Sherwood Economic Opportunities Analysis

August 2018

Prepared for:

City of Sherwood

***DRAFT* REPORT**

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Table of Contents

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Summary

This report presents an economic opportunities analysis consistent with the requirements of statewide planning Goal 9 and the Goal 9 administrative rule (OAR 660-009). Goal 9 describes the EOA as "an analysis of the community's economic patterns, potentialities, strengths, and deficiencies as they relate to state and national trends" and states that "a principal determinant in planning for major industrial and commercial developments should be the competitive advantage of the region within which the developments would be located."

Note to reviewers: The final version of the EOA will include a summary

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1. Introduction

This report presents an Economic Opportunities Analysis (EOA) for the City of Sherwood. The purpose of an EOA is to develop information as a basis for policies that capitalize on Sherwood opportunities and help address the City's challenges. The EOA includes technical analysis to address a range of questions that Sherwood faces in managing its commercial and industrial land. For example, the EOA includes an employment forecast that describes how much growth Sherwood should plan for over the 2018 to 2038 period and identifies the amount and type of employment land necessary to accommodate growth in Sherwood over that period. The EOA also includes an inventory of commercial and industrial land within Sherwood's urban growth boundary (UGB) to provide information about the amount of land available to accommodate employment growth.

This EOA complies with the requirements of statewide planning Goal 9, the Goal 9 administrative rules (OAR 660 Division 9), and the court decisions that have interpreted them. Goal 9 requires cities to state objectives for economic development (OAR 660-009-0020(1)(a)) and to identify the characteristics of sites needed to accommodate industrial and other employment uses (OAR 660-009-0025(1)) over the 20-year planning period. This approach could be characterized as a *site-based* approach that projects land need based on the forecast for employment growth, the City's economic development objectives, and the specific needs of target industries.

Background

The City of Sherwood last evaluated economic trends in an Economic Development Strategy and EOA in 2006, based on the 2000 Census data. Substantial changes have occurred in the national and regional economy since 2006 that have implications for economic growth in Sherwood, such as the recovery from the Great Recession as well as the changes in retail and increased automation. Since then, Greater Portland Inc. completed a five-year economic development strategy for the Portland region in 2015, *Greater Portland 2020,* defining emerging industry clusters and policies for economic development in the region. The City of Sherwood completed a concept plan for the Tonquin Employment Area in 2010 and an implementation plan for the area in 2015, building on policies in the 2006 EOA and aligning with the target industries identified by Greater Portland Inc.

The purpose of this project was to develop a factual base to provide the City with information about current economic conditions. This factual basis, presented in this report, provides information necessary for updating the City's economic development Comprehensive Plan policies. This report identifies opportunities to meet the City's economic development objectives and develop Comprehensive Plan policies and implementation strategies that capitalize on the City's comparative advantages and address areas of economic weakness.

The EOA provides information that the City can use to identify and capitalize on its economic opportunities. It also provides information essential to addressing the City's challenges in

managing economic development, such as a lack of larger industrial sites to support growth of businesses that require large sites, underutilized commercial land, underutilized industrial land, and a lack of policy direction to address these issues.

The EOA draws on information from numerous data sources, such as the Oregon Employment Department, U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, and the U.S. Census. The EOA also uses information from the following reports:

- *Tonquin Employment Area: Market Analysis, Business Recruitment Strategy, and Implementation Plan*, June 5, 2015
- *Urban Growth Report*, Discussion Draft, Metro, July 3, 2018
- *Greater Portland 2020 Economic Prosperity for All: Regional Trends in Greater Portland's Target Clusters (2017)*
- *City of Sherwood Economic Development Strategy Final Report,* 2006

Framework for an Economic Opportunities Analysis

The content of this report is designed to meet the requirements of Oregon Statewide Planning Goal 9 and the administrative rule that implements Goal 9 (OAR 660-009). The analysis in this report is designed to conform to the requirements for an Economic Opportunities Analysis in OAR 660-009 as amended.

1. *Economic Opportunities Analysis (OAR 660-009-0015)*. The Economic Opportunities Analysis (EOA) requires communities to identify the major categories of industrial or other employment uses that could reasonably be expected to locate or expand in the planning area based on information about national, state, regional, county or local trends; identify the number of sites by type reasonably expected to be needed to accommodate projected employment growth based on the site characteristics typical of expected uses; include an inventory of vacant and developed lands within the planning area designated for industrial or other employment use; and estimate the types and amounts of industrial and other employment uses likely to occur in the planning area. Local governments are also encouraged to assess community economic development potential through a visioning or some other public input-based process in conjunction with state agencies.

2. *Industrial and commercial development policies (OAR 660-009-0020)*. Cities are required to develop commercial and industrial development policies based on the EOA. Local comprehensive plans must state the overall objectives for economic development in the planning area and identify categories or particular types of industrial and other employment uses desired by the community. Local comprehensive plans must also include policies that commit the city or county to designate an adequate number of employment sites of suitable sizes, types and locations. The plan must also include policies to provide necessary public facilities and transportation facilities for the planning area. Finally, cities within a Metropolitan Planning Organization (which

includes Sherwood) must adopt policies that identify a competitive short-term supply of land for desired industrial and other employment uses as an economic development objective.

3. *Designation of lands for industrial and commercial uses (OAR 660-009-0025).* Cities and counties must adopt measures to implement policies adopted pursuant to OAR 660-009-0020. Appropriate implementation measures include amendments to plan and zone map designations, land use regulations, public facility plans, and transportation system plans. More specifically, plans must identify the approximate number, acreage and characteristics of sites needed to accommodate industrial and other employment uses to implement plan policies, and must designate serviceable land suitable to meet identified site needs.

   Plans for cities and counties within a Metropolitan Planning Organization, or cities and counties that adopt policies relating to the short-term supply of land must designate suitable land to respond to economic development opportunities as they arise.

Organization of this Report

This report is organized as follows:

- **Chapter 2. Buildable Lands Inventory** presents a summary of the inventory of employment lands.
- **Chapter 3. Factors Affecting Future Economic Growth** summarizes historic economic trends that affect current and future economic conditions in Sherwood as well as Sherwood's competitive advantages for economic development.
- **Chapter 4. Employment Growth and Site Needs** presents a forecast for employment growth in Sherwood and describes the City's target industries and site needs for potential growth in industries.
- **Chapter 5. Land Sufficiency and Conclusions** compares the supply of and demand for buildable lands and presents key concluding recommendations for Sherwood.

This report also includes one appendix:

- **Appendix A, Buildable Lands Inventory Methodology**

2. Buildable Lands Inventory

This chapter provides a summary of the commercial and industrial buildable lands inventory (BLI) for the Sherwood City Limits and Tonquin Employment Area. The City of Sherwood staff, in coordination with ECONorthwest staff, developed the buildable lands inventory analysis using Metro's 2018 Buildable Lands Inventory as a starting point. The analysis complies with statewide planning Goal 9 policies that govern planning for employment uses. The full buildable lands inventory completed by City staff is presented in Appendix A.

Methods, Definitions, and Assumptions

The buildable lands inventory includes land in commercial and industrial Comprehensive Plan Designations within Sherwood's city limits and in the Tonquin Employment Area, which is outside of the city limits but expected to annex into Sherwood before development occurs in the Area.

Definitions

Metro developed the buildable lands inventory with a tax lot database from RLIS. The tax lot database is current as of March 2018. The inventory builds from the database to estimate buildable land by plan designation. A key step in the buildable lands inventory was to classify each tax lot into a set of mutually exclusive categories. Metro classified all tax lots in Sherwood into one of the following categories:

- *Vacant land*.[1] Any tax lot that is "fully vacant (Metro aerial photo)"; or "with less than 2,000 sq. ft. developed AND developed part is under 10% of entire tax lot"; or that is "95% or more 'vacant' from the GIS vacant land inventory."
- *Potentially redevelopable land*.[2] For taxlots that were not classified vacant or exempt, Metro included all other employment land taxlots in the strike-price model. Taxlots with a value greater than zero in the "net_emp_acres_strike_price" field in the Metro BLI GIS layer were considered to have redevelopment potential. The value in that field for each tax lot is the number of acres that is potentially redevelopable, not including constrained acres. Tax lots with a "net_emp_acres_strike_price" value of zero were considered developed.
- *Developed land*.[3] Tax lots with a "net_emp_acres_strike_price" value of zero were considered developed.

[1] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018. p. 20. https://www.oregonmetro.gov/sites/default/files/2018/07/03/UGR_Appendix2_Buildable_Lands_Inventory.pdf.

[2] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018.

[3] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018.

- *Exempt land*.[4] Land that is classified as either, "tax exempt with property codes for city, state, federal and Native American designations; schools; churches and social organizations; private streets; rail properties; tax lots under 1,000 sq. ft. (0.023 gross acres); parks, open spaces and where possible private residential common areas." Metro used GIS data and Assessor's data to determine the status of exempt land. ECONorthwest included all tax lots classified as exempt land in the developed land tabular and mapping information, but these tax lots can still be distinguished in the GIS data layer.

Development Constraints

The physical constraints used in the Sherwood buildable lands inventory includes: areas subject to landslides, areas with slopes greater than 25%, lands within the 100-year flood plain, Metro's Title 3 land (including Water Resource Conservation Areas), lands within Metro's Title 13 Habitat Conservation Areas (Class I and II, A and B), Wetlands, and public facilities. Land with these constraints is considered unbuildable, as discussed below.

Results of the Buildable Lands Inventory

As part of developing the buildable lands inventory, ECONorthwest staff worked with City staff to verify the results of the buildable land inventory. Staff carefully considered the accuracy of land identified as vacant and potentially redevelopable to ensure that these areas have capacity for additional development, given the development constraints present on each tax lot.

Land Base

Table 1 shows commercial and industrial land in Sherwood by classification (development status). The results show that Sherwood has 931 total acres in commercial and industrial plan designations. Of the 931 acres in the UGB, about 407 acres (44%) are in classifications with no development capacity. Of the remaining 527 acres, 282 acres (30%) are constrained and 242 acres (26%) are buildable land with development capacity.

Note to reviewers: This version of the BLI does not include vacant Office Commercial and Light Industrial land in the Brookman Area. This land is not yet annexed into the City and is likely only a few acres. This oversight will be addressed with a revision to the BLI.

[4] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018. pp. 20-21.

Table 1. Employment acres by classification and plan designation, Sherwood City Limits and Tonquin Employment Area, 2018

Plan Designation	Tax Lots	Total Acres	Acres with No Development Capacity	Constrained Acres	Total Unconstrained Buildable Acres
Commercial	**134**	**171**	**134**	**10**	**27**
General Commercial	31	62	42	5	15
Neighborhood Commercial	2	1	1	0	0
Office Commercial	11	16	6	5	5
Retail Commercial	90	92	85	0	7
Industrial	**115**	**478**	**257**	**128**	**94**
General Industrial	66	238	153	29	56
Light Industrial	49	240	104	99	38
Tonquin	**24**	**282**	**16**	**144**	**122**
Future Development	24	282	16	144	122
Total	**273**	**931**	**407**	**282**	**242**
Percent of Total		**100%**	**44%**	**30%**	**26%**

Source: Appendix A, Table 20.

Vacant Buildable Land

Table 2 shows unconstrained buildable acres for vacant and potentially redevelopable land by plan designation. The results show that Sherwood has about 242 net buildable acres in commercial and industrial plan designations. Of this, 11% (27 acres) is in the commercial designations, 39% (94 acres) is in industrial designations, and 50% (122 acres) is designated as future development in the Tonquin Employment Area.

Table 2. Employment land with unconstrained development capacity (Vacant, Potentially Redevelopable) by plan designation, Sherwood City Limits and Tonquin Employment Area, 2018

Plan Designation	Uncon-strained Vacant Acres	Unconstrained Potentially Redevelopable Acres	Total Unconstrained Buildable Acres
Commercial	**14**	**13**	**27**
General Commercial	8	7	15
Office Commercial	4	1	5
Retail Commercial	2	5	7
Industrial	**45**	**49**	**94**
General Industrial	27	29	56
Light Industrial	17	20	38
Tonquin	**82**	**39**	**122**
Future Development	82	39	122
Total	**141**	**101**	**242**
Percent of Total	**58%**	**42%**	**100%**

Source: Appendix A: Table 22.

Map 1 shows Sherwood's employment land by classification with development constraints.

Table 3 shows the size of lots by plan designations for buildable employment land. Sherwood has 49 lots that are smaller than 2 acres (with 35 acres of land). Sherwood has 29 lots between 2 and 10 acres (126 acres of land) and 3 lots between 10 and 60 acres in size (81 acres of land).

Table 3. Lot size by plan designation, buildable acres, Sherwood City Limits and Tonquin Employment Area, 2018

	Buildable Acres in Tax Lot (vacant, potentially redevelopable)				
Plan Designation	<1	1 - 1.99	2 - 4.99	5 - 9.99	10 - 59.99
Acres					
Commercial	**6**	**6**	**10**	**5**	**0**
General Commercial	4	2	4	5	0
Neighborhood Commercial	0	0	0	0	0
Office Commercial	2	1	3	0	0
Retail Commercial	1	3	3	0	0
Industrial	**7**	**7**	**35**	**19**	**25**
General Industrial	1	3	21	19	12
Light Industrial	6	4	14	0	13
Tonquin	**2**	**6**	**24**	**34**	**56**
Future Development	2	6	24	34	56
Subtotal	**16**	**19**	**68**	**58**	**81**
Taxlots					
Commercial	**12**	**4**	**3**	**1**	**0**
General Commercial	8	1	1	1	0
Neighborhood Commercial	0	0	0	0	0
Office Commercial	2	1	1	0	0
Retail Commercial	2	2	1	0	0
Industrial	**18**	**5**	**11**	**3**	**2**
General Industrial	4	2	6	3	1
Light Industrial	14	3	5	0	1
Tonquin	**6**	**4**	**6**	**5**	**1**
Future Development	6	4	6	5	1
Subtotal	**36**	**13**	**20**	**9**	**3**

Source: Appendix A: Table 23.

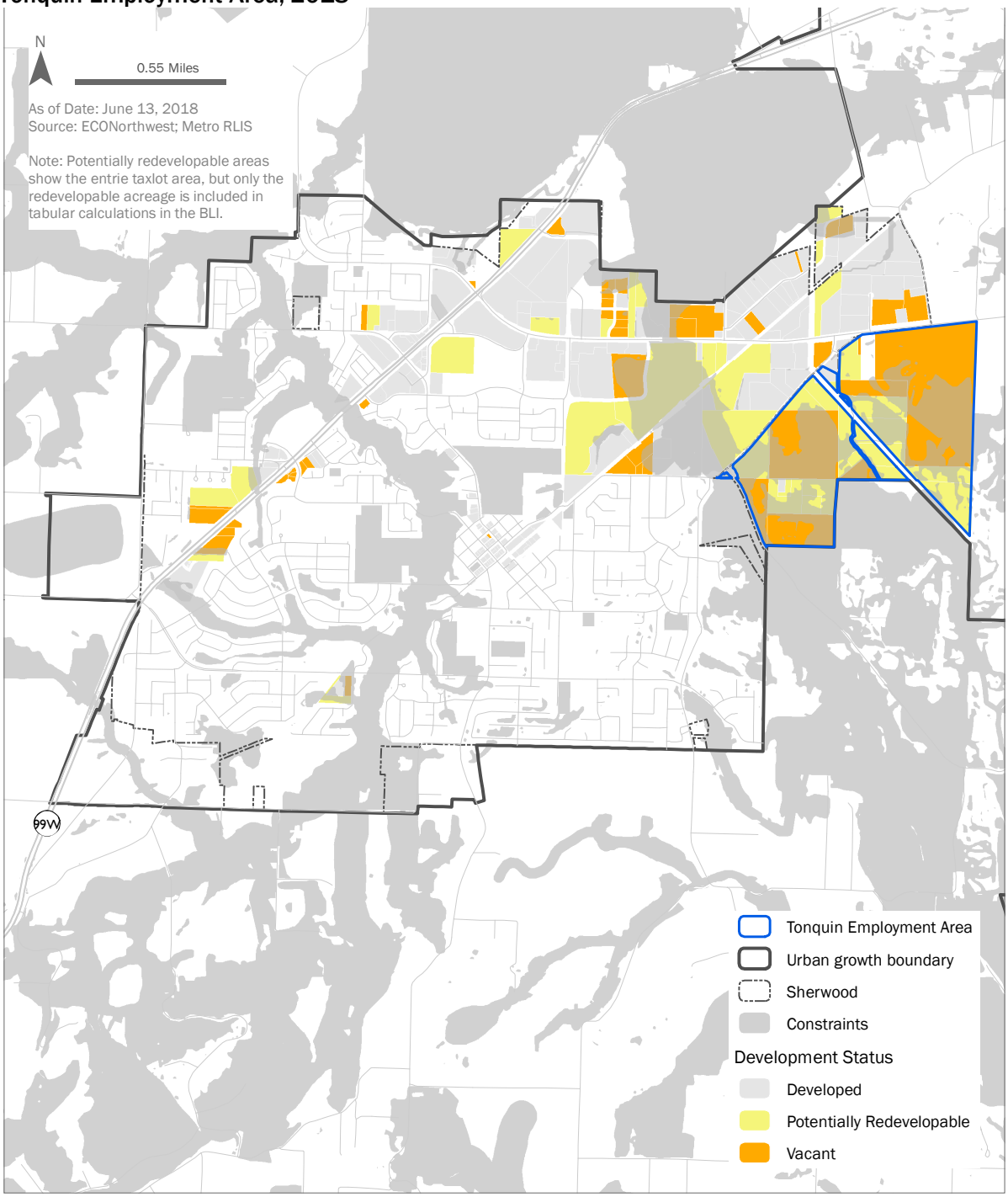
The data in Table 3 shows that Sherwood has no commercial sites larger than 10 acres within the city limits. Sherwood does, however, have industrial sites larger than 10 acres (a total of 25 acres). In addition, the Tonquin Employment Area has 5 sites between 5 and 10 acres and 1 site larger than 10 acres.

The Tonquin Employment Area Concept Plan assumes that employment growth in the Tonquin Area will be predominantly industrial employment, with a total of 10 acres of land for retail and commercial uses to provide services to businesses and workers in the Tonquin Area.[5]

[5] *Tonquin Employment Area Concept Plan: Preferred Concept Plan Report*, Final Report October 2010, Table IV-1.

Note to reviewers: This version of the BLI does not include vacant Office Commercial and Light Industrial land in the Brookman Area. This land is not yet annexed into the City and is likely only a few acres. This oversight will be addressed with a revision to the BLI.

