents the annual income of your household before taxes?

- [ ] Less than $10,000
- [ ] $10,000-$19,999
- [ ] $20,000-$29,999
- [ ] $30,000-$49,999
- [ ] $50,000-$74,999
- [ ] $75,000-$99,999
- [ ] $100,000-$149,999
- [ ] $150,000 or more
- [ ] Don't know / Prefer not to answer

20. Do you live with a disability? (Check all that apply.)

- [ ] Hearing Difficulty (deaf or having serious difficulty hearing)
- [ ] Vision Difficulty (blind or having serious difficulty seeing, even when wearing glasses)
- [ ] Cognitive Difficulty (because of a physical, mental or emotional problem, having difficulty remembering, concentrating or making decisions)
- [ ] Ambulatory Difficulty (having serious difficulty walking or climbing stairs)
- [ ] Self-care Difficulty (having difficulty bathing or dressing)
- [ ] Independent Living Difficulty (because of a physical, mental or emotional problem, having difficulty doing errands alone)
- [ ] No or not applicable / Prefer not to answer

WILSONVILLE SIGNAGE & WAYFINDING PROJECT SURVEY

Stay Involved!

If you'd like to stay involved in this project or receive other project updates, sign up for the City newsletter.

21. Enter email address:

22. How did hear about this project?

CITY COUNCIL MEETING
STAFF REPORT

Meeting Date: November 5, 2018	**Subject:** Wilsonville Town Center Plan **Staff Member:** Miranda Bateschell, Planning Manager **Department:** Community Development
Action Required	**Advisory Board/Council Recommendation**
☐ Motion ☐ Public Hearing Date: ☐ Ordinance 1st Reading Date: ☐ Ordinance 2nd Reading Date: ☐ Resolution ☒ Information or Direction ☐ Information Only ☐ Council Direction ☐ Consent Agenda	☐ Approval ☐ Denial ☐ None Forwarded ☒ Not Applicable **Comments:**
Staff Recommendation: N/A	
Recommended Language for Motion: N/A	
Project / Issue Relates To:	
☒Council Goals/Priorities Town Center	☐Adopted Master Plan(s) ☐Not Applicable

ISSUE BEFORE COUNCIL:

Review and provide input on the draft development feasibility analysis as well as the draft traffic analysis for Wilsonville Town Center.

EXECUTIVE SUMMARY:

The Wilsonville Town Center Plan will create a community-driven vision for Town Center and through strategic actions (new projects, policies, programs or partnerships) will guide future development in Town Center that advances the vision. In the first phase of the project, existing conditions, opportunities and constraints were identified, and the community established a vision and set of goals for future Town Center. Community events and public input on Town Center

design options during the second phase of the project culminated in the creation of the draft Community Design Concept for Town Center: the community's priorities for land use and activity centers, open space, and connectivity in Wilsonville Town Center. During the first half of 2018, the project team conducted additional outreach to get the community's input on the Draft Community Design Concept, which has formed the basis of the draft Wilsonville Town Center Plan.

The project team has prepared a Development Feasibility Analysis to look at different building types preferred by the community for the future Town Center and laid out in the Draft Plan (see Attachment A). A number of conditions and assumptions are tested for each to determine feasibility. At the meeting, the project team will review key findings of this analysis and discuss the Council's ideas on potential incentives, if any, to encourage more development.

The project team will also review the draft Wilsonville Town Center Plan Traffic Analysis and proposed Wilsonville Road Layout (see Attachments B and C) for City Council discussion of the proposed multi-modal network.

In addition to general discussion and input from the Council, the project team would like direction on the following items:

1. Are there specific challenges you see after reviewing the results of the feasibility analysis in achieving the Town Center Vision?
2. What would you consider a catalyst project? Are there first steps that you feel are most appropriate?
3. What role do you think the City should play in future development in Town Center?
4. What type of incentives, if any, should be considered for implementation of the Plan?

BACKGROUND:

In 2014, City Council adopted Wilsonville's Urban Renewal Strategy and Tourism Development Strategy, both of which identified a Town Center Redevelopment Plan as a priority action item. City Council then established starting the Town Center Plan as a 2015-2017 Council Priority Goal. Staff applied for and was granted a Metro Community Planning and Development Grant to complete the Plan. In 2016, Council approved the Inter-Governmental Agreement between Metro and the City of Wilsonville, which outlined the major milestones, deliverables, and funding conditions, setting the framework for the Scope of Work with MIG, Inc.

The project team began work on the project with a Town Center tour in October 2016, and kicked-off the project with the community in February 2017. With over 50 public events, public input has driven the development of the draft Town Center plan before the Council.

EXPECTED RESULTS:

The Project Team will use this input to refine the various elements of the draft Town Center Plan.

TIMELINE:

After the work session, the project team will integrate the Council's input into draft implementation strategies, project lists, and development code provisions, which staff will present for discussion at the November 14 Planning Commission meeting. The Plan and its components are anticipated to be before the Council for adoption in early 2019.

CURRENT YEAR BUDGET IMPACTS:

This project has two components: Professional Services Agreement and Staff Time. The Professional Services Agreement has a budget of $420,000 of which $320,000 is funded through a Metro Community Planning and Development grant. The remainder of the agreement and staff time is funded through Year 2000 Urban Renewal. Approximately one quarter of the agreement budget remains and will be spent during this fiscal year.

FINANCIAL REVIEW / COMMENT:

Reviewed by: CAR **Date:** 10/25/2018

LEGAL REVIEW / COMMENT:

Reviewed by: BAJ **Date:** 10/25/2018

COMMUNITY INVOLVEMENT PROCESS:

There are multiple opportunities to participate in the project outlined in a Public Engagement and Communication Plan for the Town Center Plan, including an advisory task force, community design workshops, focus groups, pop-up neighborhood events and idea centers, and in-person and online surveys. The engagement plan is designed to reach as broad an audience as possible and to gather the variety of perspectives in the community. It also includes targeted outreach to specific stakeholders more impacted by activity in the Town Center.

POTENTIAL IMPACTS or BENEFIT TO THE COMMUNITY:

As a result of this project, the city anticipates specific actions that will help the Town Center become a more vibrant, pedestrian and transit-supportive mixed-use district that integrates the urban and natural environments, creating an attractive and accessible place for visitors and residents of all ages to shop, eat, live, work, learn, and play. These actions will help remove barriers and encourage private investment in the Wilsonville Town Center. Benefits to the community also include identifying tools to maintain and strengthen businesses in the Town Center, improving access to and within the area, and making the Town Center a place where people want to spend time and support businesses.

ALTERNATIVES:

There are many alternatives the Council may consider and provide input on during the discussion.

CITY MANAGER COMMENT:

N/A

ATTACHMENTS:

A. Draft Wilsonville Town Center Plan Development Feasibility Analysis
B. Draft Wilsonville Town Center Plan Traffic Analysis
C. Draft Wilsonville Road Layout

Wilsonville Town Center

DRAFT Development Feasibility Analysis

PREPARED FOR

WILSONVILLE OREGON

PREPARED BY

LELAND CONSULTING GROUP

October 11, 2018

Assignment

Wilsonville Town Center Plan
Task 5.2: Development Financial Feasibility Analysis

Process and Goals. Leland Consulting Group (LCG) will:

- Assess whether the proposed development options ("prototypes") are economically feasible from a private development perspective via a development financial ("pro forma") analysis.
- Test various development prototypes using assumptions and inputs such as land costs, construction costs, commercial rents, and cap rates.
- Test the effectiveness of different building forms, zoning codes, financial incentives, and other tools.

This presentation provides additional context to supplement the Development Type "two pagers" that have also been prepared as a part of this task.

Contents:

Development Feasibility Inputs

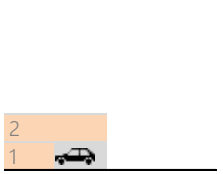
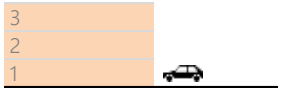
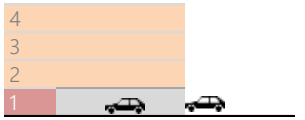
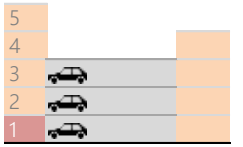
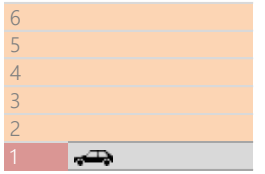
A number of different inputs—shown at right—are required in order to test the financial feasibility of various types of real estate development.

Program Based on comparable projects throughout the region, as well as an estimated 1.5 acre site in the Wilsonville Town Center.	• Site size • Square feet of retail/restaurant, office, or other commercial uses • Number of housing units • Parking: Number and type of spaces • Building height, floors, and other design attributes
Timing Based on market research and expected project deliveries.	• Construction start • Certificate of Occupancy • Lease-up period
Costs Based on market research and cost estimates from RSMeans and industry experts.	• Land or building purchase • Site preparation, e.g., demolition, grading • Hard Cost (construction) • Soft Costs (architecture and engineering; project management; permits and fees; insurance; construction loan interest; contingency; other.)
Operating Revenue and Expenses Based on market research and data from industry experts.	• Rent revenue from retail, office, residential, parking • Vacancy • Operating expenses for management, utilities, taxes, insurance, maintenance, etc. • Net Operating Income (NOI: revenue less expenses)
Return on Investment Data from industry experts.	• Comparison of NOI to Total Project Cost

Prototypes: Residential

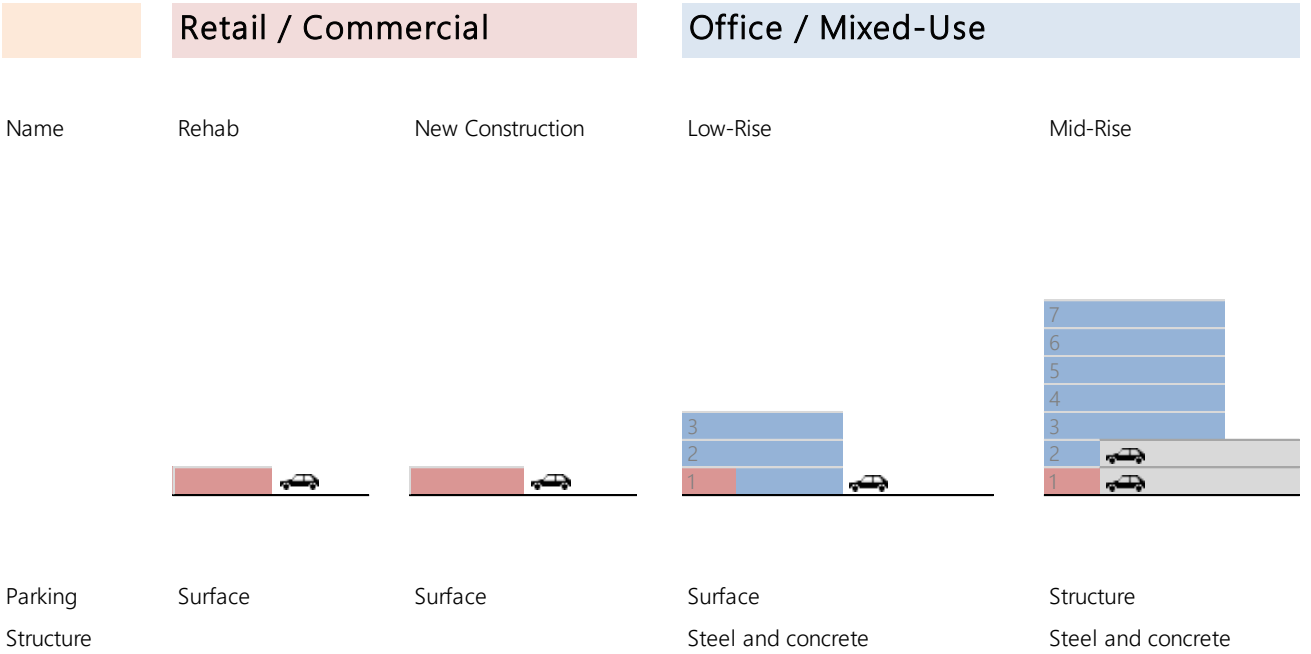
Most developments fall within a finite series of "prototypes," which group buildings by various aspects of their physical form. The way in which parking is provided (surface, tuck under, or structured) is a key influence on the physical form of these projects. Using these prototypes as development models helps to simplify the feasibility analysis by comparing generic building types with common features and form.

The housing (multifamily) prototypes used for this feasibility analysis, including mixed-use residential development, are shown below.

	Residential / Mixed-Use				(Commercial)
Name	Townhomes	Garden Apartments	Main St. Mixed Use	Mid-Rise Wrap	Mid-Rise Podium
					
Parking	Surface / tuck under	Surface	Surface / tuck under	Structure	Structure
Structure	Wood frame	Wood frame	Wood over concrete	Wood with concrete	Wood over concrete

Prototypes: Retail and Office

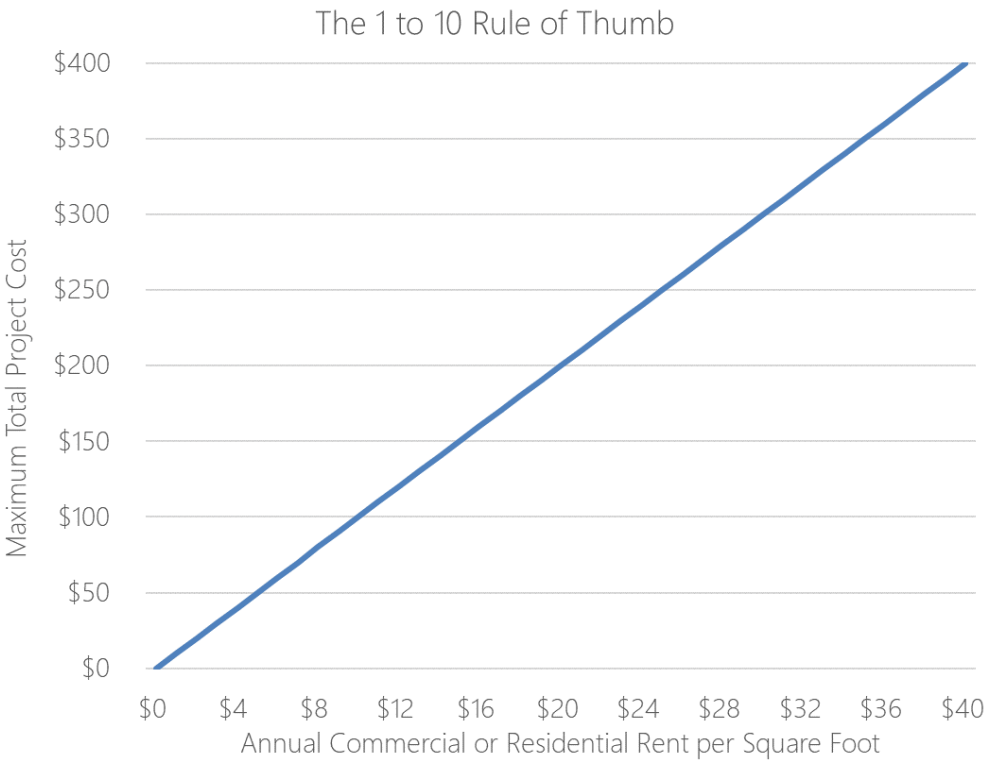
The retail and office prototypes used for this feasibility analysis are shown below. Like the housing prototypes, the way in which parking is provided (surface, tuck under, or structured) is a key influence on the physical form of these projects. For retail projects, we evaluated the rehab or renovation of existing retail/commercial buildings, since there are many of these buildings in the Town Center and rehab is a likely type of development to occur.



Rents Drive Feasibility

For income property (as opposed to for-sale property such as single family homes) the rental revenue that developers can earn is perhaps the single most important factor that affects profitability.

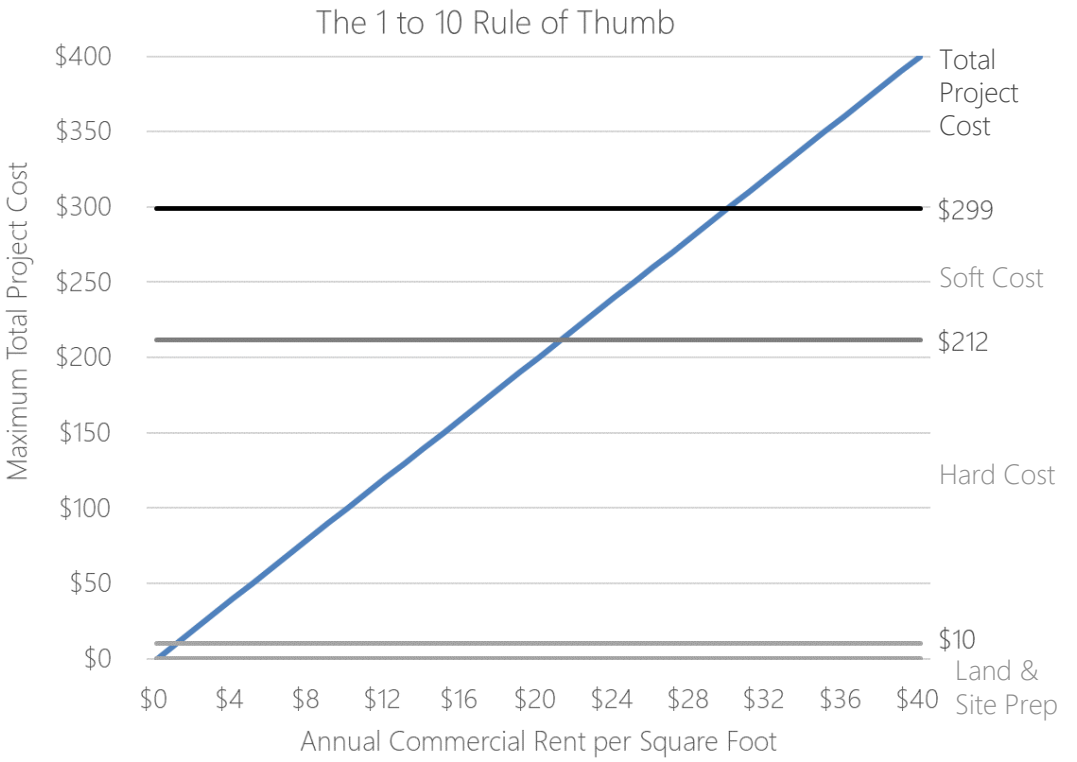
The "1 to 10" rule is an old rule of thumb in the development industry, and suggests that for each one dollar of rental revenue (per square foot per year), total project costs can be no more than 10 dollars per square foot. For example, if retail rents are $20 PSF in a given area, the total project costs cannot be more than $200 PSF. This is a rough rule of thumb that provides only a first impression of development feasibility. It is used a basis for determining feasibility in the following pages.



Rents Drive Feasibility

The chart at right shows the costs associated with developing a typical retail/commercial building (single-story, surface parked). Land, site preparation, hard costs, and soft costs total to $296 PSF. Hard costs of construction are $200 PSF (including both core and shell, and interior tenant improvement costs) and make up the majority of the total costs.

Using these cost assumptions and the 1 to 10 rule suggests that rents would need to be $29.60 PSF in order for a developer to build this project and achieve a reasonable rate of return.

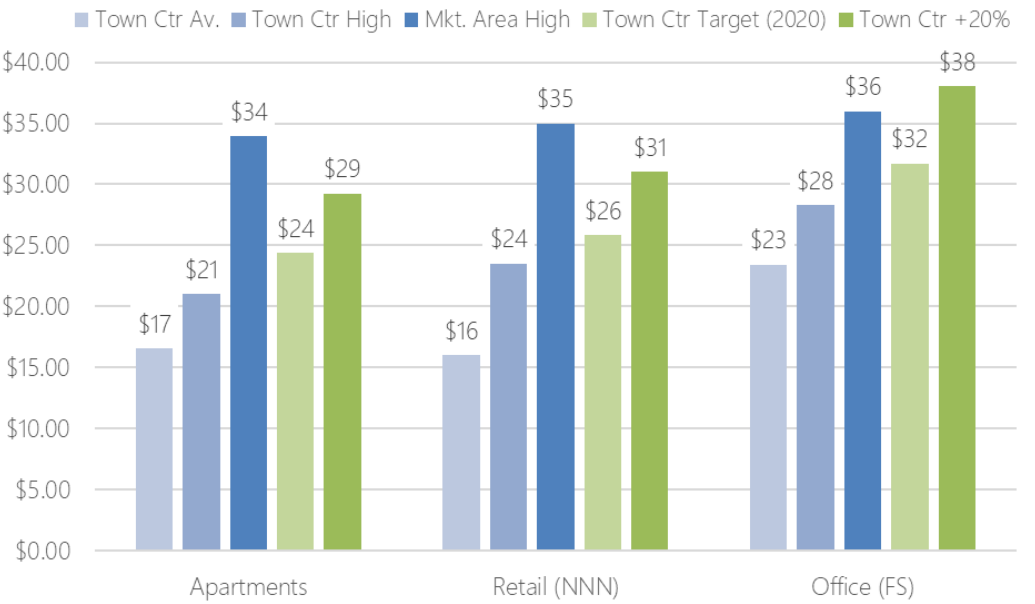


Rents

It is not simple to determine what rents will be for new projects in the Wilsonville Town Center as the landscape is likely to change significantly and much depends on an individual developer's experience, access to finances, and desired return on investment (a lower ROI might result in the developer charging lower rents). It is also difficult to predict market demand in the medium and long-term. The figure at right shows a number of rent benchmarks, including:

- The average rent (for apt., retail, and office space) in the Wilsonville Town Center.
- The highest rents identified by LCG in the Wilsonville Town Center (or within approximately ½ mile).
- The highest rents identified by LCG in the "market area" (Defined here as a 10-mile radius that includes Wilsonville and most or all of the following cities: West Linn, Lake Oswego, Tualatin, Tigard, Sherwood, and Newberg.)
- Current (2018) rents are shown in blue, and future (projected) rents are shown in green. The future year is 2020, which is approximately the year a project would open and begin leasing, if construction started today.

Current and **Future** Rents: Wilsonville Town Center and Market Area



- The opening year "target" for new projects that would be built in the Wilsonville Town Center is the baseline assumption used in this financial feasibility analysis and is calculated by escalating the top rents found within a half-mile of the Town Center for two years, and adding a 10% premium, assuming a 2020 building completion date (based on average annual rent increases for new builds).
- The opening year target, plus a 20% rent bump is a theoretical rent level that we use to test project feasibility in the Wilsonville Town Center based on the assumption that new projects in the Town Center will be high quality, be differentiated from less distinctive projects elsewhere, and benefit from special amenities in the Town Center.
- No escalation was assumed for retail rents, since rents have been flat or declining.

Rent Revenue Analysis

The inputs to the chart shown on the preceding page are summarized below.

Because of the varying tenant/ landlord responsibilities for utilities and expenses, housing, retail and office rents are typically quantified in different ways, described as follows.

Apartment rents are usually quoted on a *monthly* per-square-foot or per-unit basis. These are shown as *annual* figures below as well.

Commercial lease structures (i.e. office and retail) are typically Triple-net or Full Service, or some variation in between.

Retail rents are typically quoted as *annual triple-net* (or NNN) rent. The net operating income (NOI) that retail landlords keep is similar to the asking or quoted rent. *Triple-net (NNN)* refers to rent structures where tenants pay most or all of the operating costs associated with occupancy, including real estate taxes, building insurance, maintenance, and utilities.

Office rents are typically quoted as *annual "gross" or "full service"* (FS) rents. The net operating income (NOI) that office landlords keep is significantly less than the asking or quoted gross rent. *Full Service (FS)* (also called a "Gross Lease") refers to rent structures where landlords pay most or all of the operating costs associated with occupancy.

Development Type		Current Rents			Premium:	Rent Escalation		Opening Yr. Rents		Opening Yr. NOI	
		Town Ctr Av.	Town Ctr High	Mkt. Area High	New Project TC	% to 2020	$ to 2020	Town Ctr Target (2020)	Town Ctr +20%	Operating Expenses	NOI
Apartments	Monthly PSF	$1.38	$1.75	$2.83	$0.18	6.1%	$0.11	$2.03	$2.44		
	Per Unit	$1,173	$1,488	$2,406	$149		$91	$1,727	$2,072		
	Annual PSF	$16.56	$21.00	$33.96	$2.10	6.1%	$1.28	$24.38	$29.25	$6.37	$18.01
Retail (NNN)	Annual PSF	$16.00	$23.50	$35.00	$2.35	0.0%	$0.00	$25.85	$31.02	-	$25.85
Office (FS)	Annual PSF	$23.40	$28.30	$36.00	$2.83	2.0%	$0.57	$31.70	$38.04	$8.50	$23.20

Office Rent Analysis

Town Center Average

According to CoStar and LCG's review of the market, office rents average about $23.40 per square foot gross. Office development has been limited recently; the last new office building was completed in 2012. Because office and retail transactions are less frequent than multifamily transactions (new rental leases), data is harder to come by and each lease is different.

Town Center High

The 29174 SW Town Center Loop office building is shown below. Based on LCG's analysis, this small (12,000 SF) office project is achieving among the highest rents in the City. Built in 2009, this project is also among the newest. The landlords have completed at least three leases in 2017 and 2018, and the highest rent was $28.30 gross.

Market Area High

Kruse Oaks III (shown below) is located approximately 8 miles north of the Wilsonville Town Center on I-5 in Lake Oswego's Kruse Way office cluster. With rents averaging about $36 per square foot, approximately 25 to 30% higher than the Wilsonville Town Center high, this is one of the office buildings within the 10-mile market area achieving the highest rents.

Office Data

Availability	Survey
Gross Rent Per SF	$23.40
Vacancy Rate	1.1%
Vacant SF	13,940
Availability Rate	16.7%
Available SF	220,745
Sublet SF	70,020
Months on Market	5.7

Retail Rent Analysis

Town Center Average

According to CoStar and LCG's review of the market, retail rents in the Town Center average about $15.60 per square foot, triple-net (NNN). Because office and retail transactions are less frequent than multifamily transactions (new rental leases), data is harder to come by and each lease is different.

Town Center High

The 30020 SW Boones Ferry Road building is shown below. This building is a part of the Old Town Square project, just west of I-5 and the Wilsonville Town Center. CoStar estimates new retail space such as this rents for approximately $23.50 per square foot, triple net. Landlords may generate higher rents for small spaces, with large "anchor" tenants paying lower rents per square foot.

Market Area High

The Windward, a mixed use development completed in 2018 in downtown Lake Oswego, is shown below. Asking rents for this project are among the highest in the 10-mile market area at $36 to $42 per square foot, triple-net. Actual signed leases may be lower than asking rents. Ground floor retail rents for spaces in mixed-use projects are typically higher per square foot than standalone retail developments..

Retail Data

Availability	Survey
Gross Rent Per SF	$15.61
Vacancy Rate	3.0%
Vacant SF	74,038
Availability Rate	4.5%
Available SF	109,806
Sublet SF	0
Months on Market	8.3

Note: the retail rent analysis assumes developers will use similar projects to those used by LCG for both the Town Center High and Market Area High rents, regardless of whether the developer's project is a standalone retail or mixed-use project with ground-floor retail.

Mixed-Use Residential Rent Analysis

The table below shows a summary of multifamily and mixed use projects in Wilsonville and nearby cities. These projects are further profiled in the following pages.

The Bell Tower project is achieving the highest rents per square foot of any multifamily project in Wilsonville, and is located across I-5 from the Town Center.

Rents here are significantly above the Town Center average of $1.38 per square foot.

The Attwell (Tigard, built 2017) and Windward (Lake Oswego, built 2018) projects were chosen for comparison for two reasons. First, they are among the "top performing" projects in terms of rent, a key metric for developers.

The Attwell is the top performing mixed-use project along the I-5 corridor south of Portland; and The Windward is the top performing project within a 10 mile radius of the Town Center.

Second, they are both downtown/town center projects, located near the heart of Tigard and Lake Oswego, respectively.

Location	Project Name	Avg. Rent	Premium vs. WTC
Wilsonville	Domaine at Villebois	$1.52	
	Portera at the Grove	$1.59	
	Bell Tower (Wilsonville High)	$1.75	-
Tigard	Attwell Off Main	$1.94	11%
Lake Oswego	The Windward	$2.83	62%

Bell Tower, Wilsonville

The Bell Tower mixed-use project is located at Old Town Square, just across I-5 from the Wilsonville Town Center.

This project is earning the highest multifamily rents in Wilsonville, likely due to the concentration of amenities available within easy walking distance. These include restaurants, pubs, grocery stores, coffee shops, many other retailers, as well as Boones Ferry Park and access to the Willamette River.

This average rent being generated by this project across all units is $1.75 per square foot (residential only). This is significantly more than the rents at the Portera, Terrene, and other more recent projects.

This project is likely to be used as an important "comparable" for developers looking to build in the Town Center.

Built: 2012
Prototype: Main Street Apartments (not including ground floor retail)

Unit and Rent Summary

		Unit Mix		Vacancy		Avg Asking Rent		Avg Effective Rent		
Totals	Avg SF	Units	Mix %	Units	Percent	Per Unit	Per SF	Per Unit	Per SF	Concessions
All Studios	505	1	2.0%	0	0.0%	$1,289	$2.55	$1,285	$2.54	0.3%
All 1 Beds	761	36	70.6%	0	0.0%	$1,358	$1.79	$1,355	$1.78	0.3%
All 2 Beds	1,036	14	27.5%	1	7.1%	$1,732	$1.66	$1,721	$1.65	0.6%
Totals	**831**	**51**	**100%**	**1**	**2.0%**	**$1,465**	**$1.75**	**$1,459**	**$1.75**	**0.4%**

Attwell Off Main, Downtown Tigard

The Attwell Off Main mixed-use project is the best-performing project along the I-5 corridor south of Portland, on a rent-per-square-foot basis. Average rents are $1.94, which is 11 percent higher than rents at the Bell Tower, and 20%+ higher than other Wilsonville projects such as the Portera and Domaine at Villebois.

This project is a good example of the Main Street Apartment prototype, since it includes retail (on Burnham Street), and a mix of tuck under and surface parking, which costs less than structured parking.

This project was led by the City of Tigard. The City owned a 3.5 acre public works site near Main Street and Fanno Creek, and sold the site at a somewhat below-market value because there were no strong "urban housing" comparables, and because the City wanted to achieve a higher-quality project. The City also applied a 10-year tax abatement.

Built: 2017
Prototype: Main Street Apartments (not including ground floor retail)

Unit and Rent Summary

		Unit Mix		Vacancy		Avg Asking Rent		Avg Effective Rent		
Totals	Avg SF	Units	Mix %	Units	Percent	Per Unit	Per SF	Per Unit	Per SF	Concessions
All Studios	485	31	18.8%	2	6.5%	$1,205	$2.48	$1,205	$2.48	0.0%
All 1 Beds	685	71	43.0%	4	5.6%	$1,401	$2.05	$1,401	$2.05	0.0%
All 2 Beds	1,024	26	15.8%	1	3.9%	$1,859	$1.82	$1,859	$1.82	0.0%
All 3 Beds	1,321	37	22.4%	2	5.4%	$2,284	$1.73	$2,284	$1.73	0.0%
Totals	**843**	**165**	**100%**	**9**	**5.5%**	**$1,634**	**$1.94**	**$1,634**	**$1.94**	**0.0%**

The Windward, Lake Oswego

The Windward, located in the heart of downtown Lake Oswego, generates the highest rents per-square-foot of any project within a 10-mile radius of the Wilsonville Town Center. Average rents are $2.83 per square foot, approximately 62% above the rents at the Bell Tower. Because it opened in 2018, this project is still leasing up (30 percent occupied, 70 percent vacant), and therefore rents may trend up or down. The Windward includes 42,900 square feet of retail.

Downtown Lake Oswego includes numerous amenities, including numerous restaurants and retailers, lake views, and the famer's market and other events that are held in adjacent Millennium Plaza Park, which likely increased demand for this project.

Parking is provided underground. Therefore, despite the height (four stories above ground), this is considered a podium project due to the cost of underground parking and related structural elements. The project was purely market driven.

Built: 2018
Prototype: Mid-Rise / Podium (High Activity)

Unit and Rent Summary

		Unit Mix		Vacancy		Avg Asking Rent		Avg Effective Rent	
Totals	Avg SF	Units	Mix %	Units	Percent	Per Unit	Per SF	Per Unit	Per SF
All Studios	779	32	16.0%	23	71.9%	$2,238	$2.87	$2,145	$2.75
All 1 Beds	861	109	54.5%	76	69.7%	$2,547	$2.96	$2,431	$2.83
All 2 Beds	1,367	52	26.0%	36	69.2%	$4,072	$2.98	$3,902	$2.86
All 3 Beds	1,830	7	3.5%	5	71.4%	$5,472	$2.99	$5,243	$2.87
Totals	**1,013**	**200**	**100%**	**141**	**70.5%**	**$2,996**	**$2.96**	**$2,866**	**$2.83**

Condominium Projects

Following the onset of the recession in 2008/2009, very few condominium projects have been built in the Portland metropolitan region, consistent with development trends in most western (Pacific Coast to the Rocky Mountains) metro regions. Condo projects came to a halt for a number of reasons:

- The prevalence of costly construction liability lawsuits by homeowners associations against developers has created a significant deterrent for many developers, architects, and construction firms.
- More stringent lending practices.
- Concern from consumers about the long-term value of condominiums compared to the purchase price, based on their experience in the recession.
- The significantly higher cost of construction for new condominiums. Developers often seek to use steel and concrete construction, rather than wood, in order to create a product that is higher-quality and less susceptible to construction defects.
- Fewer comparable sales on which lenders and developers can estimate future projects.

LCG is aware of a total of five significant projects that have been completed during the last decade, all of which have been built in either the Pearl District, or close-in Eastside Portland (all other multifamily developments have been apartments).

The Windward, in downtown Lake Oswego, was originally planned as a condominium project, but then converted to rental, likely due to the lower risk, better financing terms, and superior economics associated with rental projects. The project was approved in November 2015, construction started January 2016, and it was completed in early 2018.

LCG does expect that the number of condominium projects will increase going forward. However, there is inadequate data at this point on which to base an analysis of condominium feasibility or a comparison of rental apartments versus condominiums. In many cases, higher-cost and higher-quality condominium projects follow several successful rental apartment or office mixed-use projects.

For these reasons, this analysis focuses on an analysis of mixed-use multifamily rental development rather than condominium development.

Construction Costs

Another key determinant of development feasibility is construction (or "hard") costs. RS Means' construction cost index for all types of development in the Portland region is shown at right. The index is set at 100 for the year 2006, and shows that construction costs have increased 31 percent over the past 12 years. Developers generally need higher rents to compensate for these higher costs.

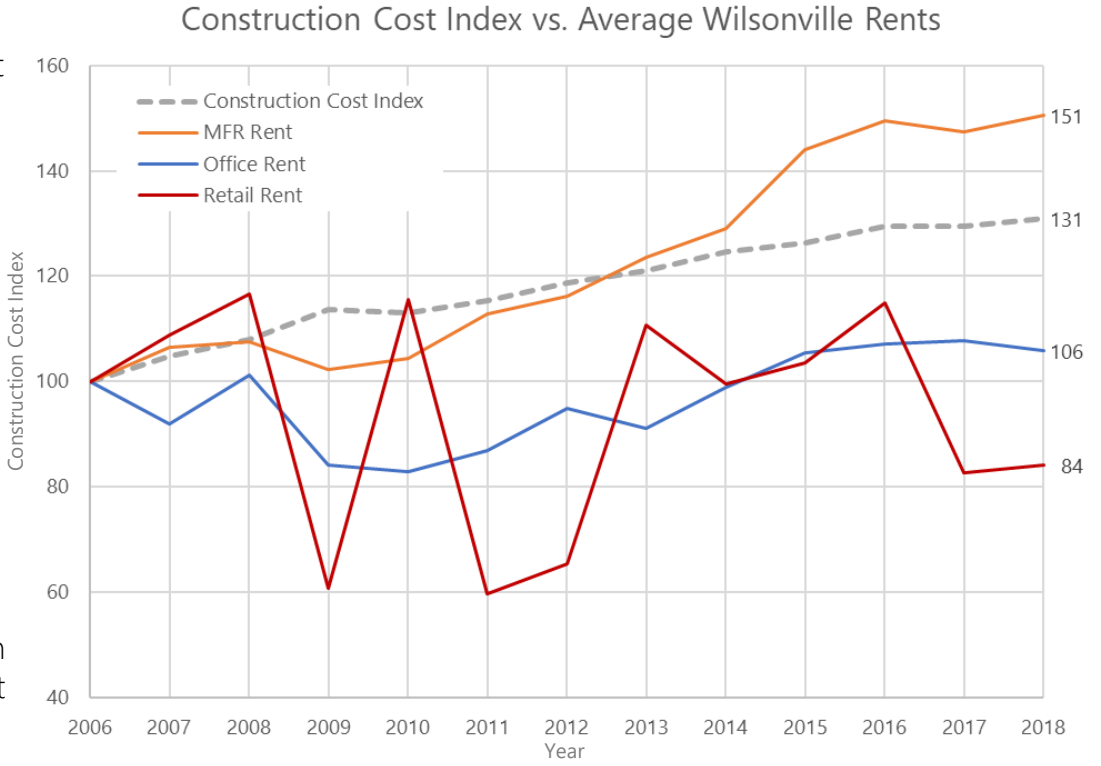
Source: RS Means.

Construction Costs

The chart at right compares construction costs to average apartment (multifamily), office, and retail rents in Wilsonville over time. All data is indexed to 100 in the year 2006.

Multifamily rents have increased consistently and rapidly—by 51 percent—over this time period, while office rents have stayed relatively constant and retail rents have actually fallen by 16 percent.

This data provides a key reason that multifamily development has been very strong over the past five years, while office and retail development have been slower. The data also reflect the fact that rental housing has become less affordable in recent years.



Sources: RS Means, Costar.

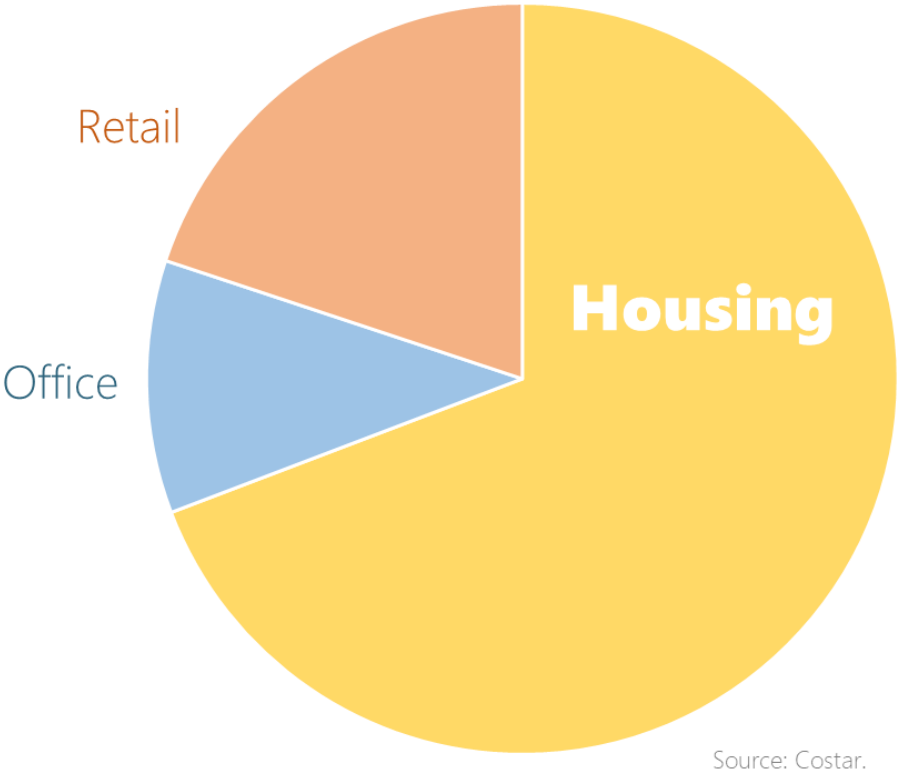
Wilsonville Development Trends

The relationship between construction costs and rents reflects demand and drives the types of development that have been built in Wilsonville and other cities throughout both the market area, as well as the greater Portland Metropolitan Region.

The figure at right shows the amount of multifamily (rental housing), office, and retail development (square feet) built over the past decade in Wilsonville.

The data source is CoStar, whose focus is on leased space, and therefore sometimes does not track dedicated "owner-occupied" office and retail developments. Owner-occupied single family homes and townhomes are also not shown. This figure reflects the fact that housing constitutes the bulk of recently built commercial development.

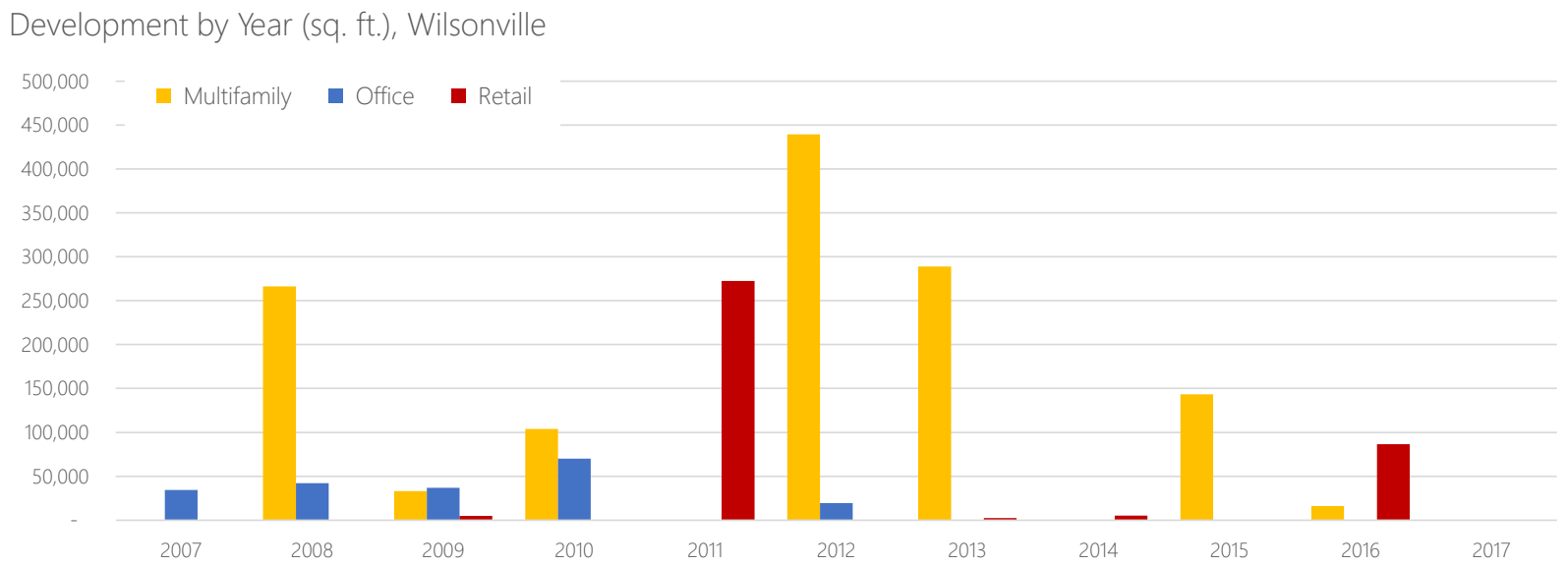
Land Use Mix, City of Wilsonville
2007 to 2017



Source: Costar.

