PLANNING COMMISSION

WEDNESDAY, OCTOBER 10, 2018

III. WORK SESSIONS

A. Town Center Plan (Bateschell) (60 Minutes)

PLANNING COMMISSION WORK SESSION
STAFF REPORT

Meeting Date: October 10, 2018	**Subject**: Wilsonville Town Center Plan **Staff Member**: Miranda Bateschell **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**:
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 COMMISSION: Review and provide input on draft elements of the Wilsonville Town Center Plan including draft comprehensive plan and development code provisions, the Wilsonville Town Center development feasibility analysis and traffic analysis.

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 resulted in the Draft Wilsonville Town Center Plan.

At the August Planning Commission meeting, the Commission discussed Task Force recommendations for site design and development code recommendations. Based on input from the Planning Commission, the project team has prepared updated drafts of proposed amendments for the Wilsonville Comprehensive Plan and Wilsonville Development Code (Attachment A).

In addition, the consultant team has prepared a Development Feasibility Analysis (Attachment B). The study looks at different building types preferred by the community for the future Town Center and laid out in the Draft Plan. 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 Commission's ideas on potential incentives, if any, to encourage more development. Finally, the project team will review the draft Wilsonville Town Center Plan Traffic Analysis (Attachment C) for Planning Commission discussion based on the proposed multi-modal network.

In addition to general discussion and input from the Commission, the project team would like to continue discussion with the Planning Commission on the following items:

1. Do the Comprehensive Plan and development code revisions address comments on design specifics versus general guidelines?
2. Are the proposed parking requirements acceptable given the desire for a more compact development type? Should parking reductions be considered as part of the development code?
3. Are there specific challenges you see after reviewing the results of the feasibility analysis in achieving the Town Center Vision?
4. What would you consider a catalyst project? Are there first steps that you feel are most appropriate?
5. What role do you think the City should play in future development in Town Center? 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 Commission.

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 Commission's input and bring the next draft back for further discussion at the November 14 Planning Commission meeting along with draft project lists and implementation strategies. The Plan and its components is anticipated to be before the Commission for adoption late 2018 or early 2019.

CURRENT YEAR BUDGET IMPACTS:
The Professional Services Agreement has a budget of $420,000 fully funded through the CD Fund and CIP project #3004 in the adopted budget, of which $320,000 is funded through a Metro Community Planning and Development grant. Staff estimates spending approximately half the costs during this budget year and the other half during the next fiscal year.

FINANCIAL REVIEW / COMMENTS: N/A

LEGAL REVIEW / COMMENT: N/A

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 Commission may provide feedback.

CITY MANAGER COMMENT: N/A

ATTACHMENTS:

A. Draft Town Center Comprehensive Plan and Development Code Standards
B. Wilsonville Town Center Plan Development Feasibility Analysis
C. Wilsonville Town Center Plan Traffic Analysis

City of Wilsonville

Comprehensive Plan

Draft Amendments Supporting the Wilsonville Town Center Plan
September 19, 2018

Updated December 2016

This document uses the December 5, 2016 amendments adopted for the Frog Pond Master Plan as the "accepted" base text for further amendment.

CITY OF WILSONVILLE

COMPREHENSIVE PLAN

Table of Contents

The Wilsonville Comprehensive Plan was revised in entirety and adopted by City Council Ordinance No. 517 on October 16, 2000. It has been amended since then by the ordinances below. These ordinances have been incorporated into the December 2016~~January 2013~~ Comprehensive Plan.

Ordinance #	Description	Adoption Date
No.	City of Wilsonville Town Center Plan	Date
No.	Frog Pond Master Plan	Date
742	Wilsonville Residential Land Study	5/19/14
718	2013 Transportation System Plan (Replaces prior Transportation Systems Plan)	9/6/12
707	Water System Master Plan (*Replaces all prior Water System Master Plans)*	9/6/12
700	Stormwater Master Plan (*Repeals Ordinance No. 515)*	2/23/12
676	Accessory Dwelling Units	3/3/10
674	Metro Title 13 (Nature in Neighborhoods) Compliance	11/16/09
671	Transportation-related amendments	11/16/09
653	Transit Master Plan	7/7/08
638	Statewide Planning Goal 9: Economic Opportunities Analysis	12/3/07
637	Coffee Creek 1 Master Plan	10/15/07
625	Parks and Recreation Master Plan	9/17/07
623	Bicycle and Pedestrian Master Plan	12/20/06
609	Villebois Village Master Plan Amendments	5/15/06
610	Public Works Standards	5/1/06
594	Villebois Village Master Plan Amendments	12/3/05
574	Reduction of Allowable Commercial Uses in Industrially-Zoned Land	11/1/04
573	Memorial Parks Trails Master Plan	9/20/04
571	Wastewater Facility Plan	8/30/04
566	Villebois Village Master Plan Amendment	6/21/04
556	Villebois Village Master Plan (adoption of)	8/18/03
552	Transportation Systems Plan	6/2/03
555	Villebois Village Concept Plan - Comprehensive Plan Map amendment	6/2/03
554	Villebois Village Concept Plan text amendment	6/2/03
553	Villebois Village Concept Plan (adoption of)	6/2/03
549	Metro Title 5 Compliance	10/21/02
531	Water System Master Plan *(Replaced by Ordinance No. 707, adopted 9/6/12)*	1/24/02
530	Wastewater Collection System Master Plan	7/17/01
515	Stormwater Master Plan (*Repealed by Ordinance No. 700, adopted 2/23/12)*	6/7/01
516	Natural Resources Plan	6/7/01

~~No.~~ ~~Frog Pond West Master Plan~~ ~~Date~~

INTRODUCTION

BRIEF HISTORY

Wilsonville is located within the traditional territory of the Kalapuyan people who occupied nearly all of the Willamette River watershed above the Falls (at Oregon City). The Tualatin Kalapuyans occupied the north bank of the Willamette and all of the Tualatin River watershed. The Santiam Kalapuyans occupied the south bank of the Willamette (including what is now the Charbonneau District of Wilsonville).

The opening of overland and sea routes to Oregon brought Old World diseases which repeatedly devastated Kalapuyan populations in a series of epidemics that ranged from smallpox to malaria in the late 18th and early 19th centuries. After that, the expansion of white and multi-racial immigration restricted Kalapuyan land management and undermined the native economy. Following treaties in the 1850s, the remnants of both the Santiam and Tualatin Kalapuyans were moved to the Grand Ronde Reservation.

Early settlement of the Wilsonville area by people other than the indigenous Native Americans dates back to the early 1800s. In addition to scattered farms, the early settlement began providing needed support services for travelers using a ferry crossing the Willamette River. The ferry was operated by Alphonse Boone, a relative of Daniel Boone, and provided access to the southern Willamette Valley from the Portland area. The town was named after early postmaster Charles Wilson. In 1908 the railroad came to the area, creating a transportation link that still continues today. Electricity, natural gas lines, telephone service, automobiles, paved roads and eventually the I-5 Interstate freeway came to Wilsonville, inducing more growth. The freeway brought Wilsonville to within a 20-minute drive to Portland, and a 30-minute drive to Salem. With the completion of I-205, connecting with I-5 just north of Wilsonville, the area's advantageous position for interstate trucking and commerce was substantially enhanced. Freeway and rail access and an abundance of open land have made Wilsonville a desirable place for commercial and industrial development. The peaceful, rural setting also provided a pleasant atmosphere for residential development. As a result, Wilsonville has been one of the fastest growing cities in the state and has one of the highest ratios of jobs to housing.

HISTORY OF LOCAL PLANNING EFFORTS

The creation of the Interstate-5 freeway in the late 1950s, followed by the first sections of I-205 in the 1960s, increased the pressure for development within this area. In a move to increase local control, the local residents voted to incorporate. On January 1, 1969, Wilsonville became a City.

It should be noted that the term "City," as used in this document, refers to the land where the City of Wilsonville is located, the collective citizenry of the community, and the political entity providing governance of the community – subject to the City Charter.

Almost immediately after incorporation, the newly-formed City began work on a General Plan that was intended to help the City preserve the natural qualities of the area, while also ensuring efficient land use as development occurred.

Wilsonville's General Plan, completed in 1971, was adequate for its time. However, changes in economic and social circumstances, as well as adoption of new state planning legislation, soon outdated the General Plan. Requirements for land use plans in Oregon changed substantially with the adoption of new state legislation (Senate Bill 100) in 1973. In 1975, a new Comprehensive Plan Map was adopted which included an urban growth boundary as required by LCDC. Subsequent Comprehensive Plan amendments were adopted on July 7, 1980, by Resolution No. 144; on May 3, 1982, by Ordinance No. 209; and on November 7, 1988, by Ordinance No. 318. The last two of those major amendments were the result of periodic review processes.

The adoption of SB 100 established the Land Conservation and Development Commission (L.C.D.C.) and empowered the Commission to adopt Statewide Planning Goals. All cities and counties in Oregon were required to adopt Comprehensive Plans and implementing ordinances in conformance with the Statewide Planning Goals and to coordinate their Plans with affected units of government and special districts under the State Legislation. Since that time, Comprehensive Plans have become the dominant legal documents directing land use and development within local jurisdictions. The requirement to conform to the Statewide Planning Goals has also made local Plans more comprehensive in content. Plans must also be supported by adequate documentation and analysis of alternatives, impacts, etc., and must be legislatively adopted by the City. Wilsonville's Comprehensive Plan and implementing ordinances must also be coordinated with the plans of both Washington and Clackamas Counties. In the Portland area, local plans and ordinances must also be reviewed by the Metropolitan Service District (Metro) for compliance with regional plans and policies.

The Metro Charter, approved by two-thirds of the region's voters in November 1992, established growth management as Metro's primary task and gave Metro's elected Council broad powers affecting city and county planning programs throughout the region.

Wilsonville's planning programs are required to support Metro's 2040 Regional Framework Plan, and any Functional Plans that are formally adopted by the Metro Council. Such Metro plans are intended to direct the region's urban growth and development.

With the adoption of Metro's 2040 Plan, Wilsonville joined other cities and counties as an active participant in a regional planning effort. This is particularly important to Wilsonville because Metro's decisions on the regional UGB will have a direct effect on land supply and housing demands in this area.

Wilsonville's history of growth is partly the result of its physical location, its position in the regional economy, and its relationship to the interstate freeway system. Wilsonville continues its cooperative and participatory approach to growth management in order to preserve the local quality of life as additional people move into the urban area. Also, as a participant in regional planning efforts, Wilsonville must deal with the issues accompanying growth - traffic congestion,

loss of open space, speculative pressure on rural farm lands, rising housing costs, diminishing environmental quality, demands on infrastructure such as transportation systems, schools, water and sewer treatment plants, and vulnerability to natural hazards - within a common framework. A planning program that recognizes each of these issues and provides a means of balancing and equitably resolving the conflicts between competing interests enhances the community's ability to manage urban growth successfully and creates the opportunity for a livable future.

In addition to meeting Metro requirements, Wilsonville's Comprehensive Plan must be reviewed by LCDC for compliance with the Statewide Planning Goals. All local land use decisions must be made in conformance with the provisions and policies of the City's Comprehensive Plan.

The Comprehensive Plan is an official statement of the goals, policies, implementation measures, and physical plan for the development of the City. The Plan documents the City's approach to the allocation of available resources for meeting current and anticipated future needs. In doing so, it records current thinking regarding economic and social conditions. Because these conditions change over time, the Plan must be directive, but flexible, and must also be periodically reviewed and revised to consider changes in circumstances.

Periodic Review is a State-mandated process through which a local government reviews its Comprehensive Plan and land use regulations to ensure continued compliance with the Statewide Planning Goals and other legal requirements.

The current amendments to the Comprehensive Plan are a result of the Periodic Review process that was initiated in 1996. In the years since the previous major update of the Comprehensive Plan, Wilsonville has experienced significant increases in both population and employment. The Comprehensive Plan has been updated so that the City's actions will be based on recent trends and future projections.

Wilsonville's Comprehensive Plan has been re-evaluated, updated, and in some places re-written, to produce a more user-friendly, current document that will guide the City's growth and development for some years into the future.

Comprehensive Plan Land Use Map

The Land Use Map of the Comprehensive Plan shows land designated for Public, Industrial, Town Center, Commercial, and Residential use.

The residential designations include planned density ranges which have been changed to reflect Metro's requirement that minimum densities be at least 80% of maximums. In order to meet that requirement, the lower end of the planned density range has been increased and the higher end left unchanged. For example, properties that were previously designated for residential development at 7 to 12 units/acre are now planned for 10 to 12 units/acre. Most of the residential development that has occurred in Wilsonville has been at densities within 80% of the maximum, so this change is not expected to significantly alter the patterns of housing development that have already been established.

The City historically protected natural resources through the Primary Open Space (POS) and Secondary Open Space (SOS) designations in the Comprehensive Plan and Comprehensive Plan Land Use Map. Primary Open Space was a protected resource category that did not allow any development, and Secondary Open Space, which served as a buffer to Primary Open Space, allowed limited development through a Conditional Use permit review process.

In order to comply with the requirements of Statewide Planning Goal 5-Natural Resources, Title 3 of Metro's Urban Growth Management Functional Plan and the Endangered Species Act (ESA) related to the listing of salmonids in the Willamette River as threatened, the City has completed a public process and has created a Significant Resource Overlay Zone. This overlay zone and implementing ordinance replaces the POS/SOS designations in the Comprehensive Plan and on the Comprehensive Plan Land Use Map.

Additional to the Land Use Map, the Plan includes the following text:

1. Separate sections as follows:
   A. Citizen Involvement;
   B. Urban Growth Management;
   C. Public Facilities and Services; and
   D. Land Use and Development.

2. Each section includes background information and a listing of the Goals, Policies, and Implementation Measures which describe the desired form, nature and rate of City development. Goals state what the community intends to achieve through the implementation of the Comprehensive Plan. Policies are clearly stated commitments from the City Council that are intended to help achieve the stated Goals. Implementation Measures describe the actions that the City will take in support of the Policies. None of these things are intended to be merely guidelines. Policy statements address the entire range of topics included in the Statewide Planning Goals. Also included are references to the Metro 2040 Plan, as well as the Framework and Functional Plans that apply to Wilsonville's planning program.

3. A land use map shows what kind of use is planned for each piece of land, and how these uses are related to adjacent uses. Uses include residential, public, commercial, and industrial activities. For residential areas, the map shows anticipated densities. Public uses include streets, parks, schools, fire stations, public water and sewer facilities and other City buildings.

4. The City uses a two-map system for land use planning (the Land Use Map of the Comprehensive Plan and the Zoning Map). Those researching the potential uses of land should see both maps and read the applicable portions of the City's Development Code, as well as the text of the Comprehensive Plan.

Supporting Documents:

All of the following documents, including amendments that may subsequently be made, should be considered to be supportive of the contents of the Comprehensive Plan. However, only those documents that have been specifically adopted by the City Council as part of this Comprehensive Plan, or implementing this Plan, shall have the force and effect of the Plan.

- Bicycle and Pedestrian Master Plan (Replaces Chapter 5 of Transportation Systems Plan) (2006)
- Capital Improvements Plan Summary Findings and Recommendations (on-going),
- Coffee Creek 1 Master Plan (2007)
- Development Code (Chapter 4 of the Wilsonville Code) and other implementing City ordinances.
- Federal Emergency Management Agency Floodway and Flood Insurance Rate Maps (2008)
- Guidelines for a Water Wise Landscape (1998)
- Master Public Facilities and Capital Improvements Plan (on-going).
- Memorial Park Trails Plan (2004)
- Metro's Region 2040 program (1995), Regional Framework Plan (1997), Urban Growth Management Functional Plan (1997) and subsequent titles (chapters), Regional Transportation Plan (RTP) and supporting documents (including the Regional Housing Needs Analysis, 1997).
- Metro's Title 13 (Nature in Neighborhoods) compliance (with Metro's Urban Growth Management Functional Plan)
- Natural Resource Plan and supporting documents (2001)
- Parks and Recreation Master Plan (2007)
- Physical Inventory – The Natural Environment Research/Analysis (1979)
- Public Works Standards (2006)
- Statewide Planning Goal 9: Economic Opportunities Analysis (2007)
- Statewide Planning Goals and Guidelines, as amended. Please see the end of this Introduction section for a list of the Statewide Planning Goals.
- Stormwater Master Plan (2012)
- Street Tree Study (1998)
- Transit Master Plan (Replaces Chapter 6 and Chapter 8 of the 2003 Transportation Master Plan) (2008)
- Transportation Systems Plan (2003) and supporting documents.
- Urban Renewal Plan (1993)
- Villebois Village Concept Plan (2003)

- Villebois Village Master Plan (2006)
- Wastewater Collection System Master Plan (2001)
- Wastewater Facility Plan (2004)
- Water Moratorium and Public Facility Strategy Information (1998 – 2000)
- Water Supply Study Report (1997)
- Water System Master Plan (2012)
- West Side Master Plan (1996)
- Wilsonville Residential Land Study (2014)
- Frog Pond Area Plan (2015)
- Frog Pond West Master Plan (2017)
- City of Wilsonville Town Center Plan (date)

PROCEDURES

How to Use the Plan

The purpose of this Plan is to guide the physical development of the City. Following this introduction, the text of the Plan is presented in four major sections that provide a framework for land use decisions. The four sections are:

A. Citizen Involvement – this section describes the City's on-going citizen involvement program.

B. Urbanization – this section defines where and when urban level development will be permitted and recognizes Metro's authority relative to the regional urban growth boundary.

C. Public Facilities and Services – this section determines what facilities and services must be available to support urban development, and therefore, further defines when development can occur.

D. Land Use and Development – this section determines future zoning and how a parcel of land may be developed. It provides basic standards for residential, public, town center, commercial, and industrial uses and establishes general planning districts for each of these types of uses. The planning districts are visually represented on a land use map.

This Plan consists of general background and explanatory text, City of Wilsonville Goals, Policies, Implementation Measures, and a Plan Map. When any ambiguity or conflict appears to exist, Goals shall take precedence over Policies, Implementation Measures, text and Map; Policies shall take precedence over text, Implementation Measures, and Map. The land use map is only a visual illustration of the intent of the Plan. Therefore, the lines separating uses on the map are not rigid and inflexible. The lines for residential districts do, however, provide a basis

for computing permitted densities or total number of allowable units, or zoning densities within a given development.

The Planning Commission, Development Review Board, and Planning Director are authorized to interpret the standards and requirements of either the text or maps of the Comprehensive Plan. The City Council shall have final authority for the interpretation of the text and/or map when such matters come before the Council for consideration.

Plan Amendments

This Plan has been designed to provide some flexibility in interpretation in an effort to be market-responsive and to minimize the need for Plan amendments. However, since it is impossible and impractical to allow for all possible combinations of land development proposals, it is probable that occasional Plan amendments will be necessary. In addition, economic and social conditions change over time, as do land use laws. Therefore, Plans must be periodically reviewed to consider changed circumstances. As noted above, periodic review of local Plans is also required by state law.

The Planning Commission, Development Review Board, and City Council all provide the public with opportunities to comment on non-agenda items at each regularly scheduled public meeting. Any interested person has the opportunity to suggest changes to the Comprehensive Plan that those decision-making bodies may wish to consider. The Commission, DRB, or Council may initiate a Plan amendment, by motion, as prescribed in #1, below.

1. Who May Initiate Plan Amendments? An amendment to the adopted Plan may be initiated by:

    a. The City Council
    b. The Planning Commission (for legislative amendments) or Development Review Board (for quasi-judicial amendments); or
    c. Application of the property owner(s) or contract purchaser(s) affected or their authorized agents, as specified in #2, below.

2. Application for Plan Amendments:

    An application for an amendment to the Plan maps or text shall be made on forms provided by the City. The application, except when initiated by the City Council, DRB, or Planning Commission, as noted in #1, above, shall be accompanied by a Plan Amendment Fee.

3. The Consideration of Plan Amendments:

    a. Amendments to the maps or text of the Comprehensive Plan shall only be considered by the City Council after receiving findings and recommendations from the Planning Commission (legislative) or Development Review Board (quasi-judicial) at their regular or special meetings.

b. Amendments must be initiated as provided in this section, sufficiently in advance of the first evidentiary hearing on the proposal to allow adequate time for providing public notice and preparing a staff report on the proposal. The first evidentiary hearing is usually the first public hearing held by the Planning Commission or Development Review Board on the proposal.

c. This Plan, and each of its elements, is always open for amendments that consider compliance with the Statewide Planning Goals and Plans of Metro. Amendment and revision for compliance with the above regional Goals, Objectives, and Plans shall be consistent with any re-opening of local Plans as approved by the Land Conservation and Development Commission (LCDC).

This provision is not to be construed as waiving any legal rights which the City may have to challenge the legality of a regional Goal, Objective or Plan provision.

d. The Planning Commission or City Council may conduct a public hearing at any time to consider an amendment to the Plan text or Plan map when the Commission or Council finds that the consideration of such amendments are necessary to comply with the rules, regulations, goals, guidelines or other legal actions of any governmental agency having jurisdiction over matters contained in said text or Plan map.

4. Standards for approval of Plan Amendments.

In order to grant a Plan amendment, the City Council shall, after considering the recommendation of the Development Review Board (quasi-judicial) or Planning Commission (legislative), find that:

a. The proposed amendment is in conformance with those portions of the Plan that are not being considered for amendment.

b. The granting of the amendment is in the public interest.

c. The public interest is best served by granting the amendment at this time.

d. The following factors have been adequately addressed in the proposed amendment:
   - the suitability of the various areas for particular land uses and improvements;
   - the land uses and improvements in the area;
   - trends in land improvement;
   - density of development;
   - property values;
   - the needs of economic enterprises in the future development of the area;
   - transportation access;
   - natural resources; and
   - the public need for healthful, safe and aesthetic surroundings and conditions.

e. Proposed changes or amendments to the Comprehensive Plan do not result in conflicts with applicable Metro requirements.

5. Public Notice Requirements.

a. Notice of public hearings before the Development Review Board, Planning Commission, and City Council concerning proposed Plan amendments shall be published in a newspaper of general circulation as prescribed by the state. A written notice of proposed amendments shall be posted in at least three conspicuous public places within the City not less than ten (10) days prior to the hearings(s). Written notice of map amendments shall be mailed to owners of property within 250 feet of the properties or property described in the notice at least ten (10) days prior to the date of the hearing(s).

The City of Wilsonville regularly meets and exceeds the typical standards for public notice concerning land use planning matters. This practice will continue, including City-wide notice, in appropriate situations, to all property owners.

b. The public notice shall include the date, time, and place of the public hearing(s); a description of the properties involved in the proposed amendment; and a general statement of the nature of the proposed amendment to be considered by the reviewing body.

c. In the process of amending any Comprehensive Plan provision or implementing ordinance, the City will continue to give notice to Metro as required. At such time as any notice is given to the Director of the Department of Land Conservation and Development pursuant to ORS 197.610 or 197.615, a copy shall be sent to Metro's Executive Officer. In addition to the content of the notice required by ORS 197.610 or 197.615, the notice furnished to Metro shall include an analysis demonstrating that the proposed amendments are consistent with applicable Functional Plans. However, if the analysis demonstrating consistency with Functional Plans is not included in the initial notice, Metro requirements specify that a report containing the analysis shall be delivered to Metro no later than fourteen (14) days before the City conducts a final hearing on the proposed amendment.

Planning/Zoning Procedures

The City is gradually building out, with much less undeveloped property than in the past. Portions of the undeveloped areas are currently served with adequate public facilities for urban level development. Other areas are not adequately served and the service levels vary greatly throughout the City.

Therefore, in order to provide a process to insure orderly development consistent with the availability of adequate public facilities, the provisions of this Plan shall be administered through

case-by-case zoning and Site Plan review procedures set forth in the Wilsonville Code. The Development Code clearly defines the standards that must be met to obtain a Zone Change and/or Site Development Permit.

The purpose of the case-by-case review is two-fold. First, the zoning process is intended to serve as an administrative procedure to evaluate the conversion of urbanizable land to urban land consistent with the conversion criteria set forth in the Statewide Planning Goal 14 (Urbanization). Because the service levels vary throughout the City, the zoning process will allow for a case-by-case analysis of the availability of public facilities and services and to determine specific conditions in terms of phasing of development related to needed facility improvements.

Secondly, not all types of development create equal community impact. Therefore, each development must be evaluated on its own merits and liabilities. For this reason, a case-by-case Site Development Plan review is intended to provide site specific analysis of impacts related to particular development proposals, rather than general use categories such as residential, commercial or industrial.

All land development proposals shall be reviewed for conformity to the Plan and specific standards set forth in implementing Ordinances.

The applicable Statewide Planning Goals, as of March 2000, have been copied in full below to help the reader to understand the City's role in the State's overall planning program.

OREGON'S STATEWIDE PLANNING GOALS

1. Citizen Involvement: To develop a citizen involvement program that insures the opportunity for citizens to be involved in all phases of the planning process.

2. Land Use Planning: To establish a land use planning process and policy framework as a basis for all decisions and actions related to use of land and to assure an adequate factual base for such decisions and actions.

3. Agricultural Lands: To preserve and maintain agricultural lands.

4. Forest Lands: To conserve forest lands by maintaining the forest land base and to protect the state's forest economy by making possible economically efficient forest practices that assure the continuous growing and harvesting of forest tree species as the leading use on forest land consistent with sound management of soil, air, water, and fish and wildlife resources and to provide for recreational opportunities and agriculture.

5. Natural Resources, Scenic and Historic Areas, and Open Spaces: To conserve open space and protect natural and scenic resources.

6. Air, Water, and Land Resources Quality: To maintain and improve the quality of the air, water, and land resources of the state.

7. Areas Subject to Natural Disasters and Hazards: To protect life and property from natural disasters and hazards.

8. Recreational Needs: To satisfy the recreational needs of the citizens of the state and visitors and, where appropriate, to provide for the siting of necessary recreational facilities including destination resorts.

9. Economic Development: To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens.

10. Housing: To provide for the housing needs of the citizens of the state.

11. Public Facilities and Services: To plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development.

12. Transportation: To provide and encourage a safe, convenient and economic transportation system.

13. Energy Conservation: To conserve energy.

14. Urbanization: To provide for the orderly and efficient transition from rural to urban land use.

15. Willamette River Greenway: To protect, conserve, enhance, and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway.

CITIZEN INVOLVEMENT

In one way or another, directly or indirectly, the Comprehensive Plan affects all citizens in the City, whether they own property or not. The Plan allocates land to various residential, public, commercial and industrial uses. It also establishes standards for how and when such lands may be developed for the designated purposes. The Comprehensive Plan is not a document created by one faction and imposed upon another, but rather an ongoing planning process that needs and depends upon input and direction developed by all concerned. For these reasons, citizen involvement is a vital part of the planning process. In fact, under Oregon law, citizen involvement is required. Statewide Planning Goal No. 1 requires each community to adopt, implement, and periodically review a citizen involvement program.

Since its incorporation, including development of the 1971 General Plan; and each subsequent revision of the Comprehensive Plan, as well as routine planning and zoning administration, the City of Wilsonville has encouraged citizen involvement in the decision-making process. For a number of years, Wilsonville Interested Neighbors (WIN) served as the City's official Citizen Advisory Committee. WIN ceased meeting in 1991 and after that a number of different ad hoc committees have been appointed to provide for citizen involvement. The City's Planning Commission has continued to serve as the primary citizen involvement organization throughout that time. Given this history, the City has chosen to recognize the Planning Commission's continuing role in facilitating and encouraging public involvement. This does not preclude the use of other ad hoc or adjunct groups to gain public participation but it does formalize the Planning Commission's responsibilities in advising the City Council about the City's overall citizen involvement program.

Wilsonville's Planning Commission, made up of people with diverse interests in the community, now fulfills the role as the City's official Committee for Citizen Involvement. Unlike most Planning Commissions that have quasi-judicial authority, Wilsonville's Planning Commission deals only with legislative and long-range policy issues. The Planning Commission's quasi-judicial functions were transferred to the Development Review Board in 1997, in order to allow the Commission to focus on advising the City Council on legislative policy issues. The Planning Commission's advisory duties make the Commission especially qualified to fulfill the role as the City's Committee for Citizen Involvement. The Planning Commission frequently conducts work sessions and other informal public meetings that are deliberately intended to encourage an exchange of ideas and opinions without the formality of public hearings. These meetings are intended to "open" the City's planning processes for greater public participation.

The Commission may conduct both work sessions and public hearings in one meeting. For instance, it is fairly typical for the Commission to have a work session or informal public meeting before or after a public hearing. The Commission conducts regularly scheduled meetings each month and frequently schedules additional meetings to deal with a wide range of issues. All Planning Commission meetings are open to the public.

Wilsonville's Planning Commission meets the two principal requirements of Statewide Planning Goal No. 1 to serve as the City's official Committee for Citizen Involvement:

* members are broadly representative of geographic areas and interests related to land use; and

* members are selected through an open, well-publicized public process.

All City residents and interested parties are allowed and encouraged to participate throughout the City's planning processes. Citizens also regularly participate in decision-making or advisory capacities as members of:

Development Review Board
Planning Commission
Parks and Recreation Advisory Board
Library Board
Budget Committee
Other special study task forces

The City has long recognized the importance of citizen involvement and understanding in government decisions. In support of past involvement activities and to guide future citizen involvement, the following goals, policies, and implementation measures are established.

Local planning decisions also affect other public agencies. Therefore, elements of the Plan and the supporting database will continue to be coordinated with numerous other public agencies.

GOAL 1.1 To encourage and provide means for interested parties to be involved in land use planning processes, on individual cases and City-wide programs and policies.

Policy 1.1.1 The City of Wilsonville shall provide opportunities for a wide range of public involvement in City planning programs and processes.

Implementation Measure 1.1.1.a Provide for early public involvement to address neighborhood or community concerns regarding Comprehensive Plan and Development Code changes. Whenever practical to do so, City staff will provide information for public review while it is still in "draft" form, thereby allowing for community involvement before decisions have been made.

Implementation Measure 1.1.1.b Support the Planning Commission as the City's official Citizens Involvement Organization with regular, open, public meetings in which planning issues and projects of special concern to the City are discussed and resultant recommendations and resolutions are recorded and regularly reported to the City Council, City staff, and local newspapers. The Planning Commission may schedule special public meetings as the Commission deems necessary and appropriate to carry out its responsibilities as the Committee for Citizen Involvement.

Implementation Measure 1.1.1.c Support the Planning Commission as the Committee for Citizen Involvement, which assists City Officials with task forces for gathering information, sponsoring public meetings and/or evaluating proposals on special projects relating to land use and civic issues, when requested by officials or indicated by community need.

Implementation Measure 1.1.1.d Support the Planning Commission as a public Citizens Involvement Organization which assists elected and appointed City Officials in communicating information to the public regarding land use and other community issues. Examples of ways in which the Commission may accomplish this include conducting workshops or special meetings.

Implementation Measure 1.1.1.e Encourage the participation of individuals who meet any of the following criteria:

1. They reside within the City of Wilsonville.
2. They are employers or employees within the City of Wilsonville.
3. They own real property within the City of Wilsonville.
4. They reside or own property within the City's planning area or Urban Growth Boundary adjacent to Wilsonville.

Implementation Measure 1.1.1.f Establish and maintain procedures that will allow any interested parties to supply information.

Implementation Measure 1.1.1.g The Planning Commission will continue to conduct three different kinds of meetings, all of which are open to the public. Whenever feasible and practical, and time allows, the Commission and staff will conduct additional informal meetings to gather public suggestions prior to drafting formal documents for public hearings. The different kinds of meetings conducted by the Commission will include:

1. Public hearings;
2. Work sessions and other meetings during which citizen input is limited in order to assure that the Commission has ample time to complete the work that is pending; and
3. Informal work sessions and other meetings during which the general public is invited to sit with the Commission and play an interactive part in discussions. These sessions are intended to provide an open and informal exchange of ideas among the members of the general public and the Commissioners. Such meetings will happen at least two or three times each year.

Implementation Measure 1.1.1.h In preparing public notices for Planning Commission meetings, the staff will clarify whether the meeting will involve a public hearing and/or a work session.

GOAL 1.2: For Wilsonville to have an interested, informed, and involved citizenry.

Policy 1.2.1 The City of Wilsonville shall provide user-friendly information to assist the public in participating in City planning programs and processes.

Implementation Measure 1.2.1.a Clarify the process of land use planning and policy formulation so citizens understand when and how they can participate.

Implementation Measure 1.2.1.b Using press releases or other means, publicize the ways in which interested parties can participate and the topics which will be considered by public boards.

Implementation Measure 1.2.1.c Establish procedures to allow interested parties reasonable access to information on which public bodies will base their land use planning decisions.

Policy 1.3 The City of Wilsonville shall coordinate with other agencies and organizations involved with Wilsonville's planning programs and policies.

Implementation Measure 1.3.1.a Encourage members of the Wilsonville Chamber of Commerce and other interested organizations to serve on City Boards and Planning Commission.

Implementation Measure 1.3.1.b Where appropriate, the City shall continue to coordinate its planning activities with affected public agencies and private utilities. Draft documents will be distributed to such agencies and utilities and their comments shall be considered and kept on file by the City.

Elements of this Plan and the supporting database have been coordinated with the following agencies:

- Dept. of Land Conservation and Development (DLCD)
- Metropolitan Service District (Metro)
- Tri-Met
- Washington County
- Clackamas County
- Cities of: Tualatin, Sherwood, West Linn, Rivergrove, Canby, Durham, Lake Oswego, Tigard, Aurora, Woodburn, and Newberg.
- Sherwood, Canby, and West Linn-Wilsonville School Districts
- Oregon Department of Environmental Quality
- Oregon Department of Transportation and Parks and Recreation Dept.
- Oregon Department of Economic Development
- Oregon Department of Fish and Wildlife
- Oregon Department of Forestry

- Port of Portland
- U.S. Army Corps of Engineers
- Bonneville Power Administration
- The franchise utilities operating within the City.

URBAN GROWTH MANAGEMENT

Wilsonville is located within the jurisdiction of Metro, and coordinates the management of urban growth in and around Wilsonville with the affected county and regional governments. This section of the Comprehensive Plan recognizes that land around Wilsonville, especially land within the Urban Growth Boundary (UGB), is intended to meet urban growth needs for many years to come. This section is closely tied to the public facilities element to assure the orderly economic provision of urban services. This prioritizes areas for phased urban development, and specifies policies for the conversion of rural land to urban uses.

Wilsonville's rapid growth is clearly demonstrated by the following statistics: of the land within the current City limits, three times as much was developed in 1999 as was the case in 1988; and the City's population increased by nearly 400 percent in the same period. Economic development has grown just as rapidly, yielding an employment base that has grown as rapidly as the population. Figures provided by Metro in 1996 indicated that Wilsonville had more than three jobs for each housing unit within the City.

Based on Metro's (1981) regional growth allocation statistics, Wilsonville's population was projected to grow to 15,600 by the year 2000. In the same time period, the City's economic growth is expected to generate a total of 14,400 jobs. Those projections proved to be surprisingly accurate. In fact, Wilsonville's population in 2000 approached the 15,600 figure, and the number of jobs exceeded the 14,400 figure.

The City has found that uncontrolled rapid growth can seriously impact and overload the available public facilities and services. However, the City recognizes that the Portland metropolitan region continues to grow, and the City has made the commitment to do its fair share to accommodate part of the region's urban growth. Doing its fair share includes expanding the capacity of public facilities and services to keep pace with growth. The City also recognizes that if growth is uncontrolled, the City's current pleasant living and working environment will deteriorate. Therefore, the following provisions have been established as a framework for growth management policies and procedures.

It is a basic premise of this Plan that the purpose of designating land for urban development is to provide for needed housing, employment, and community services. Therefore, while public facilities are used as a controlling factor in growth management, it is not the intent of this Plan to place a priority on the provision of public facilities and services over that of providing for housing and employment. Rather, it is the intent of the Plan to seek a balance of these factors by insuring that a reasonable service level of public facilities is maintained to support urban growth.

The policies and Implementation Measures of this section of the Comprehensive Plan have been established for the management of urban growth in, and adjacent to, the City of Wilsonville.

CITY LIMITS

Wilsonville's City limits establish the boundary of the City's authority and jurisdiction. Only in cases where the City has an intergovernmental agreement (IGA) with one or both of the surrounding counties will the City have jurisdiction over outlying properties.

The City of Wilsonville intends to enter into and maintain such IGAs with both Washington and Clackamas Counties, to allow the City to continue to prepare long-range plans for the properties within Wilsonville's planning area and outside the City limits. Additional authority to zone, provide urban services to, or issue development approvals for, lands outside the City will require separate IGAs. Wilsonville's Planning Commission has strongly encouraged the City staff to enter into these IGAs as soon as possible after the enactment of this Comprehensive Plan.

The City will actively participate in the land use planning decisions of nearby jurisdictions that may have an effect on Wilsonville.

The City limit line is used to clearly indicate the edge of urban development at any given time. It provides for flexibility within the land development market, to assure that there are choices in type, location, and density or intensity of residential, commercial, and industrial development.

While the entire City, other than land that is designated as open space, is planned for immediate growth, the City recognizes that not all areas within the City can be equally served by existing facilities and services. This pattern is likely to continue in the future as the City grows out into previously rural land.

By allowing development to occur anywhere within the City limits, maximum market efficiency is maintained, and a greater variety of development proposals are made possible. The emphasis is then placed on the timing or phasing of actual site development in accordance with the ability to provide services.

Even within the City limits, it is important to place a priority on contiguous development. In so doing, capital improvements can be concentrated from the center portion of the City (near the freeway) outward, thus, providing for maximum efficiency in the street and utility systems.

In spite of the rapid rate of growth and development in Wilsonville since the City's incorporation, there are still portions of the City that lack full urban level services and street improvements. Development master plans and subdivision plats may be approved within these areas, but site development will be restricted to the service level capacities of the existing primary facilities until such time as urban level services are provided, as specified in Section 'C' of the Comprehensive Plan (Public Facilities and Services). The approval of development plans and subdivision plats in such areas with phased development controls will provide specific service demand information which is needed for efficient public facility planning and capital improvements.

URBAN GROWTH BOUNDARIES

Consistent with the Statewide Planning Goals, and statutory mandates, Metro has established, and will periodically expand the urban growth boundary for the region. Upon a demonstration of need, the Metro Council is required to add land to the Urban Growth Boundary to meet projected growth requirements for twenty years.

Once land has been added to the Urban Growth Boundary established by Metro, the City may annex adjacent parts of the UGB into the City limits. This allows for development, subject to the City's review procedures. Only in highly unusual situations would the City annex land outside the regional UGB, and then only after coordination with Metro, the affected county, and any other affected jurisdictions.

At the City's request, Metro has added land to the UGB adjacent to Wilsonville. However, there are still substantial land areas outside the City limits that the City considers to be within its planning area for long-range urban growth. The City does not have the legal authority or responsibility to plan for areas outside the City limits unless that land has been added to the UGB or the City has an approved Urban Growth Management Agreement (i.e., intergovernmental agreement) with the affected county. Given the demand for urban development in Wilsonville, it makes sense for the City to begin planning for outward expansion into those areas and to coordinate such planning with Metro, the counties and the state.

GOAL: 2.1 To allow for urban growth while maintaining community livability, consistent with the economics of development, City administration, and the provision of public facilities and services.

Policy 2.1.1. The City of Wilsonville shall support the development of all land within the City, other than designated open space lands, consistent with the land use designations of the Comprehensive Plan.

Implementation Measure 2.1.1.a. Allow development within the City where zoning has been approved and other requirements of the Comprehensive Plan have been met.

Implementation Measure 2.1.1.b. Allow urbanization to occur to provide adequate housing to accommodate workers who are employed within the City.

Implementation Measure 2.1.1.c. Encourage a balance between residential, industrial, and commercial land use, based on the provisions of this Comprehensive Plan.

Implementation Measure 2.1.1.d. Establish and maintain revenue sources to support the City's policies for urbanization and maintain needed public services and facilities.

Implementation Measure 2.1.1.e. Allow new development to proceed concurrently with the availability of adequate public services and facilities as specified in Public Facilities and Services Section (Section C) of the Comprehensive Plan.

Implementation Measure 2.1.1.f. To insure timely, orderly and efficient use of public facilities and services, while maintaining livability within the community, the City shall establish and maintain growth management policies consistent with the City's regional growth allocation and coordinated with a Capital Improvements Plan.

1. The Planning Commission shall periodically review growth-related data, e.g., the availability of public facilities, scheduled capital improvements, need for housing, commercial development and/or industrial development, etc.; and shall, as determined necessary following a public hearing, make recommendations to the City Council regarding Growth Management Plans.

2. To maximize design quality and conformity to the Comprehensive Plan, the City shall encourage master planning of large land areas. However, as an added growth management tool, the Development Review Board may, as a condition of approval, set an annual phasing schedule coordinated with scheduled Capital Improvements, particularly streets and related transportation facilities.

Implementation Measure 2.1.1.g. To discourage speculative zoning and to provide for maximum responsiveness to new design concepts and a changing market, site plan approvals shall carry an expiration date with substantial progress towards site development required to preserve the approval.

Policy 2.2.1. The City of Wilsonville shall plan for the eventual urbanization of land within the local planning area, beginning with land within the Urban Growth Boundary.

Implementation Measure 2.2.1.a. Allow annexation when it is consistent with future planned public services and when a need is clearly demonstrated for immediate urban growth.

Implementation Measure 2.2.1.b The City of Wilsonville, to the best of its ability based on infrastructure provided at the local, regional, and state levels, shall do its fair share to increase the development capacity of land within the Metro UGB.

1. The City of Wilsonville shall comply with the provisions of the Metro Urban Growth Management Functional Plan, unless an exception to the requirements is granted as provided in that Functional Plan.

2. The City shall comply with the provisions of Metro's Urban Growth Management Functional Plan, as long as that compliance does not violate federal or state law, including Statewide Planning Goals.

3 The City of Wilsonville recognizes that green corridors as described in the 2040 Growth Concept are critical to interurban connectivity. If the City at some future date annexes an area that includes a Metro-designated green corridor, it will be the City's policy to do the following:

   a. Control access to the transportation facility within the green corridor to maintain the function, capacity and level of service of the facility and to enhance safety and minimize development pressures on rural reserve areas; and

b. Provide adequate screening and buffering to adjacent development and limit signage in such a way as to maintain the rural character of the green corridor.

[Implementation Measure 2.2.1.b(3) added per Ordinance 549, October 21, 2002.]

Implementation Measure 2.2.1.c In conjunction with Metro, Washington County, and Clackamas County, the City shall periodically review and recommend revisions to the Urban Growth Boundary containing buildable land of a quality and quantity adequate to meet urban growth needs for twenty years.

Implementation Measure 2.2.1.d The City shall review all proposed UGB and urban reserve amendments in the Wilsonville area for conformance with Wilsonville's Comprehensive Plan.

Implementation Measure 2.2.1.e Changes in the City boundary will require adherence to the annexation procedures prescribed by State law and Metro standards. Amendments to the City limits shall be based on consideration of:

1. Orderly, economic provision of public facilities and services, i.e., primary urban services are available and adequate to serve additional development or improvements are scheduled through the City's approved Capital Improvements Plan.
2. Availability of sufficient land for the various uses to insure choices in the marketplace for a 3 to 5 year period.
3. Statewide Planning Goals.
4. Applicable Metro Plans;
5. Encouragement of development within the City limits before conversion of urbanizable (UGB) areas.
6. Consistency with legislative Master Plans and other applicable provisions of the Comprehensive Plan and Development Code.

Implementation Measure 2.2.1.f Washington and Clackamas Counties have agreed that no new lots shall be created outside the City and within the Urban Growth Boundary that contain less than ten acres. Development of existing lots of record and newly created lots of 10 or more acres shall be limited to single-family dwellings, agricultural activities; accessory uses which are directly related to the primary residential or agricultural use and necessary public and semi-public uses. *(Note that this Implementation Measure may need to be revised after the State has completed pending revisions to Statewide Planning Goal 14.)*

Implementation Measure 2.2.1.g Urban sanitary sewer and water service shall not be extended outside the City limits, with the following exceptions:

1. Where an immediate demonstrable threat to the public health exists, as a direct result of the lack of the service in question;
2. Where a Governmental agency is providing a vital service to the City; or

3. Where it is reasonable to assume that the subject area will be annexed to the City within a reasonable period of time.

Implementation Measure 2.2.1.h To assure consistency between Comprehensive Plans and establish the City's interest in the area, the City shall jointly adopt dual interest area agreements with Washington and Clackamas Counties for comprehensive planning of the land outside the City and within the UGB and the Wilsonville planning area.

PUBLIC FACILITIES AND SERVICES

Public facilities and services include sanitary sewer, water, fire and police protection, libraries, storm drainage, schools, parks and recreation, transportation, solid waste and general governmental administrative services. Semi-public facilities are privately owned and operated, but have general public benefit and may be regulated by government controls. They include a wide range of services from electric utilities to day care.

As a growing City, Wilsonville has learned through experience the importance of community facilities and services that are adequate to serve urban growth. In the late 1990s, the City adopted two Public Facilities Strategies and a City-wide water moratorium on new development approvals. Those actions were due to proposed developments that, if approved, would have exceeded the City's ability to provide concurrent facilities and services.

Wilsonville uses a three-step approach to planning for public facilities. First, general Policies and Implementation Measures are contained in the Comprehensive Plan. Second, individual master plans (e.g., Parks and Recreation Master Plan, Stormwater Master Plan, Transportation Systems Plan, etc.) are prepared and periodically updated to deal with specific facility requirements. Finally, the City annually updates a rolling five-year Capital Improvement Program, based on these master plans, that is used for scheduling and budgeting of improvement projects.

Relying heavily on the formation of Local Improvement Districts (LIDs) and the use of Systems Development Charges (SDCs), Wilsonville typically requires developers to pay for the costs of major facility expansions to serve new development.

As development increases, so does the requirement for improved and greater capacity facilities and services. Providing facilities in response to growth rather than in anticipation of growth is ineffective and causes gaps in service capabilities. In the worst case situations, failure to provide needed facilities and services can result in threats to the public's health or safety. In recognition of this circumstance, the City continues to emphasize the need for providing adequate facilities and services in advance of, or in conjunction with, urban development. However, it also recognizes that not all facilities and services require the same level of service adequacy, simultaneous with development. The Comprehensive Plan, therefore, prioritizes facilities into primary and complimentary categories and establishes specific development policies for each facility or service.

The City's policies for the provision of public facilities and services can be divided into three categories. The first is the City's overall commitment to provide, or coordinate the provision of, facilities and services to meet the community's needs. The second concerns the timing of the provision of facilities and services relative to development (i.e., concurrency issues). The third concerns the costs of providing facilities and services and who is responsible for paying.

This Plan also includes provisions dealing specifically with different types of facilities and services. They are covered in the following order:

Primary facilities and services include: those which significantly impact public health and safety and are directly linked to the land development process, in terms of service capacity, location, and design, or directly affect public health and safety. Therefore, adequate provision must be made for these facilities/services prior to or concurrently with urban level development. These facilities and services include:

Sanitary sewer;
Water service;
Roads and transportation;
Storm drainage;
Fire protection; and
Police protection and public safety.

Complementary Facilities and Services include: those which complement the public health, safety and general welfare of urban residents and workers, but are not necessarily directly linked to the land development process or public health and safety. These facilities include:

Schools, library, and educational services;
Parks, recreation, and open space;
Solid waste;
Semi-public utilities;
City administration; and
Health and social services.

While these complementary facilities and services affect the overall quality of urban living and should be planned for in anticipation of development, in some cases it is more economical and practical to determine service levels subsequent to actual development.

The following provisions apply to public facilities and services in general. More specific Policies and Implementation Measures applying to specific facilities and services follow later in the document.

GOAL 3.1: To assure that good quality public facilities and services are available with adequate, but not excessive, capacity to meet community needs, while also assuring that growth does not exceed the community's commitment to provide adequate facilities and services.

Policy 3.1.1 The City of Wilsonville shall provide public facilities to enhance the health, safety, educational, and recreational aspects of urban living.

Implementation Measure 3.1.1.a The City will continue to prepare and implement master plans for facilities/services, as sub-elements of the City's Comprehensive Plan. Facilities/services will be designed and constructed to help implement the City's Comprehensive Plan.

Implementation Measure 3.1.1.b The City Engineer shall report annually, and at other times as needed, to the Planning Commission, Budget Committee, and City Council, and other City

committees or commissions on the status and available capacity of urban services/facilities, including streets, bicycle and pedestrian facilities, water, sanitary sewer, and storm drainage.

Implementation Measure 3.1.1.c Developments shall continue to be required to extend services/facilities to the far side of the subject property – assuring that the adjacent properties have access to those services/facilities. It is noted that unusual existing circumstances may necessitate creative solutions for the extension of services/facilities.

Implementation Measure 3.1.1.d The City shall periodically review and, where necessary, update its development densities indicated in the land use element of the Plan, based on the capacity of existing or planned services and/or facilities.

TIMING -- CONCURRENCY ISSUES

Wilsonville emphasizes the importance of providing the needed public facilities and services in advance of, or concurrently with, development. In fact, much of the text of the Comprehensive Plan deals with concurrency.

In the course of the most recent Comprehensive Plan revision process, the various provisions dealing with concurrency have been reorganized and listed below:

Policy 3.1.2 The City of Wilsonville shall provide, or coordinate the provision of, facilities and services concurrent with need (created by new development, redevelopment, or upgrades of aging infrastructure).

Implementation Measure 3.1.2.a Urban development will be allowed only in areas where necessary facilities and services can be provided.

Implementation Measure 3.1.2.b Development, including temporary occupancy, that threatens the public's health, safety, or general welfare due to a failure to provide adequate public facilities and services, will not be permitted. Development applications will be allowed to proceed on the following basis:

1. Planning approvals may be granted when evidence, including listing in the City's adopted Capital Improvement Program, supports the finding that facilities/services will be available within two years. Applicants may be encouraged or required to plan and complete development in phases, in order to assure that the rate of development does not exceed the capacity of needed facilities/services.

2. Building permits will be issued when planning approvals have been granted and funding is in place to assure completion of required facilities/services prior to occupancy. Applicants must sign a statement acknowledging that certificates of occupancy will not be given until adequate facilities/services, determined by the Building Official, after consulting with the City Engineer, are in place and operational. Parks, recreation facilities, streets and other transportation system improvements may be considered to be adequately in place and operational if they

are listed in the City's adopted Capital Improvement Program, or other funding is committed for their completion within two years. In such cases, water, sewer, and storm drainage facilities must be available, to the satisfaction of the City Engineer, on at least a temporary basis, prior to occupancy.

3. Final certificates of occupancy will not be given until required facilities/services are in place and operational. Temporary certificates of occupancy may only be granted when the Building Official determines, after consulting with the City Engineer, that needed facilities/services will be in place and operational at the conclusion of the time period specified in the temporary certificate of occupancy. Nothing in this policy is intended to indicate that a temporary certificate of occupancy will be granted without assurance of full compliance with City requirements.

Implementation Measure 3.1.2.c Where a shortage of facilities/services exists or is anticipated in the near future, and other alternatives are not feasible to correct the deficiency, the City shall take steps to implement a moratorium on development activity or to manage growth through a public facilities strategy, as provided by statute. In the event that State laws provide other alternatives to address shortages of facilities/services, the City will consider those alternatives as well.