Map 1. Employment land by classification with development constraints, Sherwood City Limits and Tonquin Employment Area, 2018



3. Factors Affecting Future Economic Growth

Sherwood exists as part of the larger economy of the Portland region[6] and is strongly influenced by regional economic conditions. For many factors, such as access to labor, Sherwood does not differ significantly from the broader region. For other factors, such as income, it does. Thus, Sherwood benefits from being a part of the larger regional economy and plays a specific role in it.

This chapter describes the factors affecting economic growth in Sherwood, including national and regional economic trends. The analysis presents Sherwood's competitive advantages for growing and attracting businesses, which forms the basis for identifying potential growth industries in Sherwood.

Factors that Affect Economic Development[7]

The fundamental purpose of Goal 9 is to make sure that a local government plans for economic development. The planning literature provides many definitions of economic development, both broad and narrow. Broadly,

> "Economic development is the process of improving a community's well-being through job creation, business growth, and income growth (factors that are typical and reasonable focus of economic development policy), as well as through improvements to the wider social and natural environment that strengthen the economy."[8]

That definition acknowledges that a community's wellbeing depends in part on narrower measures of economic wellbeing (e.g., jobs and income) and on other aspects of quality of life (e.g., the social and natural environment). In practice, cities and regions trying to prepare an economic development strategy typically use a narrower definition of economic development; they take it to mean business development, job growth, and job opportunity. The assumptions are that:

- Business and job growth are contributors to and consistent with economic development, increased income, and increased economic welfare. From the municipal point of view, investment and resulting increases in property tax are important outcomes of economic development.

[6] In this analysis, the Portland region is defined as the three-county area including, Clackamas, Multnomah, and Washington Counties.

[7] The information in this section is based on previous Goal 9 studies conducted by ECONorthwest and the following publication: *An Economic Development Toolbox: Strategies and Methods*, Terry Moore, Stuart Meck, and James Ebenhoh, American Planning Association, Planning Advisory Service Report Number 541, October 2006.

[8] *An Economic Development Toolbox: Strategies and Methods*, Terry Moore, Stuart Meck, and James Ebenhoh, American Planning Association, Planning Advisory Service Report Number 541, October 2006.

- The evaluation of tradeoffs and balancing of policies to decide whether such growth is likely to lead to overall gains in wellbeing (on average and across all citizens and businesses in a jurisdiction, and all aspects of wellbeing) is something that decision makers do after an economic strategy has been presented to them for consideration.

That logic is consistent with the tenet of the Oregon land-use planning program: all goals matter, no goal dominates, and the challenge is to find a balance of conservation and development that is acceptable to a local government and state. Goal 9 does not dominate, but it legitimizes and requires that a local government focus on the narrower view of economic development that focuses on economic variables.

In that context, a major part of local economic development policy is about local support for business development and job growth; that growth comes from the creation of new firms, the expansion of existing firms, and the relocation or retention of existing firms. Thus, a key question for economic development policy is, *What are the factors that influence business and job growth, and what is the relative importance of each?* This document addresses that question in depth.

What Factors Matter?

Why do firms locate where they do? There is no single answer—different firms choose their locations for different reasons. Key determinants of a location decision are a firm's *factors of production*. For example, a firm that spends a large portion of total costs on unskilled labor will be drawn to locations where labor is relatively inexpensive. A firm with large energy demands will give more weight to locations where energy is relatively inexpensive. In general, firms choose locations they believe will allow them to maximize net revenues: if demand for goods and services are held roughly constant, then revenue maximization is approximated by cost minimization.

The typical categories that economists use to describe a firm's production function are:

- **Labor.** Labor is often the most important factor of production. Other things equal, firms look at productivity—labor output per dollar. Productivity can decrease if certain types of labor are in short supply, which increases the costs by requiring either more pay to acquire the labor that is available, the recruiting of labor from other areas, or the use of the less productive labor that is available locally.
- **Land.** Demand for land depends on the type of firm. Manufacturing firms need more space and tend to prefer suburban locations where land is relatively less expensive and less difficult to develop. Warehousing and distribution firms need to locate close to interstate highways.
- **Local infrastructure.** An important role of government is to increase economic capacity by improving quality and efficiency of infrastructure and facilities, such as roads, bridges, water and sewer systems, airport and cargo facilities, energy systems, and telecommunications.

- **Access to markets.** Though part of infrastructure, transportation merits special attention. Firms need to move their product, either goods or services, to the market, and they rely on access to different modes of transportation to do this.
- **Materials.** Firms producing goods, and even firms producing services, need various materials to develop products that they can sell. Some firms need natural resources (i.e., raw lumber) and others may need intermediate materials (i.e., dimensioned lumber).
- **Entrepreneurship**. This input to production may be thought of as good management, or even more broadly as a spirit of innovation, optimism, and ambition that distinguishes one firm from another even though most of their other factor inputs may be quite similar.

The supply, cost, and quality of any of these factors obviously depend on market factors: on conditions of supply and demand locally, nationally, and even globally. But they also depend on public policy. In general, public policy can affect these factors of production through:

- **Regulation.** Regulations protect the health and safety of a community and help maintain the quality of life. Overly burdensome regulations, however, can be disincentives for businesses to locate in a community. Simplified bureaucracies and straightforward regulations can reduce the burden on businesses and help them react quickly in a competitive marketplace.
- **Taxes**. Firms tend to seek locations where they can optimize their after-tax profits. Tax rates are not a primary location factor—they matter only after businesses have made decisions based on labor, transportation, raw materials, and capital costs. The costs of these production factors are usually similar within a region. Therefore, differences in tax levels across communities within a region are more important in the location decision than are differences in tax levels between regions.
- **Financial incentives**. Governments can offer firms incentives to encourage growth. Most types of financial incentives have had little significant effect on firm location between regions. For manufacturing industries with significant equipment costs, however, property or investment tax credit or abatement incentives can play a significant role in location decisions. Incentives are more effective at redirecting growth within a region than they are at providing a competitive advantage between regions.

This discussion may make it appear that a location decision is based entirely on a straight-forward accounting of costs, with the best location being the one with the lowest level of overall costs. Studies of economic development, however, have shown that location decisions depend on a variety of other factors that indirectly affect costs of production. These indirect factors include agglomerative economies (also known as industry clusters), quality of life, and innovative capacity.

- **Industry clusters**. Firms with similar business activities can realize operational savings when they congregate in a single location or region. Clustering can reduce costs by creating economies of scale for suppliers. For this reason, firms tend to locate in areas where there is already a presence of other firms engaged in similar or related activities.

- **Quality of life.** A community that features many quality amenities, such as access to recreational opportunities, culture, low crime, good schools, affordable housing, and a clean environment can attract people simply because it is a nice place to be. A region's quality of life can attract skilled workers, and if the amenities lure enough potential workers to the region, the excess labor supply pushes their wages down so that firms in the region can find skilled labor for a relatively low cost. The characteristics of local communities can affect the distribution of economic development within a region, with different communities appealing to different types of workers and business owners. Sometimes location decisions by business owners are based on an emotional or historical attachment to a place or set of amenities, without much regard for the cost of other factors of production.
- **Innovative capacity.** Increasing evidence suggests that a culture promoting innovation, creativity, flexibility, and adaptability is essential to keeping U.S. cities economically vital and internationally competitive. Innovation is particularly important in industries that require an educated workforce. High-tech companies need to have access to new ideas typically associated with a university or research institute. Innovation affects both the overall level and type of economic development in a region. Government can be a key part of a community's innovative culture, through the provision of services and regulation of development and business activities that are responsive to the changing needs of business.

How Important Are These Factors?

To understand how changes in public policies affect local job growth, economists have attempted to identify the importance for firms of different locational factors. They have used statistical models, surveys, and case studies to examine detailed data on the key factors that enter the business location decision.

Economic theory says that firms locate where they can reduce the costs of their factors of production (assuming demand for products and any other factors are held constant). Firms locate in regions where they have access to inputs that meet their quality standards, at a relatively low cost. Because firms are different, the relative importance of different factors of production varies both across industries and, even more importantly, across firms.

No empirical analysis can completely quantify firm location factors because numerous methodological problems make any analysis difficult. For example, some would argue simplistically that firms would prefer locating in a region with a low tax rate to reduce tax expenses. However, the real issue is the value provided by the community for the taxes collected. Because taxes fund public infrastructure that firms need, such as roads, water, and sewer systems, regions with low tax rates may end up with poor infrastructure, making it less attractive to firms. When competing jurisdictions have roughly comparable public services (type, cost, and quality) and quality of life, then tax rates (and tax breaks) can make a difference.

Further complicating any analysis is the fact that many researchers have used public expenditures as a proxy for infrastructure quality. But large expenditures on roads do not

necessarily equal a quality road system. It is possible that the money has been spent ineffectively and the road system is in poor condition.

An important aspect of this discussion is that the business function at a location matters more than a firm's industry. A single company may have offices spread across cities, with headquarters located in a cosmopolitan metropolitan area, the research and development divisions located near a concentration of universities, the back office in a suburban location, and manufacturing and distribution located in areas with cheap land and good interstate access.

The location decisions of businesses are primarily based on the availability and cost of labor, transportation, raw materials, and capital. The availability and cost of these production factors are usually similar within a region. Most economic development strategies available to local governments, however, only indirectly affect the cost of these primary location factors. Local governments can most easily affect tax rates, public services, and regulatory policies. Economists generally agree that these factors do affect economic development, but the effects on economic development are modest. Thus, most of the strategies available to local governments have only a modest effect on the level and type of economic development in the community.

Local governments in Oregon also play a central role in the provision of buildable land through inclusion of lands in the Urban Growth Boundary, as well as through determination of plan designations and zoning, and through provision of public services. Obviously, businesses need buildable land to locate or expand in a community. Providing buildable land alone is not sufficient to guarantee economic development in a community—market conditions must create demand for this land, and local factors of production must be favorable for business activity. In the context of expected economic growth and the perception of a constrained land supply in Washington County, the provision of buildable land has the potential to strongly influence the level and type of economic development in Sherwood. The provision of buildable land is one of the most direct ways that the City of Sherwood can affect the level and type of economic development in the community.

Summary of the Effect of National, State and Regional Trends on Economic Development in Sherwood

This section presents a summary and the implications of national, state, and regional economic trends on economic growth in Sherwood, which are presented in Section 3.3.

National, State, and Regional Economic Trends	Implications for Economic Growth in Sherwood
Moderate growth rates and recovery from the national recession After the end of the recession in 2009, economic growth returned to the U.S. economy, with persistent increases in real GDP (a 2.3 percentage point growth in 2017 relative to 2016)[9], a steady job growth (about 2.1 million jobs were added during 2017)[10], and a decline in the unemployment rate (about 4.1% in 2017 compared to the recessionary peak of 9.9%).[11] Unemployment at the national level has gradually declined since the height of the recession. Unemployment rates in Oregon are typically higher than those of the nation as a whole. The federal government's economic forecast predicts a moderate pace of economic growth, with gradual increases in employment and real GDP (roughly 3% through the end of 2016). IHS Economic projects that Oregon's economy will be the fifth fastest-growing among all states in the U.S., averaging annual growth of about 2.7% through 2023.[12]	The rate of employment growth in Sherwood will depend, in part, on the rate of employment growth in Oregon and the nation. Sherwood's employment growth is most closely tied to growth in Washington County, which has higher wages than the state average. The types of employment identified as having growth potential and higher than average wages in the Portland Region and in Washington County are: Computer and Electronics, Software and Media, Clean Tech, Athletic and Outdoors, Metals and Machinery, and Health Science and Tech. The Oregon Employment Department forecasts that employment in Portland (which includes Clackamas, Multnomah, and Washington counties) will grow by about 13% from 2017 levels. Private Educational and Health Services, Trade, Transportation, and Utilities, Leisure and Hospitality, Construction, and Manufacturing will make up the majority of the region's growth.
Growth of service-oriented sectors	The changes in employment in Washington County have followed similar trends as the changes in national and state employment. The service sector showed the greatest change in share of employment since 1980.

[9] Federal Reserve Bank of St. Louis, FRED Economic Data, Real Gross Domestic Product (GDPC1), Billions of Chained 2009 Dollars, Seasonally Adjust Annual Rate. Retrieved from: https://fred.stlouisfed.org/series/GDPC1#0, on June 25, 2018.

[10] Bureau of Labor Statistics. Economic News Release, Employment Situation News Release, December 2017. Published on January 5, 2018. Retrieved from: https://www.bls.gov/news.release/archives/empsit_01052018.htm, on June 25, 2018.

[11] Bureau of Labor Statistics. Current Population Survey, Unemployment Rate, Seasonally Adjusted, 16 years and over. Retreived from https://www.bls.gov/data/, on June 25, 2018.

[12] Office of Economic Analysis. Oregon Economic and Revenue Forecast, March 2018. Vol. XXXVIII, No. 1, page 16. https://www.oregon.gov/das/OEA/Documents/forecast0318.pdf.

National, State, and Regional Economic Trends	Implications for Economic Growth in Sherwood
Increased worker productivity and the international outsourcing of routine tasks led to declines in employment in the major goods-producing industries. Projections from the Bureau of Labor Statistics indicate that U.S. employment growth will continue to be strongest in healthcare and social assistance, professional and business services, and other service industries. Construction employment will grow with the economy, but manufacturing employment will decline. These trends are also expected to affect the composition of Oregon's economy, although manufacturing in Oregon will grow.	The Oregon Employment Department forecasts that the service sectors likely to have the most employment growth in Portland—the region that includes Washington County—over the 2017 to 2027 period are: Professional and Business Services, Private Education and Health Services, and, Leisure and Hospitality. These sectors represent employment opportunities for Sherwood.
Importance of small businesses in Oregon's economy Small business, with 100 or fewer employees, account for 66% of private-sector employment in Oregon. Workers of small businesses typically have had lower wages than the state average.	The average size for a private business in Sherwood is 9 employees per business, compared to the State average of 11 employees per private business. Businesses with 50 or fewer employees account for roughly 57% of private employment in Sherwood. Businesses with 9 or fewer employees account for 20% of private employment and 4 or fewer account for 10% of private employment Growth of small businesses presents key opportunities for economic growth in Sherwood.
Availability of trained and skilled labor Businesses in Oregon are generally able to fill jobs, either from available workers living within the State, or by attracting skilled workers from outside of the State. Availability of labor depends, in part, on population growth and in-migration. Oregon added more than 1,299,000 new residents and about 605,000 new jobs between 1990 and 2016. The population-employment ratio for the State was about 2.3 residents per job over the 24-year period. Availability of labor also depends on workers' willingness to commute. Workers in Oregon typically have a commute that is 30 minutes or shorter. Availability of skilled workers depends, in part, on educational attainment. About 31% of Oregon's workers have a Bachelor's degree or higher.	Employment in Washington County grew at about 1.4% annually over the 2000 to 2016 period, while population grew at about 2.4% over the same period. About 48% of workers at businesses located in Sherwood lived in Washington County, and 8% lived within Sherwood city limits. Firms in Sherwood attracted workers from the Portland Region. Over 90% of workers in Sherwood commuted into the city from elsewhere, many from Portland (22% of Sherwood workers), Beaverton (8%), and Tigard (8%). These commuting patterns are similar to commuting in other cities in the Portland area. Businesses in Sherwood are able to pull data from across the Westside of the Portland Region and from across the rest of the Portland Region. Sherwood's residents were more likely to have earned a Bachelor's degree or higher (46%) than the State average (31%). With historically low unemployment rates, businesses in Sherwood may have difficulties attracting employees, consistent with the experience of other cities in the Region. However, the lower wages at businesses and Sherwood may make attracting employees more difficult

National, State, and Regional Economic Trends	Implications for Economic Growth in Sherwood
Aging of the population The number of Oregonians aged 65 and older will nearly double between 2015 and 2050, while the number of people under age 65 will grow by only about 29%. The economic effects of this demographic change include a slowing of the growth of the labor force, an increase in the demand for healthcare services, and an increase in the percent of the federal budget dedicated to Social Security and Medicare. Furthermore, people are retiring later than previous generations and continuing to work past 65 years old. This trend is seen both at the national and State levels. Even given this trend, the need for workers to replace retiring Baby Boomers will outpace job growth. Management occupations and teachers will have the greatest need for replacement workers because these occupations have older-than-average workforces.	The changes in the Washington County's age structure are similar to that of the State, with the most growth observed in people 60 years and older. The State projects that the share of the population over the age of 60 in the Washington County will increase from 18% to 27% from 2015 to 2035. Firms in Sherwood will need to replace workers as they retire. Demand for replacement workers may outpace job growth in Sherwood, consistent with State trends. Given the CBO's forecast of relatively low unemployment rates (about 4.9% through 2027), businesses in Sherwood (and throughout the State) may have difficulties finding replacement workers.
Increases in energy prices Although energy prices are relatively low by historical standards, over the long-term, energy prices are forecast to grow as the economy and the population grows. As energy prices increase over the planning period of 2017 to 2050, energy consumption for transportation may decrease. Though with expected increases in fuel economy, people will be able to travel longer distances while consuming less energy. The U.S. Energy Information Administration estimates that transportation energy consumption declines as a result of increasing fuel economy more than offsets the total growth in vehicle miles traveled (VMT). VMT for passenger vehicles is forecasted to increase through 2050.	In 2017, lower energy prices have decreased the costs of commuting. Over the long-term, if energy prices increase, these higher prices will likely affect the mode of commuting before affecting workers' willingness to commute. For example, commuters may choose to purchase a more energy-efficient car, use the bus, or carpool. Very large increases in energy prices may affect workers' willingness to commute, especially workers living the furthest from Sherwood or workers with lower paying jobs. In addition, very large increases in energy prices may make shipping freight long distances less economically feasible, resulting in a slow-down or reversal of off-shore manufacturing, especially of large, bulky goods.
Comparatively low wages The income of a region affects the workforce and the types of businesses attracted to the region. Average income affects workers and businesses in different ways. Workers may be attracted to a region with higher average wage or high wage jobs. Businesses, however, may prefer to locate in regions with lower wages, where the cost of doing business may be lower. Since the early 1980's, Oregon's per capita personal income has been consistently lower than the U.S. average. In 2016, Oregon's per capita wage was 92% of the national average. From 2000 to 2016 nominal wages in the nation grew by 52% from $35,300 to $53,600, while wages in Oregon increased by 51% from $32,800 to $49,500.	Income in Oregon has historically been below national averages, and Washington County's per capita personal income has remained above that of the State and the nation. While the county's average wages followed a similar trend as personal income, they remained well above the State in both 2000 and 2016. In 2016, Washington County's average wage was about $65,908 compared to the State ($49,467). There are two basic reasons that wages are higher in Washington County than in the U.S.: (1) wages for similar jobs tend to be higher; (2) the occupational mix of employment is weighted towards higher paying occupations such as manufacturing.