Wilsonville Development Timeline

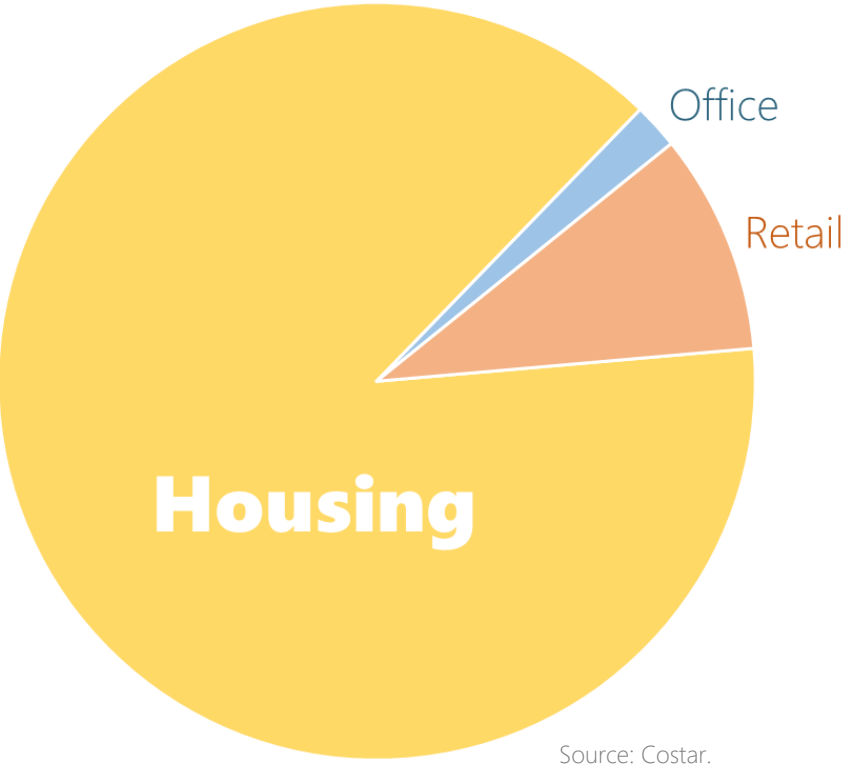
The chart below shows another view of rental-occupied multifamily, retail, and office development over time in the City of Wilsonville. This chart shows there has been no new office space developed since 2012. The multifamily development north of the Wilsonville Town Center has comprised the bulk of all development in the past 5 years.



Five-Year Wilsonville Development Trends

The figure at right shows the amount of multifamily (rental housing), office, and retail development (square feet) built over the past five years, and shows that the shift towards housing development and away from office and retail, has been even more pronounced in this time period.

Land Use Mix, City of Wilsonville
2012 to 2017



Source: Costar.

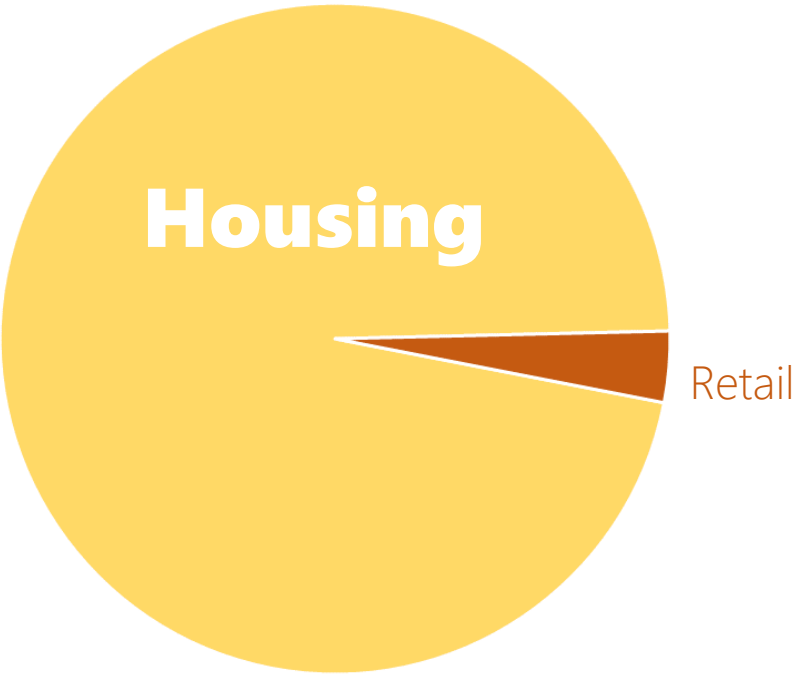
Regional Town Center Development Trends

The figure at right shows the amount of multifamily (rental housing), office, and retail development (square feet) built in the Orenco Station area in Hillsboro—also a designated Town Center—since 2006.

This reflects the fact that a land use mix dominated by housing is not atypical for successful town centers.

Indeed, multifamily housing also makes up the bulk of new development in other centers such as Downtown Hillsboro, Beaverton, Tigard and Lake Oswego.

Land Use Mix, Orenco Station
2006 to 2018, South of Cornell Road



Source: Costar. We use the time period of 2006 to 2018 because it captures the later phases of development in the Orenco area. We use the area south of Cornell Road since the area to the north was developed earlier. The area south of Cornell Road is also sometimes called "The Platform District" at Orenco Station.

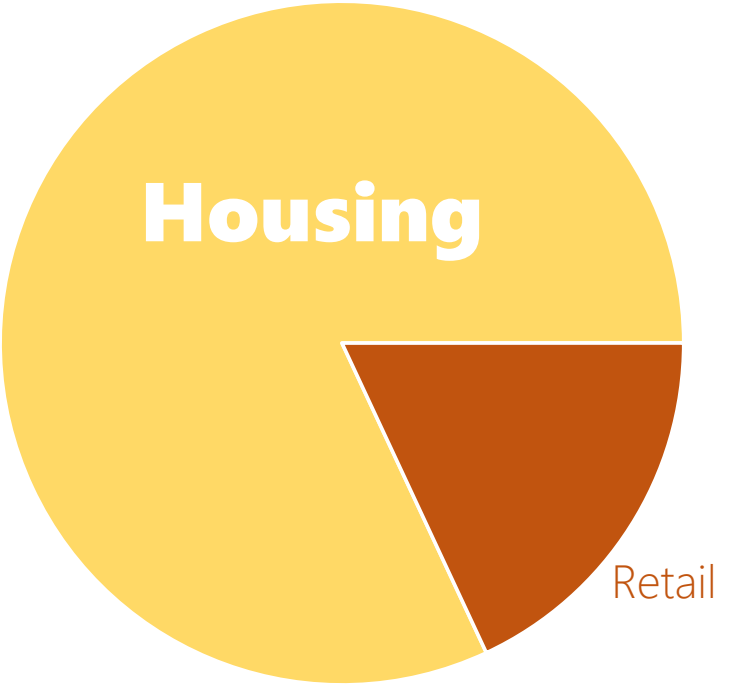
Regional Town Center Development Trends

The figure at right shows the amount of multifamily (rental housing), office, and retail development (square feet) built in downtown Lake Oswego built since 2012.

Development of multifamily housing has been more prevalent than non-residential development.

The shift towards housing development and away from office and retail has been even more pronounced since 2012.

Land Use Mix, Downtown Lake Oswego
2012 to present



Source: Costar. The "Downtown" boundary is based on the City's downtown parking map.

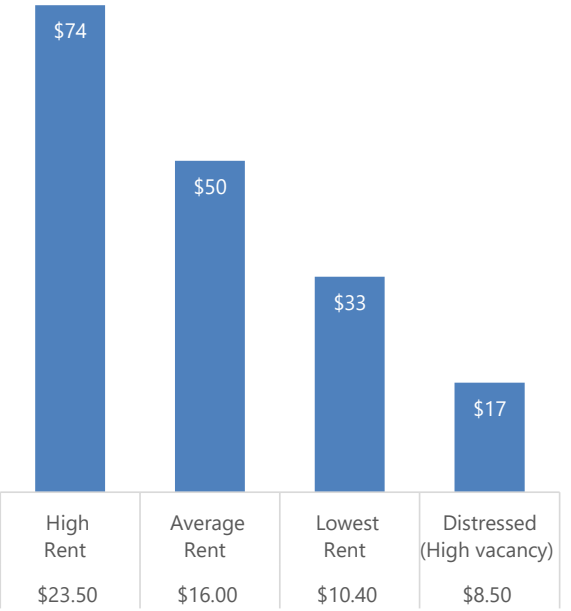
Land Cost

The amount developers must pay to purchase land is another key factor in development feasibility, particularly in the Wilsonville Town Center, where most of the land is developed with existing retail/ commercial buildings.

The chart at right shows the estimated land value in the Town Center (per square foot of site area) at various retail rental rates. High rents are capitalized into the total value of the land and building since buyers will be willing to pay more to acquire the income stream. Asking prices for "high rent" properties is expected to be approximately $70 PSF (which is currently the "high" land value), while average rent properties are estimated to cost $50 per square foot. LCG is not aware of any properties that would transact at the "low" or "distressed" level, but it is possible in the event of a very underutilized property.

All other things equal, developers will look to purchase and redevelop properties with low rents and high vacancies, or are "tear downs." Property owners of highly underutilized sites (e.g., a lightly-used parking lot) also may redevelop their own property. This analysis considers the development feasibility of both property that is already owned and land with existing commercial buildings that must be acquired.

Property Acquisition Cost PSF of Site Area, Based on Retail Rent PSF



Sources: Costar, Leland Consulting Group.

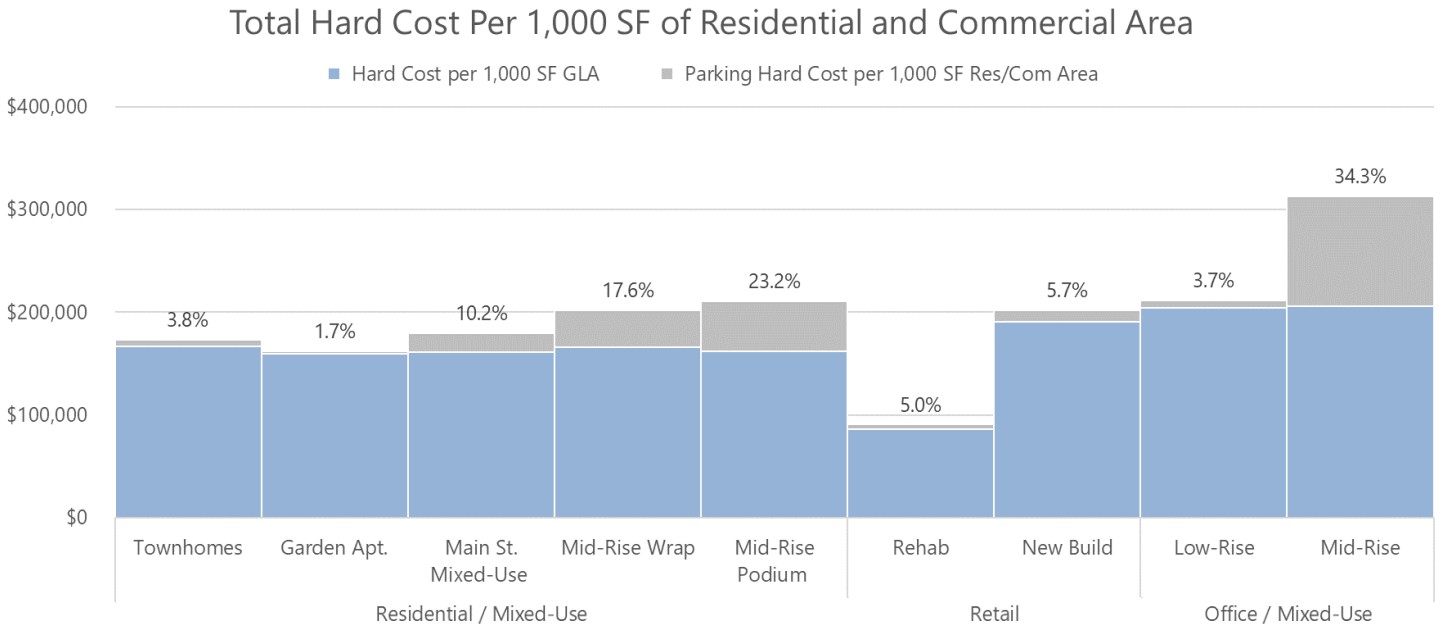
Construction and Parking Cost

The figure below shows the hard (construction) cost per 1,000 square feet of residential and/or commercial area (also called gross leasable area or GLA); the parking cost per 1,000 square feet of GLA; and the combined hard and parking cost (dollar figure shown) for different development types.

The cost of parking increases significantly for housing and office prototypes that include structured parking. The cost of parking for higher density office projects is particularly high because parking ratios are higher for office than housing.

Parking Types by Prototype:

- *Surface Parking:* Townhomes, Garden Apartments, Rehab and New Build Retail, Creative Office
- *Tuck Under and Surface Parking:* Main Street Apartments
- *Structured Parking:* Wrap and Podium Apartments and Mid Rise Office



Parking Ratios

As described above, structured parking significantly increases the cost of many town center projects. At the same time, the car remains the dominant form of transportation and nearly all projects require parking. Therefore, finding the right balance of parking is important.

The City's current parking requirements vary by land use, with retail requiring the most parking spaces per 1,000 square feet, followed by office, and then residential. Requirements vary depending on the type of retail (e.g. restaurant, grocery, general retail), size of dwelling units, and other factors. The City also allows developers to build less parking when it is shared among multiple tenants or uses.

Parking ratios for residential and mixed-use projects in Wilsonville and comparable town center locations are shown below. The average parking ratio for these recent projects is 1 space per dwelling unit and is used as the baseline parking ratio for development feasibility in this analysis.

Location		Project Name	Parking /unit
Wilsonville		Terrene	1.7
		Portera	0.9
		Bell Tower	1.3
Hillsboro	Town Center	Platform 14	0.7
	Town Center	Hub 9	1.1
Beaverton	Town Center	The Rise	0.7
Lake Oswego	Town Center	The Windward	1.5
Average	All Projects		1.1

Baseline and reduced parking ratios used for this analysis are shown below.
A review of townhome projects indicates higher parking ratios compared to the multifamily residential prototypes. Baseline retail and office ratios are based on current City requirements for general retail and office, respectively. The financial impact of 30%[1] lower parking ratios was also analyzed, as shown on the following slides, and those ratios are also listed below.

Parking Ratios	Baseline	Reduced 30%	
Townhomes	2.0	1.4	/unit
Multifamily	1.0	0.7	/unit
Retail	4.1	2.9	/1,000 SF
Office	2.7	1.9	/1,000 SF

[1] The Rise and Platform 14 have 30% less parking than would be required today in the Wilsonville Town Center. Residents of mixed-use town center projects typically require less parking, usually by well over 30%. Mixed use/multifamily projects in Portland's other central cities have achieved parking ratios of much lower than 1.0. Further, many studies argue that parking demand will decrease further with the advent of AVs, increasing car sharing, and other numerous transportation innovations, such as bike share, scooters, and ongoing walking, biking, and transit.

Form Follows Parking: Office

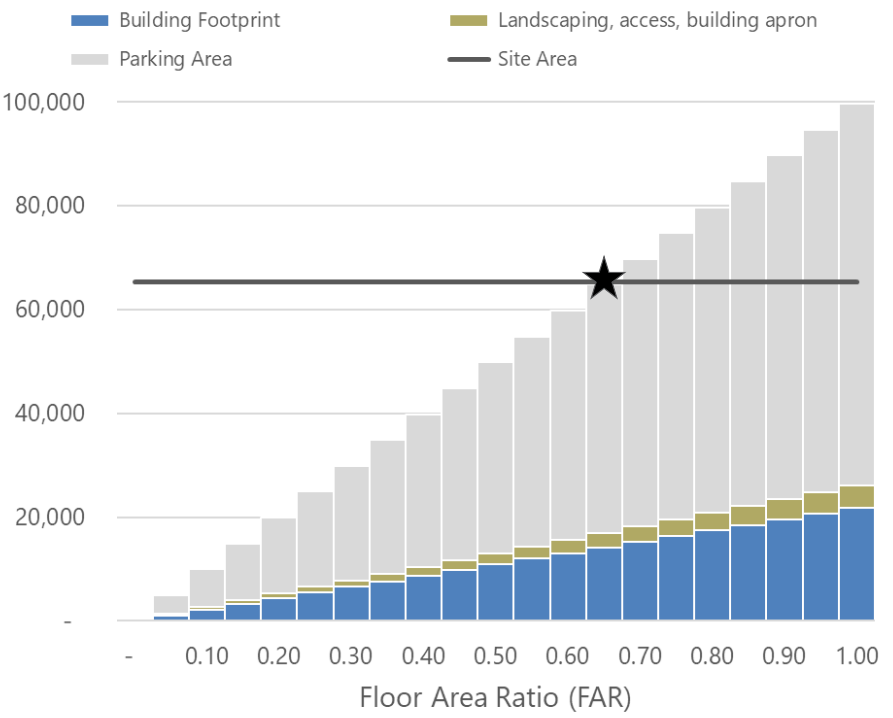
One saying in the design and real estate development industries is "form follows parking." In other words: parking—whether surface or structured—has a significant impact on the types of buildings that are physically and financially feasible.

Indicated on the chart at right is the building footprint, parking area, and landscaping and access area for a typical, three-story office building on a 65,000 square foot site (1.5 acres). Assuming that 3.0 surface parking spaces are require for each 1,000 square feet of office area, based on traditiona parking ratios, the building can be no more than about 42,000 square feet of building area (with a building footprint of about 14,000 SF and Floor Area Ratio of 0.65). *A larger building will either require more parking than can fit on the site or structured parking.*

The traditional parking ratios for suburban office development is 3.0 spaces per 1,000 SF of space. While shor term parking demand may actually be increasing in some cases as denser "creative" and open office floorplans replace earlier floorplans that had numerous enclosed offices, over the long-term, Town Center residents typically own fewer cars and transportation technology is expected to reduce parking demand. Wilsonville's base parking requirement for office buildings is slightly less—2.7 spaces per 1,000. The City also allows a parking reduction if parking is shared between multiple uses (e.g. office, retail, and housing).

Even if regulations do not require a high parking ratio, developers will try to build the amount of parking they think their tenants will demand.

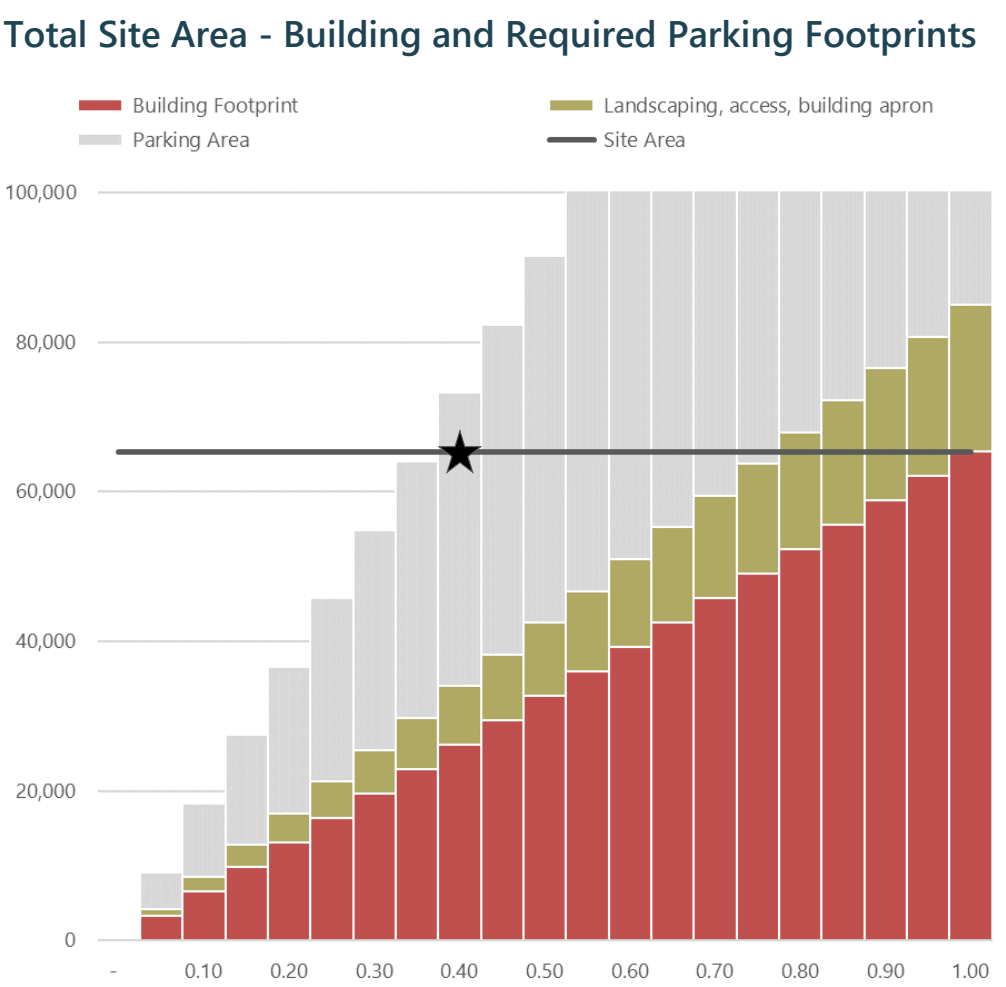
Total Site Area – Building and Required Parking Footprints



Form Follows Parking: Retail

Indicated on the chart at right is the development of a typical, one-story retail building on a 65,000 square foot site (1.5 acres). Assuming that 4.0 surface parking spaces are required for each 1,000 square feet of office area, the building can be no more than about 22,800 square feet in size (a FAR of 0.4).

A larger building will either require more parking than can fit on the site, or structured parking spaces.



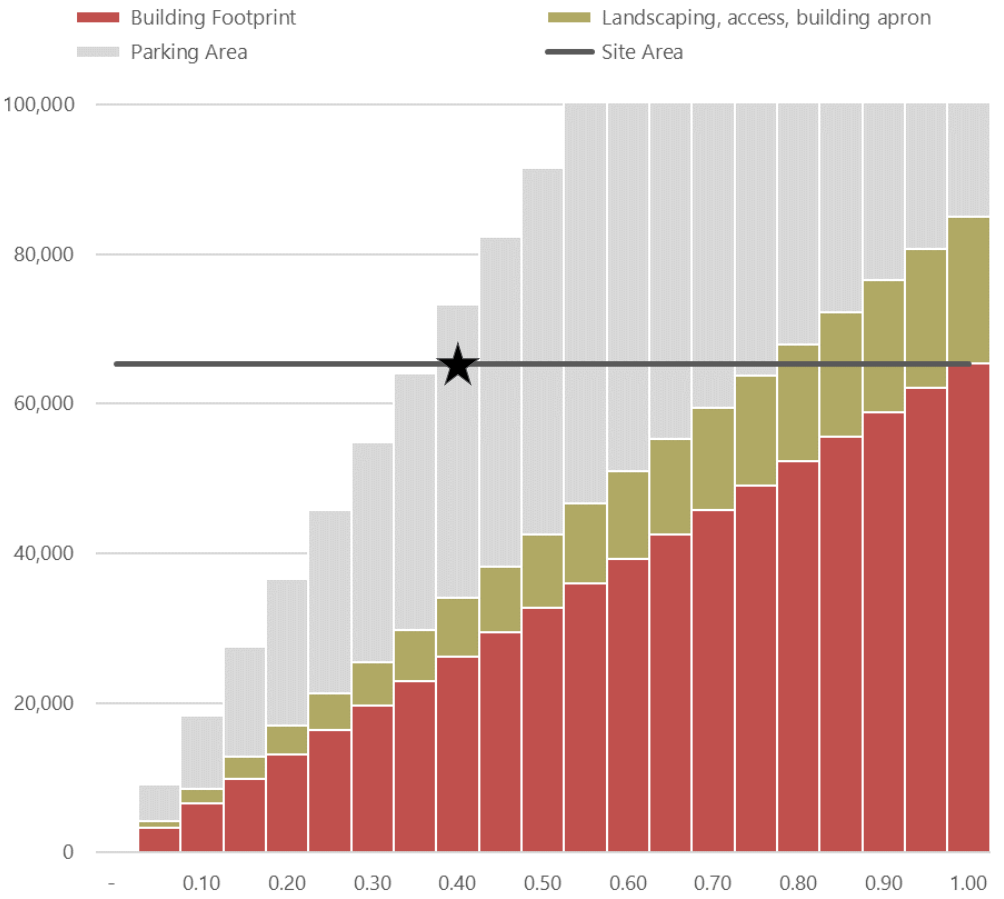
Form Follows Parking: Retail

Parking has an even bigger impact on retail than office development.

Retail parking ratios are higher. Ratios of 4 to 5 spaces per 1,000 SF are typical for general retail/commercial, but ratios can be much higher for specific uses such as restaurants. Wilsonville's requirement for "general retail" is 4.1 spaces per 1,000 SF. The parking area needed to fulfill these ratios reduces the potential retail building footprint.

Existing single-story retail development, particularly in suburban areas, is based on development codes that include high parking ratios for retail. While on-site parking at the store's front door step is convenient, it significantly impacts overall site design and pedestrian oriented building design.

Total Site Area - Building and Required Parking Footprints



Return on Investment

In this section, we summarize the return on investment for various development alternatives tested through this analysis. These alternatives are based on a number of key variables and test the feasibility of the development prototypes identified earlier. A summary of key inputs are as described in previous slides and listed at the end of this report.

Different developers use different metrics and approaches to evaluate whether a project is a good investment, including return on cost (or yield), internal rate of return (IRR), net present value (NPV), equity multiple (EM), and other metrics, such as cash-on-cash return.

In this analysis, we use the return on cost approach, since this is perhaps the most commonly used by developers for preliminary feasibility analysis. Return on cost is calculated as a percentage: estimated net operating income (NOI) in the first year of stabilized operation, divided by total project costs (land, hard cost, soft cost, etc.). Target returns are 5.9% percent for multifamily, 7.8% for retail, and 7.9% for office. Target returns are based on established real estate industry capitalization rates ("cap rates"). They are lower for multifamily because the development industry is generally more optimistic about the reliability of future apartment revenues, and less confident about retail and office returns.

We categorize the ROI of different development alternatives as follows:

1 **Infeasible**
Less than 80% of target return.

2 **Challenged**
80 to 90% of target return.
However, major changes could improve feasibility, such as new funding mechanisms and economic opportunities

3 **Marginal**
90 to 100% of target return.
Value engineering* or other changes could make this project feasible

4 **Feasible**
100 to 120% of target return.
Should attract capable developers

5 **Excellent**
More than 120% of target return.
Multiple developers are likely to seek out this project type

**Value engineering is used to solve problems and identify and eliminate unwanted costs, while improving function and quality. The aim is to increase the value of products, satisfying the product's performance requirements at the lowest possible cost.*

Development Alternatives

Eight main development alternatives were analyzed for each building prototype. Each alternative makes a different set of assumptions about key variables that affect development feasibility. The variables are shown below: land acquisition conditions/ cost; parking rate; rent; and tax abatement.

Land. In alternatives one through four, we assume that the developer is developing a property they already own and does not cost them anything to acquire. This reflects the potential to develop underutilized sites in the Town Center such as lightly used surface parking lots; "low basis" properties that were purchased many years ago; or, potentially, publicly owned land that is sold at below-market costs. In alternatives five through eight, we assume the developer is acquiring a *commercial building*, with a purchase price of $50 per square foot, which lowers developer returns.

Rent. Some alternatives use the baseline rent assumptions ("opening year targets" on slide 8), while others assume a 20% "rent premium," which is still below the market area high. It is possible rents will be higher in the future, as additional amenities are added to the Town Center.

Parking reduction. Some alternatives assume current parking ratios, while others assume a reduction of 30% (based on the parking ratios of comparable projects in regional Town Centers). A reduction in parking reduces development costs.

Tax Abatement. Some alternatives apply a ten-year property tax abatement, authorized in the State of Oregon for mixed-use projects with ground floor commercial and housing above. It has been used by numerous cities (Hillsboro, Tigard, Eugene) to incentivize projects in designated areas. No tax abatement is available for retail or office projects.

Key Variables	**Alternative**							
	1	2	3	4	5	6	7	8
Land	Owned	Owned	Owned	Owned	Building	Building	Building	Building
Parking Reduction	0%	30%	0%	30%	0%	30%	0%	30%
Rent Premium	0%	0%	20%	20%	0%	0%	20%	20%
Tax Abatement	No	Yes	No	Yes	No	Yes	No	Yes

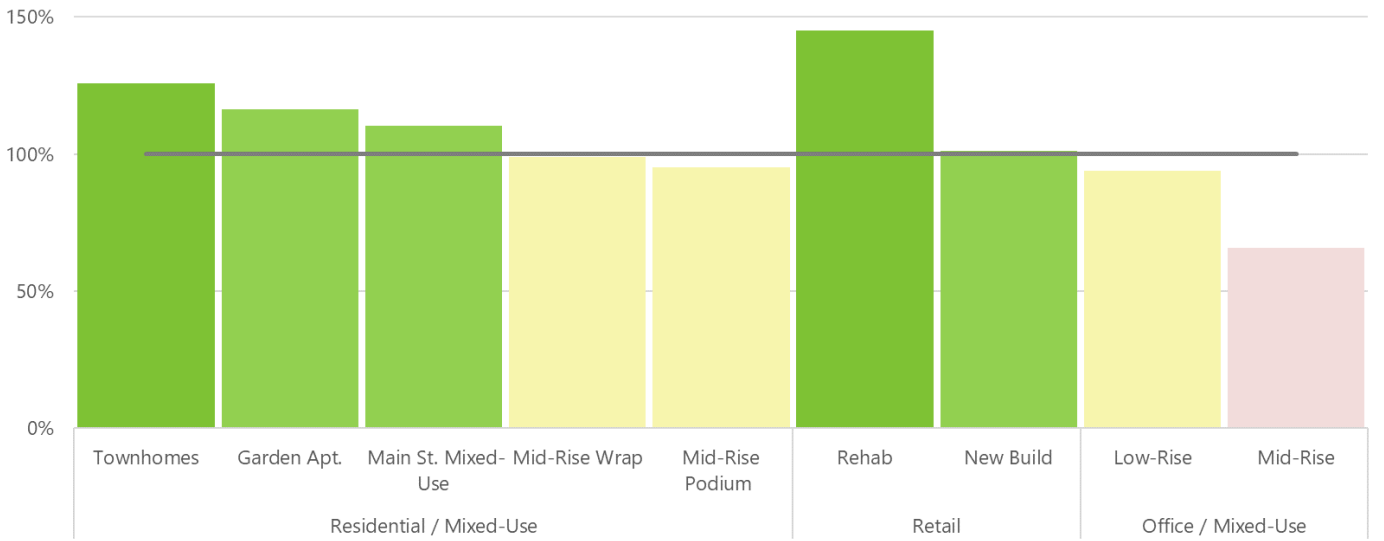
Alternative 1: Baseline

The ROI results for the baseline alternative are shown below for all 10 building prototypes assessed in this analysis. In this alternative, we assume the developers are building on property they already own, the project obtains baseline rents, builds to current parking ratios, and receives no tax abatement.

This analysis indicates a number of development types are feasible under these conditions, including townhomes, garden apartments, main street apartments, and both retail development types. The fact that retail renovations will generate strong returns suggests that existing retail buildings are likely to remain.

Higher density residential and all office development are below feasibility targets.

Land	Owned
Parking Reduction	0%
Rent Premium	0%
Tax Exemption	No

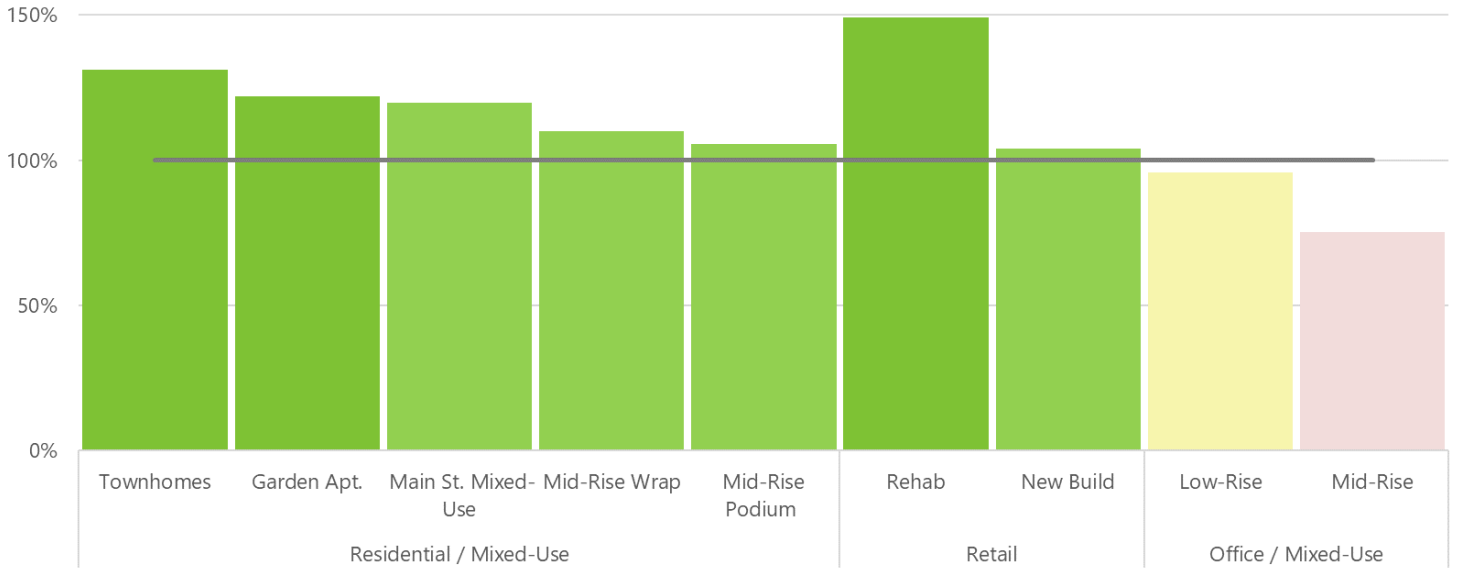


2: Parking Reduction & Tax Abatement

The ROI results for alternative 2 are shown below. The changes made from alternative 1 are: applying a 30 percent parking reduction and the temporary tax abatement. Making these changes improves feasibility for several reasons. Parking costs are reduced for both surface and structured parking projects, and the space per square foot is converted to rent-generating uses. This cost reduction is modest for surface parked projects, but it is significant for structured parking projects such as the wrap and podium, which are now feasible.

Office development remains below feasibility targets.

Land	Owned
Parking Reduction	30%
Rent Premium	0%
Tax Exemption	Yes



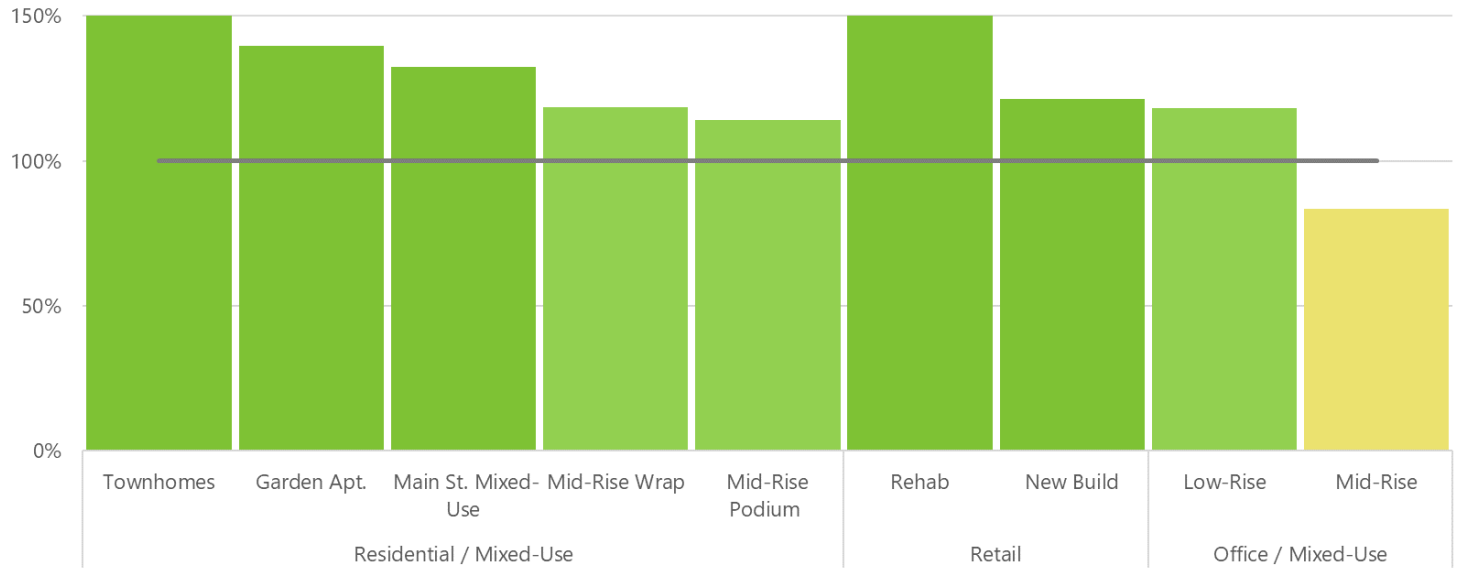
3: Rent Premium

The ROI results for alternative 3 are shown below. The change made from alternative 1 is to increase all rents by 20 percent. Increasing rents significantly makes all of the development types feasible—with the exception of mid rise office (assuming the developers build on their own underutilized land).

A significant residential rent premium may be achievable over time, as projects such as the Attwell are already achieving a premium (currently about 11 percent higher than the Town Center High).

A 20 percent office rent premium would mean that Wilsonville Town Center office space would be directly competing with Kruse Way.

Land	Owned
Parking Reduction	0%
Rent Premium	20%
Tax Exemption	No

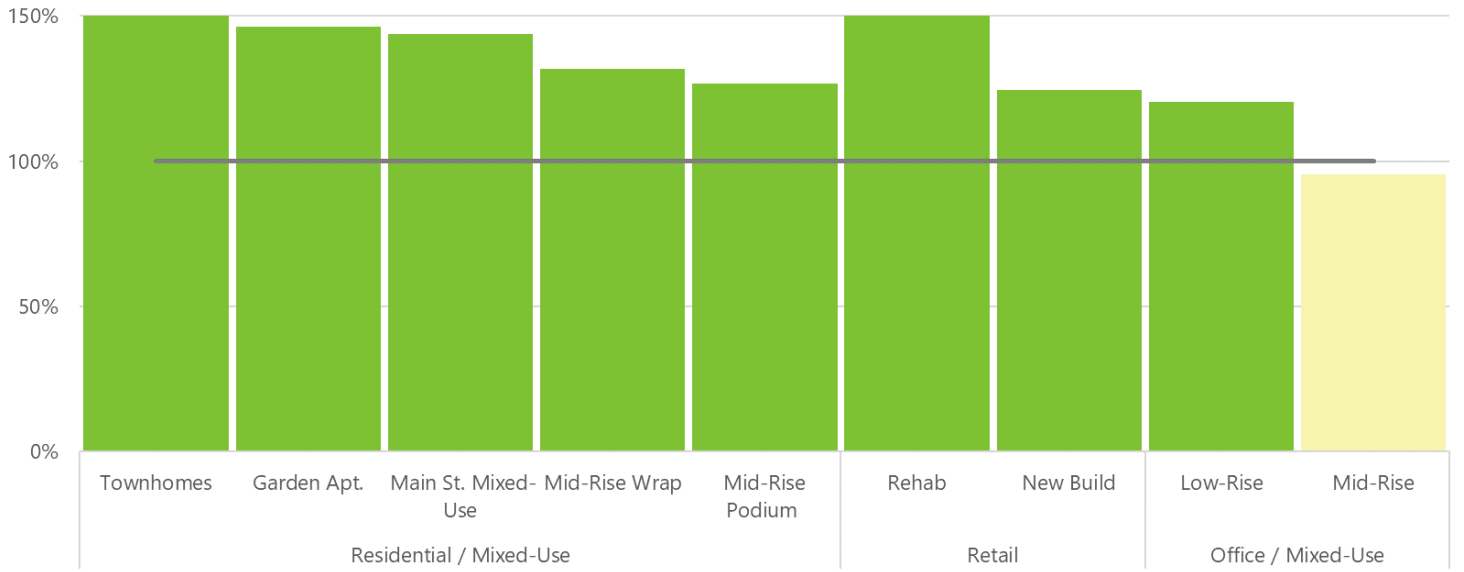


4: Favorable Development Conditions

The ROI results for alternative 4 are shown below. In this alternative, the rent premium is paired with the parking reduction and tax abatement.

Once again, all of the development types are feasible (assuming the developers build on their own underutilized land), with the exception of mid rise office, which are marginal.

Land	Owned
Parking Reduction	30%
Rent Premium	20%
Tax Exemption	Yes

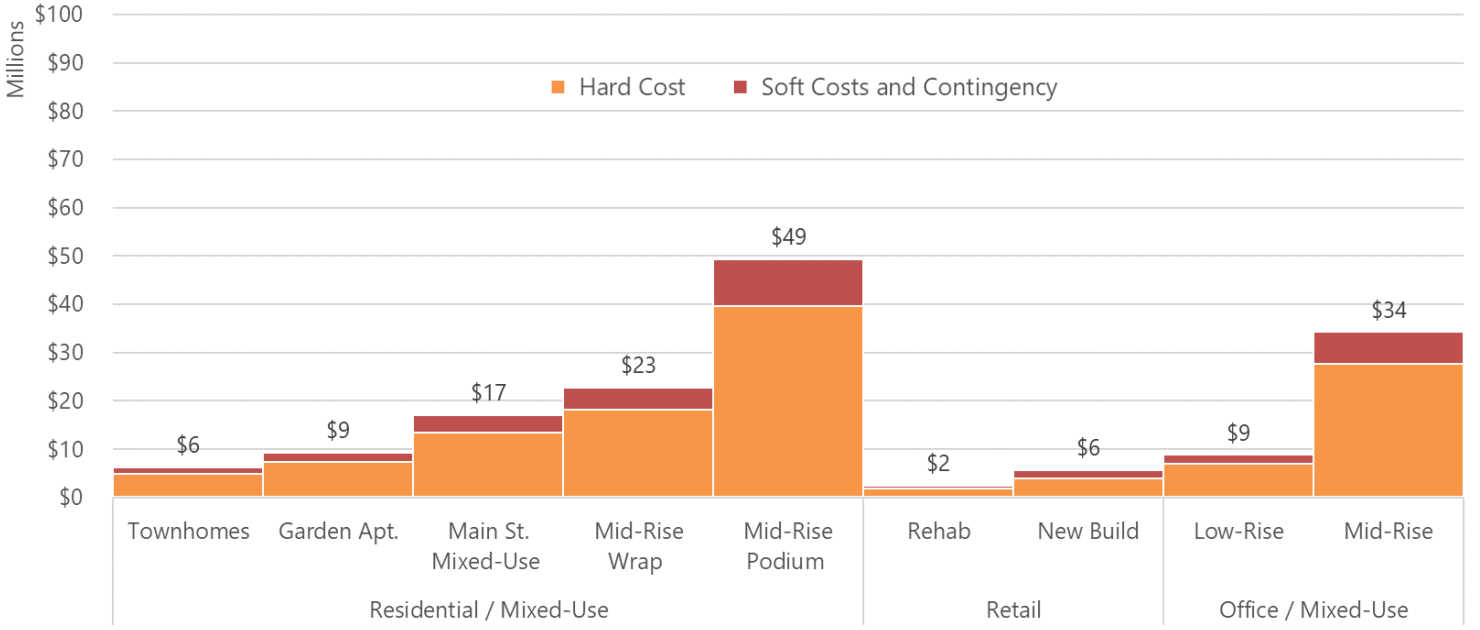


4: Total Project Cost ($ millions)

The chart below shows the total project cost (in millions of dollars) for each of the ten development prototypes as tested in alternative 4. This shows the significant differences in total investment between the project types, and the fact that hard and soft costs, not the cost of land, make up the majority of total project cost.

The higher density housing and office projects are major investments. They are therefore often riskier, and undertaken by a smaller group of developers.