Implementation Measure 3.1.2.d As an alternative to denying a development application that otherwise meets all applicable standards and criteria, the City shall impose reasonable conditions of approval on that development, in terms of the provision of adequate services/facilities.

Implementation Measure 3.1.2.e When development is proposed in areas of the City where full urban services/facilities are not yet available, development approval shall be conditioned on the provision of adequate facilities and services to serve the subject property. Where the development can reasonably proceed in phases prior to the availability of full urban services/facilities, such development may be permitted. However, the use of on-site sewage disposal and private water systems shall only be approved where permitted by City ordinance.

Implementation Measure 3.1.2.f Coordinate with the appropriate school district to provide for additional school sites substantially ahead of the anticipated need.

PAYING FOR NEEDED FACILITIES AND SERVICES

Policy 3.1.3 The City of Wilsonville shall take steps to assure that the parties causing a need for expanded facilities and services, or those benefiting from such facilities and services, pay for them.

Implementation Measure 3.1.3.a Developers will continue to be required to pay for demands placed on public facilities/services that are directly related to their developments. The City may establish and collect systems development charges (SDCs) for any or all public

facilities/services, as allowed by law. An individual exception to this standard may be justified, or SDC credits given, when a proposed development is found to result in public benefits that warrant public investment to support the development.

Implementation Measure 3.1.3.b The City will continue to prepare and implement a rolling five-year Capital Improvement Program, with annual funding decisions made as part of the municipal budget process.

Implementation Measure 3.1.3.c The City shall continue to employ pay-back agreements, development agreements, and other creative solutions for facilities that are over-sized or extended from off-site at the expense of only some of the benefited properties.

PRIMARY FACILITIES AND SERVICES

Sanitary Sewer Plan

The City operates its own wastewater treatment plant and sewage collection system, independent of any other agencies. The wastewater treatment plant was significantly expanded in the late 1990s. The wastewater treatment plant has now undergone four major expansions to keep pace with community growth since its original construction. The latest improvements were designed to serve the community through approximately the year 2015.

The City recognizes Metro's role in coordinating water management and waste treatment planning as well as the Department of Environmental Quality's role in monitoring water quality.

The City recognizes and assumes its responsibility for the operation and maintenance of the wastewater treatment plant and the collection system, including public lines and pump stations that have been designed and constructed to City standards. The City also assumes the responsibility for assuring that wastewater treatment plant capacity expands to keep pace with community growth.

Policy 3.1.4 The City of Wilsonville shall continue to operate and maintain the wastewater treatment plant and system in conformance with federal, state, and regional water quality standards.

Implementation Measure 3.1.4.a The City shall continue to maintain a sewer service capacity monitoring and expansion program to assure that adequate treatment and trunk main capacity are is available to serve continued development, consistent with the City's urban growth policies and the concurrency standards noted above.

Implementation Measure 3.1.4.b The City shall continue to manage growth consistent with the capacity of sanitary sewer facilities.

Implementation Measure 3.1.4.c Based on the service capacity and the permit monitoring program, the City shall plan and appropriately schedule future expansions of the wastewater treatment plant.

Implementation Measure 3.1.4.d. While the City assumes the responsibility for maintaining the treatment plant and collection system, it does not assume the responsibility for extending lines to serve individual properties and developments.

Implementation Measure 3.1.4.e The City shall continue to require all urban level development to be served by the City's sanitary sewer system.

Implementation Measure 3.1.4.f The cost of all line extensions and individual services shall be the responsibility of the developer and/or property owners(s) seeking service. When a major line is to be extended, the City may authorize and administer formation of a Local Improvement District (LID). All line extensions shall conform to the City Sanitary Sewer Collection System Master Plan, urbanization policies, and Public Works Standards.

Water Service Plan

The City's water system has expanded significantly from the original well and reservoir located on Elligsen Road. The water system has four reservoirs with a total storage capacity of 7.95 million gallons and eight wells with a total production capability of 5.2 million gallons per day (MGD). Following voter approval in 1999, a surface water treatment plant on the Willamette River was designed to provide up to 20 MGD of capacity for the local system with up to 50 additional MGD available to be pumped to neighboring communities north of Wilsonville. The initial phase of the treatment plant construction is intended to meet the average daily water demands predicted through the year 2015. Additional phases of treatment plant expansion will be built as the demand actually occurs, so system expansion will occur on a regular basis. It is also anticipated that a water system master plan update (due for completion in fiscal year 2000-2001) will indicate the need for additional reservoir capacity before the year 2020. As future growth occurs, it will be necessary to incrementally expand the existing water system to provide additional storage, pumping, and pipeline capacity.

The City recognizes and assumes the responsibility for developing and maintaining the community's basic water system.

Policy 3.1.5 The City shall continue to develop, operate and maintain a water system, including wells, pumps, reservoirs, transmission mains and a surface water treatment plant capable of serving all urban development within the incorporated City limits, in conformance with federal, state, and regional water quality standards. The City shall also continue to maintain the lines of the distribution system once they have been installed and accepted by the City.

Implementation Measure 3.1.5.a The City shall review and, where necessary, update the Water System Master Plan to conform to the planned land uses shown in the Comprehensive Plan and any subsequent amendments to the Plan.

Implementation Measure 3.1.5.b All major lines shall be extended in conformance to the line sizes indicated on the Master Plan and, at a minimum, provisions for future system looping shall be made. If the type, scale and/or location of a proposed development negatively impacts operating pressures or available fire flows to other properties as determined by the City Engineer, the Development Review Board may require completion of looped water lines, off-site facilities, pipelines, and/or facility/pipelines to achieve or maintain minimum pressures or fire flows as a conditions of development approval.

Implementation Measure 3.1.5.c Extensions shall be made at the cost of the developer or landowner of the property being served. When a major line is extended that is sized to provide service to lands other than those requiring the initial extension, the City may:

1. Authorize and administer formation of a Local Improvement District to allocate the cost of the line improvements to all properties benefiting from the extension; or
2. Continue to utilize a pay-back system whereby the initial developer may recover an equitable share of the cost of the extension from benefiting property owners/developers as the properties are developed.

Implementation Measure 3.1.5.d. All water lines shall be installed in accordance with the City's urban growth policies and Public Works Standards.

Implementation Measure 3.1.5.e The City shall continue to use its Capital Improvements Program to plan and schedule major water system improvements needed to serve continued development (e.g., additional water treatment plant expansions, transmission mains, wells, pumps and reservoirs).

Policy 3.1.6 The City of Wilsonville shall continue a comprehensive water conservation program to make effective use of the water infrastructure, source water supply and treatment processes.

Implementation Measure 3.1.6.a. The City will track system water usage through production metering and service billing records and take appropriate actions to maintain a target annual average unaccounted for water volume of less than 10% of total production.

Implementation Measure 3.1.6.b. The City will maintain other programs and activities as necessary to maintain effective conservation throughout the water system.

Policy 3.1.7 The City of Wilsonville shall maintain an accurate user demand profile to account for actual and anticipated demand conditions in order to assure an adequately sized water system.

Implementation Measure 3.1.7.a. The City will track system water usage through production metering and service billing records and take appropriate actions to maintain a target annual average unaccounted for water volume of less than 10% of total production.

Implementation Measure 3.1.7.b. The City will maintain other programs and activities as necessary to maintain effective conservation throughout the water system.

Policy 3.1.8 The City of Wilsonville shall coordinate distribution system improvements with other CIP projects, such as roads, wastewater, and storm water, to save construction costs and minimize public impacts during construction.

~~Roads and Transportation Plan~~ [Deleted by Ord. No. 671, 11/16/09] See "Transportation" on page C – 20.

Storm Drainage Plan

Conventionally designed urban development tends to result in an increase in impervious surfaces. Increased quantities of impervious surface increase both the volume and speed of storm water flows, while also damaging water quality. As a rapidly urbanizing and growing area, Wilsonville now experiences the effects of increased impervious surfaces with every major storm event. Increases in impervious surface area in Wilsonville also have the potential to impact downstream locations along the Willamette River.

There are increasing regulatory requirements that affect stormwater and the various drainage ways that convey that water. Federal standards regulate water quality (including temperature and turbidity) and the Endangered Species Act calls for the protection of native salmonid species. The City must set its own standards for development and land use activities to comply with relevant federal standards, and must also comply with regional and state requirements in the process.

The City's storm drainage responsibilities range from controlling the volume and speed of run-off through storm water detention facilities, to regulating land development activities to assure that individual private construction projects do not overburden the public systems or damage the environment without adequate mitigation. Additionally, the City must now regulate land uses to protect or improve riparian vegetation as feasible, along drainage ways.

To identify deficiencies in the City's storm drainage system, to improve uniform drainage information, to create specified storm drainage standards, and establish a systems development and maintenance program, the City has prepared a Stormwater Master Plan.

Policy 3.1.7 The City of Wilsonville shall develop and maintain an adequate storm drainage system. However, where the need for new facilities is the result of new development, the financial burden for drainage system improvements shall remain primarily the responsibility of developers. The City will use systems development charges, user fees, and/or other funding sources to construct facilities to improve storm water quality and control the volume of runoff.

Implementation Measure 3.1.7.a In order to adequately provide for urban development, the City has established and will maintain a Stormwater Master Plan, development policies/standards for control of an on and off-site drainage, Public Works Standards, and a Capital Improvements Program to upgrade deficient structures and drainage ways.

Implementation Measure 3.1.7.b. To assure maximum efficiency and effectiveness of the drainage system, a maintenance program has also been established to assure compliance with the City's NPDES (National Pollution Discharge Elimination System) permit. In some circumstances, private maintenance of facilities (by homeowners associations or other entities) may be required, as has been the case for the maintenance of neighborhood parks in Wilsonville.

Implementation Measure 3.1.7.c. A storm drainage systems development charge shall continue to be collected from developers prior to issuance of a building permit. The Stormwater Master Plan and the Capital Improvements Program will continue to be the basis of establishing Systems Development Charges for storm drainage. The funds are used to upgrade the storm drainage system beyond those improvements required to serve individual developments. Provision of drainage control within a given development shall remain the responsibility of the developer, with the City assisting only insofar as the system will also accommodate off-site drainage. In reviewing planned improvements, the City Engineer may specify the use of on-site or off-site storm water detention, based on specific site characteristics and drainage patterns of the area.

Implementation Measure 3.1.7.d Major natural drainage ways shall be retained and improved as the backbone of the drainage system and designated as open space. The integrity of these drainage ways shall be maintained as development occurs. Where possible, on-site drainage systems will be designed to complement natural drainage ways and designated open space to create an attractive appearance and will be protected by conservation, utility, or inundation easements. Alteration of minor drainage ways may be allowed provided that such alterations do not adversely impact stream flows and in-stream water quality of the major drainage ways and provide for more efficient use of the land. Such alteration must be approved by the City. Remnant creek channels, which previously carried water that has since been diverted, shall be evaluated for their wildlife habitat value before being selected for use as drainage ways. Where a remnant creek channel is found to provide unique habitat value without being a riparian zone, and that habitat value would actually be diminished through the re-introduction of storm water, alternate methods of conveying the storm water will be considered and, if feasible, used.

Implementation Measure 3.1.7.e Existing culverted or piped drainage ways will be "daylighted" (converted from underground to surface facilities) when doing so will help to achieve the City's goals for storm drainage without overly conflicting with development.

Implementation Measure 3.1.7.f Conversion of existing swales or drainage ways to culverted or piped systems shall be permitted only where the City Engineer determines that there is no other reasonable site development option. See Option A, above.

Implementation Measure 3.1.7.g Conversion of existing meandering swales or drainage ways to linear ditches shall be permitted only when the City Engineer determines that there is no other reasonable site development option.

Implementation Measure 3.1.7.h Open drainage ways may be used to meet a portion of the landscaping and open space requirements for developments, provided that they meet the design requirements of the Development Review Board.

Implementation Measure 3.1.7.i It is the intent of these measures to maximize the use of the natural drainage system to allow for ground water infiltration and other benefits to community aesthetics as well as habitat enhancement. This does not mean that natural drainage ways will be left unimproved.

Implementation Measure 3.1.7.j The natural system must also be improved and maintained to handle the anticipated run-off in a manner that meets the requirements of the Stormwater Master Plan. Where wetlands are constructed for the purpose of accommodating storm drainage, certain areas of those wetlands may be designed to accumulate sediment. The City will periodically dredge and maintain those areas in constructed wetlands, or will permit others to do so, as necessary to maintain the storm drainage functions of those constructed wetlands.

Implementation Measure 3.1.7.k One-hundred year flood plains and floodways have been established through the Federal Flood Insurance program, for all flood-prone areas of the City except Coffee Lake Creek, north of Barber Street. For that area along Coffee Lake Creek, a hydrology study to establish the 100-year flood elevation will be required prior to development approval. The floodways must continue to be protected from encroachment. Development within the flood plain shall be regulated consistent with the standards of the Federal Flood Insurance Act, and Title 3 of Metro's Urban Growth Management Functional Plan. Storm water runoff from upstream development shall be controlled so as to not adversely impact the peak flood flow in the mainstream channels.

Implementation Measure 3.1.7.l The City will regulate new land divisions to prevent the creation of additional lots for building sites within 100-year floodplains. This is not intended to prohibit the creation of new lots that are partially within flood plains, provided that the developable portion of each lot will be outside of the 100-year flood plain, and FEMA standards are met.

Implementation Measure 3.1.7.m The City will regulate cuts and fills within flood plains to assure that the amount of fill material added will not exceed the amount of cut material that is removed.

Implementation Measure 3.1.7.n Wilsonville has established a single-storm drainage runoff standard that is applied throughout the City. That standard requires developers to plan for at least a 25-year storm event. However, the differences in the natural characteristics of the Boeckman Creek and Seely Ditch Basins and their sub-area basins will require developers and their engineers to plan for different types of detention or retention facilities

in one basin than would be used in another. The appropriate criteria will be established and implemented through the City's Public Works Standards.

Implementation Measure 3.1.7.o Based on facility capacities identified in the Stormwater Master Plan, appropriate storm run-off standards shall be implemented through the City's Public Works Standards.

Implementation Measure 3.1.7.p In the course of site development, developers may be required to retain or improve native vegetation in identified riparian zones and landslide prone areas to decrease the amount of surface water run-off, to shade areas of surface water, to preserve areas of natural percolation, help stabilize landslide-prone areas, and reduce erosion. Replacement, enhancement, and/or restoration of vegetation, including the removal of invasive plants, may also be required depending on the type, scale, and location of development.

Implementation Measure 3.1.7.q Natural drainage ways shall be stabilized as necessary below drainage and culvert discharge points for a distance sufficient to convey the discharge without channel erosion. The City Engineer may require the use of energy dissipaters to help minimize erosion.

Implementation Measure 3.1.7.r Sediment and erosion control shall be provided consistent with the Public Works Standards. All approved open drainage channels and open detention/retention basins shall be designed, constructed, and maintained with appropriate safeguards to insure public health and safety.

Implementation Measure 3.1.7.s All drainage facilities shall be designed to be consistent with state and federal standards for the passage of fish and wildlife.

Implementation Measure 3.1.7.t All development proposals shall be accompanied by a storm drainage plan and hydrologic analysis adequate to meet the above policies and standards, unless waived by the City Engineer for good cause. No development permit shall be issued for any project until a storm drainage plan has been approved by the City Engineer and/or the Development Review Board.

Fire Protection Plan

Fire protection is very adequately provided by the Tualatin Valley Fire and Rescue District. The District has responsibility for maintaining and upgrading fire-fighting apparatus and making necessary capital improvements such as new fire stations. However, the overall effectiveness of their operations is significantly affected by the location and design of urban development.

Policy 3.1.8 The City of Wilsonville shall continue to coordinate planning for fire safety with the Tualatin Valley Fire and Rescue District.

Implementation Measure 3.1.8.a All development plans, as approved by the Development Review Board, shall be approved by the City's Building Division for consistency with the state Uniform Fire Code (as amended by the Tualatin Valley Fire and Rescue District and subsequently adopted by the City of Wilsonville).

Implementation Measure 3.1.8.b The City shall update Chapter 9 of the Wilsonville Code by adopting the Fire Prevention Code of the Tualatin Valley Fire and Rescue District as it is updated.

Implementation Measure 3.1.8.c The City shall require that all buildings be designed to a maximum fire flow rating of 3,000 GPM at 20 p.s.i. or such other standard as may be agreed to by the City and the Fire District.

Implementation Measure 3.1.8.d The City's Public Works Standards shall be reviewed for conformity to minimum Fire District Requirements.

Implementation Measure 3.1.8.e The City shall continue to coordinate with the Fire District in maintaining accurate maps (including addressing) and land development records. The City should also take advantage of the District's computer capacity, when operational, for the storage and retrieval of such land use data.

Implementation Measure 3.1.8.f Provide fire protection consistent with the health, welfare, and safety of Wilsonville citizens.

Police Protection And Public Safety

The City's police protection is provided through a contract with the Clackamas County Sheriff's Department. Supplemental services are also available from the State Police.

Policy 3.1.9 The City of Wilsonville shall continue to provide adequate police protection.

Implementation Measure 3.1.9.a To augment formal police protection and minimize public financing of police services, the City shall:

1. Work in concert with the County Sheriff's office and local citizens to develop community crime prevention and safety programs, i.e., citizen patrol.
2. Incorporate where appropriate defensible space and other safety and security design concepts/standards in site and building design review.
3. Encourage local businesses to utilize private security personnel for site specific property protection.

Implementation Measure 3.1.9.b Provide police protection consistent with the health, welfare, and safety of Wilsonville citizens.

COMPLEMENTARY FACILITIES/SERVICES PLAN

These services support urban growth and add to or complement livability in a community. The adequacy of their service levels also tend to be less definable than those in the primary category. Service levels in this category typically lag behind demand and are generally more economical to provide in response to specific rather than projected demands. Even so, it is important to plan for these facilities and services in advance, and if significant service deficiencies exist, to regulate growth accordingly.

School And Educational Services

Public educational facilities/services in Wilsonville are currently provided by three school districts. The West Linn – Wilsonville School District serves the majority of the City but portions of the City also lie within the Canby and Sherwood Districts. Current services provided by the districts are adequate and provisions are being made for new or expanded facilities where existing capacities have been exceeded.

While existing services and facilities are adequate, the division of the City into three districts tends to detract from continuity in community identity.

Policy 3.1.10 The City of Wilsonville shall continue to coordinate planning for educational facilities with all three local school districts and Clackamas Community College.

Implementation Measure 3.1.10.a To provide better continuity throughout the community and realize the maximum benefit to the local tax structure, the City will continue to support the consolidation of the entire City limits into one school district.

Implementation Measure 3.1.10.b Residential development directly impacts school facilities and services. However, the City does not have the responsibility for providing educational services. For this reason, the City will provide information to the school districts about proposed and actual residential developments within the City.

Implementation Measure 3.1.10.c The City shall continue to coordinate with the school districts for the planning, scheduling, and construction of needed educational facilities. To minimize unnecessary duplication, the City will also work in concert with the school districts for the provision of recreational facilities and programs.

Implementation Measure 3.1.10.d The City will encourage private educational services and will work with organizations or individuals proposing such activities in an effort to meet their needs while complying with the appropriate elements of the Comprehensive Plan.

Implementation Measure 3.1.10.e It is the basic reasoning of these policies that development within the City should not be regulated based on the availability of school facilities and services. Rather, these services should be planned for and provided to meet the demands

created by development. If, however, school facilities and/or services were determined to be severely inadequate and the school districts unable to provide satisfactory improvement, then growth limitations would be appropriate.

Parks/Recreation/Open Space

Parks and recreational facilities in and around Wilsonville are provided for by the City, County, State and local school districts. The City's close proximity to Portland provides local residents with numerous recreational and entertainment opportunities provided throughout the metropolitan area, all within a 30 to 40 minute drive. Even the ocean beaches, Mt. Hood and other Cascade Mountains and several campgrounds, rivers and lakes are close at hand, within a couple of hours drive, thus providing an abundance of recreational activities.

Within the City, recreational planning is coordinated with the West Linn-Wilsonville School District. The District provides traditional physical education programs as part of their regular school curriculum plus competitive sports programs in the upper grade levels. Other youth sports programming is provided by the City and a variety of non-profit organizations. The School District's community education program also provides recreational programs for both youth and adult activities and coordinates the use of District facilities.

As the City continues to grow, additional facilities and services will need to be developed.

The following Park and Recreation policies are further supported by policies in the Land Use and Development Section of the Comprehensive Plan regarding the natural environment, natural resources, and general open space.

The 1971 General Plan and the 1988 Comprehensive Plan sought to:

1. Preserve the natural integrity of the Willamette River. Provide for frequent contact with the river. Encourage development of an adequate park and recreation system which would contribute to the physical, mental and moral health of the community.

2. Encourage the school/park concept as a basic feature of the park element of the Plan.

3. Develop parks and open spaces where the land and surrounding development make it least suited for intensive development.

4. Develop an extensive system of trails along stream courses and power line easements.

5. Encourage early acquisition of recreation sites to protect them from development and to reduce the public cost of acquiring the land.

6. Encourage commercial recreation carefully sited within, or adjacent to, other uses.

These standards recognize the importance of an adequate park and recreation system to the physical, mental and moral health of the community. They also represent a common-sense approach to parks planning and are, therefore, reaffirmed by this Plan. The Park and Recreation system envisioned is a combination of passive and active recreational areas including specified park lands, schools, and linear open spaces in both public and private ownership. It is a basic premise of this Plan that the availability of conveniently located open recreational spaces is more important than the form of ownership.

In planning for such a system, it is helpful to classify the individual components (neighborhood parks, community parks, Greenway, etc.) which will or could comprise the park system. In addition, the establishment of a reasonable acquisition and development program requires a listing of priorities and a guide to desirable service levels. To maximize effectiveness, however, the actual development of such a system requires relating the provision of facilities and services to the particular needs and recreational desires of the residents to be served.

In recognition of Statewide Planning Goals and to provide a framework for development of park and recreation facilities, the following policy and implementation measures have been established:

Policy 3.1.11 The City of Wilsonville shall conserve and create open space throughout the City for specified objectives including park lands.

Implementation Measure 3.1.11.a Identify and encourage conservation of natural, scenic, and historic areas within the City.

Implementation Measure 3.1.11.b Provide an adequate diversity and quantity of passive and active recreational opportunities that are conveniently located for the people of Wilsonville.

Implementation Measure 3.1.11.c Protect the Willamette River Greenway from incompatible uses or developments.

Implementation Measure 3.1.11.d Continue the acquisition, improvement, and maintenance of open space.

Implementation Measure 3.1.11.e Require small neighborhood parks (public or private) in residential areas and encourage maintenance of these parks by homeowner associations or other entities as deemed appropriate by the City.

Implementation Measure 3.1.11.f Maintain and develop the current park system for centralized community-wide park facilities, but emphasize the future acquisition of small parks in localized areas.

Implementation Measure 3.1.11.g Where appropriate, require developments to contribute to open space.

Implementation Measure 3.1.11.h Protect residents from bearing the cost for an elaborate park system, excessive landscape maintenance, and excessive public facility costs.

Implementation Measure 3.1.11.i Develop limited access natural areas connected where possible by natural corridors for wildlife habitat and watershed and soil/terrain protection. Give priority to preservation of contiguous parts of that network which will serve as natural corridors throughout the City for the protection of watersheds and wildlife.

Implementation Measure 3.1.11.j Identify areas of natural and scenic importance and where appropriate, extend public access to, and knowledge of such areas, to encourage public involvement in their preservation.

Implementation Measure 3.1.11.k Protect the river-connected wildlife habitat.

Implementation Measure 3.1.11.l Encourage the interconnection and integration of open spaces within the City and carefully manage development of the Willamette River Greenway.

Implementation Measure 3.1.11.m Provide for legal public access to the river only through and within the City parks, right-of-ways, easements, or other public property.

Implementation Measure 3.1.11.n Park classifications and standards shall be developed to guide a program for acquisition and development of a park and open space system to insure an adequate supply of usable open space and recreational facilities, directly related to the specific needs of the local residents.

Implementation Measure 3.1.11.o Individual park and recreational sites, as defined by the parks and open space standards and classification system will be developed according to the following priorities:

1. Where possible, facilities within a park should be adjusted to meet the needs and desires of the local residents and the characteristics of the site. Park and/or recreational facilities in demand and least supply should receive the highest priorities.
2. Parks should be planned to insure maximum benefit to the greatest number of local residents. For this reason, acquisition and development of community level parks should be given the highest park priority.
3. Development of additional neighborhood Parks will have a lower priority for public funding, except where a higher priority is established for a specific area by a legislative Master Plan or other provision of the Comprehensive Plan. To assure localized benefit, development and maintenance of neighborhood parks

shall continue to be accomplished through homeowner associations or other entities as deemed appropriate by the City.

4. Small neighborhood parks have the lowest development priority and should be supplied at public expense only if an area is determined to be isolated from access to other parks, or where deemed to be needed by a legislative Master Plan, or where space is extremely limited, and the park is supported by the adjacent neighborhood the park is serving. Maintenance of such parks should be assigned to a homeowners' association or other neighborhood organization or the City. Small neighborhood parks tend to benefit a very localized population. It is, therefore, the intent of these standards to assign, where possible or appropriate to specific areas, the financial burden of maintenance and even development to those that benefit the most. In addition, a significant factor affecting maintenance costs is one of transporting equipment from park to park. Therefore, by concentrating public maintenance efforts to a few community parks, efficient use of maintenance dollars can be maximized.

5. Provision of regional park facilities will only be considered as an inter-jurisdictional project; and should have a low priority unless unusual circumstances arise.

6. The City will encourage dedication or acquisition of land for parks and other public purposes in excess of lands needed to satisfy immediate needs.

Implementation Measure 3.1.11.p New developments shall be responsible for providing specified amounts of usable on-site open space depending on the density characteristics and location of the development, considering the provisions of applicable legislative Master Plans. Where possible, recreational areas should be coordinated with and complement Willamette River Greenway, and other open space areas identified as environmentally sensitive or hazardous areas for development.

Implementation Measure 3.1.11.q All development within the Willamette River Greenway shall be controlled through the conditional use permit process and shall be subject to Design Review approval.

It is the reasoning of these policies that the need for open space is closely related to density. There is a relationship between the amount of interior space provided within living units and the desire for outdoor space. That is, if the interior living space creates a confined or crowded feeling, the availability of outdoor space becomes more important than if the interior area is spacious and comfortable. Therefore, while standards for open space will be set, they may be adjusted based on individual site design characteristics. The standards further recognize the value of urban land for development and attempts to reasonably balance the need for open or recreational space with competing uses.

The West Linn – Wilsonville School District currently provides recreational facilities and programs for City residents. They have developed facilities at Wood Middle School and at Wilsonville High School. These facilities and services are considered a vital part of the City's park and recreational system.

Implementation Measure 3.1.11.r The City shall continue to work on cooperative arrangements with the school districts to encourage provision of adequate year-round recreational programs and facilities, and to eliminate unnecessary overlap of facilities. Joint ventures in providing facilities and programs should be carefully considered in order to maximize the use of public funds in meeting local needs.

Safe and convenient access to park and recreation facilities is an important factor in a successful park system. The pedestrian/bicycle/equestrian paths are essentially an element of the City's transportation system and policies regarding their development are included in the Transportation Systems Plan. Pathways do, however, also serve a recreational function and are, therefore, referenced in this element. This is particularly true with respect to coordination/alignment of proposed pathways with park and recreational facilities, including schools.

Implementation Measure 3.1.11.s Facilities constructed to implement the Bicycle and Pedestrian Master Plan shall be designed to insure safe and convenient pedestrian, bike and, where appropriate, equestrian access from residential areas to park, recreational and school facilities throughout the City.

Park System Classifications

Detailed park development standards are included in the City of Wilsonville Parks & Recreation Master Plan, dated December 1994. That document includes standards for the following:

Neighborhood parks;
Community parks;
Regional parks;
Minor limited-use recreation center and minor multi-use recreation centers;
Major limited-use recreation centers;
Major multi-use recreation centers;
Activity Centers; and
Nature trails, minor pathways, and major pathways.

Solid Waste

Within the City of Wilsonville, solid waste disposal is currently handled by United Disposal Service which operates under an exclusive franchise agreement with the City.

Within the Portland metropolitan area solid waste disposal has been a concern for many years. The average family of four generates about 4 tons of garbage a year, which ends up in sanitary landfills. The existing landfills in the metropolitan area have been filled up and it is no longer feasible to site new ones. In fact, garbage from the Portland region is now hauled, at considerable expense, to Eastern Oregon for disposal.

This Plan also recognizes, however, that a successful solid waste management plan will have to deal with much broader issues than just landfills. Such a regional plan must address the issue of throwaway products and emphasize programs for waste reduction rather than discard as a long-term solution.

Policy 3.1.12 The City of Wilsonville shall continue to acknowledge Metro's legislative authority for regional solid waste management and landfill siting. The City may also, from time to time, recommend adoption of solid waste management strategies or programs.

Implementation Measure 3.1.12.a. In an effort to minimize the solid waste problem, the City will continue to support the local recycling/reuse program as well as supporting regional efforts in waste reduction programs.

Semi-Public Utilities

Semi-public utilities are privately owned and operated companies, but have general public benefit and may be regulated by governmental controls. They include energy and communications facilities and services.

Utilities in this category, serving Wilsonville include GTE, Century Telephone, Northwest Natural Gas Company and Portland General Electric. These services and facilities are currently generally adequate.

Policy 3.1.13 The City of Wilsonville shall coordinate planning activities with the utility companies, to insure orderly and efficient installation of needed service lines and equipment.

Implementation Measure 3.1.13.a. To enhance aesthetic quality, promote public safety and to protect service lines from damage (e.g., ice/wind storms or vehicle accidents), as new development occurs all utility service lines serving the developing property shall be placed underground, in accordance with the City's Public Works Standards.

Implementation Measure 3.1.13.b The City shall encourage the utility companies to underground existing above-ground services, at the earliest possible time.

Implementation Measure 3.1.13.c Above-ground facilities such as transformers, etc., shall be located in a manner that minimizes their visual impact. Where possible such facilities should be coordinated with the landscaping to provide screening.

Implementation Measure 3.1.13.d To reduce future demands for electrical energy, the City shall:

1. Encourage incorporation of alternative energy sources (e.g., solar, etc.) into new construction, as well as retrofitting of existing development.

2. Encourage energy efficient site and building designs. The City should also consider joint efforts with PGE and the Army Corps of Engineers and other government agencies, to study the potential for local power generation.
3. To set an example for proposed developments, the City will incorporate energy-efficient designs into construction of City buildings and facilities.
4. The City will review and revise existing street lighting standards to provide adequate safety while minimizing the demand for power (e.g., use of minimum number of lights, use of energy-efficient lights such as high pressure sodium lamps, etc.).

City Administration

Decisions about the growth of City staff and how to fund operations are properly within the purview of the City Council, after receiving recommendations from the Budget Committee. Therefore, no specific staffing standards are established.

Policy 3.1.14 The City of Wilsonville shall, pursuant to Statewide Planning Goal 11 and within the confines of the City budget, maintain a qualified staff adequate to support the various service functions of the City. The City shall plan for the provision of adequate work spaces and facilities in order to maximize the accessibility of City services to the public. Facilities shall be funded in the manner deemed most cost-effective and efficient by the Budget Committee and City Council.

Health And Social Services

Health care facilities and services are provided by a variety of public and private agencies throughout the metropolitan area. Legacy - Meridian Park Hospital located just north of the City, in Tualatin, is the closest facility with general medical and emergency services available.

Social services are also provided by a variety of agencies, including State and County facilities and volunteer or non-profit organizations. Many of these facilities are, however, extremely limited in capacity and additional facilities will be needed to support future population growth.

Policy 3.1.15 The City of Wilsonville shall periodically monitor the availability of health and social services, including day care, and where feasible, will cooperate with the appropriate agencies in providing additional services and facilities. The adequacy of these facilities should be considered during the process of planning for future growth.

For information on public facility construction projects, please see the City's Capital Improvement Program, which is updated annually.

TRANSPORTATION

[This section was amended by Ord. # 718, 6/17/13]

Under the State's Transportation Planning Rule (TPR), planning for transportation must "encourage and support the availability of a variety of transportation choices for moving people that balance vehicular use with other transportation modes, including walking, bicycling and transit in order to avoid principal reliance upon any one mode of transportation".

In MPO areas, (i.e. Metro), "regional and local Transportation Systems Plans (TSP) shall be designed to achieve adopted standards for increasing transportation choices and reducing reliance on the automobile". It is anticipated that metropolitan areas will accomplish reduced reliance by changing land use patterns and transportation systems so that walking, cycling and use of transit are highly convenient and so that, on balance, people need to and are likely to drive less than they do today".

Both the Transportation Planning Rule and the federally mandated State Air Quality Plan call for reductions in vehicle miles travelled (VMTs) per capita. The goal is to adopt plans and measures that are likely to achieve a five percent reduction in VMT per capita over the 20-year planning period. The Metro Regional Transportation Plan (2035 Federal component) states that, "Improvement in non-single occupancy vehicle (non-SOV) mode share will be used to demonstrate compliance with per capita travel reductions" [VMT reductions] "required by the TPR."

Transportation plans must also "facilitate the safe, efficient and economic flow of freight and other goods and services within regions and throughout the state through a variety of modes including road, air, rail and marine transportation".

Communities must "protect existing and planned transportation facilities, corridors and sites for their identified functions' and also "provide for the construction and implementation of transportation facilities, improvements and services necessary to support acknowledged comprehensive plans".

Transportation plans must include a transportation financing program.

The Wilsonville Comprehensive Plan includes, as sub-elements of the Plan, the City's Transportation Systems Plan (2013), the Bicycle and Pedestrian Master Plan (2006) and the Transit Master Plan (2008). There are no airports or marine transportation facilities within the city. The City has adopted 1-Year and 5-Year Capital Improvement Plans which provide for the construction of transportation facilities, improvements and services necessary to support the City's Transportation Systems Plan, the Bicycle and Pedestrian Master Plan and the Transit Master Plan.

The Transportation Network

Wilsonville is bisected by I-5, just south of its intersection with I-205. I-5 is classified as an Interstate Highway. It is part of the National Highway system and is a designated freight route

between Portland and points south. The operational objective for Interstate Highways is to provide safe and efficient high-speed travel in urban and rural areas.

Two I-5 interchanges are located within Wilsonville, Interchange 283, I-5 at Wilsonville Road, and 286, I-5 at Elligsen Road. Both interchanges provide a vital function in supporting local and regional economic development goals and plans. Local traffic, including commercial and industrial vehicles, must have safe and efficient access to and from the freeway.

In the late 1990s, substantial public improvements were made to upgrade both interchanges. Ten years later, both interchanges again had capacity limitations. A major modernization project completed in 2012 reconstructed the I-5/Wilsonville Road interchange. The I-5/Wilsonville Road project created elevated bike/pedestrian pathways on both sides of the street, expansion of the travel way to eight lanes under the I-5 Bridge, and wider and longer on and off ramps.

Capacity limitations also existed at the 95th/ Commerce Circle /Boones Ferry Road intersections. The improvements in 2012 added an additional right-turn lane southbound off I-5 to Boones Ferry Road, an additional left-turn lane from Boones Ferry Road to 95th Avenue, and an additional right-turn lane from 95th Avenue to Boones Ferry Road, as well as making Commerce Circle a right-in / right-out intersection with 95th Ave thereby minimizing congestion at this intersection.

The City has a network of streets which serve the east side or the west side, with only three connection points east–west across I-5. These are Wilsonville Road, Boeckman Road and Elligsen Road. The recent extension of Boeckman Road to Grahams Ferry Road has provided an alternative east-west route resulting in a reduction of the trip levels on both Wilsonville and Elligsen Roads.

City street standards require provision of bicycle facilities and sidewalks on all new streets. Developments in areas without bicycle facilities and sidewalks are required to provide them as part of the development of their site. The City also maintains a sidewalk infill fund for construction of missing sidewalk segments in older neighborhoods. The Bicycle and Pedestrian Master Plan provides greater detail about the existing system and its deficiencies and identifies planned improvements and financial resources.

Local and regional trails and community pathways traverse the community and connect neighborhoods with other destinations. The City is a partner in the 2013 Master Plan for the Ice Age Tonquin Trail, which will connect the communities of Tualatin, Sherwood, and Wilsonville.

The City operates a transit system, SMART, which provides local service, and connects with WES, Cherriots in Salem and Tri-Met in the Portland area. WES, the Westside Express Service Commuter Rail, operates during weekday commuter hours in the morning and evening, connecting Wilsonville with the Beaverton Transit Station and the MAX system. The Transit Master Plan provides greater detail about the existing system and its deficiencies and identifies planned improvements and financial resources.

GOAL 3.2: To encourage and support the availability of a variety of transportation choices for moving people that balance vehicular use with other transportation modes, including walking, bicycling and transit in order to avoid principal reliance upon any one mode of transportation.

Policy 3.2.1 To provide for safe and efficient vehicular, transit, pedestrian and bicycle access and circulation.

Implementation Measure 3.2.1.a Provide a safe, well-connected, and efficient network of streets and supporting infrastructure for all travel modes.

Implementation Measure 3.2.2 The City may adopt street demonstration plans and other illustrative guidance to street, bicycle and pedestrian connectivity, and require development to show consistency with those plans.

Policy 3.2.2 To provide for a mix of planned transportation facilities and services that are sufficient to ensure economical, sustainable and environmentally sound mobility and accessibility for all residents and employees in the city.

Policy 3.2.3 If adequate regional transportation services, including I-5 interchange modification or additions, and high capacity public transportation, cannot be provided, then the City shall reevaluate and reduce the level of development and/or timing of development anticipated by other elements of this Plan. Such reductions shall be consistent with the capacity of the transportation system at the time of re-evaluation.

GOAL 3.3: To achieve adopted standards for increasing transportation choices and reducing reliance on the automobile by changing land use patterns and transportation systems so that walking, cycling and use of transit are highly convenient and so that, on balance, people need to and are likely to drive less than they do today.

Policy 3.3.1 The City shall provide facilities that allow people to reduce reliance on single occupant automobile use, particularly during peak periods.

Implementation Measure 3.3.1.a. Encourage a balance among housing, employment, and commercial activities within the City so more people are able to live and work within Wilsonville, thereby reducing cross-jurisdictional commuting.

Implementation Measure 3.3.1.b. Increase densities and intensities of development in or near the Town Center area and in other locations where transportation systems can meet those needs.

Implementation Measure 3.3.1.c. Plan for increased access for alternative modes of transportation, such as bicycling, transit and walking.

Implementation Measure 3.3.1.d. Continue use of the Planned Development/ Master Plan process to encourage developments that make it more convenient for people to use transit, to walk, to bicycle, and to drive less to meet daily needs.

Implementation Measure 3.3.1.e. Provide more and better options for travel from one side of the freeway, the railroad, and the Willamette River to the other.

Implementation Measure 3.3.1.f. Support provision of full day and Saturday transit service in the WES corridor.

Implementation Measure 3.3.1.g. Advocate for the extension of WES to Salem.

Implementation Measure 3.3.1.h. Consider reducing parking requirements where it can be shown that transit and/or bicycle pedestrian access will reduce vehicular trips.

Policy 3.3.2 The City shall work to improve accessibility for all citizens to all modes of transportation.

Implementation Measure 3.3.2.a. Provide pedestrian and bicycle connections between residential neighborhoods and major commercial, industrial, and recreational activity centers throughout the city, as shown in the Bicycle and Pedestrian Master Plan. Coordinate the system of pathways planned by adjacent jurisdictions to allow for regional travel.

Implementation Measure 3.3.2.b. Concrete sidewalks will be provided on both sides of all streets unless waived when alternative provisions are found to adequately address pedestrian needs.

Implementation Measure 3.3.2.c. Transportation facilities shall be ADA-compliant.

Implementation Measure 3.3.2.d. Fill gaps in the existing sidewalk and off-street pathway systems to create a continuous network of safe and accessible bicycle and pedestrian facilities.

GOAL 3.4: To facilitate the safe, efficient and economic flow of freight and other goods and services within the city and the region.

Policy 3.4.1 Upgrade and/or complete the street network on the west side of I-5, including in the Coffee Creek and Basalt Creek areas, to serve the warehousing, distribution, and other industrial uses located there.

Implementation Measure 3.4.1.a Where the City Council officially designates truck routes, these streets shall be developed to arterial street construction standards and be posted as truck routes.

Policy 3.4.2 The City will work with ODOT, Metro and neighboring communities to maintain the capacity of I-5 through a variety of techniques, including requirements for concurrency, continued development of a local street network within and connecting cities along I-5, access management, and completion of targeted improvements on I-5 such as auxiliary lanes, improvements at interchanges, etc.

Implementation Measure 3.4.2.a. Consistent with the City's policy that needed public facilities and services are provided in advance of, or concurrently with, development, proposed land use changes within the I-5/Wilsonville Road IMA shall be consistent with planned future transportation projects.

GOAL 3.5: To protect existing and planned transportation facilities, corridors and sites for their identified functions, including protection of the function and operation of the I-5/Wilsonville Road Interchange and the I-5/Elligsen Road Interchange, together with the local street network within the Interchange Areas.

Policy 3.5.1 Develop and maintain a transportation system that balances land use and transportation needs in a manner that enhances the livability and economic vitality of the city.

Implementation Measure 3.5.1.a. Establish and maintain design standards for each arterial and major collector street, in accordance with the Functional Street Classification System. The conceptual location of proposed new major streets identified in the TSP will be refined based on detailed engineering specifications, design considerations, and consideration of local impacts.

Implementation Measure 3.5.1.b. Evaluate the alignment and design of local streets on a project-by-project basis in coordination with the overall purposes of the TSP.

Implementation Measure 3.5.1.c. The Transportation Systems Plan shall be used to establish the Functional Street Classification System.

Implementation Measure 3.5.1.d. The Development Review Board or City Council may approve specific modifications through the planned development process. Such modifications shall be made in consideration of existing traffic volumes and the cumulative traffic generation potential of the land uses being developed.

Implementation Measure 3.5.1.e. All arterial and collector streets shall be dedicated public streets.

Policy 3.5.2 Review all land use/development proposals with regards to consistency with the TSP transportation impacts.

Implementation Measure 3.5.2.a. All development proposals shall be required to provide for a transportation impact analysis by payment to the City for completion of such study by the city's traffic consultant unless specifically waived by the City's Community Development Director because the scale of the proposed development will have very limited impacts.

Implementation Measure 3.5.2.b. The City may approve local private streets through the Planned Development process, provided that adequate emergency access is available and that proper maintenance by private entities is ensured.

Implementation Measure 3.5.2.c. Any proposed change to the Comprehensive Plan or Zoning Maps that would result in additional trips above that allowed under the city's concurrency policies may be denied unless mitigation measures are identified and provided.

Policy 3.5.3 Provide for an adequate system of local roads and streets for access and circulation within I-5 Interchange Management Areas that minimize local traffic through the interchanges and on the interchange cross roads.

I-5/Wilsonville Road IMA:

Implementation Measure 3.5.3.a. The City will require future development to plan for and develop local roadway connections consistent with the I-5/Wilsonville Road IAMP as part of the development permit approval process.

Implementation Measure 3.5.3.b. Bicycle and pedestrian connections within the IMA will be required for new development consistent with the City's Bicycle and Pedestrian Plan.

Implementation Measure 3.5.3.c. System operational improvements, including signal synchronization, transportation demand management measures and incident management shall be implemented within the vicinity of the interchange to maximize the efficiency of the local street network and minimize the impact of local traffic on the interchange.

Implementation Measure 3.5.3.d. The City will require future development to adhere to access management spacing standards for private and public approaches on statewide highways as adopted in the Wilsonville Road IAMP.

Implementation Measure 3.5.3.e. The City will approve development proposals in the I-5/Wilsonville Road Interchange Management Area (IMA) only after it is demonstrated that proposed access and local circulation are consistent with the Access Management Plan in the I-5/Wilsonville Road IAMP.

Implementation Measure 3.5.3.f. Ensure that future changes to the planned land use system are consistent with protecting the long-term function of the interchange and the surface street system.

Implementation Measure 3.5.3.g. Any proposed change to the Comprehensive Plan Map or existing zoning that would result in additional trips above that allowed under the current zoning and assumed in the I-5/Wilsonville Road IAMP must include a review of transportation impacts consistent with OAR 660-12-0060.

Implementation Measure 3.5.3.h. The City will provide notice to ODOT for any land use actions proposed within the I-5/Wilsonville Road IAMP Overlay Zone.

I-5/Elligsen Road Interchange

Implementation Measure 3.5.3.i. The City will require future development to adhere to access management spacing standards for private and public approaches on statewide highways as required by the Oregon Highway Plan.

Implementation Measure 3.5.3.j. Ensure that future changes to the planned land use system are consistent with protecting the long-term function of the interchange and the surface street system.

Implementation Measure 3.5.3.k. Bicycle and pedestrian connections within the Interchange Area will be required for new development consistent with the City's Bicycle and Pedestrian Plan.

Implementation Measure 3.5.3.l. System operational improvements, including signal synchronization, transportation demand management measures and incident management shall be implemented within the vicinity of the interchange to maximize the efficiency of the local street network and minimize the impact of local traffic on the interchange.

GOAL 3.6: To provide for the construction and implementation of transportation facilities, improvements and services necessary to support the TSP, the Transit Master Plan and the Bicycle and Pedestrian Master Plan.

Policy 3.6.1 The City will plan, schedule, and coordinate implementation of all street improvements through the on-going five-year Capital Improvements Plan. A priority is given to eliminating existing deficiencies and in upgrading the structural quality of the existing arterial system.

Implementation Measure 3.6.1.a. Complete the major street system improvements shown in the Transportation Systems Plan. The City may not be able to finance all of these improvements. Some may be financed by other entities, or a combination of public and private funds.

Implementation Measure 3.6.1.b. The City shall coordinate routine and necessary maintenance with the appropriate State or County agencies.

Policy 3.6.2 Require each development to provide all collector and local streets, unless the benefit to the entire community warrants public participation in funding those collector streets.

GOAL 3.7: Maintain a transportation financing program for the construction and implementation of transportation facilities, improvements and services necessary to support the TSP, the Transit Master Plan and the Bicycle and Pedestrian Master Plan.

Policy 3.7.1 To ensure development of an adequate street system, the City shall collect a Systems Development Charge as development occurs. Funds collected shall be allocated through the Capital Improvements Plan as needed to provide extra capacity service.

GOAL 3.8: To maintain coordination with neighboring cities, counties, Metro, ODOT local businesses, residents and transportation service providers regarding transportation planning and implementation.

Policy 3.8.1 The City shall work with the State, Metro, Clackamas and Washington Counties and adjacent jurisdictions to develop and implement a Regional Transportation Plan that is complementary to and supportive of the City's Plan while addressing regional concerns. The City expects a reciprocal commitment from the other agencies. This policy recognizes that there is a need for a collective and cooperative commitment from all affected agencies to solve existing and future transportation problems. The City will do its part to minimize transportation conflicts, but it must also have the support of County, regional, State and Federal agencies to effectively implement this Plan.

Implementation Measure 3.8.1.a. The City shall advocate for the State, Metro, and Counties to improve regional transportation facilities which, due to inadequate carrying capacities, limit implementation of the City's Transportation Plan.

LAND USE AND DEVELOPMENT

The previous sections on urbanization and public facilities have addressed the City's intent in terms of where and when development should occur. This section discusses the "what" (type) and "how" (design) of development.

The City of Wilsonville is required to utilize standards to help implement the Metro 2040 Growth Concept and Metro functional plans. Such standards include allowing the creation of smaller lots and more flexible use of land, strategies to encourage land assembly, more flexible zoning, and improvements in the pre-application process to ensure timely and thorough review.

The following plan policies are divided into five sections. The first deals with general development standards applying throughout the City. The second deals with commercial development; followed by sections on the Town Center, industrial development and residential development.

The last section deals with resource areas and natural hazards and it discusses the City's intention to protect environmental resources. It also supports the establishment of community design standards. It provides guidelines for integrating development with the natural features of the community, as well as with surrounding uses. In combination, these standards yield an integrated community design that blends the natural environment with urban development. The design criteria ensure the protection of significant natural resources and enhance the visual attractiveness of the community.

In reviewing this section of the Comprehensive Plan, it is important to remember that Wilsonville is required to conduct its planning efforts in conformance with state and regional requirements. The fundamental theme of the statewide planning program is that urban areas (especially cities) are expected to provide urban services and accommodate urban densities and intensities of development in order to reduce the development pressure on farm and forest lands. The fundamental theme of Metro's regional requirements is that the cities and counties in the urban Portland region must cooperate in meeting urban growth needs in order to reduce the development pressure on farms and forest lands outside the regional Urban Growth Boundary.

Metro has established its own standards for design that the City must consider in amending the local Comprehensive Plan. These "design types" can be found in Metro's 2040 Growth Concept. It is important to note that Wilsonville's Comprehensive Plan does not necessarily use the same terminology as Metro's Growth Concept and the results can be different. The following Metro design types do not necessarily have the same meaning as the words used in Wilsonville's Comprehensive Plan:

Town Center - Local retail and services will be provided within this area, with compact development and transit service. Note that the boundaries of Wilsonville's Town Center area, as defined in the local Comprehensive Plan and zoning, are more refined than Metro's Town Center

designation., ~~which Metro did not intend to be site-specific~~. Recommended average density - 40 persons (residents and employees) per acre.

Station Communities - Include nodes of development centered approximately one-half mile around a light rail or high capacity transit station that feature a high-quality pedestrian environment. Depending on the location and design of a station within Wilsonville for commuter rail, a Station Community may be developed within the City. It should be noted, however, that commuter rail stations tend to have different operating characteristics than light rail stations because they have fewer arrivals and departures throughout the course of a day. Because of those different operating characteristics, development planned around Wilsonville's commuter rail station should not be expected to meet the same standards as light rail areas elsewhere in the region. Recommended average density - 45 persons (residents and employees) per acre.

Main Streets - Include part of the Town Center and the neighborhoods served by main streets, typically including retail and service developments, as well as housing, served by transit. Wilsonville's plans for the Old Town District along Boones Ferry Road would help to establish that neighborhood as a Main Street. The Town Center Plan also includes a Main Street sub-district with active ground floor uses. Recommended average density - 39 persons (residents and employees) per acre.

Corridors - Along good quality transit lines, corridors feature a high-quality pedestrian environment, convenient access to transit, and generally high-densities. Corridor areas in Wilsonville include Parkway Drive from Town Center through the north Wilsonville freeway interchange, and the northern end of Boones Ferry Road leaving the city limits. Recommended average density - 25 persons (residents and employees) per acre.

Employment Areas - Various types of employment and some residential development are encouraged in employment areas, with limited commercial uses. Wilsonville has three employment areas according to Metro maps. Metro's employment areas are regarded primarily as industrial development sites in the City's Comprehensive Plan. The site that previously housed the Burns Brothers Truck Stop (Area of Special Concern 'A') is labeled as an employment area by Metro, but is zoned for commercial development by the City. Such sites with existing commercial zoning have been exempted from Metro requirements limiting large retail developments in employment areas. Recommended average density - 20 persons (employees) per acre.