National, State, and Regional Economic Trends	Implications for Economic Growth in Sherwood
	In addition, wages in Washington County and Oregon tend to be more volatile than the national average. The major reason for this volatility is that the relative lack of diversity in the State and County economy. Average wages in Sherwood are lower than Washington County and Oregon. For example, the average wage in Sherwood in 2016 was $38,696, compared to $65,908 in Washington County and $49,467 in Oregon. This difference is due to the larger share of lower-paying service sector jobs in Sherwood, compared to the Portland region. The median income in Sherwood ($86,111), however, is higher than Washington County ($69,743). This disparity in wages and income reflect that Sherwood residents are employed in other cities in the Portland region, but not in Sherwood.
Education as a determinant of wages The majority of the fastest growing occupations will require an academic degree, and on average, they will yield higher incomes than occupations that do not require an academic degree. The fastest-growing occupations requiring an academic degree will be registered nurses, software developers, general and operations managers, accountants and auditors, market research analysts and marketing specialists, and management analysts. Occupations that do not require an academic degree (e.g., retail sales person, food preparation workers, and home care aides) will grow, accounting for approximately 71% of all new jobs by 2026. These occupations typically have lower pay than occupations requiring an academic degree. The national median income for people over the age of 25 in 2017 was about $47,164. Workers without a high school diploma earned $20,124 less than the median income, and workers with a high school diploma earned $10,140 less than the median income. Workers with some college earned $6,916 less than median income, and workers with a bachelor's degree earned $13,832 more than the median. Workers in Oregon experience the same patterns as the nation, but pay is generally lower in Oregon than the national average.	Sherwood's residents were more likely to have obtained a Bachelor's degree or higher compared to Oregon residents as a whole (46% versus 31%). Businesses that want to locate in Sherwood can draw from the labor pool of the Portland region, especially the higher-educated population of workers living in Washington County.

National, State, and Regional Economic Trends	Implications for Economic Growth in Sherwood
Importance of high quality natural resources The relationship between natural resources and local economies has changed as the economy has shifted away from resource extraction. Increases in the population and in households' incomes, plus changes in tastes and preferences, have dramatically increased demands for outdoor recreation, scenic vistas, clean water, and other resource-related amenities. Such amenities contribute to a region's quality of life and play an important role in attracting both households and firms.	The region's high quality natural resources present economic growth opportunities for Sherwood, ranging from agriculture and wineries to amenities that attract visitors and contribute to the region's high quality of life.

National Trends

Economic development in Sherwood over the next 20 years will occur in the context of long-run national trends. The most important of these trends include:

- **Economic growth will continue at a moderate pace**. Analysis from the Congressional Budget Office (CBO) predicts moderate growth of just above 2.0% GDP throughout 2018 and over the next decade, assuming current laws remain intact, and a growth of around 1.9% per year until 2027.

  The unemployment rate is expected to decrease to 4.3% by the end of 2017 and fall to 4.2% early 2018. Growth in hourly compensation may increase labor force participation, slowing its longer-term decline.

  Unemployment is expected to be 4.9% from 2021-2027, which is slightly above the estimated natural rate of unemployment but considerably lower than unemployment rates for 2010 to 2015 (during the recovery from the 2007-2009 recession).[13]

- **The aging of the Baby Boomer generation, accompanied by increases in life expectancy.** As the Baby Boomer generation continues to retire, the number of Social Security recipients is expected to increase from 59 million in 2014 to over 90 million in 2035, a 53% increase. However, due to lower-birth rate replacement generations, the number of covered workers is only expected to increase 14.7% over the same time period, from 165 million to almost 190 million in 2035. Currently, there are 36 Social Security beneficiaries per 100 covered workers in 2014 but by 2035 there will be 58 beneficiaries per 100 covered workers. This will increase the percent of the federal budget dedicated to Social Security and Medicare.[14]

  Baby boomers are expecting to work longer than previous generations. An increasing proportion of people in their early- to mid-50s expect to work full-time after age 65. In 2004, about 40% of these workers expect to work full-time after age 65, compared with about 30% in 1992.[15] This trend can be seen in Oregon, where the share of workers 65 years and older grew from 2.9% of the workforce in 2000 to 4.1% of the workforce in 2010, an increase of 41%. Over the same ten-year period, workers 45 to 64 years increased by 15%.[16]

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[13] Congressional Budget Office. An Update to the Budget and Economic Outlook: 2017-2027. June 2017. https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/52801-june2017outlook.pdf.

[14] The Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, 2015, *The 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, May 13, 2015.

[15] "The Health and Retirement Study," 2007, National Institute of Aging, National Institutes of Health, U.S. Department of Health and Human Services.

[16] Analysis of 2000 Decennial Census data and 2010 U.S. Census American Community Survey, 1-Year Estimates for the table Sex by Age by Employment Status for the Population 16 Years and Over

- **Need for replacement workers.** The need for workers to replace retiring baby boomers will outpace job growth. According to the Bureau of Labor Statistics, total employment in the United States will grow by about 11.5 million jobs over 2016 to 2026. Annually, they estimate there will be 18.7 million occupational openings over the same period. This exhibits the need for employees over the next decade as the quantity of openings per year is large relative to expected employment growth. About 71% of annual job openings are in occupations that do not require postsecondary education.[17]
- **The importance of education as a determinant of wages and household income.** According to the Bureau of Labor Statistics, a majority of the fastest growing occupations will require an academic degree, and on average, they will yield higher incomes than occupations that do not require an academic degree. The fastest-growing occupations requiring an academic degree will be registered nurses, software developers, general and operations managers, accountants and auditors, market research analysts and marketing specialists, and management analysts. Occupations that do not require an academic degree (e.g., retail sales person, food preparation workers, and home care aides) will grow, accounting for approximately 71% of all new jobs by 2026. These occupations typically have lower pay than occupations requiring an academic degree.[18]

  The national median income for people over the age of 25 in 2017 was about $47,164. Workers without a high school diploma earned $20,124 less than the median income, and workers with a high school diploma earned $10,140 less than the median income. Workers with some college earned $6,916 less than median income, and workers with a bachelor's degree earned $13,832 more than median. Workers in Oregon experience the same patterns as the nation, but pay is generally lower in Oregon than the national average.[19]
- **Increases in labor productivity.** Productivity, as measured by output per hour of labor input, increased in most sectors between 2000 and 2010, peaking in 2007. However, productivity increases were interrupted by the recession. After productivity decreases from 2007 to 2009, many industries saw large productivity increases from 2009 to 2010. Industries with the fastest productivity growth were Information Technology-related industries. These include wireless telecommunications carriers, computer and peripheral equipment manufacturing, electronics and appliance stores, and commercial equipment manufacturing wholesalers.[20]

  Since the end of the recession (or 2010), labor productivity has increased across a handful of large sectors but has also decreased in others. In wholesale trade, productivity—measured in output per hour—increased by 19% over 2009 to 2017. Retail

[17] "Occupational Employment Projections to 2016-2026," Bureau of Labor Statistics, 2018.

[18] "Occupational Employment Projections to 2016-2026," Bureau of Labor Statistics, 2018.

[19] Bureau of Labor Statistics, Employment Projections, March 2018. http://www.bls.gov/emp/ep_chart_001.htm

[20] Brill, Michael R. and Samuel T. Rowe, "Industry Labor Productivity Trends from 2000 to 2010." Bureau of Labor Statistics, *Spotlight on Statistics,* March 2013.

trade gained even more productivity over this period at 25%. Food services, however, have remained stagnant since 2009, fluctuating over the nine-year period and shrinking by 0.01% over this time frame. Additionally, the Bureau of Labor Statistics reports multifactor productivity in manufacturing has been slowing down 0.3% per year over the 2004 to 2016 period. Much of this, they note, is due to slowdown in semiconductors, other electrical component manufacturing, and computer and peripheral equipment manufacturing.[21]

- **Increases in automation across sectors.** Automation is a long-running trend in employment, with increases in automation (and corresponding increases in productivity) over the last century and longer. The pace of automation is increasing, and the types of jobs likely to be automated over the next 20 years (or longer) is broadening. Lower paying jobs are more likely to be automated, with potential for automation of more than 80% of jobs paying less than $20 per hour over the next 20 years. About 30% of jobs paying $20 to $40 per hour and 4% of jobs paying $40 or more are at risk of being automated over the next 20 years.[22]

  Low- to middle-skilled jobs that require interpersonal interaction, flexibility, adaptability, and problem solving will likely persist into the future as will occupations in technologically lagging sectors (e.g. production of restaurant meals, cleaning services, hair care, security/protective services, and personal fitness).[23] This includes occupations such as (1) recreational therapists, (2) first-line supervisors of mechanics, installers, and repairers, (3) emergency management directors, (4) mental health and substance abuse social workers, (5) audiologists, (6) occupational therapists, (7) orthotists and prosthetists, (8) healthcare social workers, (9) oral and maxillofacial surgeons, and (10) first-line supervisors of firefighting and prevention workers. Occupations in the service and agricultural or manufacturing industry are most at-risk of automation because of the manual-task nature of the work.[24,25,26] This includes occupations such as (1) telemarketers, (2) title examiners, abstractors, and searchers, (3) hand sewers, (4) mathematical technicians, (5) insurance underwriters, (6) watch repairers, (7) cargo and

[21] Michael Brill, Brian Chanksy, and Jennifer Kim. "Multifactor productivity slowdown in U.S. manufacturing," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, July 2018. Retrieved from: https://www.bls.gov/opub/mlr/2018/article/multifactor-productivity-slowdown-in-us-manufacturing.htm.

[22] Executive Office of the President. (2016). Artificial Intelligence, Automation, and the Economy.

[23] Autor, David H. (2015). Why Are There Still So Many Jobs? The History and Future of Workplace Automation. Journal of Economic Perspectives, Volume 29, Number 3, Summer 2015, Pages 3–30.

[24] Frey, Carl Benedikt and Osborne, Michael A. (2013). The Future of Employment: How Susceptible Are Jobs to Computerisation? Oxford Martin School, University of Oxford.

[25] Otekhile, Cathy-Austin and Zeleny, Milan. (2016). Self Service Technologies: A Cause of Unemployment. International Journal of Entrepreneurial Knowledge. Issue 1, Volume 4. DOI: 10.1515/ijek-2016-0005.

[26] PwC. (n.d.). Will robots really steal our jobs? An international analysis of the potential long-term impact of automation.

freight agents, (8) tax preparers, (9) photographic process workers and processing machine operators, and (10) accounts clerks.[27]

- **Consolidation of Retail.** Historical shift in retail businesses, starting in the early 1960s, was the movement from one-off, 'mom and pop shops' toward superstores and the clustering of retail into centers or hubs. Notably, we still see this trend persist; for example, in 1997, the 50 largest retail firms accounted for about 26% of retail sales and by 2007, they accounted for about 33%.[28] The more recent shift began in the late 1990s, where technological advances have provided consumers the option to buy goods through e-commerce channels. The trend toward e-commerce has become increasingly preferential to millennials and Generation X, who are easier to reach online and are more responsive to digital ads than older generations.[29] Since 2000, e-commerce sales grew from 0.9% to 6.4% (2014) and are forecasted to reach 12% by 2020. It is reasonable to expect this trend to continue. With it has come closures of retail stores. By 2027 for example, an estimated 15% of about 1,050 U.S. malls in smaller markets will close, impacting local employment levels, local government revenue streams (tax dollars), and neighborhood character.

  The draft 2018 Metro Urban Growth Report[30] describes the uneven impact on retail from e-commerce. Overall, e-commerce accounts for 9% of national retail sales, with online sales growing at a faster rate than retail sales growth overall. Nationally, non-store retailers are negatively affecting furniture stores, electronics, clothing, and recreational goods (e.g., sporting goods, hobby supplies, and books and music). The retail types that grew strongly in the Portland Region between 2007 and 2017 were grocery stores, general merchandise stores, and miscellaneous specialty retailers.

  While it is unclear what impact e-commerce will have on employment and brick and mortar retail, it seems probable that e-commerce sales will continue to grow, shifting business away from some types of retail. Over the next decades, communities must begin considering how to redevelop and reuse retail buildings in shopping centers, along corridors, and in urban centers.

  The types of retail and related services that remain will likely be sales of goods that people prefer to purchase in person or that are difficult to ship and return (e.g., large furniture), specialty goods, groceries and personal goods that maybe needed immediately, restaurants, and experiences (e.g., entertainment or social experiences).

- **The importance of high-quality natural resources.** The relationship between natural resources and local economies has changed as the economy has shifted away from

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[27] Frey, Carl Benedikt and Osborne, Michael A. (2013). The Future of Employment: How Susceptible Are Jobs to Computerisation? Oxford Martin School, University of Oxford.

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

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

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

resource extraction. High-quality natural resources continue to be important in some states, especially in the Western U.S. Increases in the population and in households' incomes, plus changes in tastes and preferences have dramatically increased demands for outdoor recreation, scenic vistas, clean water, and other resource-related amenities. Such amenities contribute to a region's quality of life and play an important role in attracting both households and firms.[31]

- **Continued increase in demand for energy.** Energy prices are forecasted to increase over the planning period. While energy use per capita is expected to decrease through 2050, total energy consumption will increase with rising population. Energy consumption is expected to grow primarily from industrial (0.9%) and, to a lesser extent, commercial users (0.4%). Residential consumption is forecasted to stagnate (0.0%), and transportation will slightly decrease (-0.1%). This decrease in energy consumption for transportation is primarily due to increased federal standards and increased technology for energy efficiency in vehicles. Going forward through the projection period, potential changes in federal laws (such as decreases in car emissions) leave energy demand somewhat uncertain.

  Energy consumption by type of fuel is expected to change over the planning period. By 2050, the U.S. will continue to shift from crude oil towards natural gas and renewables. For example, from 2017 to 2050, the Energy Information Administration projects that U.S. overall energy consumption will average a 0.4% annual growth rate, while consumption of renewable sources grows at 1.4% per year. With increases in energy efficiency, strong domestic production of energy, and relatively flat demand for energy by some industries, the U.S. will be able to be a net exporter of energy over the 2017 to 2050 period. Demand for electricity is expected to increase, albeit slowly, over 2017 to 2050 as population grows and economic activity increases.[32]

- **Impact of rising energy prices on commuting patterns.** As energy prices increase over the planning period, energy consumption for transportation will decrease. These increasing energy prices may decrease willingness to commute long distances, though with expected increases in fuel economy, it could be that people commute further while consuming less energy.[33] Over 2019 to 2035, the U.S. Energy Information Administration estimates in its forecast that the decline in transportation energy consumption a result of

[31] For a more thorough discussion of relevant research, *see,* for example, Power, T.M. and R.N. Barrett. 2001. *Post-Cowboy Economics: Pay and Prosperity in the New American West*. Island Press, and Kim, K.-K., D.W. Marcouiller, and S.C. Deller. 2005. "Natural Amenities and Rural Development: Understanding Spatial and Distributional Attributes." *Growth and Change* 36 (2): 273-297.

[32] Energy Information Administration, 2018, *Annual Energy Outlook 2018 with Projections to 2050*, U.S. Department of Energy, February 2018. https://www.eia.gov/outlooks/aeo/pdf/AEO2018.pdf. Note, the cited growth rates are shown in the Executive Summary and can be viewed here: https://www.eia.gov/outlooks/aeo/data/browser/#/?id=2-AEO2018&cases=ref2018&sourcekey=0.

[33] Energy Information Administration, 2018, *Annual Energy Outlook 2018 with Projections to 2050*, U.S. Department of Energy, February 2018.

increasing fuel economy more than offsets the total growth in vehicle miles traveled (VMT). VMT for passenger vehicles is forecasted to increase through 2050.

- **Potential impacts of global climate change.** The consensus among the scientific community that global climate change is occurring expounds important ecological, social, and economic consequences over the next decades and beyond.[34] Extensive research shows that Oregon and other western states already have experienced noticeable changes in climate and predicts that more change will occur in the future.[35]

  In the Pacific Northwest, climate change is likely to (1) increase average annual temperatures, (2) increase the number and duration of heat waves, (3) increase the amount of precipitation falling as rain during the year, (4) increase the intensity of rainfall events, and 5) increase sea level. These changes are also likely to reduce winter snowpack and shift the timing of spring runoff earlier in the year.[36]

  These anticipated changes point toward some of the ways that climate change is likely to impact ecological systems and the goods and services they provide. There is considerable uncertainty about how long it would take for some of the impacts to materialize and the magnitude of the associated economic consequences. Assuming climate change proceeds as today's models predict, however, some of the potential economic impacts of climate change in the Pacific Northwest will likely include:[37]

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[34] Karl, T.R., J.M. Melillo, and T.C. Peterson, eds. 2009. *Global Climate Change Impacts in the United States.* U.S. Global Change Research Program. June. Retrieved June 16, 2009, from www.globalchange.gov/usimpacts; and Pachauri, R.K. and A. Reisinger, eds. 2007. *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.*

[35] Doppelt, B., R. Hamilton, C. Deacon Williams, et al. 2009. *Preparing for Climate Change in the Upper Willamette River Basin of Western Oregon.* Climate Leadership Initiative, Institute for a Sustainable Environment, University of Oregon. March. Retrieved June 16, 2009, from http://climlead.uoregon.edu/pdfs/willamette_report3.11FINAL.pdf and Doppelt, B., R. Hamilton, C. Deacon Williams, et al. 2009. *Preparing for Climate Change in the Rogue River Basin of Southwest Oregon.* Climate Leadership Initiative, Institute for a Sustainable Environment, University of Oregon. March. Retrieved June 16, 2009 from http://climlead.uoregon.edu/pdfs/ROGUE%20WS_FINAL.pdf

[36] Mote, P., E. Salathe, V. Duliere, and E. Jump. 2008. *Scenarios of Future Climate for the Pacific Northwest.* Climate Impacts Group, University of Washington. March. Retrieved June 16, 2009, from http://cses.washington.edu/db/pdf/moteetal2008scenarios628.pdf; Littell, J.S., M. McGuire Elsner, L.C. Whitely Binder, and A.K. Snover (eds). 2009. "The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate - Executive Summary." *In The Washington Climate Change Impacts Assessment: Evaluating Washington's Future in a Changing Climate*, Climate Impacts Group, University of Washington. Retrieved June 16, 2009, from www.cses.washington.edu/db/pdf/wacciaexecsummary638.pdf; Madsen, T. and E. Figdor. 2007. *When it Rains, it Pours: Global Warming and the Rising Frequency of Extreme Precipitation in the United States.* Environment America Research & Policy Center and Frontier Group.; and Mote, P.W. 2006. "Climate-driven variability and trends in mountain snowpack in western North America." *Journal of Climate* 19(23): 6209-6220.

[37] The issue of global climate change is complex and there is a substantial amount of uncertainty about climate change. This discussion is not intended to describe all potential impacts of climate change but to present a few ways that climate change may impact the economy of cities in Oregon and the Pacific Northwest.