Land	Vacant
Rent Premium	20%
Parking Reduction	30%
Tax Exemption	Yes

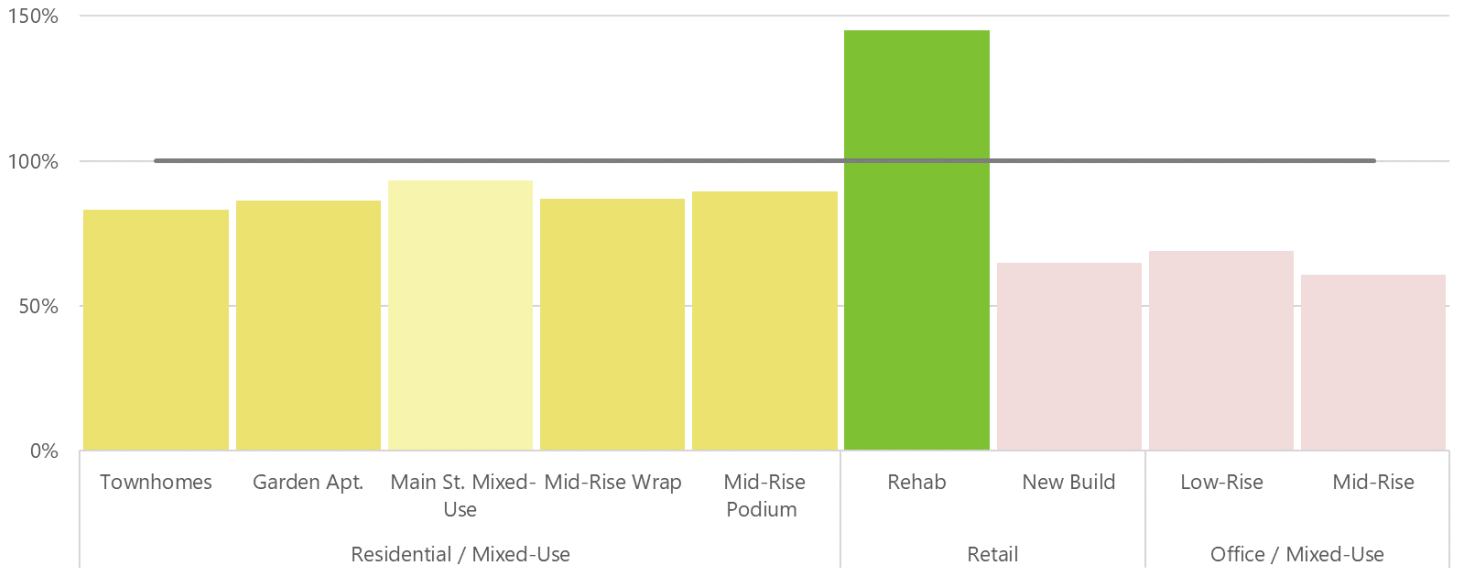


5: Baseline with Land/Building Acquisition

The ROI results for alternative 5 are shown below. The change made from alternative 1 is that the developer must acquire a one-story commercial building prior to development (at $50 per square foot of land). The retail rehab project is exempt from this assumption since a developer will *usually* own the building to be renovated. Therefore, retail rehab continues to be feasible. However, the other projects do not meet their return thresholds.

All housing projects are either challenged or marginal due to significant land costs, while new-construction retail and office projects are infeasible.

Land	Building
Parking Reduction	0%
Rent Premium	0%
Tax Exemption	No



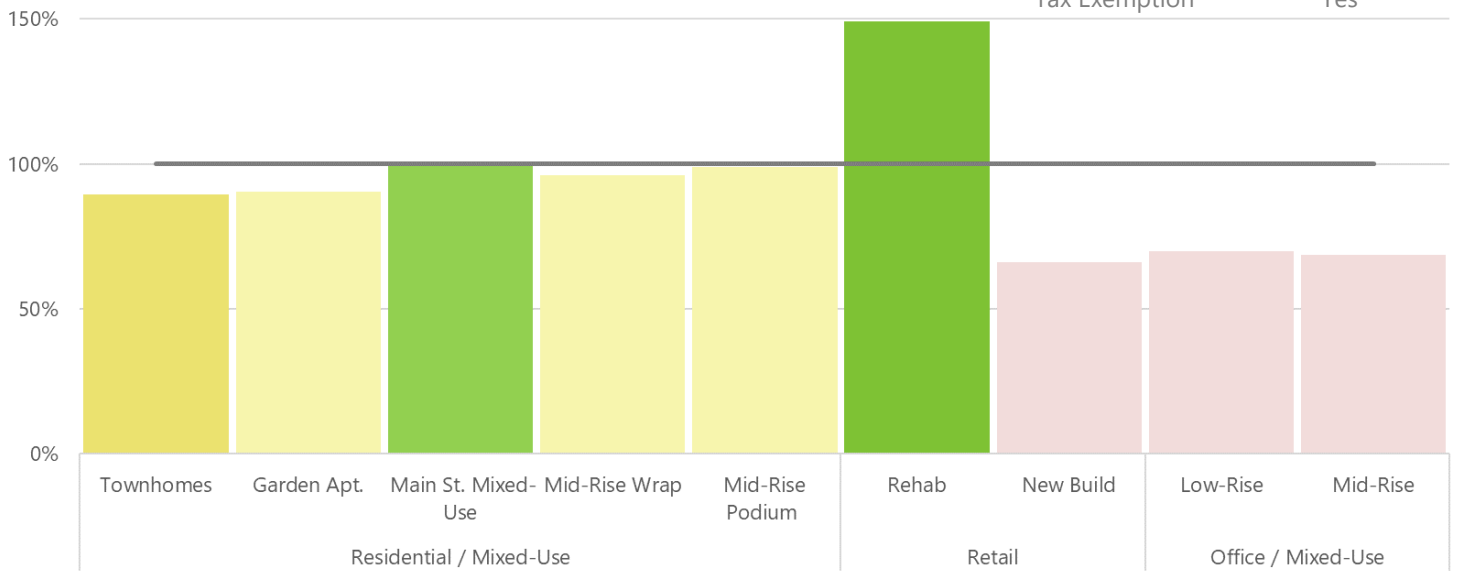
6: Parking Reduction & Tax Abatement

The ROI results for alternative 6 are shown below. The changes made from alternative 5 are to assume a 30 percent parking reduction and property tax abatement, similar to alternative 2. The tax abatement does not apply to retail and office projects.

Making these changes results in significant improvements to the feasibility of the residential development types. The most notable change is to the main street project, which becomes feasible.

The new-build retail and office projects continue to be infeasible, since the parking reduction does not lower costs enough to offset the higher land/building acquisition costs.

Land	Building
Parking Reduction	30%
Rent Premium	0%
Tax Exemption	Yes



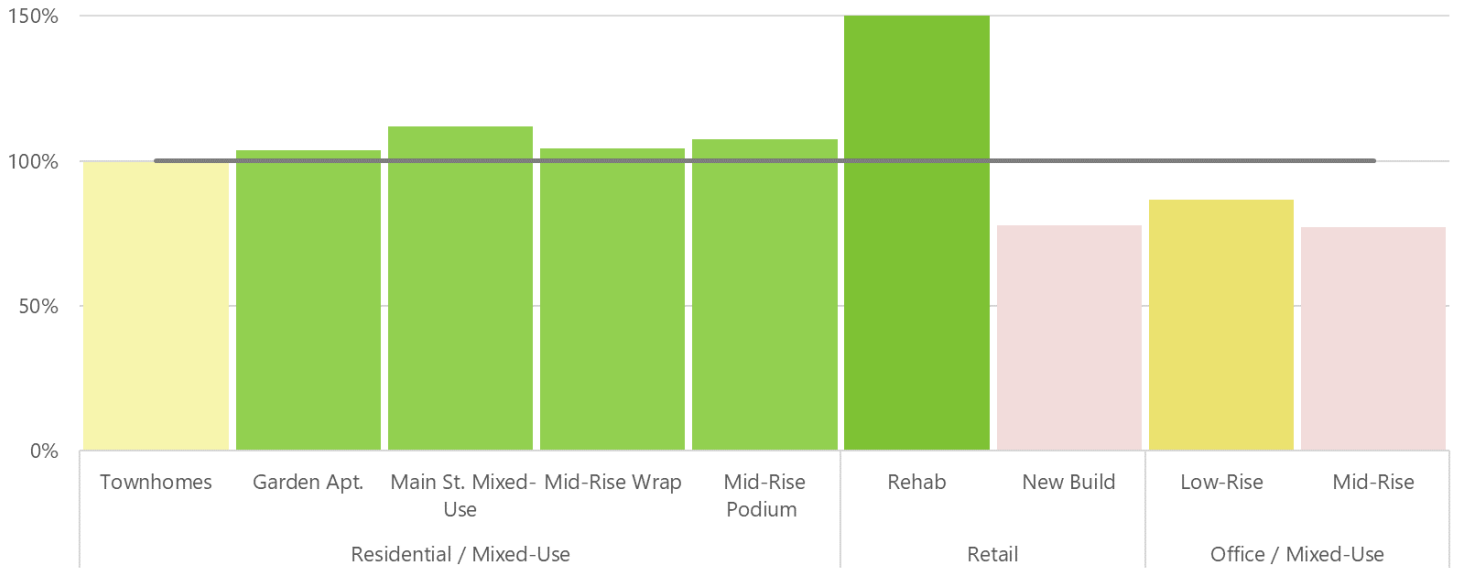
7: 20 Percent Rent Premium

The ROI results for alternative 7 are shown below. The change made from alternative 5 is to increase all rents by 20 percent, similar to alternative 2. This rent premium improves returns for all projects, particularly the housing/mixed use projects. The four denser housing types are now feasible.

Notably, office development remains infeasible, reflecting the fact that nearly all recent office development has taken place near Portland's central city, where gross rents are around $40 per square foot, significantly higher than the $23 to $28 range (current average and high) in the Wilsonville Town Center.

Likewise, new retail development cannot overcome the costs of building acquisition.

Land	Building
Parking Reduction	0%
Rent Premium	20%
Tax Exemption	No



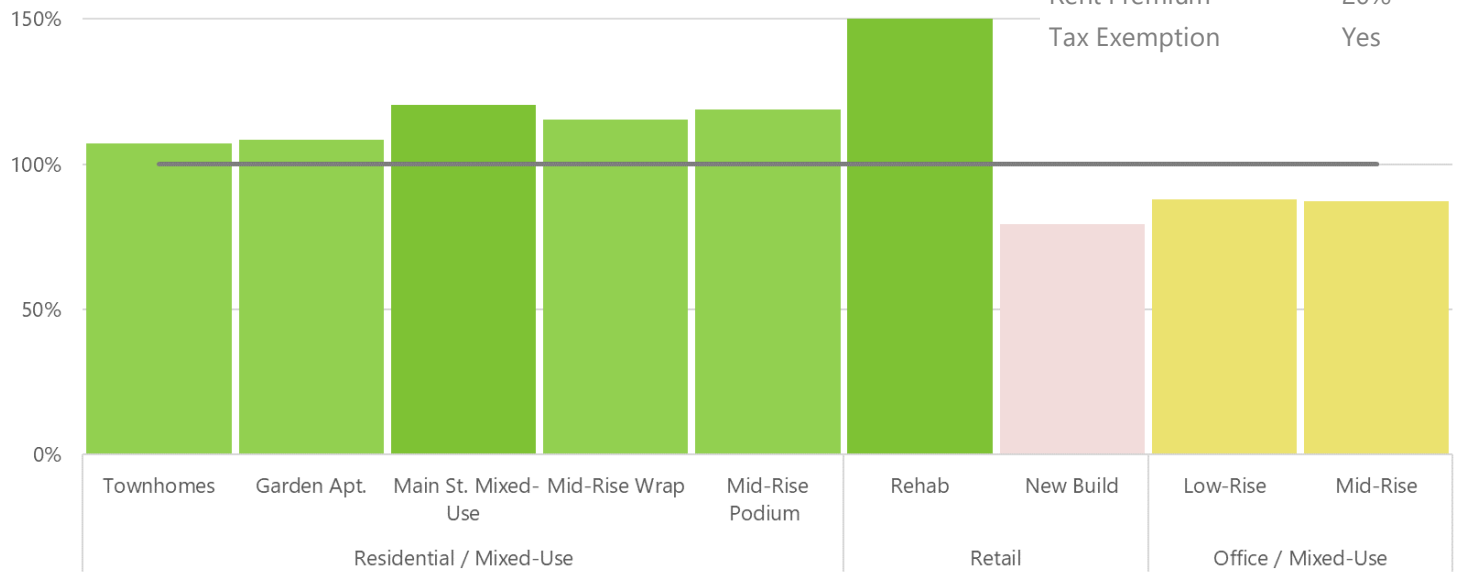
8: Favorable Development Conditions

The ROI results for alternative 8 are shown below. In this alternative, the 20% rent premium is paired with the parking reduction, property tax abatement, and acquisition of a one-story commercial building. Under these "optimal" economic conditions, the model indicates that developers of mixed-use residential projects should be able to acquire and redevelop low to medium-value commercial buildings in the Wilsonville Town Center.

This would require the project to achieve significantly higher rents.

Consistent with the findings for alternative 4, some higher-density housing projects will be able to pay more for land than retail projects, and thus "out compete" retail projects to acquire commercial sites in the area.

Land	Building
Parking Reduction	30%
Rent Premium	20%
Tax Exemption	Yes

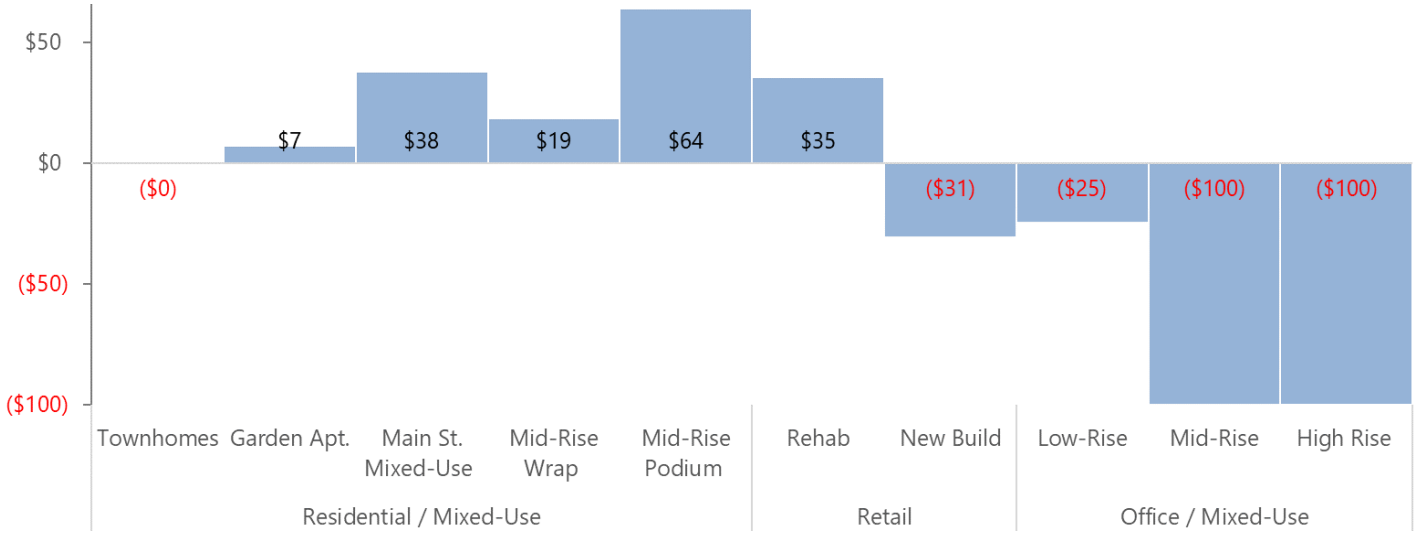


Residual Land Value

The chart below shows residual land value assuming a 20 percent rent premium. This is the maximum amount that developers would be willing to pay for the site in addition to the base land cost of $50, while still meeting their return thresholds. This shows that higher-density housing projects begin to generate the capacity to pay significant amounts for land and building acquisition, when higher rents may be achievable. This is due to the fact that they are taller and denser projects, with overall larger project budgets, compared to one-story retail projects, for example.

The podium project generates the highest values at $64 per square foot (or $114 including the base of $50).

This analysis also shows that higher-density residential projects will tend to outbid lower-density projects for land, when rents increase. Infeasible office projects are unable to pay for land. These projects show a negative land value.



Limitations of this Analysis

This report uses established methods of real estate financial feasibility analysis, and is intended to reflect the thought process that many developers would go through if they were evaluating whether or not to build in the Wilsonville Town Center. However, no development feasibility analysis can be comprehensive, and some types of development may be more feasible than those shown here.

Every developer and property owner is unique and will bring their own thinking about what financial returns are adequate and what risks are acceptable. For example, some developers—often locals—are willing to accept lower returns, or wait longer until larger returns materialize ("patient capital") because of a belief in the long-term prospects of the market. Developers' costs may be lower if they are vertically integrated. Local developers may be less mobile—i.e., not looking to alternative developments in other metro-area cities, and may already own property.

This analysis is focused on "spec" or speculative development, in which developers build projects for unknown tenants, who will be recruited and signed during the leasing process. An alternative is "build to suit," in which a corporation engages a developer to build a custom building specifically for them to occupy. This is a less risky form of development. If there are medium to large-scale businesses with very compelling non-financial reasons to locate in the Wilsonville Town Center, build to suits could overcome some of the economic challenges identified here.

Real estate development is inherently unpredictable. It is cyclical, and can be fickle. For example, the single family and condominium markets dried up abruptly after 2008, as did most office, retail, and hotel development. This was a trend that sometimes had more to do with national dynamics than local conditions.

The future of office and particularly retail development is likewise uncertain and may be affected by online shopping, automated vehicles, and other technological advances. Travel agents and video stores, once common in most retail centers, are nearly nonexistent today.

Lastly, this analysis only looks at certain common development categories. There are other development concepts and categories that may be more (or less) feasible. For example, while this analysis focuses on market-rate, rental multifamily projects, there are other types of urban housing, such as student and senior; affordable and mixed-income; and for sale condos (discussed above). Many other development types exist beyond those evaluated here and include hotel, healthcare/medical, educational, self storage, and public (e.g., library).

Conclusions: Context

- A significant share of all real estate development is built within a defined series of prototypes that are familiar to the development industry; 10 different prototypes have been modeled for this analysis.
- The key inputs to this development feasibility analysis are program, timing, development costs, operating revenue and expenses, and preferred rate of return on investment (this changes depending on land use).
- Rents are a critical driver of financial feasibility and are often one of the first figures developers want to know about a particular area. A rule of thumb in the industry is that for every $1 of rent revenue, developers can spend $10 on the project (this is a rough indicator and a more detailed analysis is included throughout the pages of this report).
- Rents vary in the Wilsonville Town Center and Market Area. LCG established an opening year "target" for new projects that would be built in the Wilsonville Town Center. That target is based on the top rents found within a half-mile of the Wilsonville Town Center, escalating the rents for two years, and adding a 10% premium. The premium is based on the assumption that new projects in the Town Center will be high quality, be differentiated from less distinctive projects elsewhere, and benefit from special amenities in the Town Center. No escalation was assumed for retail rents, since rents have been flat or declining.
- Construction costs have been escalating rapidly in the Portland region, and nationwide, over the past decade as the economy and construction have continued to boom. Housing is the primary development type whose rents have kept up with the increasing cost of construction. Office rents have been essentially flat over the past decade. Retail rents have declined, likely reflecting the ongoing challenges associated with the retail sector, particularly the impact of online retailing.
- High demand for housing and moderate demand for other uses has meant housing has been the primary land use built in Wilsonville and most other town centers.
- Denser development types that require more structured parking have higher construction costs per square foot and therefore require higher rents.
- Land cost is another important input to feasibility. Existing healthy commercial buildings in the Town Center will be expensive for developers to purchase and are likely to remain in place in the near term. In the near term, development is most likely to occur on property that is already owned by potential developers or has low rents and/or high vacancies and is therefore low-value.
- Commercial buildings cannot be high-density and have surface parking. High-density buildings require structured parking, or significantly lower parking ratios than are now seen in the Wilsonville Town Center.

Conclusions: Alternatives

- In the event that developers already own land in the Wilsonville Town Center and are open to development (Alternative 1), a number of development types should be feasible, including townhome, garden apartment, main street apartment, retail rehab, and new retail development.
- Reducing developers' parking requirements (either through changes to City regulations, improved alternative transportation modes, public parking garages, or other approaches) makes more development types feasible on developer-owned land (Alternative 2). The 10-year property tax abatement also improves feasibility for mixed-use housing projects (including the wrap and podium mid-rise projects and the Town Center apartments).
- As discussed above and shown in Alterative 3, 20% higher rents increase developers' returns and makes more projects feasible. Alternative 4 underscores these findings as most projects are feasible or almost feasible. Development feasibility is a function of revenue compared to cost. When revenue increases significantly and costs remain the same, feasibility increases and developers are more likely to build projects.
- Some higher-density housing projects will be able to more for land than retail projects, and thus "out compete" retail projects to acquire commercial sites in the area. Therefore, despite the greater level of feasibility shown for Town Center retail, higher-density residential projects are likely to be a more favorable building type for prospective developers.
- Parking reductions, tax abatement, and higher rents are once again shown to have a positive impact on feasibility Alternatives 5 through 8.
- Alternatives 5 through 8 show that Wilsonville Town Center development becomes significantly less feasible when developers must acquire an existing one-story commercial building prior to building. For example, where Alternative 1 indicates that garden apartments are feasible on "owned" land, they are "challenged" when developers must acquire a building first. This is a challenge that Wilsonville Town Center redevelopment will need to contend with, since much of the Wilsonville Town Center is currently developed as one-story commercial buildings and rehab of these buildings was deemed to be feasible throughout all the alternatives.
- When rents increase by 20% or more, the economics of higher-density mixed-use housing projects (main street apartment, wrap and podium) become stronger and they generate significant residual land values (the maximum amount that developers can pay for land). However, even with a rent increase, new-build retail and office projects do not have the economics to merit the acquisition and redevelopment of commercial buildings.
- Higher rents (of 20% or more) should make more types of development feasible in the Wilsonville Town Center and should enable developers to purchase and redevelop some average- to lower-value commercial land. However, this theoretical 20% increase may take several years.

Conclusions: Preliminary Actions

There are a number of potential actions that the City can take in order to increase development feasibility. Some actions are listed below, and more may emerge from the Town Center plan going forward:

- Build Amenities, complete the Town Center Plan. A high-quality environment, with parks, pedestrian and bicycle infrastructure, and a mix of easily accessible goods and services, should increase demand and rents.
- Consider reducing parking requirements. Town Center residents typically own fewer cars, and transportation technology is expected to reduce on-site parking demand[1], even in the suburbs. Structured and tuck under parking is expensive and less parking reduces developers' costs. Encouraging additional shared parking in the Town Center, and/or a shared parking structure, may also help.

[1] Walker Consultants, 2018, *Parking in the Age of Uber and AVs*; Metropolitan Transportation Commission, 2007, *Reforming Parking Policies to Support Smart Growth;* Andy Cohen, 2018, Gensler, *The Game Changer for Cities and Driverless Cars;* Patrick Sisson, 2016, Curbed, *How Driverless Cars can Reshape our Cities*

- Consider adopting the Vertical Housing Program developed by the State of Oregon. This is a partial tax abatement (20 to 80 percent) for a 10-year period, intended to encourage mixed-use development (residential with ground floor retail/commercial) in designated zones.
- Consider taking other actions such as implementing reduced SDCs within the Town Center for desired development types or certain project components (e.g. affordable units); setting up a local improvement district to finance shared capital infrastructure projects such as utilities or streetscapes; or utilizing Urban Renewal to make improvements; and/or selling publicly-owned land to developers willing to build the desired development types (which may involve entering into a public-private partnership).

Main Street Mixed-Use

DESCRIPTION / PURPOSE

A walkable and lively town center with a mix of active uses at the ground floor, and three to four story buildings. This building type is named after the Main Street Zone; it could also be built in the High Activity and Moderate Activity zones.

ASSUMPTIONS

- Site Size: 1.5 acres (consistent for comparisons)
- Residential Apartment Rents: (Per square foot per month)
  - Current Avg.: $1.38
  - Current TC High: $1.75
  - Future Potential (+20%): $2.44
- Land cost (per square foot of site area)
  - Owner Occupied Land: $0
  - Land with building: $30 to $90
- Hard Cost (Construction) per square foot:
  - Wood Frame Housing: $160+
  - Tuck Under Parking: $15,180 per space

PROGRAM

- Some small ground-floor retail tenants; amount of retail will be limited by the site's capacity to support parking for retail and residential uses.
- Housing on above floors
- Four story buildings (some three story)
- A mix of "tuck under" parking (within wood frame structure, at back of building) and surface parking

PARKING

- Current Parking Ratios
  - Vary depending on number of bedrooms
  - Base of 1.0 spaces/unit assumed, based on projects in and near Wilsonville TC.
- Future Parking Needs: Could be lower due to automated vehicle technology, more shared parking, and/or district parking garages

Main Street Mixed-Use

BUILDING PROGRAM SUMMARY AND ALTERNATIVES

- The table below summarizes a series of building attributes, including a number of development alternatives. Some inputs such as construction costs, rents, and parking ratios are summarized on the previous page.
- **Key Variables.** In some alternatives, the developer of the site is also assumed to be the current owner of the site ("owned"). In other alternatives, we assume that the developer must acquire and demolish an existing building before building the proposed building ("building"); this increases development costs. In some alternatives, we assume a (theoretical) parking reduction of 30% or more in the future, in order to test development feasibility if automated vehicle technology, more shared parking between uses, and/or district parking garages affects the need for on-site parking. In some alternatives, we assume that rents increase significantly, perhaps due to the increasing desirability of the Town Center. In some alternatives, we assume a property tax abatement of 20% per floor of residential (up to four floors).
- **Return on Investment.** The table below shows the actual ROI calculated by the model compared to the target ROI (6% for an apartment project). ROI is defined here as Net Operating Income divided by Total Project Cost in the first stabilized year of project operation.
- **Key Findings.** The Main Street Mixed Use program is deemed feasible across all but one alternative. If a developer must purchase land and/or an existing building, and there is no parking reduction, rent premium, or tax exemption, project feasibility is considered "marginal."

	Key:	Feasible	Feasible	Marginal	Challenged	Infeasible		
Key Variables								
Development Alternative	1	2	3	4	5	6	7	8
Land	Owned	Owned	Owned	Owned	Building	Building	Building	Building
Parking Reduction	0%	30%	0%	30%	0%	30%	0%	30%
Rent Premium	0%	0%	20%	20%	0%	0%	20%	20%
Tax Exemption	No	Yes	No	Yes	No	Yes	No	Yes
Gross Building Area								
Residential	72,000	72,000	72,000	72,000	72,000	72,000	72,000	72,000
Retail	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Office								
Parking								
Surface								
Tuck under	32,550	21,070	32,550	21,070	32,550	21,070	32,550	21,070
Structured								
Underground								
Gross Building Area (GBA)*	109,550	98,070	109,550	98,070	109,550	98,070	109,550	98,070
FAR**								
* Not including surface parking.								
** Not including below ground bldg. areas.								
Total Project Costs								
Land					$3,267,000	$3,267,000	$3,267,000	$3,267,000
Site Prep	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020
Hard Cost	$13,830,430	$13,332,475	$13,830,430	$13,332,475	$13,830,430	$13,332,475	$13,830,430	$13,332,475
Soft Costs and Contingency	$3,617,358	$3,535,196	$3,617,358	$3,535,196	$3,617,358	$3,535,196	$3,617,358	$3,535,196
Total Project Costs	**$17,643,808**	**$17,063,691**	**$17,643,808**	**$17,063,691**	**$20,910,808**	**$20,330,691**	**$20,910,808**	**$20,330,691**
Return on Investment: Actual vs Target	110%	120%	132%	144%	93%	101%	112%	121%

POTENTIAL CITY ACTIONS

- **Build Amenities, complete the Town Center Plan.** A high-quality environment, with parks, pedestrian and bicycle infrastructure, and a mix of easily accessible goods and services, should increase demand and rents.
- **Consider reducing parking requirements.** Town Center residents (often young adults or seniors) typically own fewer cars, and transportation technology is expected to reduce parking demand. Structured and tuck under parking is expensive and less parking reduces developers' costs. Encouraging additional shared parking in the Town Center, and/or a shared parking structure, may also help.
- **Consider adopting the Vertical Housing Program** developed by the State of Oregon. This is a partial tax abatement (20 to 80 percent) for a 10-year period, intended to encourage mixed use development (residential with ground floor retail/commercial) in designated zones.
- **Consider taking other actions** such as implementing reduced SDCs within the Town Center; utilizing Urban Renewal to make improvements; creating a business improvement district to fund desired improvements, and creating a Town Center Business/District Association to coordinate economic activities, market and advocate for the Town Center, put on events, and pursue grants.

Housing with Ground Floor Retail (Mid Rise)

DESCRIPTION / PURPOSE

Allowing taller buildings, up to five stories, along I-5 and near the future pedestrian bridge landing, would improve Town Center's visibility, help create a sense of place, and introduce residents who can support additional ground floor commercial tenants, employers, entertainment, and hospitality services.

ASSUMPTIONS

- Site Size: 1.5 acres (consistent for comparisons)
- Residential Apartment Rents: (Per square foot per month)
  - Current Avg.: $1.38
  - Current TC High: $1.57
  - Future Potential (+20%): $2.44
- Land cost (per square foot of site area)
  - Owner Occupied Land: $0
  - Land with building: $30 to $90
- Hard Cost (Construction) per square foot:
  - Wood Frame Housing: $160+
  - Structured Parking: $30,360 per space

PROGRAM

- Ground floor retail/commercial
- Housing on floors above
- Generally four and five story buildings
- Structured parking within buildings

PARKING

- Current Parking Ratios
  - Vary depending on number of bedrooms
  - Base of 1.0 spaces/unit assumed, based on projects in and near Wilsonville TC.
- Future Parking Needs: Could be lower due to automated vehicle technology, more shared parking, and/or district parking garages.

Housing with Ground Floor Retail (Mid Rise)

BUILDING PROGRAM SUMMARY AND ALTERNATIVES

- The table below summarizes a series of building attributes, including a number of development alternatives. Some inputs such as construction costs, rents, and parking ratios are summarized on the previous page.
- **Key Variables.** In some alternatives, the developer of the site is also assumed to be the current owner of the site ("owned"). In other alternatives, we assume that the developer must acquire and demolish an existing building before building the proposed building ("building"); this increases development costs. In some alternatives, we assume a (theoretical) parking reduction of 30% or more in the future, in order to test development feasibility if automated vehicle technology, more shared parking between uses, and/or district parking garages affects the need for on-site parking. In some alternatives, we assume that rents increase significantly, perhaps due to the increasing desirability of the Town Center. In some alternatives, we assume a property tax abatement of 20% per floor of residential (up to four floors).
- **Return on Investment.** The table below shows the actual ROI calculated by the model compared to the target ROI (6% for an apartment project). ROI is defined here as Net Operating Income divided by Total Project Cost in the first stabilized year of project operation.
- **Key Findings.** With a parking reductions, rent premium, or tax exemption, a mid-rise mixed-use residential project is likely to be feasible. Feasibility decreases slightly if the land is not owned and a developer must acquire land and/or an existing building.

		Key:	Feasible	Feasible	Marginal	Challenged		Infeasible
Key Variables								
Development Alternative	1	2	3	4	5	6	7	8
Land	Owned	Owned	Owned	Owned	Building	Building	Building	Building
Parking Reduction	0%	30%	0%	30%	0%	30%	0%	30%
Rent Premium	0%	0%	20%	20%	0%	0%	20%	20%
Tax Exemption	No	Yes	No	Yes	No	Yes	No	Yes
Gross Building Area								
Residential	188,000	188,000	188,000	188,000	188,000	188,000	188,000	188,000
Retail	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Office								
Parking								
Surface								
Tuck under								
Structured	80,150	53,165	80,150	53,165	80,150	53,165	80,150	53,165
Underground								
Gross Building Area (GBA)*	278,150	251,165	278,150	251,165	278,150	251,165	278,150	251,165
FAR**								
* Not including surface parking.								
** Not including below ground bldg. areas.								
Total Project Costs								
Land					$3,267,000	$3,267,000	$3,267,000	$3,267,000
Site Prep	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020
Hard Cost	$41,703,656	$39,362,660	$41,703,656	$39,362,660	$41,703,656	$39,362,660	$41,703,656	$39,362,660
Soft Costs and Contingency	$10,222,778	$9,836,514	$10,222,778	$9,836,514	$10,222,778	$9,836,514	$10,222,778	$9,836,514
Total Project Costs	**$52,122,455**	**$49,395,194**	**$52,122,455**	**$49,395,194**	**$55,389,455**	**$52,662,194**	**$55,389,455**	**$52,662,194**
Return on Investment: Actual vs Target	95%	106%	114%	127%	90%	99%	108%	119%

POTENTIAL CITY ACTIONS

- **Build Amenities, complete the Town Center Plan.** A high-quality environment, with parks, pedestrian and bicycle infrastructure, and a mix of easily accessible goods and services, should increase demand and rents.
- **Consider reducing parking requirements.** Town Center residents (often young adults or seniors) typically own fewer cars, and transportation technology is expected to reduce parking demand. Structured and tuck under parking is expensive and less parking reduces developers' costs. Encouraging additional shared parking in the Town Center, and/or a shared parking structure, may also help.
- **Consider adopting the Vertical Housing Program** developed by the State of Oregon. This is a partial tax abatement (20 to 80 percent) for a 10-year period, intended to encourage mixed use development (residential with ground floor retail/commercial) in designated zones.
- **Consider taking other actions** such as implementing reduced SDCs within the Town Center; utilizing Urban Renewal to make improvements; creating a business improvement district to fund desired improvements, and creating a Town Center Business/District Association to coordinate economic activities, market and advocate for the Town Center, put on events, and pursue grants.

Low-Rise Office with Ground Floor Retail

DESCRIPTION / PURPOSE

A variety of 2 and 3 story buildings in the Town Center would provide the mix of residential, commercial and office uses the community is looking to have in Town Center. Moderate activity near Wilsonville Road would be commercially focused while the areas near Town Center Park would include more residential and mixed-use buildings.

ASSUMPTIONS AND INPUTS

- Site Size: 1.5 acres (consistent for comparisons)
- Office Rents:
  (Per square foot leasable area, full service)
  - Current TC Average: $23.40
  - Current TC High: $28.30
  - Future TC Target: $32.00 (base)
- Land cost (per square foot of site area)
  - Owner Occupied Land: $0
  - Land with building: $30 to $90
- Hard Cost (Construction) per square foot:
  - Core and Shell: $162
  - Tenant Improvement Allowance: $60

PROGRAM

- Generally three stories
- General office/commercial or medical office
- Ground floor retail/commercial

PARKING

- Current Parking Ratios
  - Office: 2.7 spaces per 1,000 square feet
  - Retail: 4.1+ spaces per 1,000 square feet
  - 20% reduction allowed for shared parking
- Future Parking Demand: May increase due to denser, open or "creative" floorplans (but decrease in the long term due to emerging technologies and/or shared parking)

Low-Rise Office with Ground Floor Retail

BUILDING PROGRAM SUMMARY AND ALTERNATIVES

- The table below summarizes a series of building attributes, including a number of development alternatives. Some inputs such as construction costs, rents, and parking ratios are summarized on the previous page.
- **Key Variables.** In some alternatives, the developer of the site is also assumed to be the current owner of the site ("owned"). In other alternatives, we assume that the developer must acquire and demolish an existing building before building the proposed building ("building"); this increases development costs. In some alternatives, we assume a (theoretical) parking reduction of 30% or more in the future, in order to test development feasibility if automated vehicle technology, more shared parking between uses, and/or district parking garages affects the need for on-site parking. In some alternatives, we assume that rents increase significantly, perhaps due to the increasing desirability of the Town Center. In some alternatives, we assume a property tax abatement of 20% per floor of residential (up to four floors).
- **Return on Investment.** The table below shows the actual ROI calculated by the model compared to the target ROI (8% for a commercial project). Figures above 100% indicate that a typical developer would likely view the project as feasible. ROI is defined here as Net Operating Income divided by Total Project Cost in the first stabilized year of project operation.
- **Key Findings.** Office development is generally less feasible than housing and/or mixed-use, especially if the land is not owned and must be purchased. A high-quality low-rise office project which can achieve a 20% rent premium, and where the land is already owned, is considered feasible.

	Key:	Feasible	Feasible	Marginal	Challenged	Infeasible		
Key Variables								
Development Alternative	1	2	3	4	5	6	7	8
Land	Owned	Owned	Owned	Owned	Building	Building	Building	Building
Parking Reduction	0%	30%	0%	30%	0%	30%	0%	30%
Rent Premium	0%	0%	20%	20%	0%	0%	20%	20%
Tax Exemption	No	Yes	No	Yes	No	Yes	No	Yes
Gross Building Area								
Residential								
Retail	5,263	5,263	5,263	5,263	5,263	5,263	5,263	5,263
Office	27,407	27,407	27,407	27,407	27,407	27,407	27,407	27,407
Parking								
Surface	31,850	15,435	31,850	15,435	31,850	15,435	31,850	15,435
Tuck under								
Structured								
Underground								
Gross Building Area (GBA)*	32,670	32,670	32,670	32,670	32,670	32,670	32,670	32,670
FAR**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
* Not including surface parking.								
** Not including below ground bldg. areas.								
Total Project Costs								
Land					$3,267,000	$3,267,000	$3,267,000	$3,267,000
Site Prep	$196,020	$176,175	$196,020	$176,175	$196,020	$176,175	$196,020	$176,175
Hard Cost	$6,919,554	$6,788,234	$6,919,554	$6,788,234	$6,919,554	$6,788,234	$6,919,554	$6,788,234
Soft Costs and Contingency	$1,901,953	$1,876,345	$1,901,953	$1,876,345	$1,901,953	$1,876,345	$1,901,953	$1,876,345
Total Project Costs	**$9,017,527**	**$8,840,755**	**$9,017,527**	**$8,840,755**	**$12,284,527**	**$12,107,755**	**$12,284,527**	**$12,107,755**
Return on Investment: Actual vs Target	94%	96%	118%	121%	69%	70%	87%	88%

POTENTIAL CITY ACTIONS

- **Build Amenities, complete the Town Center Plan.** A high-quality environment, with parks, pedestrian and bicycle infrastructure, and a mix of easily accessible goods and services, should increase demand and rents.
- **Consider reducing parking requirements.** Town Center residents (often young adults or seniors) typically own fewer cars, and transportation technology is expected to reduce parking demand. Structured and tuck under parking is expensive and less parking reduces developers' costs. Encouraging additional shared parking in the Town Center, and/or a shared parking structure, may also help.
- **Consider taking other actions** such as implementing reduced SDCs within the Town Center; utilizing Urban Renewal to make improvements; creating a business improvement district to fund desired improvements, and creating a Town Center Business/District Association to coordinate economic activities, market and advocate for the Town Center, put on events, and pursue grants.

Mid Rise Office with Ground Floor Retail

DESCRIPTION / PURPOSE

Allowing taller buildings, up to 5 stories, along I-5 and near the future pedestrian bridge landing, would improve Town Center's visibility, help create a sense of place, and support the increased level of activity and economic vibrancy desired by community members, including additional employment opportunities, entertainment, and hospitality services.

ASSUMPTIONS AND INPUTS

- Site Size: 1.5 acres (consistent for comparisons)
- Office Rents:
  (Per square foot leasable area, full service)
  - Current TC Average: $23.40
  - Current TC High: $28
  - Future TC Target: $32.00 (base)
- Land cost (per square foot of site area)
  - Owner Occupied Land: $0
  - Land with building: $30 to $90
- Hard Cost (Construction) per square foot:
  - Core and Shell: $162
  - Tenant Improvement Allowance: $60

PROGRAM

- General office or medical office
- Ground floor retail/commercial
- Generally three to four stories, possibly five stories

PARKING

- Current Parking Ratios
  - Office: 2.7 spaces per 1,000 square feet
  - Retail: 4.1+ spaces per 1,000 square feet
  - 20% reduction allowed for shared parking
- Future Parking Demand: May increase due to denser, open or "creative" floorplans (but decrease in the long term due to emerging technologies and/or shared parking)

Mid Rise Office with Ground Floor Retail

BUILDING PROGRAM SUMMARY AND ALTERNATIVES

- The table below summarizes a series of building attributes, including a number of development alternatives. Some inputs such as construction costs, rents, and parking ratios are summarized on the previous page.
- **Key Variables.** In some alternatives, the developer of the site is also assumed to be the current owner of the site ("owned"). In other alternatives, we assume that the developer must acquire and demolish an existing building before building the proposed building ("building"); this increases development costs. In some alternatives, we assume a (theoretical) parking reduction of 30% or more in the future, in order to test development feasibility if automated vehicle technology, more shared parking between uses, and/or district parking garages affects the need for on-site parking. In some alternatives, we assume that rents increase significantly, perhaps due to the increasing desirability of the Town Center. In some alternatives, we assume a property tax abatement of 20% per floor of residential (up to four floors).
- **Return on Investment.** The table below shows the actual ROI calculated by the model compared to the target ROI (8% for a commercial project). Figures above 100% indicate that a typical developer would likely view the project as feasible. ROI is defined here as Net Operating Income divided by Total Project Cost in the first stabilized year of project operation.
- **Key Findings.** Mid-rise office is considered to have marginal feasibility at best under scenario 4. Without significant incentives and/or funding and financing tools, mid-rise office is unlikely to be feasible in the Town Center.

		Key:	Feasible	Feasible	Marginal	Challenged		Infeasible
Key Variables								
Development Alternative	1	2	3	4	5	6	7	8
Land	Owned	Owned	Owned	Owned	Building	Building	Building	Building
Parking Reduction	0%	30%	0%	30%	0%	30%	0%	30%
Rent Premium	0%	0%	20%	20%	0%	0%	20%	20%
Tax Exemption	No	Yes	No	Yes	No	Yes	No	Yes
Gross Building Area								
Residential								
Retail	5,263	5,263	5,263	5,263	5,263	5,263	5,263	5,263
Office	95,518	95,518	95,518	95,518	95,518	95,518	95,518	95,518
Parking								
Surface								
Tuck under								
Structured	93,100	45,570	93,100	45,570	93,100	45,570	93,100	45,570
Underground								
Gross Building Area (GBA)*	193,881	146,351	193,881	146,351	193,881	146,351	193,881	146,351
FAR**	3.0	2.2	3.0	2.2	3.0	2.2	3.0	2.2
* Not including surface parking.								
** Not including below ground bldg. areas.								
Total Project Costs								
Land					$3,267,000	$3,267,000	$3,267,000	$3,267,000
Site Prep	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020	$196,020
Hard Cost	$31,549,947	$27,426,636	$31,549,947	$27,426,636	$31,549,947	$27,426,636	$31,549,947	$27,426,636
Soft Costs and Contingency	$7,488,468	$6,684,422	$7,488,468	$6,684,422	$7,488,468	$6,684,422	$7,488,468	$6,684,422
Total Project Costs	**$39,234,435**	**$34,307,079**	**$39,234,435**	**$34,307,079**	**$42,501,435**	**$37,574,079**	**$42,501,435**	**$37,574,079**
Return on Investment: Actual vs Target	66%	75%	84%	96%	61%	69%	77%	87%

POTENTIAL CITY ACTIONS

- **Build Amenities, complete the Town Center Plan.** A high-quality environment, with parks, pedestrian and bicycle infrastructure, and a mix of easily accessible goods and services, should increase demand and rents.
- **Consider reducing parking requirements.** Town Center residents (often young adults or seniors) typically own fewer cars, and transportation technology is expected to reduce parking demand. Structured and tuck under parking is expensive and less parking reduces developers' costs. Encouraging additional shared parking in the Town Center, and/or a shared parking structure, may also help.
- **Consider taking other actions** such as implementing reduced SDCs within the Town Center; utilizing Urban Renewal to make improvements. creating a business improvement district to fund desired improvements, and creating a Town Center Business/District Association to coordinate economic activities, market and advocate for the Town Center, put on events, and pursue grants.

Town Center Retail / Commercial

DESCRIPTION

Generally one-story commercial buildings, with mostly retail and restaurant uses, and some office uses. In some cases, buildings could be two stories, however, this may require structured parking which significantly increases construction costs. Town Center Retail may be provided by renovating / rehabbing existing structures, and adding more pedestrian oriented features.

ASSUMPTIONS

- Site Size: 1.5 acres (consistent for comparisons)
- Retail Rents:
  (per square foot, per year, triple-net)
  - Current TC Average: $16.00
  - Current TC High: $23.50 (used for model)
  - Old Town Square High: $35
- Land cost (per square foot of site area)
  - Owner Occupied Land: $0
  - Land with building: $30 to $90
- Hard Cost (Construction) per square foot:
  - Core and Shell: $131
  - Tenant Improvement Allowance: $60

PROGRAM

- One-story commercial (retail or office)
- Pedestrian oriented
- Neighborhood- and city-serving businesses

PARKING

- Current Parking Ratios
  - Retail: 4.1+ spaces per 1,000 square feet
  - Office: 2.7 spaces per 1,000 square feet
  - 20%+ reduction allowed for parking shared between uses
- Future Parking Needs: Could be lower due to automated vehicle technology, more shared parking, and/or district parking garages.