Industrial Areas - Industrial areas are set aside primarily for industrial activities with limited supporting uses. Metro maps designate one large industrial area within the City. Most of Wilsonville's industrial properties have been categorized by Metro as employment areas. Recommended average density - 9 persons (employees) per acre.

Inner Neighborhoods - Residential areas accessible to jobs and neighborhood businesses with smaller lot sizes, are classified as inner neighborhoods. It should be noted that the residential designations on Wilsonville's Comprehensive Plan Land Use Map cover a wide range of densities. Overall, properties with residential zoning in Wilsonville will exceed the recommended density established by Metro. Recommended average density - 14 persons per acre.

Outer Neighborhoods - Residential neighborhoods farther away from large employment centers, with larger lot sizes and lower densities, are classified as outer neighborhoods. (Please see the notes on residential densities in inner neighborhoods, above.) Recommended average density - 13 persons per acre.

It should be noted that the City will revisit and reconsider Metro's design types as part of the on-going revisions to the Comprehensive Plan. The City will be considering possible changes to the Land Use Map of the Comprehensive Plan in the process of completing the Transportation Systems Plan in 2000 or 2001. The potential for changing City land use designations to better match Metro's design types will be considered at that time.

ECONOMIC DEVELOPMENT

Industrial development has been the primary element in Wilsonville's growth in recent years. However, commercial development, particularly professional offices, has begun to be of interest to business developers. Housing development has also increased substantially. Metro has now projected growth that will more than double both the number of housing units and the number of jobs in Wilsonville between the year 2000 and approximately 2020. If this growth occurs as predicted, the existing imbalance between jobs and housing (estimated at more than three jobs for each housing unit in 1996) will continue into the future.

Economic trends have fluctuated significantly, although perhaps cyclically, since Wilsonville was incorporated in 1969. As with much of Oregon, the local economy hit a low point in the early 1980s but boomed throughout the 1990s.

Commercial and industrial developments accounted for a total local employment that exceeded 17,000 jobs in 1996 (Metro data – ES 202). As of October 1999, the ten top employers within the City had a total of approximately 5,200 employees. Of those top-ten employers, only one was a retail store. The rest would be considered to be industrial uses of one kind or another. Although the number of workers in the ten largest local employers was impressive for a City of less than 15,000 residents, it also indicated how many smaller companies were employing people in Wilsonville. This is a clear indication of the economic diversity that the community now enjoys.

Industrial development is the basic element of economic growth as it produces goods for marketing, as well as being the primary employment generator. Commercial development is also important in that it creates secondary employment and provides retail outlets for manufactured goods. The commercial sector also provides support services for industry and personal goods and services (e.g., doctors, lawyers, food, clothing, etc.) for local residents and workers. It should be noted that having adequate commercial services in proximity to homes and other businesses reduces the need for travel and helps to meet state and regional goals for air quality and traffic congestion.

While commercial and industrial developments are generally associated with economic growth, housing is also an important element of the local economy. Housing development provides employment in planning, engineering, architecture, construction and real estate. More important, however, is the relationship of the availability of affordable housing to the local labor market. The first section of this element of the Plan is oriented to commercial and industrial development. However, this Plan recognizes the importance of providing housing commensurate with the social and economic needs of local employees and is, therefore, followed by a section on housing.

The State's Economic Development Goal (Goal 9) is, "To provide adequate opportunities throughout the state for a variety of economic activities vital to the health, welfare, and prosperity of Oregon's citizens." Prior to adoption of this statewide goal, Wilsonville had developed the 1971 General Plan. The 1971 General Plan's goals and objectives included:

> To develop an attractive and economically sound community.
>
> Encourage commercial and industrial development to provide a balanced tax base and take advantage of the City's strategic location along I-5 and the rail line.
>
> Maintain high-quality industrial development that enhances the livability of the area and promotes diversified economic growth.
>
> Protect industrial lands from incompatible uses.
>
> Encourage only industries interested in and willing to participate in development and preservation of a high-quality environment.
>
> Encourage incorporation of large office complexes in industrial parks.
>
> Develop performance standards, in addition to site development standards, which will limit emissions of smoke, dust, odor, glare, noise, and vibration from industrial uses.
>
> Plan for industry to take advantage of the railroad and I-5 where necessary services can be provided.

These goals and objectives are still as much value today, as they were in 1971. In addition, the 1971 Plan attempted to provide for a reasonable amount of commercial facilities in a planned relationship to the people they will serve. Commercial areas were designated to reinforce existing development patterns and to be centered along Wilsonville Road and the north freeway interchange.

Existing commercial and industrial development has generally conformed to these guidelines and the 1988 Plan reaffirmed them as desirable objectives. The Comprehensive Plan continues to retain a focus on commercial development in the form of centers, rather than strip development.

Wilsonville is strategically located on the fringe of the metropolitan area, just south of the confluence of the I-5 and I-205 freeways, making it very desirable for economic development. Because of this, the City has an excellent opportunity to actively plan and guide its commercial

and industrial development rather than remain in a passive review role. In this way, the City can ensure the type of development it wishes to occur.

GENERAL DEVELOPMENT

The rate of business and residential growth experienced by Wilsonville between 1980 and 2000 clearly indicates the popularity of this community as a place to do business, a place to work, and a place to live. The City has historically focused considerable attention on economic development without losing sight of the importance of protecting natural resources and developing attractive residential neighborhoods. The City has a well-established history of designating and protecting open space areas. Wilsonville residents also voted to support regional efforts to acquire large tracts of open space outside the City.

The City completed the West Side Master Plan in 1996, covering most of the City limits west of I-5 and south of Boeckman Road. The implementation of that Master Plan was delayed pending the prison-siting decision by the State and the completion of Wilsonville's Transportation Systems Plan. Much of the text of the West Side Master Plan can now be incorporated into the Comprehensive Plan.

Throughout this section of the Comprehensive Plan, provisions have been made for allowing certain mixes of uses to occur within the separate land use districts. This flexibility is provided to allow for the realization of benefits derived from complementary relationships in land uses. The benefits to be derived from these mixed-uses are primarily related to improvements in transportation and related utilization of energy and subsequent emissions of pollutants. The mixed-use provisions are not intended merely to increase property values.

GOAL 4.1 To have an attractive, functional, economically vital community with a balance of different types of land uses.

Policy 4.1.1 The City of Wilsonville shall make land use and planning decisions to achieve Goal 4.1.

Implementation Measure 4.1.1.a To ensure overall economic stability, the City will continue to coordinate its policies with those of Clackamas County's and Washington County's Overall Economic Development Plans (OEDP), as well as the Oregon Economic Development Department.

Implementation Measure 4.1.1.b To guide the local economic development program, the City will work with the local Chamber of Commerce to plan and promote economic growth in the community. In this regard, the City will maintain the base data and mapping necessary to assist economic development activities. The City will establish a process to update the base data at least annually.

Implementation Measure 4.1.1.c The City will continue to support a cooperative and active working relationship with the business community through the Chamber of Commerce as well as those businesses that are not members of the Chamber of Commerce and will seek their input when making decisions having economic impacts on the business community.

Implementation Measure 4.1.1.d In the process of administering the City's Comprehensive Plan, careful consideration will be given to the economic impacts of proposed policies, programs and regulations. Efforts will be made to simplify and streamline the planning and zoning review process while maintaining the quality of development.

Implementation Measure 4.1.1.e The City shall protect existing and planned industrial and commercial lands from incompatible land uses, and will attempt to minimize deterrents to desired industrial and commercial development.

Implementation Measure 4.1.1.f Through the City's public facilities, transportation, and Capital Improvements Plans, priorities will be established to ensure that adequate public facilities are available to support desired industrial and commercial development. A high priority shall be given to improvements to water, storm drainage, traffic circulation, and safety. It is not the intent of this Implementation Measure for the City to subsidize commercial or industrial development. Developers continue to be primarily responsible for providing needed improvements. The City merely acts as the coordinating agent to ensure that adequate facilities coincide with development.

Implementation Measure 4.1.1.g The City of Wilsonville will continue to help implement the Metro 2040 Growth Concept and the Urban Growth Management Functional Plan through the use of development standards allowing the creation of smaller lots and more flexible use of land, strategies to encourage land assembly, more flexible zoning and improvements in the pre-application process to ensure timely and thorough review.

Implementation Measure 4.1.1.h Application for proposed developments will be accompanied by site plans which at a minimum:

1. Identify and protect adjacent properties.
2. Designate access points; and where possible, coordinate these points with adjacent uses.
3. Provide for adequate on and off-site vehicular and pedestrian/bike circulation.
4. Identify proposed building locations, heights, set-backs, and landscaped areas, architectural drawings or sketches sufficient to demonstrate the intent, impact, character, and intensity of use of the proposed development. Detailed specifications will be required as part of final development plans, which may occur in phases.

Implementation Measure 4.1.1.i In reviewing proposed developments, the City will continue to examine:

1. The intensity of use, which includes percentage of lot coverage.

2. Number of employees per acre.
3. Peak vehicle trips per hour per acre.
4. Total trips per day per acre.

Implementation Measure 4.1.1.j Development will coincide with the provision of public streets, water, and sanitary sewer and storm drainage facilities as specified in Section 'C,' above. These facilities shall be: (a) capable of adequately serving all intervening properties as well as the proposed development; and, (b) designed to meet City standards.

Implementation Measure 4.1.1.k Unless otherwise specified in a legislative master plan or the development code, a~~A~~ minimum of 15% of the total gross area of all developments shall be landscaped and, where possible, integrated with the open space system. Areas identified as having significant natural resources may require enhancement in order to be considered part of the required open space for a given development. Additional landscaping may be required by the Development Review Board depending on the scale of the proposed development and its compatibility with abutting properties and their respective uses.

Implementation Measure 4.1.1.l Continue to utilize performance standards, in addition to site development standards, which will limit emissions of smoke, dust, odor, glare, noise, and vibration from industrial and commercial uses.

Implementation Measure 4.1.1.m Encourage a balance between light industrial and residential growth within the City.

Implementation Measure 4.1.1.n As existing businesses are renovated and new ones are constructed, the Development Review Board will require high standards of compatibility with surrounding development, landscaping, architecture and signage. The ability of a site to function properly in relation to the surrounding area will be emphasized.

Implementation Measure 4.1.1.o Applications for proposed developments will be accompanied by detailed site plans as specified in the City's Development Code.

Implementation Measure 4.1.1.p Require the placement of utilities underground in new developments and seek means of undergrounding existing above-ground utilities, other than storm drainage facilities.

Implementation Measure 4.1.1.q Implement those portions of the text of the West Side Master Plan that do not conflict with the remainder of the Comprehensive Plan. Changes to the Land Use Map of the Comprehensive Plan, implementing the West Side Master Plan, will not be made until the Transportation Systems Plan has been adopted by the City Council.

To further guide economic growth, specific goals, objectives and policies have been established for residential**,** commercial, and industrial land use decisions.

COMMERCIAL DEVELOPMENT

Commercial development is often a major identifying feature in a community, offering impressions to resident and visitor alike of the quality of life available. The Plan, therefore, urges that shopping areas be pleasant environments to live near and to do business within. They should not be designed in a manner only to attract attention. Buildings need not be painted in an offensive manner or have obtrusive signs to secure their share of the shopping public. In fact, the reverse trend tends to be the case, with centers providing a pleasant shopping environment often being more prosperous.

Commercial development demands special consideration in terms of traffic. On one hand, most commercial businesses need lots of customers coming and going in order to thrive. On the other hand, traffic jams at commercial locations can adversely affect the quality of the lives of other people in the area. The City must balance the needs of both the commercial and non-commercial sectors of the community in reviewing proposed development and considering the traffic impacts that will result. This is not intended to imply that commercial development is the only source of traffic problems. It is not. Rather, it is intended to point out that some commercial land uses may thrive in an environment where the traffic is excessive for other uses.

Commercial areas designated on the Plan recognize and reinforce existing development patterns, at the north (Elligsen Road) and south (Wilsonville Road). The Plan also recognizes the commercial development potential within the Charbonneau District, and the need for complementary commercial uses within or near the industrial area of the City. All commercial districts are planned in the form of centers or complexes rather than as a strip development along major streets. Five types of commercial centers have been recommended in Wilsonville's Comprehensive Plan since 1971. They are:

Town Center (please see the Town Center Development section below);
Service Centers;
Office Complexes;
Commercial Recreation Centers; and
Neighborhood Commercial Sites.

At this time, it is apparent that there are commercial areas of the City that do not clearly fall into the categories listed above. For that reason, the Planning Commission and City Council are continuing to discuss potential changes to commercial land designations. More changes to the commercial designations of the Comprehensive Plan are expected with the completion of the City's Transportation Systems Plan in the months ahead.

The Town Center or City Center was, prior to the preparation of the Town Center Plan, described in the Comprehensive Plan as the City's ~~is intended to be the~~ "major commercial district". Through the extensive community process to create the Town Center Plan, the vision has been broadened be a mixed use heart of the City. Please see the Town Center section below. ~~It should be anchored by a few major department stores and a grocery store. It should be interspersed with smaller shops, offering a wide variety of merchandise for comparative shopping. In addition to retail shops, complementary uses such as offices, theaters, restaurants, and civic activities should~~

~~be provided. As defined by Metro, the Town Center area is expected to have a fairly high population density, and compact development with good quality transit service.~~

Service Centers are primarily related to the motoring public and should be located at the freeway interchanges, particularly the Stafford Interchange These centers would be the sites for motels, restaurants, automobile and truck service centers, and other large site users dependent on easy access for freeway travelers. Such centers may also be incorporated into industrial developments. Service centers will be "on view" to a maximum number of visitors to the City and, accordingly, their appearance and their physical and visual relationship to abutting land uses are critical. Such uses should not compete for the same retail market as that intended to be served by the Town Center.

Office Complexes are distinguished from other commercial centers primarily because they are expected to generate less traffic than retail operations. A limited amount of retail is expected to occur within office complexes, but the amount of retail space is intended to be accessory or incidental to the primary office functions. Structures that will be located in these locations should be relatively small in scale if they are to form a transition between abutting residential areas and more intensive uses. The offices should be set back from streets a distance not less than that of abutting residential areas. Larger office complexes are appropriate in larger commercial or industrial locations. Parking areas and yards should be landscaped and signing should be subtle and "in keeping" with a quality environment. Large-scale and technology-oriented office facilities should be encouraged to locate in the Town Center and in large planned development commercial or planned development industrial zones.

Commercial Recreation - One such center has been developed in Charbonneau and is related to the golf courses contained within the development. Commercial recreation developments should be carefully introduced into the natural or constructed landscape of which they are a part, such as river or other water-oriented park sites. Such developments may also serve the convenience shopping needs of nearby residences.

Neighborhood Commercial Centers are established to provide for daily convenience needs of nearby residential or industrial areas. They will consist primarily of a small markets. Other related uses such as barber and beauty shops, laundry and dry cleaner pickup and delivery facilities, small bakery shops and other similar uses would also be appropriate in these small centers. If located in a residential area, parking facilities, signs, landscaping and the architecture of these centers must be of a quality at least equal to that of surrounding housing. Neighborhood Commercial Centers should be sensitively designed so that they are physically and visually compatible with the residential world of which they are generally a part.

Because large portions of the designated commercial areas are undeveloped, the opportunity exists to develop master plans, i.e., Town Center, or Wilsonville Square '76, to coordinate uses within a given area. The use of master plans for development within Wilsonville has been employed by the City since its incorporation. When small areas or individual lots develop, it also makes sense to coordinate them with adjacent properties. Therefore, under the commercial designation, a Planned Development Review process will continue to be the primary method of administration.

The intent of the Planned Development Review process is to allow for more flexible and creative designs and to encourage coordinated master planning of large areas. It is a further intent to provide for a logical mix of uses in relation to the surrounding uses without necessitating a Plan Amendment.

Policy 4.1.2 The City of Wilsonville shall encourage commercial growth primarily to serve local needs as well as adjacent rural and agricultural lands.

Implementation Measure 4.1.2.a Encourage commercial uses which are compatible with the residential nature of the community, and are complementary to or supportive of industrial development in the City.

Implementation Measure 4.1.2.b Provide opportunities for a basic mix of needed goods and services.

Implementation Measure 4.1.2.c Encourage a rate of commercial development consistent with serving the needs of residents of the City and adjacent rural and agricultural lands.

Implementation Measure 4.1.2.d Cluster commercial activity near the freeway interchanges and encourage service or freeway-oriented commerce to locate near the Stafford Interchange. Encourage retail and other local-oriented commerce to locate in commercial districts along Wilsonville Road to minimize transient traffic impacts on the Wilsonville Interchange.

Implementation Measure 4.1.2.e Maintain the area south of the Willamette River for residential needs and with a residential character consistent with the amended Charbonneau Master Plan (which includes some commercial development).

Implementation Measure 4.1.2.f The City, in accordance with Title 4 of the Metro Urban Growth Management Functional Plan, will encourage development of lands designated by Metro as “Employment” and “Industrial” areas to include supportive retail development. Commercial uses in those areas can be expected to include some limited retail uses, primarily to serve the needs of people working or living in the immediate area and office complexes housing technology-based industries. Where the City has already designated land for commercial development within Metro’s employment areas, the City has been exempted from Metro development standards.

Implementation Measure 4.1.2.g The location and development of commercial areas within the community should be given very careful consideration. Although they may occupy a relatively small percentage of the total land area, commercial developments customarily occur at points of maximum traffic movement and, therefore, have a tremendous impact on people's impressions of the visual quality of the community. If Wilsonville is to retain an image as a desirable place to live, its commercial areas must reflect that quality.

Implementation Measure 4.1.2.h Non-commercial uses may be permitted within a planned development commercial zone, provided that the predominant uses remain commercial. In many locations, the development of residential uses is appropriate and desirable in upper floors, while ground-floor uses remain commercial.

Implementation Measure 4.1.2.i As existing businesses are renovated and new ones are constructed, the Development Review Board will require high standards of compatibility with surrounding development, landscaping, architecture, and signage. The ability of a site to function properly in relation to the surrounding area will be emphasized.

Implementation Measure 4.1.2.j Neighborhood commercial, limited to convenience goods and services for local residents and workers, may be permitted as part of a Planned Development in a residential or industrial area provided the following criteria are met:

1. Sites shall be separated from other commercial uses by at least one-half (1/2) mile.
2. Each neighborhood commercial area shall be limited to no more than 5% of the total planned development acreage (gross) or one acre, whichever is less.
3. Sites shall have direct access to a street of at least a collector classification. Pedestrian access to surrounding development areas should also be provided.
4. Sites shall not include more than one quadrant of an intersection and will not result in undue traffic congestion.

Implementation Measure 4.1.2.k In order to assure compliance with Metro standards, retail uses with more than 60,000 square feet of gross leasable floor area per building or business shall not be permitted within areas zoned for industrial development.

TOWN CENTER DEVELOPMENT

In the early 1970's, a proposal by Payless Drugs to locate its warehouse and headquarters in Wilsonville led to the relocation of Wilsonville's Town Center land from the west side of I-5 to the current location east of I-5 and north of Wilsonville Road. A group of landowners in the new Town Center convened and hired architect Mel Kroker to prepare a master plan for Town Center. The Wilsonville City Center Plan (1973) recommended a suburban village approach to development with a mix of housing and commercial uses lining a loop road with a park or lake in the center. Kroker envisioned that one day the land would be in high demand and new development would fill in the center of the loop. As a result, the City Council amended the City's Comprehensive Plan in 1978 to reflect the adopted Wilsonville City Center Plan.

After three decades of development and a lot of change, the City recognized the need for a new vision for the Town Center. In 2014, the City Council adopted Wilsonville's Urban Renewal Strategy and the Tourism Development Strategy, both of which identified a Town Center Redevelopment Plan as a priority action item. In 2015, the City of Wilsonville was awarded a Metro Community Planning and Development Grant to help fund the Wilsonville Town Center Plan. Through an extensive outreach process, the Wilsonville community developed and adopted the City of Wilsonville Town Center Plan, which envisions the Town Center as a vibrant,

walkable destination and heart of Wilsonville. The following policies state that vision in full, and the implementation steps to achieve it.

Policy 4.TC.1. The vision for Wilsonville's Town Center is:

"Town Center is a vibrant, walkable destination that inspires people to come together and socialize, shop, live, and work. Town Center is the heart of Wilsonville. It is home to active parks, civic spaces, and amenities that provide year-round, compelling experiences. Wilsonville residents and visitors come to Town Center for shopping, dining, culture, and entertainment."

All development in the Town Center shall be consistent with the above-stated vision.

Policy 4.TC.2. The Wilsonville Town Center Plan shall be a supporting document of the Comprehensive Plan, adopted by the City as a part of this Comprehensive Plan with the full force and effect of the Plan.

Policy 4.TC.3. The planning area in the Wilsonville Town Center Master Plan shall be designated Town Center on the Comprehensive Plan Land Use Map. This map designation shall be implemented by the Town Center Zone. The purpose of the Town Center Zone is to implement Wilsonville's vision for the Town Center, these policies, and the Wilsonville Town Center Master Plan.

Policy 4.TC.4. Development in the Town Center shall create a highly connected and walkable street and multi-modal transportation network that is consistent with the Wilsonville Town Center Master Plan.

Policy 4.TC.5. Development in the Town Center shall create open spaces that are linked, that serve as attractive amenities for the Town Center, and are consistent with the Wilsonville Town Center Master Plan.

Policy 4.TC.6. The Town Center Zone shall include design and development standards that will:

A. Provide high quality design in new development and redevelopment that promotes a sense of community identity and implements the Wilsonville Town Center Vision.

B. Provide a well-defined pedestrian, bicycle and vehicular network, good connections to adjacent land uses and efficient connections to transit stops.

C. Provide quality and usable open space, increase street tree canopy, and create transitions between land uses.

D. **Provide sustainable development through the adaptive reuse of existing buildings and increase the use of low-impact development best practices.**

Policy 4.TC.7. The City may use a variety of strategies to fund improvements in the Town Center. These include but are not limited to: funding by developers; public-private partnerships; partnerships with public agencies; urban renewal funding, special fees, and others authorized by the City Council.

INDUSTRIAL DEVELOPMENT

Wilsonville is basically a compact City, for this reason all industrial development should be compatible with adjacent or nearby commercial and/or residential areas. Therefore, there is little need for more than one industrial designation. For all practical purposes, all development should be guided by the same general standards; dealing with intensity, etc.

Policy 4.1.3 City of Wilsonville shall encourage light industry compatible with the residential and urban nature of the City.

Implementation Measure 4.1.3.a Develop an attractive and economically sound community.

Implementation Measure 4.1.3.b Maintain high-quality industrial development that enhances the livability of the area and promotes diversified economic growth and a broad tax base.

Implementation Measure 4.1.3.c Favor capital intensive, rather than labor intensive, industries within the City.

Implementation Measure 4.1.3.d Encourage industries interested in and willing to participate in development and preservation of a high-quality environment. Continue to require adherence to performance standards for all industrial operations within the City.

Implementation Measure 4.1.3.e Site industries where they can take advantage of existing transportation corridors such as the freeway, river, and railroad.

Implementation Measure 4.1.3.f Encourage a diversity of industries compatible with the Plan to provide a variety of jobs for the citizens of the City and the local area.

Implementation Measure 4.1.3.g Encourage energy-efficient, low-pollution industries.

Implementation Measure 4.1.3.h The City, in accordance with Title 4 of the Metro Urban Growth Management Functional Plan, supports appropriate retail development within Employment and Industrial Areas. Employment and Industrial areas are expected to include some limited retail commercial uses, primarily to serve the needs of people working or living in the immediate Employment or Industrial Areas, as well as office complexes housing technology-based industries. Where the City has already designated land for commercial development within Metro's employment areas, the City has been exempted from Metro development standards.

Implementation Measure 4.1.3.i The City shall limit the maximum amount of square footage of gross leasable retail area per building or business in areas designated for industrial development. In order to assure compliance with Metro's standards for the development of industrial areas, retail uses with more than 60,000 square feet of gross leasable floor area per building or business shall not be permitted in areas designated for industrial development.

Implementation Measure 4.1.3.j All industrial areas will be developed in a manner consistent with industrial planned developments in Wilsonville. Non-industrial uses may be allowed within a Planned Development Industrial Zone, provided that those non-industrial uses do not limit the industrial development potential of the area.

RESIDENTIAL DEVELOPMENT

Housing is a basic human need which concerns everyone. With today's housing costs, satisfying this basic need is becoming an increasingly difficult task. Governments at all levels are giving more and more attention to housing issues.

In the process of adopting the Statewide Planning Goals, LCDC established the goal providing for the housing needs of citizens of the State. To meet this goal, all local jurisdictions in the State must develop plans, "that encourage the availability of adequate number of needed housing units at price ranges and rent levels which are commensurate with the financial capabilities of Oregon households and allow for flexibility of housing location, type and density."

As of October 1999, the existing housing stock of 6,788 units consisted of 41.2% single-family 52.4% multi-family (including duplexes and condominiums), and 6.4% manufactured housing (mobile homes). This mix of housing types indicates that the City met the intent of the State's "Metro Housing Rule" applying to housing mix. It is also important to note that the total number of housing units within the City increased by more than 200% in thirteen years. During that period, there were 476 more multiple-family units than single-family units added to the City's housing mix. The number of mobile and manufactured housing units actually declined during that period, in spite of the fact that local codes were amended to permit those units to be located alongside conventionally built houses and multiple-family units.

Even prior to the adoption of the Statewide Planning Goals, Wilsonville's 1971 General Plan contained a goal that supported affordable housing, plus the following objectives:

Establish residential areas that are safe, convenient, healthful, and attractive places to live;

Encourage variety through the use of clusters and planned developments; and

Develop a renewal program to update the "Old Town" area.

In compliance with these objectives, numerous residential developments, including apartments, single family subdivisions, planned developments, and a mobile home park were approved by the City. However, during the review hearings of many of these projects, questions of need, related to the timing, type, and number of units continually arose. Subsequently, as part of the 1988 Plan update, a detailed housing and economic development analysis was conducted (the Housing and Economic Development Report). While the report discussed several factors, it identified two significant factors related to housing. They were as follows:

> The majority of workers employed in Wilsonville did not live in the City.
>
> The prevailing vacancy rates for all types of housing as of January 1987, within the City were extremely low. This indicates that the demand for housing in Wilsonville exceeded the supply.

Many members of the community's sizable work force still cannot afford to live in Wilsonville because of their incomes and the lack of affordable housing.

The City recognizes that some of the existing mobile home parks were originally approved as temporary transitional uses, eventually to be phased out for commercial or industrial uses in conformance with the designations of the 1975 Plan map. The City also recognizes that existing residents within these parks have chosen to live in mobile or manufactured homes based on personal preference and economic factors. They have also invested money in their homes and, if their parks are phased out, will be faced with finding suitable relocation sites, be forced to relocate outside of the City or sell their mobile homes.

The City is required by Metro to assure that residential densities in new developments are not less than 80 percent of maximum-zoned densities. The City is also required to determine the calculated capacity of dwelling units and jobs by the year 2017, using the capacity of its current Comprehensive Plan and implementing ordinances.

Additionally, the City is required to periodically review its public facility capacities and plans to assure that planned public facilities can be provided to accommodate the calculated capacity within the planning period.

The City is required to calculate the increases in dwelling unit and job capacities by the year 2017 from any proposed changes to the current Comprehensive Plan and Development Code that must be adopted and add the increases to the calculation of expected capacities.

The City is required to determine the effect of each of the following on calculated capacities, and include any resulting increase or decrease in calculated capacities:

1. Required dedications for public streets, consistent with Metro's Regional Accessibility requirements;

2. Off-street parking requirements, consistent with the Metro Urban Growth Management Functional Plan;

3. Landscaping, setback, and maximum lot coverage requirements;

4. The effects of tree preservation ordinances, environmental protection ordinances, view preservation ordinances, solar access ordinances, or any other regulations that may have the effect of reducing the capacity of the land to develop at the zoned density;

5. The effects of areas dedicated to bio-swales, storm water retention, open space dedications, and other requirements of local codes that may reduce the capacity of the land to develop at the planned density.

If any of the calculated capacities are determined to be less than the City's target dwelling unit and job capacities specified by Metro, either jurisdiction-wide or in mixed-use areas, or both, then the City is required to increase calculated capacities, as needed, to comply with the calculated capacities of Metro's Urban Growth Management Functional Plan. The City is required to achieve the target capacities for both dwelling units and jobs.

As stated above, housing is a basic human need. Therefore, residential development is considered a primary element of this Plan. A priority is given to satisfying the housing Goal. In so doing, however, it is not the intent of this section to ignore other sections of the Plan. Rather, the intent is to balance conformance to other provisions of the Plan so as to best satisfy housing needs within the City. To complete the framework for evaluating residential development, the following Implementation Measures have been established.

Policy 4.1.4 The City of Wilsonville shall provide opportunities for a wide range of housing types, sizes, and densities at prices and rent levels to accommodate people who are employed in Wilsonville.

Implementation Measure 4.1.4.a The City shall encourage that at least an area of land equal to that now utilized for existing mobile home parks within the City, shall be identified within the City for development of replacement mobile or manufactured parks or subdivisions prior to redevelopment of the existing parcels for other uses. Preservation of existing parks will be encouraged where consistent with other provisions of this Plan.

Implementation Measure 4.1.4.b Plan for and permit a variety of housing types consistent with the objectives and policies set forth under this section of the Comprehensive Plan, while maintaining a reasonable balance between the economics of building and the cost of supplying public services. It is the City's desire to provide a variety of housing types needed to meet a wide range of personal preferences and income levels. The City also recognizes the fact that adequate public facilities and services must be available in order to build and maintain a decent, safe, and healthful living environment.

Implementation Measure 4.1.4.c Establish residential areas that are safe, convenient, healthful, and attractive places to live while encouraging variety through the use of planned developments and clusters and legislative Master Plans.

Implementation Measure 4.1.4.d Encourage the construction and development of diverse housing types, but maintain a general balance according to housing type and geographic distribution, both presently and in the future. Such housing types may include, but shall not be limited to: Apartments, single-family detached, single-family common wall, manufactured homes, mobile homes, modular homes, and condominiums in various structural forms.

Implementation Measure 4.1.4.e Targets are to be set in order to meet the City's Goals for housing and assure compliance with State and regional standards.

Implementation Measure 4.1.4.f Accommodate the housing needs of the existing residents of the City of Wilsonville. The future status of existing mobile home dwellers within the City is a particular concern in establishing this Measure.

Implementation Measure 4.1.4.g Coordinate housing development with the social and economic needs of the community.

Implementation Measure 4.1.4.h Require new housing developments to pay an equitable share of the cost of required capital improvements for public services.

Implementation Measure 4.1.4.i Restrict the number of housing starts to the capacities of public facilities and services.

Implementation Measure 4.1.4.j The City shall have a diverse range of housing types available within its City limits.

Implementation Measure 4.1.4.k The City shall adopt specific goals for low and moderate cost housing to ensure that sufficient and affordable housing is available to households of all income levels that live or have a member working within the City of Wilsonville.

Implementation Measure 4.1.4.l The City shall work to improve the balance of jobs and housing within its jurisdictional boundaries.

Implementation Measure 4.1.4.m The City will consider the use of the following tools identified by Metro to improve availability of sufficient housing affordable to households of all income levels and manufactured housing to assure a diverse range of available housing types.

1. Donation of buildable tax-foreclosed properties to nonprofit organizations or governments for development as mixed-market affordable housing.
2. Development of permitting process incentives for housing being developed to serve people at or below 80% of area median income.
3. Provision of fee waivers and property tax exemptions for projects developed by nonprofit organizations or governments serving people at or below 60% of area median income.

4. Creation of a land-banking program to enhance the availability of appropriate sites for permanently affordable housing.

5. Adoption of replacement ordinances that would require developers of high-income housing, commercial, industrial, recreational or government projects to replace any affordable housing destroyed by these projects.

6 Creation of linkage programs that require developers of job-producing development, particularly that which receives tax incentives, to contribute to an affordable housing fund.

7. Committing locally controlled funds, such as Community Development Block Grants, Strategic Investment Program tax abatement funds, or general fund dollars, to the development of permanently affordable housing for people at or below 60% of area median income.

8. Within the limits set by State law, consider inclusionary zoning requirements, particularly in tax incentive programs, for new development in transit zones and other areas where public investment has contributed to the value and developability of land.

Implementation Measure 4.1.4.n Amend the Development Code to permit manufactured homes configured as duplexes, triplexes, fourplexes, etc. outside manufactured dwelling parks, consistent with zoning densities.

Implementation Measure 4.1.4.o The City will encourage the development of housing of various types and densities. Guided by the urbanization, public facilities, and economic elements, the City will, however, manage residential growth to ensure adequate provision of public facilities and that proposed housing satisfies local need and desires, i.e., type, price and rent levels.

Implementation Measure 4.1.4.p In an effort to balance residential growth with the City's employment base, the City shall encourage the development of housing to meet the needs of the employees working in the City.

Implementation Measure 4.1.4.q The City will continue to allow for mobile homes and manufactured dwellings, subject to development review processes that are similar to those used for other forms of housing. Individual units will continue to be allowed on individual lots, subject to design standards. Mobile home parks and subdivisions shall be subject to the same procedures as other forms of planned developments.

Implementation Measure 4.1.4.r All development, except as indicated in the lowest density districts, will coincide with the provision of adequate streets, water, and sanitary sewerage and storm drainage facilities, as specified in the Public Facilities and Services Section of the Plan. These facilities shall be (a) capable of adequately serving all intervening properties as well as the proposed development and (b) designed to meet City standards.

Implementation Measure 4.1.4.s Residential subdivisions, including mobile home subdivisions, shall be developed with paved streets, curbs and gutters, street lights and walkways, according to City standards. All utilities, other than storm water facilities, will be placed underground.

Implementation Measure 4.1.4.t Site plans will provide for adequate open space to (a) protect adjacent properties; and (b) provide ample yard space and play areas for residents. The residential character of established neighborhoods, particularly low density developments, shall also be protected as surrounding development occurs. Site development standards shall continue to be applied to ensure compatibility with adjacent land uses. High design standards will be established for signage and appearance, including the landscaping of setback areas and the designation of access points.

Implementation Measure 4.1.4.u To provide variety and flexibility in site design and densities, residential lands shown on the Land Use Map and legislative Master Plans of the Comprehensive Plan have been divided into districts, with different density ranges for each district. In all residential developments, other than those that are so small that it is not mathematically feasible to achieve the prescribed minimum density, the 80% minimum shall apply. The following density ranges have been prescribed for each district:

Density:
0-1 units/acre
2-3 units/acre
4-5 units/acre
6-7 units/acre
10-12 units/acre
18-20 units/acre

Densities may also be defined for specific areas in legislative Master Plans.

Implementation Measure 4.1.4.v Site development standards and performance criteria have been developed for determining the approval of specific densities within each district. Densities may be increased through the Planned Development process to provide for meeting special needs (e.g., low/moderate income, elderly, or handicapped). Site development standards, performance criteria, density flexibility and other standards may be established for specific areas in legislative Master Plans.

Implementation Measure 4.1.4.w These Implementation Measures shall not be administered in such a manner as to violate other provisions of this Plan.

Implementation Measure 4.1.4.x Apartments and mobile homes are to be located to produce an optimum living environment for the occupants and surrounding residential areas. Development criteria includes:

1. Buffering by means of landscaping, fencing, and distance from conflicting uses.

2. Compatibility of design, recognizing the architectural differences between apartment buildings and houses.

3. On-site recreation space as well as pedestrian and bicycle access to parks, schools, mass transit stops and convenience shopping.

4. The siting of buildings to minimize the visual effects of parking areas and to increase the availability of privacy and natural surveillance for security.

Implementation Measure 4.1.4.y Housing units shall be designed, constructed, and maintained so that the community is assured of safe, sanitary, and convenient living conditions in dwellings that are sound, energy efficient, and attractive in their appearance. Conservation of housing resources shall be encouraged through code enforcement, renovation, and rehabilitation of the existing housing stock.

Implementation Measure 4.1.4.z The City shall continue to apply a minimum density standard to all zones allowing residential use, such that all development, including subdivisions, will result in the eventual build-out of 80 percent or more of the maximum number of dwelling units per net acre permitted by the zoning designation for a given development. The minimum density requirement does not apply inside areas designated by the City as open spaces or significant resource sites. The maximum-zoned density does not include the density bonus for zones that allow them.

Implementation Measure 4.1.4.aa The City will continue to allow partitioning or subdividing where existing lot sizes are two or more times that of the minimum lot size in the Development Code, and all other applicable requirements are met.

Implementation Measure 4.1.4.bb The City allows the construction of one accessory dwelling unit with any detached or attached single family dwelling that is permitted to be built in any zone, subject to standards in the Land Development Code or density and size standards in Neighborhood Plans, Stage II Development Plans or Final Development Plans. Regulations of such units include size, architectural design to match the primary unit on the site, and parking requirements. [Amended by Ord. 676, 3/3/10]

Implementation Measure 4.1.4.cc In order to encourage originality, flexibility, and innovation in land development, and minimize monotonous standardized subdivisions, all subdivisions over two acres in size require Planned Development review (P.D.R.). Multi-plexes and single-family attached units may also be approved as part of a planned development.

Implementation Measure 4.1.4.dd Continue the development of a renewal program to update/upgrade the "Old Town" area of Wilsonville.

<u>RESIDENTIAL PLANNING DISTRICTS SHOWN ON THE LAND USE MAP OF THE COMPREHENSIVE PLAN</u>

Density (0-1 du/ac)

The purpose of this district is to provide for very low density housing areas to satisfy individuals desiring to own a large lot within an urban setting. This district recognizes and protects existing and future large-lot developments within the City. This density would generally fall under the PDR-1 zoning district category as outlined in the Development Code.

The following areas should be designated and developed at this density:

1. Areas which are currently developed at suburban densities and where little need exists for redevelopment.

2. Areas where transportation is limited to minor collector and local streets, and where high volume traffic would create safety problems.

3. Areas where sensitivity to the natural environment or natural hazards warrant a reduced density.

Density (2-3 or 4-5 du/ac)

The purpose of this district is to provide for low density residential areas. The 2-3 du/acre density would generally fall under the PDR-2 zoning district category as outlined in the Development Code. The 4-5 du/acre density would generally fall under the PDR-2 and PDR-3 (or other categories that could work out to this level of density) zoning district category as outlined in the Development Code.

The following areas should be designated and developed at this density:

1. Areas with access to a minor arterial, collector, or local streets. However, direct vehicular access from individual lots onto a minor arterial will be restricted.

2. Undeveloped areas adjacent to existing lower density developments, or near the fringe of the Urban Growth Boundary.

3. Areas where sensitivity to the natural environment or natural hazards warrant a reduced density.

Density (6-7 or 10-12 du/ac)

The purpose of this district is to ensure an efficient use of urban land by providing for the development of medium density housing areas. This density would generally fall under the PDR-3 and PDR-4 (or other categories that could work out to this level of density) zoning districts category as outlined in the Development Code.

The following areas should be designated and developed as urban medium density:

1. Areas with access to a major or minor arterial or collector street. Siting should not, however, result in significant traffic impacts through lower density residential areas.

2. Areas located near or adjacent to commercial areas, employment centers and/or mass transit routes.

3. Areas adjacent to urban lower density developments or planning districts.

Permitted uses in this district typically include single family dwellings, whether detached or attached, accessory dwelling units, multi-family dwellings, including duplexes and tri-plexes, and mobile home parks or subdivisions, multi-family developments, including duplexes and multi-plexes and mobile home parks or subdivisions, will be subject to Development Review approval.

Neighborhood or convenience commercial uses may be permitted as part of a Planned Development but should be integrated into the design of the surrounding residential development, i.e., first floor of multi-story structure or similar design as residential units. Such commercial developments shall be limited to locations where there is clearly demonstrated local need. All such uses shall be subject to Development Review approval.

Density (18-20 du/ac)

The purpose of this district is to provide for efficient use of land near the major commercial or employment centers by providing for high-density residential development. It is a further purpose of this district to encourage mixed uses in commercial areas. This density would generally fall under the PDR-6 and PDR-7 (or other categories that could work out to this level of density) zoning district categories as outlined in the Development Code.

The following areas may be designated urban high-density residential:

1. Areas located on major or minor arterials and where such development will not result in significant traffic impacts through low- or medium-density residential areas.

2. Areas located within or adjacent to major shopping centers, employment centers and/or adjacent to mass transit routes.

Because of the land use intensity allowable in this district, the zoning will be restricted to a Planned Development review.

All developments will be subject to Development Review Board approval, including lot sizes, setbacks, open space, and parking requirements. Where feasible, under-structure parking will be encouraged on structures over two (2) stories in height.

Residential – Village

See the Compact Urban Development section of this Plan for the description of the Residential – Village designation.

Residential – Neighborhood

See the Residential Neighborhood section of this Plan for the description of the Residential – Neighborhood designation.

ENVIRONMENTAL RESOURCES AND COMMUNITY DESIGN

At a glance, most land appears to be much the same as the lands surrounding it, with the exception of obvious differences such as topography and vegetation. However, a more detailed analysis can reveal distinct differences in the land composition and physical characteristics of nearly any two adjacent parcels of land. These differences can affect the overall suitability of a particular parcel of land for various types of land use. Each piece of land has a natural land use intensity potential which results from variations in its physical features and their interrelationships with natural processes, such as:

1. Underlying geological deposits and associated characteristics.
2. Types of surface soils and associated characteristics.
3. Water, the hydrologic cycle and natural drainage.
4. Slope of the land.
5. Vegetative cover (type, size, and location).
6. Weather conditions.
7. Character of adjoining natural features and developments.

Certain combinations of these natural features and processes can create inherently hazardous or unstable conditions which have special significance to humans and their land use activities. These conditions, referred to as natural hazards, are more appropriately labeled physical or natural limitations and occur in the form of:

1. Flood plains and wetlands
2. Runoff and erosion potentials.
3. Soil instability, including landslides, settlement, shrink/swell potential and earthquakes.

In addition to natural limitations, there are also natural potentials which can provide a more desirable living environment if given proper consideration in determining land use patterns and development design. The elements which offer these potentials are:

1. Existing vegetation.
2. Topography.
3. Wildlife and their associated habitats.
4. River, streams, lakes, and ponds.

In nature, there is a balanced system of events and processes that affect and shape the land on which we live. Because these processes continually and ultimately affect land and property, it

follows that we should respect these natural processes in making land use decisions. For example, unless mitigated, it would not be wise to make a land use decision that encourages subdivisions to be built in areas that are known to flood.

By using nature as a guide to initial land use decisions, it is possible to minimize potential development hazards due to physical limitations of the land. It is also possible to maximize the preservation of nature and natural processes, thereby insuring that development occurs in harmony with the natural features of the community. This approach can also maintain and even enhance the natural aesthetic qualities of the community.

Following a detailed analysis of the characteristics of Wilsonville's natural environment, several areas of special concern were identified. They are:

1. Areas containing weak foundation soils, which are soft or compressible or those prone to liquefaction in the event of earthquakes and require special foundation engineering for construction.

2. Areas subject to seasonal or periodic flooding.

3. Areas with seasonally high ground water tables.

4. Areas of steep slope and subject to landslide and/or erosion.

5. Fish and wildlife habitat and associated water courses and native vegetation.

These areas are discussed in detail in the Physical Inventory report. The most significant areas identified are as follows:

1. Coffee Lake Creek/Seely Ditch - this area contains historically hydric soils with a high water table and low compressive strength. The wet soil conditions are compounded by winter rains resulting in standing water over much of the area during the winter months.

2. Boeckman Creek and other small streams have formed steep-sided canyons and ravines as they drain into the Willamette River. These steep slopes, as well as the steep banks along the Willamette River itself, include locations that are extremely unstable and subject to landslide and/or excessive erosion.

3. The flood plains along the Willamette River, Coffee Lake Creek, and Seely Ditch which are subject to seasonal and/or periodic high water following heavy storms.

4. Several stands of native vegetation scattered throughout the City, particularly along natural drainage ways. These areas provide visual relief from urban development plus run-off erosion control and habitat for wildlife.

Generally, all intensive urban development creates conflicts with open space and associated wildlife areas. However, careful management within and adjacent to these areas can significantly

reduce these conflicts. Open-space-use management can also increase public safety by controlling development in hazardous areas while preserving valuable natural resources.

The City has identified significant natural resource areas that warrant special use management consideration in order to preserve water quality, visual quality, and sensitive wildlife habitats. Uncontrolled development of adjacent properties could diminish the natural quality of these areas. Therefore, it is necessary to establish development standards for properties along the fringe of the sensitive areas. The management and protection of these natural resource areas is implemented through the provisions of the Significant Resource Overlay Zone ordinance. The economic loss of development of open space lands can be compensated for through such techniques as density transfers. In order for such a technique to work, the City must take an effective and creative approach to proposed developments, without placing unnecessary limitations on the density of development that will be permitted.

Many of these open space areas also provide scenic views, although no significant site-specific viewpoints have been identified. The Physical Inventory Report identifies the following general scenic views:

1. The Willamette River from the water, its bank, and from the I-5 bridge.
2. Numerous stands of trees throughout the City.
3. Mount Hood.
4. Boeckman Creek.

These views can be observed from numerous locations throughout the City and are infrequently threatened by development in accordance with current standards. Therefore, special scenic view standards are considered impracticable and unnecessary.

The City has determined that there is limited commercial timber resource in the numerous stands of trees throughout the City. However, as noted, they have been considered worthy of protection to preserve wildlife habitats and the community's air and visual quality, as well as providing shade, soil stabilization, and erosion control.

Other environmental resources investigated in the Physical Inventory Report include mineral and aggregate deposits. Based on the Report, there are no known mineral deposits in the City. There are some gravel deposits along the I-5 corridor north of the Willamette River. However, these deposits are of low grade in both quality and quantity. In addition, further excavation of these deposits would significantly conflict with the urban uses planned along the I-5 corridor. Therefore, no provisions have been made to protect this resource.

In addition to these factors, one of the major aspects of Wilsonville's natural environment is its relationship to agricultural land. Statewide Planning Goal #3 is intended to preserve agricultural lands.

Wilsonville's 1971 General Plan and 1988 Comprehensive Plan set objectives to allow for the continuation of agriculture as a viable part of the community's economy. Agricultural activities still exist as an interim use within the City, and they are the primary land use outside of the City. In recognition of this factor, Metro has established an urban growth boundary to protect prime

agricultural lands outside of the urban area. The urban growth boundary has been established in consideration of the placement of existing and planned utilities in relation to existing and planned development patterns and provides sufficient vacant land for continued growth over the next 20 years.

As a basic framework for land use decisions in these areas, the following Policies and Implementation Measures have been established. Many of these Policies and Implementation Measures are complemented by policies in the parks and open space sections of the Public Facilities Element.

In combination, these Policies and Implementation Measures form the foundation for an integrated community design that preserves the integrity and aesthetic quality of the natural environment while allowing for development. It is the underlying intent of the Plan to reconcile these factors through site planning and design, so that they complement each other. Wilsonville's agricultural and rural heritage has long given it a sense of openness accented by lines and clusters of trees and other natural vegetation. As the City has become more urban, there remains a desire to create the sense of openness and to preserve natural features, while allowing for higher density development, as expected in urban areas.

Noise, water quality, and air quality affect our health, our economic interests and quality of life. High noise levels affect a person's mental and physical well being and ability to work. Poor water and air quality can be a health hazard. Because of their complexities, air and water quality and noise control require both local and regional action. A regional and urban growth boundary has been established to concentrate urban growth within a specified area and to reduce sprawl. Wilsonville is within the regional growth boundary. While urban growth will be contained by the boundary, the boundary, without the necessary safeguards (such as performance standards), could simultaneously exaggerate and concentrate urban pollution.

Wilsonville is located within the Portland/Vancouver Air Quality Maintenance Area (AQMA). Within the AQMA there are three non-attainment areas (CO, TSP, 03). Only the 03 non-attainment area includes Wilsonville (it has the same boundaries as the AQMA). Consequently, the City is subject to the policies and standards set forth in the State Implementation Plan jointly adopted by Metro and State Department of Environmental Quality (DEQ).

Full compliance with these standards could result in some development constraints with the City and at a minimum could require installation of air pollution control devices on some industries. Air quality will remain a concern as urban development occurs.

Similarly, water quality is regulated by Federal Standards enforced by DEQ at the State level. For example, the City's sanitary sewer treatment system is monitored to insure compliance with DEQ wastewater discharge standards.

The major source of noise pollution within the City is the I-5 Freeway. Other noticeable sources include boats on the river and trains passing through town.

In recognition of the noise conflicts with the Freeway and railroad tracks, the City has made an effort to minimize the location of residential development adjacent to the Freeway or tracks. In addition, site design and sound control devices, i.e., berms and walls can be used to reduce noise conflicts.

In considering the overall character of the community, it is important to look to the past. As a community develops, it should not discard its past for the sake of the future. Historic features provide a link with the past and add character and variety to the community's design.

The Statewide Inventory of Historic Sites and Building identifies one historic site in the City, the Boones Ferry Landing Site. There is no physical evidence of this landing site, except that Boone's Ferry Road terminates at the river's edge. The site is part of a six-acre City Park and is located within the Willamette River Greenway Boundaries. Other than documentation and recognition that this landing site exists, no additional standards or measures are considered necessary to preserve its historic value.

Additional Wilsonville sites and buildings have been inventoried and the results have been included as an appendix to the Comprehensive Plan as potential historic sites and structures. The City has worked with the local Historical Society on that inventory in the past and is expected to continue to coordinate with that group in completing the Goal 5 process for historic resources in the future.

Policy 4.1.5 Protect valuable resource lands from incompatible development and protect people and property from natural hazards.

Implementation Measure 4.1.5.a Require the placement of utilities underground in new developments and seek means of undergrounding existing above-ground utilities, other than storm drainage facilities.

Implementation Measure 4.1.5.b Help to preserve agricultural land by protecting the agricultural lands outside the Urban Growth Boundary, by guiding development within the boundary. Discourage long term agricultural uses within the urban boundary.

Implementation Measure 4.1.5.c Provide a buffer use or transition zone between urban and adjacent agricultural areas.

Implementation Measure 4.1.5.d Conserve and create open space throughout the City for specified objectives.

Implementation Measure 4.1.5.e Protect the beneficial uses and functional values of resources within the Water Quality and Flood Management Areas and Habitat Conservation Areas identified by Metro by limiting or mitigating the impact on these areas from development activities.

Implementation Measure 4.1.5.f Ensure protection of Water Quality and Flood Management Areas and Habitat Conservation Areas pursuant to Title's 3 and 13 of the Metro Urban Growth Management Functional Plan by either:

1. Adopting the relevant provisions of the Metro Water Quality and Flood Management model ordinance and Metro Water Quality and Flood Management Conservation Area Map; or
2. Adopting the relevant provisions of the Metro Title 13 model ordinance and Habitat Conservation Areas Map; or
3. Demonstrating that the City's plans and implementing ordinances substantially comply with the performance standards, including the map, contained in Title 3. In this case, the purpose of this map is to provide a performance standard for evaluation of substantial compliance for the City; or
4. Demonstrating that the City's plans and implementing ordinances substantially comply with the development standards, including the Habitat Conservation Areas Map; or
5. Any combination of 1 and 3 above that substantially complies with all performance standards in Section 4 of Title 3 of Metro's Urban Growth Management Functional Plan.
6. Any combination of 2 and 4 above that substantially complies with all development standards in Section 6 of Title 13 of Metro's Urban Growth Management Functional Plan.