- *Potential impact on agriculture and forestry.* Climate change may impact Oregon's agriculture through changes in growing season, temperature ranges, and water availability.[38] Climate change may impact Oregon's forestry through an increase in wildfires, a decrease in the rate of tree growth, a change in the mix of tree species, and increases in disease and pests that damage trees.[39]
- *Potential impact on tourism and recreation.* Impacts on tourism and recreation may range from (1) decreases in snow-based recreation if snow-pack in the Cascades decreases, (2) negative impacts to tourism along the Oregon Coast as a result of damage and beach erosion from rising sea levels,[40] (3) negative impacts on availability of water summer river recreation (e.g., river rafting or sports fishing) as a result of lower summer river flows, and (4) negative impacts on the availability of water for domestic and business uses.

Short-term national trends will also affect economic growth in the region, but these trends are difficult to predict. At times, these trends may run counter to the long-term trends described above. A recent example is the downturn in economic activity in 2008 and 2009 following declines in the housing market and the mortgage banking crisis. The result of the economic downturn was decreases in employment related to the housing market, such as construction and real estate. As these industries recover, they will continue to play a significant role in the national, state, and local economy over the long run. This report takes a long-run perspective on economic conditions (as the Goal 9 requirements intend) and does not attempt to predict the impacts of short-run national business cycles on employment or economic activity.

State Trends

Short-Term Trends

Oregon is on its way to recovery from the recent recession. According to the Oregon Office of Economic Analysis (OEA), the Oregon economy "continues to hit the sweet spot." Wages remain below the national average, but they are at its highest point relative to the early 1980s. Over the past year, Oregon added over 39,000 jobs, a 2.1% growth rate. The leisure and hospitality, construction, professional and business services, and health services, and industries have accounted for over half of total growth in the State. Oregon continues to have an advantage in job growth compared to other states, due to its industrial sector and in-migration

[38] "The Economic Impacts of Climate Change in Oregon: A preliminary Assessment," Climate Leadership Initiative, Institute for Sustainable Environment, University of Oregon, October 2005.

[39] "Economic Impacts of Climate Change on Forest Resources in Oregon: A Preliminary Analysis," Climate Leadership Initiative, Institute for Sustainable Environment, University of Oregon, May 2007.

[40] "The Economic Impacts of Climate Change in Oregon: A preliminary Assessment," Climate Leadership Initiative, Institute for Sustainable Environment, University of Oregon, October 2005.

flows. Though Oregon's labor market is tight, it continues to gain more workers, signaled by an improving market participation rate relative to its low recessionary levels.[41]

The housing market continues to recover as Oregon's economy improves. Oregon is seeing an increase in household formation rates, which is good for the housing market. Though younger Oregonians are tending to live at home with their parents longer, the aging Millennial generation (from their early 20s to mid-to-late 30s) and the state's increase in migration will drive demand for homes in the coming years. The latter half of 2017 was the largest level of home construction since early 2007 levels. Through 2020, the OEA forecasts moderate to strong housing growth. Beyond this time frame, it forecasts an average growth of 24,000 units per year to satisfy the demand for Oregon's growing population and to make up for the under development of housing post-recession.[42]

The Oregon Index of Leading Indicators (OILI) has grown quite rapidly since January 2017. The leading indicators showing improvement are: volume of air freight, help wanted advertisements, increase in housing permits, industrial productions, initial claims for unemployment, the manufacturing purchasing managers index (PMI), new incorporations of companies, the appreciating Oregon Dollar Index, semiconductor billings, and withholdings out of wages and salaries. The one slowing indicator is consumer sentiment.[43]

Oregon's economic health is dependent on the export market. The value of Oregon exports in 2017 was $21.9 billion. The countries that Oregon exports the most to are China (18% of total Oregon exports), Canada (11%), Malaysia (11%), South Korea (9%), Japan (8%), and Vietnam (7%).[44] With straining trade relations overseas, specifically with China, Oregon exports are left potentially vulnerable, as China is a top destination for Oregon exports.[45] An economic slowdown across many parts of Asia will have a spillover effect on the Oregon economy. Furthermore, with the United States' withdrawal from the Trans-Pacific Partnership in January 2017, it is unclear how much Pacific Northwest trade will be impacted in the years to come.

Long-term Trends

State, regional, and local trends will also affect economic development in Sherwood over the next 20 years. The most important of these trends includes: continued in-migration from other states, distribution of population and employment across the state, and change in the types of industries in Oregon.

- **Continued in-migration from other states.** Oregon will continue to experience in-migration (more people moving *to* Oregon than *from* Oregon) from other states,

[41] Office of Economic Analysis. Oregon Economic and Revenue Forecast, March 2018. Vol. XXXVIII, No. 1, page 4 http://www.oregon.gov/das/OEA/Documents/forecast0318.pdf

[42] Office of Economic Analysis. Oregon Economic and Revenue Forecast, March 2018. Vol. XXXVIII, No. 1, page 12.

[43] Office of Economic Analysis. Oregon Economic and Revenue Forecast, March 2018 Vol. XXXVIII, No. 1, page 9.

[44] United States Census. State Exports from Oregon, 2014-2017. https://www.census.gov/foreign-trade/statistics/state/data/or.html.

[45] Office of Economic Analysis. Oregon Economic and Revenue Forecast, March 2018 Vol. XXXVIII, No. 1, page 13.

especially California and Washington. From 1990 to 2017, Oregon's population increased by about 1.3 million, 66% of which was from people moving into Oregon (net migration). The average annual increase in population from net migration over the same time period was just over 33,200. During the early- to mid-1990's, Oregon's net migration was highest, reaching over 60,000 in 1991, with another smaller peak of almost 42,100 in 2006. In 2017, net migration reached just over 58,800 persons. Oregon has not seen negative net migration since a period of negative net migration in the early- to mid-1980's.[46]

- **Forecast of job growth.** Total nonfarm employment is expected to increase from 1.87 million in 2017 to just below 1.98 million in 2021, an increase of 111,000 jobs. The industries with the largest growth will be Professional and Business Services, Health Services, and Manufacturing, accounting for 58% of the forecasted growth.[47]
- **Continued importance of manufacturing to Oregon's economy.** Oregon's exports totaled $19.4 billion in 2008, nearly doubling since 2000, and reached almost $22 billion in 2017. The majority of Oregon exports go to countries along the Pacific Rim, with China, Canada, Malaysia, South Korea, and Japan as top destinations. Oregon's largest exports are tied to high tech and mining, as well as agricultural products.[48] Manufacturing employment is concentrated in five counties in the Willamette Valley or Portland area: Washington, Multnomah, Lane, Clackamas, and Marion Counties.[49]
- **Shift in manufacturing from natural resource-based to high-tech and other manufacturing industries.** Since 1970, Oregon started to transition away from reliance on traditional resource-extraction industries. A significant indicator of this transition is the shift within Oregon's manufacturing sector, with a decline in the level of employment in the Lumber & Wood Products industry and concurrent growth of employment in other manufacturing industries, such as high-technology manufacturing (Industrial Machinery, Electronic Equipment, and Instruments), Transportation Equipment manufacturing, and Printing and Publishing.[50]
- **Income.** Oregon's income and wages are below that of a typical state. However, mainly due to the wage growth over the last two to three years, Oregon wages are at their highest point relative to other states since the recession in the early 1980's. In 2017, the average annual wage in Oregon was $51,117, and in 2016, the median household income

[46] Portland State University Population Research Center. 2013 Annual Population Report. April 2014. http://www.pdx.edu/prc/annual-oregon-population-report

[47] Office of Economic Analysis. Oregon Economic and Revenue Forecast, March 2018. Vol. XXXVIII, No. 1, page 42 http://www.oregon.gov/das/OEA/Documents/forecast0318.pdf.

[48] United States Census. State Exports from Oregon, 2014-2017. https://www.census.gov/foreign-trade/statistics/state/data/or.html.

[49] Oregon Employment Department. *Employment and Wages by Industry (QCEW)*. 2017 Geographic Profile, Manufacturing (31-33). Retrieved from: qualityinfo.org.

[50] Although Oregon's economy has diversified since the 1970's, natural resource-based manufacturing accounts for about 38% of employment in manufacturing in Oregon in 2017, with the most employment in Food Manufacturing (nearly 30,000) and Wood Product Manufacturing (nearly 23,000) (QCEW).

was $57,532 (compared to national average wages of $53,621 in 2017, and national household income of $57,617 in 2016).[51] Total personal income (all classes of income, minus Social Security contributions, adjusted for inflation) in Oregon is expected to increase by 35%, from $192.6 billion in 2017 to $260.6 billion in 2023. Per capita income is expected to increase by 25% over the same time period, from $46,400 in 2017 to $58,100 in 2023 (in nominal dollars).[52]

- **Small businesses continue to account for a large share of employment in Oregon**. While small firms played a large part in Oregon's expansion between 2003 and 2007, they also suffered disproportionately in the recession and its aftermath (64% of the net jobs lost between 2008 and 2010 was from small businesses).

  In 2017 small businesses (those with 100 or fewer employees) accounted for 95% of all businesses and 66% of all private-sector employment in Oregon. Said differently, most businesses in Oregon are small (in fact, 78% of all businesses have fewer than 10 employees), but the largest share of Oregon's employers work for large businesses.

  The average annualized payroll per employee for small businesses was $37,149 in 2015, which is considerably less than that for large businesses ($54,329) and the statewide average for all businesses ($47,278).[53]

  Younger workers are important to continue growth of small businesses across the nation. More than one-third of Millennials (those born between 1980 - 1999) are self-employed, with approximately half to two-thirds interested in becoming an entrepreneur. Furthermore, in 2011, about 160,000 startup companies were created each month; 29% of these companies were founded by people between 20 to 34 years of age.[54]

- **The Portland Metro region is expected to continue to grow over the next 20 years.** Metro forecasts growth of 524,000 new people between 2018 and 2038 and 209,000 more jobs over the same period. The sectors expected to have the most growth are Professional and Business Services, as well as Education and Health Services. Manufacturing employment is expected to decrease slightly over the 20-year period.[55]

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[51] Average annual wages are for "Total, all industries," which includes private and public employers. Oregon Quarterly Census of Employment and Wages, 2016. Retrieved from: https://www.qualityinfo.org; Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2016; Total, U.S. Census American Community Survey 1-Year Estimates, 2016, Table B19013.

[52] Office of Economic Analysis. Oregon Economic and Revenue Forecast, March 2018. Vol. XXXVIII, No. 1, page 44 http://www.oregon.gov/das/OEA/Documents/forecast0318.pdf.

[53] U.S Census Bureau, 2015 Statistics of U.S. Businesses, Annual Data, Enterprise Employment Size, U.S and States. https://www.census.gov/data/tables/2015/econ/susb/2015-susb-annual.html.

[54] Cooper, Rich, Michael Hendrix, Andrea Bitely. (2012). "The Millennial Generation Research Review." Washington, DC: The National Chamber Foundation. Retrieved from: https://www.uschamberfoundation.org/sites/default/files/article/foundation/MillennialGeneration.pdf.

[55] *Urban Growth Report*, Discussion Draft, Metro, July 3, 2018. The population and employment forecast are the "most likely growth" forecasts presented in the report.

Regional and Local Trends

Throughout this section and the report, Sherwood is compared to the State of Oregon, Washington County, and the Portland Region (which is Multnomah, Washington, and Clackamas Counties). These comparisons are to provide context for changes in Sherwood's socioeconomic characteristics.

Availability of Labor

The availability of trained workers in Sherwood will impact development of its economy over the planning period. A skilled and educated populace can attract well-paying businesses and employers and spur the benefits that follow from a growing economy. Key trends that will affect the workforce in Sherwood over the next 20 years include its growth in its overall population, growth in the senior population, and commuting trends.

Growing Population

Population growth in Oregon tends to follow economic cycles. Oregon's population grew from 2.8 million people in 1990 to 4.1 million people in 2017, an increase of almost 1,300,000 people at an average annual rate of 1.40%. Oregon's growth rate slowed to 1.1% annual growth between 2000 and 2017.

Sherwood's population grew faster than that of the State or Portland Region since 1990. Sherwood's population grew from about 3,000 residents in 1990 to more than 19,000 residents in 2017, an increase of more than 16,000 people or more than 500%.

Table 4. Population Growth, Sherwood, Portland Region, and Oregon, 1990 – 2017

Geography	1990	2000	2010	2017	Number	Percent	AAGR
Sherwood	3,093	11,791	18,194	19,350	16,257	526%	7.03%
Portland Region	1,174,291	1,444,219	1,641,036	1,811,860	637,569	54%	1.62%
Oregon	2,842,321	3,421,399	3,831,074	4,141,100	1,298,779	46%	1.40%

Source: U.S. Census Bureau, 1990, 2000, and 2010. Portland State University Population Estimates, 2017.

Age Distribution

The number of people aged 65 and older in the U.S. is expected to increase by nearly three-quarters by 2050, while the number of people under age 65 will only grow by 16%. The economic effects of this demographic change include a slowing of the growth of the labor force, need for workers to replace retirees, aging of the workforce for seniors that continue working after age 65, an increase in the demand for healthcare services, and an increase in the percent of the federal budget dedicated to Social Security and Medicare.[56]

Figure 1 through Figure 4 show the following trends:

[56] The Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, 2017, *The 2017 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds*, July 13, 2017. *The Budget and Economic Outlook: Fiscal Years 2018 to 2028*, April 2018.

- Sherwood's population is getting older faster father than those of Washington County, the Portland Region, or Oregon. This suggests that Sherwood is attracting more people in mid-life and more people over 65 years old.
- Sherwood has a smaller percentage of population between 40 and 59 years old and a smaller percentage of population older than 60 years, compared with Washington County, the Portland Region, or Oregon. This shows that Sherwood is attractive to people in their mid-life, which affects potential availability of mid-career workers.
- Washington County's population is expected to continue to age, with people 60 years and older increasing from 18% of the population in 2017 to 24% of the population in 2035. This is consistent with Statewide trends. Sherwood may continue to attract mid-life and older workers over the planning period. While Sherwood's share of retirees may increase over the next 20 years, availability of people nearing retirement (e.g., 55 to 70 years old) is likely to increase. People in this age group may provide sources of skilled labor, as people continue to work until later in life. These skilled workers may provide opportunities to support business growth in Sherwood.

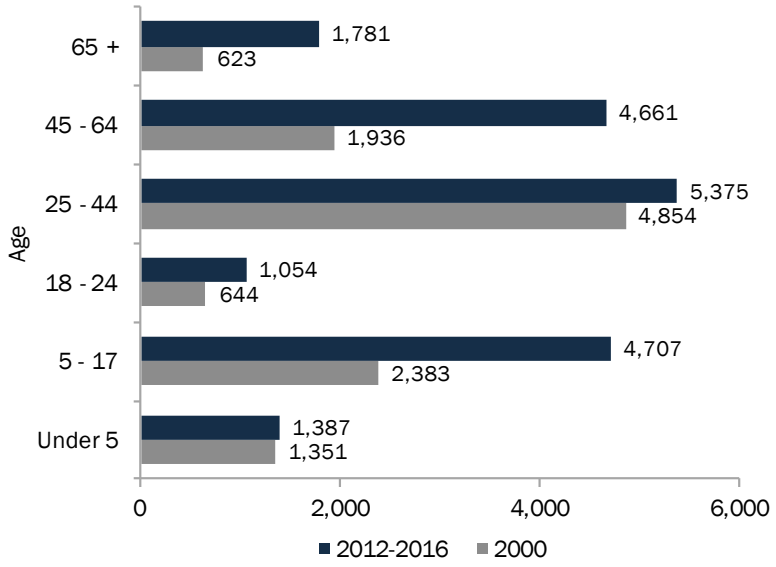
Sherwood's median age has increased by about six years since 2000. This change suggests that Sherwood is attracting more workers in mid-life and more people over 65 years old.

Figure 1. Median Age, 2000 to 2012-2016
Source: U.S. Census Bureau, 2000 Decennial Census, Table P013; American Community Survey 2012-2016 5-year estimate, Table B01002.

2000	31.4 Sherwood	33.0 Wash. County	34.9 Portland Region	36.3 Oregon
2012-16	37.0 Sherwood	36.2 Wash. County	34.9 Portland Region	39.1 Oregon

From 2000 to 2012-2016, Sherwood's largest population increase was for the population aged 45 to 64 years old. This is larger than statewide trends.

Figure 2. Sherwood population change by age, 2000 to 2012-2016
Source: U.S. Census Bureau, 2000 Summary File; American Community Survey 2012-2016 5-year estimate, Table B01001.

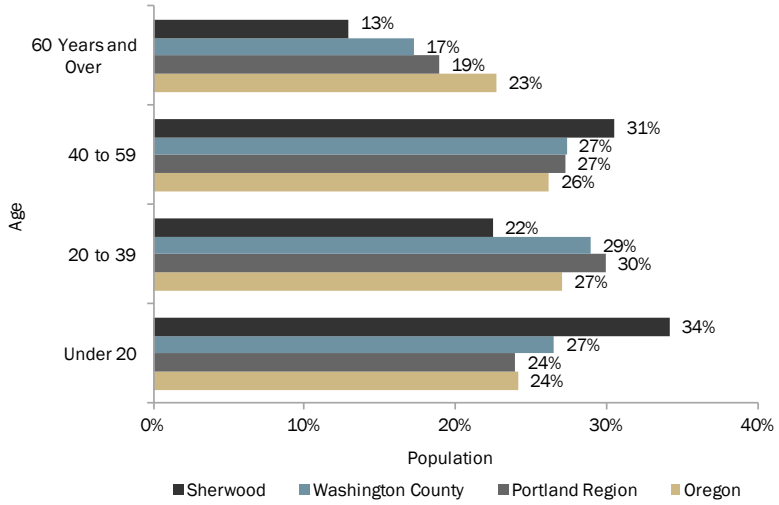


From 2012 to 2016, 53% of Sherwood's residents were between 20 and 59 years old.

Sherwood has a larger share of residents under the age of 20 than the Portland Region and the State. Sherwood has a comparatively small population of residents between the ages of 20 to 39 (22%).

Figure 3. Population distribution by age, Sherwood, Washington County, Portland Region, and Oregon, 2012-2016

Source: U.S. Census Bureau, American Community Survey, 2012-2016 5-year estimate, Table B01001.