Town Center Retail / Commercial

BUILDING PROGRAM SUMMARY AND ALTERNATIVES

- The table below summarizes a series of building attributes, including a number of development alternatives. Some inputs such as construction costs, rents, and parking ratios are summarized on the previous page.
- **Rehab vs New Build.** As mentioned above, existing commercial buildings in the TC can be rehabbed or renovated to add architectural character, pedestrian oriented features, signage, etc. Such relatively low-cost improvements can have a very positive ROI.
- **Key Variables.** In some alternatives, the developer of the site is also assumed to be the current owner of the site ("owned"). In other alternatives, we assume that the developer must acquire and demolish an existing building before building the proposed building ("building"); this increases development costs. In some alternatives, we assume a (theoretical) parking reduction of 30% or more in the future, in order to test development feasibility if automated vehicle technology, more shared parking between uses, and/or district parking garages affects the need for on-site parking. In some alternatives, we assume a property tax abatement of 20% per floor of residential (up to four floors).
- **Return on Investment.** The table below shows the actual ROI calculated by the model compared to the target ROI (8% for a commercial project). Figures above 100% indicate that a typical developer would likely view the project as feasible. ROI is defined here as Net Operating Income divided by Total Project Cost.
- **Key Findings.** Town Center retail/commercial is considered a feasible development type under all scenarios, except where a new project is proposed on land which is not owned, even when incentives or increased rents are assumed.

	Key:	Feasible	Feasible	Marginal	Challenged	Infeasible	
Key Variables							
Development Alternative	1	2	3	4	5	6	7	8
Land	Owned	Owned	Owned	Owned	Building	Building	Building	Building
Parking Reduction	0%	30%	0%	30%	0%	30%	0%	30%
Rent Premium	0%	0%	20%	20%	0%	0%	20%	20%
Tax Exemption	No	Yes	No	Yes	No	Yes	No	Yes
Gross Building Area								
Residential								
Retail	19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602
Office								
Parking								
Surface	28,000	13,720	28,000	13,720	28,000	13,720	28,000	13,720
Tuck under								
Structured								
Underground								
Gross Building Area (GBA)*	19,602	19,602	19,602	19,602	19,602	19,602	19,602	19,602
FAR**	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
* Not including surface parking.								
** Not including below ground bldg. areas.								
Total Project Costs								
Land					$3,267,000	$3,267,000	$3,267,000	$3,267,000
Site Prep	$196,020	$178,380	$196,020	$178,380	$196,020	$178,380	$196,020	$178,380
Hard Cost	$3,958,357	$3,844,117	$3,958,357	$3,844,117	$3,958,357	$3,844,117	$3,958,357	$3,844,117
Soft Costs and Contingency	$1,702,338	$1,680,061	$1,702,338	$1,680,061	$1,702,338	$1,680,061	$1,702,338	$1,680,061
Total Project Costs	**$5,856,715**	**$5,702,558**	**$5,856,715**	**$5,702,558**	**$9,123,715**	**$8,969,558**	**$9,123,715**	**$8,969,558**
Return on Investment: Actual vs Target	101%	104%	121%	125%	65%	66%	78%	79%

POTENTIAL CITY ACTIONS

- **Build Amenities, complete the Town Center Plan.** A high-quality environment, with parks, pedestrian and bicycle infrastructure, and a mix of easily accessible goods and services, should increase demand and rents.
- **Introduce Façade Improvement and Tenant Improvement Grant or Loan Programs.** Other cities have used these tools successfully to encourage investments by building owners.
- **Consider reducing parking requirements.** Town Center residents (often young adults or seniors) typically own fewer cars, and transportation technology is expected to reduce parking demand. Encouraging additional shared parking in the Town Center, and/or a shared parking structure, may also help.
- **Consider taking other actions** such as implementing reduced SDCs within the Town Center, creating a business improvement district to fund desired improvements, and creating a Town Center Business/District Association to coordinate economic activities, market and advocate for the Town Center, put on events, and pursue grants.

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503.391.8773
www.dksassociates.com

MEMORANDUM (DRAFT)

DATE:	October 3, 2018
TO:	Alex Dupey, MIG
FROM:	Garth Appanaitis, PE Scott Mansur, PE, PTOE Rachel Vogt, EIT
SUBJECT:	Wilsonville Town Center Plan – Land Use Alternatives Traffic Analysis

The purpose of this memorandum is to summarize the transportation impacts and improvements needed to support future land use alternatives in Wilsonville Town Center. The Town Center is approximately 100 acres and encompasses the properties north of Wilsonville Road, within and adjacent to Town Center Loop. Town Center is an important service hub for the Wilsonville community and the region at large. City Hall and other City offices, the Wilsonville Public Library, the Community Center/Senior Center, parks, the post office, and Clackamas Community College are in or near Town Center. The following sections summarize the adopted Comprehensive Plan, additional growth proposed through the Town Center Plan, traffic operations for both the adopted and proposed scenarios, and a proposed transportation network to address circulation and mobility needs for the proposed scenario.

Study Area

The study area includes the roadway segments within and connecting to Town Center, which is mapped in Figure 2 on the following page. In addition, the analysis focused on nine study intersections that were selected based on coordination with the City of Wilsonville staff.

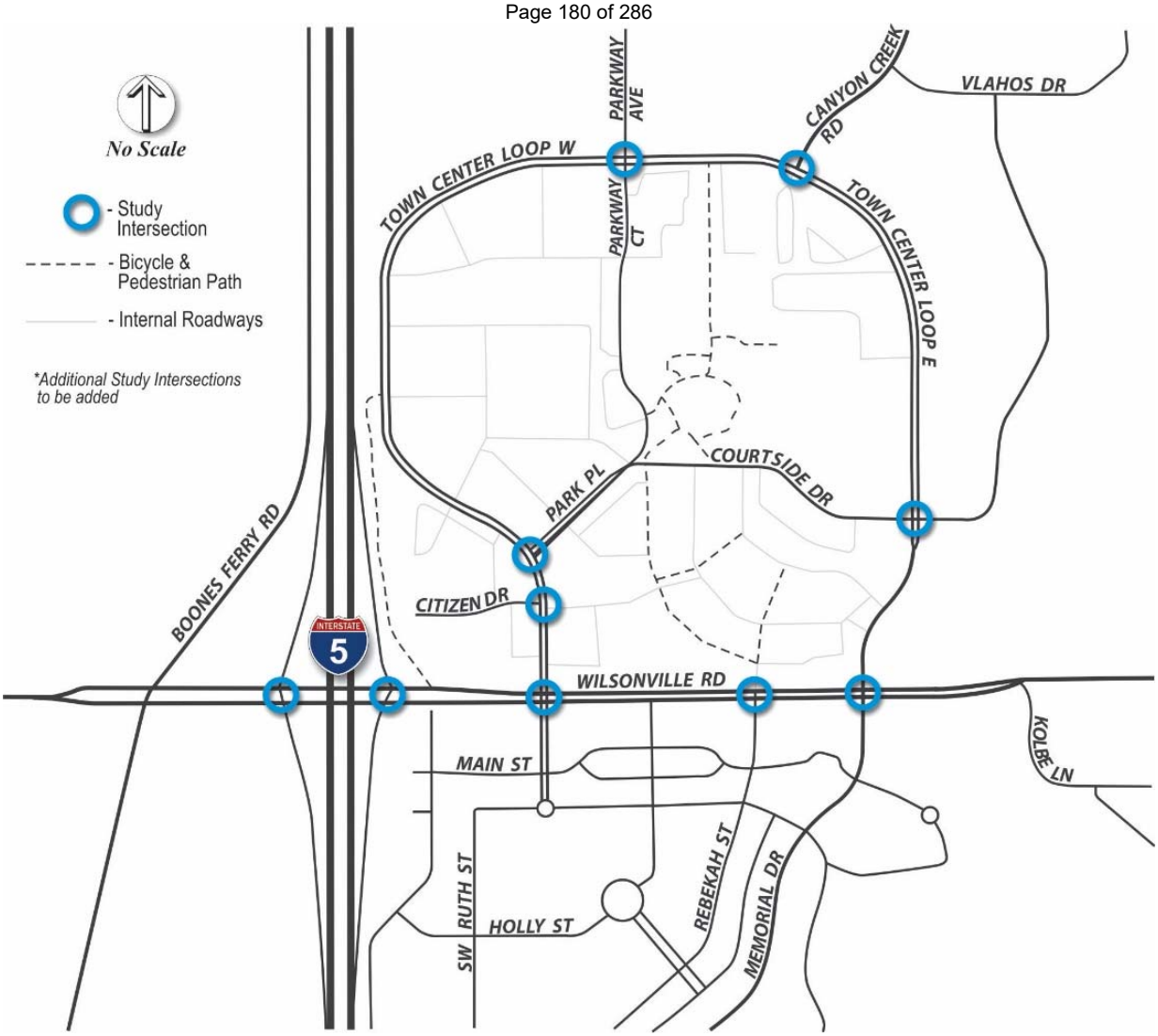


Figure 1: Study Area

Adopted Land Use and Transportation Plan

Wilsonville's Transportation System Plan (TSP) identifies transportation projects, programs, and strategies to support existing activities and planned growth. The TSP summarizes future land use assumptions that are consistent with the designations in the Comprehensive Plan and existing zoning.[1] These land use designations for the Town Center area, as shown in Figure 2, provide the basis for the current TSP's assumptions regarding land use and traffic growth during the planning period 2010-2035.

[1] *Transportation System Plan*. City of Wilsonville. Amended June 2016.

Figure 2: Comprehensive Plan Designations

Table 1 lists the anticipated future household and employment growth for several transportation analysis zones (TAZ) that generally represent the Town Center area. Land use growth maps for each of the TAZ in the City are included in the appendix.

Table 1: Wilsonville Town Center Land Use Growth in TSP (2010 to 2035)

Town Center TAZ	Household Unit Growth	Retail Employee Growth	Non-Retail Employee Growth
4043	0	10	100
4044	10	84	505
4045	20	10	125
4049	0	10	250
4050	0	161	150
Total TSP Growth (2010 to 2035)	**30**	**275**	**1130**
Average Growth Per Year	*1.2 Units*	*11 Employees*	*45.2 Employees*

The traffic analysis conducted for the Town Center Plan used the latest traffic data and updated future traffic forecasts consistent with the process used to develop future traffic volumes for the Wilsonville TSP. Projected 2035 future traffic volumes were developed using recent traffic counts (collected in 2016) and were post processed adding the increment of traffic growth from the Wilsonville travel demand model for the remaining years (2016 to 2035).

As listed in Table 1, the five TAZs that generally encompass the Town Center were assumed to include predominately non-retail employee growth (1,130 employees), some retail growth (275 employees), and limited housing (30 units) over the 25 year period. Table 2 summarizes the traffic growth projected in the TSP that corresponds to the development changes in Town Center land use for the base model of 2010 and future model of 2035. Over the 25 year TSP growth period (2010 to 2035), 1,264 vehicle trips from the Town Center were included in the resulting forecasts to account for the land use growth summarized in Table 2. For purposes of the Town Center Plan traffic analysis, this traffic growth was interpolated to account for 19 years of growth (2016 to 2035) to align with recent traffic counts collected in 2016. These recent 2016 traffic counts include additional growth (in Wilsonville and regionally) that was not present in 2010. Therefore, the increment of model growth (2016 to 2035) was applied rather than the entire 25 year period to avoid double counting measured and projected traffic growth. This 19-year growth increment was added to 2016 traffic counts to update 2035 traffic forecasts and traffic analysis.

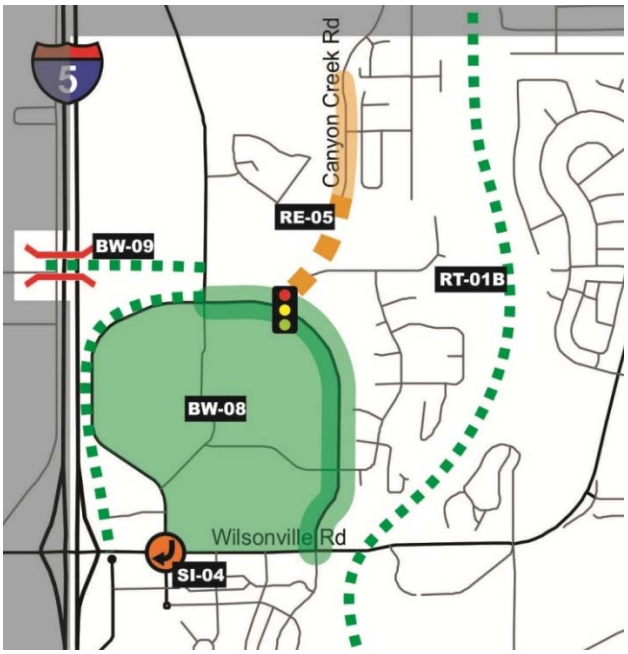
Table 2: Wilsonville Town Center TAZ* Peak Hour Trip Growth

Scenario	Trips In	Trips Out	Total Town Center Model Trips
TSP 2010 Existing Model Trips	378	256	634
TSP 2035 Projected Model Trips	897	1,001	1,898
TSP 25 Year Projected Growth (2010 to 2035)	519	745	1,264
19 Year Projected Growth (2016 to 2035)	394	566	960

Note: * Values provided for five TAZ that represent the Town Center Area: 4043, 4044, 4045, 4049, 4050

TSP High Priority Projects

The City of Wilsonville TSP provides a list of high priority projects necessary to meet the demands of the projected growth through 2035. There are several projects that impact the Town Center as shown in the figure to the right. These projects are assumed to be completed for purposes of analyzing future 2035 traffic conditions.



TSP High Priority Projects

RE-05 Canyon Creek Road Extension – (Completed)

This project constructed the remaining 3-lane roadway with bike lanes, sidewalks, and transit stop improvements from the prior terminus to Town Center Loop East; project also included realigning a portion of Vlahos Drive (so it intersects Canyon Creek Road) and installing a traffic signal at the Town Center Loop East/Canyon Creek Road intersection.

SI-04 Wilsonville Road/Town Center Loop West Intersection Improvements

This project intends to widen the north leg of the intersection and install a second dedicated southbound right-turn lane (dual right turn lanes).

BW-08 Town Center Loop Pedestrian, Bicycle, and Transit Improvements

This project intends to create more direct connections between destinations within Town Center area, improve accessibility to civic uses and transit stops, retrofit sidewalks with curb ramps, highlight crosswalks with colored pavement, and construct other similar treatments that support pedestrian, bicycle, and transit access and circulation; also construct shared-use path along Town Center Loop West from Wilsonville Road to Parkway Avenue and restripe Town Center Loop East from Wilsonville Road to Parkway Avenue to a three-lane cross-section with bike facilities.

BW-09 Town Center Loop Bike/Pedestrian Bridge

This project includes constructing a bike/pedestrian bridge over I-5 approximately aligned with Barber Street to improve connectivity of Town Center area with businesses and neighborhoods on west side of I-5; include aesthetic design treatments.

Proposed Town Center Plan Land Use Alternative (2035)

The Town Center Plan proposes a long-term vision for the Town Center area that provides the framework for both new development and redevelopment. For traffic analysis purposes, the changes in land use are focused on a relative change between the existing land use and the proposed land use. Figure 3 shows the proposed land use zones, which consist of four zoning types representing a mix of land uses:

- **Main Street.** A walkable and lively main street with a mix of active uses and mostly 3-4 story buildings through the heart of Town Center along Parkway Avenue, which would extend south past Town Center park to Wilsonville Road.
- **Neighborhood-Mixed Use.** Development would be less intense as it approaches Town Center Loop East and the adjacent neighborhoods. Light activity development would include 1-3 story residential and mixed-use development, with neighborhood-serving commercial businesses.
- **Mixed Use.** A variety of mostly 2-4 story buildings throughout Town Center would provide the mix of residential, commercial and office uses the community is looking to have in Town Center. Moderate activity near Wilsonville Road would be commercially focused while the areas near Town Center Park would include more residential and mixed-use buildings.
- **Commercial-Mixed Use.** Allowing taller buildings, up to 5 stories, along I-5 and near the future pedestrian bridge landing, would improve Town Center's visibility, help create a sense of place, and support the increased level of activity and economic vibrancy desired by community members, including additional employment opportunities, entertainment, and hospitality services. As proposed, residential uses in this area would be limited and not allowed adjacent to I-5.

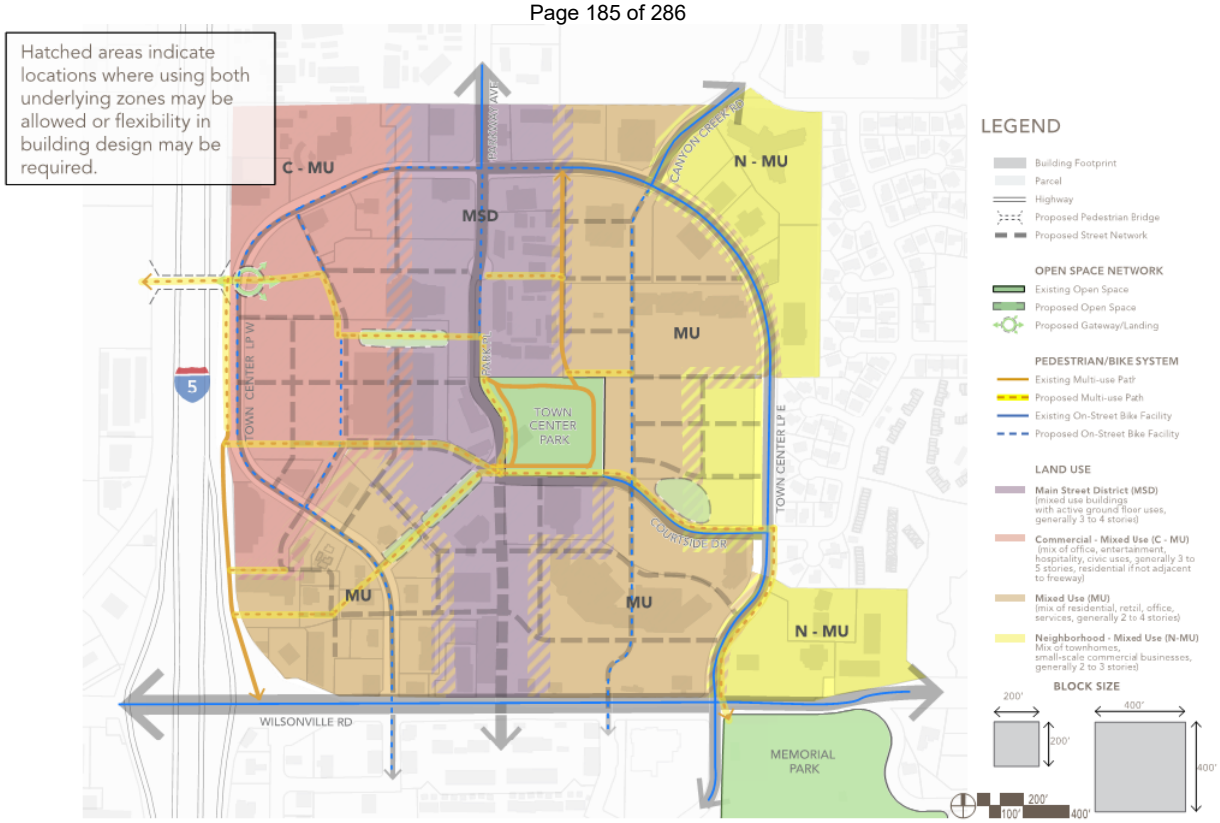


Figure 3: Proposed Land Use Zones and Transportation Network Improvements

Given the proposed land use zones for the town center shown in Figure 3, a traffic analysis scenario was developed which looks at full buildout of the proposed land use zones (shown in Table 3). The table shows a potential for more than double the amount of commercial square footage and over a million square feet of office square footage by 2035.

Table 3: Proposed Square Footage of Full Development in Town Center

	Commercial (sq. ft.)	Retail (sq. ft.)	Office (sq. ft.)	Residential (units)
Existing	299,238	321,340	178,947	79
Added	391,991	355,200	1,057,691	739
Loss	187,396	305,200	37,078	-
Net New	204,595	50,000	1,020,613	739
Net Total	**503,833**	**371,340**	**1,199,561**	**818**

Table 4 shows the number of trips generated based on the full buildout of the Town Center Plan. This assumes all land use zones and transportation network changes have been made.

Table 4: Full Development Trip Generation Table

	Commercial (KSF[1])	Retail (KSF)	Office (KSF)	Residential (Units)	Total
Net New Development	204.595	50	1,020.613	818	-
Trip Rate[2]	3.79 per KSF	3.79 per KSF	1.01 per KSF	0.62 per unit	-
Net New Trips	775	190	1,033	507	2,505
Pass-by Reduction (34%)[3]	258	63	-	-	321
Mutlimodal Reduction (10%)[4]	52	13	103	51	219
Internal Trip Reduction (10%)[5]	52	13	103	51	219
Net New Total Trips	**413**	**101**	**827**	**405**	**1,746**

[1] KSF = 1,000 square feet

[2] Trip rates were developed using the ITE 10th Edition Trip Generation. The total square footage for each use was used to determine the rate based on the equation. Commercial and retail use was combined to develop a mixed-use rate.

[3] The pass-by reduction rate was calculated using an average of multiple potential land uses in ITE Trip Generation manual.

[4] Accounts for non-vehicular trips that would be enabled and encouraged based on the vision for a walkable, bikeable Town Center that provides a pleasant environment and ease of access for non-auto modes.

[5] Reduction accounts for trips among uses present in the Town Center that use internal roadways and are not added to external roadways (e.g., Wilsonville Road). The mix of land uses present provides opportunities for travel among the uses (e.g., office to residential, or residential to retail). Due to the scale and uncertainty of uses, a conservatively low value of 10% was applied, rather than higher rates (20% and above) identified for most combinations of uses in ITE Trip Generation.

The difference in projected 2035 new trips between the TSP and the proposed land use changes as part of the Town Center Plan at full development is a net increase of 786 trips.

Transportation Network Improvements

As part of the redevelopment plan, there are several transportation network improvements that are proposed. These improvements change the overall traffic patterns and routes that drivers would take through the Town Center. These changes are shown in Figure 4 and are described below.

- **Wilsonville Road/Town Center Loop W:** Modify the existing traffic signal to eliminate eastbound and westbound left turns, add a landscaped median to the west leg, and improve pedestrian and bicycle safety by adding a median refuge to cross Wilsonville Road.
- **Wilsonville Road/Parkway Ave:** Construct a new intersection that connects the extension of Parkway Avenue to the south with Wilsonville Road. At this intersection install a traffic signal that allows all turning movements and moves eastbound left turn traffic further from the I-5 interchange.
- **Wilsonville Road/Rebekah Street:** Remove the existing traffic signal and restrict the minor street turning movements to be right-in, right-out only by continuing the landscaped median or using space for a pedestrian median with flashers for crossings.
- **Wilsonville Road/Town Center Loop E:** Modify the existing traffic signal to include duel eastbound lefts and modify the north leg to have duel northbound receiving lanes.
- **Town Center Loop W/Park Place:** Remove this intersection for vehicle traffic.

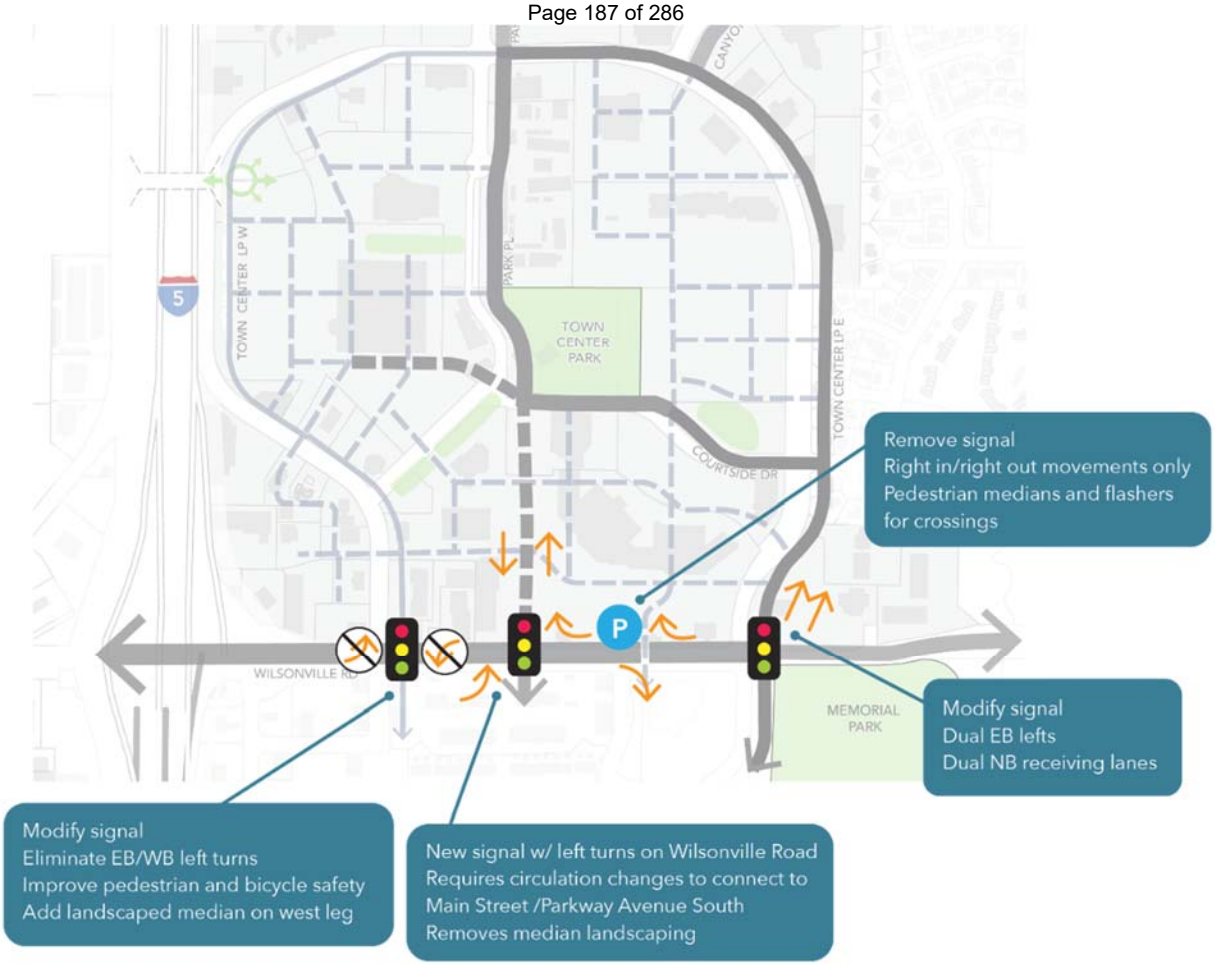


Figure 4: Proposed Transportation Network Changes

Operation Analysis

Operational analysis is the primary tool to understand how the traffic is moving through key intersection of the Town Center as development strategies are put in place. Level of service (LOS) ratings and volume-to-capacity (v/c) ratios are two performance measures of intersection operations.

- **Level of service (LOS):** A "report card" rating (A through F) based on the average delay experienced by vehicles at the intersection.[2] LOS A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. LOS D and E are progressively worse operating conditions. LOS F

[2] A description of Level of Service (LOS) is provided in the Attachment which includes a list of the delay values (in seconds) that correspond to each LOS designation. For example, the City of Wilsonville's minimum operating standard, LOS D, has an approximately allowed delay of 25 to 35 seconds for an unsignalized intersection and 35 to 55 seconds for a signalized intersection.

represents conditions where average vehicle delay has become excessive and demand has exceeded capacity.

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

The City of Wilsonville requires the intersections of public streets to meet its minimum acceptable level of service (LOS) standard, which is LOS D (operates with significant delays) for peak periods.[3] Interstate 5 (I-5) is adjacent to the study area boundaries and impacts the functionality of roads within the study area. I-5 is an Oregon Department of Transportation (ODOT) facility classified as an Interstate on the National Highway System and part of the national network as a high clearance, reduction review, freight route. According to the *1999 Oregon Highway Plan* (*OHP*), ODOT mobility targets are given as v/c ratios and are based on the highway category, which is 0.90 for peak period for the I-5/Wilsonville Road only.[4,5]

Scenario Development

As previously shown, the TSP forecasted approximately 960 net new trips to the Town Center from 2016 to 2035. This accounts for approximately 55% of the estimated full buildout of the proposed land uses in the Town Center Plan. Based on meeting with City staff, the analysis of the new trips will be broken into three scenarios to understand the impact of the proposed changes on expected growth by 2035 and of the full development potential of the Town Center.[6]

- 2035 TSP Horizon Year Scenario (TSP approved growth and transportation network assumptions) – No Build
- 2035 TSP Horizon Year + Town Center Transportation Improvements (TSP growth assumptions and Town Center Plan proposed transportation network improvements) – Build
- 2035 Town Center Plan Full Development Buildout (Town Center Plan full build growth assumptions above and beyond TSP assumptions) – Full Development

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[3] *City of Wilsonville Code*, City of Wilsonville Section 4.140.

[4] *1999 Oregon Highway Plan,* Page 76, Oregon Department of Transportation, 1999.

[5] The typical ODOT mobility target for interchange ramps is a 0.85 v/c ratio. However, when the interchange vicinity is fully developed and adequate storage is available on the interchange ramp to prevent queues from backing up on the mainline, then the target can be increased to a 0.90 v/c ratio.

[6] Meeting with Zach Weigel, City of Wilsonville, September 20th, 2018.

The 2035 Horizon Year No Build and Build scenarios assume that no additional Town Center growth above and beyond growth assumptions projected by the TSP. Given current development pattern in Town Center it is unlikely for the Town Center Plan to be fully implemented by 2035. As traffic patterns and driving habits change, updated traffic analysis will occur and needed improvements will be assessed as development of the Town Center Plan is realized. The 2035 Full Development Buildout scenario used the volumes generated by the potential 1,746 net new trips (above existing development, or 786 trips above TSP projections) of the Town Center Plan.

The volumes for the two scenarios based on Town Center Plan proposed transportation network improvements can be seen in Figure 5 and Figure 6 on the following pages. Additional transportation simulation of the Wilsonville Road corridor will be needed to determine storage needs and the final intersection footprints as Town Center development progresses.

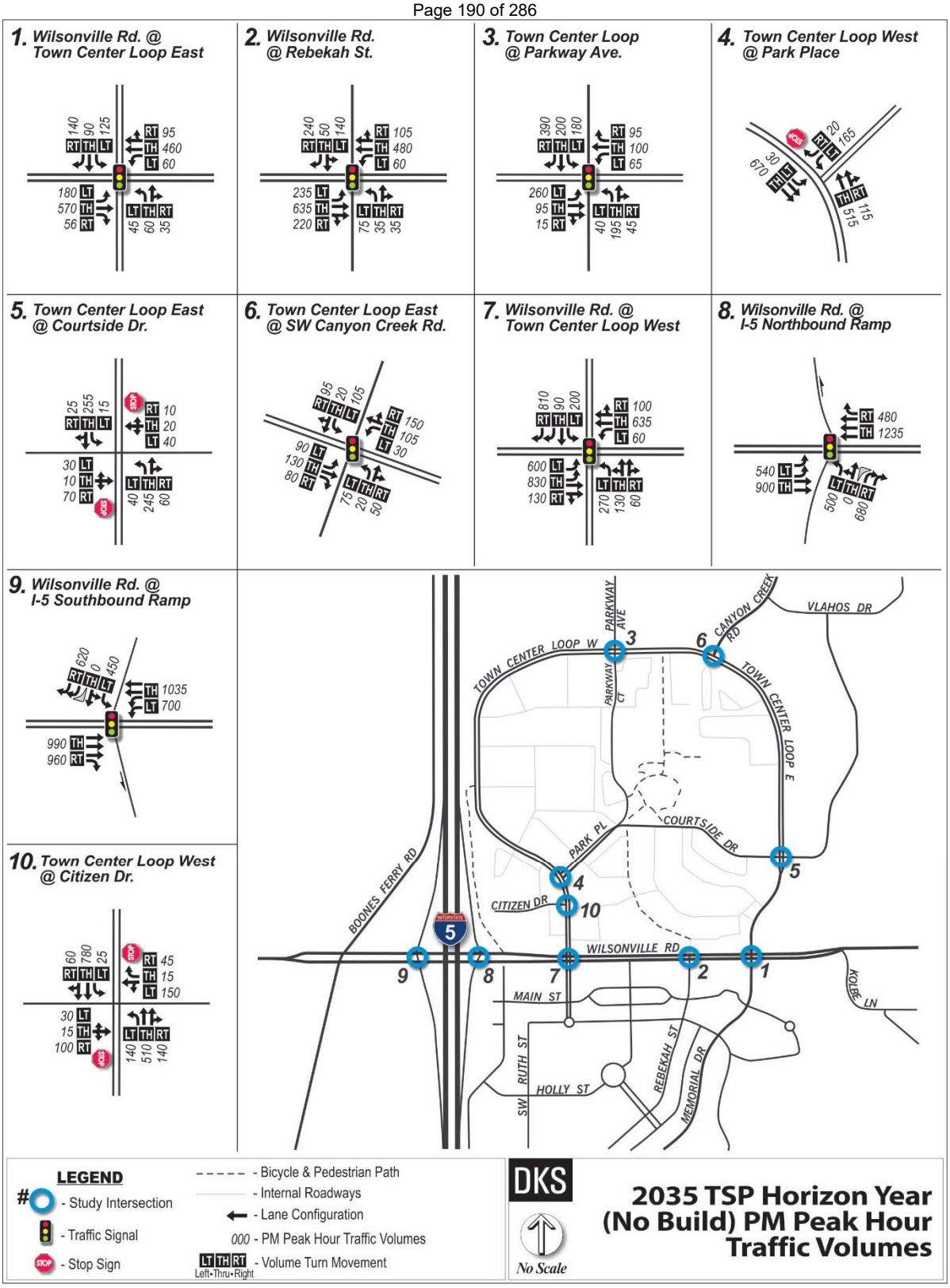


Figure 5: 2035 TSP Horizon Year (No Build) PM Peak Hour Traffic Volumes

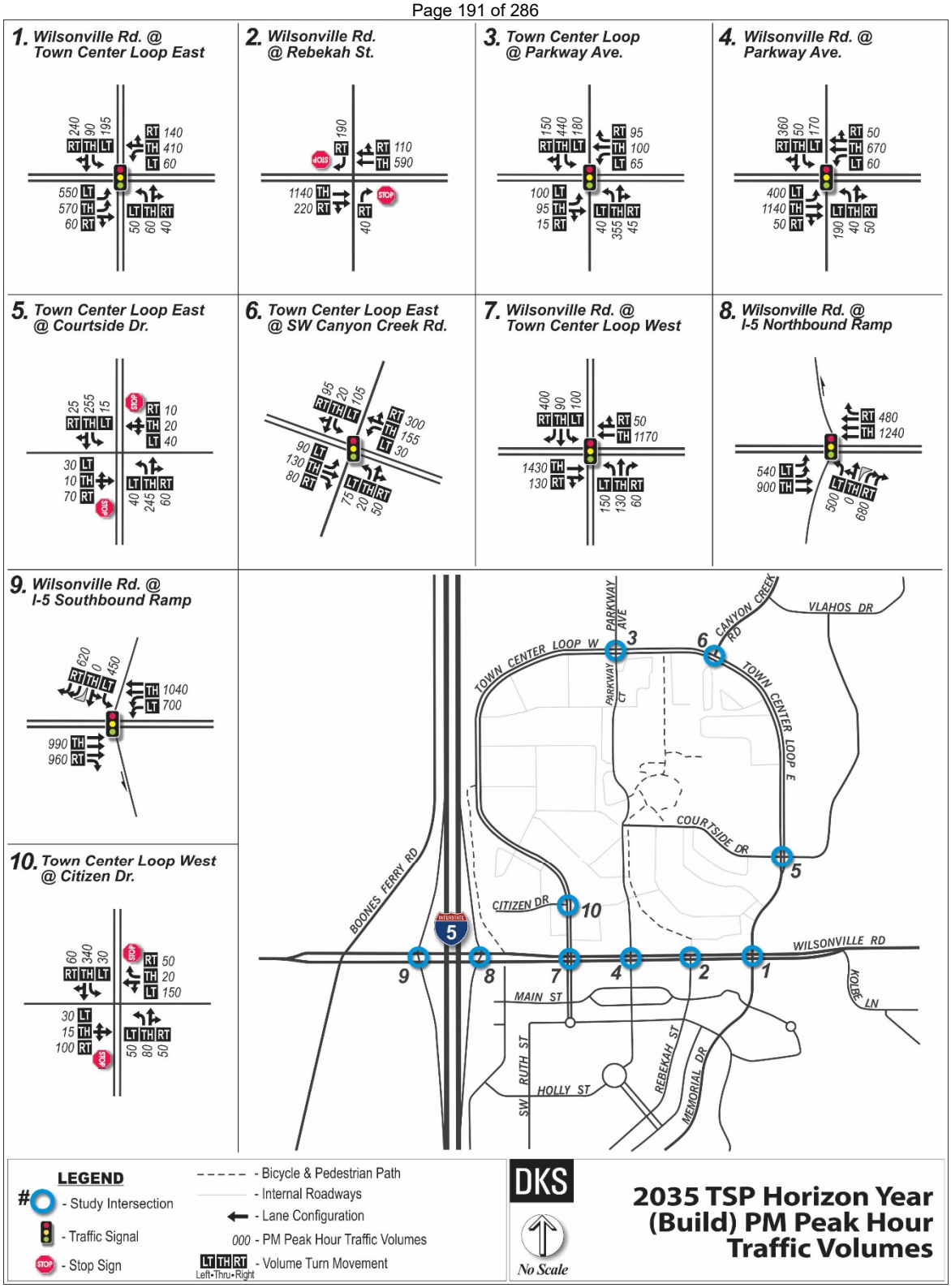


Figure 6: 2035 TSP Horizon Year (Build) PM Peak Hour Traffic Volumes

Table 5 shows the intersection operations given the existing 2035 horizon year traffic volumes and TSP transportation network improvements. As shown, the unsignalized intersections along Town Center Loop West at Park Place and Citizen Drive will fail to meet the required LOS D operating standard for the City of Wilsonville.

Table 5: 2035 Horizon Year No Build Intersection Operations

Intersection	Jurisdiction	Operating Standard/ Mobility Target	PM Peak Hour		
			Delay	*LOS*	*v/c*
Signalized					
Wilsonville Road/Town Center Loop E	City of Wilsonville	LOS D	20.8	C	0.53
Wilsonville Road/Rebekah St	City of Wilsonville	LOS D	16.0	B	0.48
Wilsonville Road/Town Center Loop W[1]	City of Wilsonville	LOS D	41.2	D	0.75
Wilsonville Road/ I-5 NB	ODOT	0.90 v/c	27.7	C	0.67
Wilsonville Road/ I-5 SB	ODOT	0.90 v/c	45.1	D	0.87
Town Center Loop West/Parkway Avenue	City of Wilsonville	LOS D	25.5	C	0.47
Town Center Loop East/Canyon Creek Road	City of Wilsonville	LOS D	23.8	C	0.31
Unsignalized					
Town Center Loop West/Park Place	City of Wilsonville	LOS D	**61.6**	**A/F**	**0.78**
Town Center Loop West/Citizen Drive	City of Wilsonville	LOS D	**>100**	**B/F**	**>1.0**
Town Center Loop East/Courtside Drive	City of Wilsonville	LOS D	19.7	A/C	0.24

Signalized Intersections:
Delay = Average Stopped Delay per Vehicle (sec)
LOS = Level of Service of Intersection
v/c = Volume-to-Capacity Ratio of Intersection

Unsignalized Intersections:
Delay = Average Stopped Delay per Vehicle (sec) at Worst Movement
LOS = Level of Service of Major Street/Minor Street
v/c = Volume-to-Capacity Ratio of Worst Movement

Bold/Highlighted: Fails to meet Operating Standards/Mobility Target

[1] 2035 TSP operations assumed a high priority project that included duel southbound right turn lanes. See TSP High Priority projects SI-04.

To mitigate the future impacts at unsignalized intersections along Town Center Loop West at Park Place and Citizen Drive, it is recommended that left turns (driven by traffic passing through Town Center) be deterred or restricted at each location or traffic signal be installed to improve the safety and decrease the delay experienced by eastbound and westbound vehicles turning left. Other transportation network changes would also aid in shifting vehicles to other locations within the Town Center that improve the operations at Park Place and Citizen Drive (as discussed in the Transportation Improvements identified as part of the Town Center Plan).

As shown in Table 6 on the following page, given the proposed transportation network improvements in the Town Center Plan, all study intersections will meet operating standards or mobility targets for the horizon year of 2035.

Table 6: 2035 Horizon Year Build Intersection Operations

Intersection	Jurisdiction	Operating Standard/ Mobility Target	PM Peak Hour		
			Delay	*LOS*	*v/c*
Signalized					
Wilsonville Road/Town Center Loop E	City of Wilsonville	LOS D	39.2	D	0.74
Wilsonville Road/Parkway Avenue[1]	City of Wilsonville	LOS D	39.0	D	0.86
Wilsonville Road/Town Center Loop W	City of Wilsonville	LOS D	22.2	C	0.72
Wilsonville Road/ I-5 NB	ODOT	0.90 v/c	32.8	C	0.66
Wilsonville Road/ I-5 SB	ODOT	0.90 v/c	45.4	D	0.87
Town Center Loop West/Parkway Avenue	City of Wilsonville	LOS D	21.7	D	0.51
Town Center Loop East/Canyon Creek Road	City of Wilsonville	LOS D	25.2	C	0.52
Unsignalized					
Wilsonville Road/Rebekah St	City of Wilsonville	LOS D	15.5	B/C	0.30
Town Center Loop West/Citizen Drive	City of Wilsonville	LOS D	32.2	A/D	0.54
Town Center Loop East/Courtside Drive	City of Wilsonville	LOS D	18.7	A/C	0.22

Signalized Intersections:
Delay = Average Stopped Delay per Vehicle (sec)
LOS = Level of Service of Intersection
v/c = Volume-to-Capacity Ratio of Intersection
[1]New Intersection

Unsignalized Intersections:
Delay = Average Stopped Delay per Vehicle (sec) at Worst Movement
LOS = Level of Service of Major Street/Minor Street
v/c = Volume-to-Capacity Ratio of Worst Movement

Full Development Buildout Sensitivity Test

A sensitivity test was completed for the full development scenario with the transportation network improvements in the Town Center Plan. Figure 7 shows the traffic volumes and trip distribution assumptions for the full development.