Implementation Measure 4.1.5.g Encourage identification and conservation of natural scenic and historic areas within the City.

Implementation Measure 4.1.5.h Develop an attractive and economically sound community.

Implementation Measure 4.1.5.i Identify buildings of unusual or outstanding architectural style from earlier eras. Encourage preservation of these structures.

Implementation Measure 4.1.5.j Ensure that open space conforms to the characteristics of the land, type of land use, adjacent land uses and City needs.

Implementation Measure 4.1.5.k Develop open, limited, or restricted access natural areas connected where possible by natural corridors, for wildlife habitat, watershed, soil and terrain protection. Preservation of contiguous natural corridors throughout the City for the protection of watersheds and wildlife will be given priority in land use decisions regarding open space.

Implementation Measure 4.1.5.l Identify areas of natural and scenic importance and give them priority in selection of public open space. Where legal rights of access have been

acquired, extend public access to, and knowledge of such areas, in order to encourage public involvement in their preservation.

Implementation Measure 4.1.5.m Protect the river-connected wildlife habitat and encourage the integration and inter-connection of the Willamette River Greenway to open space areas of the City. Continue to regulate development within the Greenway boundaries. Provide for public access to the river only through and within the City parks or other properties intended for public access.

Implementation Measure 4.1.5.n Adopt performance and development standards, in accordance with Metro, to conserve, preserve, protect, and enhance fish and wildlife habitat within the fish and wildlife habitat conservation areas identified on Metro's water quality and flood management area map and Habitat Conservation Areas Map.

Implementation Measure 4.1.5.o Adopt Metro's Habitat-Friendly Development Practices, which provide a method of developing property that protects natural resources and focuses on land development and site design that mimic natural processes. The design and construction practices include the following categories:

1. Minimize hydrologic impacts
2. Minimize impacts on wildlife corridors and fish passage
3. Protect and enhance native landscaping

Implementation Measure 4.1.5.p Require compliance with Oregon Department of Fish and Wildlife (ODFW) seasonal restrictions for in-stream work. Limit development activities that would impair fish and wildlife during key life-cycle events according to the guidelines contained in ODFW's "Oregon Guidelines for Timing of In-water Work to Protect Fish and Wildlife Resources."

Implementation Measure 4.1.5.q The Administrative Review, Variance and mitigation procedures within the Development Code may be used to consider claims of map error and unique hardship, to assure that the standards do not render any legal tax lot to be unbuildable by application of requirements for natural resource protection.

Implementation Measure 4.1.5.r Continue to regulate development in potential disaster and hazard areas to minimize risks to life or property.

Implementation Measure 4.1.5.s Housing development, and any other development intended for human occupancy, shall occur, to the greatest extent possible, on lands designated for development that are free from flood hazard, severe soil limitations, or other hazards.

Implementation Measure 4.1.5.t Ensure adequate storm drainage.

Implementation Measure 4.1.5.u Define risks of development by using Federal Emergency Management Agency maps showing flood plains and floodways. Restrict buildings in the flood plains and prohibit buildings in the floodway.

Implementation Measure 4.1.5.v Require engineering where necessary to minimize the potential effects of natural hazards.

Implementation Measure 4.1.5.w Require all future utilities to be placed underground, other than storm drainage facilities.

Implementation Measure 4.1.5.x Provide available information, when requested, to those interested in developing land in areas of the following hazards:

a. 100 year floods;
b. slides and earthquake damage; or
c. wind damage, possible tree topping.

Implementation Measure 4.1.5.y Protect the Willamette River Greenway from incompatible uses or development activities, using the standards of the Greenway section of the Development Code.

Implementation Measure 4.1.5.z Riparian corridors, wetlands and wildlife habitat that are determined to be significant through the Goal 5 process shall be designated as one or more overlay zones on the City Zoning Map.

Implementation Measure 4.1.5.aa Protected natural resources within the Significant Resource Overlay Zone are intended to remain undeveloped with the possible exceptions of passive recreation and underground public facilities. These areas include the following:

1. Riparian corridors, wetlands and wildlife habitat that are determined to be significant through the Goal 5 process and are included in the Significant Resource Overlay Zone.

2. Water quality resource areas as defined by Metro's Title 3 of the Urban Growth Management Functional Plan.

3. Habitat Conservation Areas as defined by Metro's Title 13.

Implementation Measure 4.1.5.bb An Area of Limited Conflicting Use is defined as an area located between the riparian corridor boundary, riparian impact area or the Metro Urban Growth Management Functional Plan Title 3 Water Quality Resource Area boundary, whichever is furthest away from the wetland or stream and the outside edge of the SROZ or an isolated significant wildlife habitat area as defined by Goal 5. These areas can serve as a buffer between development and conservation. Limited development impacts may be permitted in accordance with special development standards found within the Planning and Land Development Ordinance.

Implementation Measure 4.1.5.cc Undeveloped portions of the Significant Resource Overlay Zone may be used towards satisfaction of open space requirements. A density transfer credit of not more than 50% of the designated Significant Resource Overlay Zone will also be allowed, except where legislative Master Plans have defined subdistricts or use

other means to determine the amount and location of residential density outside of the SROZ without the use of a density transfer credit.

Implementation Measure 4.1.5.dd In vegetated areas, the positive visual impact of the trees, etc., is to be preserved. Any clearing of trees for development is subject to arboricultural standards and the requirements of the Planning and Land Development Ordinance.

Implementation Measure 4.1.5.ee Due to potential hazards to human health, the high voltage powerline easements within the City are regulated by the Planning and Land Development Ordinance. No residential structures shall be allowed within the easements and any development, particularly residential, adjacent to the easements will be carefully reviewed. While these corridors offer some potential for recreational use, their use is also somewhat limited by utility requirements. Any proposed non-residential development within powerline easements shall also be coordinated with, and approved by, the Bonneville Power Administration or Portland General Electric Company, depending on the easement ownership.

Implementation Measure 4.1.5.ff To protect the integrity of the Willamette River Greenway, the City has established standards for the development of non-water-related and non-water-dependent uses consistent with Greenway standards. These standards:

a. Direct incompatible (non-water-related and non-water-dependent) development away from the river.

b. Establish a minimum setback from the top of bank where no native vegetation can be removed, and only allow selective vegetation removal within the remaining portion of the Greenway Boundaries with revegetation required.

c. Establish a minimum setback from the river banks for all uses that are not appropriate river-dependent or river-related land uses.

d. Provide protection of public and private property, as well as public safety.

e. Provide necessary and needed public access to the river oriented through public lands, without precluding legal river access at appropriate locations across private property. Such public access shall be based upon recorded easements or other legal instruments.

Implementation Measure 4.1.5.gg Where possible, on-site drainage should be designed to preserve natural drainage channels and to allow for ground water infiltration. Man-made structures should be designed to complement the natural system. It is not the intent of this Measure to encourage unsightly and unsafe open ditches. Rather, open drainage systems should be designed to: (1) accent natural creeks and drainage channels and provide an attractive natural area-like appearance; and/or (2) be an integrated part of the streetscape; and/or (3) be designed as an attractive and functional amenity within a development.

Implementation Measure 4.1.5.hh Minimize the impact of urban development on adjacent rural and agricultural lands. Buffering, open space and low density land use designation may be employed.

Implementation Measure 4.1.5.ii The design of developments within the community can be regarded from two viewpoints: the design of structures as they relate to site and function (architectural design) and, their relationship to the surrounding area (community design). Both aspects shall be considered to be of equal importance. Good architectural design is necessary to provide visual variety and allow for individual identity. At the same time, good community design provides a sense of unity with other development while eliminating conflicting appearances.

Implementation Measure 4.1.5.jj All proposed developments, except single family dwellings outside of designated significant natural resource areas, shall continue to be subject to site plan (including landscaping) and architectural development review approval. Single-family subdivisions are subject to development review for approval of street tree plans. Individual (single-family) dwellings to be located within a designated significant natural resource area are subject to site plan review for removal of trees and vegetation and impacts to natural resources. They are not, however, subject to architectural review.

Implementation Measure 4.1.5.kk Minimum open space and landscaping standards have been established, emphasizing the incorporation of native vegetation and unique topographic features in site design. Additional landscaping may be required based on the scale and type of development and its compatibility with abutting land uses. Legislative Master Plans may further direct open space standards appropriate to their planning areas.

Implementation Measure 4.1.5.ll Landscaping and/or open space may be used to buffer non-compatible uses. It is intended to soften the visual impact and provide a sense of openness and should be used to complement good building designs and may be used to screen certain types of development.

Implementation Measure 4.1.5.mm Sign standards have been established to control the visual impact of signs on the community and minimize sign clutter. Legislative Master Plans may specify sign standards appropriate to their planning area.

Implementation Measure 4.1.5.nn The City shall coordinate with and encourage the State and other appropriate agencies to assist in developing noise controls and mitigation measures.

Implementation Measure 4.1.5.oo Industrial and other potential noise generating activities will be located and designed so as to minimize noise conflicts with adjacent uses. The City will cooperate with DEQ and ODOT in establishing and where practicable assisting in enforcing noise control standards.

Implementation Measure 4.1.5.pp In reviewing all major residential, commercial, industrial and public facility uses, the City shall coordinate with DEQ to insure compliance with the Portland AQMA Plan and standards as well as other applicable regional, State and Federal air, water and environmental quality standards.

Implementation Measure 4.1.5.qq The City will further cooperate with the appropriate State and Federal agencies for enforcement of air, water, noise and other environmental quality standards.

Implementation Measure 4.1.5.rr The City recognizes that historic features form a desirable link with the past and that they form a vital part of and contribute to the overall character of Wilsonville. The City, therefore, will cooperate with the Wilsonville Historical Society, the State Historic Preservation Office, Clackamas County and other interested parties to evaluate and identify potential historic sites and structures and proceed with the Goal 5 process. The City shall determine which sites and structures, if any, are suitable for inclusion on the Plan Inventory and will contact the owners of potentially historic properties to determine whether they object to having their properties listed.

COMPACT URBAN DEVELOPMENT

Several hundred acres of the Metro Urban Growth boundary are affected by the directives of the Villebois Village Concept Plan (Ordinance No. 533). These properties, bounded generally on the north by Tooze Road, west by Grahams Ferry Road, south by the Metro Urban Growth Boundary at Brown and Evergreen Roads, and east to the current City western boundary, can be designated "Residential-Village" on the Comprehensive Plan Map.

Including Dammasch State Hospital property, development and redevelopment will integrate a mixed-use land pattern that combines natural resources, transportation facilities and land uses to create over 2300 residential units that are configured around three neighborhood areas.

The Residential-Village Plan Map Designation fulfills and replaces the intent of previous Comprehensive Plan language that addressed this portion of the City as Special Area of Concern B on the Comprehensive Plan Map. A Residential-Village Plan Map designation carries additional requirements and implementation tools as described below.

The City's "Village" Zone District will implement this area's development. The Villebois Village Master Plan will direct necessary infrastructure improvements. The Significant Resource Overlay Zone District will govern how identified natural resources are integrated under the Concept Plan.

Specific development proposals will be guided and directed by "specific area plans" and pattern books. In many cases a development proposal will be reviewed by the City's Development Review Board for conformance with development requirements for this area.

Policy 4.1.6 Require the development of property designated "Residential-Village" on the Comprehensive Plan Map to create livable, sustainable urban areas which provide a strong sense of place through integrated community design, while also making efficient use of land and urban services.

Implementation Measure 4.1.6.a Development in the "Residential-Village" Map area shall be directed by the Villebois Village Concept Plan (depicting the general character of proposed land uses, transportation, natural resources, public facilities, and infrastructure strategies), and subject to relevant Policies and Implementation Measures in the Comprehensive Plan; and implemented in accordance with the Villebois Village Master Plan, the "Village" Zone District, and any other provisions of the Wilsonville Planning and Land Development Ordinance that may be applicable.

Implementation Measure 4.1.6.b The Villebois Village Master Plan shall contain the following elements:

1. An integrated plan addressing land use, transportation, utilities, open space and natural resources.
2. Direction for cohesive community design based on sustainable economic, social and environmental principles; pedestrian and transit friendly principles; mitigation of

traffic impacts; and enhanced connectivity within proposed development as well as to the remaining Wilsonville environs.

3. Identification of opportunities for employment and services within a village core area to reduce vehicle trip lengths.
4. Incorporation of designs or an indication of where those designs shall be developed that will implement Villebois Village Concept Plan principles of innovative rainwater management, aesthetic vistas, nature corridors and pathways, active and passive parks, wildlife corridors, protection of trees, wetlands, and other sensitive natural resources.
5. Identification of how the properties will accommodate a mix of housing types and densities so that an ultimate buildout of over 2300 housing units is accommodated.
6. Direction for provision of community housing consistent with Oregon Revised Statute 426.508.
7. Identification of architectural patterns and types, creating neighborhoods that encourage bicycle and pedestrian travel, human interaction, and appreciation for natural features and systems.

Implementation Measure 4.1.6.c The "Village" Zone District shall be applied in all areas that carry the Residential-Village Plan Map Designation.

Implementation Measure 4.1.6.d The "Village" Zone District shall allow a wide range of uses that befit and support an "urban village," including conversion of existing structures in the core area to provide flexibility for changing needs of service, institutional, governmental and employment uses.

[*Compact Urban Development* added per Ordinance No. 554, June 2, 2003.}

RESIDENTIAL NEIGHBORHOOD DEVELOPMENT

Since the original 1971 General Plan, Wilsonville has planned for expansions of the City for residential growth. With the addition of the Frog Pond Area to the Urban Growth Boundary in 2002, and subsequent designation of Urban Reserve Areas in 2010, the vision for the expanded city gained new focus and attention. Overall, the City intends for these urban expansion areas to be walkable neighborhoods that are a connected part of the larger community. The vision for the Frog Pond Area Plan is indicative of the city's intent to coordinate development and ensure a high level of livability in these new neighborhoods. The Frog Pond Area Plan's vision statement is:

> *"The Frog Pond Area in 2035 is an integral part of the Wilsonville community, with attractive and connected neighborhoods. The community's hallmarks are the variety of quality homes; open spaces for gathering; nearby services, shops and restaurants; excellent schools; and vibrant parks and trails. The Frog Pond Area is a convenient bike, walk, drive, or bus trip to all parts of Wilsonville." (Frog Pond Area Plan, adopted November, 2015)*

Policy 4.1.7a New neighborhoods in residential urban growth expansion areas may be designated "Residential Neighborhood" on the Comprehensive Plan Map.

The purpose of the Residential Neighborhood designation is to:

A. Implement legislative Area Plans and Master Plans for new neighborhoods in Wilsonville.
B. Create attractive and connected residential neighborhoods.
C. Regulate and coordinate development to result in cohesive neighborhoods that include: walkable and active streets; a variety of housing appropriate to each neighborhood; connected paths and open spaces; parks and other non-residential uses that are focal points for the community; and, connections to and integration with the larger Wilsonville community.
D. Encourage and require high quality architectural and community design.
E. Provide transportation choices, including active transportation options.
F. Preserve and enhance natural resources so that they are an asset to the neighborhoods, and there is appropriate visual and physical access to nature.

Implementation Measure 4.1.7.a Area Plans (also called Concept Plans) shall be prepared to guide the overall framework of land use, multi-modal transportation, natural resources, parks and open space, public facilities, and infrastructure funding. Master Plans shall direct more detailed planning. The City may at its discretion combine Area Planning and Master Planning.

Implementation Measure 4.1.7.b Legislative Master Plans for Residential Neighborhood areas shall be tailored to the needs of the specific area being planned and coordinated with the needs of the larger community. Master Plans should include but are not limited to:

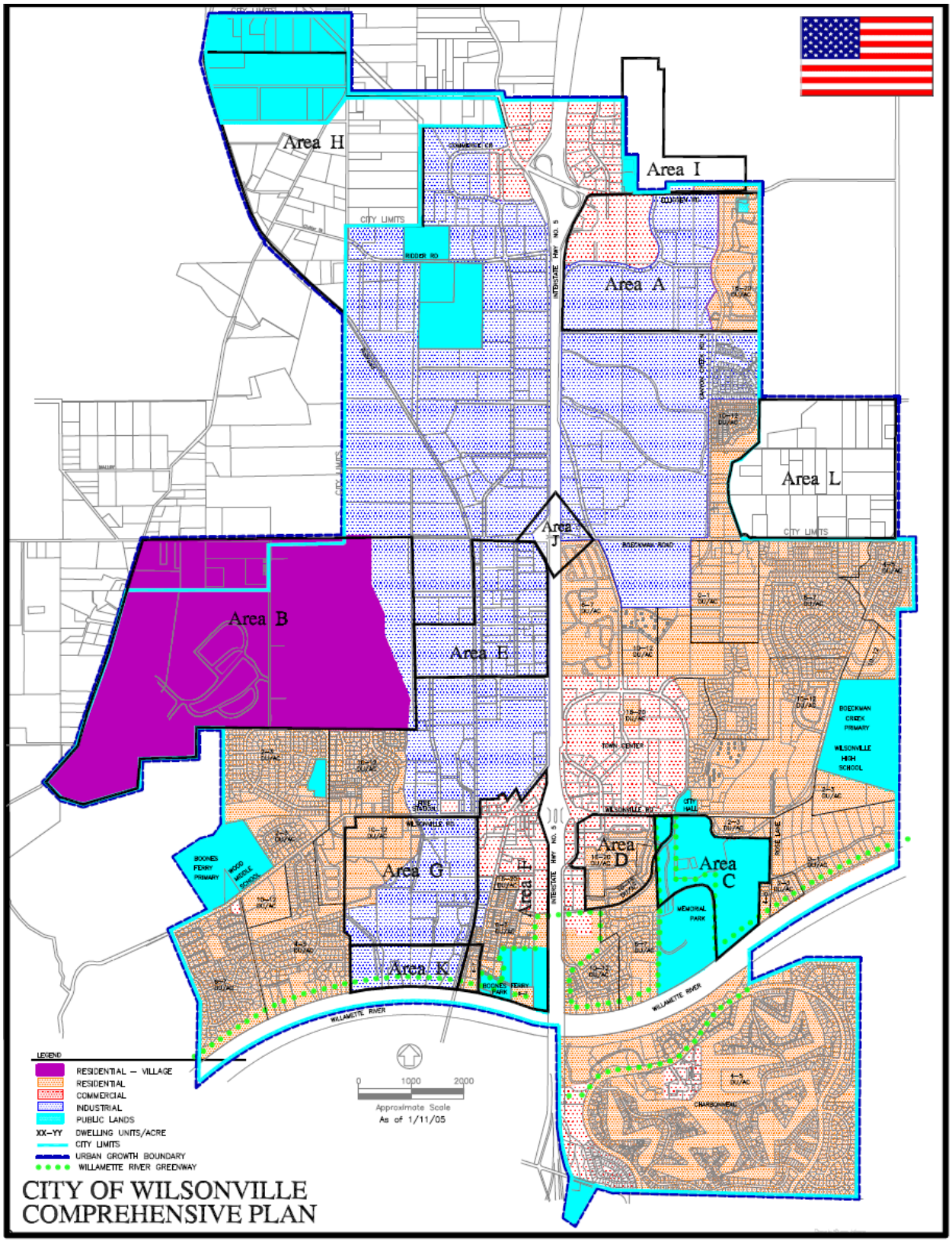
1. An integrated plan addressing land use, transportation, utilities, open space and natural resources.
2. Zoning which directs the land uses, densities and development standards needed to regulate and guide development.
3. Identification of how the properties will accommodate a mix of housing types and densities to accommodate the City's housing needs and variety of housing that is appropriate to each neighborhood.
4. Recommendations that promote community interaction and the creation of community gathering places.
5. Community and site design standards that ensures quality development and implementation of the vision for the neighborhood.
6. Transportation recommendations that promote travel choices, including active transportation choices.
7. Street, path and trail designs that create complete and pedestrian-friendly streets, pedestrian and bicycle routes.
8. Park, open space and natural resource strategies that tie together green spaces into connected networks of open space and protect natural resources.
9. Design studies and strategies that illustrate the intended built form of the neighborhood and show how many individual developments can be knit together over time.
10. Infrastructure plans and funding strategies.
11. Strategies for promoting compatibility between new development and adjacent areas.

Implementation Measure 4.1.7.c The "Residential Neighborhood" Zone District shall be applied in all areas that carry the Residential Neighborhood Plan map designation, unless otherwise directed by an area plan or master plan.

THE PLAN MAP

The Plan Map represents a visual illustration of the general land use concepts presented in the Plan. It establishes a basic land use pattern by allocating specific areas or districts to various land uses, including residential, commercial, industrial, public and open space. The map illustrates a typical separation of uses, consistent with conventional zoning. However, the Plan text recognizes that certain combinations of uses can be beneficial and, therefore, language in the text provides for a mixing of those combinations through a Planned Development Review process. When interpreting the intent of the Plan, the text supersedes the map in the event of a conflict.

This Comprehensive Plan Map is dated January 11, 2005 and does not include amendments made to the Map after that date.


Area H
Area I
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Area F
Area K
Area D
Area C
CITY LIMITS
RIDDER RD
INTERSTATE Hwy NO. 5
BOECKMAN ROAD
TOWN CENTER
WILSONVILLE RD
CITY HALL
MEMORIAL PARK
BOONES FERRY PARK
WILLAMETTE RIVER
BOECKMAN CREEK PRIMARY
WILSONVILLE HIGH SCHOOL
BOONES FERRY PRIMARY
WOOD MIDDLE SCHOOL
ROSE LANE
LEGEND
RESIDENTIAL – VILLAGE
RESIDENTIAL
COMMERCIAL
INDUSTRIAL
PUBLIC LANDS
XX–YY DWELLING UNITS/ACRE
CITY LIMITS
URBAN GROWTH BOUNDARY
WILLAMETTE RIVER GREENWAY
0 1000 2000
Approximate Scale
As of 1/11/05
CITY OF WILSONVILLE
COMPREHENSIVE PLAN

AREAS OF SPECIAL CONCERN

In reviewing and updating the Plan map, several areas of special concern were identified. It was felt that the general language in the text did not adequately address these concerns in these areas.

The following section includes specific language describing special considerations that must be addressed in development of these areas.

AREA A

This area is comprised of land in the southeast quadrant of the I-5/Stafford (Exit 286) interchange. The designated development for this area is a mixture of commercial, industrial, and residential activities, with the majority of the area designated as industrial park. While this is a logical land use pattern, generally conforming to the City's original General Plan goals and objectives, the potential impacts of these designations were considered great enough to warrant special attention.

Ideally, the entire area would be redeveloped under a common master plan, with a development agreement involving all of the property owners and the City. In fact, the various owners worked jointly with the City in developing the original designations on the Comprehensive Plan Map. Specific concerns for this area are related to transportation, land use, and environmental/community design issues. Each development of this area shall be consistent with or complimentary to the following objectives:

Transportation Objectives

1. Assure that congestion at the I-5/Stafford interchange, including conflicts between the freeway on-off ramps and Parkway Avenue, does not exceed the City's adopted level-of-service standards.

Environmental Resources and Community Design Objectives

1. Capitalize on special development opportunities provided by existing topography and natural vegetation. Concentrate sensitive residential uses in areas where privacy may be provided by natural vegetation and topographic variety.
2. Minimize the disruptive and incompatible impacts of the high voltage power lines which transverse the area. Housing should be located away from the power line easements. Less sensitive uses (e.g., short term parking/storage and open space) may effectively utilize areas adjacent to and within the power line easements.
3. Future development shall be designed and located so as to soften the intense appearance of large buildings or expanses of asphalt.

AREA B

[Deleted per Ordinance No. 554, June 2, 2003]

AREA C

This area is located between Memorial Drive and Rose Lane and south of Wilsonville Road. Considerable concern was expressed over the potential impacts of development on the low-density Montgomery Way area and also over potential traffic impacts on Rose Lane and Wilsonville Road.

Design Objectives

1. Provide low-density and/or open space buffers adjacent to existing large lot development.
2. Maximize the visual buffering effect of Boeckman Creek and associated vegetation by locating higher densities southwest of the Creek.
3. Provide a master plan for the development of the east side of Memorial Park and for the Boozier property that has been acquired by the City.

AREA D

This area is the site of the Village at Main Street development located south of Wilsonville Road and east of Parkway Avenue. The area is now undergoing commercial and residential development. The majority of the site is designated for residential development. The frontage of the area is designated for commercial development intended to create a vital village atmosphere. Concerns for this area are related to traffic, design, and use.

Design Objectives

1. Minimize direct access to Wilsonville Road. Primary access to this site shall be provided at signalized intersections to Wilsonville Road aligned with the Town Center Loop Road and the central access to the Town Center. An internal street network shall provide connectivity to and from Parkway Avenue, Memorial Drive, Rogue Lane, Holly Street, the library and the commercial frontage. Provisions for transit access and coordination with existing and planned pedestrian and bike pathways to the City library and City Park are also concerns in this area.
2. The predominant use of the site is intended to be residential. Commercial uses shall be located as designated on the Comprehensive Plan Map and shall be subject to careful design review for compatible and complementary design with the adjacent residential uses. Uses are intended to be convenience and neighborhood oriented to serve the local residents, but may include service commercial and office uses provided they are found to be consistent with the design objectives established in the Planned Development review process. Uses shall interrelate to each other to create a dynamic and vital sense of place. Buildings shall be oriented

to each other and to court yards or plazas to facilitate connectivity. All commercial uses and buildings are subject to Development Review Board approval as part of the Stage I Master Plan and Stage II Site Development Plan.

3. Residential building design shall maintain human scale and provide a mix of public and private spaces resulting in a safe, healthful, attractive, and engaging community. Sign lines and visual reference points shall be created and/or enhanced throughout the site to strengthen the overall aesthetics of the development.

4. The heavy stand of fir trees along the southern portion of the property shall be maintained, providing continuity in the vegetation line extending west from the City Park. A visual corridor and pedestrian/bikeway connection shall be provided between the residential areas and the park.

5. The Village at Main Street development is recognized as a sub district of the Town Center. The core area is located immediately across Wilsonville Road. As such, the subject property creates an opportunity for a unique complementary relationship to the Town Center as a mixed use development. While not physically part of the core area of Town Center, the commercial portion of the Village at Main Street development shall be designed to function as a special sub district with a neighborhood or main street that complements the City's major commercial district. This also recognizes that the predominant use within the subject site is residential.

6. As a special sub-district of the Town Center, the entire development shall be designed with a strong pedestrian orientation both internally and externally to the site. This is of particular concern within the commercial portion where there is an opportunity to create a less auto-dominated environment than has occurred within the Town Center. This special design orientation also recognizes the site's unique geographic location adjacent to the Town Center, City Library, City park and nearby City Hall which are all within easy walking distance. To create a vital pedestrian-oriented environment, the commercial development shall be designed with multiple linkages between storefronts and main doorways. While building sizes may vary, it is the orientation between buildings, store fronts, building entries, walkways and plazas that is of specific concern to maximize the pedestrian environment. Second story uses such as office and residential are also encouraged to strengthen the mix of use and activity within the center.

AREA E

This is the area planned for industrial use between Boeckman Road and Barber Street, from Boones Ferry Road to the railroad tracks. It also includes the property west of the railroad, immediately north of Barber Street, that has been identified as a potential commuter rail station and park-and-ride lot. The primary concerns for this area have been related to continuity in design and protection of the existing mobile home park.

The area has been previously divided into numerous small lots, many of which are in separate ownerships. For this reason, the opportunity to design development under a common master plan is minimized. Therefore, there is a potential for an uncoordinated patchwork development pattern to occur.

The Walnut Park mobile home park is also located in this area. While economics may ultimately force redevelopment of the park to industrial use, the life of the park can be prolonged through careful design considerations of surrounding development. Doing so will help to retain one of the City's affordable housing opportunities.

Design Objectives

1. Encourage consolidation of smaller lots to allow for master planning of large areas.
2. Provide buffers adjacent to the mobile home park, e.g., increased landscaped setbacks, or complementary uses.
3. Minimize traffic (truck) conflicts with residential activities, including pedestrians.
4. Provide an attractive and easily accessible park-and-ride facility in conjunction with a commuter rail station. If necessary to meet these objectives, prepare a master plan for the area around the selected commuter rail station site.
5. Determine the appropriate alignment for a road connecting 95th Avenue and Kinsman Road through this area.

AREA F

This area is situated west of I-5 and primarily, although not entirely, south of Wilsonville Road and includes commercial and residential properties in the Old Town neighborhood. It includes the existing retail centers, both north and south of Wilsonville Road, plus land to the south along both sides of Boones Ferry Road to the Willamette River. Future development applications in Area 'F' must address the design objectives listed below, as well as all other applicable Development Code requirements.

This Area of Concern specifically includes the "Old Town" area of the City. A portion of Old Town includes properties previously master planned as "Wilsonville Square 76." As a result of the West Side master planning effort, additional emphasis has been placed on creating a special

Old Town District (through overlay zoning), and reinforcing the appearance of the City's historic beginnings.

Existing development within Old Town includes a gas station, bank building, prior post office, the Old Methodist Church, the Wilsonville Primary School, apartments, a mini-storage facility, two historic commercial structures, a manufacturing facility, and two mixed-use commercial/industrial buildings, as well as many residential properties with varying densities. One of the mixed-use buildings was recently developed as the first historic replica facade envisioned for the Old Town District discussed below.

Through the planning effort that led to the preparation of the West Side Master Plan, additional emphasis has been placed on creating a special Old Town Overlay Zone. The purpose of the Overlay Zone is to reinforce the appearance of the city's historic beginnings and to create a unique commercial main street. The Old Town District is envisioned as a modern representation of the community's past, and is intended to promote compatibility of commercial designs with Old Town residential development and to create a functional main street.

By moving in the direction of recreating an "Old Town" it is recognized that the Wilsonville Square Plan is outdated, falling short of new design objectives. Therefore, there is a need for coordinated planning and broader based master planning that addresses all of the commercial development in Old Town, not just that on the east side of Boones Ferry Road.

The portion of Area 'F' that is north of Wilsonville Road includes properties between Boones Ferry Road and the freeway, the Riverwood Shopping Center at the northwest corner of Boones Ferry and Wilsonville Roads, and other properties to the north and west of the Riverwood Center. There has not been much continuity of design in this area in the past and access control is expected to be of increasing importance in the future as traffic congestion increases.

The Design Objectives listed below include provisions dealing with both commercial and non-commercial properties.

<u>Design Objectives</u>

1. Establish Old Town as a special overlay zoning district, with design criteria reflecting the character of Willamette Valley architecture that was prevalent between 1880 and 1930.
2. As noted above, not all of Area 'F' is within the Old Town Overlay Zone. Because of this, there are two different standards of review for new development proposals in the area. Require master planning (Stage I) coordinating access, circulation, and streetscape, linking both sides of Boones Ferry Road, for any proposed development as far south as 4th Street. For properties within the Old Town Overlay Zone, include architectural design and general building orientation within the Stage I review process. A "main street" pedestrian-oriented feel and look is the desired outcome of such coordinated design. In order for that to be accomplished, on–street parking will need to be provided wherever feasible in the Old Town area.

3. Coordinate public facilities, and in particular master planning of commercial accesses and circulation options, consistent with Old Town Overlay zoning regulations. These requirements apply to all properties in Area F.

4. Coordinate street improvements, including alternate routes to help relieve traffic impacts on Old Town neighborhood residents and on Wilsonville Road near the I-5 Interchange. The new coordinated access and circulation plan is intended, in part, to replace and expand upon the old local street plan set forth in the Wilsonville Square 76 Plan. Internal circulation is intended to provide flow-through access from site to site, not limited by property lines. However, such access need not be via dedicated public streets.

5. Maintaining reasonable access is an important factor in accommodating additional commercial development in this area. Commercial development will create additional traffic. Therefore, it will be necessary to balance maintaining an acceptable level of service and safety while providing reasonable and functional commercial access.

6. Almost all of the long-standing businesses in this area of the community are now in need of modernization or redevelopment, and may also be planning to expand. Therefore, allowing for appropriate remodeling and/or redevelopment of the existing commercial sites or buildings is a concern for the current owners of these properties. There needs to be flexibility allowed to accommodate normal modernization and even redevelopment of existing commercial operations while still making provisions for coordinated design, access, and circulation.

7. New development and redevelopment is expected throughout most of the old Wilsonville Square 76 area. Redevelopment of the school property and the Lowrie's property (on the west side of Boones Ferry Road) is also anticipated. The anticipated redevelopment plan for the school site includes stores fronting Boones Ferry Road. There is also an intent to preserve and remodel the old church on the east side of Boones Ferry Road as some form of public space.

8. Community members have expressed concern about the loss of the park and play facilities which were part of the historic school site. The City will seek ways to replace the recreational space and explore incentive mechanisms to protect and encourage enhancement of the historic residential character of the neighborhood, while preserving appropriate public open space.

9. Minimize the disruptive and incompatible nature of the railroad, which abuts this District. The City may consider pursuing a second commuter rail stop in or near Old Town, at such time as commuter rail service is extended south toward Salem. If a park & ride is added in this area, it will need to be sized and sited to be complimentary with the needs of the commercial district, without drawing unnecessary freeway traffic into the neighborhood.

10. Minimize non-residential traffic impacts south of 4th Street, while planning for improving the recreational potential of the Willamette River and Boones Ferry Park.

11. Allow flexible mixed-use development, including retail commercial, offices, service commercial and light industrial, residential, and public activities within the Old Town Overlay Zone. Limit the area of service commercial development based on traffic capacity.
12. Coordination of utilities and street locations, alignment, and connections will require cooperation among property owners. The City will need to work with private landowners and developers to deliver the desired outcomes.
13. Two-story buildings shall be encouraged along Boones Ferry Road in the Old Town area in order to add to the "Main Street" feel.

AREA G

This area, located west of the railroad tracks and south of Wilsonville Road, contains a mix of planned and existing uses. Existing uses in the area include a concrete plant, building products distribution, and an office building which also houses a church. There are several houses and barns towards the south end of the area. The rest of the area is currently farmed, and includes Coffee Lake Creek, which flows to the Willamette River in this area.

Wilsonville Concrete has conducted gravel and concrete operations at the south end of this area adjacent to the river since prior to the incorporation of the city. The plant is an aggregate resource-based operation that has relied upon the river for transport of raw materials, such as sand and gravel. Aggregate is not mined at the site, but it is brought there for processing. The continuing operation of the plant is important to meet the needs of the construction industry, which relies on the aggregate and concrete products. For that reason, there need to be provisions made to manage conflicts with neighboring uses and activities, while allowing for appropriate continued operations. At the same time, there will be a continuing need to provide for appropriate modernization, including environmental protection as the operation continues within an increasingly urbanized setting.

The owners of the concrete/gravel operation have taken steps to mitigate the effects of their operation on nearby residential development and to separate the truck traffic from their operation from non-industrial traffic. Operational changes at the site will need to be carefully considered in relation to other long-term uses planned for this area. Future planning will need to balance and mitigate conflicts between potentially non-compatible uses. Continued urbanization of this area creates some inherent potential conflicts for which there is a need for creative and cooperative solutions.

The extension of Kinsman Road, south to Industrial Way, and extension of Bailey and/or 5th Streets, west at least to Industrial Way/Kinsman, would improve access to and from Old Town. It would also provide a signalized intersection for the industrial truck traffic generated to the south. An extension from Kinsman Road, west to Brown Road, would further enhance access and circulation in this area, providing an alternative to Wilsonville Road, which is congested during rush-hour times.

Improved access into and through this area could actually result in conflicts between industrial truck traffic and general commercial and residential vehicles. These conflicts will be exaggerated if pedestrian paths and bikeways are not adequately separated from other street improvements. Such anticipated conflicts could increase resistance to the cooperation necessary in developing streets south of Wilsonville Road and west of the railroad tracks. Therefore, the City will likely need to participate in a cooperative public/private partnership.

The West Side Master Plan also acknowledged public desire for more recreational access along the riverfront, and supported commercial and residential mixed-uses along the river frontage, east of Wilsonville Concrete and west of the railroad. This would also bring more non-industrial traffic and use into the area, although the various ravines provide separation between some of those uses. It should also be noted that those ravines provide important natural resource benefits to the area and will necessitate special designs for bridges or other crossings.

A portion of Area 'G' adjacent to Wilsonville Road was previously designated for commercial use. However, this designation conflicted with the city's policy to avoid strip-commercial development. Therefore, that area was designated for industrial development in 1980. During the formulation of the West Side Master Plan, commercial and industrial activities were reconsidered. In particular, the frontage south of Wilsonville Road, just west of the railroad, was recommended to be zoned for offices as well as industrial uses.

Design Objectives

1. Require master planning (Stage I) of large areas to provide long-term protection of the concrete/gravel operation, accommodate the city's water treatment plant and associated water feature park, accommodate new compatible residential, industrial, and office development, and provide for continuity of design and coordination of uses. Note that residential development at moderate densities may be one alternative to other uses that would otherwise generate excessive traffic on Wilsonville Road.
2. Provide coordinated access and circulation that accommodates industrial development, minimizes conflicts with residential neighborhoods, provides an alternate route for Boones Ferry Road and Old Town, and that helps to minimize congestion on Wilsonville Road, particularly where capacity is limited.
3. The city shall work with property owners to identify appropriate street alignments that provide needed access and circulation while serving adjacent properties and Old Town.
4. Provide buffering along the western perimeter of the area for adjacent residential developments. Buffering can be provided by open space, walls, or berms; residentially sensitive buildings such as offices or light industrial; by visual barriers and sound control mechanisms and structures; or combinations thereof.
5. Maintain and enhance the aesthetic and environmental quality of Seely Ditch, Coffee Lake Creek, and the Willamette River.
6. Carefully limit incompatible uses in this area, while minimizing noise and air quality impacts on adjacent residential neighborhoods.

7. If possible, without damaging the viability of the railroad, minimize the disruptive and incompatible nature of the railroad, which abuts this area Pursue appropriate commuter rail service, which ultimately may extend south of Wilsonville.

AREA H

Note: the previous Area 8 has been replaced with Area H, dealing with the Day Road area, northwest of the current City limits, including the new State prison. This area is bordered by Clay and Day Roads on the north and railroad tracks on the west.

A master plan for this neighborhood will be needed to address property-owner concerns and mitigate the effects of the 110-acre prison development. The City is providing urban services to the prison prior to annexation, and expects to provide services to the entire area when it has been master planned and annexed.

AREA I

Note: the previous Area 9 has been replaced with Area I, dealing with the land along Elligsen Road, north of the current City limits. This area includes the Pheasant Ridge RV facility, a City water reservoir, and another 50 or more acres that are still in agricultural use. Interesting development proposals have been discussed for this area, including an amphitheater for outdoor concerts. However, the City has not yet approved a master plan for the area, and future uses are uncertain.

The development of Area I will need to be coordinated with the redevelopment of the old Burns Brothers property, south of Elligsen Road, because of traffic issues in close proximity to freeway interchange #286.

AREA J

The City has long viewed the Boeckman Road crossing of I-5 as a suitable location for construction of an interchange with I-5. However, the City also recognizes that I-5, being an interstate freeway, has state and national functions which may have to be balanced-with local interests. The Oregon Department of Transportation (ODOT) has authority along with the Federal Highway Administration for the design, construction, and operation of I-5. Only recently has ODOT agreed to work with the City to study the feasibility of a Boeckman Road interchange.

The land between the Wilsonville Road / I-5 and the North Wilsonville-Stafford Road / I-5 Interchanges was planned initially with a transportation system which included an interchange at Boeckman Road. The City and ODOT will be evaluating all aspects of need, as well as preliminary interchange design for Boeckman Road at I-5. There are many potential impacts on surrounding land use patterns and other aspects of the local transportation network that will depend on the outcome of the study of interchange feasibility for Boeckman Road at I-5.

As viewed by the City, the rationale for an interchange at this location is at least threefold. (1) Interchange congestion could be reduced by distributing the number of trips among three rather than two interchanges, (2) traffic associated with development allowed by the Wilsonville Comprehensive Plan in the vicinity of Boeckman Road (and especially the Dammasch area, noted in 'D,' above) could be expedited more effectively, and (3) options for improving traffic upon other roadways serving the City of Wilsonville could be enhanced. The City recognizes that if item three is verified, then the improvement to I-5 at Boeckman Road may be viewed by ODOT as a local improvement which is inconsistent with the purpose of the interstate freeway. This may be sufficient or additional reason for ODOT to reject the interchange.

Because of these, and perhaps other, benefits to the City, the City Council has chosen to highlight the City's interest in this potential project by including this special section in the Comprehensive Plan. The City will continue to cooperate with other interested parties to conduct feasibility analyses of a Boeckman Road interchange. As appropriate, City consultants, staff, the Planning Commission and City Council will conduct reviews and hold public meetings on the options.

In the event that the City determines, with ODOT's concurrence, the feasibility of the interchange, the City will proceed with a plan amendment to add the Boeckman Road interchange to the Transportation Systems Plan. In the event this project is to be included in the City's Plan, the City will prepare amendments necessary to include in the Plan the other roadways required to complete the City's transportation network. In this regard, the City realizes that, because a Boeckman Road interchange can only be implemented with the cooperation of ODOT. The City will need to obtain agreement from ODOT demonstrating compliance with state and federal regulations pertaining to the addition of new interchanges before the proposed Boeckman Road interchange can be included in the City's Transportation Systems Plan and capital improvement plans.

AREA K

Note: Area K, land along the Willamette River, west of Boones Ferry, has been designated in the West Side Master Plan for river-focused development. Text applying to this Area of Special Concern will be completed when the Natural Resource Plan has been adopted.

AREA L

[Deleted per Ordinance No. __, date, 2017]

HISTORIC SITES OR FEATURES

NOTE: information on the historical sites survey, including that generated in 1999, has been moved to the background inventory until the Goal 5 process has been completed.

The City will coordinate its review of land development proposals with the local historical society when any uses are proposed that could have an adverse impact on listed historical features.

Section 4.XXX. Town Center Zone.

(.01) Applicability and Purpose.

The Town Center (TC) Zone applies to lands within the Town Center Comprehensive Plan Map designation. The TC zone is a Planned Development Zone, subject to applicable Planned Development regulations, except as superseded by this section or in the Comprehensive plan and its supporting documents. The purpose of the TC Zone is stated below. Wilsonville's Town Center is:

A. A vibrant, walkable destination that inspires people to socialize, shop, live, and work.
B. The heart of Wilsonville.
C. Home to active parks, civic spaces, and amenities that provide year-round, compelling experiences.
D. Where Wilsonville residents and visitors come for shopping, dining, culture, and entertainment.

Sub-districts. The TC area is composed of four sub districts (Figure X), described below:

a. 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.

b. 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.

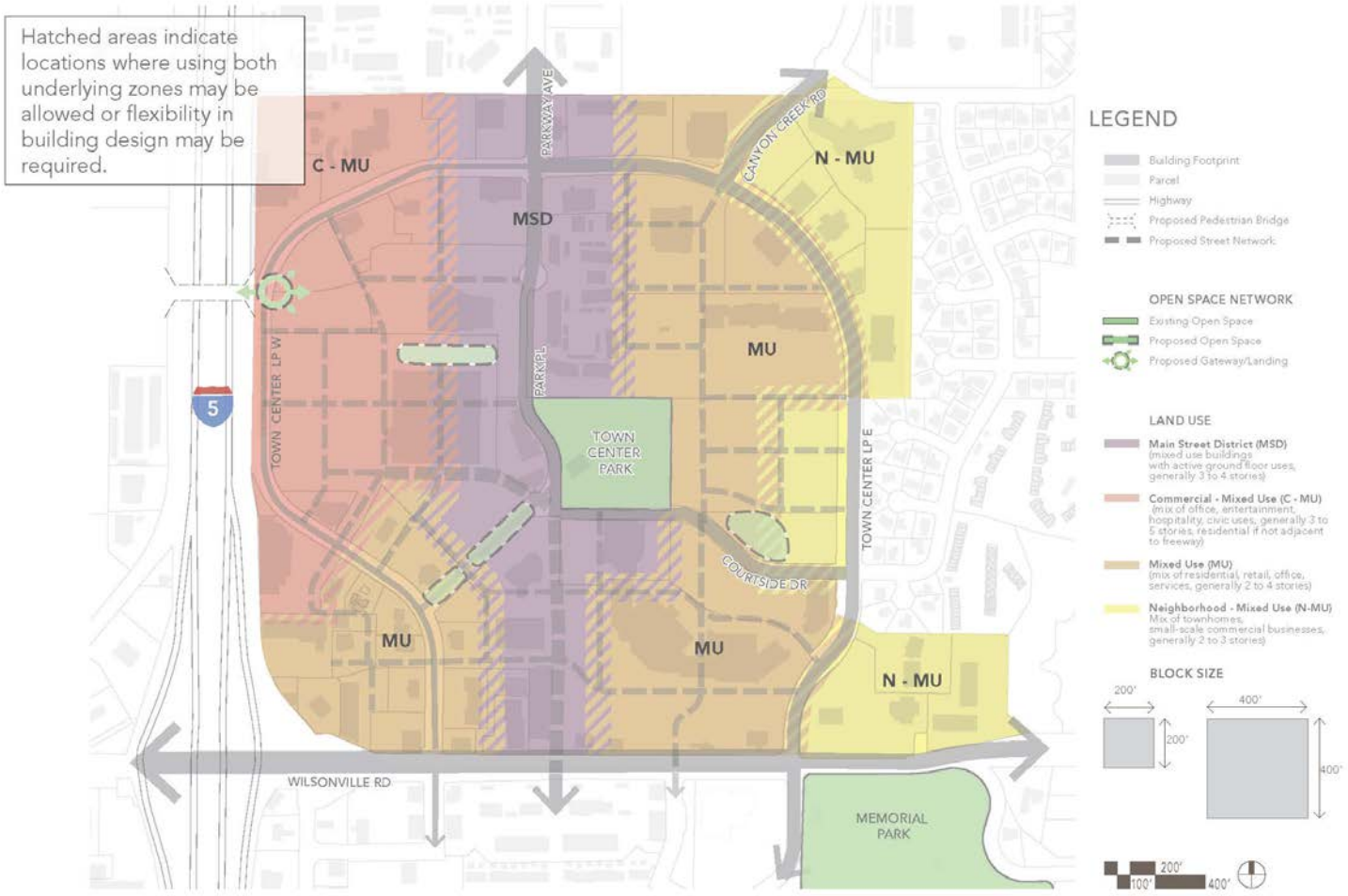
c. Mixed Use. A variety of mostly 2-4 story buildings throughout Town Center would provide the mix of residential, commercial and office uses the community is looking to have in Town Center. Moderate activity near Wilsonville Road would be commercially focused while the areas near Town Center Park would include more residential and mixed-use buildings.

d. 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.

(.02) Uses permitted anywhere in the TC Zone

A. Open space
B. Multi-family Dwelling Units
C. Public or private parks, playgrounds, recreational and community buildings and uses
D. Commercial recreation
E. Retail sales and service of retail products, under a footprint of 30,000 square feet per use
F. Offices
G. Personal and professional services
H. Day care
I. Food service (e.g. restaurants, food carts, food cart pods)
J. Beverage service (e.g. cafes, brewpubs, bars)
K. Any of the above in mixed use buildings.

Figure X. Town Center Sub Districts



(.03) Permitted and Prohibited uses in specific sub-districts

Figure X, Land Use Sub-Districts, illustrates subareas of the Town Center where certain regulations apply. Below are use-related regulations for the Sub-districts.

A. COMMERCIAL – MIXED USE (C-MU)

1. Additional permitted uses – Commercial recreation with outdoor facilities (e.g. cart track); retail exceeding a footprint of 30,000 square feet per user; cinemas
2. Multi-family is prohibited on any parcel side that abuts I-5, including the I-5 side of parcels abutting Town Center Loop West

B. MAIN STREET (MS)

1. Uses with drive-through facilities – New uses with drive-through facilities (e.g. fast food, banks, car wash), are prohibited. Existing drive-through uses and facilities may be continued consistent with Section 4.189. In the MS sub-district, a change in use is permitted for a new drive-through use, consistent with the other standards of Section 4.189.

C. MIXED USE (MU)

1. Uses with Drive-through facilities – New uses with drive-through facilities (e.g. fast food, banks, car wash), are prohibited. Existing drive-through uses and facilities may be continued consistent with Section 4.189. In the MU sub-district, a change in use is permitted for a new drive-through use, consistent with the other standards of Section 4.189.

D. NEIGHBORHOOD –(N-MU)

1. Uses with Drive-through facilities – New uses with drive-through facilities (e.g. fast food, banks, car wash), are prohibited. Existing drive-through uses and facilities may be continued consistent with Section 4.189. In the MU sub-district, a change in use is permitted for a new drive-through use, consistent with the other standards of Section 4.189.

(.04) Consistency with Street Network and Multi-modal Network

A. All development will be consistent with the Street Network and Multi-modal Network, shown in Figures X and X. Street and multi-modal facility locations are approximate and will be finalized as part of the development review process. The purpose of these plans are to support the creation of a highly connected and walkable Town Center where there are options for travel. The Development Review Board may approve variations from Figures X and/or X if needed to accommodate existing development or physical constraints, and/or, preserve natural resources and open space. If a street or other multimodal connection is varied, substantially equivalent connectivity and multi-modal travel options shall be provided.
B. All development shall provide transportation facilities consistent with the cross-sections in the Wilsonville Town Center Plan and applicable provisions of the Wilsonville Transportation System Plan.

(.05) Consistency with Open Space Network

A. All development will be consistent with the Open Space Network, shown in Figure X. The Open Space sizes and locations on Figure X are approximate and will be finalized as part of the development review process. The purpose of the plan is to create open spaces that are linked and serve as attractive amenities for Town Center. The Development Review Board may approve variations from Figure X if needed to accommodate existing development or physical constraints, and/or, preserve natural resources and open space. If an open space is varied, substantially equivalent open space and open space linkage shall be provided.