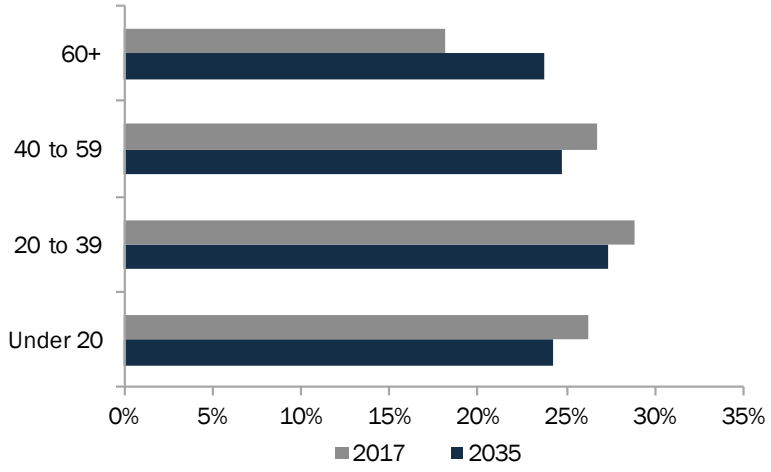


By 2035, Washington County will have a larger share of residents older than sixty than it does today.

The share of residents aged 60 years and older will account for 24% of Washington County's population, compared to 18% in 2017.

Figure 4. Population Growth by Age Group, Washington County, 2017 - 2035

Source: Oregon Population Forecast, 2017.



Income

Income and wages affect business decisions for locating in a city. Per capita income[57] grew most years during the 34-year period, with the exception of a decrease during the recession. Between 1980 and 2016, Oregon's per capita personal income was consistently lower than the U.S. average. In 1980, Oregon's per capita personal income equaled the national average. By 2016, Oregon's per capita personal income reached 89% of the national average. Oregon's relatively low wages make the state attractive to businesses seeking to locate in areas with lower-than-average wages.

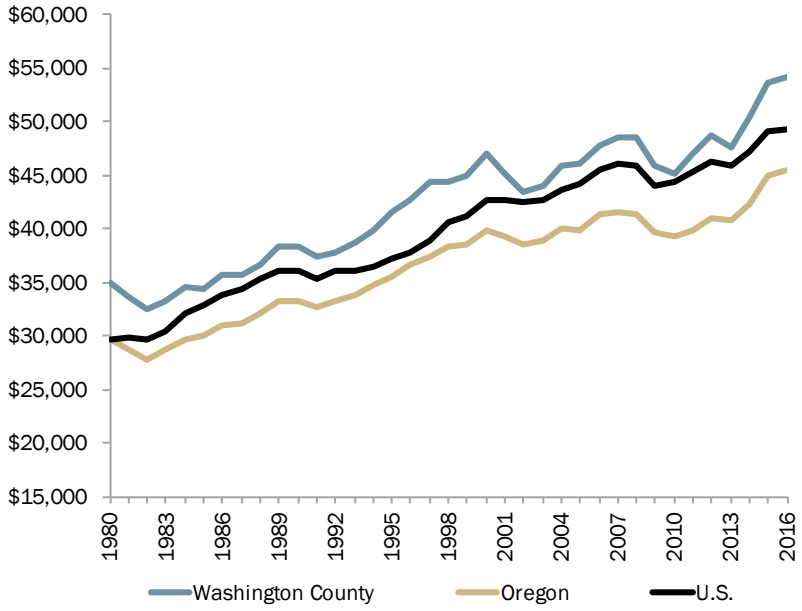
Washington County's per capita income remained consistently above the State average and the U.S. average.

Per capita income (adjusted for inflation) in the nation, Oregon, and Washington County has grown since 1980.

Oregon's per capita income grew 15% in the post-recession period between 2009 and 2016, larger than the nation's 12% growth over the same period, but less than Washington County's 18% over this time frame. Washington County's per capita income was 117% of Oregon's average in 2016.

Figure 5. Per Capita Personal Income, Washington County, Oregon, and U.S., 1980 to 2016, Inflation-adjusted 2016 Dollars

Source: Bureau of Economic Analysis, Per Capita Personal Income, Table CA-1.



[57] Personal income includes wages, dividends and interest from investments, rent from investments, pension play payments and transfer payments (e.g., social security payments). Per capita personal income is the personal income of the area divided by the total number of people in the area.

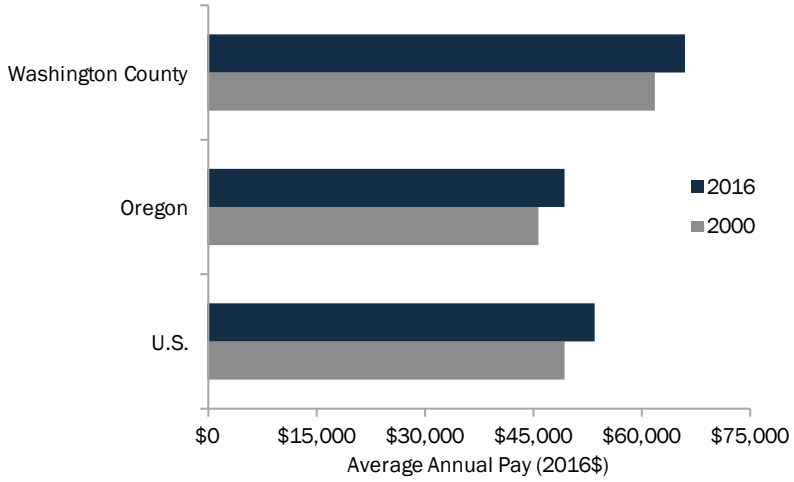
Between 2000 and 2016, Washington County's per capita personal income grew, and its average wages increased. Over the same period, average wages increased in Oregon and the U.S. The increase in average wages in Washington County has many causes, but one cause is the change in mix of jobs in Washington County since 2001. The sectors in Washington County with the largest number of employees is Manufacturing and Business Services, both of which have above-average wages (see Table 6).

Sherwood's wages are below average for the Portland Region and for the nearby cities of Tigard and Tualatin. The primary reason for lower wages at jobs in Sherwood is the mix of jobs in Sherwood, with Retail and Accommodations and Food Services having the largest number of employees in Sherwood but wages below the city average (see Figure 20).

At the same time, median household income and median family income in Sherwood are considerably above those of Washington County. This suggests that many residents of Sherwood either work outside of Sherwood (where wages are higher) or have income from sources other than wages (such as investments). The commuting patterns in Sherwood show that only 8% of Sherwood's working residents both live and work in Sherwood (see Figure 16).

From 2000 to 2016, average annual wages rose in Washington County, Oregon, and the nation.
In 2016, average annual wages were $65,908 in Washington County, $49,467 in Oregon, and $53,621 across the nation.

Figure 6. Average Annual Wage, Covered Employment, Washington County, Oregon, and U.S., 2000 to 2016, Inflation-adjusted 2016 Dollars
Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages.



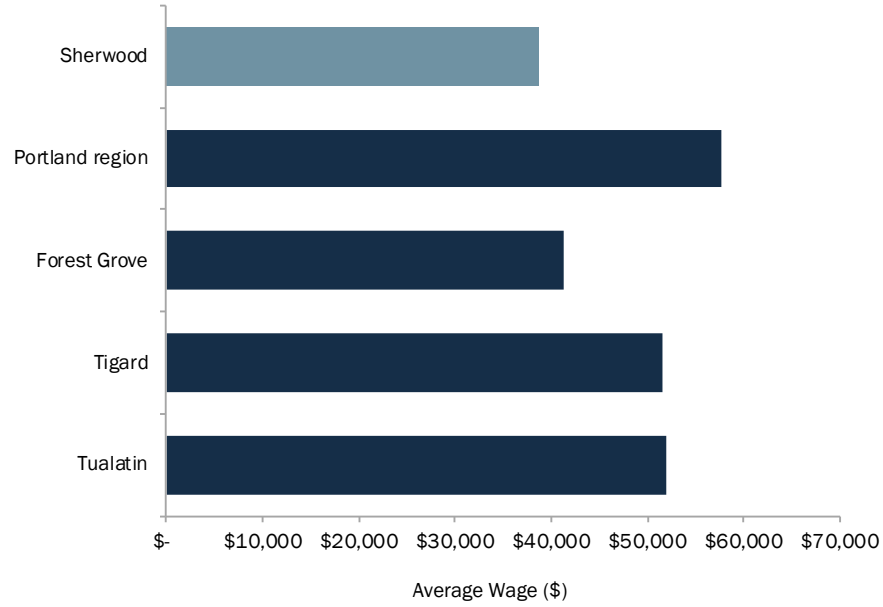
In 2016, average annual wages in Sherwood were lower than other cities in the Portland region.

In 2016, average annual wages were $38,696 in Sherwood and $57,616 in the Portland region. Average annual wages in cities such as Forest Grove, Tigard, and Tualatin were between Sherwood and the Portland region.

A large number of jobs in Sherwood (see Figure 20) are lower wage sectors, such as in Retail and Accommodations and Food Services.

Figure 7. Average Annual Wage, Covered Employment, Sherwood and Portland region, 2016.

Source: Oregon Quarterly Census of Employment and Wages.



Over the 2012-2016 period, Sherwood's median household income was well above comparable cities in the region, as well as Washington County's, the Portland Region's, and the State's median household income.

Figure 8. Median Household Income,[58] 2012-2016

Source: U.S. Census Bureau, American Community Survey, 2012-2016 five-year estimate, Table B19013.

$86,111 Sherwood	$69,743 Washington County	$53,270 Oregon	
$49,857 Forest Grove	$65,505 Tigard	$71,896 Tualatin	$63,097 Wilsonville

[58] The Census calculated household income based on the income of all individuals 15 years old and over in the household, whether they are related or not.

Sherwood's median family income was well above that of Washington County's, the Portland Region's, and the State's median family income for the 2012-2016 period.

Figure 9. Median Family Income,[59] 2012-2016

Source: U.S. Census Bureau, American Community Survey, 2012-2016 five-year estimate, Table B19113.

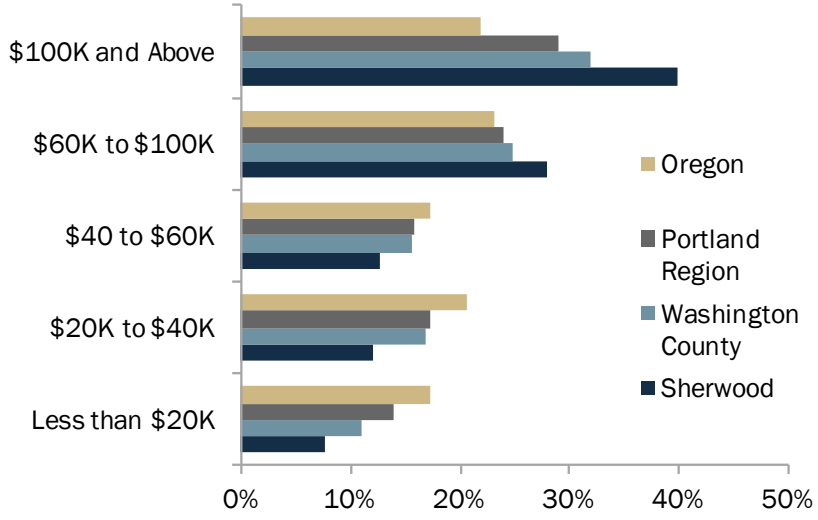
$97,196	$81,887	$65,479
Sherwood	Washington County	Oregon

During the 2012-2016 period, 40% of Sherwood households earned more than $100,000.

About 28% of Sherwood households had an income between $60,000 and $100,000 compared to 23% statewide, 24% in the Portland Region, and 25% in Washington County.

Figure 10. Household Income by Income Group, Sherwood, Washington County, Portland Region, and Oregon, 2010-2016, Inflation-adjusted 2016 Dollars

Source: U.S. Census Bureau, American Community Survey, 2012-2016 5-year estimates, Table B19001.



[59] The Census calculated family income based on the income of the head of household, as identified in the response to the Census forms, and income of all individuals 15 years old and over in the household who are related to the head of household by birth, marriage, or adoption.

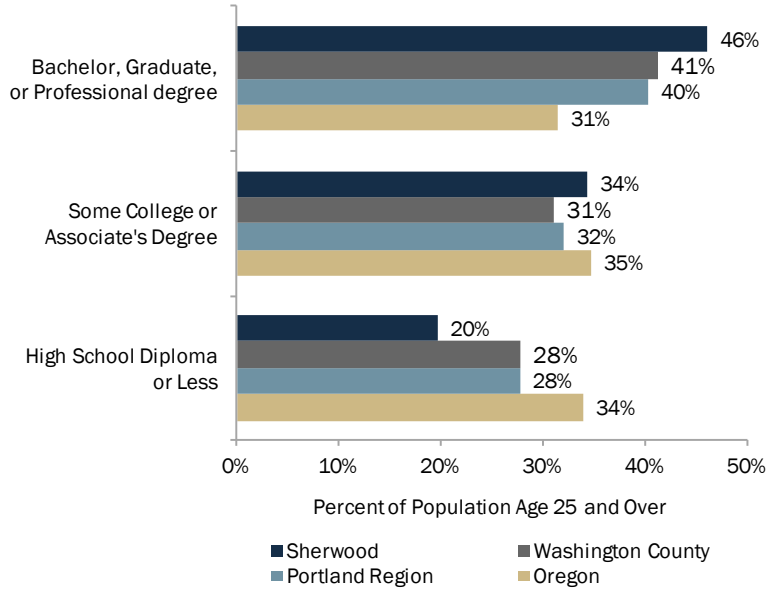
Educational Attainment

The availability of trained, educated workers affects the quality of labor in a community. Educational attainment is an important labor force factor because firms need to be able to find educated workers.

Sherwood has a larger share of residents with Bachelor, Graduate, or Professional school degrees (46%) relative to Washington County (41%), the Portland Region (40%), and Oregon (31%).

Figure 11. Educational Attainment for the Population 25 Years and Over, 2012-2016

Source: U.S. Census Bureau, American Community Survey, 2012-2016 5-year estimate, Table B15003.



Labor Force Participation and Unemployment

The current labor force participation rate is an important consideration in the availability of labor. The labor force in any market consists of the adult population (16 and over) who are working or actively seeking work. The labor force includes both the employed and unemployed. Children, retirees, students, and people who are not actively seeking work are not considered part of the labor force. According to the 2012-2016 American Community Survey, Sherwood has more than 9,700 people in its labor force.

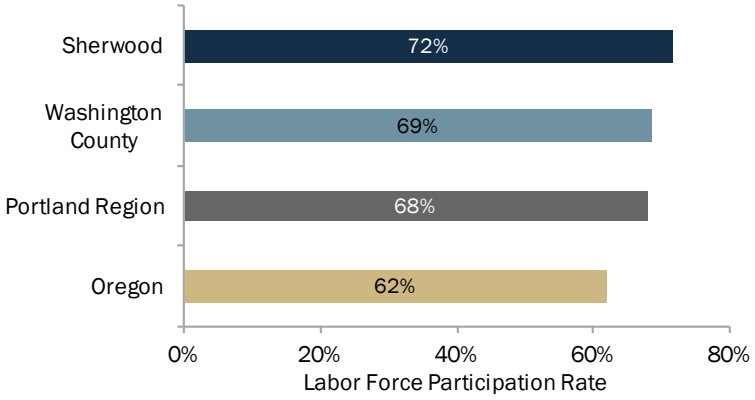
In 2017, the Oregon Office of Economic Analysis reported that 64% of job vacancies were difficult to fill. In the Portland Metro region, 51% of job vacancies were hard to fill. The most common reason for difficulty in filling jobs included a lack of applications (30% of employers' difficulties), lack of qualified candidates (17%), unfavorable working conditions (14%), a lack of soft skills (11%), and a lack of work experience (9%).[60] These statistics indicate a mismatch between the types of jobs that employers are demanding and the skills that potential employees can provide.

Sherwood has a higher labor force participation rate (72%) than Washington County (69%), the Portland Region (68%) and Oregon (62%).

The likely reason for the higher labor force participation rate is Sherwood's smaller share of people over 60 years old.

Figure 12. Labor Force Participation, Sherwood, Washington County, Portland Region, Oregon, 2012-2016

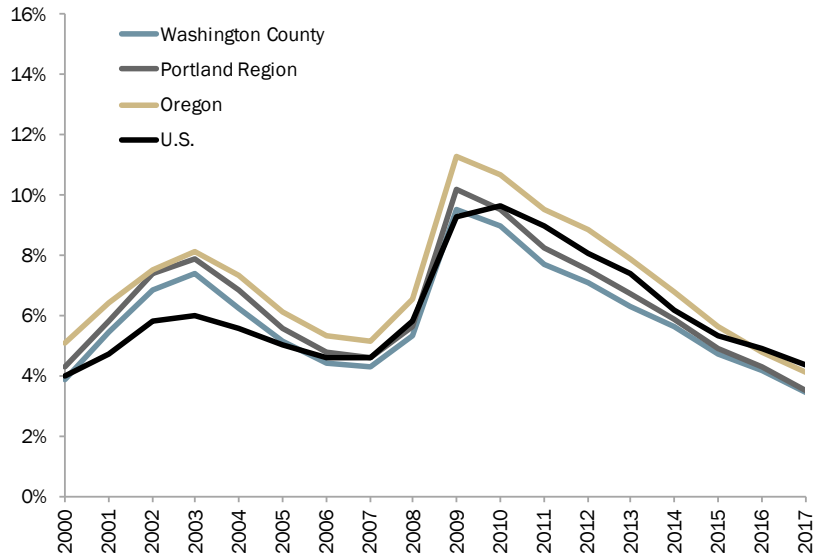
Source: U.S. Census Bureau, American Community Survey, 2010-2016 5-year estimate, Table B23001.



[60] *Oregon's Current Workforce Gaps: Difficult-to-fill Job Openings, Oregon Job Vacancy Survey*, Oregon Employment Department, June 2018.

The unemployment rate in Oregon and the U.S. has declined since the recession. Unemployment rates for 2017 in Washington County, the Portland Region, and across the state are below 2000 rates. In 2017, the unemployment rate in Washington County was about 3.4%, lower than the Portland Region's rate of 3.5%, Oregon's rate of 4.1% and the national rate of 4.4%.

Figure 13. Unemployment Rate, Washington County, Portland Region, Oregon, and US, 2000 - 2017
Source: Bureau of Labor Statistics, Local Area Unemployment Statistics and Labor Force Statistics.