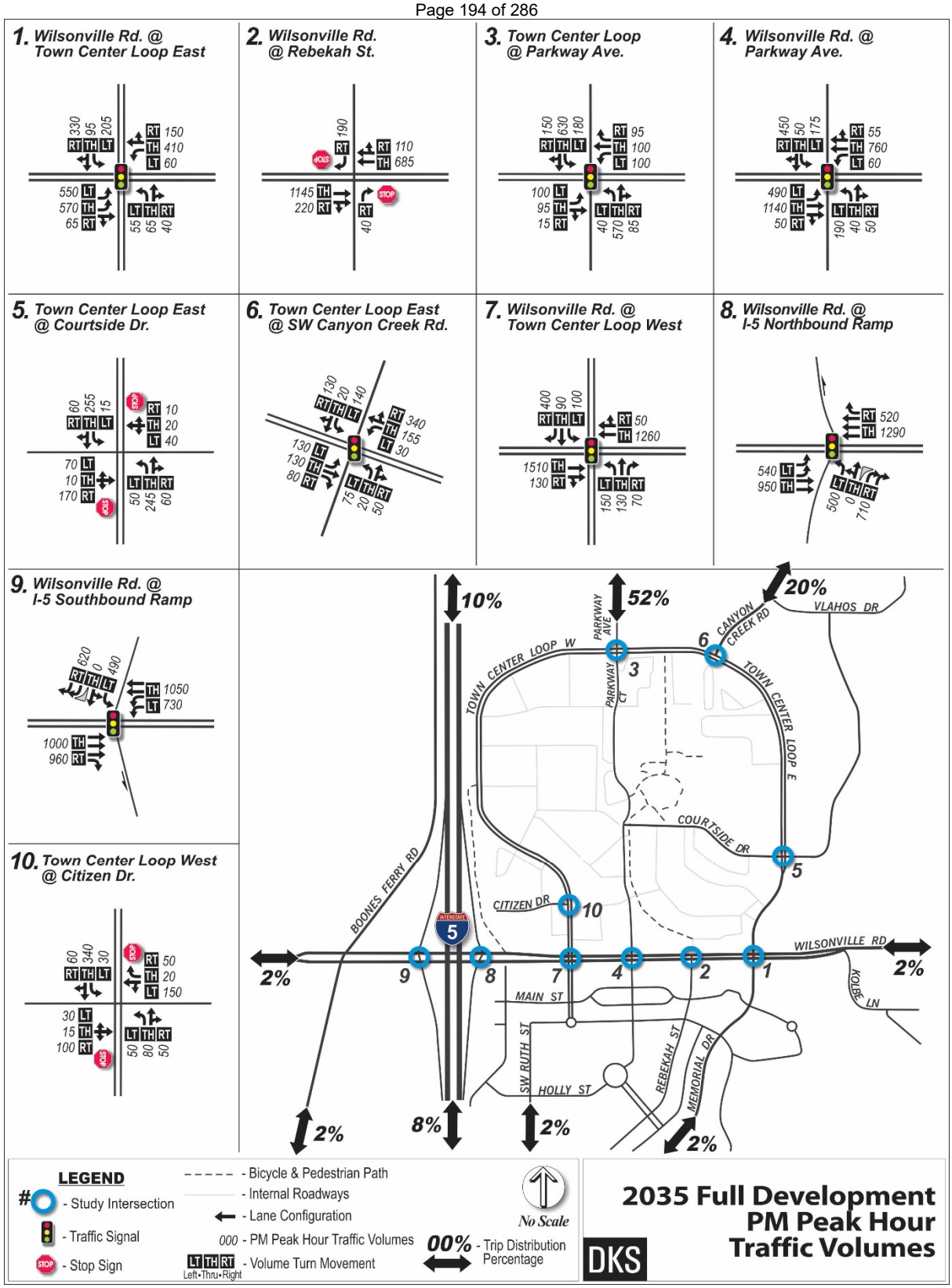


Figure 7: 2035 Full Development PM Peak Hour Traffic Volumes

As shown in Table 7, all study intersections would operate within operating standards and meet mobility targets given the proposed transportation network improvements. However, given the proximity of intersections along Wilsonville Road and the traffic operations results (LOS C and D) approaching congested conditions, additional analysis should be conducted through the years to review traffic flow and confirm operations. Such analysis (including simulation and queuing analysis) should be conducted to refine project details (including queue storage) prior to design.

Table 7: Full Development Build Intersection Operations

Intersection	Jurisdiction	Operating Standard/ Mobility Target	PM Peak Hour		
			Delay	*LOS*	*v/c*
Signalized					
Wilsonville Road/Town Center Loop E	City of Wilsonville	LOS D	47.1	D	0.83
Wilsonville Road/Parkway Avenue[1]	City of Wilsonville	LOS D	49.5	D	0.99
Wilsonville Road/Town Center Loop W	City of Wilsonville	LOS D	24.0	C	0.79
Wilsonville Road/ I-5 NB	ODOT	0.90 v/c	34.9	C	0.71
Wilsonville Road/ I-5 SB	ODOT	0.90 v/c	48.6	D	0.88
Town Center Loop West/Parkway Avenue	City of Wilsonville	LOS D	27.9	C	0.67
Town Center Loop East/Canyon Creek Road	City of Wilsonville	LOS D	25.9	C	0.53
Unsignalized					
Wilsonville Road/Rebekah St	City of Wilsonville	LOS D	15.6	C[2]	0.33
Town Center Loop West/Citizen Drive	City of Wilsonville	LOS D	33.0	A/D	0.55
Town Center Loop East/Courtside Drive	City of Wilsonville	LOS D	25.8	A/D	0.55

Signalized Intersections:
Delay = Average Stopped Delay per Vehicle (sec)
LOS = Level of Service of Intersection
v/c = Volume-to-Capacity Ratio of Intersection

Unsignalized Intersections:
Delay = Average Stopped Delay per Vehicle (sec) at Worst Movement
LOS = Level of Service of Major Street/Minor Street
v/c = Volume-to-Capacity Ratio of Worst Movement

[1]New Intersection
[2]No minor street level of service because this intersection is a right-in, right-out.

Multimodal Connectivity

Having a well-connected multimodal system allows a variety of users to travel to, from, and within the Town Center. These potential travelers include, but are not limited to:

- Commuters that travel from adjacent neighborhoods to the Town Center for work;
- Residents within the Town Center that access places of work within the Town Center, near the Town Center, or access transit for other locations; and
- Residents or employees within the town center (or adjoining areas) that visit other uses in the town center for food, shopping, or entertainment.

In order to serve these potential users, the Town Center should provide a well-connected multimodal system. The proposed multimodal system (Figure 8) was reviewed for internal and external connectivity that would enhance and enable transportation options.

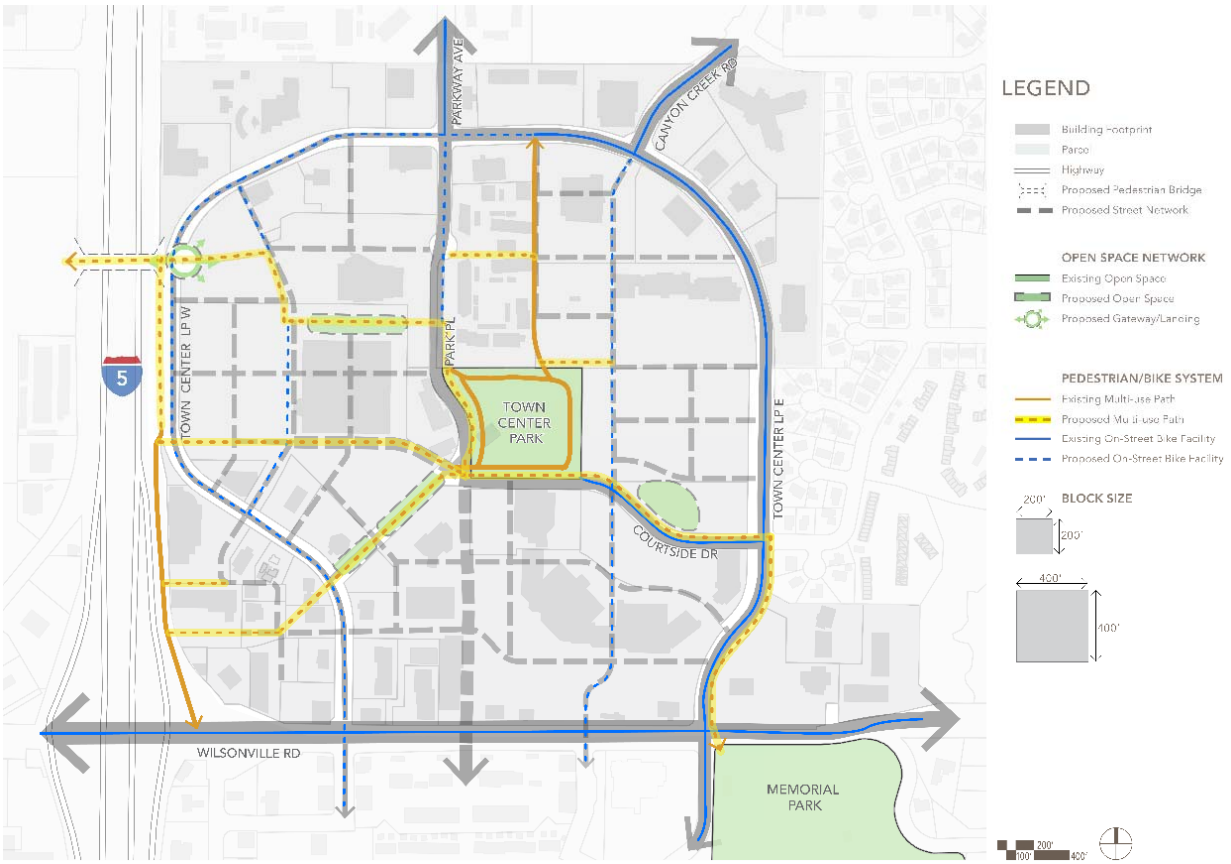


Figure 8: Proposed Multimodal Network

The proposed multimodal network offers the following enhancements to the existing transportation system:

- Internal connectivity – The proposed multimodal street network would improve the internal connectivity by adding new roads and reducing the block size. These actions would reduce travel distance and provide better network redundancy, reducing the reliance on individual streets. Streets and/or paths would provide a network with multiple routes to comfortably traverse the Town Center in a north-south or east-west direction, or travel between any internal locations. This is a stark contrast to the existing network that provides a single north-south and a single east-west route that bisect the area encompassed by Town Center Loop.
- Improved facilities within Town Center – The proposed system would include additional multi-use paths, bicycle, and pedestrian facilities, providing an enhanced user experience for both commuters and recreational travelers. These facilities would have the potential to both attract visitors from adjacent neighborhoods and enable pedestrian activity between locations in Town Center.
- External connections – The proposed network would include enhanced external connections, allowing travelers to enter or leave Town Center without reliance on a motor vehicle. Key external connections include:
    - The pedestrian bridge on the west edge of Town Center provides connections to neighborhoods east of I-5 and regional transit connections via SMART Central at Wilsonville Station.
    - Improved crossing opportunities on Wilsonville Road along the south edge of Town Center.
    - Trail connections from Town Center to Memorial Park.

The proposed multimodal system will result in a transportation network that supports multimodal activity and transportation options. Residents, employees, and visitors to Town Center would be able to travel between Town Center Park, Memorial Park, and various other destinations within and adjacent to Town Center without reliance on a motor vehicle. A major non-vehicular improvement outline in the proposed Town Center Plan is a cycle track.

Cycle Track Treatment

As recommended in the City's TSP, Cycle Tracks are a safe bicycle facility type where additional separation is provided between motor vehicle travel lanes and the bicycle facility. Cycle tracks can be one-way (similar to a buffered bike lane but with a physical separation) or two-way (where both directions are served on the same side of the street). As shown in Figure 9, the TSP standards for a cycle track recommend a 3-foot buffer between the

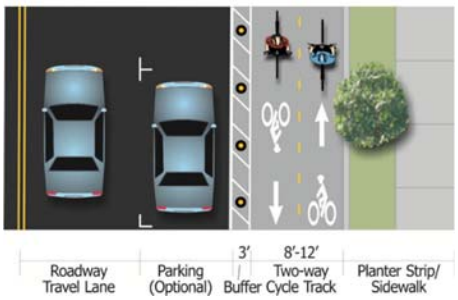


Figure 9: TSP Cycle Track Standards

parking lane and the cycle track and the cycle track should be a minimum of 8-feet to and a maximum of 12-feet wide.

A cycle track is proposed as part of the Town Center Plan to connect the planned bicycle and pedestrian bridge over I-5 with Memorial Park to the southeast and the existing multi-use path that connects to Wilsonville Road adjacent to I-5. As shown in Figure 10 on the following page, there are multiple locations where the proposed route would use an existing intersection. Each of these locations will require individual engineering and planning due to different characteristics, including traffic control and expected volumes.

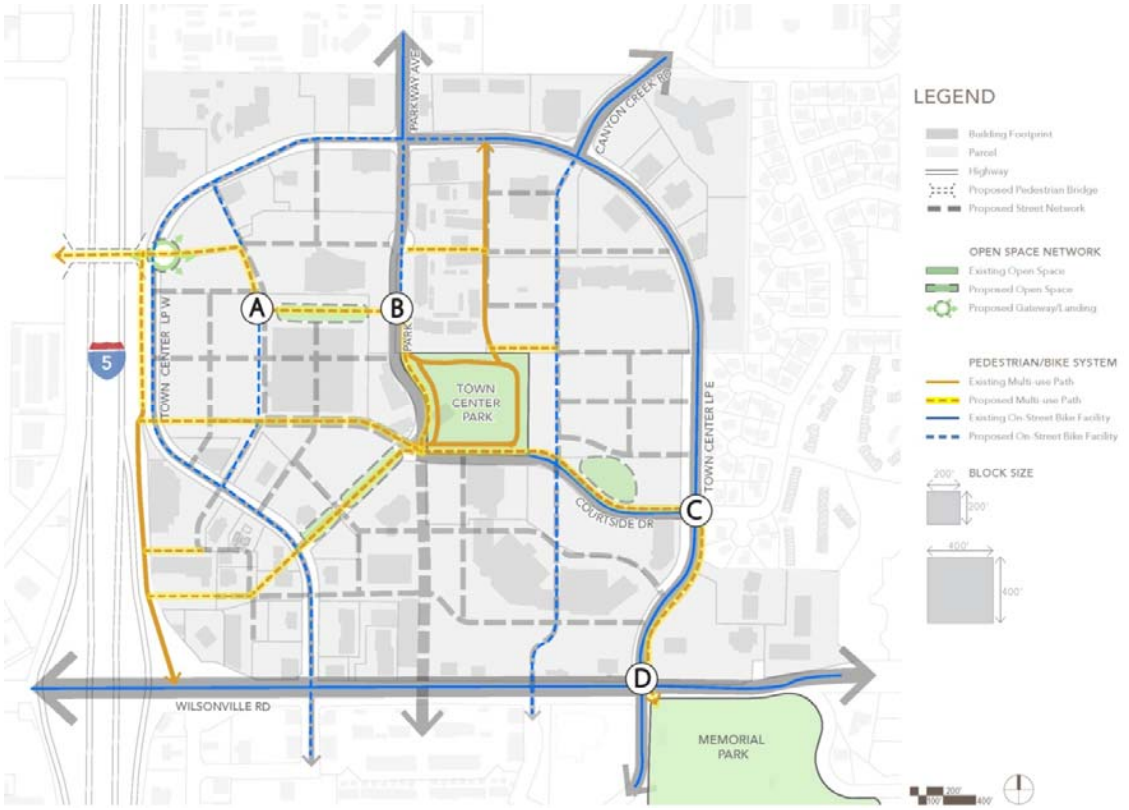


Figure 10: Cycle Track Key Locations

As shown, there are four key locations where the cycle track will cross motor vehicle traffic that could use additional modifications to improve safety and operations. Modifications include signing and striping, adding a bicycle signal, or modifying an existing traffic signal to include a bicycle phase. Each location has a unique modification that may be included based on preliminary traffic volumes and expected traffic patterns.[7] Each design treatment will need to be reevaluated as development and redevelopment occurs to assure the right design option is considered.

[7] Any new locations or location not identified in this memo should be analyzed individually to determine to best design for the use.

Location A – Bridge Landing

This location is expected to have low traffic volumes and may only require signing and striping at the intersection for the cycle track. Different design elements such as raised crossing or colored pavement to alert drivers to potential conflicts with bicyclist and all-way stop control as shown in the figure to the right could be incorporated into the design.

Stop Controlled Cycle Track

Location B – Parkway Avenue

This location is expected to have higher traffic volumes as it crosses the new main street and may require a bicycle signal that stops vehicles on main street to allow bicycles to cross as shown in the photo to the left. This location would require additional planning and design to identify specific treatment details.

Bicycle Signal for Cycle Track

Location C – Town Center Loop East

This location currently has pedestrian crossing flashing beacon that could be modified to integrate the cycle track. Alternatively a new signal with a bicycle phase could be install here when warranted by traffic volumes. The photo to the right shows a cycle track crosswalk next to a pedestrian crosswalk.

Cycle Track Crossing

Location D – Wilsonville Road

This location is currently a signalized intersection and could be modified to include a bicycle phase that connects the north/south cycle track on Town Center Loop East to Memorial Park. The photo to the right shows a special bicycle phase at a traffic signal where a designated signal head with LED bicycle red-yellow-green symbols provide traffic control for bicycles to the bicycle facility.

Bicycle Phase at Traffic Signal

Summary

The land use alternatives developed by the Town Center Plan have the following impacts to the City of Wilsonville Transportation System.

- The proposed Town Center land use would provide additional growth (approximately 786 net new PM Peak hour trips) beyond what is planned for in the TSP.
- The TSP forecasted approximately 960 net new trips to and from the Town Center that would account for approximately 55% of the estimated full development of the Town Center.
- The Town Center Plan proposes a modified street system that improves connectivity and circulation for all modes of travel, including improving the comfort and safety for pedestrian and bicycle travel.
- Modifications to the street system along Wilsonville Road include eliminating eastbound and westbound left turns at Town Center Loop W, constructing a new traffic signal at the proposed Parkway Avenue extension, replacing the existing traffic signal at Rebekah Street with an enhanced pedestrian crossing (flashing beacon or pedestrian signal), adding duel eastbound left turns with duel receiving lanes at Town Center Loop E.
- Additional elements along Wilsonville Road improve the comfort and safety of pedestrian and bicycle travel including modifications to the landscaped median to provide pedestrian median refuge locations to cross Wilsonville Road at Town Center Loop W and Rebekah Street.
- A cycle track is proposed as part of the Town Center redevelopment to connect the planned bicycle and pedestrian bridge over I-5 with Memorial Park to the southeast and the existing multi-use path on the southwest. Features of the cycle track could include designated bicycle signals when crossing roads with high traffic volumes and bicycle phases in the existing traffic signals at Wilsonville Road/Town Center Loop E.
- Traffic analysis for the study intersections indicate that the proposed changes to the transportation network would support the planned growth for Town Center. Additional transportation simulation of the Wilsonville Road corridor will be needed to determine storage needs and the final intersection footprints as Town Center development progresses.

APPENDECES

Appendix A – Land Use Assumption Tables

Appendix B – 2035 Transportation System Plan (TSP) Projects

Appendix C – Level of Service Description

Appendix D – Proposed Town Center Street Improvements

Appendix E – Proposed Town Center Trail Improvements

Appendix F – HCM Analysis Results

Appendix A – Land Use Assumption Tables

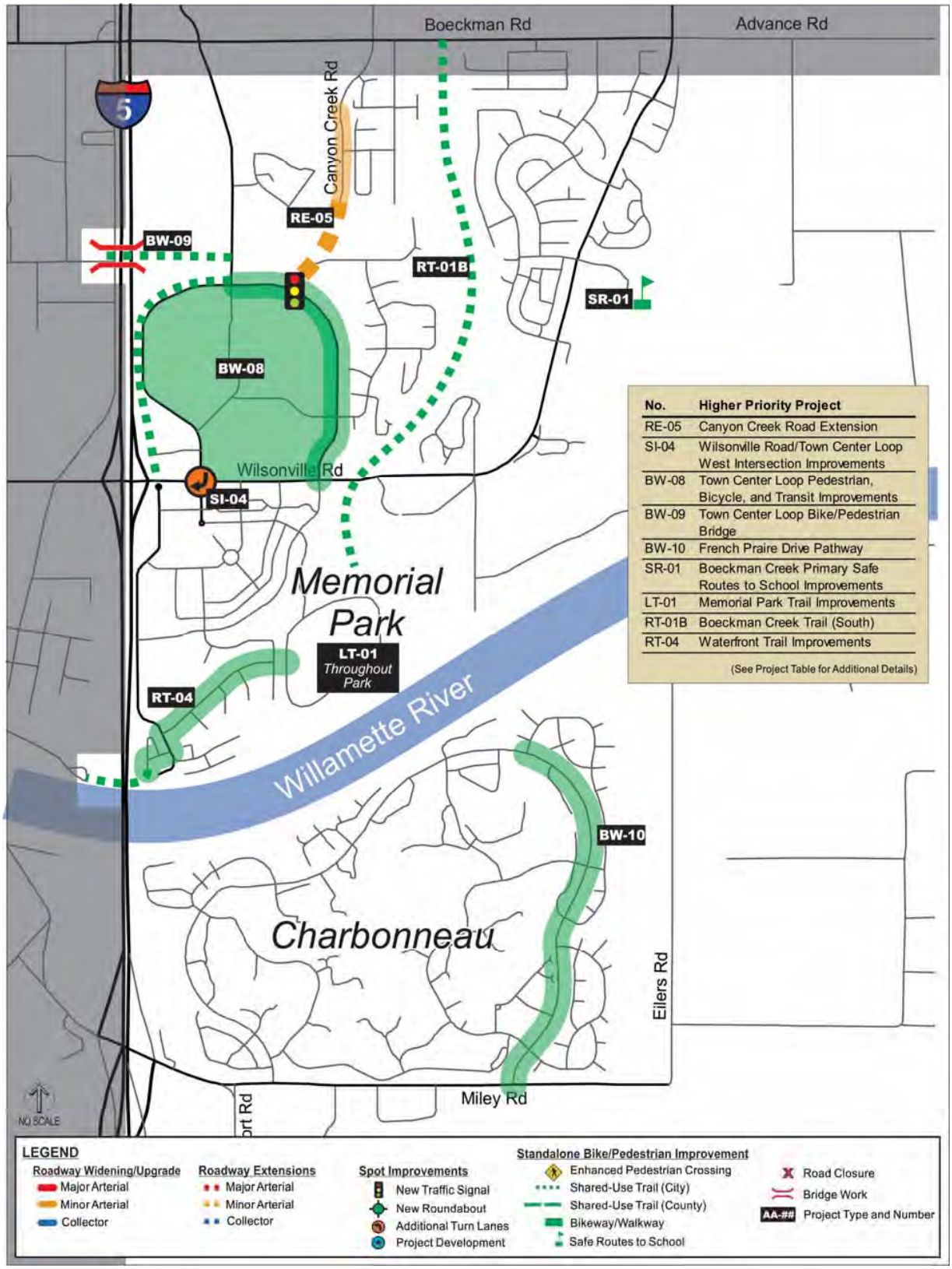
Parcel #	Gross Parcel Area (Sq.ft)	Net Parcel Area (Sq.ft)	Avg. Ht*Net Parcel Area	ITE Land Use	Exisiting Use	Redevelopment Potential (Yes/No)	Built area EXISTING (sq.ft.)	Commercial	Retail	Office	Residential	OTHER	OTHER Take-offs (Streets, OS & Parking)	Existing Trip Generation Trip Rate	Units	PM Peak	PROPOSED BUILT AREA (Sq.ft.) Park/OS	Religious	Civic	Commercial	Office	Retail	Residential	Notes
			3										0.4											
31W13CB00100	181,298	N/A	N/A	254	Assisted Living Facility	No	35,897				35,897		N/A	0.22	Beds	11							35,897	residential units of 750 sq.ft. each.
31W13CB00200	131,829	N/A	N/A	560	Church	No	16,784			16,784			N/A	0.55	KSF	9		16,784						
31W13CB00501	53,101	N/A	N/A	151	New Development (storage facility)	No	28,000			28,000			N/A	0.26	KSF	7				28,000				
31W13CB00500	32,137	19,282	57,847	710	Office	Yes	9,428			9,428			12,855	1.49	KSF	14				28,923				Would require addressing parking
31W13CB00400	46,812	N/A	N/A	566	Funeral Home	No	9,890			9,890			N/A	0.01	Acre	0		9,890						
31W13CB00300	18,295	10,977	32,932	710	Office	Yes	5,740			5,740			7,318	1.49	KSF	9				6,586				Limited area for larger building
31W13CB00800	21,722	13,033	39,100	911	Washington Bank	Yes	4,507	4,507					8,689	12.13	KSF	55				7,820				Assumes development partnered with adjacent parcels to accommodate parking
31W13CB00700	101,793	61,076	183,228	820	Strip Mall	Yes	16,543	16,543					40,717	3.71	KSF	61				36,646		18,323		
31W13CB00600	77,212	46,327	138,981	437	Bowling Building	Yes	26,741	26,741					30,885	1.51	Bowling Lanes	30						13,898	55,592	
			2																					
31W14D 00405	36,663	21,998	43,996	934	McDonald's	Yes	4,750	4,750					14,665	9.85	KSF	47						8,799		
31W14D 00411	47,317	28,390	56,781	932	Sharis	Yes	5,218	5,218					18,927	9.85	KSF	51						11,356		
31W13CC00500	22,831	13,699	27,398		Vacant	Yes	0						9,133	check	KSF	0				13,699		5,480		
31W14D 00212	41,548	24,929	49,858	932	Boston's Pub	Yes	11,504	11,504					16,619	9.85	KSF	113				11,504		4,986		
31W14D 00220	88,879	53,327	106,655		Vacant	Yes	0						35,552	check	KSF	0					31,996	10,665		Parcel split for analysis
31W14D 00220	310,906	186,543	373,087	863	Fry's	Yes	122,540		122,540				124,362	4.50	KSF	551				37,309	111,926	37,309	111,926	residential units of 750 sq.ft. each.
31W14D 00207	24,814	14,888	29,777	826	Professional services	Yes	4,316			4,316			9,926	2.71	KSF	12					14,888	2,978		
31W14D 00205	24,175	14,505	29,010	826	Professional services	Yes	4,393			4,393			9,670	2.71	KSF	12					14,505			
31W14D 00209	25,374	15,225	30,449	937	Starbucks	Yes	3,109	3,109					10,150	42.80	KSF	133						6,090		
31W14D 00211	34,320	20,592	41,184	934	Retail (Chipotle)	Yes	4,950		4,950				13,728	9.85	KSF	49						8,237		
31W13CC00400	33,650	20,190	40,380	911	Bank of Amaerica	Yes	3,390	3,390					13,460	12.13	KSF	41				20,190				Parcel split for analysis
31W14D 00206	13,759	8,255	16,511	911	Credit Union	Yes	2,905	2,905					5,504	12.13	KSF	35						3,302		Parcel split for analysis
			3																					
31W14D 00216	24,992	14,995	44,985	565	Day care (Learning Tree)	Yes	6,395			6,395			9,997	12.34	KSF	79				13,495	8,997	13,495		
31W13CC00400	313,457	188,074	564,223	820	various small retail/ strip retail	Yes	65,376		65,376				125,383	3.71	KSF	243					112,845	169,267		
31W13CC00600	42,400	25,440	76,320		Vacant	Yes	0						16,960	check	KSF	0					15,264	22,896	61,056	residential units of 750 sq.ft. each.
31W14D 00221	53,323	N/A	N/A	565, 813	2 buildings - preschool and retail	No	16,253		16,253				N/A	16.69	KSF	271,263						16,253		
31W14D 00223	147,900	88,740	266,220	444	partial site -- Regal	Yes	37,986		37,986				59,160	3.80	KSF	144					53,244	79,866	133,110	residential units of 750 sq.ft. each.
31W14D 00230	91,924	55,154	165,463	820	commercial	Yes	14,140	14,140					36,769	3.71	KSF	52					33,093	49,639		
31W14D 00206	35,820	21,492	64,475	820	strip commerical (subway)		14,141	14,141					14,328	3.71	KSF	52						19,343		Parcel split for analysis
			3																					
31W14D 00227	57,433	34,460	103,379		Vacant	Yes	0						22,973	check	KSF	0					31,014			
31W14D 00104	22,730	13,638	40,914		Vacant	Yes	0						9,092	check	KSF	0	13,638				12,274			
31W14D 00228	47,178	28,307	84,920	710	Office	Yes	6,807	6,807		6,807			18,871	1.49	KSF	10					25,476			
31W14D 00229	41,783	25,070	75,209	911	US Bank	Yes	4,319	4,319					16,713	12.13	KSF	52					22,563	7,521		
31W14D 00223	93,933	56,360	169,079		Vacant	Yes	0						37,573	check	KSF	0				50,724	50,724			Split for analysis from original parcel
31W14D 00226	67,203	40,322	120,965		Vacant	Yes	0						26,881	check	KSF	0				36,290	36,290			
31W14D 00220	238,615	143,169	429,507		Vacant	Yes	0						95,446	check	KSF	0				128,852	128,852			
31W14D 00302	27,151	16,291	48,873	826	Retail/Mattress World	Yes	10,254		10,254				10,861	2.71	KSF	28					14,662			
31W14D 00402	91,043	54,626	163,877	826	Retail/ NW Rugs	Yes	32,100		32,100				36,417	2.71	KSF	87					49,163			
31W14D 00400	67,578	40,547	121,641	710, 820	Commerical/ Guest House	Yes	20,263	20,263					27,031	1.49	KSF	30				11,457	36,492			
31W14D 00700	7,956	4,774	14,321	820	Commercial/ office	Yes	1,719	1,719					3,183	5.20	KSF	9					4,296			
31W14D 00600	34,604	20,762	62,287	310	Hotel/lodging	Yes	4,607			4,607			13,842	0.60	Room	24					18,686			
31W14D 00500	45,683	31,978	95,933	820	Strip commerical	Yes	15,190	15,190					13,705	3.71	KSF	56						15,190		
31W14D 00406	28,802	17,281	51,843	710, 820	Commerical/office	Yes	4,276	4,276					11,521	5.20	KSF	22					15,553			
31W14D 00407	11,134	6,681	20,042	710, 820	Commerical/office	Yes	2,332	2,332					4,454	5.20	KSF	12					6,013			
31W14D 00409	21,431	12,858	38,575	###### 710,	Commerical/ Nursery school	Yes	4,933	4,933					8,572	4.46	KSF	22					11,573			
31W14D 90000	14,538	8,723	26,169	820	Commerical/Office	Yes	3,928	3,928					5,815	5.20	KSF	20					7,851			
31W14D 00300	6,132	N/A	N/A		Vacant	no	0						N/A	check	KSF	0								
			2																					
31W13CB00900	50,432	30,259	45,389	816	Commercial (Ace hardware)	Yes	10,643	10,643					20,173	4.84	KSF	52							36,311	residential units of 750 sq.ft. each.
31W13CB01100	174,591	104,755	157,132	732	USPS	Yes	28,078	28,078					69,836	11.22	KSF	315		15,713			31,426		31,426	residential units of 750 sq.ft. each.
31W13CB01200	97,900	N/A	N/A	610	Providence Medical.	No	12,525			12,525			N/A	0.93	KSF	12		12,525						
31W13CB01300	348,131	N/A	N/A	540	Education (Clackamas Comm. College)	No	41,146			41,146			N/A	2.54	KSF	105		41,146						
31W13CB01000	255,264	N/A	N/A	220	Apartments	No	30						N/A	0.62	DU	19		30						
31W13CC00100	151,238	90,743	136,114		Vacant	Yes							60,495	check	KSF	0		13,611			45,371		45,371	
			3																					
31W13CC00600	106,577	N/A	N/A	813	Goodwill	No	22,841		22,841				N/A	4.35	KSF	99				22,841				
31W13CC00400	320,550	N/A	N/A	850	Safeway	No	38,468	38,468					N/A	9.48	KSF	365					38,468			Parcel split for analysis
31W13CC00400	114,000	68,400	205,200	820	Small strip retail	Yes	9,040		9,040				45,600	3.71	KSF	34					20,520	20,520		Parcel split for analysis
31W13CC00400	30,000	18,000	54,000		Parking	Yes	0						12,000	check	KSF	0					5,400			
31W13CC00201	45,070	N/A	N/A	730	City Hall	No	17,435			17,435			N/A	1.21	KSF	21		17,435						
31W13CC00201	109,500	65,700	197,100		Parking	Yes	0						43,800	check	KSF	0					19,710	19,710		
31W14D 00104	89,425	53,655	160,965	942	Commercial(Les Schwab Tire)	Yes	20,581	20,581					35,770	3.11	KSF	64				20,581				
31W14D 00109	43,988	26,393	79,178		Vacant	Yes	0						17,595	check	KSF	0					39,589		39,589	residential units of 750 sq.ft. each.
31W14D 00107	50,808	30,485	91,454	943	Commercial (Auto parts)	Yes	11,387	11,387					20,323	4.46	KSF	51					27,436			
31W14D 00100	214,110	N/A	N/A	435	Commercial (Fun Center)	No	19,367	19,367					N/A	3.58	KSF	69				19,367				
			1.0																					
31W13CD02702	156,046	93,628	93,628	730	Civic Use	Yes	15,242						62,418	1.21	KSF	18		15,242					37,451	residential units of 750 sq.ft. each.
31W13CD03000	75,051	N/A	N/A	540	Art+Tech School	No	11,482			11,482			N/A	2.54	KSF	29		11,482						
31W13CD02605	120,532	N/A	N/A	254	Senior Living	No	22,658				22,658		N/A	0.22	Beds	7							22,658	residential units of 750 sq.ft. each.
31W13CC00100	150,605	90,363	90,363		Vacant	Yes	0						60,242	check	KSF	0							90,363	residential units of 1100 sq.ft. each.
31W13CC00200	82,868	49,721	49,721		Vacant	Yes	0						33,147	check	KSF	0	49,721							

Appendix B – 2035 TSP Projects

Table 5-5. Higher Priority Projects (Southeast Quadrant)

Project		Description	Cost
Roadway Extensions			
RE-05	Canyon Creek Road Extension	Construct remaining 3-lane roadway with bike lanes, sidewalks, and transit stop improvements from existing terminus to Town Center Loop East; project also includes realigning a portion of Vlahos Drive (so it intersects Canyon Creek Road) and installing a traffic signal at the Town Center Loop East/Canyon Creek Road intersection	$3,500,000
Spot Improvements			
SI-04	Wilsonville Road/ Town Center Loop West Intersection Improvements	Widen the north leg of the intersection and install a second southbound right-turn lane (dual lanes)	$500,000
Standalone Pedestrian and Bicycle Improvements (Bikeways and Walkways)			
BW-08	Town Center Loop Pedestrian, Bicycle, and Transit Improvements	Create more direct connections between destinations within Town Center area, improve accessibility to civic uses and transit stops, retrofit sidewalks with curb ramps, highlight crosswalks with colored pavement, and construct other similar treatments that support pedestrian, bicycle, and transit access and circulation; also construct shared-use path along Town Center Loop West from Wilsonville Road to Parkway Avenue and restripe Town Center Loop East from Wilsonville Road to Parkway Avenue to a three-lane cross-section with bike facilities	$500,000
BW-09	Town Center Loop Bike/Pedestrian Bridge	Construct bike/pedestrian bridge over I-5 approximately aligned with Barber Street to improve connectivity of Town Center area with businesses and neighborhoods on west side of I-5; include aesthetic design treatments	$4,000,000
BW-10	French Prairie Drive Pathway	Construct 10-foot wide shared-use path along French Prairie Drive from Country View Lane to Miley Road or reconfigure existing roadway to remove a travel lane in each direction and add bicycle and pedestrian facilities	$1,140,000
Standalone Pedestrian and Bicycle Improvements (Safe Routes to School)			
SR-01	Boeckman Creek Primary Safe Routes to School Improvements	Construct a bicycle parking shelter near the school and a new 10 to 12-foot bike path on the south side of the existing sidewalk that meanders south of the tree line and connects to the existing marked crosswalk near the school parking lot	$65,000
Standalone Pedestrian and Bicycle Improvements (Local Trails)			
LT-01	Memorial Park Trail Improvements	Construct trails throughout Memorial Park, including the Memorial Park Center Loop Trail, the River Trail, Kolbe Homestead Trail, and Klein Homestead Trail	$595,000
Standalone Pedestrian and Bicycle Improvements (Regional Trails)			
RT-01B	Boeckman Creek Trail (South)	Construct north-south trail through east Wilsonville following Boeckman Creek, with connections to neighborhoods, parks, and intersecting roads (may need a boardwalk for various sections and would require a comprehensive public process)	$1,150,000 (Partial Regional funding)
RT-04	Waterfront Trail Improvements	Improve the condition of the shared-use path as it passes underneath the I-5 Boone Bridge by removing the Jersey barriers, installing bollards, widening the trail, adding appropriate pedestrian features such as benches and lighting, and altering the grade of the path underneath the underpass to make it more easily accessible	$125,000

FIGURE 5-6. HIGHER PRIORITY PROJECTS (SOUTHEAST QUADRANT)



Appendix C – Level of Service Description

TRAFFIC LEVELS OF SERVICE

Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of level of service has been developed to subjectively describe traffic performance. Level of service can be measured at intersections and along key roadway segments.

Levels of service categories are similar to report card ratings for traffic performance. Intersections are typically the controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. Levels of Service A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. Level of service D and E are progressively worse peak hour operating conditions and F conditions represent where demand exceeds the capacity of an intersection. Most urban communities set level of service D as the minimum acceptable level of service for peak hour operation and plan for level of service C or better for all other times of the day. The Highway Capacity Manual provides level of service calculation methodology for both intersections and arterials[1]. The following two sections provide interpretations of the analysis approaches.

[1] *2000 Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2000, Chapter 16 and 17.

UNSIGNALIZED INTERSECTIONS (Two-Way Stop Controlled)

Unsignalized intersection level of service is reported for the major street and minor street (generally, left turn movements). The method assesses available and critical gaps in the traffic stream which make it possible for side street traffic to enter the main street flow. The 2010 Highway Capacity Manual describes the detailed methodology. It is not unusual for an intersection to experience level of service E or F conditions for the minor street left turn movement. It should be understood that, often, a poor level of service is experienced by only a few vehicles and the intersection as a whole operates acceptably.

Unsignalized intersection levels of service are described in the following table.

Level-of-Service Criteria: Automobile Mode

Control Delay (s/vehicle)	**LOS by Volume-to-Capacity Ratio**	
	***v/c* ≤ 1.0**	***v/c* > 1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole

SIGNALIZED INTERSECTIONS

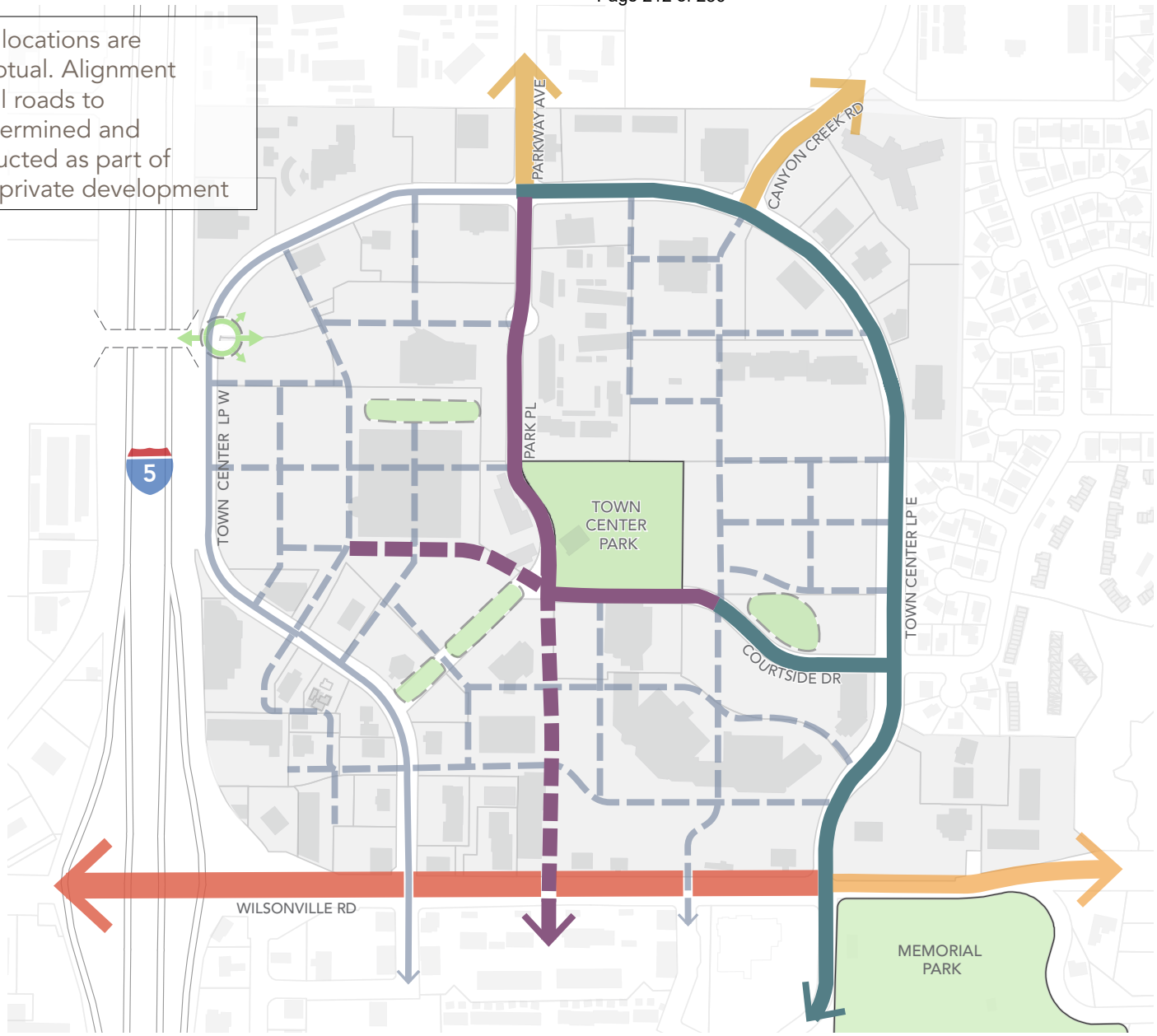
For signalized intersections, level of service is evaluated based upon average vehicle delay experienced by vehicles entering an intersection. Control delay (or signal delay) includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In previous versions of this chapter of the HCM (1994 and earlier), delay included only stopped delay. As delay increases, the level of service decreases. Calculations for signalized and unsignalized intersections are different due to the variation in traffic control. The 2000 Highway Capacity Manual provides the basis for these calculations.

Level of Service	Delay (secs.)	Description
A	<10.00	**Free Flow/Insignificant Delays:** No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Most vehicles do not stop at all. Progression is extremely favorable and most vehicles arrive during the green phase.
B	10.1-20.0	**Stable Operation/Minimal Delays:** An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. This level generally occurs with good progression, short cycle lengths, or both.
C	20.1-35.0	**Stable Operation/Acceptable Delays:** Major approach phases fully utilized. Most drivers feel somewhat restricted. Higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, and the number of vehicles stopping is significant.
D	35.1-55.0	**Approaching Unstable/Tolerable Delays:** The influence of congestion becomes more noticeable. Drivers may have to wait through more than one red signal indication. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. The proportion of vehicles not stopping declines, and individual cycle failures are noticeable.
E	55.1-80.0	**Unstable Operation/Significant Delays:** Volumes at or near capacity. Vehicles may wait though several signal cycles. Long queues form upstream from intersection. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are a frequent occurrence.
F	>80.0	**Forced Flow/Excessive Delays:** Represents jammed conditions. Queues may block upstream intersections. This level occurs when arrival flow rates exceed intersection capacity, and is considered to be unacceptable to most drivers. Poor progression, long cycle lengths, and v/c ratios approaching 1.0 may contribute to these high delay levels.

Source: *2000 Highway Capacity Manual*, Transportation Research Board, Washington D.C.