Figure X Street Network

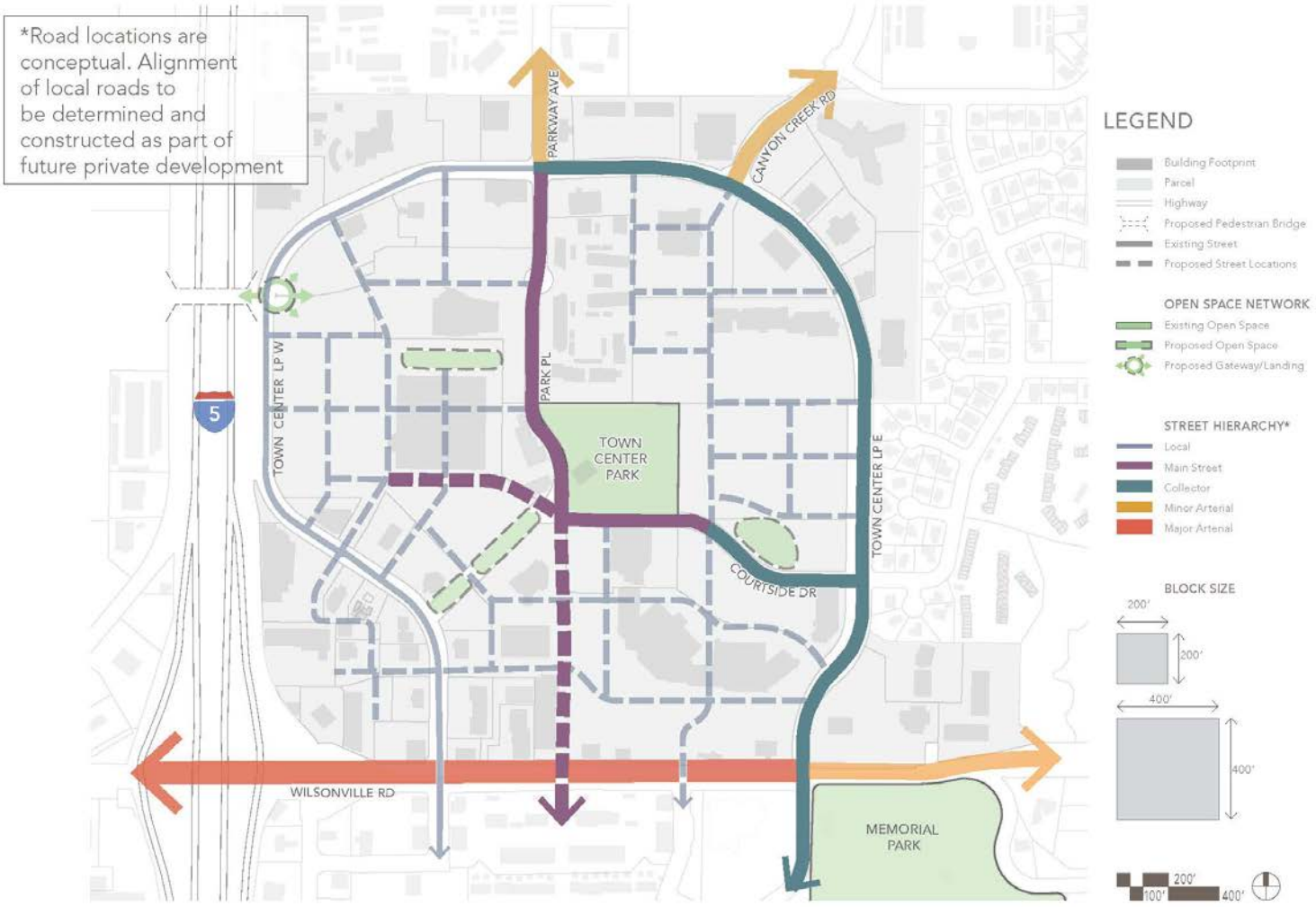


Figure X Multimodal Network

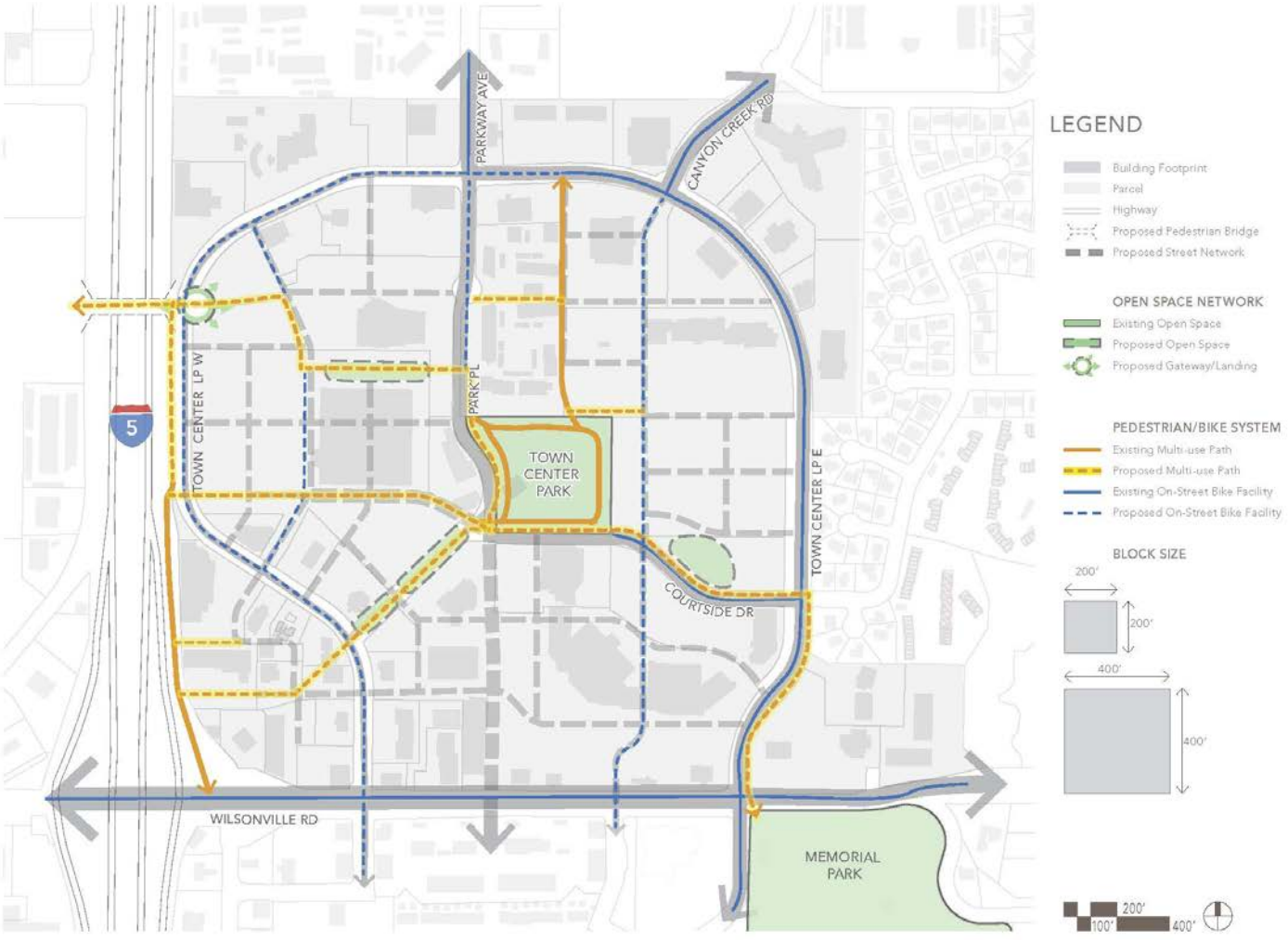


Figure X Open Space Network

(.06) Design and Development Standards

A. PURPOSE AND INTENT

The purpose of the design standards is to:

1. Provide high quality design in new development and redevelopment that promotes a sense of community identity and implements the Wilsonville Town Center Vision.
2. Provide a well-defined pedestrian, bicycle and vehicular network, good connections to adjacent land uses and efficient connections to transit stops.
3. Provide quality and usable open space, increase street tree canopy, and create transitions between land uses.
4. Provide sustainable development through the adaptive reuse of existing buildings and increase the use of low-impact development best practices.

B. BUILDING/STREET FRONTAGE REQUIREMENTS

Building and street frontage requirement in this section are intended to create an active pedestrian environment through sidewalk-facing ground floors and entryways with protection from the elements for pedestrians.

1. Building/Frontage Design Standards.

Street type	Main Street	Local Roads	Collectors	Arterial	Multi-Use Paths
Objective	Provides Pedestrian-oriented and active building frontage on street.	Provides local access to adjacent development with pedestrian design focus. Local roads should also provide access to parking and service entrances.	Provides capacity to accommodate multimodal transportation access and connectivity to regional connections	Provides connectivity to regional system focused on moving people. Access from adjacent multimodal networks is focused at signalized intersections	Provide non-motorized travel within Town Center and connections to larger bike/ped system
Sidewalks	Required. Separated from curb by planting strip, tree wells, or rain gardens.	Required. Separated from curb by planting strip, tree wells, or rain gardens.	Required. Curb-tight optional.	Required. Separated from curb by planting strip, tree wells, or rain gardens.	N/A
Sidewalk width	12 feet, plus optional setbacks	12 feet	11.5-13.5 feet (per TSP)	13.5-16.5 feet (Per TSP)	Varies-minimum 12 feet
Landscaping type	Street trees and plantings, including rain gardens, rooftop gardens, plazas	Street trees and plantings, including rain gardens, rooftop gardens, plazas	Per Wilsonville Standard	Per Wilsonville Standard	Per Wilsonville Standard
On-street parking	Parallel or diagonal parking required. Parklets and bicycle parking permitted in street	Dependent on local road design (see cross section options). Parallel parking on both sides, or diagonal parking on one side, depending on ROW availability and street cross-section.	Optional	Prohibited.	N/A
Number of lanes	Two	Two	Two	Three to five	N/A
Bicycle facilities	**Main Street:** •Required north of Town Center Park (buffered) •Two-way Cycle track adjacent to Town Center Park •Shared travel lanes south of Town Center Park	Shared or buffered	Buffered	Buffered	N/A

Street type	Main Street	Local Roads	Collectors	Arterial	Multi-Use Paths
Minimum % of building along street frontage	Minimum 70% of buildings facing Main Street. Buildings to be placed at corners with primary access at or within 20 feet of the corner.	Minimum 50% of building facing a local street. Buildings to be placed at corners	Minimum 50%	Minimum 50%	N/A
Location of parking	On street, behind building (surface or structured), or at shared central location. Parking cannot be located within 100 feet of and intersection with Main Street Parking prohibited at corners of public streets	On street, behind or to the side of building. If fronting Main Street, off street parking is not permitted along Main Street frontage Parking prohibited at corners of public streets	To the back or side of building. Parking prohibited at corners of public streets	To the back or side of building. Parking prohibited at corners of public streets	
Parking Access	Parking access provided via local street, alley, or midblock crossing. Alleys must be located more than 100 feet from another road or access point. Shared access is encouraged.	Parking access provided via local access street or alley	Parking access provided via local street	Not permitted. Access to be provided at signalized intersections and interior circulation system.	
Block length	Maximum block length is 400 ft. 250 ft. maximum to mid-block crossing to provide pedestrian and parking access. Maximum mid-block crossing width up to 30 ft.	Maximum block length is 400 ft. 250 ft. maximum to mid-block crossing to provide pedestrian and parking access. Maximum mid-block crossing width up to 30 ft.	NA	NA	
Typical vehicle speed	20-25 mph	20-25 mph	25-30 mph	25-35 mph	N/A

C. DEVELOPMENT STANDARDS

Development standards apply to all new development within the Town Center boundary.

Table _____ Town Center Development Standards [1] [2]

		Town Center		
STANDARD		**SUBDISTRICT**		
	MSD	**N-MU**	**MU**	**C-MU**
Front setback				
Minimum	0 ft.	0 ft.	0 ft.	0 ft.
Maximum	20 ft. [6	20 ft. [6]	10 ft. [6]	10 ft. [6]
Side facing street on corner and through lots				
Minimum	0 ft.	0 ft.	0 ft.	0 ft.
Maximum	20 ft	10 ft	10 ft	10 ft
Side yard				
Minimum	0 ft.	0ft.	0 ft.	0 ft.
Maximum	0 ft.	6ft.	0 ft.	0 ft.
Rear setback				
Minimum	0 ft.	0 ft.	0 ft.	0 ft.
Maximum	0 ft.	0 ft.	0 ft.	0 ft.
Building height (stories) [8]				
Minimum	two	two	two	two
Maximum (stories/feet) [7]	four	three	four.	five
Ground floor height minimum	12 ft. [3]	N/A	12 ft.	12 ft.
Site coverage maximum	90%	75%	90%	90%
Minimum landscaping	10%	15%	15%	10%
Minimum building frontage [4]	70%	25%	50%	50%
Residential density (units per acre)				
Minimum	40[5]	16	40	40

		Town Center		
STANDARD		**SUBDISTRICT**		
	MSD	**N-MU**	**MU**	**C-MU**
Maximum	None	40	None	None

[1] This table does not apply to existing development. All new buildings in the district must meet these development standards.

[2] For Commercial development, the maximum front and street side yard setback is 10 feet. For mixed-use and residential only development, the maximum front setback is 20 feet.

[3] Mixed-use building are required for buildings located within 100 feet of the Park Place/Courtside Drive intersection and on Main Street between Wilsonville Road and Courtside Drive. Development shall provide ground floor heights of 15 feet to accommodate active ground floor uses. This standard does not apply residential only buildings located elsewhere along Main Street.

[4] See Section _____ for building frontage requirements.

[5] Minimum density applies to residential-only development. There is no minimum residential density for mixed use development.

[6] Setbacks are permitted provided they are used for seating or other uses that encourage pedestrian activity and active ground floor uses

[7] If affordable housing is provided, maximum building stories may be increased by one story.

[8] Second stories or higher in buildings must be habitable. No false front buildings are permitted.

D. BUILDING PLACEMENT.

Buildings shall meet the following standards:

1. Main Streets and Local Streets. For parcels adjacent to Main Streets, buildings shall be located at public street intersections. Street frontage requirements for Main Streets are a minimum of 70 percent of the lot frontage. Off street parking shall be located behind buildings fronting Main Street, either on surface or tuck under lot, parking structure, or at a central off-site parking lot.

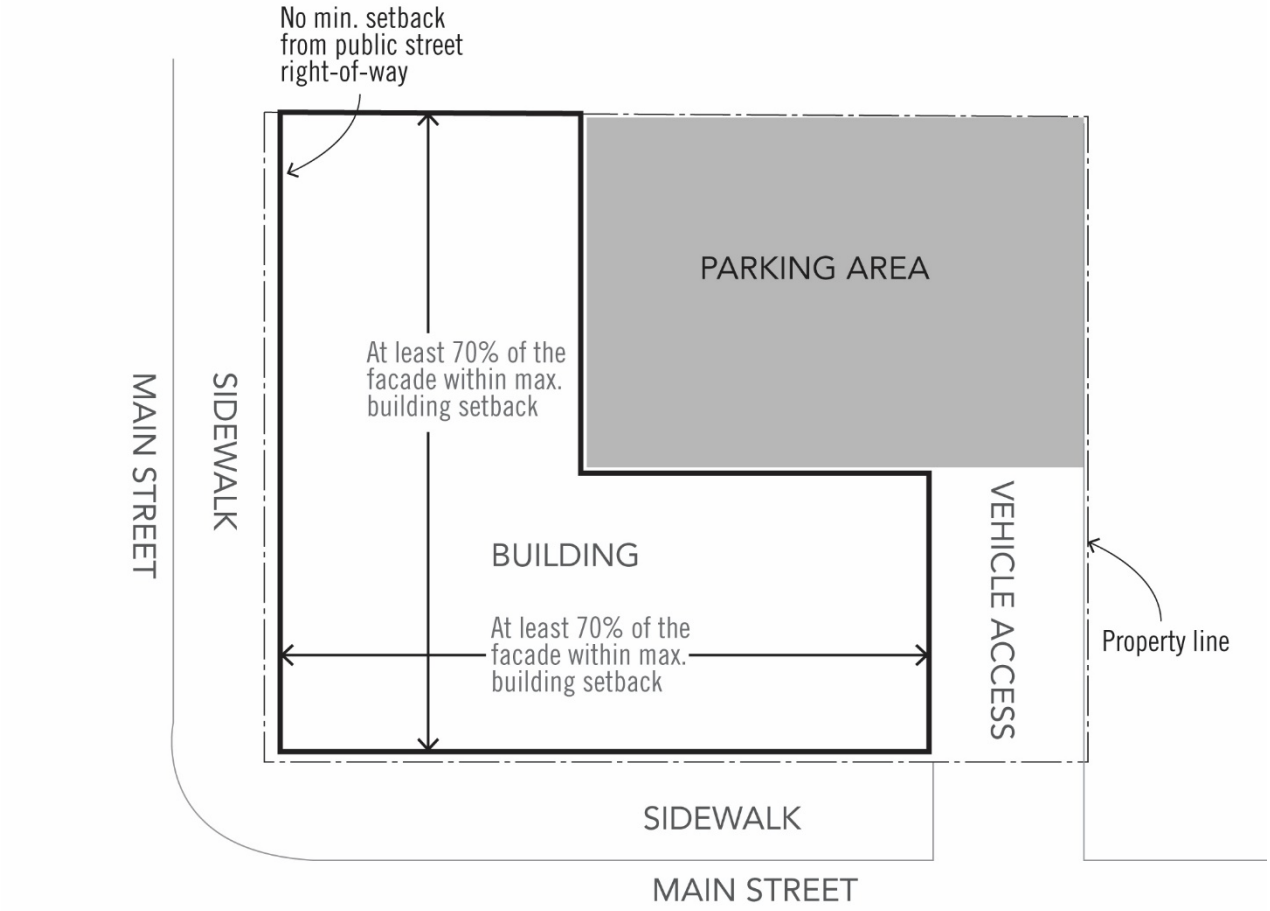
2. If a parcel fronts two or more different street design classifications, the primary building entrance shall front the following in order of priority: Main Street, Local Street, Collector Street, Arterial Street.

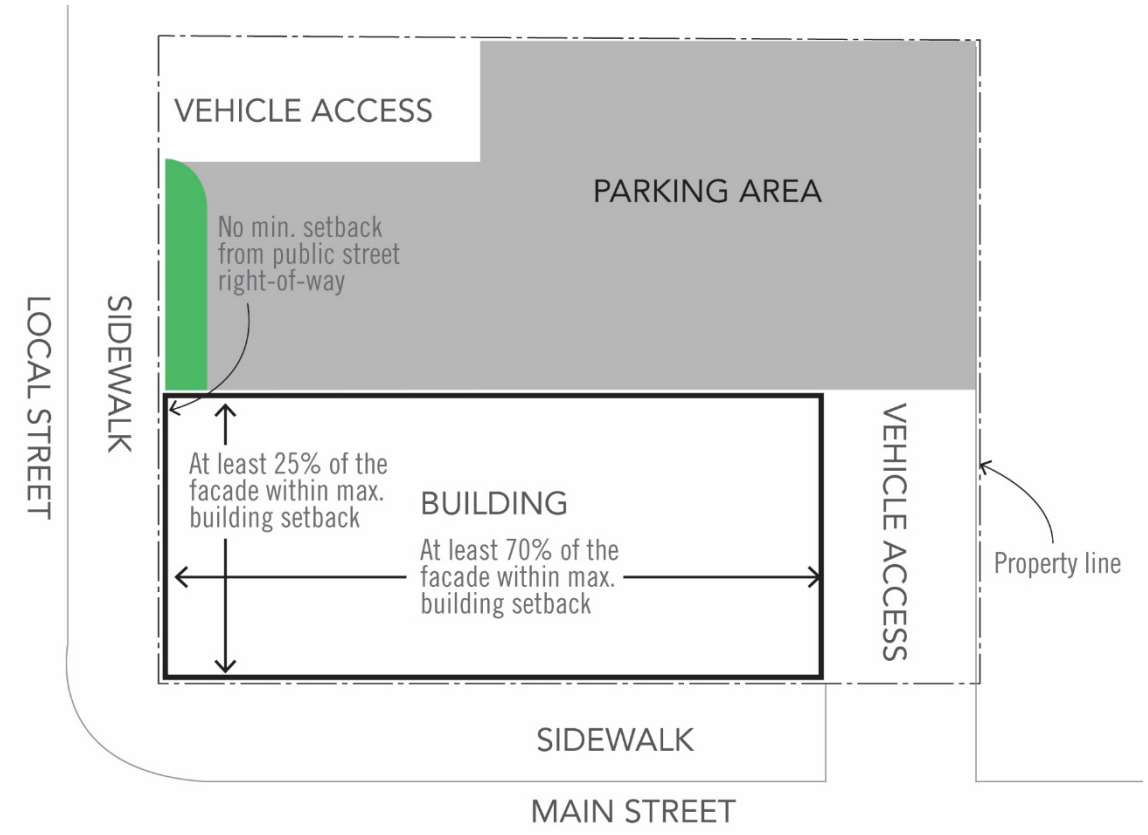
3. Minimum building frontage requirements for a Local Street shall be 25 percent if the development also fronts Main Street.

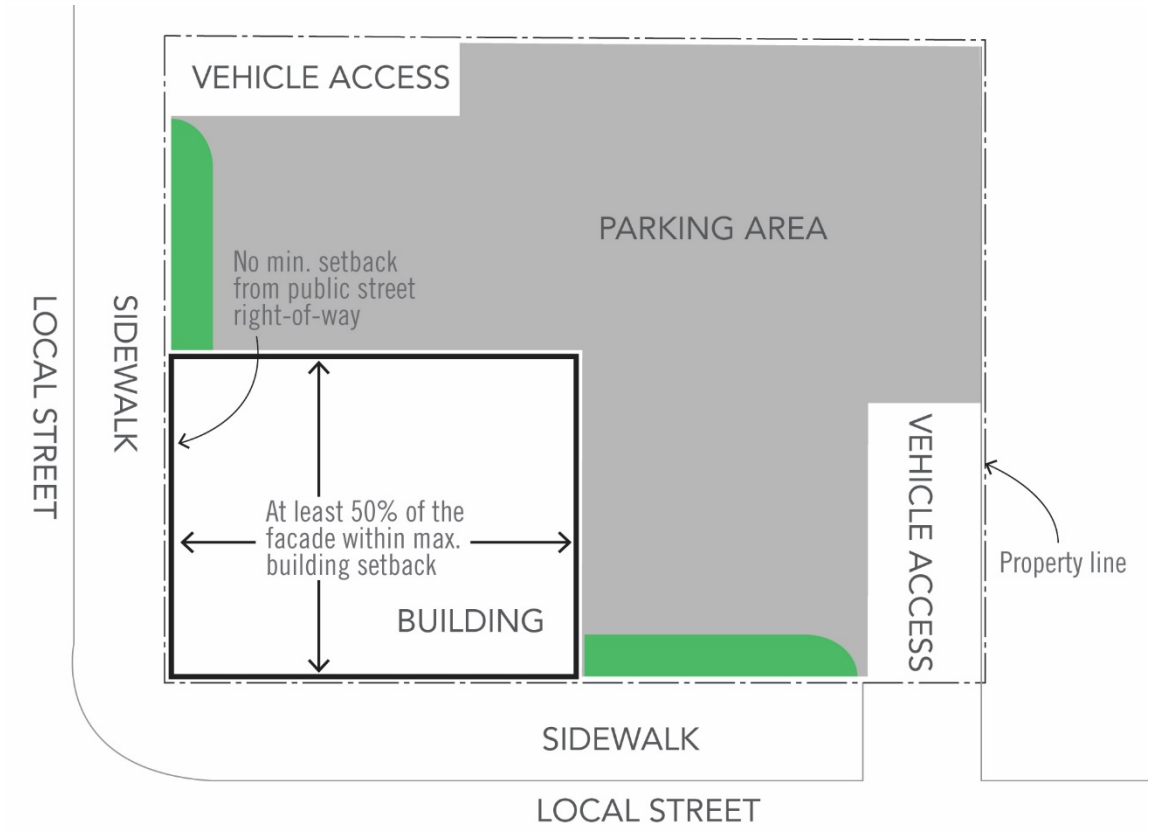
4. Minimum building frontage requirements for a Local Street shall be 50 percent if the development front another local street.

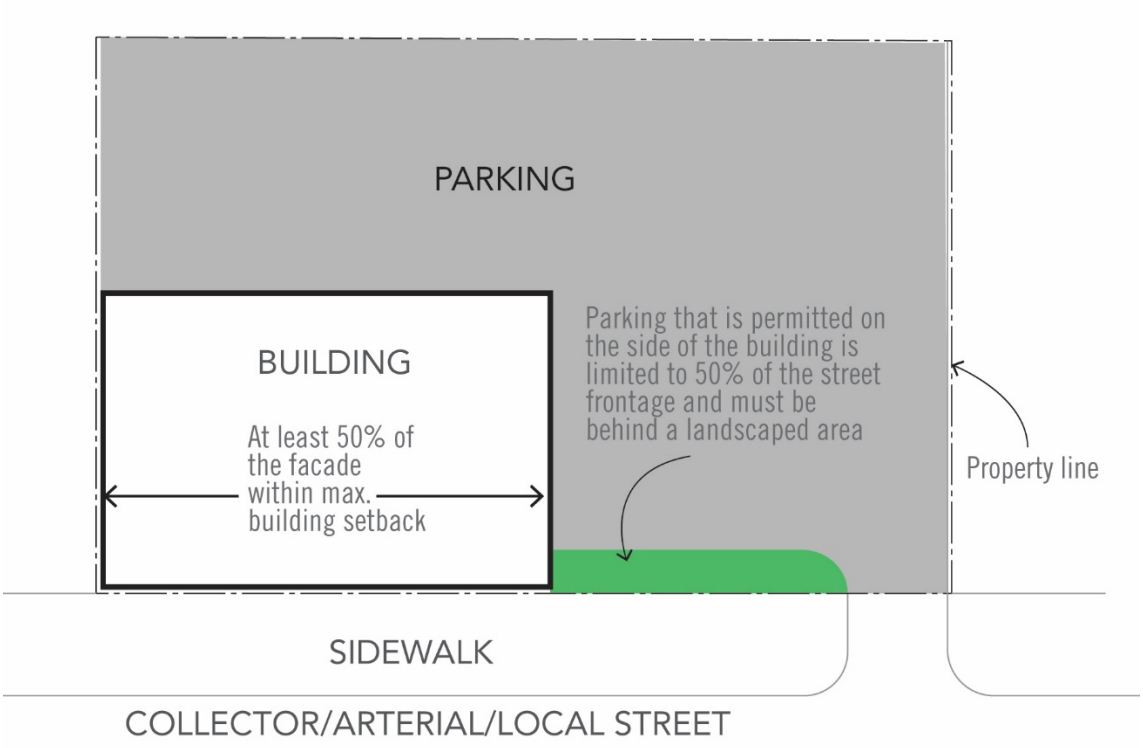
5. For parcels that do not front a Main Street or a Local Street, the minimum building frontage shall occupy a minimum 50 percent of the lot frontage.

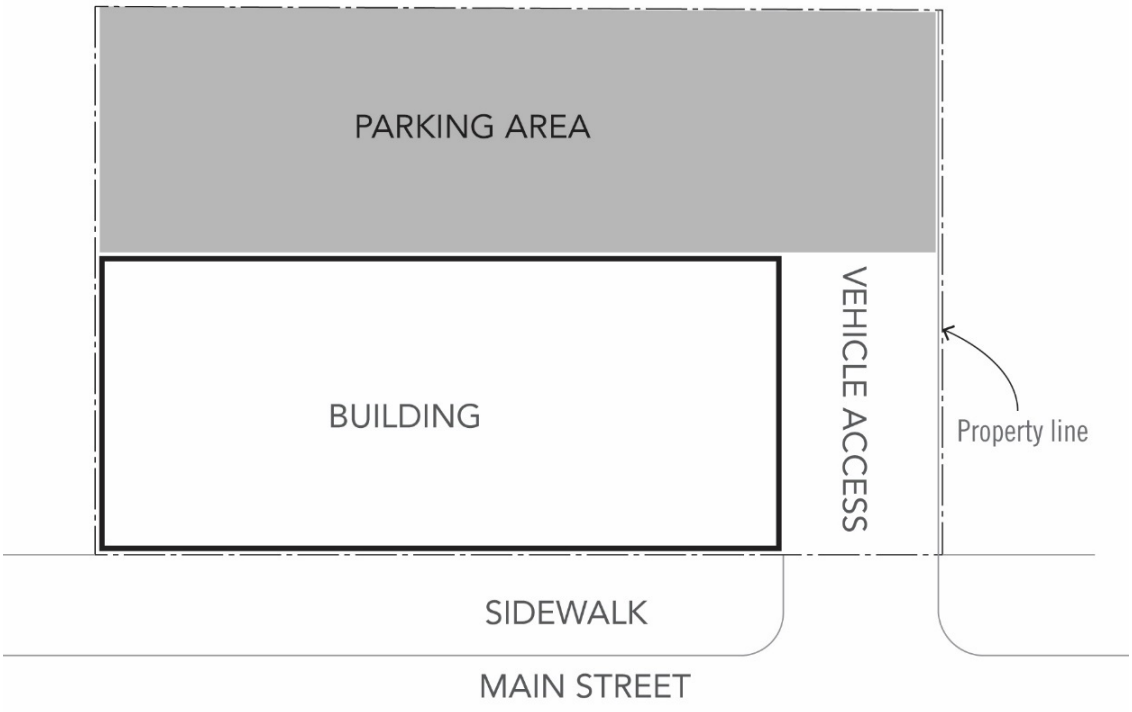
Figure X. Building Placement and Location of Parking (typical)




VEHICLE ACCESS
PARKING AREA
No min. setback from public street right-of-way
SIDEWALK
LOCAL STREET
At least 25% of the facade within max. building setback
BUILDING
At least 70% of the facade within max. building setback
VEHICLE ACCESS
Property line
SIDEWALK
MAIN STREET


VEHICLE ACCESS
PARKING AREA
No min. setback from public street right-of-way
SIDEWALK
LOCAL STREET
At least 50% of the facade within max. building setback
BUILDING
VEHICLE ACCESS
Property line
SIDEWALK
LOCAL STREET


PARKING
BUILDING
At least 50% of the facade within max. building setback
Parking that is permitted on the side of the building is limited to 50% of the street frontage and must be behind a landscaped area
Property line
SIDEWALK
COLLECTOR/ARTERIAL/LOCAL STREET


PARKING AREA
BUILDING
VEHICLE ACCESS
Property line
SIDEWALK
MAIN STREET

E. BUILDING SETBACKS.

The minimum building setback from public street rights-of-way shall be zero feet; the maximum building setback shall be 20 feet for MSD and N-MU districts. The maximum setback shall be 10 feet for all other districts. No off-street vehicle parking or loading is permitted within the setback. Bicycle parking is permitted with in the setback.

F. FRONT YARD SETBACK DESIGN.

Landscaping, seating areas, an arcade, or a hard-surfaced expansion of the pedestrian path must be provided between a structure and a public street or accessway. If a building abuts more than one street, the required improvements shall be provided on all streets. Hard-surfaced areas shall be constructed with scored concrete or modular paving materials. Benches and other street furnishings are encouraged.

G. WALKWAY CONNECTION TO BUILDING ENTRANCES.

A walkway connection is required between a building's entrance and a public street or accessway. This walkway must be at least six feet wide and be paved with scored concrete or modular paving materials. Building entrances at a corner adjacent a public street intersection is encouraged.

H. PARKING LOCATION AND LANDSCAPE DESIGN.

Parking for buildings adjacent to public street rights-of-way must be located to the side or rear of newly constructed buildings, except for buildings fronting Main Street, where parking must be located behind the building. For locations where parking may be located to the side of the building, parking is limited to 50% of the street frontage and must be behind a landscaped area.

I. PARKING GARAGES AND OFF-STREET PARKING ACCESS.

Parking garages must meet all building standards identified within this section. Off street access to a parking lot or garage should be located to minimize conflicts with pedestrians and must be provided from an alley or local street.

J. PLAZA AREAS

The following plaza design standards are intended to enhance the overall site layout and ensure that plaza areas are designed as an accessible amenity.

1. Plaza space shall be required when a mixed use or commercial development or redevelopment involves a gross site area greater than 2 acres. When a plaza is required as a percentage of the overall required open space requirement the plaza space shall incorporate at least three of the following elements:

    a. One seating space shall be provided for every 250 square feet of plaza area and/or public space. The seating space requirement may be met by providing benches, chairs, and/or seat-walls. Areas actively used for public outdoor cafes are exempted from the calculation in the seating area requirement. Remaining areas plaza areas must meet the seating requirement.

b. Structures such as pergolas, canopies, awnings, arcades, or other similar elements to provide shade and rain coverage. Structures should provide coverage for year-round use of the plaza

c. In addition to trees required to satisfy the open space requirement, trees shall be provided at a rate of one tree per 800 square feet of plaza or public space area.

d. Water features or public art.

e. Activity areas including but not limited to outdoor cafes, retail spaces, and/or programmed spaces that accommodate entertainment, meetings, educational activities, and play areas.

f. Pedestrian-scale wayfinding. Plaza areas shall be visible from adjacent streets or pedestrian areas to the greatest extent possible.

2. A minimum of 75% of the plaza frontage shall provide direct unobstructed access from adjacent streets.

3. Stormwater detention areas shall be integrated into the plaza design and used as an amenity to the greatest extent possible.

4. No less than 25% or more than 40% of the plaza area shall be utilized for planted landscaping, including stormwater detention areas.

5. Litter receptacles shall be provided at a minimum of four cubic feet of capacity per 800 square feet of open plaza space

K. DRIVE THROUGH FACILITIES

A drive-through facility shall be subject to the following standards:

1. Shall only be permitted if the building also includes indoor seating

2. Shall not be permitted on parcels with frontage on Main Street.

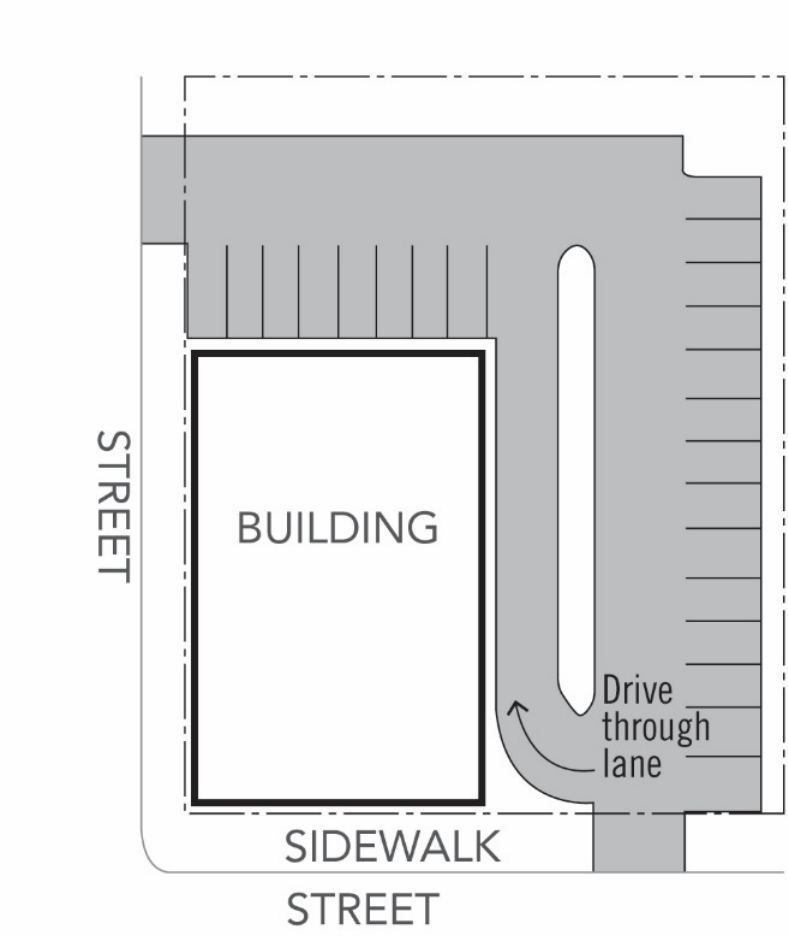
3. All traffic queuing using the drive through facilities shall be accommodated on site.

4. A drive-through lane shall not be located in the area between a building and a public street and the drive-through windows shall not face a public street

5. In addition to standards for drive throughs, buildings with drive-through facilities shall also meet standards for primary building access (Section ____).

6. Drive-through facilities shall be clearly marked with signage to avoid conflict with pedestrian and bicycle facilities.

Figure ____ Drive Through Facilities



L. BUILDING DESIGN STANDARDS

1. General Provisions

a. The first-floor façade of all buildings, including structured parking facilities, shall be designed to encourage and complement pedestrian-scale interest and activity through the use of elements such as windows, awnings, and other similar features.

b. Building entrances shall be clearly marked, provide weather covering, and incorporate architectural features of the building.

c. Architectural features and treatments shall not be limited to a single façade. All visible sides of a building from the street, whether viewed from public or private property, shall display a similar level of quality and architectural interest, with elements such as windows, awnings, murals, a variety of exterior materials, reveals, and other similar features.

2. Design Standards

a. All buildings, including parking garages, shall comply with the following design standards. Building facade windows are required on all street-facing facades, as follows:

Ground Story: Mixed-Use and Non-Residential	60% of facade
Upper Stories: Mixed-Use	30% of facade
Ground Story: Residential Only	30% of facade

i. Window area is the aggregate area of the glass within each window, including any interior grids, mullions, or transoms. Facade area is the aggregate area of each street-facing vertical wall plane.

ii. Required windows shall be clear glass and not mirrored, frosted, or reflective. Clear glass within doors may be counted toward meeting the window coverage standard.

iii. Ground floor windows. All street-facing elevations within the building setback (zero to 20 feet) along public streets shall include a minimum of 60% of the ground floor wall area with windows, display areas or doorway openings. The ground floor wall area shall be measured from two feet above grade to ten feet above grade for the entire width of the street-facing elevation. The ground floor window requirement shall be met within the ground floor wall area and for glass doorway openings to ground level. Up to 50% of the ground floor window requirement may be met on an adjoining elevation as long as the entire requirement is located at a building corner.

iv. Street-facing facades that contain vehicle parking, such as a parking structure, do not have to provide windows but shall provide facade openings that meet the minimum required window area. If required facade openings do not contain glass, they may contain architectural elements that are no more than 30 percent sight-obscuring.

b. Building Facades.

i. Facades that face a public street shall extend no more than 50 feet without providing at least one of the following features: (a) a variation in building materials; (b) a building off-set of at least one foot; (c) a wall area that is entirely separated from other wall areas by a projection, such as an arcade; or (d) by other design features that reflect the building's structural system. No building façade shall extend for more than 250 feet without a pedestrian connection between or through the building.

ii. Buildings more than three stories are required to step back six feet from the building facade at the beginning of the fourth story.

Figure X. Building Facades

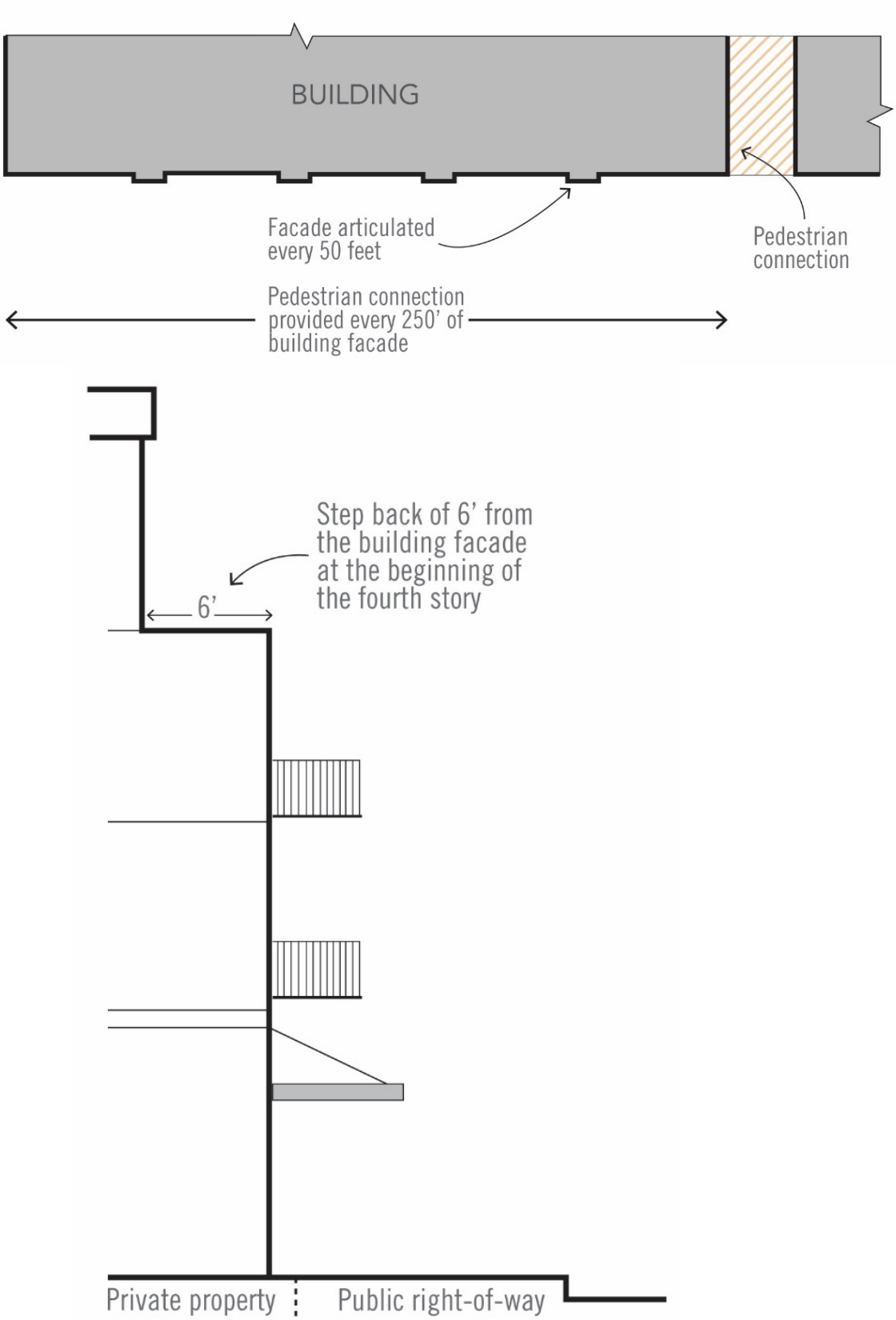
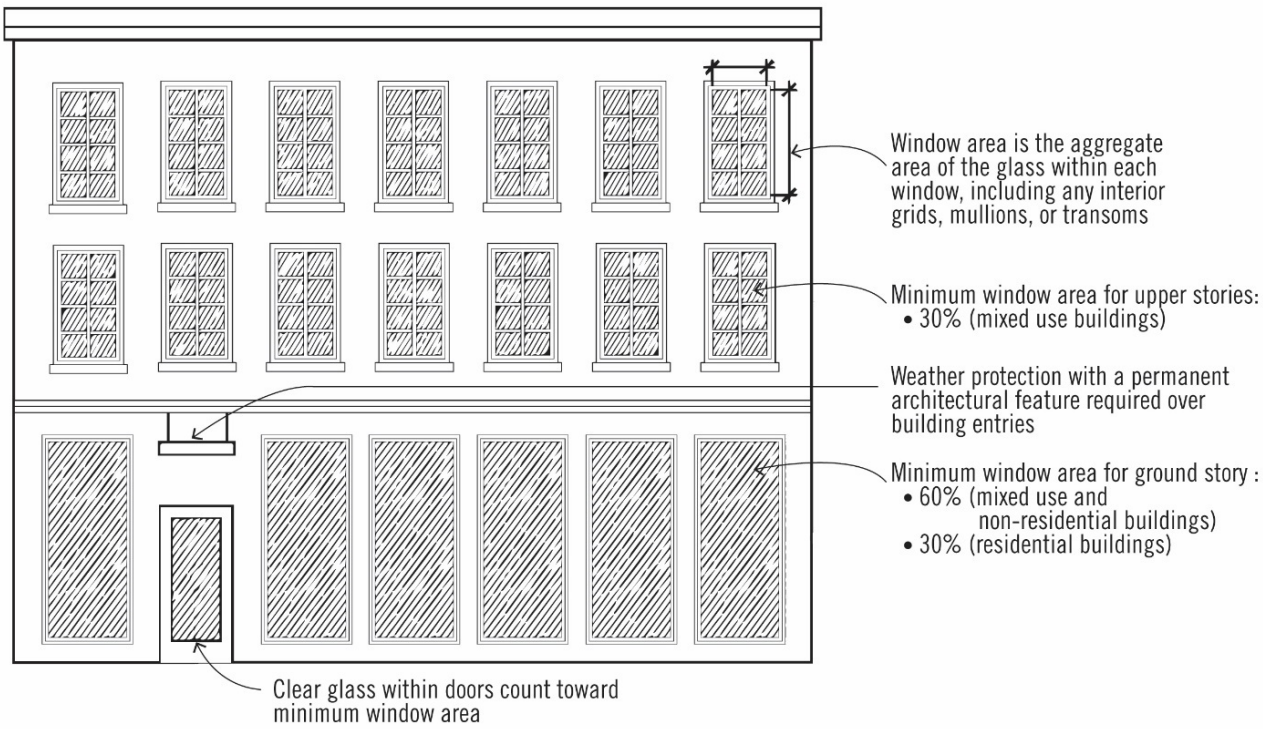


Figure X. Window Placement and Percentage of Facade



c. Weather protection (for nonresidential and mixed-use buildings):

   i. A projecting facade element (awning, canopy, arcade, or marquee) is required on the street-facing façade.

   ii. Awnings/marquees/canopies shall project a minimum of 3 feet from the façade and may project a maximum of 6 feet into the public right-of-way or the minimum sidewalk width along the building frontage, whichever is less. Any element that projects into the right-of-way is subject to approval by the city engineer.

   iii Marquees shall have a minimum 10-foot clearance from the bottom of the marquee to the sidewalk. Awnings and canopies shall have a minimum 8-foot clearance from the bottom of the awning or canopy to the sidewalk.

   iv. Awnings shall match the width of storefronts or window openings.

   v. Internally lit awnings are not permitted.

   vi Awnings shall be made of glass, metal, or exterior grade fabric (or a combination of these materials).

d. Building materials. Plain concrete block, plain concrete, T-111 or similar sheet materials, corrugated metal, plywood, sheet press board or vinyl siding may not be used as exterior finish materials. Foundation material may be plain concrete or plain concrete block where the foundation material is not revealed for more than two feet. Use of brick and natural materials (wood) is encouraged.

e. Roofs and roof lines. Except in the case of a building entrance feature, roofs shall be designed as an extension of the primary materials used for the building and should respect the building's structural system and architectural style. False fronts and false roofs are not permitted.

f. Rooftop features/equipment screening.

   i. The following rooftop equipment does not require screening:

      - Solar panels, wind generators, and green roof features;
      - Equipment under two feet in height.

   ii. Elevator mechanical equipment may extend above the height limit a maximum of 16 feet provided that the mechanical shaft is incorporated into the architecture of the building.

   iii. Satellite dishes and other communications equipment shall be limited to 10 feet in height, shall be set back a minimum of five feet from the roof edge and screened from public view to the extent possible.

   iv. All other roof-mounted mechanical equipment shall be limited to 10 feet in height, shall be set back a minimum of five feet from the roof edge and screened from public view and from views from adjacent buildings.

   v. On all structures exceeding 35 feet in height, roofs shall have drainage systems that are architecturally integrated into the building design.

   vi. Any external stairwells, corridors and circulation components of a building shall be architecturally compatible with the overall structure, through the use of similar materials, colors, and other building elements.

   vii. Required screening shall not be included in the building's maximum height calculation.

g. General Screening

   i. Utility meters shall be screened from view from a public street to the greatest extent possible and shall be painted a color to blend with the building façade.

h. Primary Entry

   i. For commercial/institutional/mixed use buildings:

      - At least one entry door is required for each business with a ground floor frontage.

- Each entrance shall be covered, recessed, or treated with a permanent architectural feature in such a way that weather protection is provided.
- All primary ground-floor common entries shall be oriented to the street or a public space directly facing the street, not to the interior or to a parking lot, or placed at an angle up to 45 degrees from an adjacent street.
- Courtyards, plazas and similar entry features may be utilized to satisfy the building entrance requirement when these features are designed to connect the adjacent street edge to the main building entrance.

ii. For residential buildings:

- Entry door. The primary public entrance to each building unit shall be covered, recessed, or treated with a permanent architectural feature in such a way that weather protection is provided.
- All primary ground-floor common entries of multifamily buildings or individual unit entries of attached residential units that front the street shall be oriented to the street or public right-of-way, not to the interior or to a parking lot.

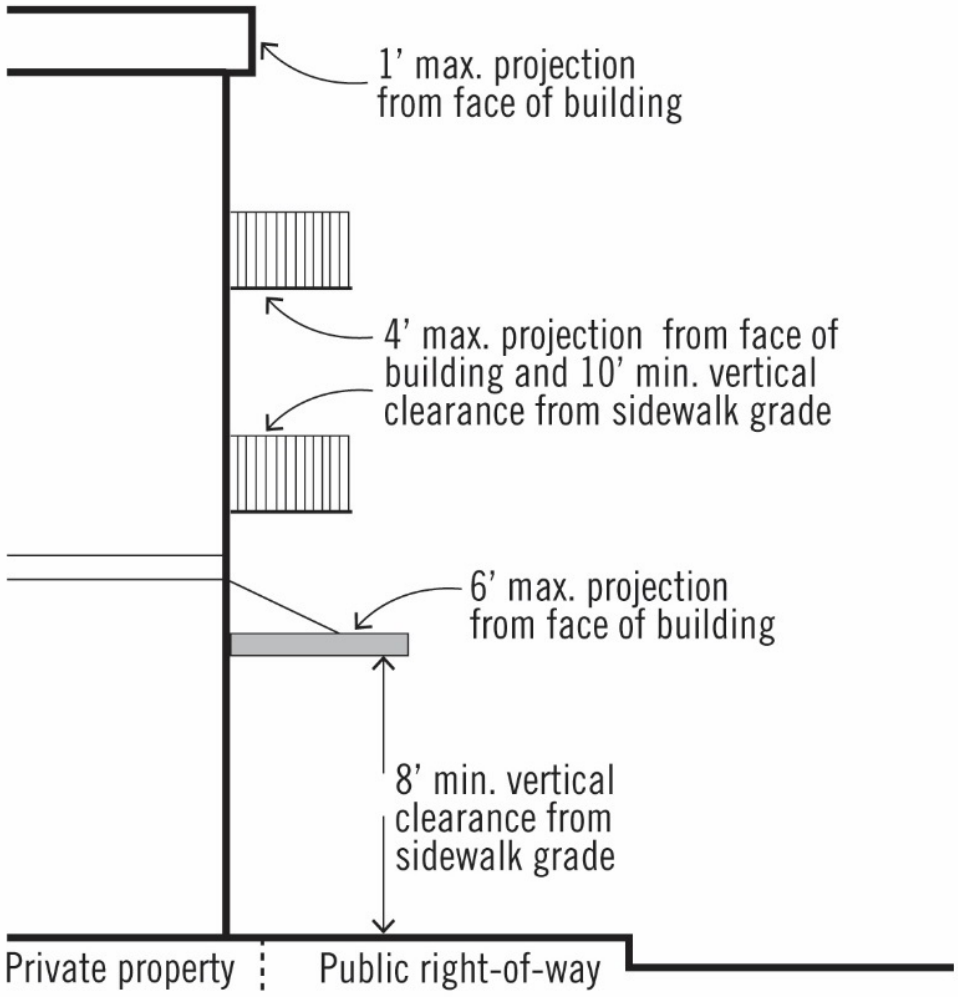
i. Building projections. Building projections are allowed as follows:

i. Architectural elements such as eaves, cornices and cornices may project up to 1’ from the face of the building.

ii. Bay windows and balconies may project up to 4’ from the face of the building Balconies that project into the right-of-way shall have a minimum vertical clearance of 10 feet from sidewalk grade

iii. Weather protection, such as awnings may project up to 6’ from the face of the building. Weather protection across the length of the building face is encouraged. Elements that project into the right-of-way shall have a minimum vertical clearance of 8’ from sidewalk grade.