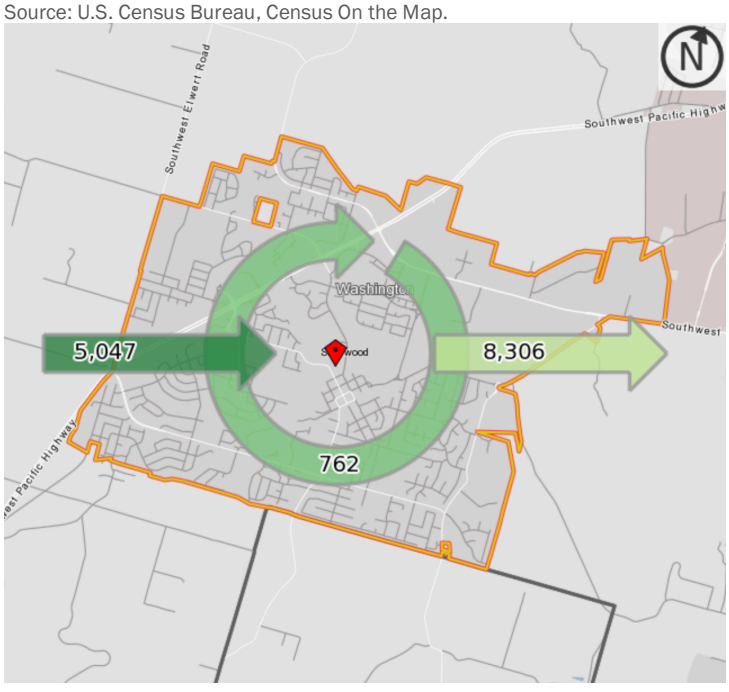


Commuting Patterns

Commuting plays an important role in Sherwood's economy because employers in Sherwood are able to access workers from people living in the city and from across the Portland Metro Region. In the 2012-2016 period, about 23% percent of Sherwood's residents had a commute of less than 15 minutes compared to 26% of Washington County residents, 23% of Portland Region residents, and 32% of Oregon residents.

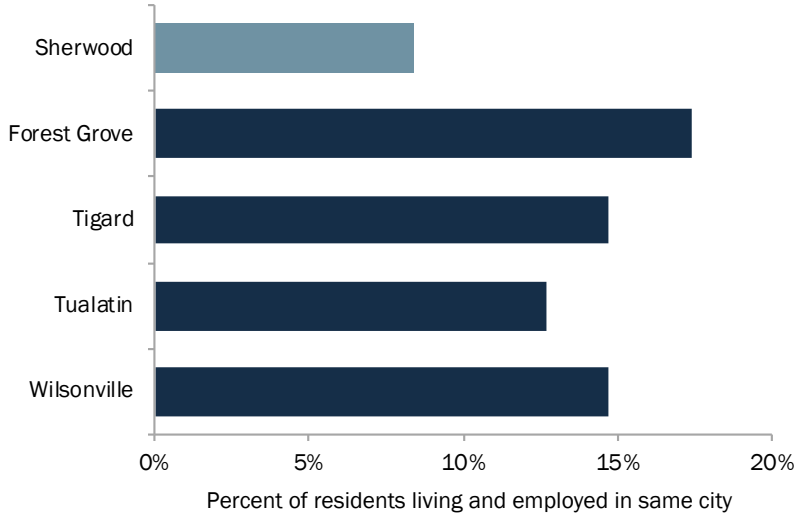
Sherwood is part of an interconnected regional economy. Fewer people both live and work in Sherwood than commute into or out of the city. This commuting pattern is similar to that in similar-sized cities in the Portland Region.

Figure 14. Commuting Flows, Sherwood, 2015
Source: U.S. Census Bureau, Census On the Map.



About 8% of Sherwood residents also work in Sherwood.
Other cities in the Portland region have a larger share of residents that work in the same city, but many still commute outside for employment.

Figure 15. Residents that Live and Work in the Same City, Sherwood, 2015
Source: U.S. Census Bureau, Census On the Map.



About 13% of all people who work in Sherwood also live in Sherwood.

Figure 16. Places Where Sherwood Workers Lived,[61] 2015
Source: U.S. Census Bureau, Census On the Map.

13%	11%	5%	5%
Sherwood	Portland	Beaverton	Tigard

About 8% of residents who live in Sherwood also work in Sherwood.
Twenty-two percent of Sherwood residents commute to Portland.

Figure 17. Places Where Sherwood Residents were Employed,[62] 2015
Source: U.S. Census Bureau, Census On the Map.

8%	22%	8%	8%
Sherwood	Portland	Beaverton	Tigard

[61] In 2015, 5,809 people worked at businesses in Sherwood, with 13% (762) people both living and working in Sherwood.

[62] In 2015, 9,068 residents of Sherwood worked, with 8% of Sherwood residents (762 people) both living and working in Sherwood.

Figure 16 shows 11% of people who work in Sherwood commute from Portland, 5% from Beaverton, and 5% from Tigard. The remaining workers commute from many other cities located across the Portland Metro area.

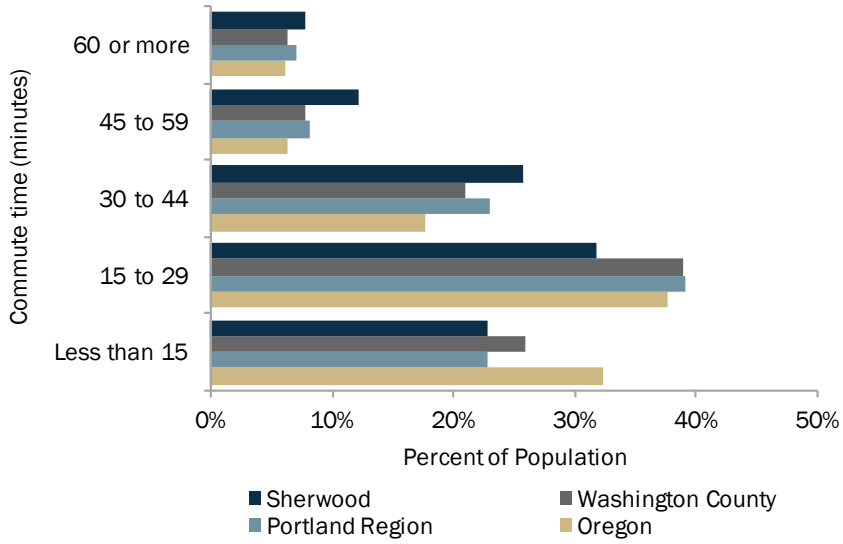
These findings are consistent with the commuting findings presented in the 2018 Draft Urban Growth Report. That report shows that most jobs in the region are in Multnomah County, with about 46% of workers who live in Washington County commuting to Multnomah County for work.[63]

The majority of Sherwood residents have a commute time of less than 30 minutes.

About 26% of Sherwood residents have commute times between 30 to 44 minutes, and about 20% commute for forty-five minutes or more.

Figure 18. Commute Time by Place of Residence, 2012-2016

Source: U.S. Census Bureau, American Community Survey, 2012-2016 5-year estimate, Table B08303.



Changes in Employment in Washington County and Sherwood

The economy of the nation changed substantially between 1980 and 2016. These changes affected the composition of Oregon's economy, including Washington County's and Sherwood's economy. At the national level, the most striking change was the shift from manufacturing employment to service-sector employment. The most important shift in Oregon during this period has been the shift from a timber-based economy to a more diverse economy, with the greatest employment in services.

Employment Trends in Washington County

Over the past few decades, employment in the U.S. has shifted from manufacturing and resource-intensive industries to service-oriented sectors of the economy. Increased worker

[63] *Urban Growth Report*, Discussion Draft, Metro, July 3, 2018

productivity and the international outsourcing of routine tasks have led to declines in employment in the major goods-producing industries.

In the 1970s, Oregon started to transition away from reliance on traditional resource-extraction industries. An important indicator of this transition is the shift within Oregon's manufacturing sector, with a decline in the level of employment in the Lumber & Wood Products industry[64] and concurrent growth of employment in high-technology manufacturing industries (Industrial Machinery, Electronic Equipment, and Instruments).[65]

As Oregon has transitioned away from natural resource-based industries, the composition of Oregon's employment has shifted from natural resource-based manufacturing and other industries to service industries. The share of Oregon's total employment in Service industries increased from its 1970s average of 19% to 30% in 2000, while employment in Manufacturing declined from an average of 18% of total employment in the 1970s to an average of 12% in 2000.

The changes in sectors and industries are shown in two tables: (1) between 1980 and 2000 and (2) between 2001 and 2016. The analysis is divided this way because of changes in industry and sector classification that made it difficult to compare information about employment collected after 2001 with information collected prior to 2000.

Employment data in this section is summarized by *sector*, each of which includes several individual *industries*. For example, the Retail Trade sector includes General Merchandise Stores, Motor Vehicle and Parts Dealers, Food and Beverage Stores, and other retail industries.

Table 5 shows changes in Washington County between 1980 and 2000. Over the total period, total employment in Washington County increased by 132% from about 93,916 to 218,125 employees. Between 1980 and 2000, employment in services as a share of total employment rose from 15% to 28%.

[64] Lumber and Wood Products manufacturing is in Standard Industrial Classification (SIC) 24

[65] SIC 35, 36, 38

Table 5. Covered Employment by SIC Industries, Washington County, 1980-2000

Sector	1980	1990	2000	Change 1980 to 2000		
				Difference	Percent	AAGR
Agriculture, Forestry & Fishing	2,344	4,545	5,573	3,229	138%	4.4%
Mining	0	182	251	251	NA	NA
Construction	5,025	7,805	12,202	7,177	143%	4.5%
Manufacturing	32,990	33,636	50,020	17,030	52%	2.1%
Trans., Comm., & Utilities	2,445	4,624	8,173	5,728	234%	6.2%
Wholesale Trade	6,282	12,262	18,675	12,393	197%	5.6%
Retail Trade	18,087	27,480	39,253	21,166	117%	4.0%
Finance, Insurance, & Real Estate	4,025	6,877	12,528	8,503	211%	5.8%
Services	13,805	30,430	61,163	47,358	343%	7.7%
Non Classifiable	NA	NA	101	NA	NA	NA
Government	8,913	8,704	10,186	1,273	14%	0.7%
Total	**93,916**	**136,545**	**218,125**	**124,209**	**132%**	**4.3%**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 1980-2000.
Note: "ND" stands for "Not disclosed" and indicates that the data has been suppressed by the BLS due to confidentiality constraints. In most years, the non-disclosure is negligible.

Table 6 shows employment in NAICS-categorized industries in Washington County for 2001 and 2016. Employment increased by 54,440 jobs, or 24%, over this period. The private sectors with the largest increases in numbers of employees were professional and business services, health care and social assistance, accommodation and food services, and retail trade. Employment in higher wage industries, such as manufacturing, decreased by 2,369 jobs over the 2001 to 2016 time period. The health care and social assistance sector increased by 12,487 jobs.

The average wage for covered employment in Washington County in 2016 was about $65,900.

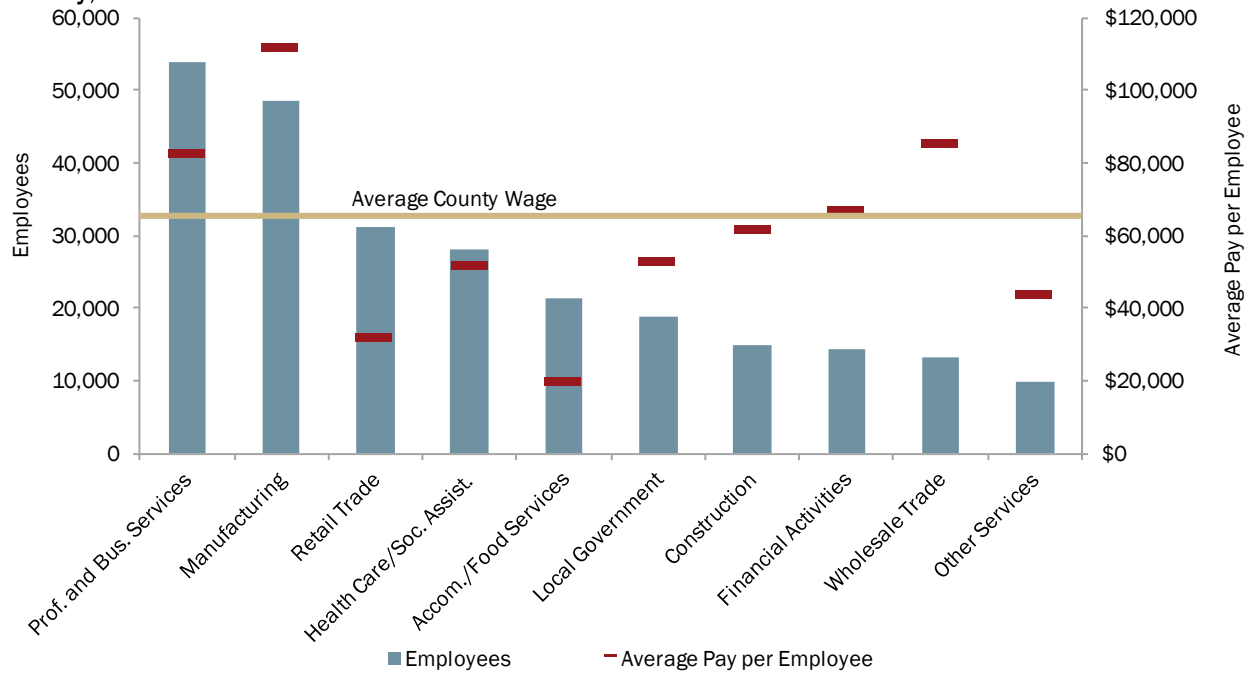
Table 6. Covered Employment by Industry, Washington County, 2001-2016

Sector	2001	2016	Change 2001 to 2016		
			Difference	Percent	AAGR
Natural Resources and Mining	3,607	3,237	-370	-10%	-0.7%
Construction	12,591	14,877	2,286	18%	1.1%
Manufacturing	50,872	48,503	-2,369	-5%	-0.3%
Wholesale trade	14,478	13,362	-1,116	-8%	-0.5%
Retail trade	26,864	31,134	4,270	16%	1.0%
Trade, Transportation, and Utilities	4,500	4,567	67	1%	0.1%
Information	8,687	7,439	-1,248	-14%	-1.0%
Financial Activities	13,139	14,397	1,258	10%	0.6%
Professional and Business Services	34,295	53,768	19,473	57%	3.0%
Educational Services	3,551	5,160	1,609	45%	2.5%
Health care and social assistance	15,532	28,019	12,487	80%	4.0%
Arts, entertainment, and recreation	2,369	4,205	1,836	78%	3.9%
Accommodation and food services	14,237	21,332	7,095	50%	2.7%
Other Services	7,188	9,947	2,759	38%	2.2%
Unclassified	75	45	-30	-40%	-3.3%
Government	16,516	22,949	6,433	39%	2.2%
Total	**228,501**	**282,941**	**54,440**	**24%**	**1.4%**

Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2001-2016.
Note: "ND" stands for "Not Disclosed" and indicates that the data has been suppressed by the BLS due to confidentiality constraints. The total amount of not-disclosed employment is shown in the table.

Figure 19 shows covered employment and average wage for the 10 largest industries in Washington County. Jobs in professional and business services, which account for about 19% of the County's covered employment, pay more per year than the county average ($82,388 compared to $65,553). Jobs in construction and financial activities approximately pay the 2016 County average annual amount. Retail trade, health care and social assistance, accommodation and food services, local government, and other services pay below the 2016 county average, while manufacturing and wholesale trade pay well above the County average.

Figure 19. Covered Employment and Average Pay by Sector, 10 Largest Sectors Washington County, 2016



Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2016.

Employment Trends in Sherwood

Table 7 shows a summary of covered employment data for the city of Sherwood in 2016. The sectors with the greatest number of employees were Retail Trade (17%), Accommodation and Food Services (13%), and Manufacturing (11%). These sectors accounted for 2,509 jobs or 41% of Sherwood's employment.

The average size for a private business in Sherwood is 9 employees per business, compared to the State average of 11 employees per private business. Businesses with 50 or fewer employees account for roughly 57% of private employment in Sherwood. Businesses with 9 or fewer employees account for 20% of private employment and 4 or fewer account for 10% of private employment.

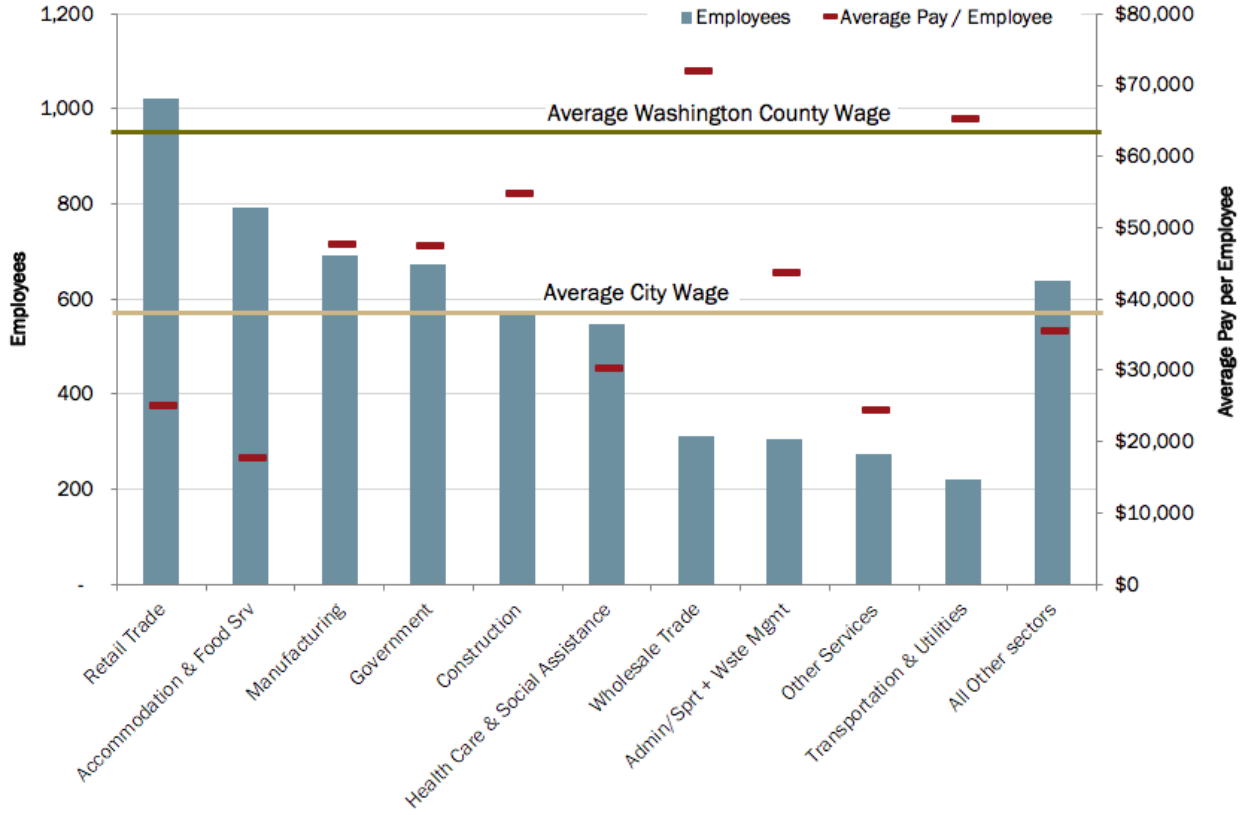
Table 7. Covered Employment and Average Pay by Industry, Sherwood City Limits and Tonquin Employment Area, 2016

Sector/Industry	Establishments	Employees	Payroll	Average Pay / Employee
Construction	60	569	$ 31,381,520	$ 55,152
Manufacturing	30	693	$ 33,207,616	$ 47,919
Wholesale Trade	62	312	$ 22,593,328	$ 72,415
Retail Trade	51	1,022	$ 26,036,704	$ 25,476
Transportation and Utilities	12	221	$ 14,517,532	$ 65,690
Information	10	37	$ 947,471	$ 25,607
Finance and Insurance	31	87	$ 4,715,399	$ 54,200
Real Estate and Rental and Leasing	28	112	$ 4,394,547	$ 39,237
Professional and Technical Services, Mgmt of Companies	60	138	$ 9,106,105	$ 65,986
Administrative and Support and Waste Mgmt Services	40	305	$ 13,401,928	$ 43,941
Private Education Services	12	73	$ 1,299,774	$ 17,805
Health Care and Social Assistance	57	547	$ 16,787,634	$ 30,690
Arts, Entertainment, and Recreation	9	191	$ 2,442,711	$ 12,789
Accommodation and Food Services	45	794	$ 14,300,792	$ 18,011
Other Services	96	275	$ 6,790,400	$ 24,692
Government	11	672	$ 32,107,329	$ 47,779
Total	614	6,048	$ 234,030,790	$ 38,696

Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2016.