Appendix D – Proposed Town Center Street Improvements

*Road locations are conceptual. Alignment of local roads to be determined and constructed as part of future private development



LEGEND

- Building Footprint
- Parcel
- Highway
- Proposed Pedestrian Bridge
- Existing Street
- Proposed Street Locations

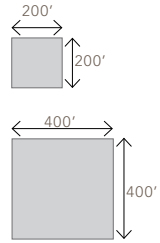
OPEN SPACE NETWORK

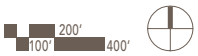
- Existing Open Space
- Proposed Open Space
- Proposed Gateway/Landing

STREET HIERARCHY*

- Local
- Main Street
- Collector
- Minor Arterial
- Major Arterial

BLOCK SIZE

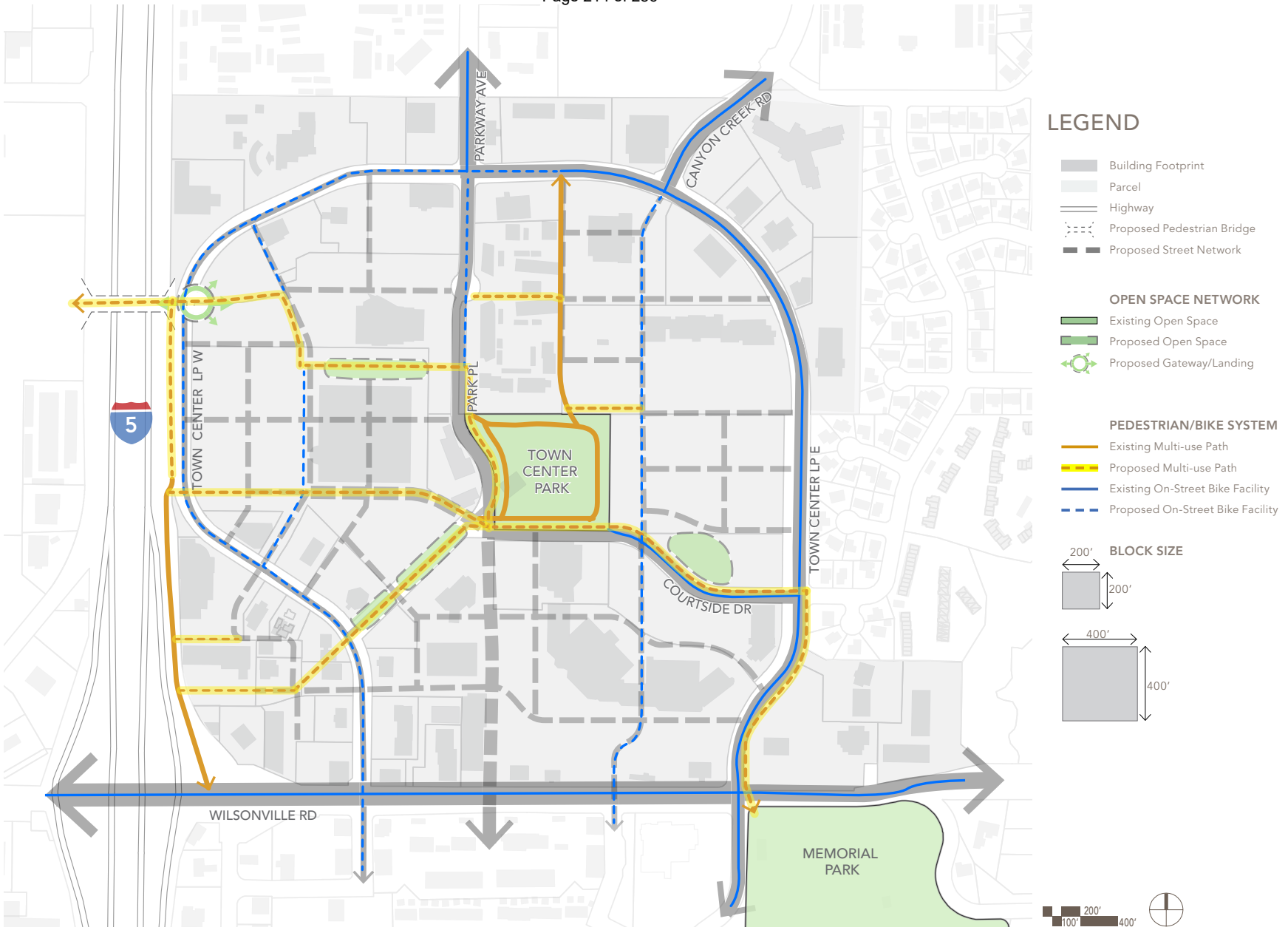




PROPOSED STREET NETWORK

City of Wilsonville Town Center Plan

Appendix E – Proposed Town Center Trail Improvements



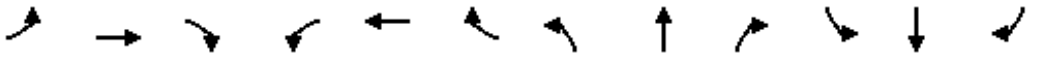
PROPOSED MULTI-MODAL NETWORK

City of Wilsonville Town Center Plan

Appendix F – HCM Analysis Results

HCM Signalized Intersection Capacity Analysis
1: Wilsonville Rd & Town Center Loop E

Horizon Year 2035 - No Build
Wilsonville Town Center

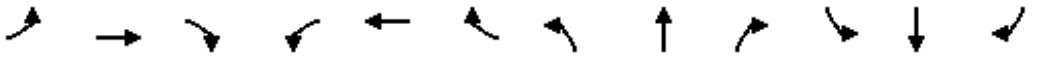


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	570	60	60	460	95	45	60	35	125	90	140
Future Volume (vph)	180	570	60	60	460	95	45	60	35	125	90	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.0		4.0	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.99		1.00	1.00	0.99
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	1.00	0.85	1.00	0.97		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	1900	1534	1800	3480		1805	1737		1805	1900	1531
Flt Permitted	0.37	1.00	1.00	0.34	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	683	1900	1534	647	3480		1805	1737		1805	1900	1531
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)	188	594	62	62	479	99	47	62	36	130	94	146
RTOR Reduction (vph)	0	0	26	0	11	0	0	25	0	0	0	125
Lane Group Flow (vph)	188	594	37	63	567	0	47	74	0	130	94	21
Confl. Peds. (#/hr)	5		13	13		5	2		5	5		2
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	3%	0%	2%	3%	0%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		Prot	NA		Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6								4
Actuated Green, G (s)	74.3	64.9	64.9	66.2	60.8		6.8	9.8		13.4	15.9	15.9
Effective Green, g (s)	74.3	64.9	64.9	66.2	60.8		6.8	9.8		13.4	15.9	15.9
Actuated g/C Ratio	0.68	0.59	0.59	0.60	0.55		0.06	0.09		0.12	0.14	0.14
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.0	4.0		4.0	4.5	4.5
Vehicle Extension (s)	2.5	3.0	3.0	2.5	3.0		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	553	1121	905	445	1923		111	154		219	274	221
v/s Ratio Prot	c0.03	c0.31		0.01	0.16		0.03	c0.04		c0.07	c0.05	
v/s Ratio Perm	0.20		0.02	0.08								0.01
v/c Ratio	0.34	0.53	0.04	0.14	0.29		0.42	0.48		0.59	0.34	0.10
Uniform Delay, d1	7.0	13.5	9.5	9.9	13.1		49.7	47.7		45.7	42.3	40.8
Progression Factor	0.90	0.82	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.3	1.7	0.1	0.1	0.4		1.9	1.7		3.6	0.5	0.1
Delay (s)	6.6	12.7	9.6	10.1	13.5		51.6	49.4		49.3	42.9	40.9
Level of Service	A	B	A	B	B		D	D		D	D	D
Approach Delay (s)		11.1			13.2			50.1			44.4	
Approach LOS		B			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
2: Rebekah & Wilsonville Rd

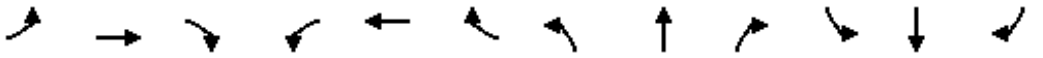
Horizon Year 2035 - No Build
Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	635	220	60	480	105	75	35	35	140	50	240
Future Volume (vph)	235	635	220	60	480	105	75	35	35	140	50	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0			4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99			1.00	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	1.00
Frt	1.00	0.96		1.00	0.97		1.00	0.93			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	1.00
Satd. Flow (prot)	1783	3380		1802	3433		1804	1744			1816	1594
Flt Permitted	0.37	1.00		0.31	1.00		0.44	1.00			0.74	1.00
Satd. Flow (perm)	704	3380		581	3433		837	1744			1387	1594
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	240	648	224	61	490	107	77	36	36	143	51	245
RTOR Reduction (vph)	0	22	0	0	12	0	0	29	0	0	0	200
Lane Group Flow (vph)	240	850	0	61	585	0	77	43	0	0	194	45
Confl. Peds. (#/hr)	7		9	9		7	1		2	2		1
Confl. Bikes (#/hr)						2			1			
Heavy Vehicles (%)	1%	2%	0%	0%	2%	0%	0%	0%	0%	1%	0%	0%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	80.8	71.7		72.1	67.0		20.7	20.7			20.2	20.2
Effective Green, g (s)	80.8	71.7		72.1	67.0		20.7	20.7			20.2	20.2
Actuated g/C Ratio	0.73	0.65		0.66	0.61		0.19	0.19			0.18	0.18
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0			4.5	4.5
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5			2.5	2.5
Lane Grp Cap (vph)	613	2203		437	2091		157	328			254	292
v/s Ratio Prot	c0.03	0.25		0.01	0.17			0.02				
v/s Ratio Perm	c0.25			0.08			0.09				c0.14	0.03
v/c Ratio	0.39	0.39		0.14	0.28		0.49	0.13			0.76	0.15
Uniform Delay, d1	5.0	8.9		6.8	10.1		39.9	37.2			42.6	37.7
Progression Factor	0.98	0.71		0.78	0.71		1.00	1.00			1.00	1.00
Incremental Delay, d2	0.2	0.4		0.1	0.3		1.8	0.1			12.2	0.2
Delay (s)	5.1	6.8		5.4	7.5		41.7	37.3			54.9	37.9
Level of Service	A	A		A	A		D	D			D	D
Approach Delay (s)		6.4			7.3			39.6			45.4	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Year 2035 - No Build
3: Parkway Ave & Town Center Loop W/Town Center Loop E — Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	95	15	65	100	95	40	195	45	180	200	390
Future Volume (vph)	260	95	15	65	100	95	40	195	45	180	200	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.99		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	0.98		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1785	3379		1750	1900	1564	1799	1778		1765	1881	1565
Flt Permitted	0.59	1.00		0.68	1.00	1.00	0.63	1.00		0.35	1.00	1.00
Satd. Flow (perm)	1114	3379		1250	1900	1564	1185	1778		646	1881	1565
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	100	16	68	105	100	42	205	47	189	211	411
RTOR Reduction (vph)	0	11	0	0	0	72	0	8	0	0	0	276
Lane Group Flow (vph)	274	105	0	68	105	28	42	244	0	189	211	135
Confl. Peds. (#/hr)	1		1	1		1	6		12	12		6
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	5%	0%	3%	0%	1%	0%	3%	5%	2%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		4
Actuated Green, G (s)	55.7	35.7		46.2	30.7	30.7	32.0	27.3		45.3	36.1	36.1
Effective Green, g (s)	55.7	35.7		46.2	30.7	30.7	32.0	27.3		45.3	36.1	36.1
Actuated g/C Ratio	0.51	0.32		0.42	0.28	0.28	0.29	0.25		0.41	0.33	0.33
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	689	1096		595	530	436	370	441		403	617	513
v/s Ratio Prot	c0.07	0.03		0.02	0.06		0.00	c0.14		c0.06	0.11	
v/s Ratio Perm	c0.13			0.03		0.02	0.03			0.14		0.09
v/c Ratio	0.40	0.10		0.11	0.20	0.06	0.11	0.55		0.47	0.34	0.26
Uniform Delay, d1	16.0	25.9		19.3	30.3	29.1	28.3	36.0		22.3	28.0	27.2
Progression Factor	0.36	0.40		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.1		0.4	0.8	0.3	0.1	5.0		3.9	1.5	1.2
Delay (s)	7.1	10.5		19.6	31.1	29.4	28.5	41.0		26.2	29.5	28.4
Level of Service	A	B		B	C	C	C	D		C	C	C
Approach Delay (s)		8.1			27.6			39.2			28.2	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	165	20	515	115	30	670
Future Vol, veh/h	165	20	515	115	30	670
Conflicting Peds, #/hr	3	7	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	50	-	-	50	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	0	1	3	0	1
Mvmt Flow	174	21	542	121	32	705

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1022	339	0	0	663	0
Stage 1	603	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Critical Hdwy	6.84	6.9	-	-	4.1	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	232	663	-	-	935	-
Stage 1	509	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	223	659	-	-	930	-
Mov Cap-2 Maneuver	223	-	-	-	-	-
Stage 1	509	-	-	-	-	-
Stage 2	609	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	56.1	0	0.4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	223	659	930	-
HCM Lane V/C Ratio	-	-	0.779	0.032	0.034	-
HCM Control Delay (s)	-	-	61.6	10.6	9	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	5.6	0.1	0.1	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	10	70	40	20	10	40	245	60	15	255	25
Future Vol, veh/h	30	10	70	40	20	10	40	245	60	15	255	25
Conflicting Peds, #/hr	9	0	10	10	0	9	6	0	7	7	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	6	3	0	25	15	1	4	0	1	0
Mvmt Flow	32	11	74	42	21	11	42	258	63	16	268	26

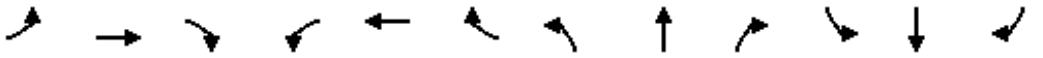
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	717	731	298	746	713	305	301	0	0	328	0	0
Stage 1	319	319	-	381	381	-	-	-	-	-	-	-
Stage 2	398	412	-	365	332	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.13	6.5	6.45	4.25	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.527	4	3.525	2.335	-	-	2.2	-	-
Pot Cap-1 Maneuver	347	351	732	328	360	684	1190	-	-	1243	-	-
Stage 1	697	657	-	639	617	-	-	-	-	-	-	-
Stage 2	632	598	-	652	648	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	310	331	722	273	339	675	1180	-	-	1234	-	-
Mov Cap-2 Maneuver	310	331	-	273	339	-	-	-	-	-	-	-
Stage 1	669	645	-	613	592	-	-	-	-	-	-	-
Stage 2	574	573	-	564	636	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.6	19.7	0.9	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1180	-	-	491	318	1234	-	-
HCM Lane V/C Ratio	0.036	-	-	0.236	0.232	0.013	-	-
HCM Control Delay (s)	8.2	-	-	14.6	19.7	8	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.9	0.9	0	-	-

HCM Signalized Intersection Capacity Analysis
6: Canyon Creek Rd & Town Center Loop E

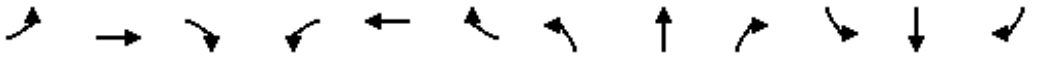
Horizon Year 2035 - No Build
Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	130	80	30	105	150	75	20	50	105	20	95
Future Volume (vph)	90	130	80	30	105	150	75	20	50	105	20	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.89		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1574	1805	1663		1805	1656		1786	1622	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.66	1.00		0.71	1.00	
Satd. Flow (perm)	1805	1863	1574	1805	1663		1247	1656		1333	1622	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	137	84	32	111	158	79	21	53	111	21	100
RTOR Reduction (vph)	0	0	37	0	45	0	0	39	0	0	75	0
Lane Group Flow (vph)	95	137	47	32	224	0	79	35	0	111	47	0
Confl. Peds. (#/hr)	4		2	2		4			5	5		
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	0%	2%	0%	0%	4%	1%	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	9.3	56.5	56.5	5.0	52.2		25.5	25.5		25.5	25.5	
Effective Green, g (s)	9.3	56.5	56.5	5.0	52.2		25.5	25.5		25.5	25.5	
Actuated g/C Ratio	0.09	0.56	0.56	0.05	0.52		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	1052	889	90	868		317	422		339	413	
v/s Ratio Prot	c0.05	0.07		0.02	c0.13			0.02			0.03	
v/s Ratio Perm			0.03				0.06			c0.08		
v/c Ratio	0.57	0.13	0.05	0.36	0.26		0.25	0.08		0.33	0.11	
Uniform Delay, d1	43.4	10.2	9.8	45.9	13.2		29.6	28.3		30.3	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.4	0.3	0.1	2.4	0.7		1.9	0.4		2.6	0.6	
Delay (s)	47.8	10.5	9.9	48.3	13.9		31.5	28.7		32.8	29.1	
Level of Service	D	B	A	D	B		C	C		C	C	
Approach Delay (s)		21.5			17.6			30.2			30.9	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — Horizon Year 2035 - No Build
7: Town Center Lp West/Town Center Loop W & Wilsonville Rd — Wilsonville Town Center



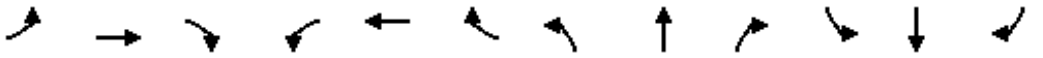
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	830	130	60	635	100	270	130	60	200	90	810
Future Volume (vph)	600	830	130	60	635	100	270	130	60	200	90	810
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.5	4.5		4.0	4.0	4.5
Lane Util. Factor	0.97	0.95		1.00	0.95		*0.95	0.91		1.00	1.00	0.88
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.98		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3502	3465		1805	3491		1665	3216		1805	1845	2709
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3502	3465		1805	3491		1665	3216		1805	1845	2709
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	632	874	137	63	668	105	284	137	63	211	95	853
RTOR Reduction (vph)	0	9	0	0	11	0	0	19	0	0	0	474
Lane Group Flow (vph)	632	1002	0	63	762	0	162	303	0	211	95	379
Confl. Peds. (#/hr)	15		3	3		15	14					14
Heavy Vehicles (%)	0%	1%	6%	0%	1%	0%	3%	3%	0%	0%	3%	1%
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												4
Actuated Green, G (s)	23.4	51.9		7.2	35.7		15.6	15.6		17.8	17.8	17.8
Effective Green, g (s)	23.4	52.4		7.2	36.2		15.6	15.6		18.3	18.3	17.8
Actuated g/C Ratio	0.21	0.48		0.07	0.33		0.14	0.14		0.17	0.17	0.16
Clearance Time (s)	4.0	4.5		4.0	4.5		4.5	4.5		4.5	4.5	4.5
Vehicle Extension (s)	2.5	4.3		2.5	4.3		2.5	2.5		2.5	2.5	2.5
Lane Grp Cap (vph)	744	1650		118	1148		236	456		300	306	438
v/s Ratio Prot	c0.18	0.29		0.03	c0.22		c0.10	0.09		0.12	0.05	
v/s Ratio Perm												c0.14
v/c Ratio	0.85	0.61		0.53	0.66		0.69	0.66		0.70	0.31	0.87
Uniform Delay, d1	41.6	21.2		49.8	31.7		44.9	44.7		43.3	40.3	44.9
Progression Factor	1.00	0.93		1.03	0.95		1.00	1.00		0.99	1.00	0.96
Incremental Delay, d2	7.6	1.4		3.5	2.9		7.4	3.3		6.7	0.4	16.0
Delay (s)	49.1	21.1		54.5	32.9		52.2	48.0		49.7	40.7	59.2
Level of Service	D	C		D	C		D	D		D	D	E
Approach Delay (s)		31.8			34.5			49.4			55.9	
Approach LOS		C			C			D			E	

Intersection Summary			
HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: I-5 NB & Wilsonville Rd

Horizon Year 2035 - No Build
Wilsonville Town Center

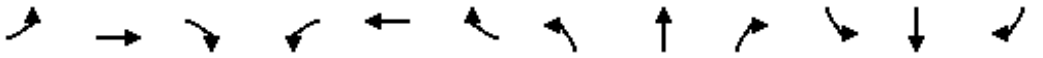


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	900	0	0	1235	480	500	0	680	0	0	0
Future Volume (vph)	540	900	0	0	1235	480	500	0	680	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3400	3574			5136	1549	1618	1618	2814			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3400	3574			5136	1549	1618	1618	2814			
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)	557	928	0	0	1273	495	515	0	701	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	243	0	0	204	0	0	0
Lane Group Flow (vph)	557	928	0	0	1273	252	257	258	497	0	0	0
Confl. Peds. (#/hr)	5		23	23		5	2					2
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	3%	1%	0%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Split	NA	custom			
Protected Phases	5	2			6		3	3	8			
Permitted Phases						6						
Actuated Green, G (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5			
Effective Green, g (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5			
Actuated g/C Ratio	0.27	0.66			0.35	0.35	0.26	0.26	0.26			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.3	4.9			4.9	4.9	2.3	2.3	2.3			
Lane Grp Cap (vph)	911	2355			1797	542	419	419	729			
v/s Ratio Prot	c0.16	0.26			c0.25		0.16	0.16	c0.18			
v/s Ratio Perm						0.16						
v/c Ratio	0.61	0.39			0.71	0.46	0.61	0.62	0.68			
Uniform Delay, d1	35.2	8.6			30.9	27.8	35.9	35.9	36.7			
Progression Factor	0.78	0.23			0.99	1.01	1.00	1.00	1.00			
Incremental Delay, d2	2.5	0.4			1.6	1.8	6.6	6.6	2.3			
Delay (s)	29.8	2.4			32.0	30.0	42.5	42.6	39.0			
Level of Service	C	A			C	C	D	D	D			
Approach Delay (s)		12.7			31.5			40.5			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
9: I-5 SB & Wilsonville Rd

Horizon Year 2035 - No Build
Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	990	960	700	1035	0	0	0	0	450	0	620
Future Volume (vph)	0	990	960	700	1035	0	0	0	0	450	0	620
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.95	0.88
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1542	3467	3505					1698	1698	2656
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1542	3467	3505					1698	1698	2656
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1000	970	707	1045	0	0	0	0	455	0	626
RTOR Reduction (vph)	0	0	388	0	0	0	0	0	0	0	0	150
Lane Group Flow (vph)	0	1000	582	707	1045	0	0	0	0	227	228	476
Confl. Peds. (#/hr)	7		8	8		7	1		3	3		1
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	0%	2%	2%	1%	3%	0%	0%	0%	0%	1%	0%	7%
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					7	7	4
Permitted Phases			2									
Actuated Green, G (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5
Effective Green, g (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5
Actuated g/C Ratio		0.34	0.34	0.25	0.63					0.29	0.29	0.29
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.9	4.9	2.3	4.9					2.3	2.3	2.3
Lane Grp Cap (vph)		1733	525	866	2214					486	486	760
v/s Ratio Prot		0.20		c0.20	0.30					0.13	0.13	c0.18
v/s Ratio Perm			c0.38									
v/c Ratio		0.58	1.11	0.82	0.47					0.47	0.47	0.63
Uniform Delay, d1		29.7	36.2	38.9	10.6					32.3	32.4	34.1
Progression Factor		0.89	0.87	1.63	0.22					1.00	1.00	1.00
Incremental Delay, d2		1.2	69.9	6.0	0.5					3.2	3.2	1.3
Delay (s)		27.6	101.6	69.2	2.8					35.5	35.6	35.4
Level of Service		C	F	E	A					D	D	D
Approach Delay (s)		64.0			29.6			0.0			35.5	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	45.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	100.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	15	100	150	15	45	140	510	140	25	780	60
Future Vol, veh/h	30	15	100	150	15	45	140	510	140	25	780	60
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	85	-	-	80	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	1	2	0	0	1	0
Mvmt Flow	32	16	108	161	16	48	151	548	151	27	839	65

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1508	1931	453	1413	1888	355	903	0	0	705	0	0
Stage 1	925	925	-	931	931	-	-	-	-	-	-	-
Stage 2	583	1006	-	482	957	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.12	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.21	-	-	2.2	-	-
Pot Cap-1 Maneuver	85	67	559	~ 100	71	647	755	-	-	902	-	-
Stage 1	294	351	-	291	348	-	-	-	-	-	-	-
Stage 2	470	321	-	540	339	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	51	52	559	~ 51	55	644	754	-	-	902	-	-
Mov Cap-2 Maneuver	51	52	-	~ 51	55	-	-	-	-	-	-	-
Stage 1	235	340	-	232	277	-	-	-	-	-	-	-
Stage 2	327	255	-	403	329	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	182.4	$ 827	1.9	0.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	754	-	-	137	51	175	902	-	-
HCM Lane V/C Ratio	0.2	-	-	1.138	3.163	0.369	0.03	-	-
HCM Control Delay (s)	11	-	-	182.4	1142.9	37.1	9.1	-	-
HCM Lane LOS	B	-	-	F	F	E	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	8.9	17.3	1.6	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

HCM Signalized Intersection Capacity Analysis
1: Wilsonville Rd & Town Center Loop E

Future 2035_Road Network
Wilsonville Town Center

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	550	570	60	60	410	140	50	60	40	195	90	240
Future Volume (vph)	550	570	60	60	410	140	50	60	40	195	90	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.5	
Lane Util. Factor	0.97	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.96		1.00	0.94		1.00	0.89	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3400	1864		1805	1805		1804	1726		1796	1628	
Flt Permitted	0.95	1.00		0.95	1.00		0.62	1.00		0.69	1.00	
Satd. Flow (perm)	3400	1864		1805	1805		1168	1726		1308	1628	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	556	576	61	61	414	141	51	61	40	197	91	242
RTOR Reduction (vph)	0	3	0	0	9	0	0	28	0	0	100	0
Lane Group Flow (vph)	556	634	0	61	546	0	51	73	0	197	233	0
Confl. Peds. (#/hr)	5		13	13		5	2		5	5		2
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	3%	0%	2%	3%	0%	0%	4%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	22.2	61.7		7.1	46.6		9.7	9.7		21.5	21.0	
Effective Green, g (s)	22.2	61.7		7.1	46.6		9.7	9.7		21.5	21.0	
Actuated g/C Ratio	0.20	0.56		0.06	0.42		0.09	0.09		0.20	0.19	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	686	1045		116	764		121	152		322	310	
v/s Ratio Prot	c0.16	0.34		0.03	c0.30		0.01	c0.04		0.08	c0.14	
v/s Ratio Perm							0.02			0.04		
v/c Ratio	0.81	0.61		0.53	0.71		0.42	0.48		0.61	0.75	
Uniform Delay, d1	41.9	16.1		49.8	26.2		47.1	47.7		39.8	42.0	
Progression Factor	0.84	1.96		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.1	1.9		3.3	5.6		1.7	1.7		2.9	9.4	
Delay (s)	40.3	33.4		53.1	31.8		48.8	49.5		42.7	51.4	
Level of Service	D	C		D	C		D	D		D	D	
Approach Delay (s)		36.6			33.9			49.2			48.1	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.4

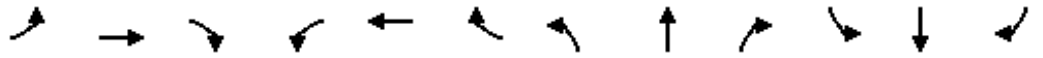
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1140	220	0	590	110	0	0	40	0	0	190
Future Vol, veh/h	0	1140	220	0	590	110	0	0	40	0	0	190
Conflicting Peds, #/hr	7	0	9	9	0	7	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	1	2	0	0	2	0	0	0	0	1	0	0
Mvmt Flow	0	1152	222	0	596	111	0	0	40	0	0	192

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	698	-	-	362
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	388	0	0	641
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	384	-	-	637
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	15.5	13.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	384	-	-	-	-	637
HCM Lane V/C Ratio	0.105	-	-	-	-	0.301
HCM Control Delay (s)	15.5	-	-	-	-	13.1
HCM Lane LOS	C	-	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	-	1.3

HCM Signalized Intersection Capacity Analysis — Future 2035_Road Network
3: Parkway Ave & Town Center Loop W/Town Center Loop E — Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	95	15	65	100	95	40	355	45	180	440	150
Future Volume (vph)	100	95	15	65	100	95	40	355	45	180	440	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1779		1750	1900	1564	1803	1801		1765	1793	
Flt Permitted	0.68	1.00		0.66	1.00	1.00	0.30	1.00		0.33	1.00	
Satd. Flow (perm)	1274	1779		1212	1900	1564	573	1801		618	1793	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	101	96	15	66	101	96	40	359	45	182	444	152
RTOR Reduction (vph)	0	5	0	0	0	74	0	4	0	0	10	0
Lane Group Flow (vph)	101	106	0	66	101	22	40	400	0	182	586	0
Confl. Peds. (#/hr)	1		1	1		1	6		12	12		6
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	5%	0%	3%	0%	1%	0%	3%	5%	2%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	33.2	25.7		33.2	25.7	25.7	50.3	46.1		63.3	54.6	
Effective Green, g (s)	33.2	25.7		33.2	25.7	25.7	50.3	46.1		63.3	54.6	
Actuated g/C Ratio	0.30	0.23		0.30	0.23	0.23	0.46	0.42		0.58	0.50	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	419	415		402	443	365	308	754		488	889	
v/s Ratio Prot	c0.02	c0.06		0.01	0.05		0.00	0.22		c0.04	c0.33	
v/s Ratio Perm	0.06			0.04		0.01	0.05			0.17		
v/c Ratio	0.24	0.25		0.16	0.23	0.06	0.13	0.53		0.37	0.66	
Uniform Delay, d1	28.4	34.3		27.9	34.1	32.8	17.6	23.9		13.0	20.7	
Progression Factor	0.84	0.82		1.00	1.00	1.00	0.65	0.41		1.00	1.00	
Incremental Delay, d2	1.4	1.5		0.9	1.2	0.3	0.1	1.4		2.2	3.8	
Delay (s)	25.3	29.6		28.7	35.3	33.1	11.5	11.2		15.1	24.6	
Level of Service	C	C		C	D	C	B	B		B	C	
Approach Delay (s)		27.5			32.9			11.2			22.4	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	10	70	40	20	10	40	245	60	15	255	25
Future Vol, veh/h	30	10	70	40	20	10	40	245	60	15	255	25
Conflicting Peds, #/hr	9	0	10	10	0	9	6	0	7	7	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	0	0	6	3	0	25	15	1	4	0	1	0
Mvmt Flow	30	10	71	40	20	10	40	247	61	15	258	25

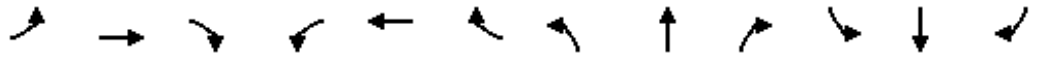
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	690	703	286	717	685	294	289	0	0	315	0	0
Stage 1	307	307	-	366	366	-	-	-	-	-	-	-
Stage 2	383	396	-	351	319	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.13	6.5	6.45	4.25	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.527	4	3.525	2.335	-	-	2.2	-	-
Pot Cap-1 Maneuver	362	364	744	343	373	694	1202	-	-	1257	-	-
Stage 1	707	665	-	651	626	-	-	-	-	-	-	-
Stage 2	644	607	-	664	657	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	325	344	734	288	352	685	1192	-	-	1248	-	-
Mov Cap-2 Maneuver	325	344	-	288	352	-	-	-	-	-	-	-
Stage 1	680	654	-	625	601	-	-	-	-	-	-	-
Stage 2	588	583	-	579	646	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	18.7	0.9	0.4
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1192	-	-	508	333	1248	-	-
HCM Lane V/C Ratio	0.034	-	-	0.219	0.212	0.012	-	-
HCM Control Delay (s)	8.1	-	-	14.1	18.7	7.9	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.8	0	-	-

HCM Signalized Intersection Capacity Analysis
6: Canyon Creek Rd & Town Center Loop E

Future 2035_Road Network
Wilsonville Town Center

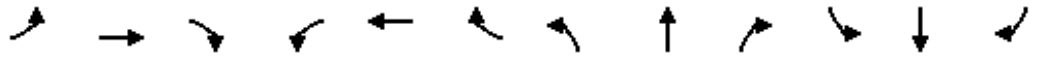


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	130	80	30	155	300	75	20	50	205	20	95
Future Volume (vph)	90	130	80	30	155	300	75	20	50	205	20	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.89		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1574	1805	1644		1805	1656		1786	1621	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.67	1.00		0.71	1.00	
Satd. Flow (perm)	1805	1863	1574	1805	1644		1264	1656		1337	1621	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	91	131	81	30	157	303	76	20	51	207	20	96
RTOR Reduction (vph)	0	0	35	0	60	0	0	38	0	0	72	0
Lane Group Flow (vph)	91	131	46	30	400	0	76	33	0	207	44	0
Confl. Peds. (#/hr)	4		2	2		4			5	5		
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	0%	2%	0%	0%	4%	1%	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	9.1	56.6	56.6	4.9	52.4		25.5	25.5		25.5	25.5	
Effective Green, g (s)	9.1	56.6	56.6	4.9	52.4		25.5	25.5		25.5	25.5	
Actuated g/C Ratio	0.09	0.57	0.57	0.05	0.52		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	164	1054	890	88	861		322	422		340	413	
v/s Ratio Prot	c0.05	0.07		0.02	c0.24			0.02			0.03	
v/s Ratio Perm			0.03				0.06			c0.15		
v/c Ratio	0.55	0.12	0.05	0.34	0.46		0.24	0.08		0.61	0.11	
Uniform Delay, d1	43.5	10.1	9.7	46.0	15.0		29.5	28.3		32.9	28.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.0	0.2	0.1	2.3	1.8		1.7	0.4		7.9	0.5	
Delay (s)	47.5	10.4	9.8	48.3	16.8		31.2	28.7		40.7	29.1	
Level of Service	D	B	A	D	B		C	C		D	C	
Approach Delay (s)		21.4			18.7			30.0			36.5	
Approach LOS		C			B			C			D	

Intersection Summary			
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — Future 2035_Road Network
7: Town Center Lp West/Town Center Loop W & Wilsonville Rd — Wilsonville Town Center



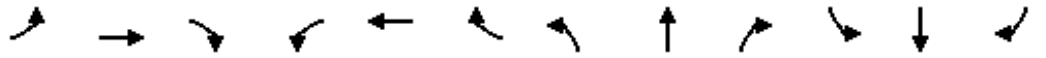
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1430	130	0	1170	50	150	130	60	100	90	400
Future Volume (vph)	0	1430	130	0	1170	50	150	130	60	100	90	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5	4.5	4.0	4.0	4.5
Lane Util. Factor		0.95			0.95		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	1.00	1.00	0.97
Flpb, ped/bikes		1.00			1.00		0.99	1.00	1.00	1.00	1.00	1.00
Frt		0.99			0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3507			3546		1726	1845	1615	1805	1845	1553
Flt Permitted		1.00			1.00		0.69	1.00	1.00	0.62	1.00	1.00
Satd. Flow (perm)		3507			3546		1246	1845	1615	1176	1845	1553
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1444	131	0	1182	51	152	131	61	101	91	404
RTOR Reduction (vph)	0	6	0	0	2	0	0	0	44	0	0	74
Lane Group Flow (vph)	0	1569	0	0	1231	0	152	131	17	101	91	330
Confl. Peds. (#/hr)	15		3	3		15	14					14
Heavy Vehicles (%)	0%	1%	6%	0%	1%	0%	3%	3%	0%	0%	3%	1%
Turn Type		NA			NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)		75.2			75.2		25.8	25.8	25.8	25.8	25.8	25.8
Effective Green, g (s)		75.7			75.7		25.8	25.8	25.8	26.3	26.3	25.8
Actuated g/C Ratio		0.69			0.69		0.23	0.23	0.23	0.24	0.24	0.23
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		4.3			4.3		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)		2413			2440		292	432	378	281	441	364
v/s Ratio Prot		c0.45			0.35			0.07			0.05	
v/s Ratio Perm							0.12		0.01	0.09		c0.21
v/c Ratio		0.65			0.50		0.52	0.30	0.04	0.36	0.21	0.91
Uniform Delay, d1		9.7			8.2		36.7	34.7	32.6	34.8	33.5	40.9
Progression Factor		1.14			1.57		1.00	1.00	1.00	1.08	1.07	1.09
Incremental Delay, d2		1.2			0.5		1.3	0.3	0.0	0.6	0.2	25.0
Delay (s)		12.2			13.3		38.0	35.0	32.6	38.0	36.0	69.8
Level of Service		B			B		D	C	C	D	D	E
Approach Delay (s)		12.2			13.3			35.9			59.2	
Approach LOS		B			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: I-5 NB & Wilsonville Rd

Future 2035_Road Network
Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	900	0	0	1240	480	500	0	680	0	0	0
Future Volume (vph)	540	900	0	0	1240	480	500	0	680	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	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			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3400	3574			5136	1549	1618	1618	2750			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3400	3574			5136	1549	1618	1618	2750			
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	545	909	0	0	1253	485	505	0	687	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	242	0	0	212	0	0	0
Lane Group Flow (vph)	545	909	0	0	1253	243	252	253	475	0	0	0
Confl. Peds. (#/hr)	5		23	23		5	2					2
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	3%	1%	0%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	5	2			6		3	8				
Permitted Phases						6			8			
Actuated Green, G (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5			
Effective Green, g (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5			
Actuated g/C Ratio	0.27	0.66			0.35	0.35	0.26	0.26	0.26			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.3	4.9			4.9	4.9	2.3	2.3	2.3			
Lane Grp Cap (vph)	911	2355			1797	542	419	419	712			
v/s Ratio Prot	c0.16	0.25			c0.24		0.16	0.16				
v/s Ratio Perm						0.16			c0.17			
v/c Ratio	0.60	0.39			0.70	0.45	0.60	0.60	0.67			
Uniform Delay, d1	35.1	8.6			30.7	27.6	35.8	35.8	36.5			
Progression Factor	0.78	0.22			1.23	2.12	1.00	1.00	1.00			
Incremental Delay, d2	2.4	0.4			1.9	2.2	6.3	1.9	2.0			
Delay (s)	29.6	2.3			39.7	60.5	42.0	37.7	38.5			
Level of Service	C	A			D	E	D	D	D			
Approach Delay (s)		12.6			45.5			39.1			0.0	
Approach LOS		B			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	32.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
9: I-5 SB & Wilsonville Rd

Future 2035_Road Network
Wilsonville Town Center

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	990	960	700	1040	0	0	0	0	450	0	620
Future Volume (vph)	0	990	960	700	1040	0	0	0	0	450	0	620
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.95	0.88
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1542	3467	3505					1698	1698	2656
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1542	3467	3505					1698	1698	2656
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	0	1000	970	707	1051	0	0	0	0	455	0	626
RTOR Reduction (vph)	0	0	388	0	0	0	0	0	0	0	0	148
Lane Group Flow (vph)	0	1000	582	707	1051	0	0	0	0	227	228	478
Confl. Peds. (#/hr)	7		8	8		7	1		3	3		1
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	0%	2%	2%	1%	3%	0%	0%	0%	0%	1%	0%	7%
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					7	7	4
Permitted Phases			2									
Actuated Green, G (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5
Effective Green, g (s)		37.5	37.5	27.5	69.5					31.5	31.5	31.5
Actuated g/C Ratio		0.34	0.34	0.25	0.63					0.29	0.29	0.29
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.9	4.9	2.3	4.9					2.3	2.3	2.3
Lane Grp Cap (vph)		1733	525	866	2214					486	486	760
v/s Ratio Prot		0.20		c0.20	0.30					0.13	0.13	c0.18
v/s Ratio Perm			c0.38									
v/c Ratio		0.58	1.11	0.82	0.47					0.47	0.47	0.63
Uniform Delay, d1		29.7	36.2	38.9	10.6					32.3	32.4	34.2
Progression Factor		0.89	0.90	1.61	0.27					1.00	1.00	1.00
Incremental Delay, d2		1.3	70.3	6.1	0.6					3.2	3.2	1.3
Delay (s)		27.8	103.0	68.8	3.4					35.5	35.6	35.5
Level of Service		C	F	E	A					D	D	D
Approach Delay (s)		64.8			29.7			0.0			35.5	
Approach LOS		E			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	45.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	104.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	15	100	150	20	50	50	80	50	30	340	60
Future Vol, veh/h	30	15	100	150	20	50	50	80	50	30	340	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	0	0	1	1	0	0	0	0	6	6	0	0
Mvmt Flow	30	15	101	152	20	51	51	81	51	30	343	61

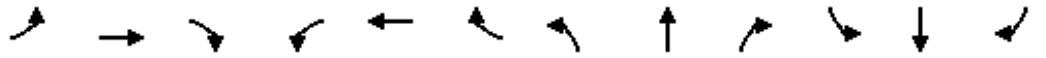
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	676	666	374	699	672	106	404	0	0	131	0	0
Stage 1	434	434	-	207	207	-	-	-	-	-	-	-
Stage 2	242	232	-	492	465	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.21	7.11	6.5	6.2	4.1	-	-	4.16	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.11	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.309	3.509	4	3.3	2.2	-	-	2.254	-	-
Pot Cap-1 Maneuver	370	383	674	356	380	954	1166	-	-	1430	-	-
Stage 1	604	585	-	797	734	-	-	-	-	-	-	-
Stage 2	766	716	-	560	566	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	319	359	674	279	356	954	1166	-	-	1430	-	-
Mov Cap-2 Maneuver	319	359	-	279	356	-	-	-	-	-	-	-
Stage 1	578	573	-	762	702	-	-	-	-	-	-	-
Stage 2	674	685	-	454	554	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	25.6	2.3	0.5
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1166	-	-	510	279	645	1430	-	-
HCM Lane V/C Ratio	0.043	-	-	0.287	0.543	0.11	0.021	-	-
HCM Control Delay (s)	8.2	-	-	14.9	32.2	11.3	7.6	-	-
HCM Lane LOS	A	-	-	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	3	0.4	0.1	-	-

HCM Signalized Intersection Capacity Analysis
11: Holly St/Park Pl & Wilsonville Rd

Future 2035_Road Network
Wilsonville Town Center



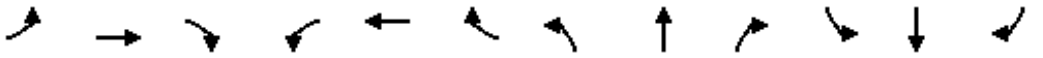
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	400	1140	50	60	670	50	190	40	50	170	50	360
Future Volume (vph)	400	1140	50	60	670	50	190	40	50	170	50	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.92		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3517		1770	3502		1770	1706		1770	1618	
Flt Permitted	0.95	1.00		0.95	1.00		0.15	1.00		0.70	1.00	
Satd. Flow (perm)	1770	3517		1770	3502		287	1706		1300	1618	
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	404	1152	51	61	677	51	192	40	51	172	51	364
RTOR Reduction (vph)	0	3	0	0	5	0	0	37	0	0	230	0
Lane Group Flow (vph)	404	1200	0	61	723	0	192	54	0	172	185	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	27.1	47.0		7.4	27.3		39.5	29.4		38.7	29.0	
Effective Green, g (s)	27.1	47.0		7.4	27.3		39.5	29.4		38.7	29.0	
Actuated g/C Ratio	0.25	0.43		0.07	0.25		0.36	0.27		0.35	0.26	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	436	1502		119	869		239	455		498	426	
v/s Ratio Prot	c0.23	c0.34		0.03	0.21		c0.07	0.03		0.03	0.11	
v/s Ratio Perm							c0.21			0.09		
v/c Ratio	0.93	0.80		0.51	0.83		0.80	0.12		0.35	0.43	
Uniform Delay, d1	40.5	27.4		49.6	39.2		27.8	30.5		25.6	33.7	
Progression Factor	0.71	1.20		1.18	0.89		1.00	1.00		1.03	0.97	
Incremental Delay, d2	21.7	2.5		3.3	6.1		17.5	0.5		0.4	2.8	
Delay (s)	50.7	35.2		61.8	41.1		45.2	31.0		26.7	35.5	
Level of Service	D	D		E	D		D	C		C	D	
Approach Delay (s)		39.1			42.7			40.7			32.9	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: Wilsonville Rd & Town Center Loop E

Full Development Build
Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	550	570	65	150	410	147	55	65	40	205	95	330
Future Volume (vph)	550	570	65	150	410	147	55	65	40	205	95	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.5	
Lane Util. Factor	0.97	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	0.94		1.00	0.88	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3400	1861		1805	1801		1804	1731		1796	1610	
Flt Permitted	0.95	1.00		0.95	1.00		0.56	1.00		0.69	1.00	
Satd. Flow (perm)	3400	1861		1805	1801		1070	1731		1297	1610	
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)	573	594	68	156	427	153	57	68	42	214	99	344
RTOR Reduction (vph)	0	4	0	0	10	0	0	26	0	0	125	0
Lane Group Flow (vph)	573	658	0	156	570	0	57	84	0	214	318	0
Confl. Peds. (#/hr)	5		13	13		5	2		5	5		2
Confl. Bikes (#/hr)			2			3						
Heavy Vehicles (%)	3%	0%	0%	0%	0%	3%	0%	2%	3%	0%	0%	4%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases							8			4		
Actuated Green, G (s)	22.1	50.2		14.4	42.5		10.3	10.3		25.7	25.2	
Effective Green, g (s)	22.1	50.2		14.4	42.5		10.3	10.3		25.7	25.2	
Actuated g/C Ratio	0.20	0.46		0.13	0.39		0.09	0.09		0.23	0.23	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.5	
Vehicle Extension (s)	2.5	3.0		2.5	3.0		2.5	2.5		2.5	2.5	
Lane Grp Cap (vph)	683	849		236	695		121	162		387	368	
v/s Ratio Prot	c0.17	c0.35		0.09	0.32		0.01	c0.05		0.09	c0.20	
v/s Ratio Perm							0.03			0.04		
v/c Ratio	0.84	0.78		0.66	0.82		0.47	0.52		0.55	0.86	
Uniform Delay, d1	42.2	25.2		45.5	30.3		46.7	47.5		36.5	40.8	
Progression Factor	0.90	1.70		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.8	5.2		6.1	10.4		2.1	2.1		1.4	18.4	
Delay (s)	44.9	48.0		51.6	40.7		48.8	49.6		37.9	59.2	
Level of Service	D	D		D	D		D	D		D	E	
Approach Delay (s)		46.5			43.0			49.3			52.2	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	47.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↱			↑↑↱				↱			↱
Traffic Vol, veh/h	0	1145	220	0	685	110	0	0	40	0	0	190
Future Vol, veh/h	0	1145	220	0	685	110	0	0	40	0	0	190
Conflicting Peds, #/hr	7	0	9	9	0	7	1	0	2	2	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	1	-	-	1	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	1	2	0	0	2	0	0	0	0	1	0	0
Mvmt Flow	0	1168	224	0	699	112	0	0	41	0	0	194