Figure X. Building Projections



M. OFF STREET PARKING AND LOADING

Parking standards are identified in Section 4.155.

N. PARKING WITHIN A BUILDING OR STRUCTURE

1. Facade openings that face a public street or open space shall be vertically and horizontally aligned and all floors fronting on those facades shall be level, not inclined.

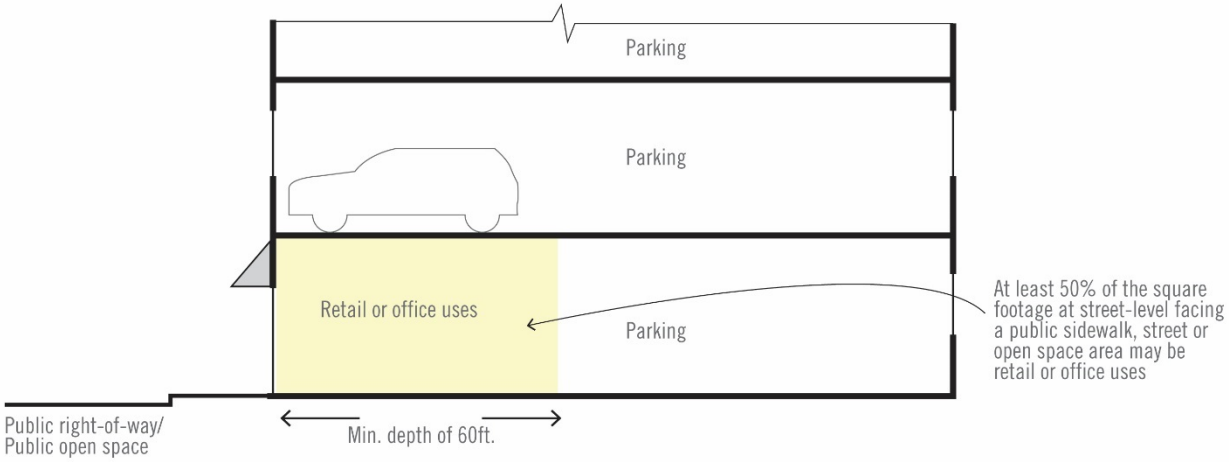
2. The first floor facade of a parking structure located adjacent to a public street shall be designed to encourage and complement pedestrian-scale interest and activity through the inclusion of at least three architectural elements such as arcades, windows, awnings, overhangs, screens, grills, louvers or other similar non-opaque features.

3. Parking structures shall be designed so that motorized vehicles parked on all levels of the structure are screened to a minimum height of 42 inches.

4. The ground floor façade of a structured parking facility that abuts a public sidewalk, street, or open space and that is not occupied by entrances, exits, or waiting areas shall be designed and constructed with a minimum unfinished floor to ceiling height of 15 feet in order to allow occupancy by uses other than parking that are permitted in the underlying district.

5. Parking structures located in the MSD and adjacent to a public street shall contain retail or office uses on the first floor fronting the street or be wrapped with development of equal or greater height than the parking structure. At least 50 percent of a street-level floor facing a public sidewalk, street, or open space area shall contain retail or office uses to a minimum depth of 60 feet.

Figure X. Parking Structure-Ground Floor Design



6. Where the upper floors of above-ground parking structures are visible from a public street, such surfaces shall include architectural or vegetative finishes.

7. Within a surface parking lot or structure, the bicycle spaces, carpool, vanpool, shared car, or electric vehicle charging spaces should be placed in preferred locations relative to the street, the building entrances, and the primary pedestrian routes within and around the project site.

O. STREET CONNECTIVITY

1. Purpose.

The purpose of these standards and procedures is to create safe, comfortable, and attractive streetscapes for pedestrians, improve connectivity for all modes of travel, and remove barriers for small-scale incremental development.

2. General provisions.

This section contains the standards and procedures for improvements to public transportation facilities for all property located in the Wilsonville Town Center Boundary, including specific standards for vehicle, pedestrian, bicycle, and transit facilities. The terms "transportation facilities" and "transportation improvements" generally include those facilities, or improvements to those facilities, that accommodate all modes of travel that are usually located in public rights-of-way, also commonly referred to as streets. "Frontage improvements" are transportation improvements immediately adjacent to a proposed development's street frontage. "Off-site improvements" are transportation improvements not adjacent to a proposed development's street frontage.

3. Transportation facility standards.

a. General Standards.

i. All transportation and associated utility improvements to be placed in a public right-of-way or public access easement shall:

- Meet the standards of the city as provided in _____; and
- Tie into existing transportation and associated utility improvements, including adjacent streets, as possible; and
- Obtain all necessary approvals and permits from other applicable road authorities if the right-of-way to be improved is not under the city's jurisdiction.

ii. Right-of-way shall be dedicated to the public for transportation purposes. Additional right-of-way dedication may be required at intersections for needed improvements identified by a transportation impact study or applicable road authority.

iii. Partial transportation improvements, also called half-street improvements, resulting in other than full improvements on both sides of the street are generally not acceptable. Partial transportation improvements may be approved where the city finds that it will be possible for the adjoining property to dedicate and improve the remainder of the street when it develops.

b. Intersection design and spacing.

i. Streets shall generally intersect at right angles (90 degrees). Angles of less than 75 degrees shall not be permitted unless approved by the city engineer. Streets shall generally intersect so that centerlines are not offset.

ii. Street intersections shall have curb extensions to reduce pedestrian crossing distances unless there are other standards that apply, such as areas with flush curbs.

iii. New street intersections, including alleys, are subject to approval by the city engineer and require an access report. The city engineer shall specify the technical information that must be included in the report. At a minimum, the access report

shall show that the proposed street intersection meets stacking, sight distance, and deceleration standards provided the American Association of State Highway and Transportation Officials (AASHTO) publications, or other standards as determined by the applicable road authority.

c. Transportation network connectivity.

i. Minimum required transportation improvements are identified in the Wilsonville Town Center Plan. Alleys are encouraged but not required. Private streets are prohibited.

ii. Bicycle and pedestrian connections are required where the addition of a connection would link the end of a permanent turnaround to an adjacent street or provide a midblock connection through a long block. A midblock connection is required where at least one block face is 400 feet or more in length. A required connection must go through the interior of the block and connect the block face that is 400 feet or more in length to its opposite block face.

iii. Streets shall be extended to the boundary lines of the proposed development where necessary to give access to or allow for future development of adjoining properties.

- Any required or proposed new streets through or along the boundary of the proposed development shall be accompanied by a future street plan. The future street plan shall show that it is feasible to extend all required or proposed new streets onto adjoining properties to the satisfaction of the city engineer.
- Temporary turnarounds shall be constructed for street stubs in excess of 150 feet in length. Drainage facilities shall be constructed to properly manage stormwater runoff from temporary turnarounds.
- Street stubs to adjoining properties shall not be considered permanent turnarounds, unless required and designed as permanent turnarounds, since they are intended to continue as through streets when adjoining properties develop.
- Reserve strips may be required in order to ensure the eventual continuation or completion of a street.

iv. Permanent dead end streets are not allowed except where no opportunity exists for creating a through street connection. Dead end streets shall meet all fire code access requirements and shall only be used where topographical constraints, protected natural resource areas, existing development patterns, or strict adherence to other city requirements precludes a future street connection. The lack of present ownership or control over abutting property shall not be grounds for a dead end street.

v. Street design. All streets are subject to the standards illustrated in the Wilsonville Town Center Plan.

vi. Street trees shall be required along all street frontages. The minimum number of required street trees shall be determined by dividing the length (in feet) of the proposed development's street frontage by 40 feet. When the result is a fraction, the number of street trees required shall be the nearest whole number.

vii. Stormwater facilities for managing stormwater runoff from transportation facilities shall meet all applicable city standards.

xiii. Above-ground vegetated water quality facilities shall be required wherever practicable.

ix. Water quality facilities may be located in an on-street parking lane in lieu of on-street parking or in the landscape strip or tree well area of the sidewalk corridor.

x. Sidewalks shall have a minimum unobstructed width of 6 feet for pedestrian through- travel, except for A-frame signs where the minimum unobstructed width is 4 feet. Any permanent structures or utilities within the required through-travel area are subject to approval by the city engineer. Any sidewalk area outside of the required through-travel area may be used for commercial purposes by adjacent development or may contain pedestrian amenities, such as street furniture, bicycle parking, trash cans, and drinking fountains. Use of this area for commercial purposes includes, but is not limited to: customer seating, merchandise display, and A-frame signs. Use of this area for commercial purposes is at the sole discretion of the director.

xi. Off street paths shall meet the city's path standards identified in the Transportation system plan, unless noted otherwise in the Wilsonville Town Center Plan. The location and type of facility shall be consistent the trail and open space, and street cross section illustrated in the Wilsonville Town Center Plan. Trail widths may be reduced where constrained by existing development, protected natural resource areas, or topography as determined by the city engineer.

xii. Bicycle facilities include bicycle parking, on-street shared lanes, on-street bike lanes and paths. Bicycle facility improvements include, but are not limited to: bicycle racks, signage, pavement markings, intersection treatments, traffic calming, and traffic diversion.

xiii. Transit facilities shall conform to current SMART standards with final approval by the city engineer.

Section 4.155. General Regulations - Parking, Loading and Bicycle Parking.

(.01) Purpose:

A. The design of parking areas is intended to enhance the use of the parking area as it relates to the site development as a whole, while providing efficient parking, vehicle circulation and attractive, safe pedestrian access.

B. As much as possible, site design of impervious surface parking and loading areas shall address the environmental impacts of air and water pollution, as well as climate change from heat islands.

C. The view from the public right of way and adjoining properties is critical to meet the aesthetic concerns of the community and to ensure that private property rights are met. Where developments are located in key locations such as near or adjacent to the I-5 interchanges, or involve large expanses of asphalt, they deserve community concern and attention.

(.02) General Provisions:

A. The provision and maintenance of off-street parking spaces is a continuing obligation of the property owner. The standards set forth herein shall be considered by the Development Review Board as minimum criteria.

1. The Board shall have the authority to grant variances or planned development waivers to these standards in keeping with the purposes and objectives set forth in the Comprehensive Plan and this Code.

2. Waivers to the parking, loading, or bicycle parking standards shall only be issued upon a findings that the resulting development will have no significant adverse impact on the surrounding neighborhood, and the community, and that the development considered as a whole meets the purposes of this section.

B. No area shall be considered a parking space unless it can be shown that the area is accessible and usable for that purpose, and has maneuvering area for the vehicles, as determined by the Planning Director.

C. In cases of enlargement of a building or a change of use from that existing on the effective date of this Code, the number of parking spaces required shall be based on the additional floor area of the enlarged or additional building, or changed use, as set forth in this Section. Current development standards, including parking area landscaping and screening, shall apply only to the additional approved parking area.

D. In the event several uses occupy a single structure or parcel of land, the total requirement for off-street parking shall be the sum of the requirements of the several uses computed separately, except as modified by subsection "E," below, except for those uses within a mixed-use building in the TC Zoning District, where

parking requirements shall require 75 percent of the cumulative number of spaces required.~~.~~

E. Owners of two (2) or more uses, structures, or parcels of land may utilize jointly the same parking area when the peak hours of operation do not overlap, provided satisfactory legal evidence is presented in the form of deeds, leases, or contracts securing full and permanent access to such parking areas for all the parties jointly using them. [Amended by Ord. # 674 11/16/09]

F. Off-street parking spaces existing prior to the effective date of this Code may be included in the amount necessary to meet the requirements in case of subsequent enlargement of the building or use to which such spaces are necessary.

G. Off-Site Parking. Except for single-family dwellings, the vehicle parking spaces required by this Chapter may be located on another parcel of land, provided the parcel is within 500 feet of the use it serves and the DRB has approved the off-site parking through the Land Use Review. The distance from the parking area to the use shall be measured from the nearest parking space to the main building entrance, following a sidewalk or other pedestrian route. Within the TC Zoning District, there is no maximum distance to an off-site location. The right to use the off-site parking must be evidenced in the form of recorded deeds, easements, leases, or contracts securing full and permanent access to such parking areas for all the parties jointly using them. [Amended by Ord. # 674 11/16/09]

H. The conducting of any business activity shall not be permitted on the required parking spaces, unless a temporary use permit is approved pursuant to Section 4.163.

I. Where the boundary of a parking lot adjoins or is within a residential district, such parking lot shall be screened by a sight-obscuring fence or planting. The screening shall be continuous along that boundary and shall be at least six (6) feet in height.

J. Parking spaces along the boundaries of a parking lot shall be provided with a sturdy bumper guard or curb at least six (6) inches high and located far enough within the boundary to prevent any portion of a car within the lot from extending over the property line or interfering with required screening or sidewalks.

K. All areas used for parking and maneuvering of cars shall be surfaced with asphalt, concrete, or other surface, such as pervious materials (i. e. pavers, concrete, asphalt) that is found by the City's authorized representative to be suitable for the purpose. In all cases, suitable drainage, meeting standards set by the City's authorized representative~~,~~ shall be provided. [Amended by Ord. # 674 11/16/09]

L. Artificial lighting which may be provided shall be so limited or deflected as not to shine into adjoining structures or into the eyes of passers-by.

M. Off-street parking requirements for types of uses and structures not specifically listed in this Code shall be determined by the Development Review Board if an

application is pending before the Board. Otherwise, the requirements shall be specified by the Planning Director, based upon consideration of comparable uses.

N. Up to forty percent (40%) of the off-street spaces may be compact car spaces as identified in Section 4.001 - "Definitions," and shall be appropriately identified.

O. Where off-street parking areas are designed for motor vehicles to overhang beyond curbs, planting areas adjacent to said curbs shall be increased to a minimum of seven (7) feet in depth. This standard shall apply to a double row of parking, the net effect of which shall be to create a planted area that is a minimum of seven (7) feet in depth.

P. Parklets are permitted within the TC Zoning District on up to two parking spaces per block. Development requirements and duration shall be specified by the Planning Director

(.03) Minimum and Maximum Off-Street Parking Requirements:

A. Parking and loading or delivery areas shall be designed with access and maneuvering area adequate to serve the functional needs of the site and shall:

1. Separate loading and delivery areas and circulation from customer and/or employee parking and pedestrian areas. Circulation patterns shall be clearly marked.

2. To the greatest extent possible, separate vehicle and pedestrian traffic.

B. Parking and loading or delivery areas shall be landscaped to minimize the visual dominance of the parking or loading area, as follows:

1. Landscaping of at least ten percent (10%) of the parking area designed to be screened from view from the public right-of-way and adjacent properties. This landscaping shall be considered to be part of the fifteen percent (15%) total landscaping required in Section 4.176.03 for the site development.

2. Landscape tree planting areas shall be a minimum of eight (8) feet in width and length and spaced every eight (8) parking spaces or an equivalent aggregated amount.

a. Trees shall be planted in a ratio of one (1) tree per eight (8) parking spaces or fraction thereof, except in parking areas of more than two hundred (200) spaces where a ratio of one (1) tree per six (six) spaces shall be applied as noted in subsection (.03)(B.)(3.). A landscape design that includes trees planted in areas based on an aggregated number of parking spaces must provide all area calculations.

b. Except for trees planted for screening, all deciduous interior parking lot trees must be suitably sized, located, and maintained to provide a branching minimum of seven (7) feet clearance at maturity.

3. Due to their large amount of impervious surface, new development with parking areas of more than two hundred (200) spaces that are located in any

zone, and that may be viewed from the public right of way, shall be landscaped to the following additional standards:

a. One (1) trees shall be planted per six (6) parking spaces or fraction thereof. At least twenty-five percent (25%) of the required trees must be planted in the interior of the parking area.
b. Required trees may be planted within the parking area or the perimeter, provided that a minimum of forty percent (40%) of the canopy dripline of mature perimeter trees can be expected to shade or overlap the parking area. Shading shall be determined based on shadows cast on the summer solstice.
c. All parking lots in excess of two hundred (200) parking spaces shall provide an internal pedestrian walkway for every six (6) parking aisles. Minimum walkway clearance shall be at least five (5) feet in width. Walkways shall be designed to provide pedestrian access to parking areas in order to minimize pedestrian travel among vehicles. Walkways shall be designed to channel pedestrians to the front entrance of the building.
d. Parking lots more than three acres in size shall provide street-like features along principal drive isles, including curbs, sidewalks, street trees or planting strips, and bicycle routes.
e. All parking lots viewed from the public right of way shall have a minimum twelve (12) foot landscaped buffer extending from the edge of the property line at the right of way to the edge of the parking area. Buffer landscaping shall meet the low screen standard of 4.176(.02)(D) except that trees, groundcovers and shrubs shall be grouped to provide visual interest and to create view openings no more than ten (10) feet in length and provided every forty (40) feet. Notwithstanding this requirement, view of parking area that is unscreened from the right of way due to slope or topography shall require an increased landscaping standard under 4.176(.02) in order to buffer and soften the view of vehicles as much as possible. For purposes of this section, "view from the public right of way" is intended to mean the view from the sidewalk directly across the street from the site, or if no sidewalk, from the opposite side of the adjacent street or road.
f. Where topography and slope condition permit, the landscape buffer shall integrate parking lot storm water treatment in bioswales and related plantings. Use of berms or drainage swales are allowed provided that planting areas with lower grade are constructed so that they are protected from vehicle maneuvers. Drainage swales shall be constructed to Public Works Standards.
g. In addition to the application requirements of section 4.035(.04)(6)(d), where view of signs is pertinent to landscape design, any approved or planned sign plan shall accompany the application for landscape design approval.

[Amended by Ord. #719, 6/17/13]

C. Off Street Parking shall be designed for safe and convenient access that meets ADA and ODOT standards. All parking areas which contain ten (10) or more parking spaces, shall for every fifty (50) standard spaces., provide one ADA-accessible parking space that is constructed to building code standards, Wilsonville Code 9.000.

D. Where possible, except for in the TC Zoning District where connections are required unless unfeasible by topography or existing buildings, parking areas shall be designed to connect with parking areas on adjacent sites so as to eliminate the necessity for any mode of travel of utilizing the public street for multiple accesses or cross movements. In addition, on-site parking shall be designed for efficient on-site circulation and parking.

E. In all multi-family dwelling developments, there shall be sufficient areas established to provide for parking and storage of motorcycles, mopeds and bicycles. Such areas shall be clearly defined and reserved for the exclusive use of these vehicles.

F. On-street parking spaces, directly adjoining the frontage of and on the same side of the street as the subject property, may be counted towards meeting the minimum off-street parking standards.

G. Tables 5 shall be used to determine the minimum and maximum parking standards for various land uses. The minimum number of required parking spaces shown on Tables 5 shall be determined by rounding to the nearest whole parking space. For example, a use containing 500 square feet, in an area where the standard is one space for each 400 square feet of floor area, is required to provide one off-street parking space. If the same use contained more than 600 square feet, a second parking space would be required. Structured parking and on-street parking are exempted from the parking maximums in Table 5. [Amended by Ordinance No. 538, 2/21/02.]

H. Electrical Vehicle Charging Stations:

1. Parking spaces designed to accommodate and provide one or more electric vehicle charging stations on site may be counted towards meeting the minimum off-street parking standards.
2. Modification of existing parking spaces to accommodate electric vehicle charging stations on site is allowed outright.

I. Motorcycle parking:

1. Motorcycle parking may substitute for up to 5 spaces or 5 percent of required automobile parking, whichever is less. For every 4 motorcycle parking spaces provided, the automobile parking requirement is reduced by one space.
2. Each motorcycle space must be at least 4 feet wide and 8 feet deep. Existing parking may be converted to take advantage of this provision.

[Amended by Ord. #719, 6/17/13]

(.04) Bicycle Parking:

A. Required Bicycle Parking - General Provisions.

1. The required minimum number of bicycle parking spaces for each use category is shown in Table 5, Parking Standards.
2. Bicycle parking spaces are not required for accessory buildings. If a primary use is listed in Table 5, bicycle parking is not required for the accessory use.
3. When there are two or more primary uses on a site, the required bicycle parking for the site is the sum of the required bicycle parking for the individual primary uses.
4. Bicycle parking space requirements may be waived by the Development Review Board per Section 4.118(.03)(A.)(9.) and (10.).

B. Standards for Required Bicycle Parking

1. Each space must be at least 2 feet by 6 feet in area and be accessible without moving another bicycle.
2. An aisle at least 5 feet wide shall be maintained behind all required bicycle parking to allow room for bicycle maneuvering. Where the bicycle parking is adjacent to a sidewalk, the maneuvering area may extend into the right-of-way.
3. When bicycle parking is provided in racks, there must be enough space between the rack and any obstructions to use the space properly.
4. Bicycle lockers or racks, when provided, shall be securely anchored.
5. Bicycle parking shall be located within 30 feet of the main entrance to the building or inside a building, in a location that is easily accessible for bicycles. For multi-tenant developments, with multiple business entrances, bicycle parking may be distributed on-site among more than one main entrance.
6. With Planning Director approval, on street vehicle parking can also be used for bicycle parking.

C. Long-term Bicycle Parking

1. Long-term bicycle parking provides employees, students, residents, commuters, and others who generally stay at a site for several hours a weather-protected place to park bicycles.
2. For a proposed multi-family residential, retail, office, or institutional development, or for a park and ride or transit center, where six (6) or more bicycle parking spaces are required pursuant to Table 5, 50% of the bicycle parking shall be developed as long-term, secure spaces. Required long-term bicycle parking shall meet the following standards:
   a. All required spaces shall meet the standards in subsection (B.) above, and must be covered in one of the following ways: inside buildings, under roof

overhangs or permanent awnings, in bicycle lockers, or within or under other structures.

b. All spaces must be located in areas that are secure or monitored (e.g., visible to employees, monitored by security guards, or in public view).

c. Spaces are not subject to the locational criterion of (B.)(5.).

[Section 4.155(.04) Added by Ord. #719, 6/17/13]

Note: In considering proposed waivers to the following standards, the City will consider the potential uses of the site and not just the uses that are currently proposed. For waivers to exceed the maximum standards, applicants shall bear the burden of proving that Metro, State, and federal clean air standards will not be violated.

TABLE 5: PARKING STANDARDS

USE	PARKING MINIMUMS	PARKING MAXIMUMS	BICYCLE MINIMUMS
a. Residential			
1. Single and attached units and any apartments (9 or fewer units)	1 per D.U., except accessory dwelling units, which have no minimum.	No Limit	Apartments – Min. of 2
2. Apartments of ten (10) or more units	1 per D.U. (less than 500 sq. ft.) 1.25 per D.U. (1 bdrm) 1.5 per D.U. (2 bdrm) 1.75 per D.U. (3 bdrm) Within the TC Zone, parking minimum is 1 per DU, regardless of the number of bedrooms	No Limit	1 per D.U.
3. Manufactured or mobile home park	2 spaces/unit	No Limit	1 per D.U.
4. Manufactured or mobile home subdivision	1 per D.U.	No Limit	1 per D.U.
b. Commercial Residential			
1. Hotel	1 per 1000 sq. ft.	No Limit	1 per 5 units Min. of 2

TABLE 5: PARKING STANDARDS

USE	PARKING MINIMUMS	PARKING MAXIMUMS	BICYCLE MINIMUMS
2. Motel	1 per 1000 sq. ft.	No Limit	1 per 5 units Min. of 2
3. Clubs, Lodges	Spaces to meet the combined requirements of the uses being conducted such as hotel, restaurant, auditorium, etc.	No Limit	1 per 20 parking spaces Min. of 2
c. Institutions			
1. Welfare or correctional institution	1 space/3 beds for patients or inmates	No Limit	1 per 50 beds Min. of 2
2. Convalescent hospital, nursing home, sanitarium, rest home, home for the aged	1 space/2 beds for patients or residents	No Limit	1 per 6000 sq. ft. Min. of 2
3. Hospital	2 spaces/bed	No Limit	1 per 20 parking spaces Min. of 2
d. Places of Public Assembly			
1. Church	1 space/4 seats, or 8 ft of bench length in the main auditorium	.8 per seat	1 per 50 seats Min. of 2
2. Library, reading room, museum, art gallery	2.5 per 1000 sq. ft.	No Limit	1 per 1000 sq. ft. Min. of 6

TABLE 5: PARKING STANDARDS

USE	PARKING MINIMUMS	PARKING MAXIMUMS	BICYCLE MINIMUMS
3. Preschool nursery, kindergarten	.2 per student and staff	.3 per student and staff	1 per 3500 sq. ft. Min. of 2
4. Elementary or Middle School	.2 per student and staff	.3 per student and staff	8 per class (above 2nd grade) K – 2nd grade: 1 per 3500 sq. ft.
5. High School	.2 per student and staff	.3 per student and staff	4 per class
6 College, commercial school for adults	.2 per student and staff	.3 per student and staff	1 per class Min. of 4
7 Other auditorium, meeting rooms	.3 per seat	.5 per seat	1 per 50 seats Min. of 4
8. Stadium, arena, theater	.3 per seat	.5 per seat	1 per 40 seats Min. of 4
9. Bowling alley	4 spaces/lane	No Limit	1 per 10 lanes Min. of 2
10. Dance hall, skating rink, gym, swim or fitness center	4.3 per 1000 sq. ft.	6.5 per 1000- sq. ft.	1 per 4000 sq. ft. Min. of 2

TABLE 5: PARKING STANDARDS

USE	PARKING MINIMUMS	PARKING MAXIMUMS	BICYCLE MINIMUMS
11. Tennis or racquetball facility	1 per 1000 sq. ft.	1.5 per 1000 sq. ft.	1 per court Min. of 2
e. Commercial			
1. Retail store except supermarkets and stores selling bulky merchandise and grocery stores 1500 sq. ft. gross floor area or less	4.1 per 1000 sq. ft.	6.2 per 1000 sq. ft.	1 per 4000 sq. ft. Min. of 2
2. Commercial retail, 1501 sq. ft. or more	4.1 per 1000 sq. ft. Within the TC zone, commercial retail less than 5000 sq. ft. within a mixed-use building has no minimum for individual parking spaces ~~less that 5000 sq. ft.~~	6.2 per 1000 sq. ft.	1 per 4000 sq. ft. Min. of 2
3. Service or repair shops	4.1 per 1000 sq. ft.	6.2 per 1000 sq. ft.	1 per 4000 sq. ft.
4. Retail stores and outlets selling furniture, automobiles or other bulky merchandise where the operator can show the bulky merchandise	1.67 per 1000 sq. ft.	6.2 per 1000 sq. ft.	1 per 8000 sq. ft. Min. of 2

TABLE 5: PARKING STANDARDS

USE	PARKING MINIMUMS	PARKING MAXIMUMS	BICYCLE MINIMUMS
occupies the major areas of the building			
5. Office or flex space (except medical and dental) Bank with drive-thru	2.7 per 1000 sq. ft. 4.3 per 1000 sq. ft	4.1 per 1000 sq. ft. 6.5 per 1000 sq. ft.	1 per 5000 sq. ft Min. of 2
6. Medical and dental office or clinic area	3.9 per 1000 sq. ft.	5.9 per 1000 sq. ft.	1 per 5000 sq. ft. Min. of 2
7. Eating or drinking establishments Fast food (with drive-thru) Other	15.3 per 1000 sq. ft. 9.9 per 1000 sq. ft.	23 per 1000 sq. ft. 14.9 per 1000 sq. ft.	1 per 4000 sq. ft. Min. of 4
8. Mortuaries	1 space/4 seats, or 8ft. of bench length in chapels	No Limit	Min. of 2
f. Industrial			
1. Manufacturing establishment	1.6 per 1000 sq. ft.	No Limit	1 per 10,000 sq. ft. Min. of 6
2. Storage warehouse, wholesale establishment, rail or trucking freight terminal	.3 per 1000 sq. ft.	.5 per 1000 sq. ft.	1 per 20,000 sq. ft. Min. of 2

TABLE 5: PARKING STANDARDS

USE	PARKING MINIMUMS	PARKING MAXIMUMS	BICYCLE MINIMUMS
g. Park & Ride or Transit Parking	As needed	No Limit	10 per acre, with 50% in lockable enclosures

[Table 5 amended by Ordinance No. 538, 2/21/02]
[Table 5 amended by Ordinance No. 548, 10/9/02]
[Table 5 amended by Ordinance No. 719, 6/17/13]

(.05) Minimum Off-Street Loading Requirements:

A. Every building that is erected or structurally altered to increase the floor area, and which will require the receipt or distribution of materials or merchandise by truck or similar vehicle, shall provide off-street loading berths on the basis of minimum requirements as follows:

1. Commercial, industrial, and public utility uses which have a gross floor area of 5,000 square feet or more, shall provide truck loading or unloading berths in accordance with the following tables:

Square feet of Floor Area	Number of Berths Required
Less than 5,000	0
5,000 - 30,000	1
30,000 - 100,000	2
100,000 and over	3

2. Restaurants, office buildings, hotels, motels, hospitals and institutions, schools and colleges, public buildings, recreation or entertainment facilities, and any similar use which has a gross floor area of 30,000 square feet or more, shall provide off-street truck loading or unloading berths in accordance with the following table:

Square feet of Floor Area	Number of Berths Required
Less than 30,000	0
30,000 - 100,000	1
100,000 and over	2

3. A loading berth shall contain space twelve (12) feet wide, thirty-five (35) feet long, and have a height clearance of fourteen (14) feet. Where the vehicles generally used for loading and unloading exceed these dimensions, the required length of these berths shall be increased to accommodate the larger vehicles.

4. If loading space has been provided in connection with an existing use or is added to an existing use, the loading space shall not be eliminated if elimination would result in less space than is required to adequately handle the needs of the particular use.

5. Off-street parking areas used to fulfill the requirements of this Ordinance shall not be used for loading and unloading operations except during periods of the day when not required to meet parking needs.

B Exceptions and Adjustments.

Section 4.155. General Regulations - Parking, Loading and Bicycle Parking.

1. The Planning Director or Development Review Board may approve a loading area adjacent to or within a street right-of-way where it finds that loading and unloading operations:
   a. Are short in duration (*i.e.,* less than one hour);
   b. Are infrequent (less than three operations daily);
   c. Do not obstruct traffic during peak traffic hours;
   d. Do not interfere with emergency response services or bicycle and pedestrian facilities; and
   e. Are acceptable to the applicable roadway authority.

(.06) Carpool and Vanpool Parking Requirements:

A. Carpool and vanpool parking spaces shall be identified for the following uses:
   1. New commercial and industrial developments with seventy-five (75) or more parking spaces,
   2. New institutional or public assembly uses, and
   3. Transit park-and-ride facilities with fifty (50) or more parking spaces.

B. Of the total spaces available for employee, student, and commuter parking, at least five percent, but not fewer than two, shall be designated for exclusive carpool and vanpool parking.

C. Carpool and vanpool parking spaces shall be located closer to the main employee, student or commuter entrance than all other parking spaces with the exception of ADA parking spaces.

D. Required carpool/vanpool spaces shall be clearly marked "Reserved - Carpool/Vanpool Only."

(.07) Parking Area Redevelopment. The number of parking spaces may be reduced by up to 10% of the minimum required parking spaces for that use when a portion of the existing parking area is modified to accommodate or provide transit-related amenities such as transit stops, pull-outs, shelters, and park and ride stations.

[Section 4.155 Amended by Ordinance. No. 536, 1/7/02]
[Section 4.155 Amended by Ordinance. No. 719, 6/17/13]

Wilsonville Town Center

DRAFT Development Feasibility Analysis

PREPARED FOR

WILSONVILLE OREGON

PREPARED BY

LELAND CONSULTING GROUP

September 18, 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:

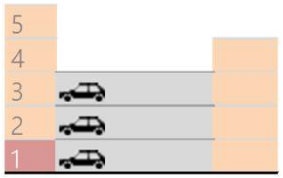
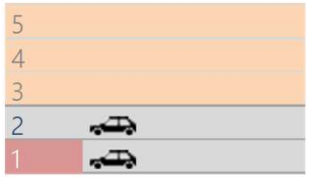
Development Feasibility Inputs

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 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

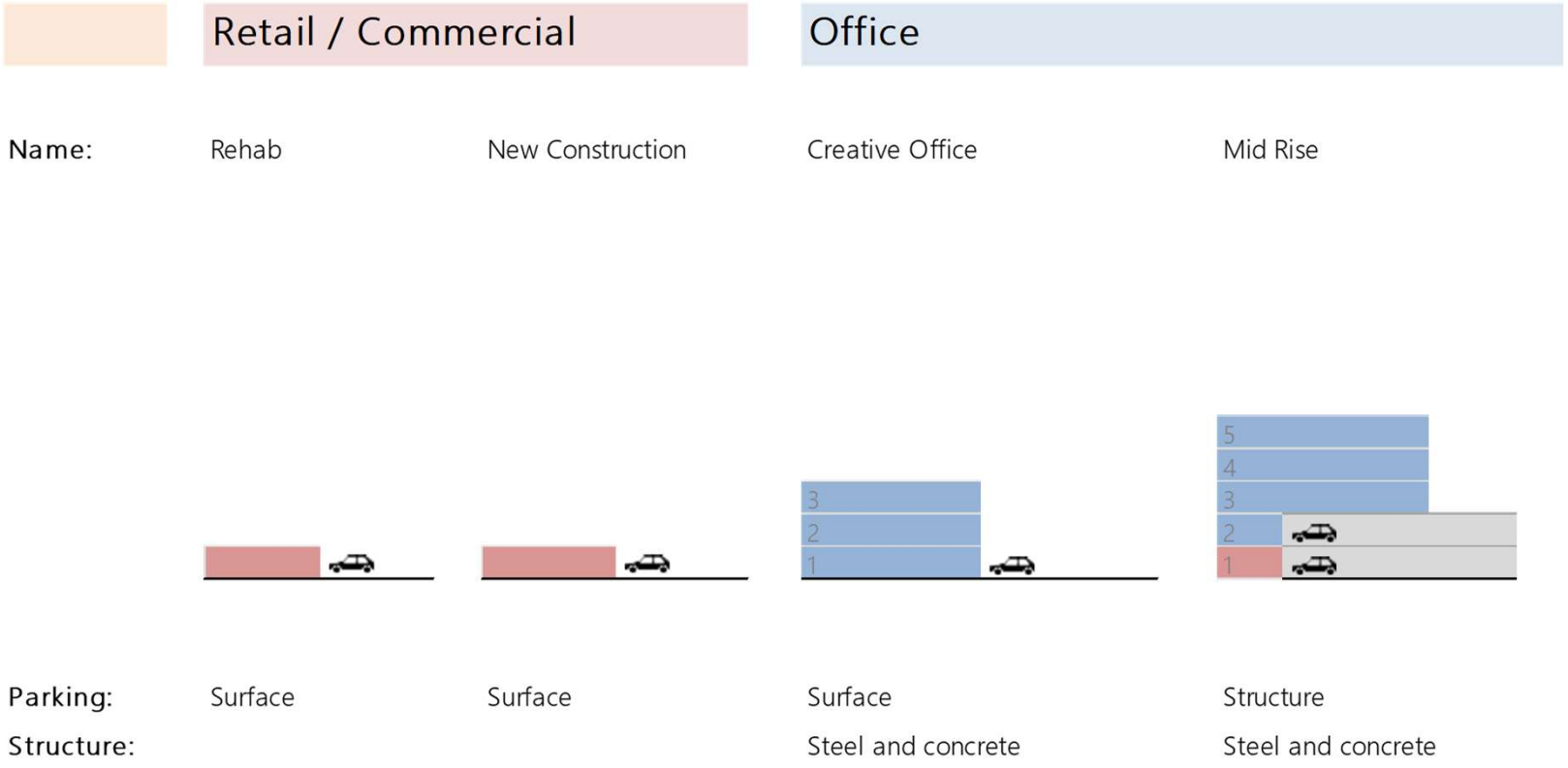
Prototypes: Housing

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

	Housing				(Commercial)
Name:	Townhomes	Garden Apartments	Main St. Mixed Use	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

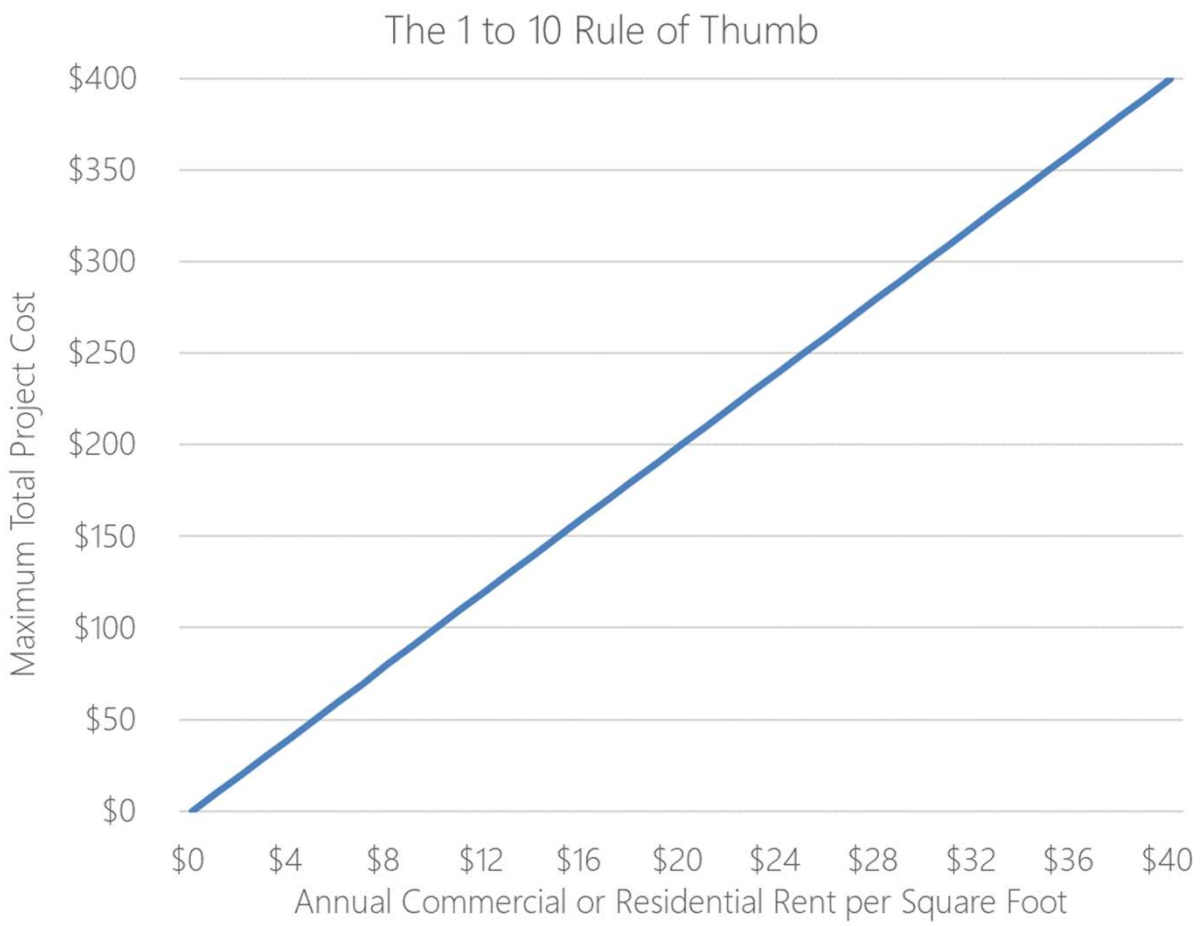
The retail and office prototypes used for this feasibility analysis are shown below. Like the housing prototypes, the way in which parking is provided (surface, tuck under, or structured) is a key influence on the physical form of these projects. For retail projects, we evaluated the rehab or renovation 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.

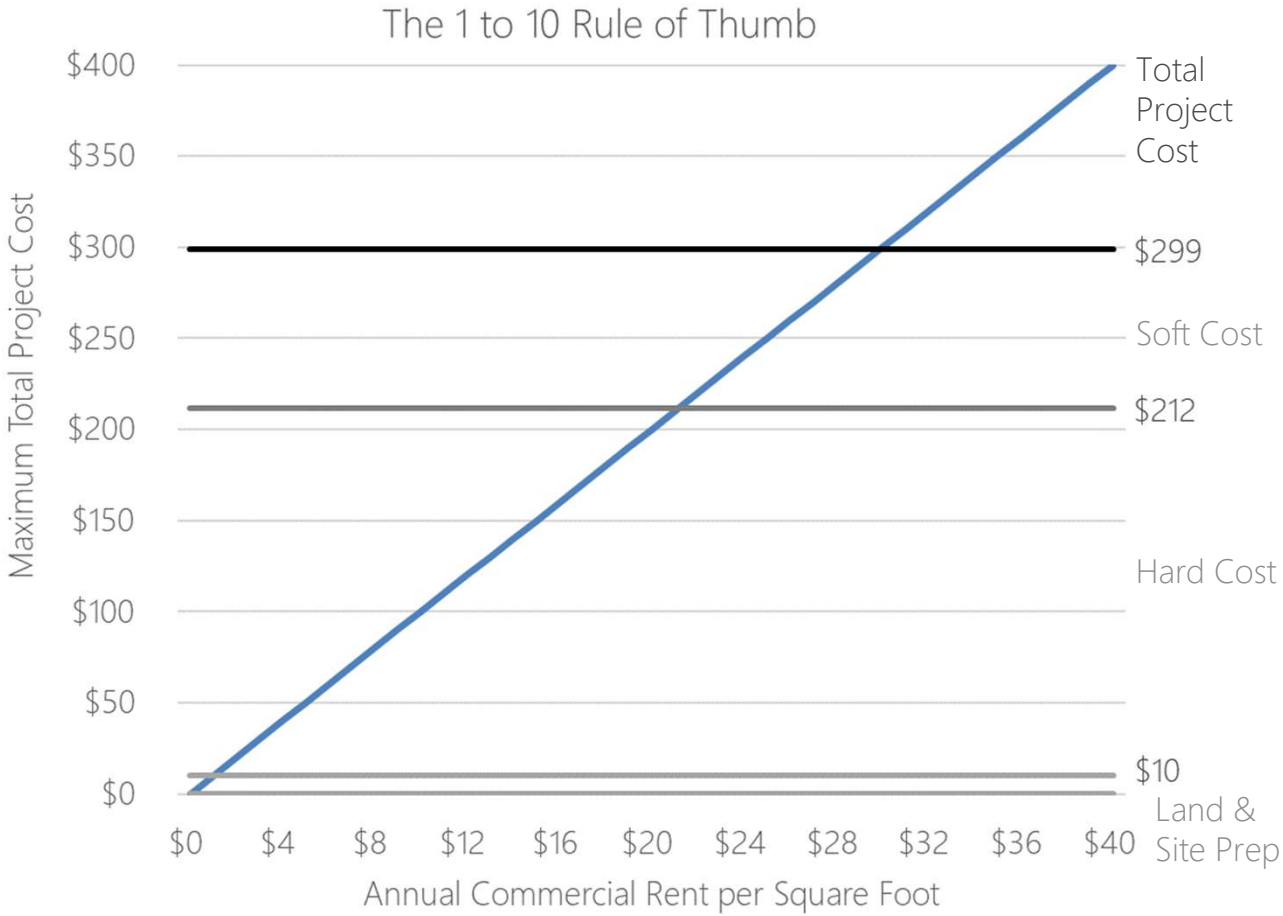
The "1 to 10" rule is an old rule of thumb in the development industry, and suggests that for each one dollar of rental revenue (per square foot per year), total project costs can be no more than 10 dollars per square foot. For example, if retail rents are $20 PSF in a given area, the total project costs 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 and 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.
- 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.

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.

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.

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

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

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.

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.

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.

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 and Windward 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	Av. Rent	Premium vs. WTC
Wilsonville	Domaine at Villebois	$1.52	
	Portera at the Grove	$1.59	
	Bell Tower (WTC 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	$1.68	$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

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.

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, particularly in the 2015/2016 time frame.

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.

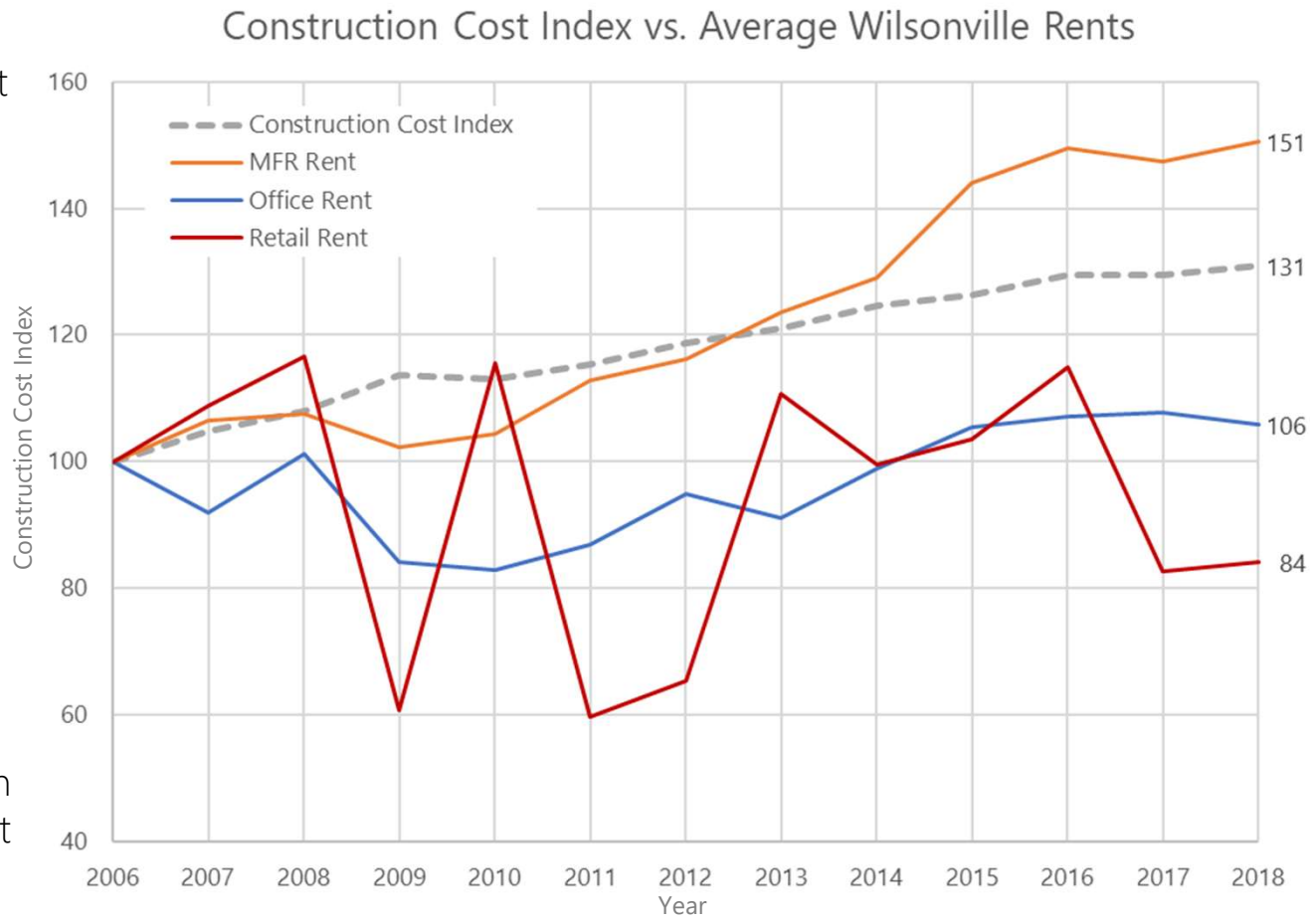
Source: RS Means.

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.

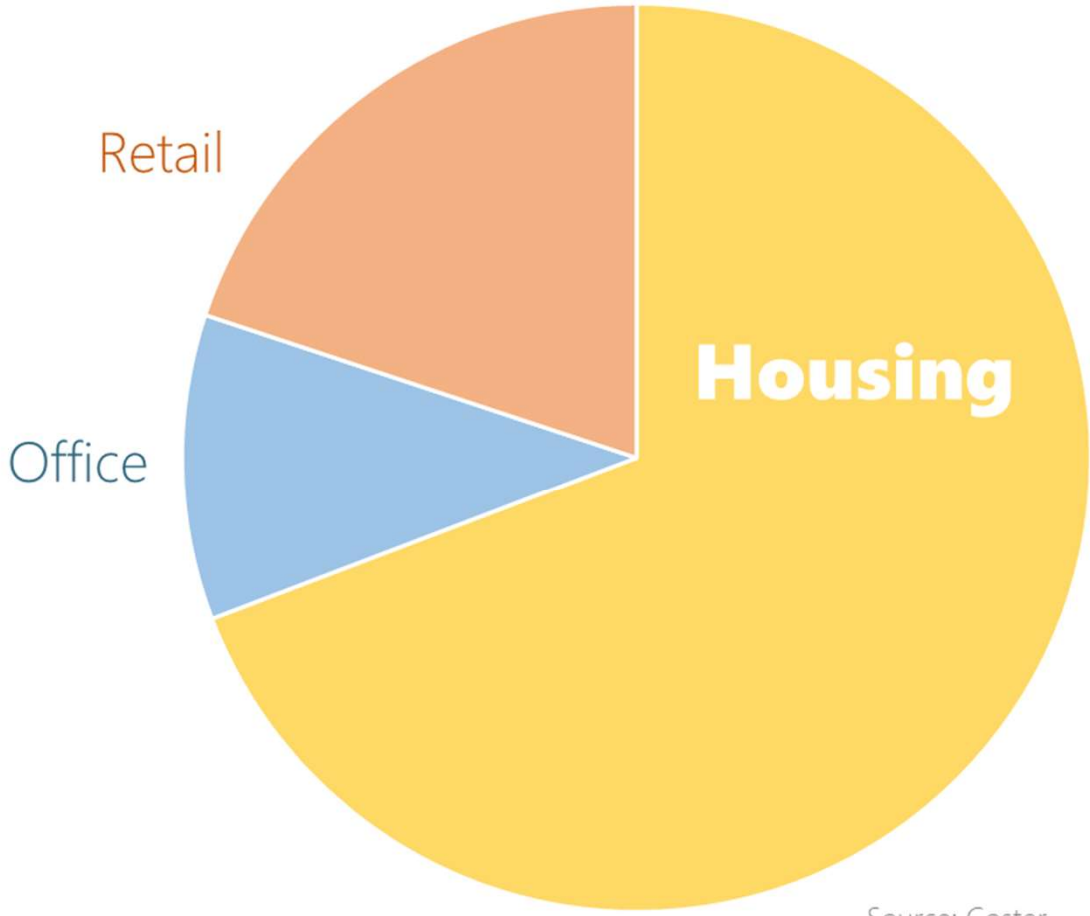
Wilsonville Development Trends

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.