Figure 20 shows the employment and average pay per employee for selected industrial sectors in Sherwood. Average pay for all employees ($38,695) is shown as a light brown line across the graph and average pay for individual sectors as short red lines. The figure shows that Manufacturing; Government; Construction; Wholesale Trade; Administrative and Support and Waste Management; Other Services; and Transportation and Utilities have above average wages. The lowest wages are in Retail Trade and Accommodations and Food Services.

Figure 20. Covered Employment and Average Pay by Industry, Sherwood City Limits and Tonquin Employment Area, 2016



Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2016.

Tourism in Portland Metro and Washington County

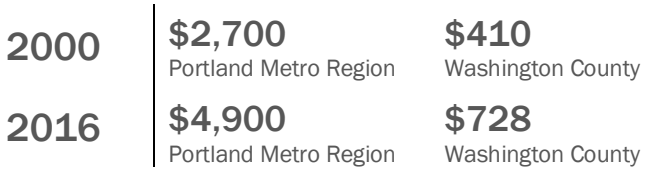
Longwoods International provides regional statistics on travel. The following information is from Longwoods International's Oregon 2015 Regional Visitor Report for the Greater Portland Region.[66] Broadly, travelers to the Greater Portland Region account for:

- 10.6 million overnight trips annually; 32% of Oregon Travel.
- Primary market area for travelers is Oregon, Washington, California, and Idaho: 30% of Greater Portland Region visitors are from Oregon; 27% are from Washington; 16% are from California; and 4% are from Idaho.
- 50% stayed 2 or fewer nights; 35% stayed 3-6 days; and 15% stayed 7 or more days.
- Average per person expenditures on overnight trips range from $12 to $50 per night.
- About 66% of visits are by personally-owned automobiles; 22% by rental car; 3% by RV.
- Visitors are younger and well-educated: over half have college degrees; 44% of visitors are between the ages 25-44; 30% are 45-64; 43% earn less than $50k; 21% earn between $50k and $75k; 15% earn between $75k and $100k; and 21% over $100k.

Washington County's direct travel spending increased 78% from 2000 to 2016.

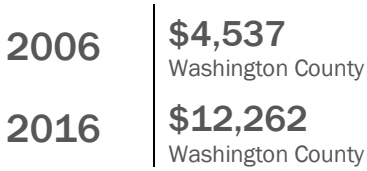
The Portland Metro Region's direct travel spending increased by 81% over the same period.

Figure 21. Direct Travel Spending ($ millions), 2000 and 2016
Source: Dean Runyan Associates, Oregon Travel Impacts, 1991-2016.



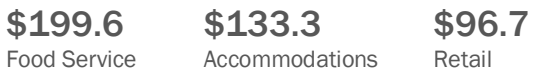
Washington County's lodging tax receipts increased 170% over 2006 to 2016.

Figure 22. Lodging Tax Receipts, 2006 and 2016
Source: Dean Runyan Associates, Oregon Travel Impacts, 1991-2016.



Washington County's largest visitor spending for purchased commodities is food services.

Figure 23. Largest Visitor Spending Categories ($ millions), Washington County, 2016
Source: Oregon Travel Impacts.



[66] "Oregon 2015 Regional Visitor Report, Greater Portland Region," Longwoods International, 2015.

Washington County's largest employment generated by travel spending is in the accommodations and food service industry.

Figure 24. Largest Industry Employment Generated by Travel Spending, Washington County, 2016
Source: Oregon Travel Impacts.

Regional Business Clusters

One way to assess the types of businesses that are likely to have future growth in an area is to examine relative concentration and employment growth of existing businesses. This method of analysis can help determine relationships and linkages within industries, also called industrial clusters. Sectors that are highly concentrated (meaning there are more than the "average" number of businesses in a sector in a given area) and have had high employment growth are likely to be successful industrial clusters. Sectors with either high concentration of businesses or high employment groups may be part of an emerging cluster, with potential for future growth.

The U.S. Cluster Mapper is a database created by the Harvard Business School and the U.S. Economic Development Administration. It provides a snapshot of the business clusters in Washington County. Greater Portland Inc. (GPI) completed a cluster analysis for the Portland region in 2018 as part of the *Greater Portland 2020* economic development strategy.[67] The six target clusters it identified—and how these clusters align with U.S. Cluster Mapper results for Washington County—were:[68]

- **Clean Tech.** GPI identified Clean Tech as a cluster that accounts for 20% of the total cluster employment in the Portland region, as of 2016. Employment in this cluster increased by about 7% between 2006 and 2016. The average wage in Clean Tech in the Portland metropolitan statistical area was $86,300 in 2016, which is above the average wage for Washington County.
- **Computer and Electronics.** The Computer and Electronics cluster accounted for the largest share of total cluster employment in the Portland region in 2016 at 24%. GPI identified this cluster as a "Growing Base Industry," and it closely aligns with the Information Technology and Analytical Instruments cluster, from U.S. Cluster Mapper, which employed 13,267 people in Washington County in 2015. The average wage in Computer and Electronics in the Portland metropolitan statistical area was $132,400 in 2016, above the average wage for Washington County.
- **Software and Media.** GPI identified the Software and Media cluster as an "emerging industry" in the Portland region. Employment in this cluster grew by about 67% between 2006 and 2016 and accounted for 19% of the total cluster employment in 2016. This cluster aligns with the Marketing, Design, and Publishing cluster, from U.S. Cluster

[67] Greater Portland Inc. *Greater Portland 2020.* "Regional Trends in Greater Portland's Target Clusters." Presentation. 2018.

[68] Ibid.

Mapper, which employed 2,974 people in Washington County in 2015. The average wage in Software and Media in the Portland metropolitan statistical area was $101,700 in 2016, above the average wage for Washington County.

- **Athletic and Outdoor.** GPI identified the Athletic and Outdoor cluster as a "Growing Base Industry." Employment in this cluster accounted for about 14% of the total cluster employment in the Portland region in 2016, and the Portland region has a higher-than-average average wage in this cluster at $132,763, compared to the U.S. average at $49,366. The Athletic and Outdoor cluster aligns with the Distribution and Electronic Commerce cluster, as defined in U.S. Cluster Mapper, which employed 21,367 people in Washington County in 2015. The average wage in the Athletics and Outdoors cluster in the Portland metropolitan statistical area was $132,800 in 2016, above the average wage for Washington County.
- **Health Sciences and Technology.** Employment in the Health Sciences and Technology cluster grew by about 12% between 2006 and 2016, and GPI identified it as an "Emerging Industry." This cluster aligns with the Education and Knowledge Creation cluster, from U.S. Cluster Mapper, which employed 9,638 people in Washington County in 2015. The average wage in Health Sciences and Technology in the Portland metropolitan statistical area was $7,700 in 2016, just above the average wage for Washington County.
- **Metals and Machinery.** GPI identified the Metals and Machinery cluster as a "Growing Base Industry," and employment in this cluster grew by about 5% between 2006 and 2016. The average wage in Metals and Machinery in the Portland metropolitan statistical area was $79,900 in 2016, above the average wage for Washington County.

Outlook for growth in Washington County

Table 8 shows the Oregon Employment Department's forecast for employment growth by industry for the Portland Region (Clackamas, Multnomah, and Washington Counties) over the 2017 to 2027 period. Employment in the region is forecasted to grow at an average annual growth rate of 1.2%.

The sectors that will lead employment in the region for the 10-year period are: Professional and Business Services (adding 28,100 jobs), Private Educational and Health Services (27,300), Trade, Transportation, and Utilities (21,400), Leisure and Hospitality (13,800), Construction (8,600), and Manufacturing (4,900). In sum, these sectors are expected to add 104,100 new jobs or about 85% of employment growth in the Portland Region.

Table 8. Regional Employment Projections, 2017-2027, Portland Region (Clackamas, Multnomah, and Washington Counties)

Industry Sector	2017	2027	Change 2017 - 2027		
			Number	Percent	AAGR
Total private	856,800	971,800	115,000	13%	1.3%
Natural resources and mining	9,800	10,600	800	8%	0.8%
Mining and logging	700	700	0	0%	0.0%
Construction	50,500	59,100	8,600	17%	1.6%
Manufacturing	101,100	106,000	4,900	5%	0.5%
Durable goods	76,300	79,200	2,900	4%	0.4%
Wood product manufacturing	2,300	2,300	0	0%	0.0%
Trade, transportation, and utilities	176,900	198,300	21,400	12%	1.1%
Wholesale trade	48,000	51,800	3,800	8%	0.8%
Retail trade	95,000	104,900	9,900	10%	1.0%
Transportation, warehousing, and utilities	33,900	41,600	7,700	23%	2.1%
Information	21,700	24,300	2,600	12%	1.1%
Financial activities	60,000	63,400	3,400	6%	0.6%
Professional and business services	155,500	183,600	28,100	18%	1.7%
Private educational and health services	140,800	168,100	27,300	19%	1.8%
Private educational services	22,800	26,700	3,900	17%	1.6%
Health care and social assistance	118,000	141,500	23,500	20%	1.8%
Leisure and hospitality	101,100	114,900	13,800	14%	1.3%
Accommodation and food services	86,300	97,800	11,500	13%	1.3%
Other services	39,400	43,500	4,100	10%	1.0%
Government	114,100	122,000	7,900	7%	0.7%
Federal government	14,200	14,900	700	5%	0.5%
State government	7,600	8,200	600	8%	0.8%
Local government	92,300	98,900	6,600	7%	0.7%
Local education	47,200	51,500	4,300	9%	0.9%
Total payroll employment	**970,900**	**1,093,800**	**122,900**	**13%**	**1.2%**

Source: Oregon Employment Department. Employment Projections by Industry 2017-2027.

Sherwood's Competitive Advantages

Economic development opportunities in Sherwood will be affected by local conditions as well as the national and state economic conditions addressed above. Economic conditions in Sherwood relative to these conditions in other portions of the Portland region form Sherwood's competitive advantage for economic development. Sherwood's competitive advantages have implications for the types of firms most likely to locate and expand in the Area.

There is little that metropolitan area jurisdictions can do to influence national and state conditions that affect economic development, though they can influence local factors that affect economic development. Sherwood's primary competitive advantages are location, schools, and quality of life. These factors make Sherwood attractive to residents and businesses that want a high quality of life where they live and work.

The local factors that form Sherwood competitive advantage are summarized in the subsections below.

Location

Sherwood's population was approximately 19,350 people in 2017. It is a city located in southern Washington County to the southwest of Tigard. Highway 99 runs southwest-northeast through the city. The highway provides access to Newberg in the southwest as well as Tigard in the northeast and Beaverton further north. Sherwood's location will impact the area's future economic development:

- Sherwood has access to 99W and the State's highway system and other transportation opportunities. Highway 99W runs southwest-northeast through the Sherwood UGB, which connects up to Interstate 5 in Tigard—residents can also access Interstate 5 by commuting east through Tualatin or southeast through the unincorporated community of Mulloy.
- Residents and businesses in Sherwood have access to other modes of transportation in Portland, including the TriMet Line 94 which transports passengers from Sherwood to and from Portland, the Portland airport, and Amtrak rail service. Though Sherwood is located in this transportation network, congestion issues on these routes presents barriers for residents commuting in and out of Sherwood, as well as businesses that need to transport goods and supplies.
- Sherwood is located within Washington County, the second-most populated county in the State, with 595,860 people in 2017. Sherwood is about 17 miles southeast of Portland, the most populated city in Oregon with 639,100 people in 2017. Other nearby and relatively large cities include Beaverton, Tigard, and Lake Oswego. In 2015, about 92% of Sherwood's residents commuted out of the City for work. Residents and City staff have noted that the high-quality of schools is a factor for choosing to live in Sherwood.
- Sherwood is located south of Beaverton and near the South Cooper Mountain expansion area, where residential growth will occur in the near term. The proximity of Sherwood

to this residential growth may create demand for services to locate in Sherwood. In addition, this population growth may provide housing for workers at businesses that locate or grow in Sherwood.

- Residents of Sherwood have access to amenities, such as the Tualatin River National Wildlife preserve, that provide a high quality of life.

Sherwood's location, quality of life and schools, and proximity to larger cities in the Portland Region are primary competitive advantages for economic development in Sherwood.

Availability of Transportation

All firms are heavily dependent upon surface transportation for efficient movement of goods, customers, and workers. Access to an adequate highway and arterial roadway network is needed for all industries. Close proximity to a highway or arterial roadway is critical for firms that generate a large volume of truck or auto trips as well as firms that rely on visibility from passing traffic to help generate business.

Businesses and residents in Sherwood have access to a variety of modes of transportation: automotive (99W and local roads); bus (TriMet, Line 94); and air (Portland Airport and Hillsboro Airport). Businesses in Sherwood can ship freight through the Port of Portland via trucks. Sherwood does not currently have active rail access but may have rail access in the future when rail infrastructure is brought into use again.

While Sherwood has automotive access for commuting via 99W as it cuts through Sherwood, this route and other major roads, such as SW Roy Rogers Road and SW Tualatin-Sherwood Road, are frequently congested. This current transportation network is considered a disadvantage for both residents commuting to jobs both in and out of Sherwood and businesses that need a distribution route to access the region.

Sherwood's distance from I-5 is a disadvantage for attracting some types of businesses, such as warehouse and distribution or manufacturers that need close access to I-5 for heavy freight. Sherwood's distance from Portland International Airport is a disadvantage for businesses needing access to commercial air service or freight services offered at the Portland Airport only. Businesses needing access to a general aviation airport, such as those with corporate planes, can use the Hillsboro Airport, which is relatively near Sherwood.

Public Facilities and Services

Provision of public facilities and services can impact a firm's decision regarding location within a region, but ECONorthwest's past research has shown that businesses make locational decisions primarily based on factors that are similar within a region. These factors are: the availability and cost of labor, transportation, raw materials, capital, and amenities. The availability and cost of these production factors are usually similar within a region.

Once a business has chosen to locate within a region, they consider the factors that local governments can most directly affect: tax rates, the cost and quality of public services, and regulatory policies. Economists generally agree that these factors do affect economic

development, but the effects on economic development are modest. Thus, most of the strategies available to local governments have only a modest effect on the level and type of economic development in the community.

Transportation Improvements

We will talk to Bob G and add this discussion.

The *Tonquin Employment Area Implementation Plan* identifies the need for $14.1 million in transportation improvements to serve the entire TEA. Transportation improvements include improvements on Oregon Street, Blake Road, the intersection of Oregon St. and Blake Rd., Tonquin Court, SW 124th Ave, and SW Dahike Lane. Of the $14.1 million, about $10 million is expected to be invested in the first 20 years of development of the Area.

Water

We will talk to Bob G and add this discussion.

The *Tonquin Employment Area Implementation Plan* identifies the need for $5.4 million in water improvements to serve the entire TEA. Water improvements include the construction of water lines and upgrades to the Willamette River Treatment Plan capacity. Of this $5.4 million, about $3 million is expected to be invested in the first 20 years of development of the Area.

Wastewater

We will talk to Bob G and add this discussion.

The *Tonquin Employment Area Implementation Plan* identifies the need for $1.7 million in waste water improvements to serve the entire TEA. Waste water improvements are construction of sewer lines along key streets in the TAC. The entire amount is expected to be invested in the first 20 years of development of the Area.

Stormwater

We will talk to Bob G and add this discussion.

The *Tonquin Employment Area Implementation Plan* identifies the need for $1.9 million in stormwater improvements to serve the entire TEA. Stormwater improvements include construction of stormwater lines and construction of two regional treatment facilities. Of this $1.9 million, about $1.5 million is expected to be invested in the first 20 years of development of the Area.

Availability of Vacant, Serviced Land

One of the key inputs for economic development is vacant, unconstrained land with urban services, such as those discussed in the prior sections. Business' need for land varies from: need for an office in an existing building; need for a small site (such as a one-quarter acre site) for a new small building; or need for a large site (such as a 50-acre site) for one or more large

buildings, parking, and other facilities. Businesses consider a range of factors when choosing a location, such as location within the city (and region), access to transportation, location of other businesses, amenities around the site (such as landscaping or access to retail and restaurants), and the characteristics of the site (such as site size and physical constraints)

Chapter 2 presents the buildable lands inventory for Sherwood. Sherwood has a total 242 acres of unconstrained land, 141 acres of which is vacant and 101 acres of which is potentially redevelopable. Nearly 60% of the City's vacant unconstrained land (and nearly 40% of the potentially redevelopable land) is in the Tonquin Employment Area (TEA).

Sherwood has nine sites in the five to ten-acre size, most of which are industrial use or in the TEA. Sherwood has three vacant sites larger than 10 acres of unconstrained land. One of these sites is 56 acres in the TEA, and the other two sites are zoned for industrial uses and about 12 acres in size.

Although Sherwood has vacant unconstrained land that can support a substantial amount of development, much of that land lacks urban services (such as the services discussed in the prior section). The *Tonquin Employment Area Implementation Plan* documents the infrastructure necessary to support employment growth, as described in the prior section.

Sherwood's vacant unconstrained land base is an advantage for economic development, especially the larger industrial sites in Sherwood and the TEA. The lack of infrastructure to support employment growth is a disadvantage to economic development, as areas without infrastructure, especially the TEA, are unlikely to develop until infrastructure is developed.