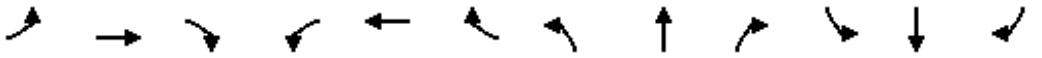
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	707	-	-	414
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.3	-	-	3.3
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	382	0	0	593
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	379	-	-	589
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	15.6	14.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	379	-	-	-	-	589
HCM Lane V/C Ratio	0.108	-	-	-	-	0.329
HCM Control Delay (s)	15.6	-	-	-	-	14.1
HCM Lane LOS	C	-	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	-	1.4

HCM Signalized Intersection Capacity Analysis
3: Parkway Ave & Town Center Loop W/Town Center Loop E

Full Development Build
Wilsonville Town Center

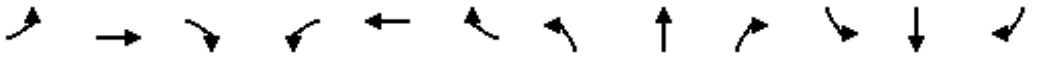


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	95	15	100	100	95	40	570	85	180	630	150
Future Volume (vph)	100	95	15	100	100	95	40	570	85	180	630	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1785	1778		1750	1900	1564	1805	1794		1770	1815	
Flt Permitted	0.66	1.00		0.63	1.00	1.00	0.14	1.00		0.13	1.00	
Satd. Flow (perm)	1240	1778		1169	1900	1564	259	1794		245	1815	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	105	100	16	105	105	100	42	600	89	189	663	158
RTOR Reduction (vph)	0	6	0	0	0	80	0	5	0	0	7	0
Lane Group Flow (vph)	105	110	0	105	105	20	42	684	0	189	814	0
Confl. Peds. (#/hr)	1		1	1		1	6		12	12		6
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	1%	5%	0%	3%	0%	1%	0%	3%	5%	2%	1%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	29.6	22.1		29.6	22.1	22.1	54.6	50.4		66.9	58.2	
Effective Green, g (s)	29.6	22.1		29.6	22.1	22.1	54.6	50.4		66.9	58.2	
Actuated g/C Ratio	0.27	0.20		0.27	0.20	0.20	0.50	0.46		0.61	0.53	
Clearance Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	370	357		354	381	314	187	821		315	960	
v/s Ratio Prot	0.02	c0.06		c0.02	0.06		0.01	0.38		c0.07	c0.45	
v/s Ratio Perm	0.06			0.06		0.01	0.10			0.30		
v/c Ratio	0.28	0.31		0.30	0.28	0.06	0.22	0.83		0.60	0.85	
Uniform Delay, d1	31.2	37.4		31.3	37.2	35.6	19.0	26.1		17.8	22.1	
Progression Factor	0.84	0.82		1.00	1.00	1.00	0.60	0.59		1.00	1.00	
Incremental Delay, d2	1.9	2.2		2.1	1.8	0.4	0.3	5.4		8.2	9.2	
Delay (s)	28.1	32.9		33.4	39.0	36.0	11.7	20.9		26.0	31.3	
Level of Service	C	C		C	D	D	B	C		C	C	
Approach Delay (s)		30.6			36.1			20.4			30.3	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
4: Holly St/Park Pl & Wilsonville Rd

Full Development Build
Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	490	1140	50	60	760	55	190	40	50	175	50	360
Future Volume (vph)	490	1140	50	60	760	55	190	40	50	175	50	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		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		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.92		1.00	0.87	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3583		1770	3564		1805	1705		1805	1623	
Flt Permitted	0.95	1.00		0.95	1.00		0.15	1.00		0.68	1.00	
Satd. Flow (perm)	1805	3583		1770	3564		279	1705		1292	1623	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	516	1200	53	63	800	58	200	42	53	184	53	379
RTOR Reduction (vph)	0	3	0	0	4	0	0	40	0	0	236	0
Lane Group Flow (vph)	516	1250	0	63	854	0	200	55	0	184	196	0
Confl. Peds. (#/hr)	7		3	3		7	4					4
Confl. Bikes (#/hr)												1
Heavy Vehicles (%)	0%	0%	0%	2%	0%	0%	0%	1%	3%	0%	1%	0%
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							2			6		
Actuated Green, G (s)	30.0	50.9		7.4	28.3		35.2	27.2		35.2	27.2	
Effective Green, g (s)	30.0	50.9		7.4	28.3		35.2	27.2		35.2	27.2	
Actuated g/C Ratio	0.27	0.46		0.07	0.26		0.32	0.25		0.32	0.25	
Clearance Time (s)	4.0	4.5		4.0	4.5		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	492	1657		119	916		200	421		450	401	
v/s Ratio Prot	c0.29	0.35		0.04	c0.24		c0.07	0.03		0.03	0.12	
v/s Ratio Perm							c0.25			0.10		
v/c Ratio	1.05	0.75		0.53	0.93		1.00	0.13		0.41	0.49	
Uniform Delay, d1	40.0	24.4		49.6	39.9		33.7	32.2		28.4	35.4	
Progression Factor	0.71	1.28		1.10	0.97		1.00	1.00		1.13	1.30	
Incremental Delay, d2	47.9	1.4		3.5	13.6		63.6	0.6		0.4	2.6	
Delay (s)	76.2	32.6		58.1	52.3		97.3	32.8		32.5	48.7	
Level of Service	E	C		E	D		F	C		C	D	
Approach Delay (s)		45.4			52.7			76.5			43.8	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.5
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	10	170	40	20	10	50	245	60	15	255	60
Future Vol, veh/h	70	10	170	40	20	10	50	245	60	15	255	60
Conflicting Peds, #/hr	9	0	10	10	0	9	6	0	7	7	0	6
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	6	3	0	25	15	1	4	0	1	0
Mvmt Flow	74	11	179	42	21	11	53	258	63	16	268	63

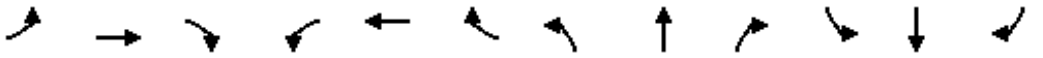
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	758	771	316	838	771	305	338	0	0	328	0	0
Stage 1	338	338	-	402	402	-	-	-	-	-	-	-
Stage 2	420	433	-	436	369	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.13	6.5	6.45	4.25	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.354	3.527	4	3.525	2.335	-	-	2.2	-	-
Pot Cap-1 Maneuver	326	333	715	285	333	684	1152	-	-	1243	-	-
Stage 1	681	644	-	623	604	-	-	-	-	-	-	-
Stage 2	615	585	-	597	624	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	287	310	705	195	310	675	1142	-	-	1234	-	-
Mov Cap-2 Maneuver	287	310	-	195	310	-	-	-	-	-	-	-
Stage 1	646	632	-	591	573	-	-	-	-	-	-	-
Stage 2	552	555	-	429	613	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	25.8	1.2	0.4
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	483	246	1234	-	-
HCM Lane V/C Ratio	0.046	-	-	0.545	0.3	0.013	-	-
HCM Control Delay (s)	8.3	-	-	21	25.8	8	-	-
HCM Lane LOS	A	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.2	1.2	0	-	-

HCM Signalized Intersection Capacity Analysis
6: Canyon Creek Rd & Town Center Loop E

Full Development Build
Wilsonville Town Center

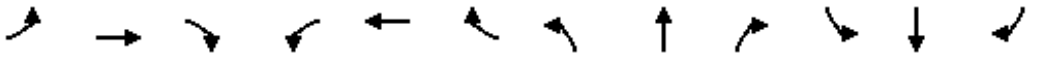


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	130	80	30	155	340	75	20	50	140	20	130
Future Volume (vph)	130	130	80	30	155	340	75	20	50	140	20	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.89		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1863	1574	1805	1635		1805	1656		1786	1608	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.59	1.00		0.71	1.00	
Satd. Flow (perm)	1805	1863	1574	1805	1635		1117	1656		1333	1608	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	137	137	84	32	163	358	79	21	53	147	21	137
RTOR Reduction (vph)	0	0	37	0	74	0	0	39	0	0	102	0
Lane Group Flow (vph)	137	137	47	32	447	0	79	35	0	147	56	0
Confl. Peds. (#/hr)	4		2	2		4			5	5		
Confl. Bikes (#/hr)						3			1			1
Heavy Vehicles (%)	0%	2%	0%	0%	4%	1%	0%	0%	0%	0%	0%	1%
Turn Type	Prot	NA	Perm	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases			2				8			4		
Actuated Green, G (s)	12.5	56.5	56.5	5.0	49.0		25.5	25.5		25.5	25.5	
Effective Green, g (s)	12.5	56.5	56.5	5.0	49.0		25.5	25.5		25.5	25.5	
Actuated g/C Ratio	0.12	0.56	0.56	0.05	0.49		0.26	0.26		0.26	0.26	
Clearance Time (s)	4.0	4.5	4.5	4.0	4.5		4.5	4.5		4.5	4.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	1052	889	90	801		284	422		339	410	
v/s Ratio Prot	c0.08	0.07		0.02	c0.27			0.02			0.03	
v/s Ratio Perm			0.03				0.07			c0.11		
v/c Ratio	0.61	0.13	0.05	0.36	0.56		0.28	0.08		0.43	0.14	
Uniform Delay, d1	41.4	10.2	9.8	45.9	17.9		29.9	28.3		31.2	28.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	0.3	0.1	2.4	2.8		2.4	0.4		4.0	0.7	
Delay (s)	46.0	10.5	9.9	48.3	20.7		32.3	28.7		35.2	29.4	
Level of Service	D	B	A	D	C		C	C		D	C	
Approach Delay (s)		23.9			22.3			30.6			32.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
7: Town Center Lp West/Town Center Loop W & Wilsonville Rd

Full Development Build
Wilsonville Town Center



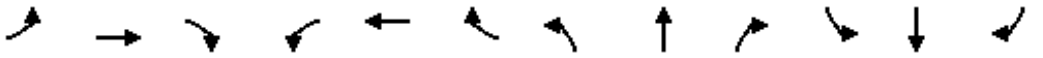
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1510	130	0	1260	50	150	130	70	100	90	400
Future Volume (vph)	0	1510	130	0	1260	50	150	130	70	100	90	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.5	4.5	4.5	4.0	4.0	4.5
Lane Util. Factor		0.95			0.95		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	1.00	1.00	0.97
Flpb, ped/bikes		1.00			1.00		0.99	1.00	1.00	1.00	1.00	1.00
Frt		0.99			0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00			1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3510			3548		1726	1845	1615	1805	1845	1553
Flt Permitted		1.00			1.00		0.68	1.00	1.00	0.61	1.00	1.00
Satd. Flow (perm)		3510			3548		1238	1845	1615	1168	1845	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1589	137	0	1326	53	158	137	74	105	95	421
RTOR Reduction (vph)	0	6	0	0	3	0	0	0	32	0	0	53
Lane Group Flow (vph)	0	1720	0	0	1376	0	158	137	42	105	95	368
Confl. Peds. (#/hr)	15		3	3		15	14					14
Heavy Vehicles (%)	0%	1%	6%	0%	1%	0%	3%	3%	0%	0%	3%	1%
Turn Type		NA			NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		2			6			8			4	
Permitted Phases							8		8	4		4
Actuated Green, G (s)		73.4			73.4		27.6	27.6	27.6	27.6	27.6	27.6
Effective Green, g (s)		73.9			73.9		27.6	27.6	27.6	28.1	28.1	27.6
Actuated g/C Ratio		0.67			0.67		0.25	0.25	0.25	0.26	0.26	0.25
Clearance Time (s)		4.5			4.5		4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)		4.3			4.3		2.5	2.5	2.5	2.5	2.5	2.5
Lane Grp Cap (vph)		2358			2383		310	462	405	298	471	389
v/s Ratio Prot		c0.49			0.39			0.07			0.05	
v/s Ratio Perm							0.13		0.03	0.09		c0.24
v/c Ratio		0.73			0.58		0.51	0.30	0.10	0.35	0.20	0.95
Uniform Delay, d1		11.6			9.7		35.4	33.3	31.7	33.5	32.1	40.5
Progression Factor		1.20			1.47		1.00	1.00	1.00	1.04	1.04	1.06
Incremental Delay, d2		1.7			0.5		1.0	0.3	0.1	0.5	0.2	31.4
Delay (s)		15.6			14.7		36.3	33.6	31.8	35.5	33.6	74.3
Level of Service		B			B		D	C	C	D	C	E
Approach Delay (s)		15.6			14.7			34.4			61.5	
Approach LOS		B			B			C			E	

Intersection Summary			
HCM 2000 Control Delay	24.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	8.5
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
8: I-5 NB & Wilsonville Rd

Full Development Build
Wilsonville Town Center

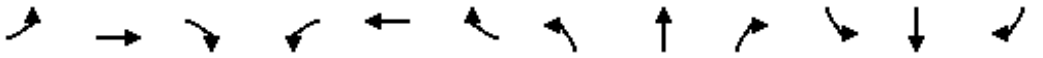


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	540	950	0	0	1290	520	500	0	710	0	0	0
Future Volume (vph)	540	950	0	0	1290	520	500	0	710	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.95	0.88			
Frpb, ped/bikes	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			
Frt	1.00	1.00			1.00	0.85	1.00	1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (prot)	3400	3574			5136	1549	1618	1618	2750			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.95	1.00			
Satd. Flow (perm)	3400	3574			5136	1549	1618	1618	2750			
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)	557	979	0	0	1330	536	515	0	732	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	252	0	0	183	0	0	0
Lane Group Flow (vph)	557	979	0	0	1330	284	257	258	549	0	0	0
Confl. Peds. (#/hr)	5		23	23		5	2					2
Confl. Bikes (#/hr)						1			2			
Heavy Vehicles (%)	3%	1%	0%	0%	1%	2%	6%	0%	1%	0%	0%	0%
Turn Type	Prot	NA			NA	Perm	Prot	NA	Perm			
Protected Phases	5	2			6		3	8				
Permitted Phases						6			8			
Actuated Green, G (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5			
Effective Green, g (s)	29.5	72.5			38.5	38.5	28.5	28.5	28.5			
Actuated g/C Ratio	0.27	0.66			0.35	0.35	0.26	0.26	0.26			
Clearance Time (s)	4.5	4.5			4.5	4.5	4.5	4.5	4.5			
Vehicle Extension (s)	2.3	4.9			4.9	4.9	2.3	2.3	2.3			
Lane Grp Cap (vph)	911	2355			1797	542	419	419	712			
v/s Ratio Prot	c0.16	0.27			c0.26		0.16	0.16				
v/s Ratio Perm						0.18			c0.20			
v/c Ratio	0.61	0.42			0.74	0.52	0.61	0.62	0.77			
Uniform Delay, d1	35.2	8.8			31.4	28.5	35.9	35.9	37.7			
Progression Factor	0.79	0.27			1.30	2.10	1.00	1.00	1.00			
Incremental Delay, d2	2.4	0.5			2.1	2.7	6.6	2.1	4.9			
Delay (s)	30.1	2.9			42.9	62.5	42.5	38.1	42.6			
Level of Service	C	A			D	E	D	D	D			
Approach Delay (s)		12.7			48.5			41.6			0.0	
Approach LOS		B			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	34.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	105.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
9: I-5 SB & Wilsonville Rd

Full Development Build
Wilsonville Town Center



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1000	960	730	1060	0	0	0	0	490	0	620
Future Volume (vph)	0	1000	960	730	1060	0	0	0	0	490	0	620
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.95	0.88
Frpb, ped/bikes		1.00	0.97	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1542	3467	3505					1698	1698	2656
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1542	3467	3505					1698	1698	2656
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)	0	1031	990	753	1093	0	0	0	0	505	0	639
RTOR Reduction (vph)	0	0	447	0	0	0	0	0	0	0	0	102
Lane Group Flow (vph)	0	1031	543	753	1093	0	0	0	0	252	253	537
Confl. Peds. (#/hr)	7		8	8		7	1		3	3		1
Confl. Bikes (#/hr)						4						
Heavy Vehicles (%)	0%	2%	2%	1%	3%	0%	0%	0%	0%	1%	0%	7%
Turn Type		NA	Perm	Prot	NA					Split	NA	custom
Protected Phases		2		1	6					7	7	4
Permitted Phases			2									
Actuated Green, G (s)		36.0	36.0	23.5	64.0					37.0	37.0	37.0
Effective Green, g (s)		36.0	36.0	23.5	64.0					37.0	37.0	37.0
Actuated g/C Ratio		0.33	0.33	0.21	0.58					0.34	0.34	0.34
Clearance Time (s)		4.5	4.5	4.5	4.5					4.5	4.5	4.5
Vehicle Extension (s)		4.9	4.9	2.3	4.9					2.3	2.3	2.3
Lane Grp Cap (vph)		1664	504	740	2039					571	571	893
v/s Ratio Prot		0.20		c0.22	0.31					0.15	0.15	c0.20
v/s Ratio Perm			c0.35									
v/c Ratio		0.62	1.08	1.02	0.54					0.44	0.44	0.60
Uniform Delay, d1		31.2	37.0	43.2	14.0					28.4	28.5	30.4
Progression Factor		0.94	1.01	1.57	0.28					1.00	1.00	1.00
Incremental Delay, d2		1.6	60.3	31.3	0.7					2.5	2.5	0.9
Delay (s)		30.9	97.6	99.0	4.7					30.9	30.9	31.3
Level of Service		C	F	F	A					C	C	C
Approach Delay (s)		63.6			43.2			0.0			31.1	
Approach LOS		E			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	48.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	105.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	8.8

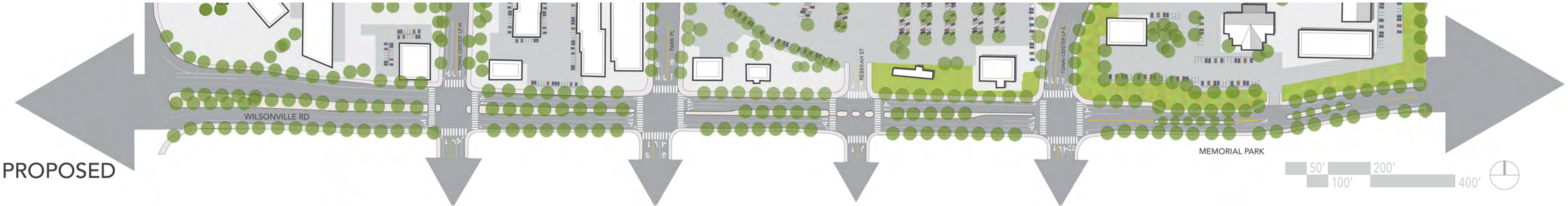
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	15	100	150	20	50	50	80	50	30	340	60
Future Vol, veh/h	30	15	100	150	20	50	50	80	50	30	340	60
Conflicting Peds, #/hr	0	0	1	1	0	0	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	50	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	0	0	0	0	0	0	1	2	0	0	1	0
Mvmt Flow	30	15	101	152	20	51	51	81	51	30	343	61

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	676	672	375	706	678	112	404	0	0	137	0	0
Stage 1	434	434	-	213	213	-	-	-	-	-	-	-
Stage 2	242	238	-	493	465	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.11	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.209	-	-	2.2	-	-
Pot Cap-1 Maneuver	370	380	676	353	377	947	1160	-	-	1459	-	-
Stage 1	604	585	-	794	730	-	-	-	-	-	-	-
Stage 2	766	712	-	562	566	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	319	354	675	275	351	942	1159	-	-	1459	-	-
Mov Cap-2 Maneuver	319	354	-	275	351	-	-	-	-	-	-	-
Stage 1	577	573	-	755	694	-	-	-	-	-	-	-
Stage 2	673	677	-	455	554	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	26.1	2.3	0.5
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1159	-	-	510	275	636	1459	-	-
HCM Lane V/C Ratio	0.044	-	-	0.287	0.551	0.111	0.021	-	-
HCM Control Delay (s)	8.2	-	-	14.9	33	11.4	7.5	-	-
HCM Lane LOS	A	-	-	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	3.1	0.4	0.1	-	-

EXISTING



PROPOSED

CITY COUNCIL MEETING
STAFF REPORT

Meeting Date: November 5, 2018	**Subject:** Update to Water and Sewer System Development Charges **Staff:** Cathy Rodocker, Finance Director; Zach Weigel, Capital Projects Engineering Manager
Action Required	**Advisory Board/Commission Recommendation**
☐ Motion ☐ Public Hearing Date: ☐ Ordinance 1st Reading Date: ☐ Ordinance 2nd Reading Date: ☐ Resolution ☒ Information or Direction ☐ Information Only ☐ Council Direction ☐ Consent Agenda	☐ Approval ☐ Denial ☐ None Forwarded ☒ Not Applicable **Comments:** N/A
Staff Recommendation: Staff to provide briefing on the Water and Sewer System Development Charge update work.	
Recommended Language for Motion: N/A	
Project / Issue Relates To:	
☒Council Goals/Priorities: Fiscal Discipline	☐Adopted Master Plan(s) ☐Not Applicable

ISSUE BEFORE URBAN RENEWAL AGENCY:

Provide City Council a briefing on updating the Sewer and Water System Development Charges (SDCs).

EXECUTIVE SUMMARY:

The Water SDC methodology and project list was last comprehensively analyzed in 2000. Currently, the rates are set at $5,995 for a 5/8" single family residence meter.

City Staff has been working with the FCS Group (FCS) to reevaluate the needs of the Water CIP program over the next 20 years. The review has included evaluating the City's various master plans and capital improvement plans, updating timelines and cost estimates, including evaluating the SDC eligibility. The results of this review will be presented by FCS.

After careful review of the Sewer CIP program, it was quite evident that a completed Wastewater Treatment Plant Master Plan was needed prior to updating the Sewer SDC. A treatment plant master plan will give the needed information for the projects that will be required to expand and/or repair the existing facility. There has not been a Wastewater Treatment Plant Master Plan completed since the major rehabilitation project was completed in 2015.

FCS is also evaluating and will provide recommendations for both the Water and Sewer rate increases. The recommendations will be brought back to Council at a later date.

EXPECTED RESULTS:
The results of the FCS work will result in the SDC recommendations to fund Water and Sewer infrastructure to serve anticipated growth.

TIMELINE:
Staff is targeting an effective date of March 1, 2019, for any changes to the Water SDC rates. A 90 day review period is required prior to the new SDCs becoming effective.

CURRENT YEAR BUDGET IMPACTS:
The work is combined in the budget with reviewing the operating rates of Sewer and Water and is budgeted at approximately $84,000 for all work products.

FINANCIAL REVIEW / COMMENT:
Reviewed by: CAR Date: 10/ 29/2018

LEGAL REVIEW / COMMENT:
Reviewed by: BAJ Date: 10/30/2018

COMMUNITY INVOLVEMENT PROCESS:
Prior to becoming effective, there will be a 90 day review period.

POTENTIAL IMPACTS or BENEFIT TO THE COMMUNITY:
N/A

ALTERNATIVES:
N/A

CITY MANAGER COMMENT:
N/A

ATTACHMENTS:
None.

CITY COUNCIL MEETING
STAFF REPORT

Meeting Date: November 5, 2018	**Subject:** Garden Acres Road – Funding Strategy **Staff Member:** Jordan Vance, Economic Development Manager; Nancy Kraushaar, Community Development; Cathy Rodocker, Finance Director **Department:** Community Development / Finance
Action Required	**Advisory Board/Commission Recommendation**
☐ Motion ☐ Public Hearing Date: ☐ Ordinance 1st Reading Date: ☐ Ordinance 2nd Reading Date: ☐ Resolution ☒ Information or Direction ☐ Information Only ☐ Council Direction ☐ Consent Agenda	☐ Approval ☐ Denial ☐ None Forwarded ☒ Not Applicable **Comments:** N/A
Staff Recommendation: Receive update on Garden Acres Road funding strategy.	
Recommended Language for Motion: N/A	
Project / Issue Relates To:	
☒Council Goals/Priorities: Economic Development – Coffee Creek Industrial Area	☐Adopted Master Plan(s) ☐Not Applicable

ISSUE BEFORE CITY COUNCIL:

Staff will update the City Council on funding options for Garden Acres Road. Materials to be presented are attached.

EXECUTIVE SUMMARY:
N/A

EXPECTED RESULTS:
N/A

TIMELINE:
N/A

CURRENT YEAR BUDGET IMPACTS:
N/A

FINANCIAL REVIEW / COMMENT:
Reviewed by: CAR Date: 10/29/2018

LEGAL REVIEW / COMMENT:
Reviewed by: BAJ Date: 10/30/2018

Legal staff recommends a bond counsel opinion to ensure compliance with bond covenants related to taking on the proposed additional debt. Legal staff assumes the new debt would need to be subordinated. Additionally, the legal department will need to review the loan documents that the City would be required to sign with the State to ensure the terms are acceptable.

COMMUNITY INVOLVEMENT PROCESS:
N/A

POTENTIAL IMPACTS or BENEFIT TO THE COMMUNITY:
N/A

ALTERNATIVES:
N/A

CITY MANAGER COMMENT:
N/A

ATTACHMENTS:
A. Coffee Creek URA and Garden Acres Road Handouts

Garden Acres Road Project Status Report

Purpose

Staff will provide an update to City Council on the Garden Acres Road project, and seek direction from Council on the proposed financing approach, which requires applying to the State of Oregon Infrastructure Finance Authority for a loan to cover $3.6 million of project costs.

Garden Acres Road Project Overview

The Garden Acres Road project is critical to upgrade infrastructure in Coffee Creek to urban standards, allowing industrial development to occur. The project is estimated to cost $8,840,000. Final design work and property acquisition is scheduled for FYE 2019, with construction scheduled for FYE 2020 and 2021. Sources of funding include SDCs, Reserve funds, contributions from partner jurisdictions, and tax increment financing. Additionally, a $3.6M loan is needed to fully fund the project

Proposed Financing Approach

On October 29, City staff met with representatives of Business Oregon to discuss potential options for obtaining a loan from the State of Oregon. Based on preliminary terms, we currently assume a 20-year term, with a 3.97% interest rate, which would result in annual payments of $264,191. Based on the latest forecast of tax increment finance (TIF) revenue for the Coffee Creek Urban Renewal Area (URA), we estimate these loan terms would be financially feasible, achieving a debt service coverage ratio of at least 1.26 in all years, without relying on any speculative future development in the area.

Process & Timeline

- October 2018. City submitted intake form to State Infrastructure Finance Authority (IFA) to begin formal application process.
- November 2018. Upon reviewing intake form, IFA staff will send the City an official invitation to apply for financing.
- December 2018. City will submit requested materials to the IFA with official loan application.
- January 2019. IFA staff will make a formal recommendation on the terms of the loan to offer to the City.
- February 2019. The IFA Board will hold a public meeting to consider the loan application and the staff recommendation and make an official decision on the terms of the loan.
- Spring 2019. If the IFA Board approves the loan to the City, the City will solicit construction bids for the project.
- Summer 2019. Construction will begin on the project, with completion estimated for FYE 2021.

Coffee Creek URA: Potential Development

October 29, 2018

Prologis

Prologis is pursuing a 40-acre parcel (5 separate tax lots) in the heart of the Coffee Creek URA, and is currently in negotiations with property owners to acquire the site for speculative light industrial development.

Square Footage: 700,000 SF (40% site coverage)

Construction Cost: $90-100 per square foot

Estimated Employment:

Manufacturing: 1 per 1,000 SF for warehouse
+ 4 per 1,000 sf office (10%)
Distribution: 0.5 per 1,000 SF for warehouse
+ 4 per 1,000 sf office (5%)

Construction Duration: 8-10 months

Other Development Interest

Developers have approached the City regarding two other sites in Coffee Creek. However, the timing and certainty of these projects is uncertain.

<u>Universal Health</u>

A 100-bed psychiatric hospital, with an estimated construction cost of $17 million. Project is delayed while developer appeals State decision on permit.

<u>SORT/Republic Services</u>

Republic Services is considering developing a $2 million anaerobic food digester designed to process 50-70,000 tons of commercial food waste per year and convert methane from decomposing food scraps into electricity. Project is delayed while negotiating agreements with Metro and/or other potential customers.

Coffee Creek URA

Garden Acres Road: Project Details

October 29, 2018

Garden Acres Road is an unimproved, rural, two-lane, local access road located in north Wilsonville, within the planned Coffee Creek Industrial Area. Significant improvements are required to upgrade the road to an urban collector roadway serving increased freight traffic. The City seeks to improve Garden Acres Road to a ¾ road section to allow planned industrial development to occur. Improvements will include a thicker pavement section, widened travel lanes, protected bike and pedestrian facilities, and roadway lighting to provide safe and reliable access to this Regionally Significant Industrial Area.

Project Cost

Total project costs are estimated to be $8,840,000. Final design work and property acquisition is scheduled for the current fiscal year, with construction scheduled for FYE 2020 and 2021.

	Nominal Dollars				
	FYE 2018	**FYE 2019**	**FYE 2020**	**FYE 2021**	**Total**
Hard Costs					
Road	$ -	$ -	$ 2,524,000	$ 2,599,000	$ 5,123,000
Sewer	$ -	$ -	$ 494,000	$ 509,000	$ 1,003,000
Offsite Storm	$ -	$ -	$ 314,000	$ 324,000	$ 638,000
Property Acquisition	$ -	$ 1,100,000	$ -	$ -	$ 1,100,000
Subtotal	*$ -*	*$ 1,100,000*	*$ 3,332,000*	*$ 3,432,000*	*$ 7,864,000*
Soft Costs					
Design	$ 237,000	$ 233,000	$ -	$ -	$ 470,000
Construction Engineering	$ -	$ -	$ 46,000	$ 48,000	$ 94,000
City Overhead	$ 59,000	$ 91,000	$ 129,000	$ 133,000	$ 412,000
Subtotal	*$ 296,000*	*$ 324,000*	*$ 175,000*	*$ 181,000*	*$ 976,000*
Total	**$ 296,000**	**$ 1,424,000**	**$ 3,507,000**	**$ 3,613,000**	**$ 8,840,000**

Funding Sources

Identified sources of City funds total $5,240,000, resulting in a funding gap of $3.6M. The City desires to obtain a loan from the State of Oregon to fill this funding gap, to be repaid with TIF revenue over time.

	Nominal Dollars				
	FYE 2018	**FYE 2019**	**FYE 2020**	**FYE 2021**	**Total**
Transportation SDCs	$ 296,000	$ -	$ -	$ -	$ 296,000
Sewer SDC	$ -	$ -	$ 508,000	$ 508,000	$ 1,016,000
Storm SDC/Fee	$ -	$ -	$ 323,500	$ 323,500	$ 647,000
Coffee Creek Reserve	$ -	$ 1,500,000	$ 208,762	$ -	$ 1,708,762
Partner Jurisdictions	$ -	$ -	$ 1,000,000	$ -	$ 1,000,000
Developer Contribution	$ -	$ -	$ -	$ -	$ -
Tax Increment Financing	$ -	$ -	$ 390,738	$ 181,500	$ 572,238
State Loan	$ -	$ -	$ 1,000,000	$ 2,600,000	$ 3,600,000
Total	**$ 296,000**	**$ 1,500,000**	**$ 3,431,000**	**$ 3,613,000**	**$ 8,840,000**

Notes on other funding sources:

SDCs for transportation, sewer, and stormwater are anticipated to fund 22% of project costs.

The Coffee Creek Reserve was funded by a one-time payment from ODOT for past construction in the area.

Partner Jurisdiction contributions are related to the share of roadway costs attributable to the Willamette Water Supply Project that will be built concurrent with Garden Acres Road. The exact amount of contribution is currently under negotiation.

Developer contributions could potentially provide an additional source of funding If any development projects occur simultaneous to the roadway construction. However, all development projects are considered speculative at this time.

Tax increment financing (TIF) is anticipated to fund $572,238, reflecting the amount of TIF revenue forecast from FYE 2018 to FYE 2021, after accounting for administrative and debt service expenditures.

Coffee Creek URA:
TIF Forecast with Development

October 29, 2018

Tax Increment Finance (TIF) revenue generated within the Coffee Creek URA is planned to be the largest source of funding for construction of Garden Acres Road, accounting for nearly half of the total funding, either directly ($770,000 in direct TIF contributions), or indirectly ($3.4M loan to be repaid with TIF in future years). TIF revenue is generated from the growth in assessed value in the Area, from new development and appreciation of existing property.

This forecast of TIF revenue (**Scenario 1**) reflects appreciation of existing property, **and exception value from the proposed Prologis development**. The Prologis development is assumed to finish construction in calendar year 2020, coming on the tax rolls in FYE 2022. Any additional development would further increase TIF revenue.

The forecast is shown through FYE 2040, the anticipated amortization period for the proposed loan. However, the Coffee Creek Urban Renewal Plan does not have a scheduled termination date and can continue to collect TIF revenue as long as necessary to pay off the maximum indebtedness.

Scenario 1. TIF Forecast with Development

					Tax Increment Finance Revenue			Cumulative
FYE	Assessed Value	Frozen Base	Excess Value	Tax Rate	Gross TIF	Adjustments	Net TIF	TIF
2018	$ 115,638,821	$ 99,003,704	$ 16,886,160	$ 12.8516	$ 217,014	$ (9,531)	$ 207,483	$ 207,483
2019	$ 123,120,206	$ 99,003,704	$ 24,116,502	$ 12.6169	$ 304,275	$ (15,213)	$ 289,062	$ 496,545
2020	$ 126,234,559	$ 99,003,704	$ 27,230,855	$ 11.5291	$ 313,948	$ (15,697)	$ 298,251	$ 794,796
2021	$ 129,436,565	$ 99,003,704	$ 30,432,861	$ 11.5127	$ 350,364	$ (17,518)	$ 332,846	$ 1,127,642
2022	$ 183,740,570	$ 99,003,704	$ 84,736,866	$ 11.6139	$ 984,124	$ (49,206)	$ 934,918	$ 2,062,560
2023	$ 188,656,027	$ 99,003,704	$ 89,652,323	$ 11.6061	$ 1,040,514	$ (52,025)	$ 988,489	$ 3,051,049
2024	$ 193,712,995	$ 99,003,704	$ 94,709,291	$ 11.5989	$ 1,098,527	$ (54,926)	$ 1,043,601	$ 4,094,650
2025	$ 198,915,659	$ 99,003,704	$ 99,911,955	$ 11.5924	$ 1,158,215	$ (57,911)	$ 1,100,304	$ 5,194,954
2026	$ 204,268,331	$ 99,003,704	$ 105,264,627	$ 11.5863	$ 1,219,626	$ (60,981)	$ 1,158,645	$ 6,353,599
2027	$ 209,775,450	$ 99,003,704	$ 110,771,746	$ 11.5807	$ 1,282,809	$ (64,141)	$ 1,218,668	$ 7,572,267
2028	$ 215,441,588	$ 99,003,704	$ 116,437,884	$ 11.5754	$ 1,347,820	$ (67,391)	$ 1,280,429	$ 8,852,696
2029	$ 221,271,454	$ 99,003,704	$ 122,267,750	$ 11.5706	$ 1,414,710	$ (70,736)	$ 1,343,974	$ 10,196,670
2030	$ 227,269,897	$ 99,003,704	$ 128,266,193	$ 11.5661	$ 1,483,537	$ (74,177)	$ 1,409,360	$ 11,606,030
2031	$ 233,441,910	$ 99,003,704	$ 134,438,206	$ 11.5619	$ 1,554,357	$ (77,718)	$ 1,476,639	$ 13,082,669
2032	$ 239,792,638	$ 99,003,704	$ 140,788,934	$ 11.5579	$ 1,627,231	$ (81,362)	$ 1,545,869	$ 14,628,538
2033	$ 246,327,378	$ 99,003,704	$ 147,323,674	$ 11.5543	$ 1,702,215	$ (85,110)	$ 1,617,105	$ 16,245,643
2034	$ 253,051,584	$ 99,003,704	$ 154,047,880	$ 11.5508	$ 1,779,378	$ (88,969)	$ 1,690,409	$ 17,936,052
2035	$ 259,970,875	$ 99,003,704	$ 160,967,171	$ 11.5476	$ 1,858,780	$ (92,939)	$ 1,765,841	$ 19,701,893
2036	$ 267,091,037	$ 99,003,704	$ 168,087,333	$ 11.5445	$ 1,940,489	$ (97,024)	$ 1,843,465	$ 21,545,358
2037	$ 274,418,029	$ 99,003,704	$ 175,414,325	$ 11.5417	$ 2,024,575	$ (101,229)	$ 1,923,346	$ 23,468,704
2038	$ 281,957,988	$ 99,003,704	$ 182,954,284	$ 11.5390	$ 2,111,105	$ (105,556)	$ 2,005,549	$ 25,474,253
2039	$ 289,717,235	$ 99,003,704	$ 190,713,531	$ 11.5364	$ 2,200,155	$ (110,008)	$ 2,090,147	$ 27,564,400
2040	$ 297,702,279	$ 99,003,704	$ 198,698,575	$ 11.5340	$ 2,291,798	$ (114,590)	$ 2,177,208	$ 29,741,608

Coffee Creek URA:
TIF Forecast without Development

October 29, 2018

Tax Increment Finance (TIF) revenue generated within the Coffee Creek URA is planned to be the largest source of funding for construction of Garden Acres Road, accounting for nearly half of the total funding, either directly ($770,000 in direct TIF contributions), or indirectly ($3.4M loan to be repaid with TIF in future years). TIF revenue is generated from the growth in assessed value in the Area, from new development and appreciation of existing property.

This forecast of TIF revenue (**Scenario 2**) reflects growth in assessed value only from appreciation of existing property, **and does not include any assessed value from speculative future development**. Any additional development would further increase TIF revenue.

The forecast is shown through FYE 2040, the anticipated amortization period for the proposed loan. However, the Coffee Creek Urban Renewal Plan does not have a scheduled termination date and can continue to collect TIF revenue as long as necessary to pay off the maximum indebtedness.

Scenario 2. TIF Forecast without Development

					Tax Increment Finance Revenue			Cumulative
FYE	Assessed Value	Frozen Base	Excess Value	Tax Rate	Gross TIF	Adjustments	Net TIF	TIF
2018	$ 115,638,821	$ 99,003,704	$ 16,886,160	$ 12.8516	$ 217,014	$ (9,531)	$ 207,483	$ 207,483
2019	$ 123,120,206	$ 99,003,704	$ 24,116,502	$ 12.6169	$ 304,275	$ (15,213)	$ 289,062	$ 496,545
2020	$ 126,234,559	$ 99,003,704	$ 27,230,855	$ 11.5291	$ 313,948	$ (15,697)	$ 298,251	$ 794,796
2021	$ 129,436,565	$ 99,003,704	$ 30,432,861	$ 11.5127	$ 350,364	$ (17,518)	$ 332,846	$ 1,127,642
2022	$ 132,728,795	$ 99,003,704	$ 33,725,091	$ 11.4990	$ 387,806	$ (19,391)	$ 368,415	$ 1,496,057
2023	$ 136,113,899	$ 99,003,704	$ 37,110,195	$ 11.4876	$ 426,307	$ (21,315)	$ 404,992	$ 1,901,049
2024	$ 139,594,603	$ 99,003,704	$ 40,590,899	$ 11.4778	$ 465,894	$ (23,295)	$ 442,599	$ 2,343,648
2025	$ 143,173,716	$ 99,003,704	$ 44,170,012	$ 11.4694	$ 506,603	$ (25,330)	$ 481,273	$ 2,824,921
2026	$ 146,854,129	$ 99,003,704	$ 47,850,425	$ 11.4621	$ 548,465	$ (27,423)	$ 521,042	$ 3,345,963
2027	$ 150,638,822	$ 99,003,704	$ 51,635,118	$ 11.4557	$ 591,514	$ (29,576)	$ 561,938	$ 3,907,901
2028	$ 154,530,862	$ 99,003,704	$ 55,527,158	$ 11.4500	$ 635,786	$ (31,789)	$ 603,997	$ 4,511,898
2029	$ 158,533,405	$ 99,003,704	$ 59,529,701	$ 11.4450	$ 681,315	$ (34,066)	$ 647,249	$ 5,159,147
2030	$ 162,649,707	$ 99,003,704	$ 63,646,003	$ 11.4405	$ 728,140	$ (36,407)	$ 691,733	$ 5,850,880
2031	$ 166,883,115	$ 99,003,704	$ 67,879,411	$ 11.4364	$ 776,298	$ (38,815)	$ 737,483	$ 6,588,363
2032	$ 171,237,079	$ 99,003,704	$ 72,233,375	$ 11.4328	$ 825,830	$ (41,292)	$ 784,538	$ 7,372,901
2033	$ 175,715,152	$ 99,003,704	$ 76,711,448	$ 11.4295	$ 876,773	$ (43,838)	$ 832,935	$ 8,205,836
2034	$ 180,320,991	$ 99,003,704	$ 81,317,287	$ 11.4265	$ 929,171	$ (46,459)	$ 882,712	$ 9,088,548
2035	$ 185,058,364	$ 99,003,704	$ 86,054,660	$ 11.4238	$ 983,068	$ (49,154)	$ 933,914	$ 10,022,462
2036	$ 189,931,151	$ 99,003,704	$ 90,927,447	$ 11.4213	$ 1,038,506	$ (51,925)	$ 986,581	$ 11,009,043
2037	$ 194,943,346	$ 99,003,704	$ 95,939,642	$ 11.4190	$ 1,095,531	$ (54,777)	$ 1,040,754	$ 12,049,797
2038	$ 200,099,065	$ 99,003,704	$ 101,095,361	$ 11.4169	$ 1,154,191	$ (57,710)	$ 1,096,481	$ 13,146,278
2039	$ 205,402,544	$ 99,003,704	$ 106,398,840	$ 11.4149	$ 1,214,533	$ (60,727)	$ 1,153,806	$ 14,300,084
2040	$ 210,858,148	$ 99,003,704	$ 111,854,444	$ 11.4131	$ 1,276,607	$ (63,830)	$ 1,212,777	$ 15,512,861

Garden Acres Road: Summary of Financial Feasibility

October 29, 2018

The Garden Acres Road project is critical to upgrade infrastructure in Coffee Creek to urban standards, allowing industrial development to occur. Based on the availability of other funding sources, the largest share of these costs ($3,600,000 or 41% of the total) are anticipated to be funded by a loan secured by urban renewal tax increment finance (TIF) revenue.

Costs

The project is estimated to cost $8,840,000. Final design work and property acquisition is scheduled for FYE 2019, with construction scheduled for FYE 2020 and 2021.

		YOE $	Percent
Hard Costs			
Road	$	5,123,000	58%
Sewer	$	1,003,000	11%
Offsite Storm	$	638,000	7%
Property Acquisition	$	1,100,000	12%
Subtotal	*$*	*7,864,000*	*89%*
Soft Costs			0%
Design	$	470,000	5%
Construction Engineering	$	94,000	1%
City Overhead	$	412,000	5%
Subtotal	*$*	*976,000*	*11%*
Total	**$**	**8,840,000**	**100%**

Funding Sources

Sources of funding include SDCs, Reserve funds, contributions from partner jurisdictions, and tax increment financing. Additionally, a $3.6M loan is needed to fully fund the project.

		YOE $	Percent
Transportation SDCs	$	296,000	3%
Sewer SDC	$	1,016,000	11%
Storm SDC/Fee	$	647,000	7%
Coffee Creek Reserve	$	1,708,762	19%
Partner Jurisdictions	$	1,000,000	11%
Developer Contribution	$	-	0%
Tax Increment Financing	$	572,238	6%
State Loan	$	3,600,000	41%
Total	**$**	**8,840,000**	**100%**

Financing Terms

The City is in talks with the State Infrastructure Finance Authority (IFA) regarding a construction loan for the project. Though loan terms have yet to be finalized, the City currently assumes a 20-year term, with a 3.97% interest rate, which would result in annual payments of $264,191.