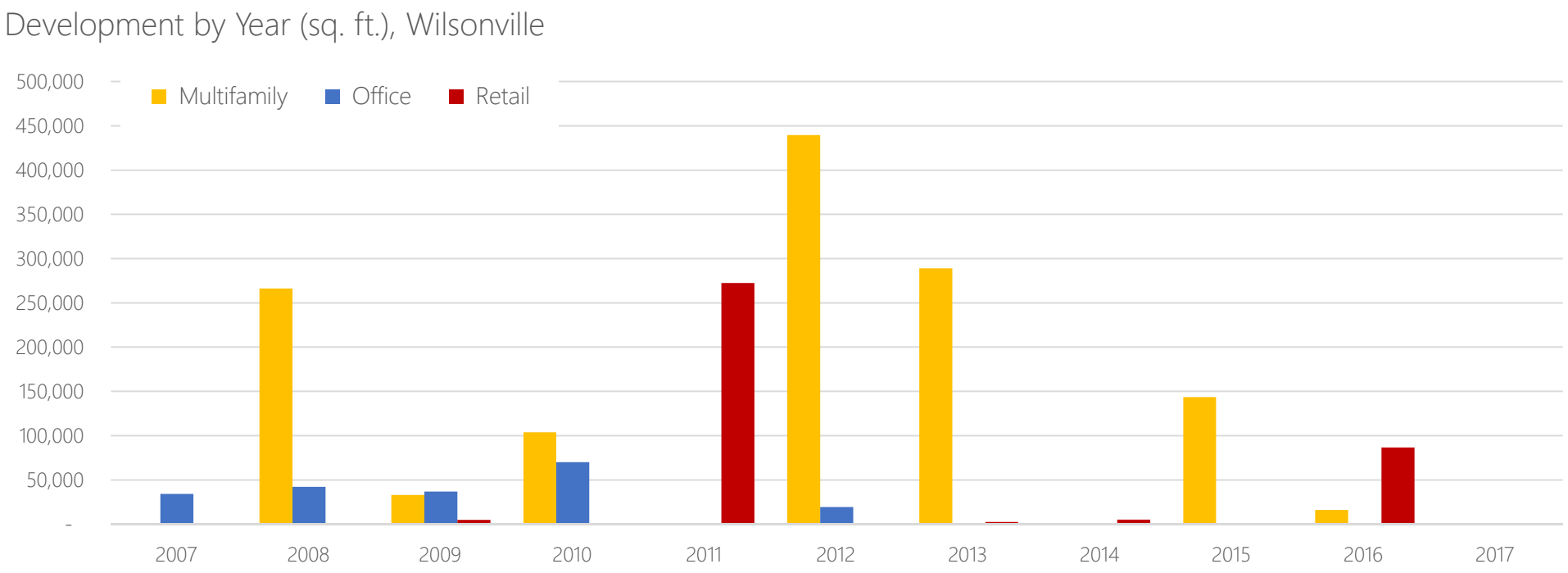
Land Use Mix, City of Wilsonville
2007 to 2017



Source: Costar.

Wilsonville Development Timeline

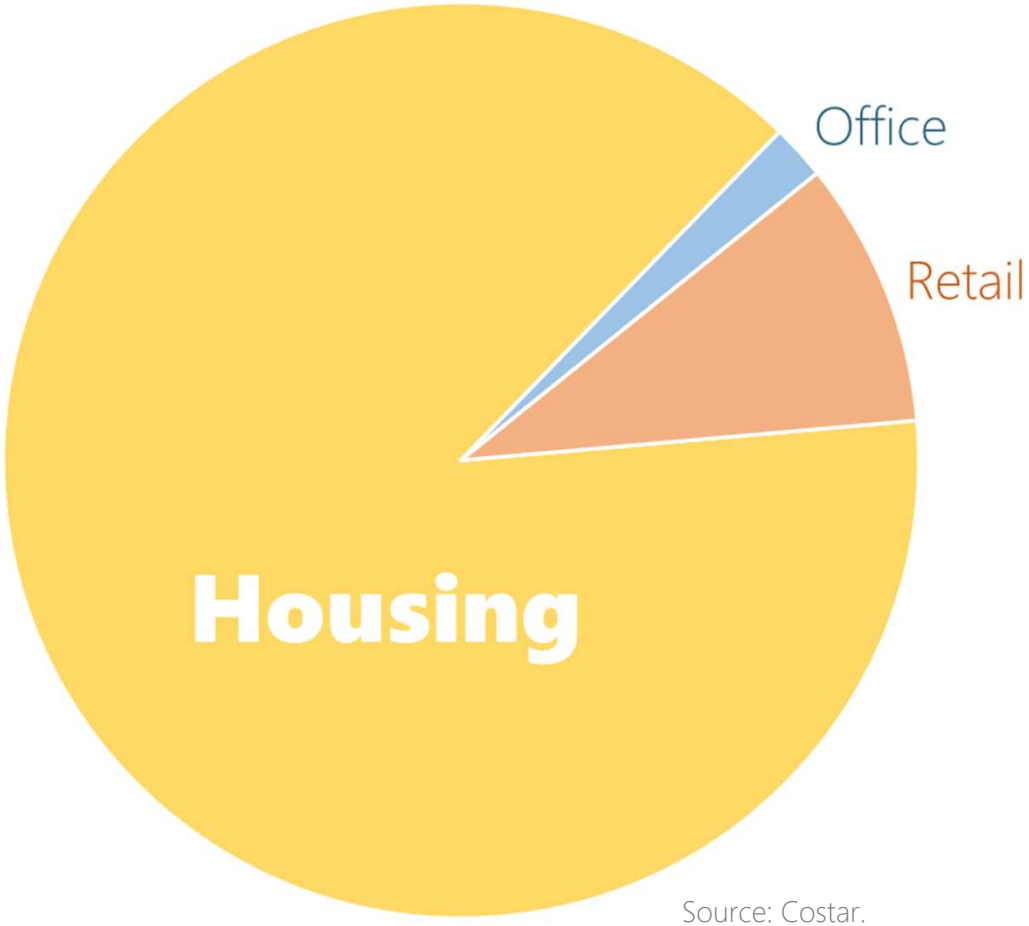
The chart below shows another view of rental-occupied multifamily, retail, and office development over time in the City of Wilsonville. This chart shows there has been no new office space developed since 2012. The multifamily development north of the Wilsonville Town Center has comprised the bulk of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

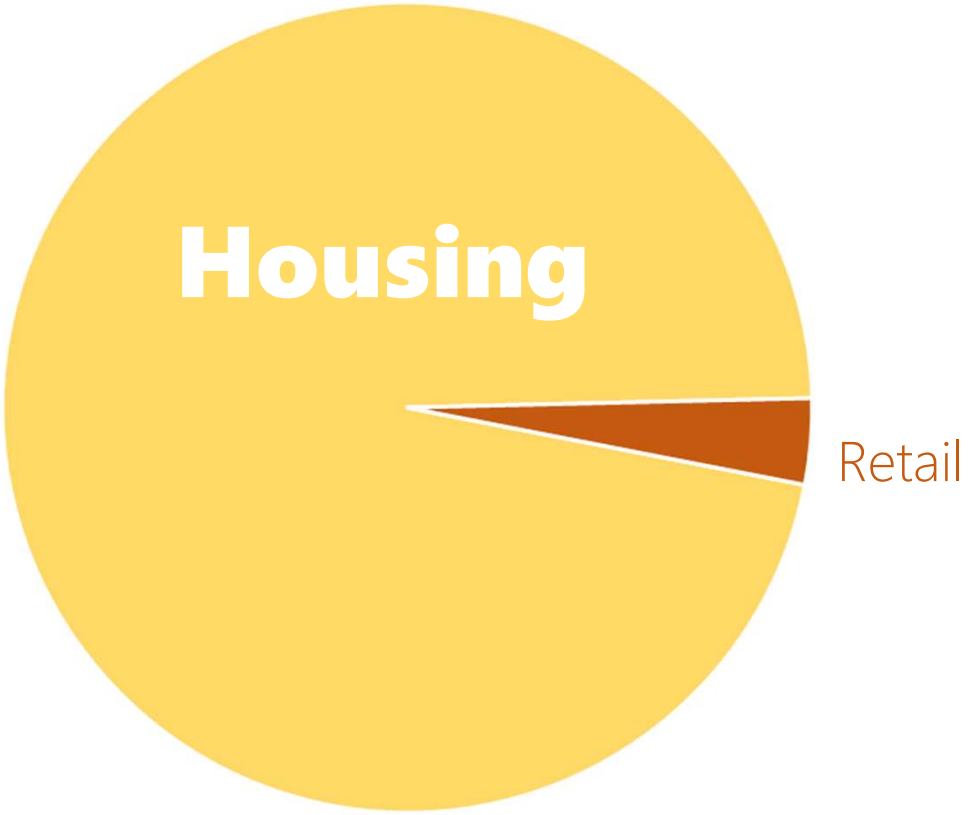
Regional Town Center Development Trends

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.

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, 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 commercial buildings that must be acquired.

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

Sources: Costar, Leland Consulting Group.

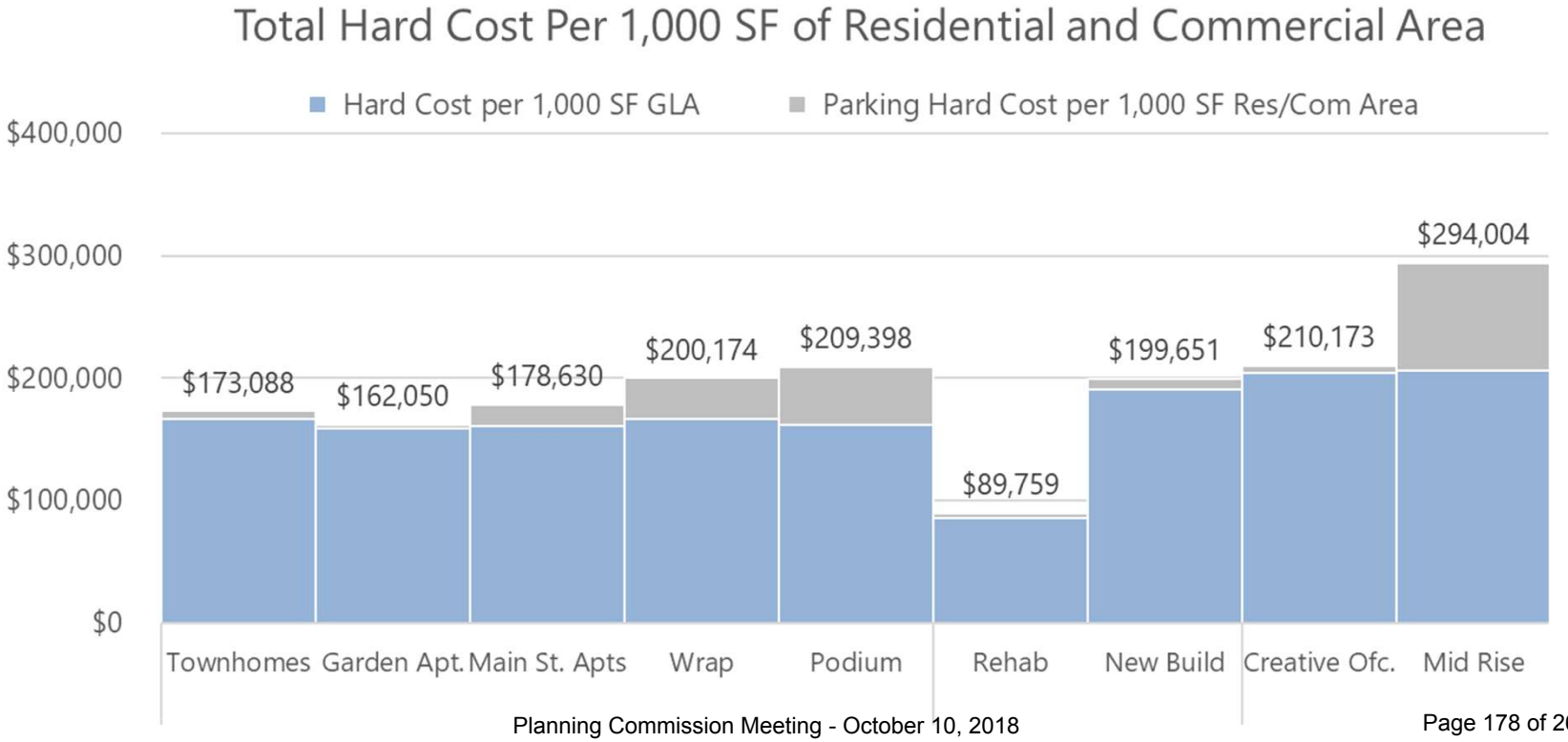
Construction and Parking Cost

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% lower parking ratios was also analyzed, as shown on the following slides, and those ratios are also listed below.

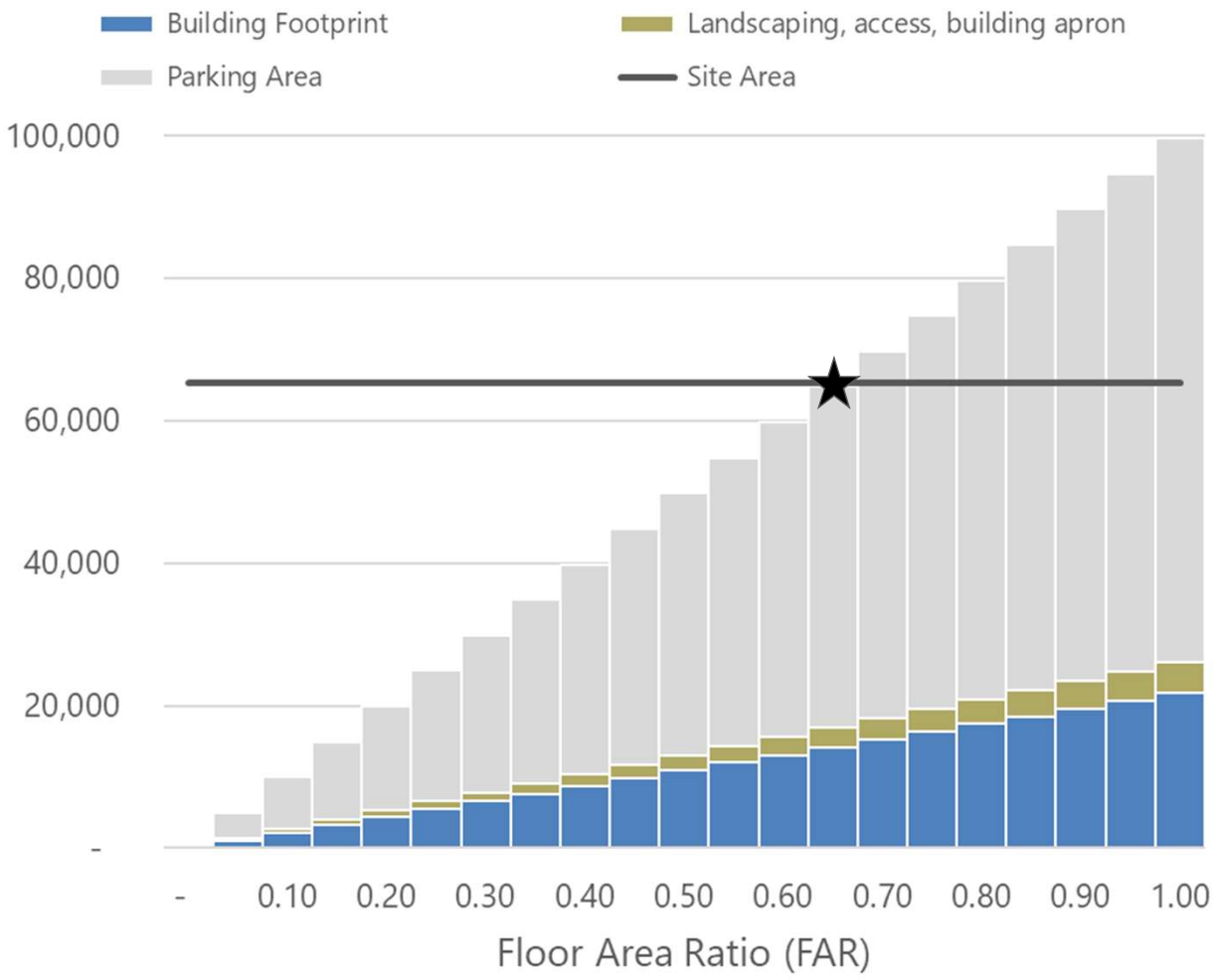
Parking Ratios	Baseline	Reduced 30%	
Townhomes	2.0	1.4	/unit
Multifamily	1.0	0.7	/unit
Retail	4.1	2.9	/1,000 SF
Office	2.7	1.9	/1,000 SF

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 required for each 1,000 square feet of office area based on traditional 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.*

Total Site Area – Building and Required Parking Footprints

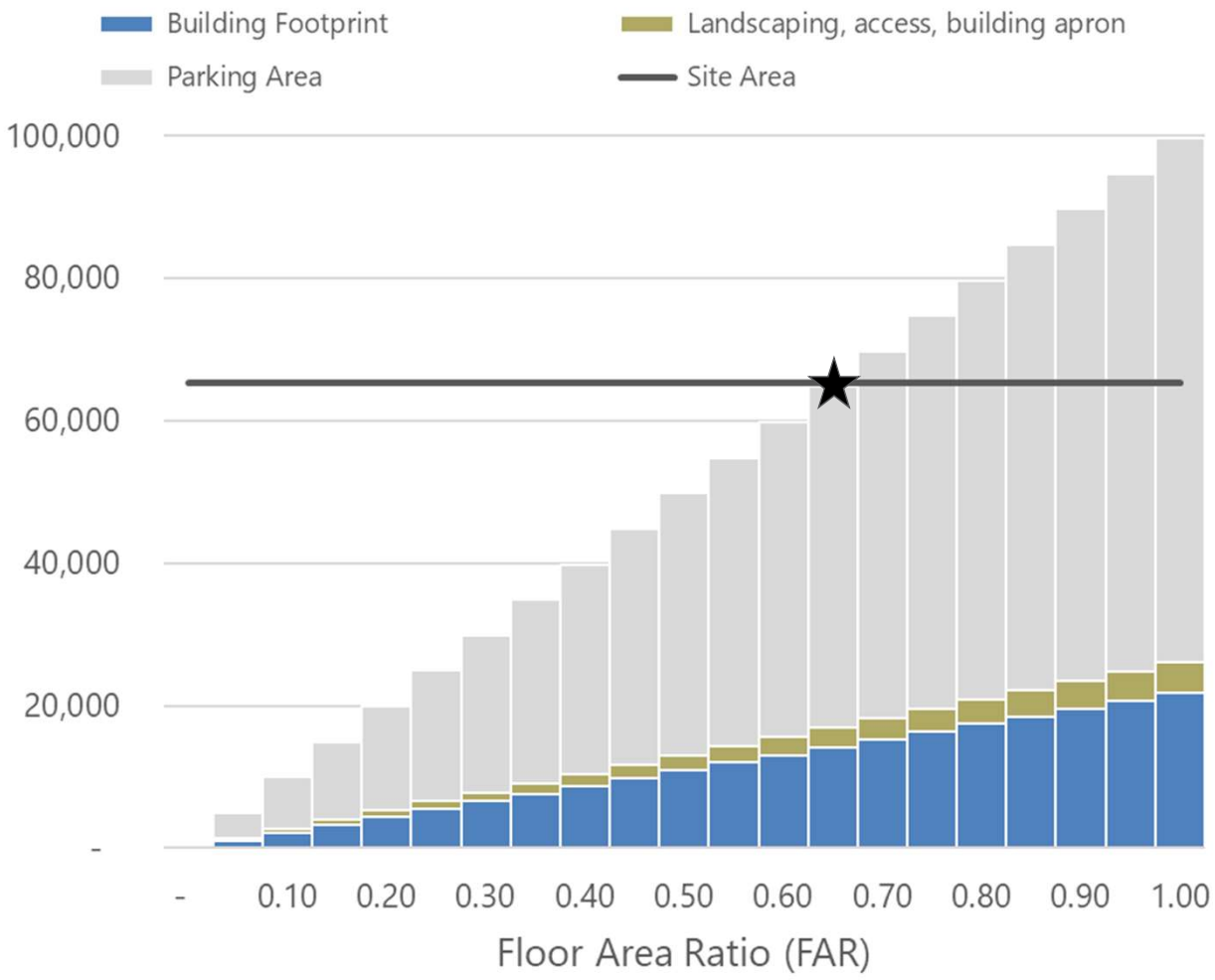


Form Follows Parking: Office

The traditional parking ratios for suburban office development is 3.0 spaces per 1,000 SF of space. Parking demand may actually be increasing in some cases as denser "creative" and open office floorplans replace earlier floorplans that had numerous enclosed offices. 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.

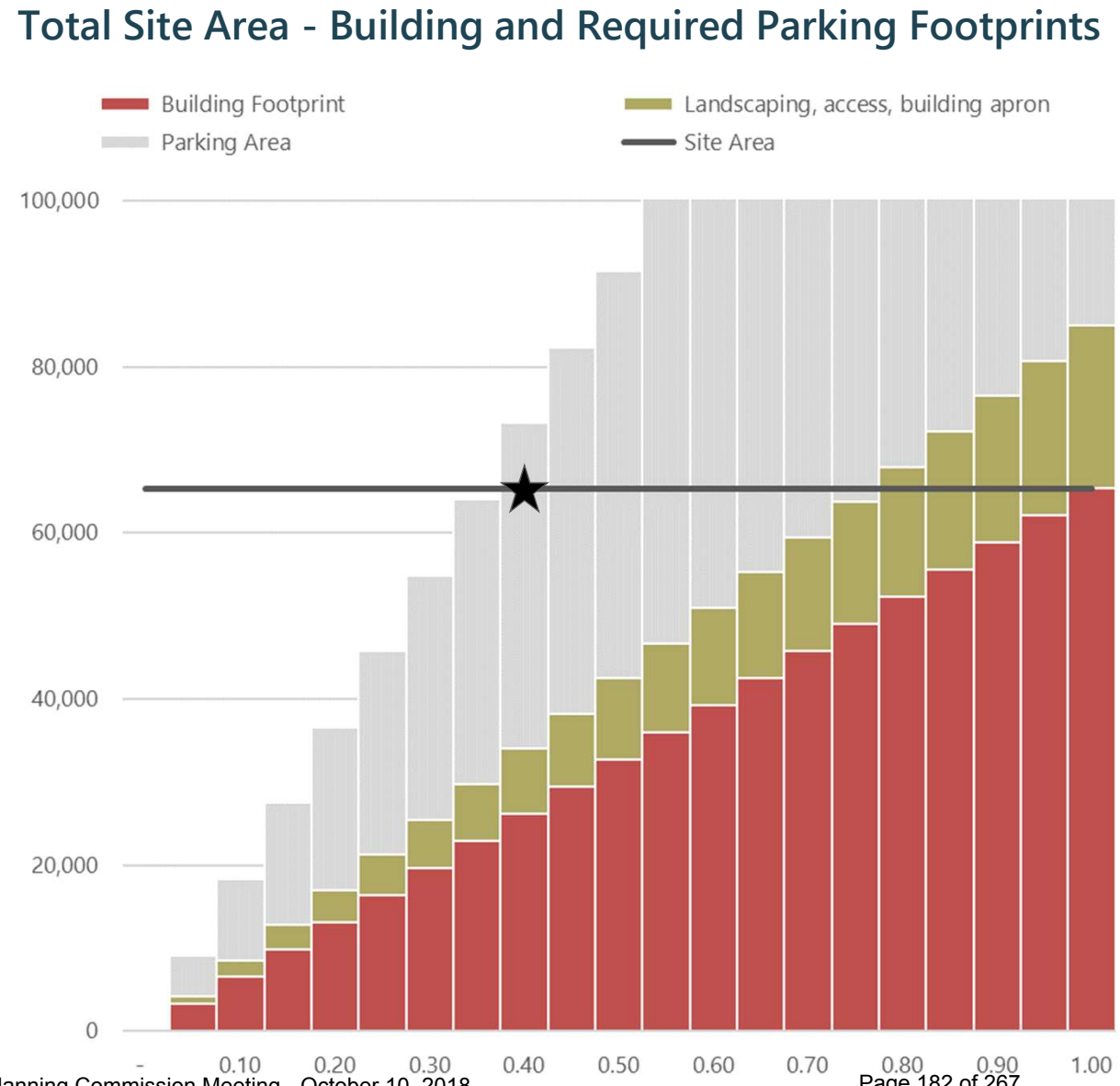
Total Site Area – Building and Required Parking Footprints



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.



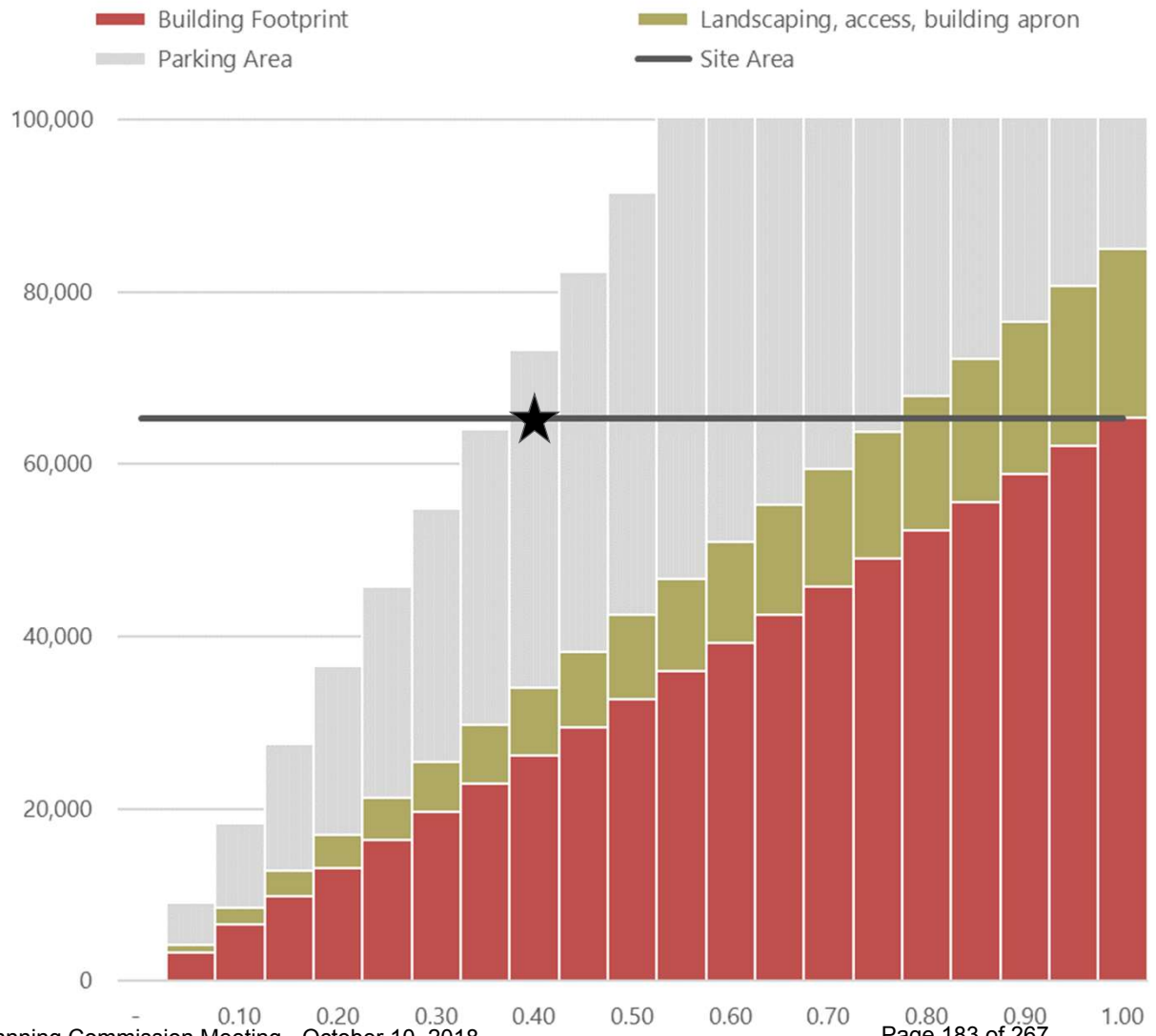
Form Follows Parking: Retail

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 further 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. 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), multiple of equity invested, and other metrics.

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 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 can be defined as an organized effort directed at analyzing designed building features, systems, equipment, and material selections for the purpose of achieving essential functions at the lowest life cycle cost consistent with required performance, quality, reliability, and safety (U.S. General Services Administration).*

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.

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.

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

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.

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 per Slide 25). 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.

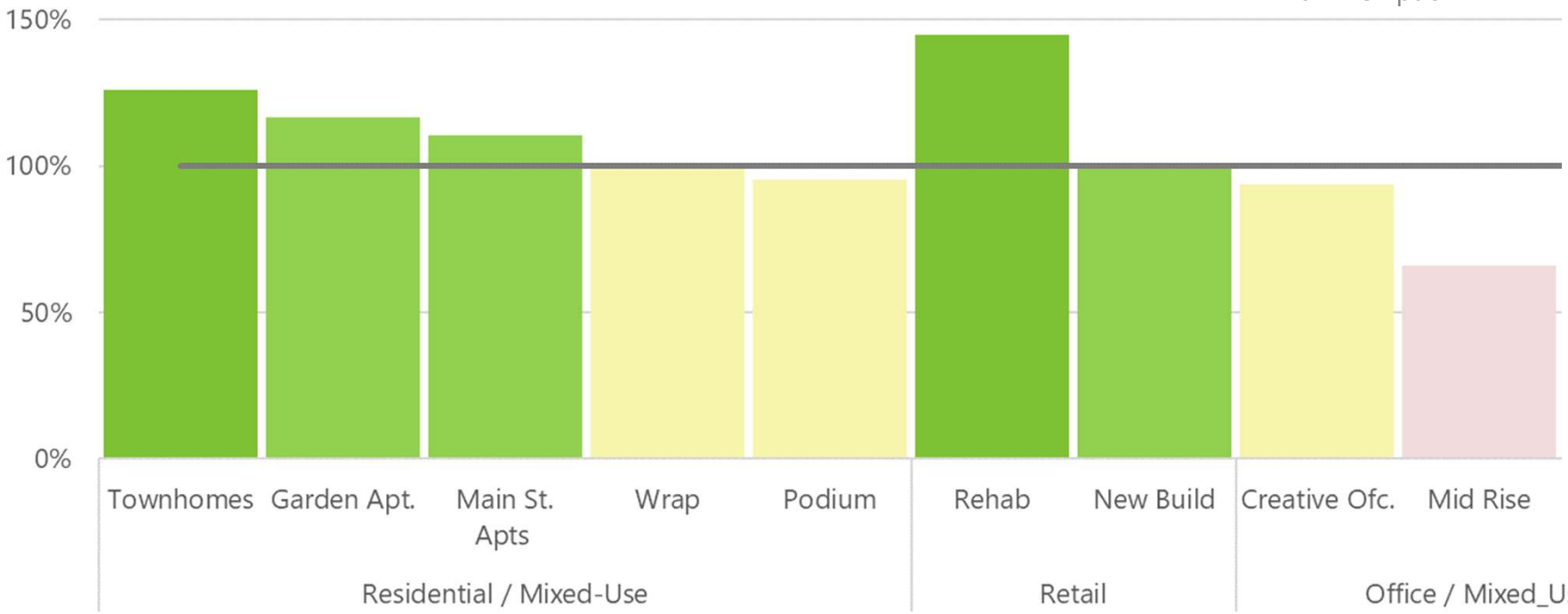
Alternative 1: Baseline

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

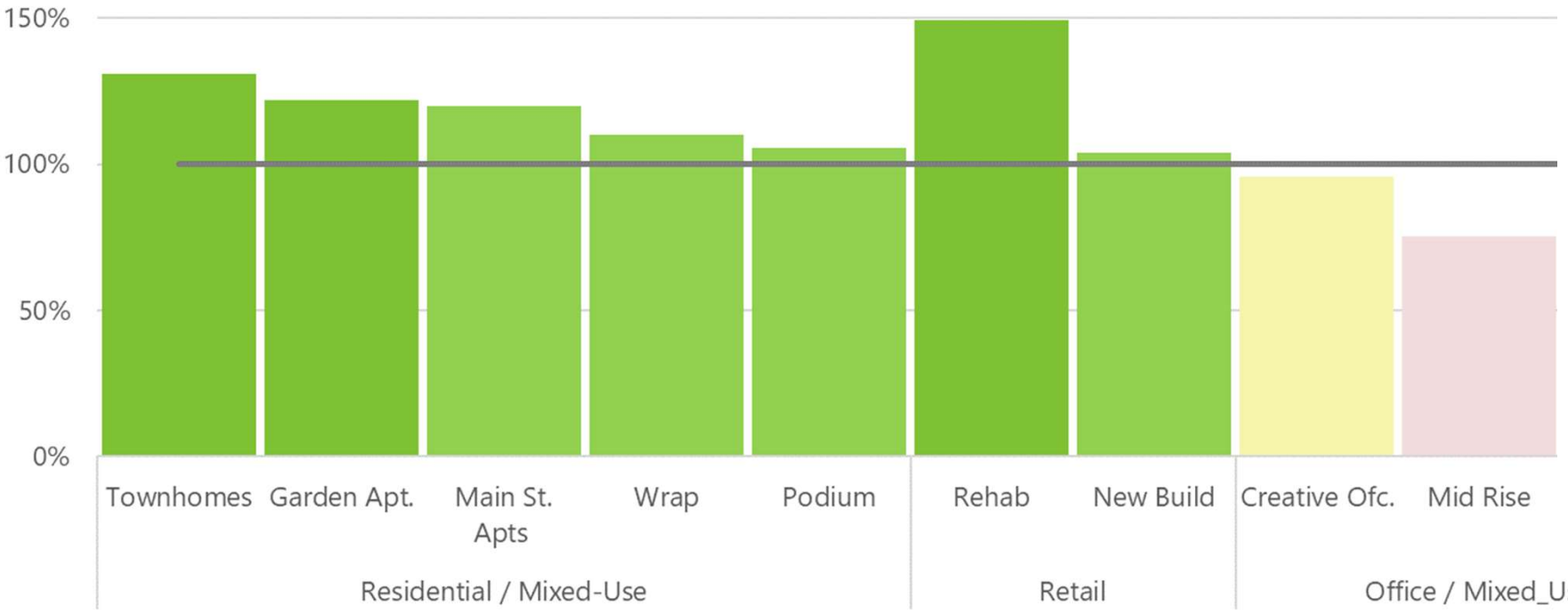


2: Parking Reduction & Tax Abatement

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



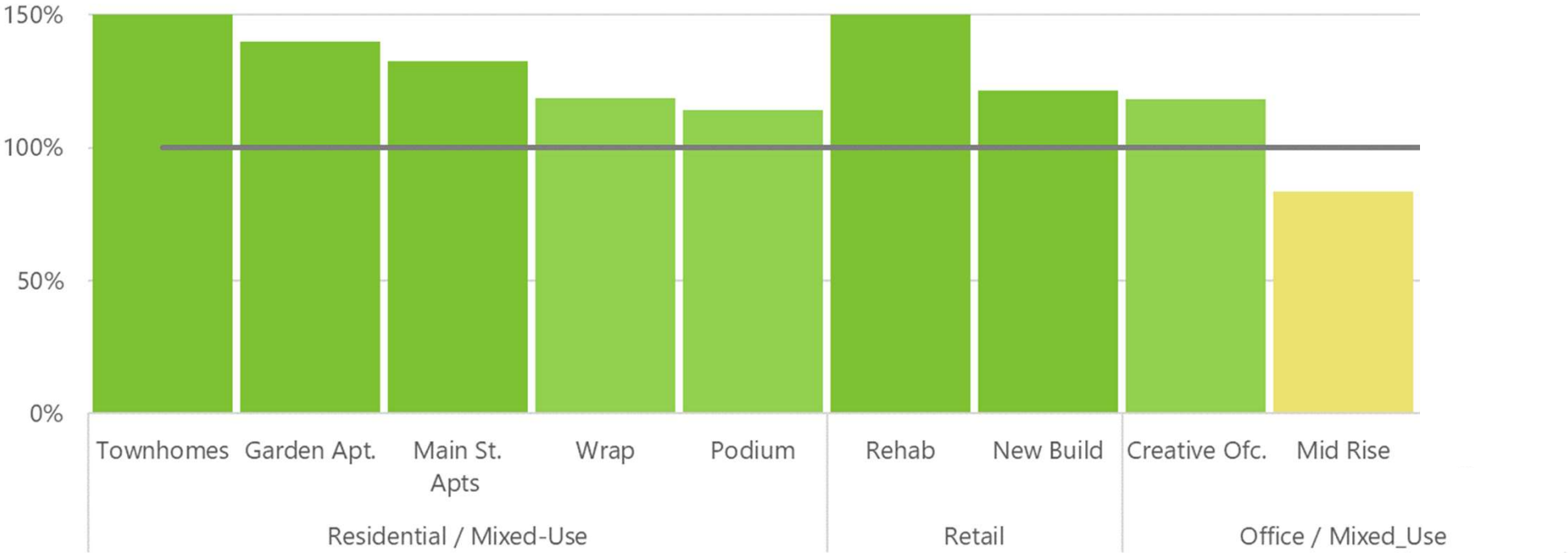
3: Rent Premium

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

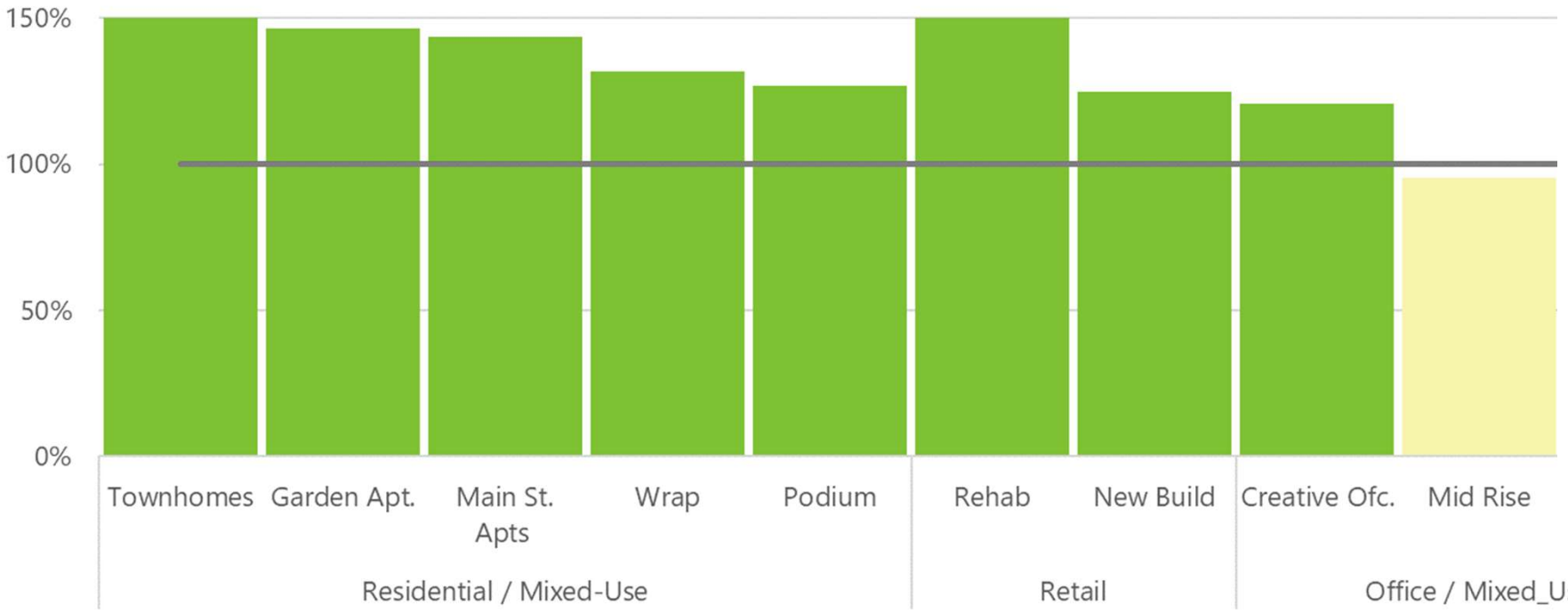


4: Favorable Development Conditions

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

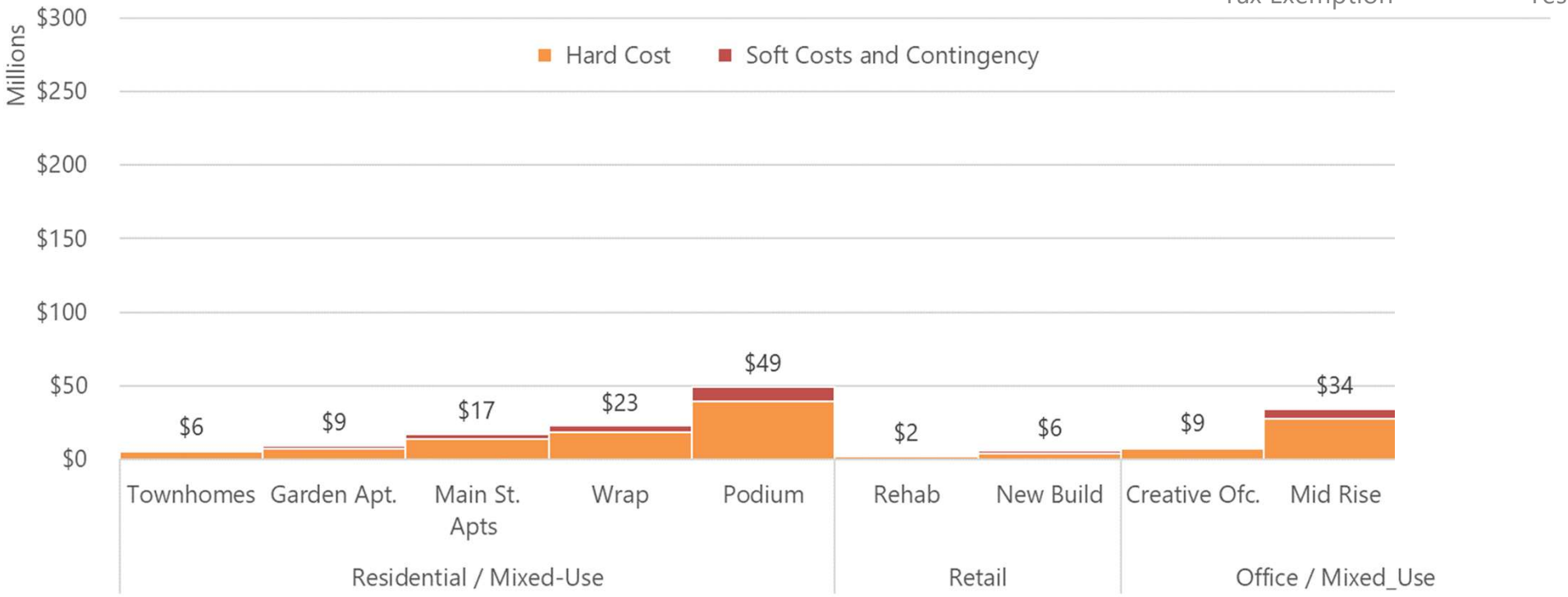


4: Total Project Cost ($ millions)

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.

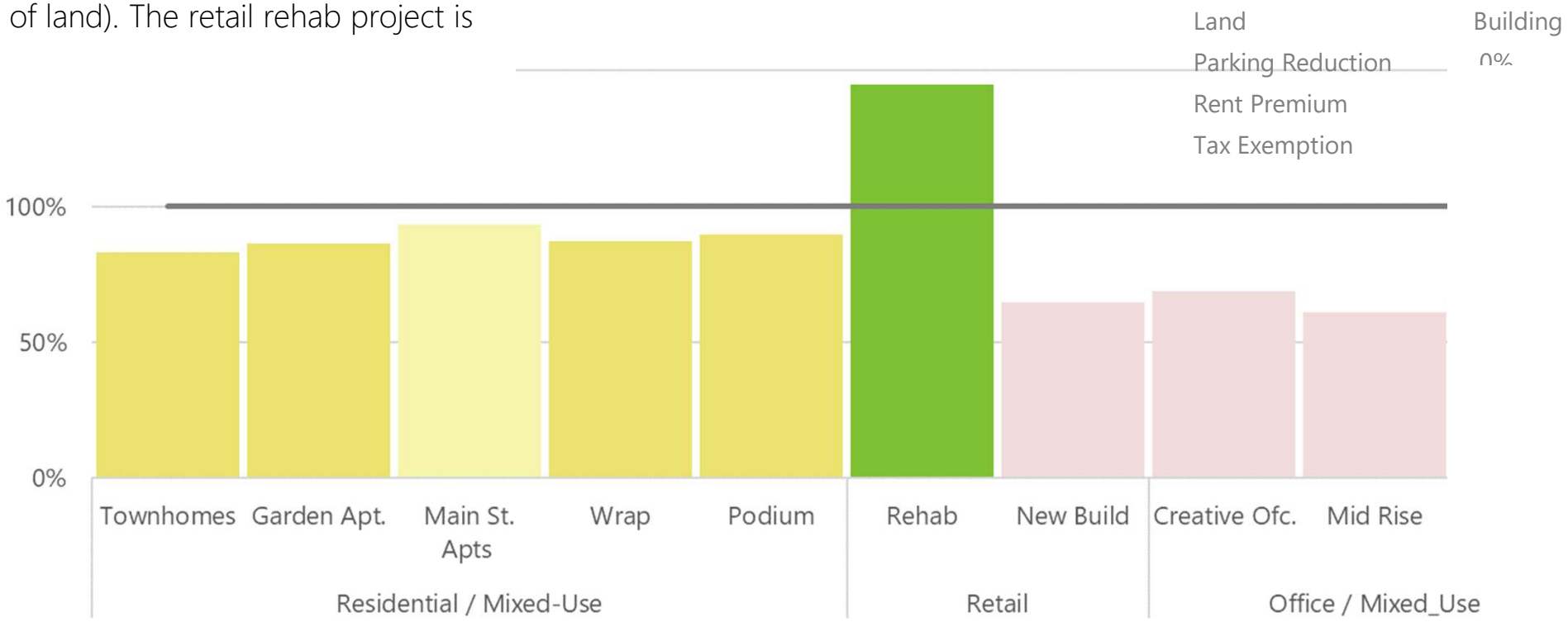
Land	Vacant
Rent Premium	20%
Parking Reduction	33%
Tax Exemption	Yes



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.



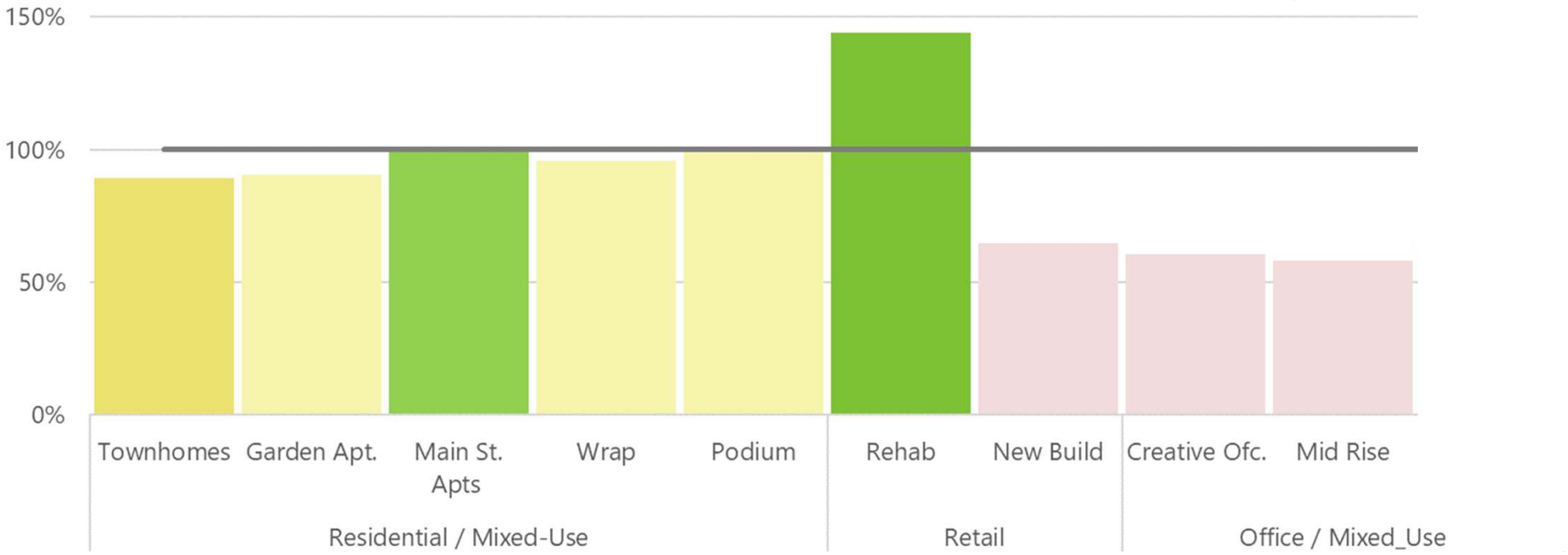
6: Parking Reduction & Tax Abatement

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



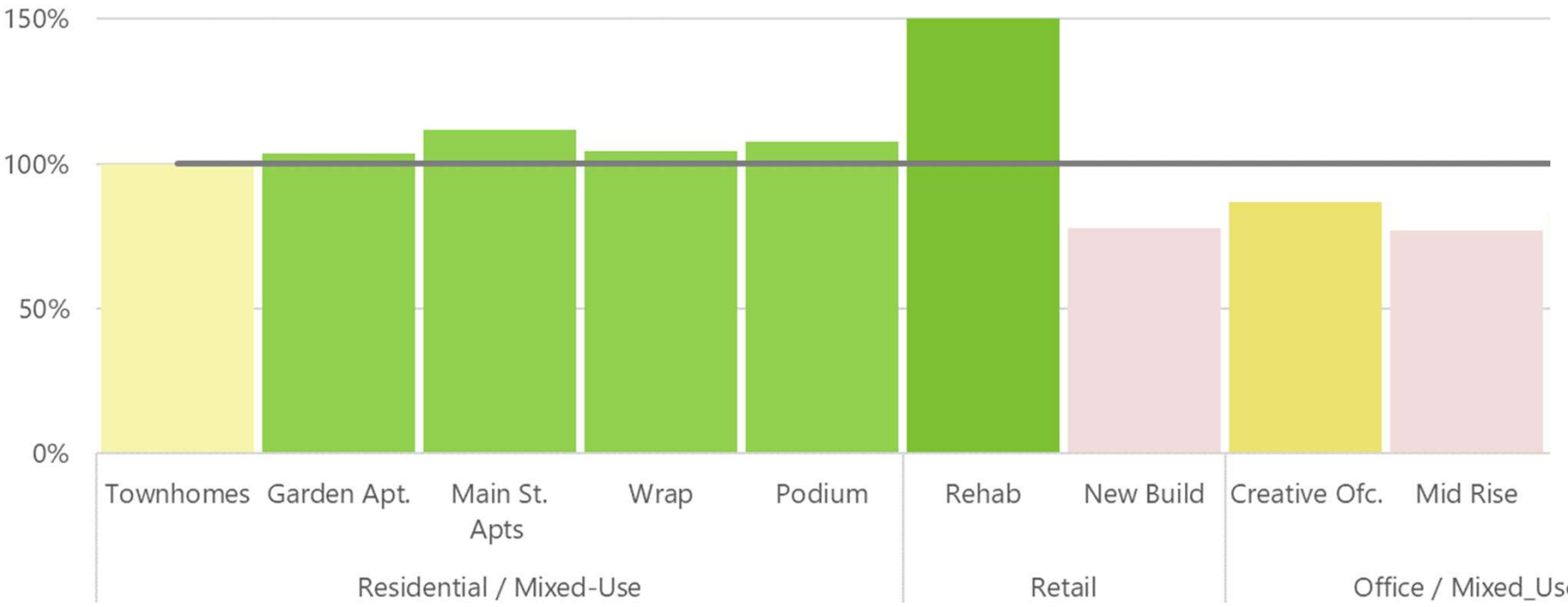
7: 20 Percent Rent Premium

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 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

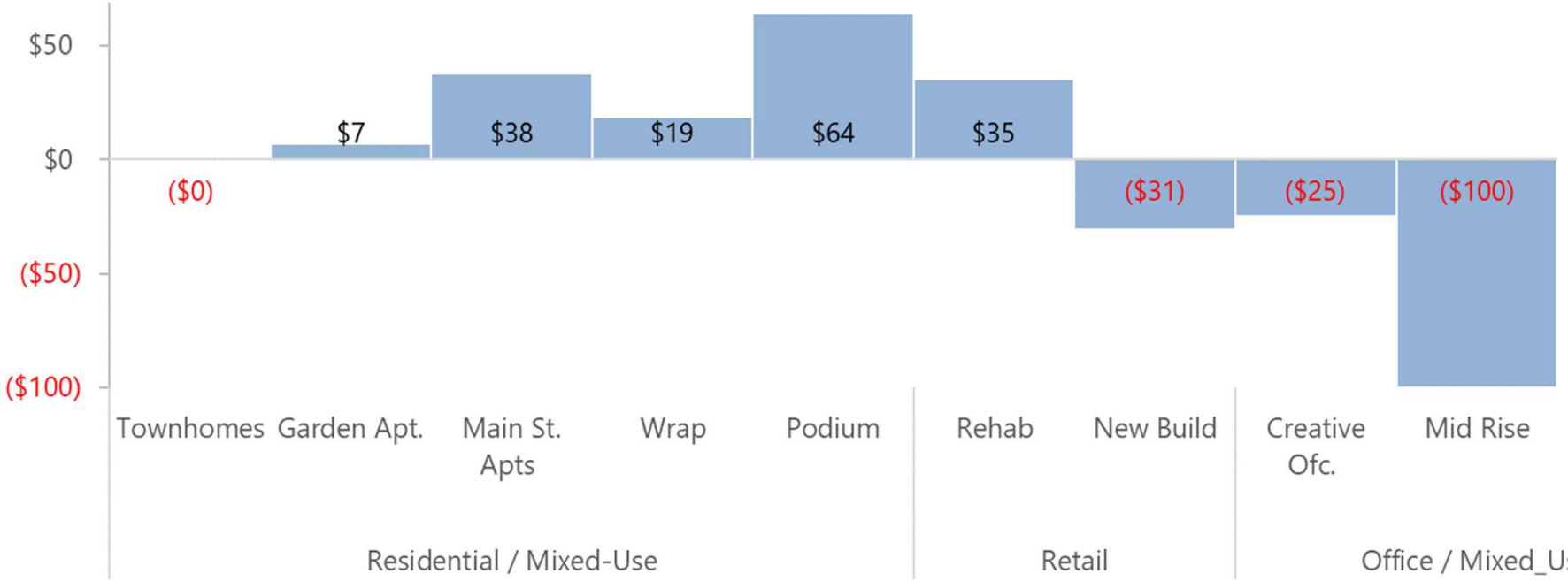


7: Residual Land Value

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.