Principal	$3,600,000
Interest	3.97%
Term	20
Annual Payment	$264,191

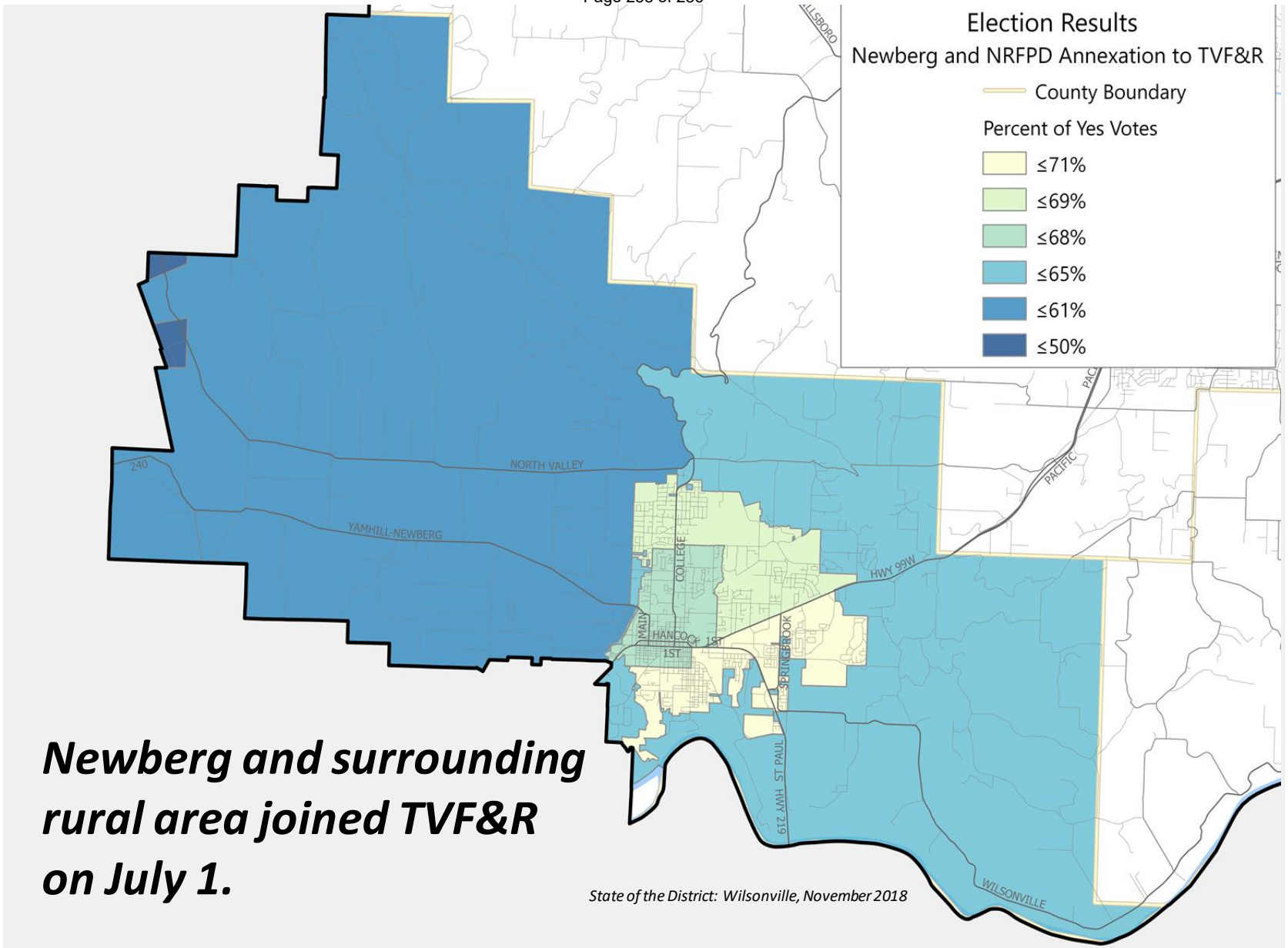
Financial Feasibility Analysis

The City's intent is to use TIF revenue to cover any debt service payments for the project. TIF revenue is forecast to be $332,000 in FYE 2021, sufficient to provide a 1.26 coverage ratio. This coverage ratio would increase over time as TIF revenue grows. If the proposed Prologis development occurs, the increase in assessed value would be sufficient to increase the coverage ratio to 3.54 by FYE 2022.

	With Development	Without Development
Debt Coverage Ratio		
Year 1 (FYE 2021)	1.26	1.26
Year 2 (FYE 2022)	3.54	1.39
Year 3 (FYE 2023)	3.74	1.53
Year 4 (FYE 2024)	3.95	1.68
Year 5 (FYE 2025)	4.16	1.82

STATE OF THE DISTRICT 2018

Chief Deric Weiss



Newberg and surrounding rural area joined TVF&R on July 1.

Year to Date Incident Snapshot through 2Q | 1/1/18 - 6/30/18

City of Wilsonville

Tualatin Valley Fire & Rescue

Total Incidents **1,295**

EMS	FIRE	HAZARD	SERVICE	GOOD INTENT	FALSE ALARM	NATURAL CONDITION	OTHER
Dispatched As							
1,078 83.2%	**105** 8.1%	**12** 0.9%	**18** 1.4%	**1** 0.1%	**0**	**0**	**81** 6.3%
Situation Found							
964 74.4%	**20** 1.5%	**21** 1.6%	**106** 8.2%	**94** 7.3%	**89** 6.9%	**0**	**1** 0.1%

Incident Sub-Categories

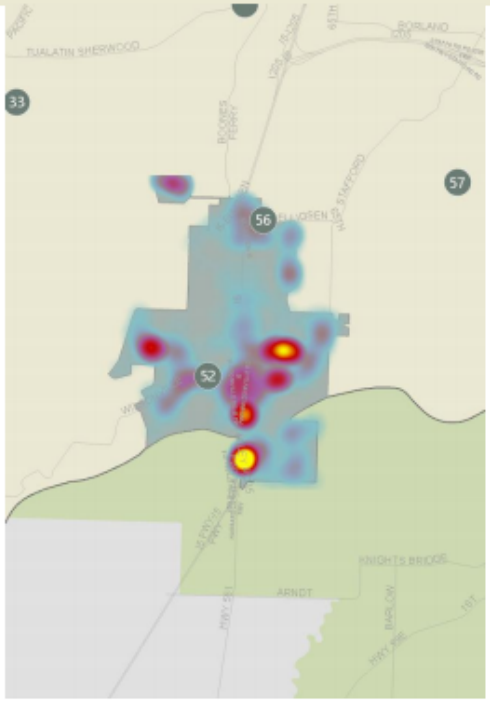
Structure Fires	Cooking Fires	Vehicle Fires	Vegetation Fires	Other Fires	Critical Patients*	MVC with Injury	MVC Unknown Injury
1	1	6	5	7	312	10	20

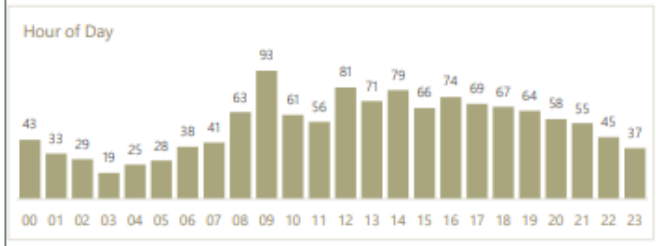
Structure Fire Types

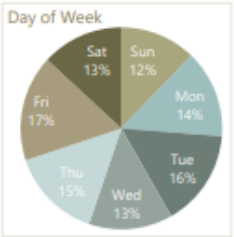
Residential	Commercial
0	1

*Critical Patients: cardiac arrest, chest pain, stroke, seizure, breathing problem, drowning, respiratory distress, respiratory arrest, or trauma system entry.

"MVC"=motor vehicle crash.







Top Station Responses

Station 52	78%
Station 56	16%
Station 34	2%
Station 57	2%

Depending on incident severity, units from multiple stations may respond to a single incident.

Data Filters: no test, information, interfacility transports, or mobile health care incidents.

Incident data gathered geospatially based on city boundary.

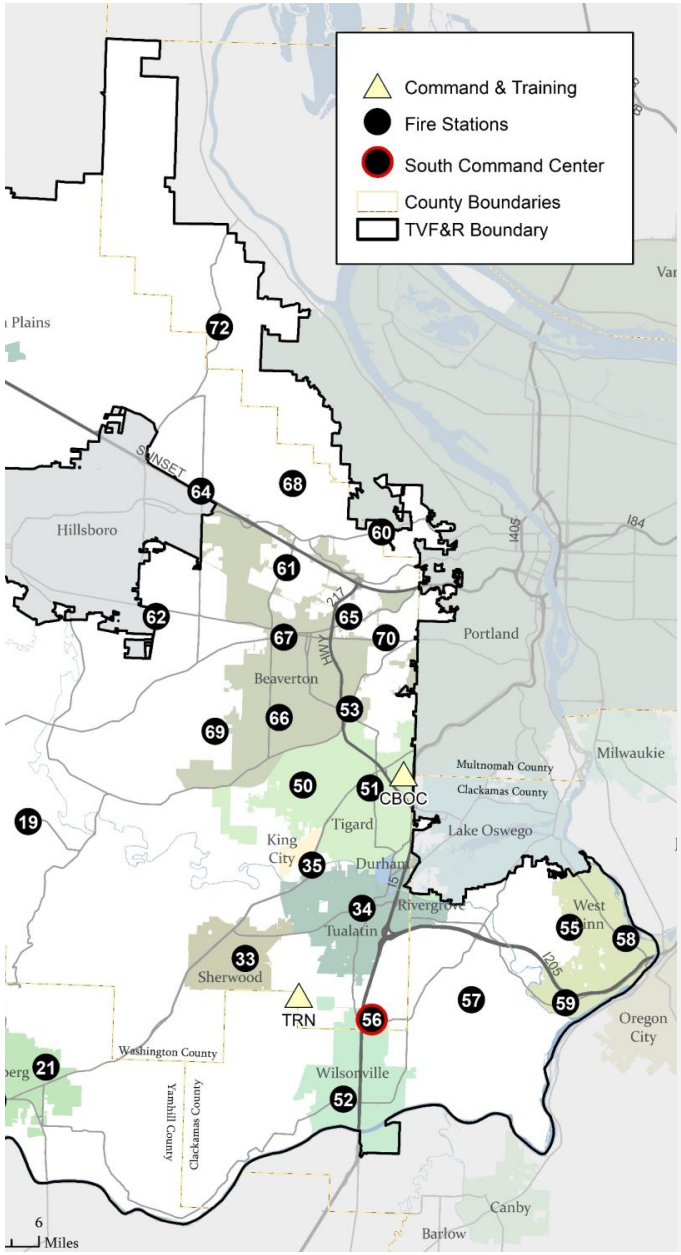
Icons made by Freepik from www.flaticon.com

Rosemont Station 55

Complete!

New stations strengthen entire system.

State of the District: Wilsonville, November 2018



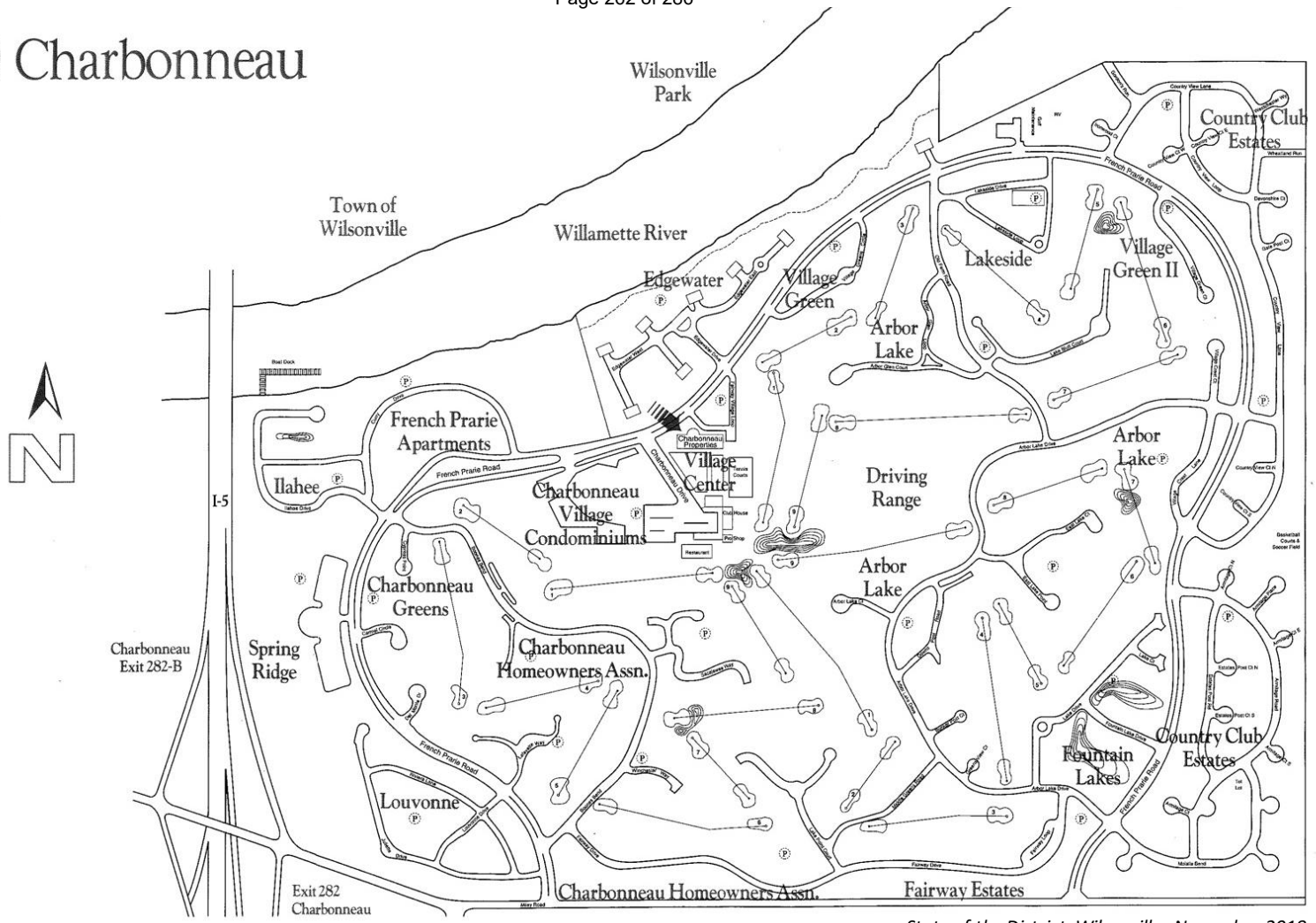
Data! Data! Data!

What do we consider when we're siting fire stations?

- population density
- incident types
- traffic & transportation system
- topography

State of the District: Wilsonville, November 2018

Charbonneau



State of the District: Wilsonville, November 2018

Station 54: *Search for site continues.*


LT. A PRATT
TVFR
SCOTT
MSA
LIEUTENANT
E 67
TVF R
ROBINSON


AMEDIC UNIT
OREGON
EMERGENCY MEDICAL TECHNICIAN
INTERMEDIATE
J. JOHNSON
M67
M67
M67


GLIDESCOPE Go

ISO Rerate May Save $
on Insurance Premiums for District Residents

Top 3% of all US fire departments!

On a 10-point scale with Class 1 being the best, TVF&R is now considered a Class 2 in all areas within five miles of a fire station.

This could mean savings for people near Wilsonville, Newberg, Sherwood, and rural areas of the District. (Properties within Wilsonville city limits were already a Class 2.)

ISO considered TVF&R's staffing, equipment, training, fire station distribution, incident reporting, data collection and community-risk-reduction efforts.

State of the District: Wilsonville, November 2018


levy
renewal
ahead

For updates & notifications

www.tvfr.com

Kitakata City
7244-2 Oshimizuhigashi,
Kitakata City, Fukushima prefecture,
966-8601, Japan

Mayor of the city of Wilsonville
29799 SW Town Center Loop E
Wilsonville, OR 97070

Dear Mr. Tim Knapp,

I would like to extend my best wishes to you.

On behalf of our delegation, I would like to thank you for your kind and warm hospitality you shared with us during our visit to celebrate the 30th anniversary of the sister-city relationship between Wilsonville and Kitakata.
Thanks to that, we have had a very meaningful and valuable experience.

With this visit as a new opportunity, we will activate the exchange program in the educational, cultural and economic fields of both cities, and we will also promote further friendship through host town project for the 2020 Tokyo Olympic and Paralympic Games.

I sincerely celebrate the 50th anniversary of Wilsonville city establishment and I wish you continued success and prosperity. Thank you so much.

Sincerely yours,

Mayor of Kitakata City

CITY COUNCIL ROLLING SCHEDULE

Board and Commission Meetings 2018

Items known as of 10/31/18

November

DATE	DAY	TIME	EVENT	LOCATION
11/12	Monday	6:30 p.m.	DRB Panel A - **Cancelled**	Council Chambers
11/14	Wednesday	1:00 p.m.	Wilsonville Community Seniors, Inc. Advisory Board	Community Center
11/14	Wednesday	6:00 p.m.	Planning Commission	Council Chambers
11/19	Monday	7:00 p.m.	City Council Meeting	Council Chambers
11/26	Monday	6:30 p.m.	DRB Panel B	Council Chambers

December

DATE	DAY	TIME	EVENT	LOCATION
12/3	Monday	7:00 p.m.	City Council Meeting	Council Chambers
12/5	Wednesday	6:30 p.m.	Library Board	Library
12/10	Monday	6:30 p.m.	DRB Panel A	Council Chambers
12/12	Wednesday	1:00 p.m.	Wilsonville Community Seniors, Inc. Advisory Board	Community Center
12/12	Wednesday	6:00 p.m.	Planning Commission	Council Chambers
12/17	Monday	7:00 p.m.	City Council Meeting	Council Chambers
12/24	Monday	6:30 p.m.	DRB Panel B - **Cancelled**	Council Chambers

Community Events:

11/5 Toy Drive Begins - Please bring a new unwrapped toy to the Parks and Recreation Admin Building.

11/12 City offices closed in observance of Veterans Day

11/22-11/23 City offices closed in observance of the Thanksgiving holiday

11/27 History Pub, 6:30 – 8:00 p.m. at McMenamins' Old Church.

12/5 French Prairie Task Force Meeting; 6:00 – 9:00 p.m. at City Hall

12/14 Toy Drive Ends - Please bring a new unwrapped toy to the Parks and Recreation Admin Building.

12/17 Holiday Light Drives to PIR SMART Bus leaves the Community Center at 6:30 p.m.

12/18 Holiday Light Drives to PIR SMART Bus leaves the Community Center at 6:30 p.m.

12/25 City offices closed in observance of Christmas Day

1/1 City offices closed in observance of New Years Day

1/21 City offices closed in observance of Martin Luther King Jr. Day

All dates and times are tentative; check the City's online calendar for schedule changes at www.ci.wilsonville.or.us.

CITY OF WILSONVILLE
CITY COUNCIL MEETING MINUTES

A regular meeting of the Wilsonville City Council was held at the Wilsonville City Hall beginning at 7:00 p.m. on Monday, September 17, 2018. Mayor Knapp called the meeting to order at 7:04 p.m., followed by roll call and the Pledge of Allegiance.

The following City Council members were present:

Mayor Knapp
Council President Starr - Excused
Councilor Stevens
Councilor Lehan
Councilor Akervall - Excused

Staff present included:

Bryan Cosgrove, City Manager
Jeanna Troha, Assistant City Manager
Barbara Jacobson, City Attorney
Kimberly Veliz, City Recorder
Nancy Kraushaar, Community Development Director
Amanda Guile-Hinman, Assistant City Attorney
Bill Evans, Communications & Marketing Manager
Eric Loomis, Transit Operations Manager
Dwight Brashear, SMART Director

Motion to approve the order of the agenda.

Motion: Councilor Lehan moved to approve the order of the agenda. Councilor Stevens seconded the motion.

Vote: Motion carried 3-0.

SUMMARY OF VOTES

Mayor Knapp	Yes
Council President Starr	Excused
Councilor Stevens	Yes
Councilor Lehan	Yes
Councilor Akervall	Excused

CITIZEN INPUT & COMMUNITY ANNOUNCEMENTS

This is an opportunity for visitors to address the City Council on items not on the agenda. It is also the time to address items that are on the agenda but not scheduled for a formal public hearing. Staff and the City Council will make every effort to respond to questions raised during citizens input before tonight's meeting ends or as quickly as possible thereafter. Please limit your comments to three minutes.

Barbara Anne Lucas of Wilsonville said she was concerned about construction vehicles and large double trailer trucks hauling gravel, asphalt, dirt, and sand hauling on Canyon Creek Road, noting this had been an issue for three or four years. These loads were being transported without

being covered, causing the contents to disperse in the air and creating a health hazard. Other potential routes exist in industrial areas along I-5 for the trucks to bypass Canyon Creek Road. She clarified the trucks were fully loaded coming south into town from Elligsen Road and that the truck traffic. The truck traffic started at 7:00 a.m. and continued until 4:00 p.m., Monday through Saturday. She had counted one vehicle approximately every five minutes and sometimes two trucks traveled together. She asked City Council to take action and stop truck traffic on Canyon Creek Road. Companies should be contacted about instructing their truck drivers.

Mayor Knapp said the City will do some research, including on where the trucks were traveling to and from, to determine any available alternatives, and the authorities would be notified about enforcement.

Staff reminded that Canyon Creek was part of the new truck route. A speed survey would be conducted in the area and the results shared with Ms. Lucas.

MAYOR'S BUSINESS

A. Upcoming meetings were announced by the Mayor as well as the regional meetings he attended on behalf of the City.

The Mayor confirmed PGE had sent the email about Building Code changes regarding electric vehicles. Staff explained that State legislation has mandated that all new residential construction have some provision for charging vehicles, effective by October 2022, though voluntary efforts possibly occurring before that.

Councilor Lehan believed the 2022 mandate was odd, especially with all the new spec homes being built because retrofitting the charging provisions was much more expensive than installing them during construction. New home purchasers do not have the opportunity to request that charging facilities be built into the home. Some sort of incentive or encouragement for installing the charging stations in new homes should be considered. The installation cost was minimal and would not impact affordability.

Mayor Knapp suggested the City consider adopting some shorter term programs, such as the State mandated programs for Eugene and Portland, which would take effect earlier and require that provision in new construction. Other alternatives included providing empty conduit in the ground for a separate service. He agreed electric vehicles were a growing trend and suggested the topic be a Council goal for the coming year.

Mr. Cosgrove said he would talk to Dan Carlson in the Building Division to see what ideas he might have and begin gathering information and researching what other cities were doing to encourage and incentivize builders to install the infrastructure.

COUNCILOR COMMENTS

A. Council President Starr - Excused

B. Councilor Stevens

Councilor Stevens reported on the following Library activities:

- The Library Board would meet at the end of the month. The Summer Reading Program statistics would be provided and the fall and winter programs have already been launched. The library had a variety of upcoming activities and was very busy, and she encouraged everyone to visit.
- First Friday Films are the first Friday of every month, and she attended the first showing, which was held this month and well attended with people ranging in age from teens to seniors.

C. Councilor Lehan

Councilor Lehan shared:

- Coeur d'Alene, Idaho had painted its electrical boxes with a variety of designs that were very pleasing to the eye. She shared photographs she took of the boxes with various designs and suggested the high school or Art Tech could undertake the project; perhaps a Community Enhancement Grant could be used for funding.

Mayor Knapp noted an art survey was currently underway that could factor into a program for the electrical boxes.

D. Councilor Akervall - Excused

CONSENT AGENDA

Ms. Jacobson read the titles of the Consent Agenda items into the record.

A. Minutes of the September 6, 2018 Council Meeting.

Motion: Councilor Lehan moved to approve the Consent Agenda. Councilor Stevens seconded the motion.

Vote: Motion carried 3-0.

SUMMARY OF VOTES

Mayor Knapp	Yes
Council President Starr	Excused
Councilor Stevens	Yes
Councilor Lehan	Yes
Councilor Akervall	Excused

PUBLIC HEARING

Ms. Jacobson read the title of Ordinance No. 827 into the record on first reading.

A. **Ordinance No. 827** – 1st Reading
An Ordinance Of The City Of Wilsonville Amending Wilsonville Code Chapter 10 By Adding 10.600 Through 10.680 And Deleting 10.305.

Mayor Knapp provided the public hearing format and opened the public hearing at 7:32 p.m.

Eric Loomis, SMART Transit Operations Manager, presented the Transit Rider Rules via PowerPoint, noting the changes made since the work session held earlier in September. He noted that while the regulations, policies, and procedures are currently practiced internally, they were not currently available to the public. The proposed document will provide the information to the public to help ensure their safety. He reviewed some of proposed changes and clarifications added to several of the proposed rules as follows (Slide 3):

- Groceries: Only luggage, grocery bags, and other containers used for transporting groceries would be allowed on the buses. The main concern was passenger safety, so these items are allowed only if they do not block the aisle, stairs, or ramps.
- Clothing/Shoes: Infants being held are not required to have shoes or other types of clothing. Customers with open sores or anything that would be a potential contaminate are required to cover the area with clothing.
- Bus Shelters: Individuals could use the shelters in inclement weather or for other reasons, however, shelter usage for transit riders remained a priority.
- Exclusion Rule: ADA customers were included to ensure they are not excluded permanently; whereas, other customers could in fact be excluded for certain periods of time or permanently.
- The list of rules in 10.660 regarding smoking near bus stops was removed to simplify the document; it was currently a regulation.
    - Amanda Guile-Hinman, Assistant City Attorney, noted the language had included the list of ORS's and was changed to "…applicable local, state, and federal rules."
- Canvassing rules were retained as SMART wanted to keep areas of public speech open to people; however, written consent would be needed from the director to use space on the bus.
- Excessive noise rules were retained, though complicated by cell phone usage. Provisions allowed SMART operators or supervisors to use their discretion to make individual determinations.
- The Aimless Riding rule was also retained. In situations where customers forget something at their origination point, fall asleep, etc., SMART drivers get them to their final destination. The rule was to ensure people had a destination when using SMART's services.
- The Transit Rider Rules/policies will be marketed to SMART customers, and its drivers would receive training on any changes that may occur.
    - The Transit Rules information would be put into simple forms and distributed to the community via SMART's website and in the How to Ride Guides available on the buses.

The Councilors agreed with the changes made and especially the language used, noting Staff had listened to Council's concerns and addressed the intent of the rules reasonably and appropriately.

Staff explained the intent of exempting fully-enclosed vehicles in the smoke-free zone was to prevent those on bicycles, skateboards, or other vehicles from being able to smoke near a bus stop. However, the trolleys SMART may operate were open without windows in some sections.

Mayor Knapp noted that lot of vehicles do not meet the definition of fully enclosed and suggested simply deleting "fully enclosed". He noted the Transit Rules were developed because the City discovered no transit rules existed to set expectations for riders to help avoid potential for conflicts and difficult situations.

The Mayor confirmed there was no public comment and closed the public hearing at 7:45 p.m.

Motion: Councilor Lehan moved to adopt Ordinance No. 827 on first reading with direction on the one change discussed. Councilor Stevens seconded the motion.

Vote: Motion carried 3-0.

SUMMARY OF VOTES

Mayor Knapp	Yes
Council President Starr	Excused
Councilor Stevens	Yes
Councilor Lehan	Yes
Councilor Akervall	Excused

CONTINUING BUSINESS

A. **Ordinance No. 818** – 2nd Reading
An Ordinance Of The City Of Wilsonville Repealing And Replacing Chapter 8 – Environment Of The Wilsonville City Code And To Repeal Ordinance No. 482.

Ms. Jacobson read the title of Ordinance No. 818 into the record for second reading.

Mayor Knapp noted Council had already had extensive discussion on this matter and confirmed there were no further questions from Council. He noted the attachment Council discussed last time was not contained within the packet this time.

Mr. Cosgrove clarified that it would be widely distributed as an educational and guidance tool, and not as a Code component. The city attorney concurred with this action.

Motion: Councilor Stevens moved to adopt Ordinance No. 818 on second reading. Councilor Lehan seconded the motion.

Vote: Motion carried 3-0.

SUMMARY OF VOTES

Mayor Knapp	Yes
Council President Starr	Excused

Councilor Stevens	Yes
Councilor Lehan	Yes
Councilor Akervall	Excused

CITY MANAGER'S BUSINESS

Mr. Cosgrove announced tomorrow Staff would meet internally to discuss how to address the blocking at the Wilsonville Rd/Boones Ferry Rd intersection He also noted the City was hosting the League of Oregon Cities (LOC) Conference on September 27 and 28, which he and the Mayor would be attending.

Councilor Lehan questioned why the Annual LOC Conference was being held before Election Day. It used to always be held afterward and classes were offered for those newly elected. She liked the summary of the City Manager's Report included in the packet.

Mayor Knapp asked if any further action had been taken on the suggestion to have a crawler line or a static screen listing the next two weeks of City events on the broadcast.

Mr. Cosgrove responded Staff was attempting to drive traffic to the website with the fully functioning, coordinated calendar. He noted that technology was not cheap, but Bill was working on a solution.

LEGAL BUSINESS

No Report.

ADJOURN

Mayor Knapp adjourned the meeting at 7:53 p.m.

Respectfully submitted,

_____
Kimberly Veliz, City Recorder

ATTEST:

_____
Tim Knapp, Mayor

CITY COUNCIL MEETING
STAFF REPORT

Meeting Date: November 5, 2018	**Subject: Resolution No. 2702** Boones Ferry Park Master Plan **Staff Member:** Mike McCarty, Parks & Recreation Director **Department:** Parks & Recreation
Action Required	**Advisory Board/Commission Recommendation**
☒ Motion ☒ Public Hearing Date: December 17, 2018 ☐ Ordinance 1st Reading Date: ☐ Ordinance 2nd Reading Date: ☐ Resolution ☐ Information or Direction ☐ Information Only ☐ Council Direction ☐ Consent Agenda	☒ Approval ☐ Denial ☐ None Forwarded ☐ Not Applicable **Comments:** Staff is requesting a continuation of this Public Hearing to ensure a better, more complete document.
Staff Recommendation: Staff recommends the Council continue the public hearing to a date certain of December 17, 2018.	
Recommended Language for Motion: I move to continue the Public Hearing on Resolution No. 2702 to the date certain of December 17, 2018.	
Project / Issue Relates To:	
☒Council Goals/Priorities	☒Adopted Master Plan(s) ☐Not Applicable

ISSUE BEFORE COUNCIL:

The City Council to continue the public hearing regarding Resolution No. 2702, Boones Ferry Park Master Plan.

EXECUTIVE SUMMARY:

The City of Wilsonville entered into a contract with GreenPlay, LLC on August 21, 2017 to help complete a Master Plan for Boones Ferry Park with the understanding that the plan would involve extensive input from the community. Design Concepts (hired by GreenPlay, LLC to complete this project) presented a draft of this plan to the City Council on June 4th, to the Planning Commission at the July 11 work session, and to the Parks & Recreation Advisory Board on July 26th. Design Concepts and staff held a community meeting on June 5, 2018 at Boones Ferry Park with approximately 25 residents in attendance. City Council, Planning Commission, Parks & Recreation Advisory Board, and residents expressed positive comments concerning the proposed plan, which was to be addressed as a Public Hearing at Planning Commission's August 8th meeting and approved by Resolution by City Council on August 20, 2018. However, staff has determined that the Boones Ferry Park Master Plan needs to be further refined and has requested the Planning Commission continue the hearing until a date certain of November 14, 2018 with City Council continuing the hearing to a date certain of December 17, 2018.

EXPECTED RESULTS:

Continue November 5, 2018 public hearing to date certain of December 17, 2018.

TIMELINE:

City Council Public Hearing (continued): Monday, November 5, 2018
Planning Commission Public Hearing (continued): Wednesday, November 14, 2018
City Council Work Session: Monday, November 19, 2018
City Council Public Hearing (continued): Monday, December 17, 2018

CURRENT YEAR BUDGET IMPACTS:

The total cost of the contract for the Boones Ferry Park Master Plan is $44,000, and was budgeted in FY 2017-18. This projected will be "carried over" to the FY 2018-19 budget via a budget supplemental, anticipated in September or October.

FINANCIAL REVIEW / COMMENT:

Reviewed by: CAR Date: 10/18/2018

Project #9149 FY18 Budget was rolled over in October for the continuous funding of this project.

LEGAL REVIEW / COMMENT:

Reviewed by: BAJ Date: 10/29/2018

COMMUNITY INVOLVEMENT PROCESS:

The community has provided vital information at three hands-on public workshops, one held at City Hall and two held on-site at Boones Ferry Park, as well as via an online survey, open Dec. 1, 2017 – Jan. 15, 2018, where the public could voice their opinions on the three conceptual plans. Public input has also been received via email.

POTENTIAL IMPACTS or BENEFIT TO THE COMMUNITY:

Providing amenities and services that the community has requested from the Parks & Recreation Department.

ALTERNATIVES:
N/A

CITY MANAGER COMMENT:
N/A

ATTACHMENTS:
None

CITY COUNCIL MEETING
STAFF REPORT

Meeting Date: November 5, 2018	**Subject: Ordinance No. 829** – 2nd Reading Amending WC 7.418, 9.200, and 9.400 **Staff Member:** Dan Carlson, Building Official; Amanda Guile-Hinman, Assistant City Attorney **Department:** Building / Legal
Action Required	**Advisory Board/Commission Recommendation**
☒ Motion ☐ Public Hearing Date: October 15, 2018 ☐ Ordinance 1st Reading Date: October 15, 2018 ☒ Ordinance 2nd Reading Date: November 5, 2018 ☐ Resolution ☐ Information or Direction ☐ Information Only ☐ Council Direction ☐ Consent Agenda	☐ Approval ☐ Denial ☐ None Forwarded ☒ Not Applicable **Comments:** Consideration and review of proposed amendments to WC 7.418, 9.200, and 9.400 to correct inaccuracies and outdated references.
Staff Recommendation: Staff recommends that Council adopt Ordinance No. 829 on second reading.	
Recommended Language for Motion: I move to approve Ordinance No. 829 on second reading.	
Project / Issue Relates To:	
☐Council Goals/Priorities	☐Adopted Master Plan(s) ☒Not Applicable

ISSUES BEFORE COUNCIL:

Council is being asked to review proposed amendments to Wilsonville Code ("WC") 7.418 regarding the City's transit payroll tax and WC 9.200 and 9.400 regarding the City's Plumbing Specialty Code and Residential Specialty Code, respectively. These revisions correct inaccuracies and outdated references in each of the listed sections.

EXECUTIVE SUMMARY:

The proposed Ordinance No. 829 addresses two key issues that City staff identified as inaccurate or outdated in the Wilsonville Code. Each are detailed below.

1. City Transit Payroll Tax

WC 7.418 provides the dates when the transit payroll tax is due to the City. Under Subsection (1), employers must pay the transit payroll tax every quarter; however, the listed months do not accurately reflect quarterly payments. In particular, Subsection (1) lists June 30, which is only two (2) months after April 30, instead of three (3) months. Subsection (1) also lists September 30, which is three (3) months after the incorrect date of June 30. The proposed Ordinance No. 829 revises this Subsection to accurate due dates of April 30, *July 31*, *October 31*, and January 31.

Subsection (2) requires individuals who are self-employed to submit payments every quarter but contains similarly incorrect dates. However, City staff recommend changing this Subsection to annual payments due on April 15 (or the following Monday if April 15 is a weekend day), which is consistent with when other transit agencies collect transit taxes from self-employed individuals and is consistent with when self-employed individuals calculate their income for federal and state tax purposes.

2. City Building Codes

The City has adopted and relies on a plumbing specialty code and a residential specialty code created by international organizations, as amended by the State of Oregon. When such codes are updated, the City must correspondingly update its Code to reflect the new editions. The required amendments are identified below.

a. Plumbing Specialty Code – WC 9.200

WC 9.200 states the City's current adopted Plumbing Specialty Code, which follows the 2009 Edition of the Plumbing Specialty Code published by the International Association of Plumbing and Mechanical Officials, as amended and supplemented by the 2014 Edition of the Oregon State Plumbing Specialty Code. Each of International and Oregon Plumbing Specialty Codes have since been updated. As such, WC 9.200 needs to be updated to reflect the latest versions of each – the 2015 Edition of the Plumbing Specialty Code published by the International Association of Plumbing and Mechanical Officials and the 2017 Edition of the Oregon State Plumbing Specialty Code.

b. Residential Specialty Code – WC 9.400

Similar to WC 9.200, WC 9.400 must also be amended to reflect updates to the Residential Specialty Code published by the International Code Council and the Oregon Residential Specialty Code. Staff propose to update WC 9.400 to the 2015 Edition of Oregon Residential Specialty Code, published by the International Code Council, as amended and supplemented by the 2017 Edition of the State of Oregon Residential Specialty Code.

EXPECTED RESULTS:
Consistency in payment due dates for the transit payroll tax and updated plumbing and residential specialty codes.

TIMELINE:
The proposed amendments identified in Ordinance No. 829 are scheduled for a first reading and public hearing on October 15, 2018 and a second reading on November 5, 2018.

CURRENT YEAR BUDGET IMPACTS:
N/A

FINANCIAL REVIEW / COMMENT:
Reviewed by: CAR Date: 10/9/2018

LEGAL REVIEW / COMMENT:
Reviewed by: ARGH Date: 10/16/2018

Oregon appellate case law makes clear that cities cannot preemptively adopt codes or statutes of the State of Oregon before the state adopts its codes or statutes. As such, the City cannot simply state that the Plumbing Specialty Code and the Residential Specialty Code are automatically updated whenever the State of Oregon updates its codes that the City utilizes for its Plumbing Specialty Code and the Residential Specialty Code. Such language would violate the Oregon Constitution.

COMMUNITY INVOLVEMENT PROCESS:
N/A

POTENTIAL IMPACTS or BENEFIT TO THE COMMUNITY:
Consistent and up-to-date Code provisions.

ALTERNATIVES:
Retain WC 7.418, 9.200, and 9.400 as is.

CITY MANAGER COMMENT:
N/A

ATTACHMENTS:
A. Attachment A: Proposed Ordinance No. 829

ORDINANCE NO. 829

AN ORDINANCE OF THE CITY OF WILSONVILLE AMENDING WILSONVILLE CODE SECTIONS 7.418, 9.200, AND 9.400.

WHEREAS, the City of Wilsonville desires to amend its Public Transportation Payroll and Self-Employment Tax, Wilsonville Code Chapter 7, Section 418, sub-section 2, to reflect the correct quarterly and yearly dates and description; and

WHEREAS, the City of Wilsonville desires to amend its Plumbing Specialty Code and the Oregon Residential Specialty Code, Wilsonville Code Chapter 9, Sections 9.200 and 9.400, to reflect the new 2017 editions that were adopted by the City as the new Statewide Residential and Plumbing Codes.

NOW, THEREFORE, THE CITY OF WILSONVILLE ORDAINS AS FOLLOWS:

1. Wilsonville Code 7.418(2) is amended as follows:

"(2) Taxes shall be determined for:

(a) Payroll - each quarter of the calendar year, and the tax due for each quarter of the calendar year shall be paid on or before April 30, ~~June 15~~ *July 31*, ~~September 15~~ *October 31,* and January 31.

(b) Self-Employment – each ~~quarter~~ *year* of the calendar year, and the tax due for each ~~quarter~~ *year* of the calendar year shall be paid on or before April 15~~, June 15, September 15 and January 15~~, *unless that date falls on a Saturday or Sunday, in which circumstance the tax due shall be due and payable on the following Monday*."

2. Wilsonville Code 9.200(1) is amended as follows:

"9.200 Plumbing *Specialty* ~~specialty~~ Code ~~2014~~ *2017* Edition

Section 1. The "PLUMBING SPECIALTY CODE", ~~2009~~ *2015* Edition, published by the International Association of Plumbing and Mechanical Officials, and as so amended and supplemented by the ~~2014~~ *2017* Edition of the Oregon State Plumbing Specialty Code Statutes and Administrative Rules, being one and the same, is hereby adopted as, *collectively and referred to herein as,* the

Plumbing Specialty Code of the City of Wilsonville. *The Plumbing Specialty Code of the City of Wilsonville addresses* ~~for~~*:*

(a) *R*egulating the erection, construction, demolition, occupancy, equipment, use, height, area and maintenance of all plumbing systems ~~as regulated by the Plumbing Specialty Code~~ in the City of Wilsonville*;*

(b) *P*roviding for issuance of permits and collection of fees thereof;

(c) *P*roviding penalties for violation of such code; and

(d) *Providing* each and all regulations, provisions, penalties, conditions, and terms of such *Plumbing Specialty Code.* ~~"PLUMBING SPECIALTY CODE", 2014 Edition, are marked Exhibit A, referred to, adopted and made a part hereof as if fully set out in this ordinance as the City's Plumbing Specialty Code.~~

A copy of the *Plumbing Specialty Code of the City of Wilsonville* ~~above referenced "Exhibit A" shall be marked and designated as the Official City of Wilsonville Plumbing Specialty Code and~~ shall be kept in the office of the Building Official of the City of Wilsonville."

"Section 2. That Chapter 9, Section 9.200, of the Wilsonville City Code is hereby amended to include the provisions of Ordinance No. ~~756~~ *829* and Ordinance No. ~~687~~ *756* is repealed."

3. Wilsonville Code 9.400(1) is amended as follows:

"9.400 Oregon Residential Specialty Code, ~~2014~~ *2017* Edition

Section 1. The "OREGON RESIDENTIAL ~~SPECIALITY~~ *SPECIALTY* CODE", ~~2009~~ *2015* Edition, published by the International Code Council, and as so amended and supplemented by the ~~2014~~ *2017* Edition of the State of Oregon Residential Specialty Code, being one and the same, is hereby adopted as, *collectively and referred to herein as,* the ~~Oregon~~ Residential Specialty Code of the City of Wilsonville. *The Residential Specialty Code of the City of Wilsonville is* for:

(a) *R*egulating the erection, construction, demolition, occupancy, equipment, use, height, area and maintenance of all buildings and/or structures in the City of Wilsonville*;*

(b) *P*roviding for issuance of permits and collection of fees thereof;

(c) *P*roviding penalties for violation of such code; and

(d) *Providing* each and all regulations, provisions, penalties, conditions, and terms of such *Residential Specialty Code*. ~~"OREGON RESIDENTIAL SPECIALITY *SPECIALTY* CODE", 2014 Edition, are marked Exhibit A, referred to, adopted, and made a part herein as if fully set forth herein as the City's Oregon Residential Specialty Code~~.

A copy of the *Residential Specialty Code of the City of Wilsonville* ~~above referenced Exhibit A shall be marked and designated as the City of Wilsonville Oregon Residential Specialty Code and~~ shall be kept in the office of the Building Official of the City of Wilsonville."

"Section 2. The Chapter 9, Section 9.400, of the Wilsonville City Code is hereby amended to include the provisions of Ordinance No. ~~757~~ *829* and Ordinance No. ~~696~~ *757* is repealed."

4. The City Recorder is directed to amend Wilsonville Code 7.418, 9.200, and 9.400, as approved above, and to make such format, style, and conforming changes to match the format and style of the Offenses Chapter of the Wilsonville Code.

5. Except as set forth above, Chapter 7 and Chapter 9 of the Wilsonville Code remains in full force and effect, as written.

6. This Ordinance shall be declared to be in full force and effect thirty (30) days from the date of final passage and approval.

SUBMITTED to the Wilsonville City Council and read for the first time at a regular meeting thereof on the 15th day of October, 2018, and scheduled for a second reading at a regular meeting of the Council on November 5, 2018 commencing at the hour of 7:30 p.m. at the Wilsonville City Hall, 29799 SW Town Center Loop East, Wilsonville, Oregon.

_____

Kimberly Veliz, City Recorder

ENACTED by the City Council on the ____ day of _____, 2018, by the following votes: Yes: _____ No: _____

_____
Kimberly Veliz, City Recorder

DATED and signed by the Mayor the _____ day of _____, 2018.

_____
TIM KNAPP, MAYOR

SUMMARY OF VOTES:

Mayor Knapp

Council President Starr

Councilor Stevens

Councilor Lehan

Councilor Akervall