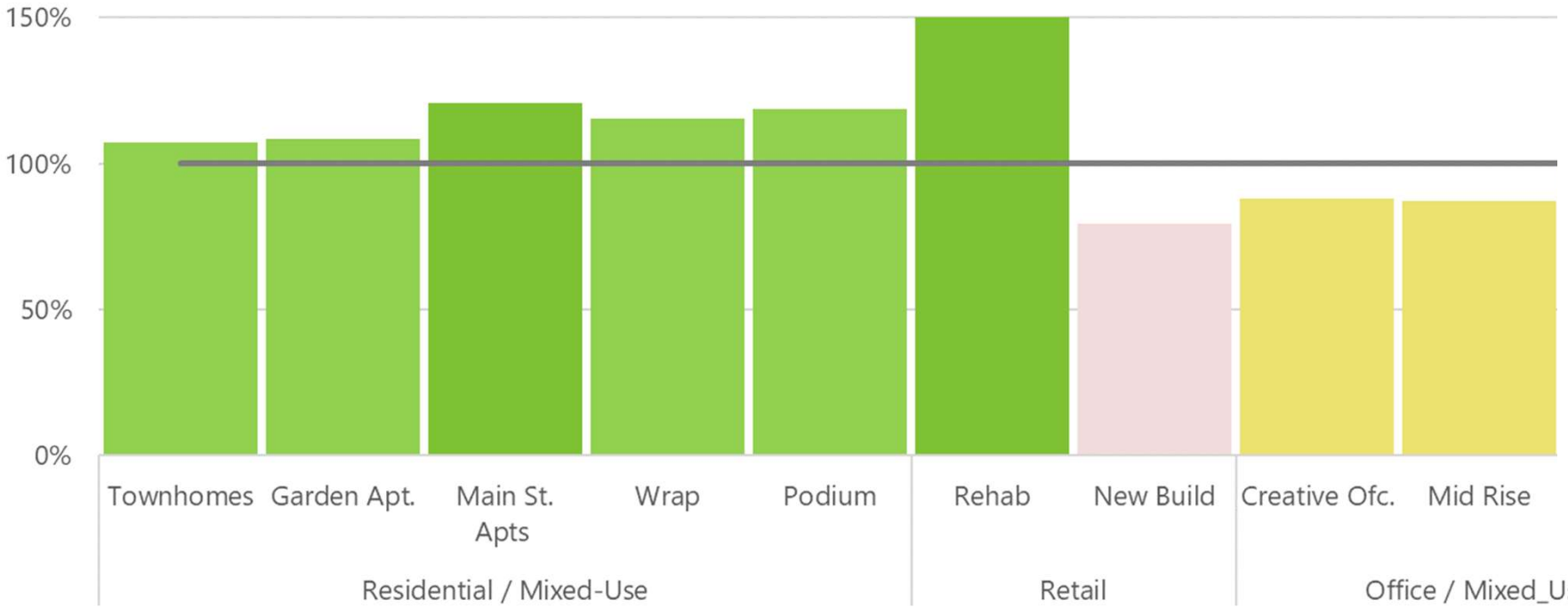


8: Favorable Development Conditions

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.



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 TC will be high quality, be differentiated from less distinctive projects elsewhere, and benefit from special amenities in the TC. 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.
- 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.
- 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.
- Parking reductions, tax abatement, and higher rents are once again shown to have a positive impact on feasibility Alternatives 5 through 8.
- 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. 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 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).

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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.

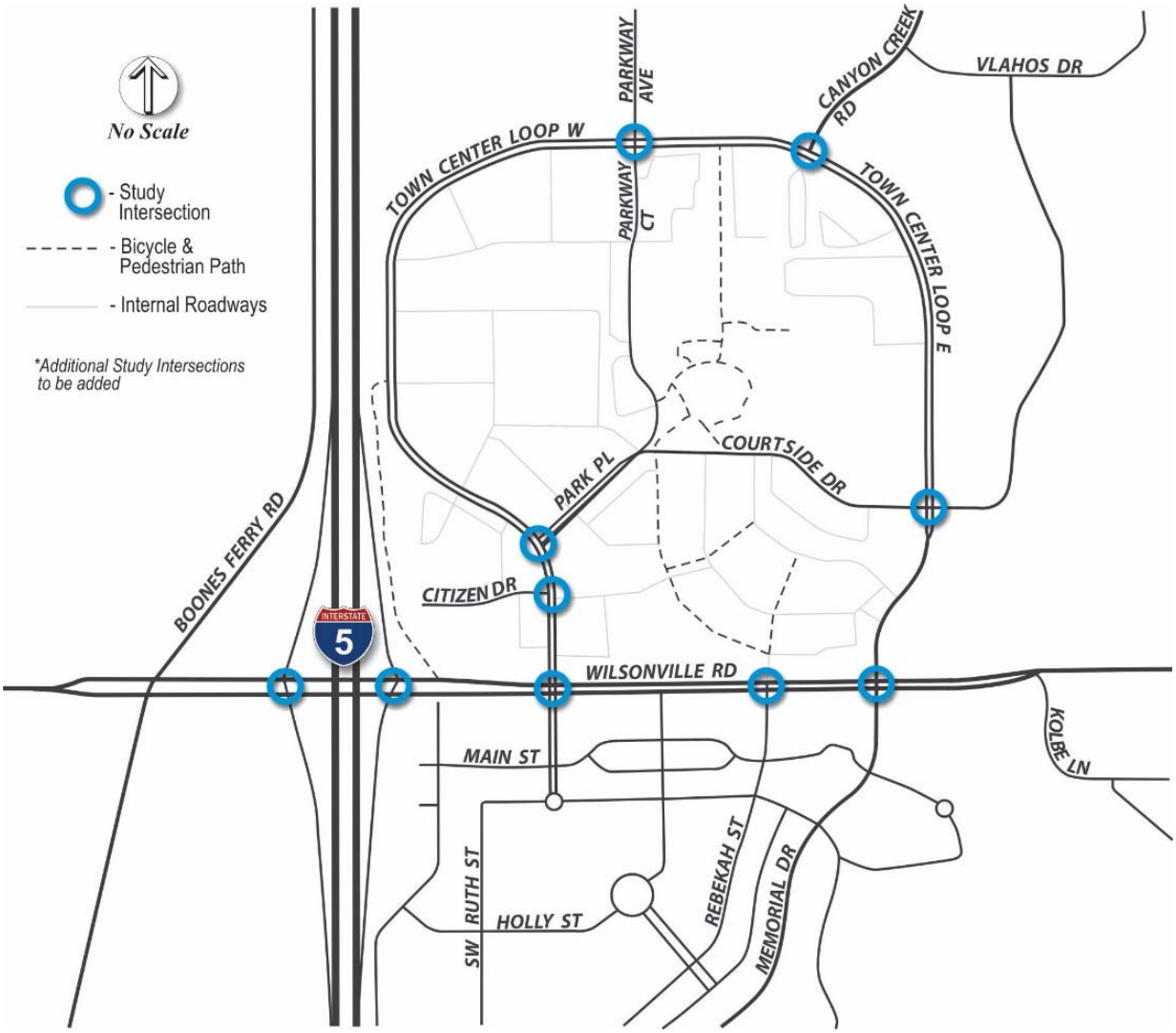


Figure 1: Study Area

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.

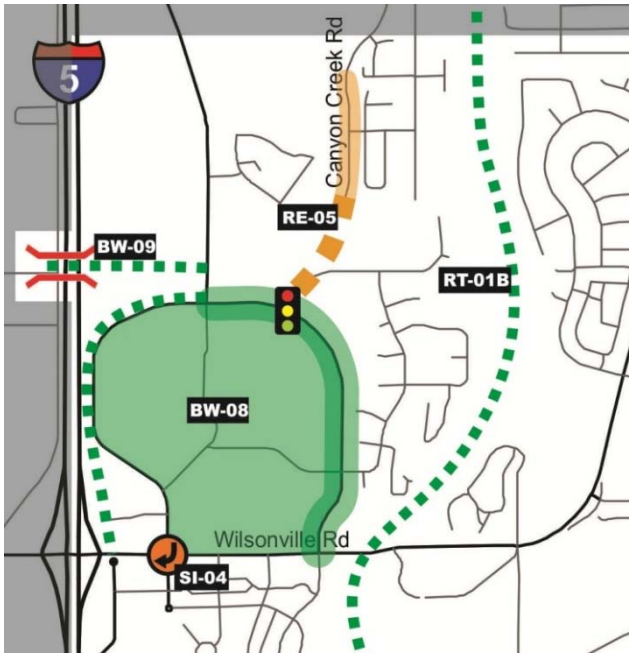
Table 2: Wilsonville Town Center TAZ* Peak Hour Trip Growth

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.

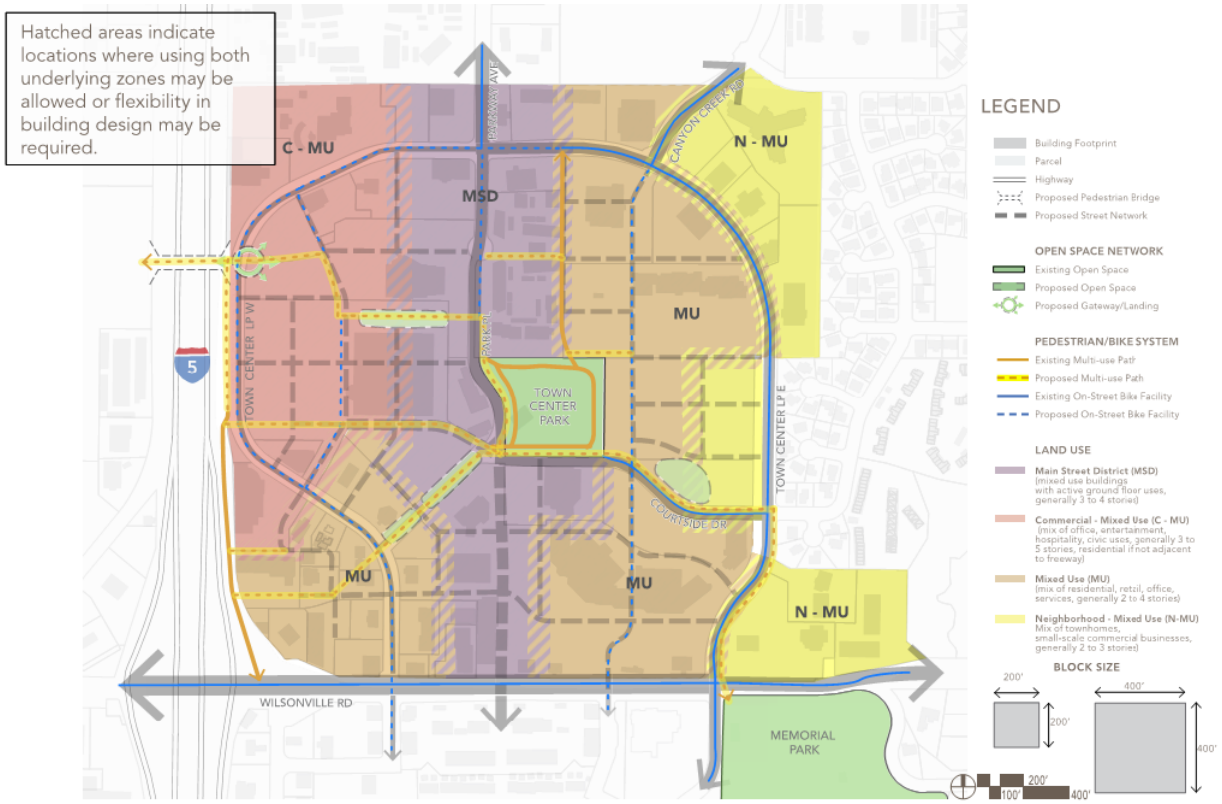


Figure 3: Proposed Land Use Zones and Transportation Network Improvements

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.

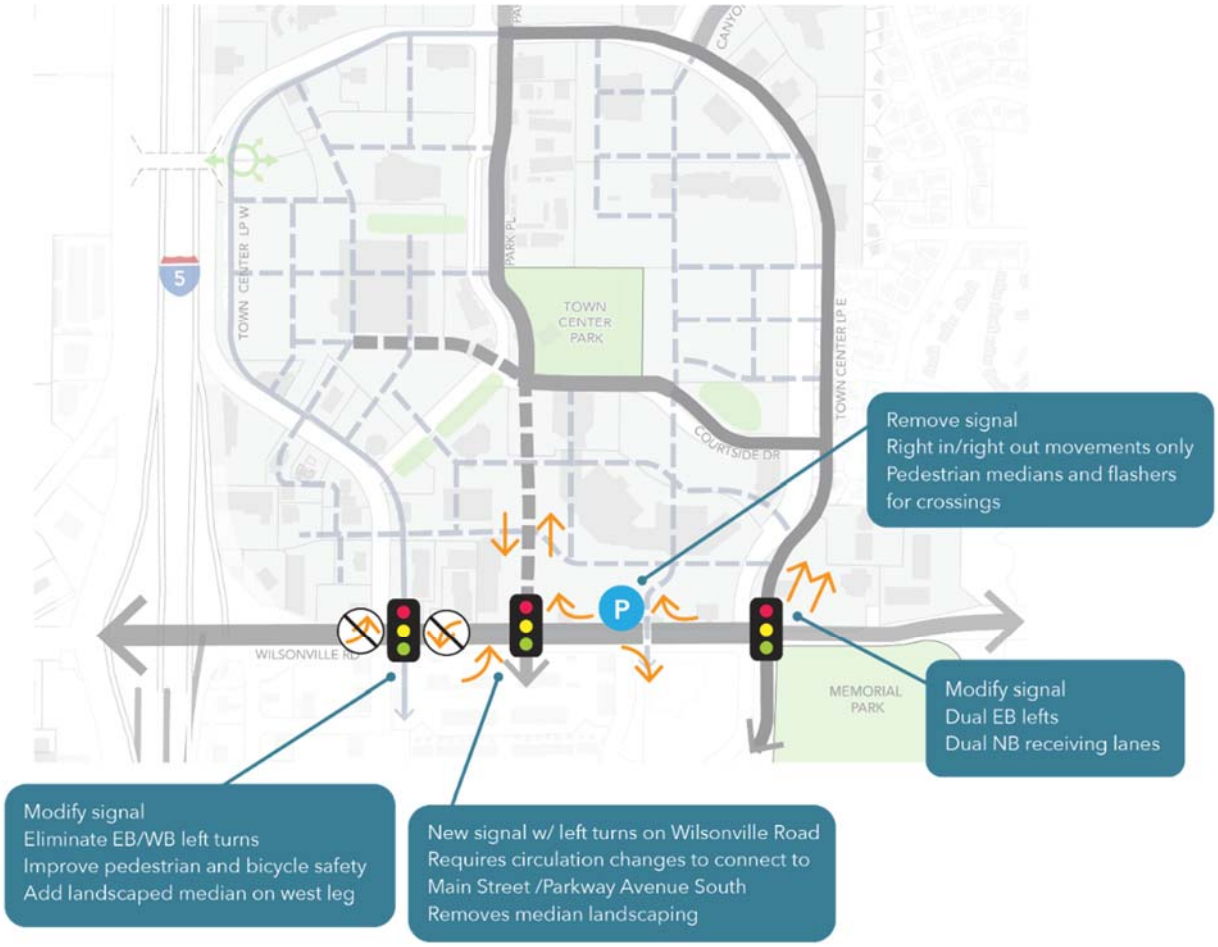


Figure 4: Proposed Transportation Network Changes

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.

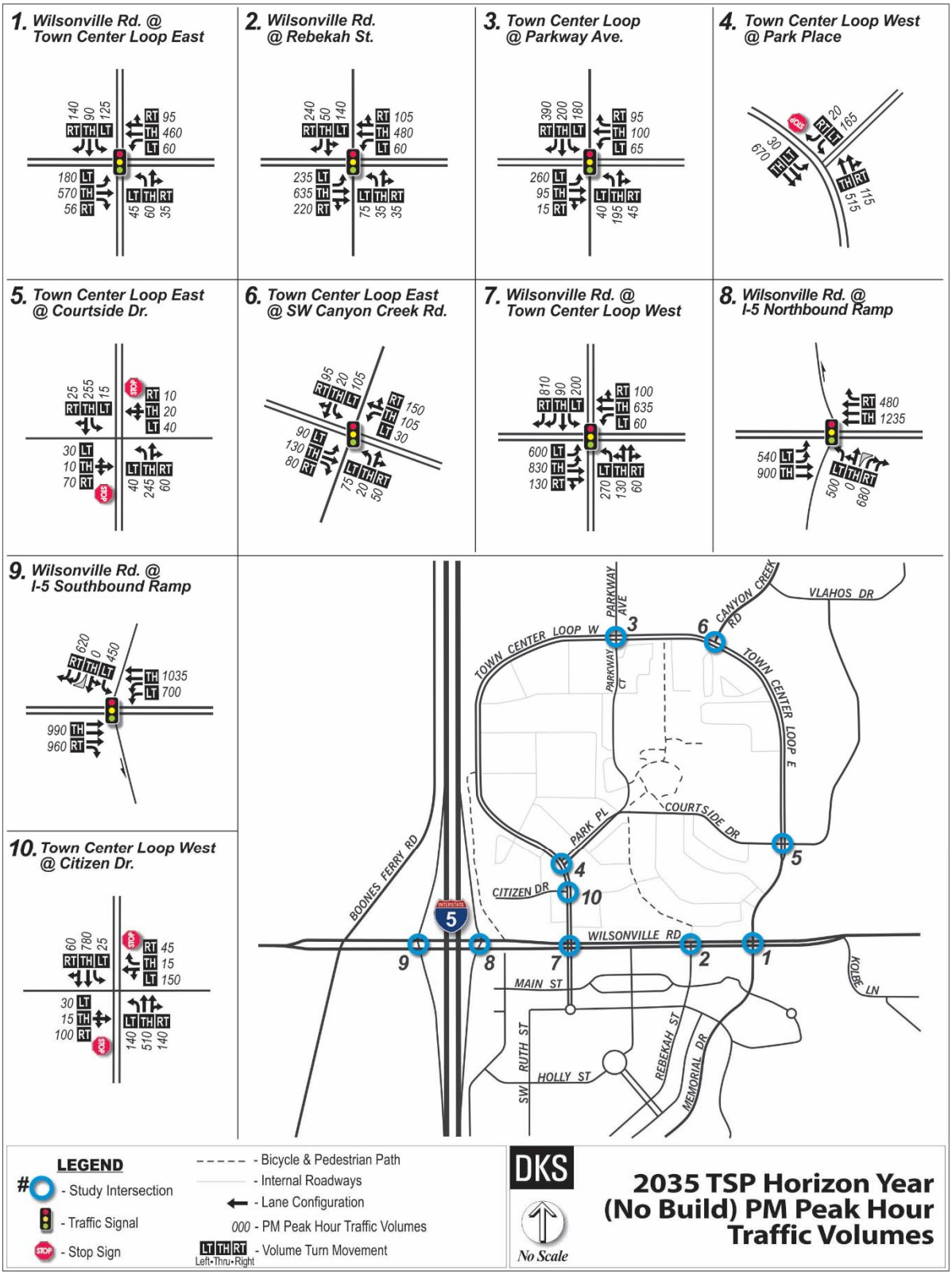


Figure 5: 2035 TSP Horizon Year (No Build) PM Peak Hour Traffic Volumes

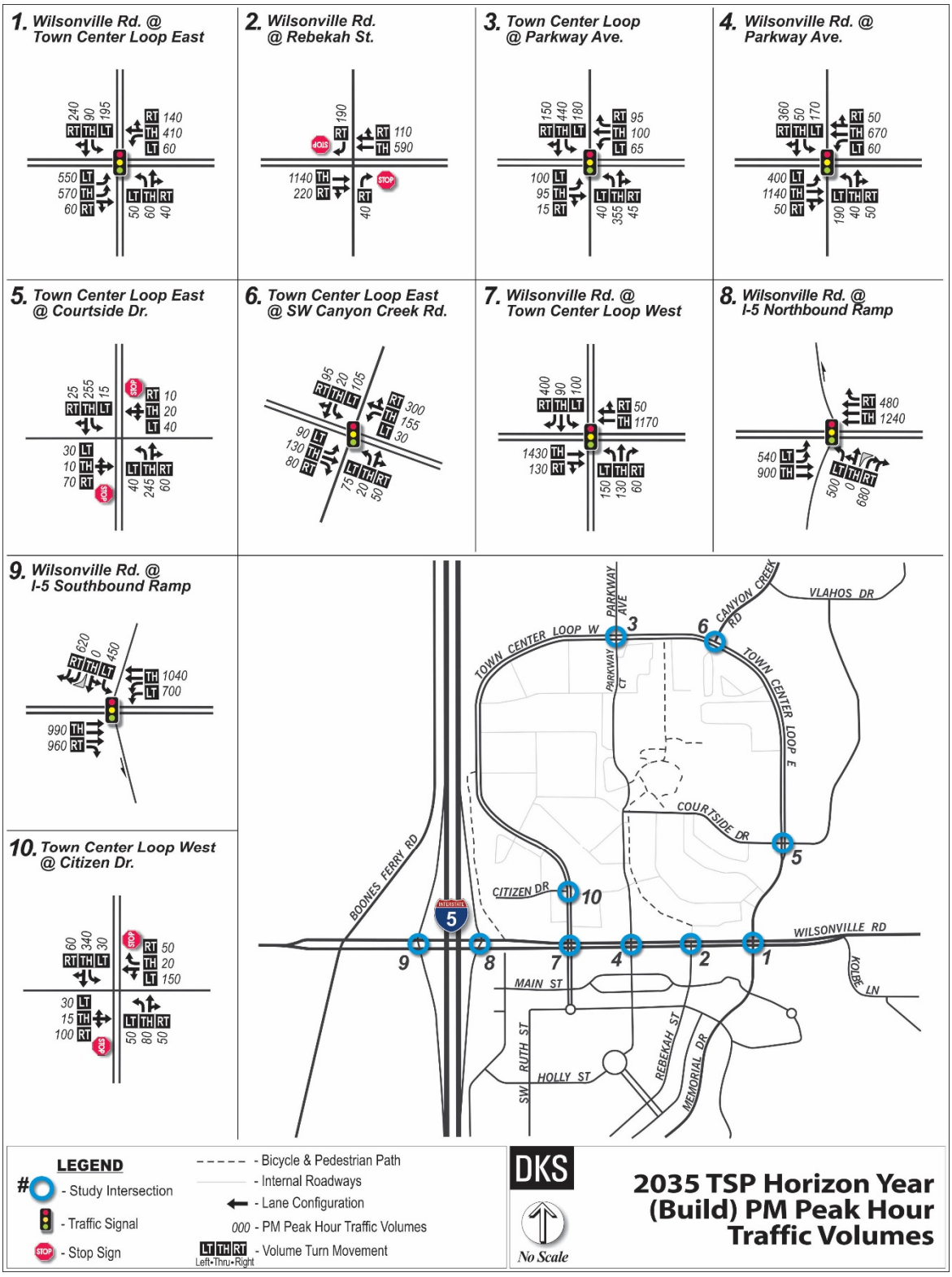


Figure 6: 2035 TSP Horizon Year (Build) PM Peak Hour Traffic Volumes

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.

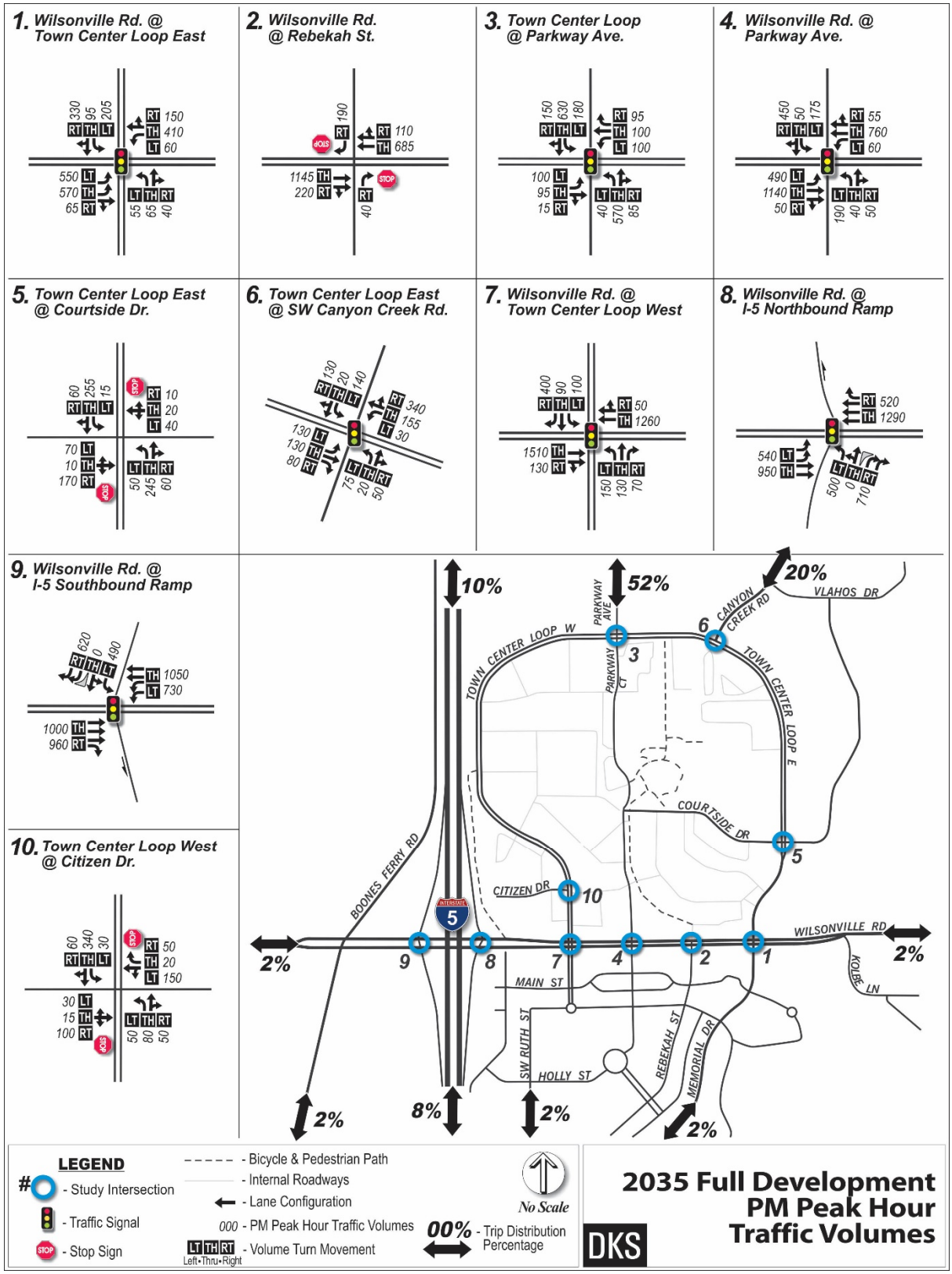


Figure 7: 2035 Full Development PM Peak Hour Traffic Volumes

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.

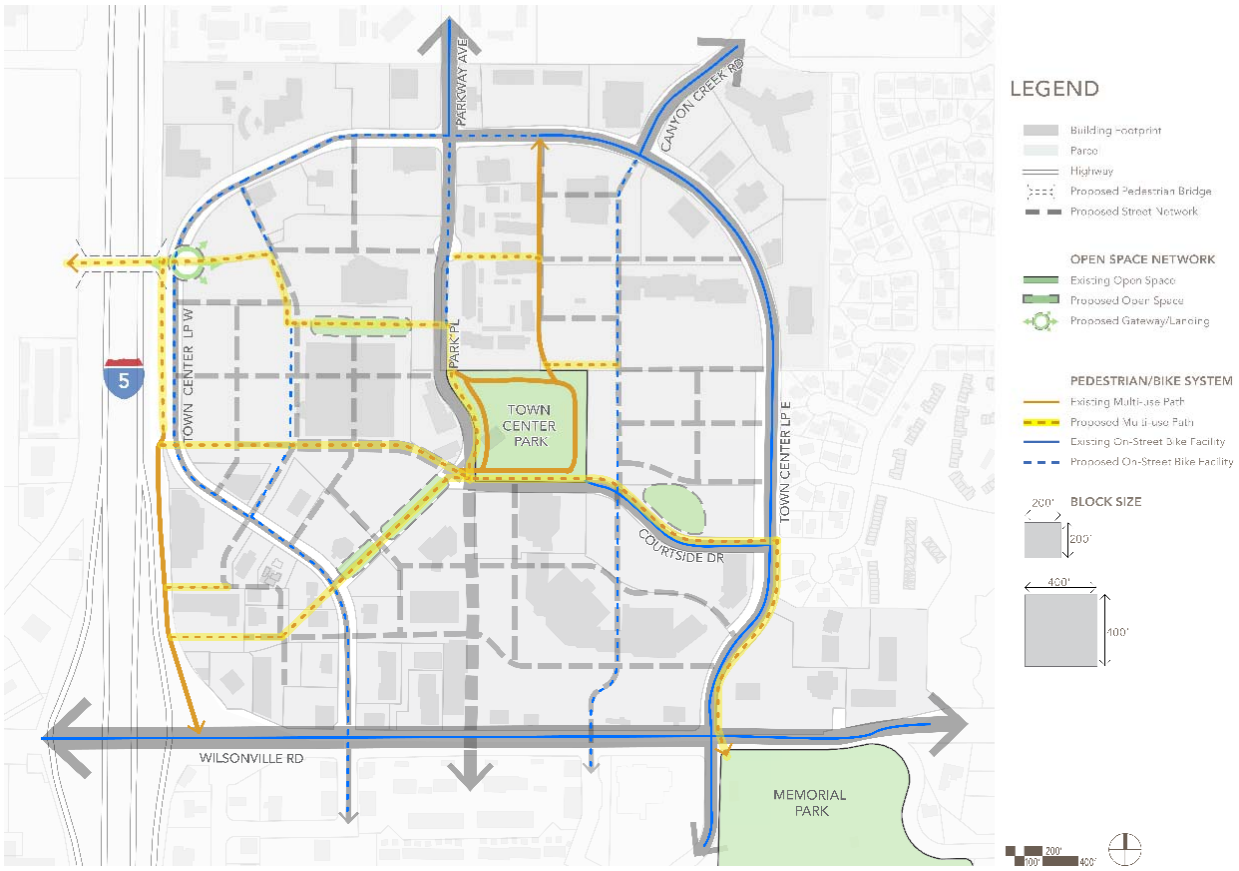


Figure 8: Proposed Multimodal Network

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

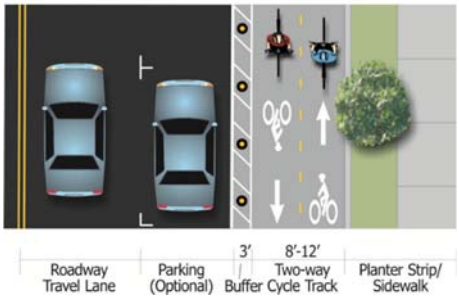


Figure 9: TSP Cycle Track Standards

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.

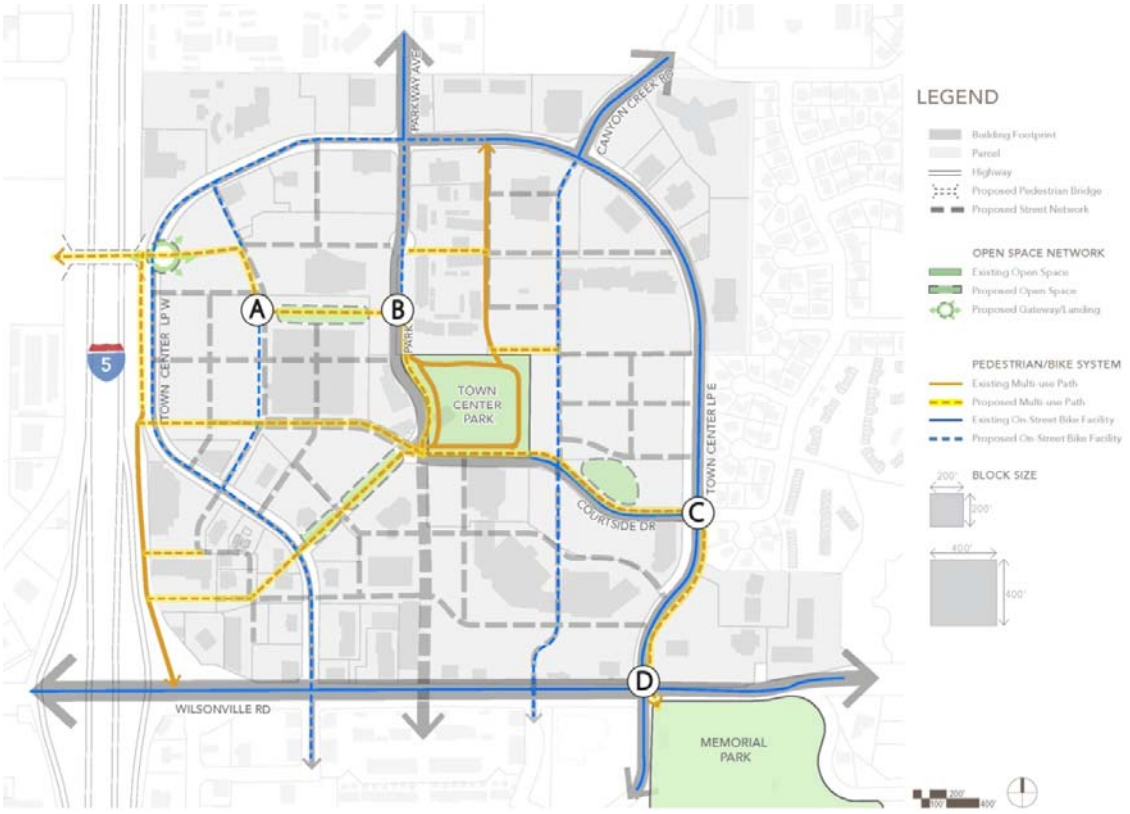


Figure 10: Cycle Track Key Locations

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

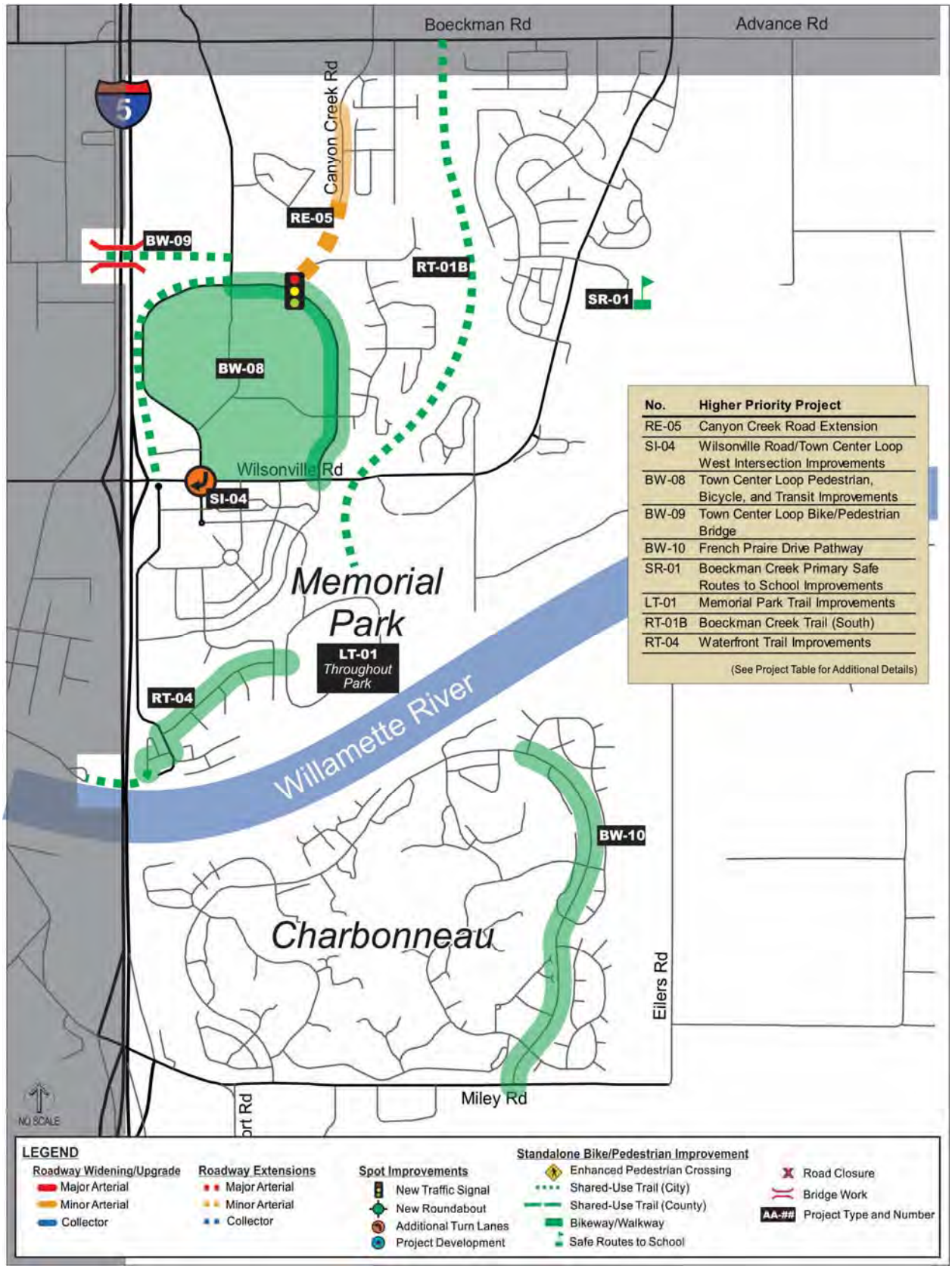
Parcel #	Gross Parcel Area (Sq.ft)	Net Parcel Area (Sq.ft)	Avg. Ht*Net Parcel Area	ITE Land Use	Exisiting Use	Redevelopment Potential (Yes/No)	Built area EXISTING (sq.ft.)	Commercial	Retail	Office	Residential	OTHER	Take-offs (Streets, OS & Parking)	Existing Trip Generation: Trip Rate	Units	PM Peak	PROPOSED 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,	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

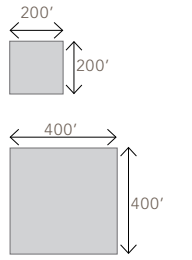
OPEN SPACE NETWORK

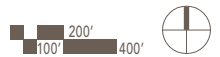
- Existing Open Space
- Proposed Open Space
- Proposed Gateway/Landing

STREET HIERARCHY*

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

BLOCK SIZE

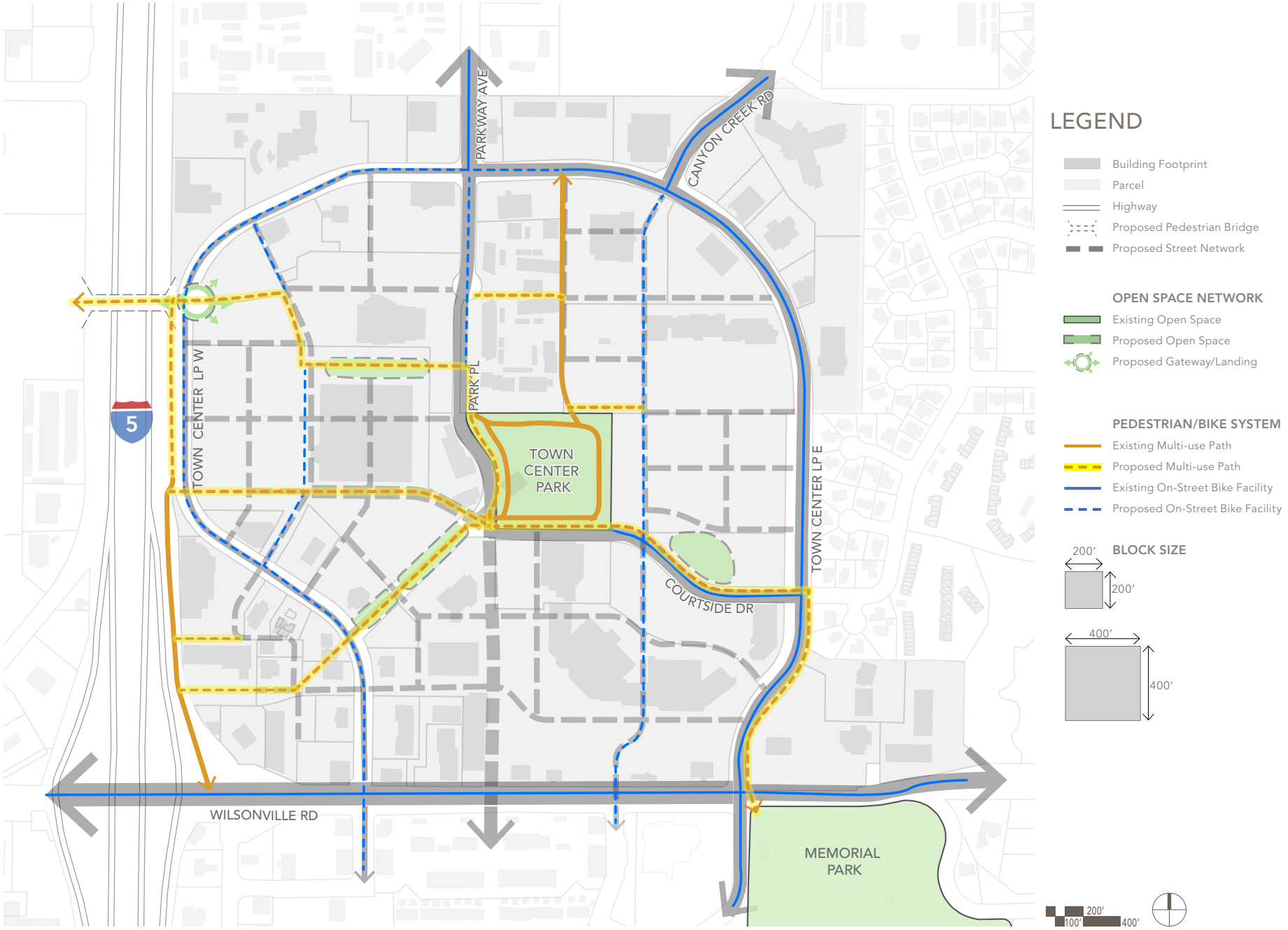




PROPOSED STREET NETWORK

City of Wilsonville Town Center Plan

Appendix E – Proposed Town Center Trail Improvements



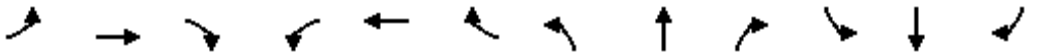
PROPOSED MULTI-MODAL NETWORK

City of Wilsonville Town Center Plan

Appendix F – HCM Analysis Results

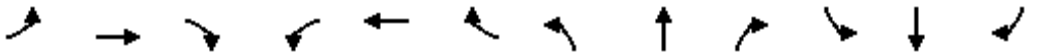
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	570	60	60	460	95	45	60	35	125	90	140
Future Volume (vph)	180	570	60	60	460	95	45	60	35	125	90	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost 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			



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			



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	-

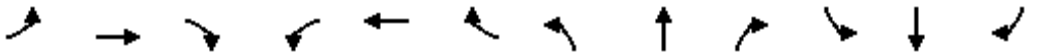
Intersection	
Int Delay, s/veh	4.2

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	-	-	-	-	-	-	-

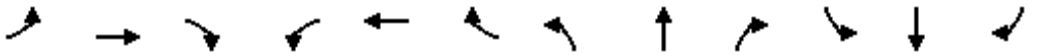
Approach	EB	WB	NB	SB
HCM Control Delay, s	14.6	19.7	0.9	0.4
HCM LOS	B	C		

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	-	-



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			



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

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 — Horizon Year 2035 - No Build

9: I-5 SB & Wilsonville Rd — 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	-	-	-	-	-	-	-

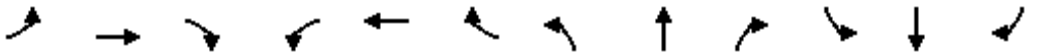
Approach	EB	WB	NB	SB
HCM Control Delay, s	182.4	$ 827	1.9	0.3
HCM LOS	F	F		

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 — Future 2035_Road Network

1: Wilsonville Rd & 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)	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			

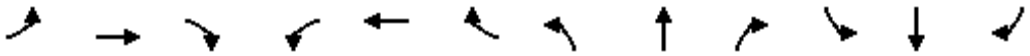
Intersection	
Int Delay, s/veh	1.4

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



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		

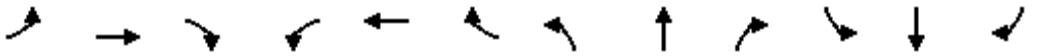
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1192	-	-	508	333	1248	-	-
HCM Lane V/C Ratio	0.034	-	-	0.219	0.212	0.012	-	-
HCM Control Delay (s)	8.1	-	-	14.1	18.7	7.9	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	0.8	0	-	-

HCM Signalized Intersection Capacity Analysis — Future 2035_Road Network

6: Canyon Creek Rd & 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)	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			



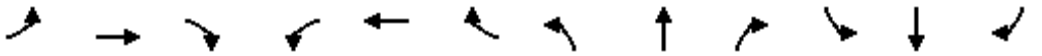
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1430	130	0	1170	50	150	130	60	100	90	400
Future Volume (vph)	0	1430	130	0	1170	50	150	130	60	100	90	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total 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

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			



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			

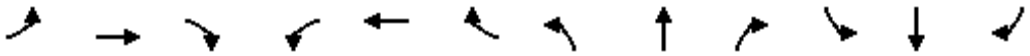
Intersection	
Int Delay, s/veh	8.6

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	-	-



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

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

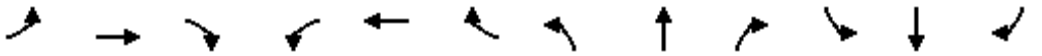
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	707	-	-	414
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.9	-	-	6.9
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up 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

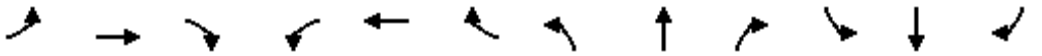
HCM Signalized Intersection Capacity Analysis — Full Development Build

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)	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			



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

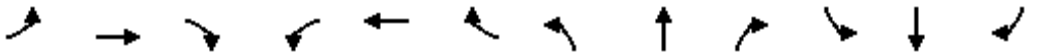
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	758	771	316	838	771	305	338	0	0	328	0	0
Stage 1	338	338	-	402	402	-	-	-	-	-	-	-
Stage 2	420	433	-	436	369	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.26	7.13	6.5	6.45	4.25	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.13	5.5	-	-	-	-	-	-	-
Critical 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	-	-

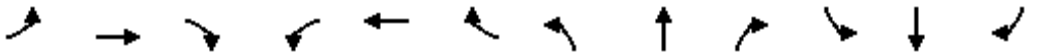
HCM Signalized Intersection Capacity Analysis — Full Development Build

6: Canyon Creek Rd & 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)	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			



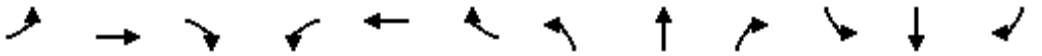
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1510	130	0	1260	50	150	130	70	100	90	400
Future Volume (vph)	0	1510	130	0	1260	50	150	130	70	100	90	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total 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

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			



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	-	-