Quality of Life

Quality of life is difficult to assess because it is subjective—different people will have different opinions about factors that affect quality of life, desirable characteristics of those factors, and the overall quality of life in any community. Economic factors such as income, job security, and housing cost are often cited as important to quality of life. These economic factors and overall economic conditions are the focus of this report, so this section will focus on non-economic factors that affect quality of life.

Sherwood's quality of life is a key comparative advantage for economic development. Key quality of life factors in Sherwood are:

- **Tualatin River National Wildlife Refuge.** This suburban nature preserve provides residents walking trails and opportunities for wildlife education.
- **Cultural amenities and events.** In addition to the national wildlife refuge noted above, the City of Sherwood has a robust parks and trail system. Another amenity available to

Sherwood residents are the high-quality sports facilities for local schools, small town character, community groups, and regional groups.[69]

- **Access to education.** Many residents live in Sherwood because of the high school quality for elementary, middle, and high school students. George Fox University, located in Newberg, and Clackamas Community College, located in Wilsonville, provide access to higher education to residents of Sherwood and the rest of the county.
- **Access to medical care.** Residents of Sherwood can access nearby medical care through the Providence Medical Plaza in Sherwood. About four miles northeast of Sherwood, residents can also access the Kaiser Permanente Tualatin Medical Office.

Sherwood's quality of life makes the city attractive to in-migrants and businesses that are attracted to Washington County.

[69] City of Sherwood Amenities. Retrieved from: https://www.sherwoodoregon.gov/economicdevelopment/page/amenities.

4. Employment Growth and Site Needs

Goal 9 requires cities to prepare an estimate of the amount of commercial and industrial land that will be needed over a 20-year planning period. The estimate of employment land need and site characteristics for Sherwood is based on expected employment growth and the types of firms that are likely to locate in Sherwood over the 20-year period. This section presents an employment forecast and analysis of target industries that build from recent economic trends.

Forecast of Employment Growth and Commercial and Industrial Land Demand

Demand for industrial and non-retail commercial land will be driven by the expansion and relocation of existing businesses and by the growth of new businesses in Sherwood. This employment land demand is driven by local growth independent of broader economic opportunities, including the growth of target industries.

The employment projections in this section build off of Sherwood's existing employment base, assuming future growth is similar to Washington and Multnomah Counties' long-term historical employment growth rates. The employment forecast does not take into account a major change in employment that could result from the location (or relocation) of one or more large employers in the community during the planning period. Such a major change in the community's employment would exceed the growth anticipated by the city's employment forecast and its implied land needs (for employment, but also for housing, parks, and other uses). Major economic events, such as the successful recruitment of a very large employer, are difficult to include in a study of this nature. The implications, however, are relatively predictable: more demand for land (of all types) and public services.

Projecting demand for industrial and non-retail commercial land has four major steps:

1. **Establish base employment for the projection.** We start with the estimate of covered employment in Sherwood presented in Table 7. Covered employment does not include all workers, so we adjust covered employment to reflect total employment in Sherwood.
2. **Project total employment.** The projection of total employment considers forecasts and factors that may affect employment growth in Sherwood over the 20-year planning period.
3. **Allocate employment.** This step involves allocating types of employment to different land-use types.
4. **Estimate land demand.** This step estimates general employment land demand based on employment growth and assumptions about future employment densities.

The remainder of this section follows this outline to estimate employment growth and commercial and industrial land demand for Sherwood.

Employment Base for Projection

The purpose of the employment projection is to model future employment land need for general employment growth. The forecast of employment growth in Sherwood starts with a base of employment growth on which to build the forecast. Table 9 shows ECONorthwest's estimate of total employment in the Sherwood city limits and Tonquin Employment Area in 2016.

To develop the figures, ECONorthwest started with estimated covered employment in the Sherwood city limits and Tonquin Employment Area from confidential Quarterly Census of Employment and Wages (QCEW) data provided by the Oregon Employment Department. Based on this information, Sherwood had about 6,048 covered employees in 2016, accounting for 2.1% of covered employment in Washington County.

Covered employment, however, does not include all workers in an economy. Most notably, covered employment does not include sole proprietors. Analysis of data shows that *covered* employment reported by the Oregon Employment Department for Washington County is only about 77% of *total* employment reported by the U.S. Department of Commerce.[70] We evaluated this ratio for each industrial sector for Washington County and used the resulting ratios to determine the number of non-covered employees. This allowed us to determine the total employment in Sherwood. Table 9 shows Sherwood had an estimated 7,919 *total* employees within its UGB in 2016.

[70] **Covered** employment includes employees covered by unemployment insurance. Examples of workers not included in covered employment are sole proprietors, some types of contractors (often referred to as "1099 employees"), or some railroad workers. Covered employment data is from the Oregon Employment Department.

Total employment includes all workers based on date from the U.S. Department of Commerce. Total employment includes all covered employees, plus sole proprietors and other non-covered workers.

Table 9. Estimated total employment by sector, Sherwood City Limits and Tonquin Employment Area, 2016

	Covered Employment	Estimated Total Employment	Covered % of Total
Construction	569	717	79%
Manufacturing	693	721	96%
Wholesale trade	312	393	79%
Retail trade	1,022	1,248	82%
Transportation and warehousing and Utilities	221	287	77%
Information	37	44	83%
Finance and insurance	87	149	58%
Real estate and rental and leasing	112	473	24%
Professional, scientific; mgmt of companies	138	248	56%
Admin. and waste mgmt services	305	382	80%
Educational services	73	146	50%
Health care and social assistance	547	684	80%
Arts, entertainment, and recreation	191	391	49%
Accommodation and food services	794	866	92%
Other services, except public administration	275	489	56%
Government	672	681	99%
Total Non-Farm Employment	**6,048**	**7,919**	**77%**

Source: 2016 covered employment from confidential Quarterly Census of Employment and Wage (QCEW) data provided by the Oregon Employment Department.

Employment Projection

The employment forecast covers the 2018 to 2038 period, requiring an estimate of total employment for Sherwood in 2018.

The City of Sherwood does not have an existing employment forecast, and there is no required method for employment forecasting. OAR 660-024-0040(9) sets out some optional "safe harbors" that allow a city to determine employment land need.

Sherwood is relying on the safe harbor described in OAR 660-024-0040(9)(a)(A), which allows Sherwood to assume that the current number of jobs in the Sherwood urban area will grow during the 20-year planning period at a rate equal to the county or regional job growth rate provided in the most recent forecast published by the Oregon Employment Department. Sherwood's population forecast for the 2018 to 2038 period shows that population in the Sherwood City Limits and Tonquin Employment Area will grow at an average annual growth rate of 1.24%.[71]

Table 10 shows employment growth in Sherwood between 2018 and 2038, based on the assumption that Sherwood will grow at an average annual growth rate of 1.20%. Sherwood will have 10,294 employees within the UGB by 2038, which is an increase of 2,184 employees (27%) between 2018 and 2038.

Table 10. Employment growth in Sherwood City Limits and Tonquin Employment Area, 2018–2038

Year	Total Employment
2018	8,110
2038	10,294
Change 2018 to 2038	
Employees	2,184
Percent	27%
AAGR	1.2%

Source: ECONorthwest

[71] "Regional Employment Projections by Industry & Occupation, 2014-2024," Portland (Multnomah and Washington Counties), Oregon Employment Department. https://www.qualityinfo.org/portland-metro.

Allocate Employment to Different Land Use Types

The next step in forecasting employment is to allocate future employment to broad categories of land use. Firms wanting to expand or locate in Sherwood will look for a variety of site characteristics, depending on the industry and specific circumstances. We grouped employment into four broad categories of land use based on North American Industrial Classification System (NAICS): industrial, retail commercial, office and commercial services, and government.

Table 11 shows the expected share of employment by land-use type in 2018 and the forecast of employment growth by land-use type in 2038 in the Sherwood City Limits and Tonquin Employment Area. The forecast shows growth in all categories of employment, with the following assumptions:

- **Industrial** employment will increase from 27% in 2018 to 30% of all employment by 2038. The increase is the result of the City's policies to support growth of higher-wage industries, such as manufacturing. Included in these policies are support for development in the Tonquin Employment Area. The State forecast for the Portland Region in Table 8 shows the Portland Region adding 25,800 new jobs in industrial sectors over the 2017-2027 period.
- **Retail Commercial** employment will decrease from 16% in 2018 to 14% of all employment by 2038. While national trends show an overall decrease in retail businesses, some retail will continue to be needed locally. Growth in population in Sherwood and in surrounding areas will drive modest growth in retail businesses in the city over the 20-year period. The State forecast for the Portland Region in Table 8 shows the Portland Region adding 9,900 new jobs in retail over the 2017-2027 period.
- **Office and Commercial Services** employment will nearly hold steady at between 49% and 48% of Sherwood's employment, accounting for the largest number of new jobs through 2038. This employment group includes commercial jobs with lower than average pay (e.g., accommodations and food services) and service jobs with higher than average pay (e.g., professional services or financial services). The State forecast for the Portland Region in Table 8 shows the Portland Region adding 79,300 new jobs in office and commercial services over the 2017-2027 period, the largest and fastest growing employment grouping.
- **Government** employment will nearly hold steady at between 9% and 8% of Sherwood's employment. Growth in employment will generally follow population growth, with the majority of government employment growth in public schools. The State forecast for the Portland Region in Table 8 shows the Portland Region adding 7,900 new jobs in government over the 2017-2027 period, more than half of which are forecast to be in public education.

Table 11. Forecast of employment growth by land use type, Sherwood City Limits and Tonquin Employment Area, 2018–2038

	2018		2038		Change 2018
Land Use Type	Employment	% of Total	Employment	% of Total	to 2038
Industrial	2,169	27%	3,088	30%	919
Retail Commercial	1,278	16%	1,441	14%	163
Office & Commercial Service	3,965	49%	4,941	48%	976
Government	697	9%	824	8%	127
Total	**8,110**	**100%**	**10,294**	**100%**	**2,185**

Source: ECONorthwest
Note: The shaded percentages denote an assumption about the future change in the share of employment (as a percent of total) by land use type.

Estimate of Demand for Commercial and Industrial Land

Some employment growth in Sherwood will not require vacant employment land over the 20-year period. Table 12 shows that some employment will locate in residential plan designations, based on the location of existing employment. According to QCEW data, some employment in Sherwood in 2016 is located on land designated for residential uses. The following amounts of employment located in residential plan designations are: (1) 12% of industrial employment, such as home offices for construction companies; (2) 15% of retail employment, such as corner stores or other retail in neighborhoods, and (3) 21% of office and commercial services, such as medical offices or small personal service businesses such as banks or hair stylists.

This analysis assumes that the percentage of new employment locating in residential land designations will remain the same over the 20-year period: 12% of industrial, 15% of retail, and 21% of office and commercial service employment.

Using these assumptions, 339 new employees will be accommodated on land in residential designations and 1,719 new employees will require vacant (including partially vacant) land over the 2018 to 2038 period.

Table 12. Forecast of employment growth by land use type, Sherwood City Limits and Tonquin Employment Area, 2018–2038

Land Use Type	New Employment Growth	Emp. In Res. Designations	New Emp. on Vacant Land
Industrial	919	110	809
Retail Commercial	163	24	139
Office & Commercial Services	976	205	771
Total	**2,058**	**339**	**1,719**

Source: ECONorthwest

Table 13 shows demand for vacant (including partially vacant) land in Sherwood over the 20-year period. The assumptions used in Table 13 are:

- **Employment density.** Employees per acre is a measure of employment density based on the ratio of the number of employees per acre of employment land that is developed for employment uses. Table 13 assumes the following numbers of net employees per acre: Industrial will have an average of 15 employees per acre, Retail Commercial will have an average of 20 employees per acre, and Office and Commercial Services will have an average of 25 employees per acre.

  These employment densities are consistent with employment densities in Oregon cities of similar size as Sherwood. Some types of employment will have higher employment densities (e.g., a multistory office building), and some will have lower employment densities (e.g., a convenience store with a large parking lot).

- **Conversion from net-to-gross acres**. The data about employment density is in *net* acres, which does not include land for public right-of-way. Future land need for employment should include land in tax lots needed for employment plus land needed for public right-of-way. One way to estimate the amount of land needed for employment, including public right-of-way, is to convert from *net* to *gross* acres based on assumptions about the amount of land needed for public right-of-way.[72] A net-to-gross conversion is expressed as a percentage of gross acres that are in public right-of-way.

  Based on empirical evaluation of Sherwood's existing net-to-gross ratios, ECONorthwest uses a net-to-gross conversion factor of 11% for industrial and 24% for commercial and retail.

Using these assumptions, the forecasted growth of 1,719 new employees will result in the following demand for vacant (and partially vacant) employment land: 61 gross acres of industrial land, 9 gross acres of retail commercial land, and 41 gross acres of land for office and commercial services.

[72] OAR 660-024-0010(6) uses the following definition of net buildable acre. "Net Buildable Acre" consists of 43,560 square feet of residentially designated buildable land after excluding future rights-of-way for streets and roads. While the administrative rule does not include a definition of a gross buildable acre, using the definition above, a gross buildable acre will include areas used for rights-of-way for streets and roads. Areas used for rights-of-way are considered unbuildable.

Table 13. Demand for vacant land to accommodate employment growth, Sherwood City Limits and Tonquin Employment Area, 2018–2038

Land Use Type	New Emp. on Vacant Land	Employees per Acre (Net Acres)	Land Demand (Net Acres)	Land Demand (Gross Acres)
Industrial	809	15	54	61
Retail Commercial	139	20	7	9
Office & Commercial Services	771	25	31	41
Total	**1,719**		**92**	**110**

Source: ECONorthwest
Note: Vacant land includes land identified in the buildable lands inventory as vacant or potentially redevelopable.

Target Industries

The characteristics of Sherwood will affect the types of businesses most likely to locate in the city. Sherwood's attributes that may attract firms are: Sherwood's location in the Portland region; the existing employment base; access to workers from across the Portland region; arts and cultural opportunities; high quality of life; and high quality of schools.

Sherwood's existing businesses are concentrated in the industries defined in Table 14. The industries in green highlight are industries with a high location quotient (i.e., highly specialized compared to national employment in the industry), high employment (i.e., have more than 200 employees in Sherwood), and higher than average wages in Sherwood. These industries have the highest potential for growth, given existing businesses and the higher concentration of employment.

Sherwood also has opportunities for employment growth in industries without a concentration of employment or a high location quotient, such as professional services or wholesale.

Table 14. Concentration of Industries and Employment, City of Sherwood, 2016.

	High Employment	Low Employment
High Location Quotient	• Waste Management and Remediation Services • Specialty Trade Contractors • Heavy and Civil Engineering Construction • Machinery Manufacturing • Merchant Wholesalers, Durable Goods • Building Material and Garden Equipment and Supplies Dealers • Amusement, Gambling, and Recreation Industries • General Merchandise Stores • Food and Beverage Stores • Food Services and Drinking Places	• Construction of Buildings • Real Estate • Wholesale Electronic Markets and Agents and Brokers • Plastics and Rubber Products Manufacturing • Personal and Laundry Services
Low Location Quotient	• Merchant Wholesalers, Nondurable Goods • Miscellaneous Store Retailers • Truck Transportation	• Professional, Scientific, and Technical Services • Ambulatory Health Care Services • Utilities • Administrative and Support Services • Nursing and Residential Care Facilities • Social Assistance

Source: Oregon Employment Department, Quarterly Census of Employment and Wages, 2016.

Greater Portland Inc. (GPI) identified the following regional clusters in their *Regional Trends in Greater Portland's Target Clusters* analysis in 2018:

- Growing Base Industries
    - **Computers and Electronics**, such as semiconductors, electronic communication equipment, computer peripherals, circuit boards, and other electronics.
    - **Metals and Machinery**, such as food processing machinery, medical devices, component parts for manufacturing, and other specialized machinery for manufacturing.
    - **Athletics and Outdoors**, such as design services, professional services, marketing, and some manufacturing of footwear and athletics goods.
- Emerging Industries
    - **Health Sciences Tech**, such as pharmaceutical manufacturing, chemical manufacturing, laboratory instrument manufacturing, medical equipment and supplies manufacturing, medical equipment and supplies wholesalers, engineering services, scientific research and development services, and medical and diagnostic laboratories.
    - **Clean Tech**, such as scientific and technical research and services, engineering services, architectural design, construction, instruments manufacturing, electrical equipment manufacturing, renewable energy equipment and components, architectural design, clean power generation, and waste remediation.
    - **Software and Media**, such as software development, data processing, computer systems design, and motion picture and video production.

These regional clusters from the GPI analysis align with some of the industries from the *Tonquin Employment Area Market Analysis, Business Recruitment Strategy, and Implementation Plan*. These industries are:

- Clean Tech
- Technology and Advanced Manufacturing
- Outdoor Gear and Active Wear

The potential growth industries in Sherwood will draw from existing industry concentration in the City and the Portland region, along with the City's economic development policies that align with changing or emerging industries and result in employment growth in Sherwood.

Potential Growth Industries

An analysis of growth industries in Sherwood should address two main questions: (1) Which industries are most likely to be attracted to Sherwood? and (2) Which industries best meet Sherwood's economic development goals? The selection of target industries is based on Sherwood's goals for economic development, economic conditions in Sherwood and the Portland region, and the City's competitive advantages.

Given the current employment base, which is composed of moderately sized businesses, it is reasonable to assume that much of the city's business growth will come from moderate-sized businesses and potentially larger businesses depending on future development at the TEA. This growth will either come from businesses already in Sherwood or new businesses that start or relocate to Sherwood from within the Portland region or from outside of the region.

The industries identified as having potential for growth in Sherwood are:

- **Manufacturing.** Sherwood's attributes, especially its location in the Portland region and proximity to Hillsboro, may attract manufacturing firms, such as:
    - Technology and Advanced Manufacturing, such as such as semiconductors, electronic communication equipment, computer peripherals, circuit boards,
    - Machinery Manufacturing (Metals and Machinery), food processing machinery, medical devices, component parts for manufacturing, and other specialized machinery for manufacturing.
    - Clean Tech, such as instruments manufacturing, electrical equipment manufacturing, and renewable energy equipment and components.
- **Professional and business services.** Sherwood's high quality of life, access to quality schools, existing population and business base, and proximity to the Portland region may attract professional and business services that prefer to locate in a smaller city like Sherwood, such as:
    - Software and Media, such as software development, data processing, computer systems design, and motion picture and video production.
    - Clean Tech, such as scientific and technical research and services, engineering services, architectural design, and construction engineering services.
    - Athletics and Outdoors, such as design services, professional services and marketing.
    - Other services, such as scientific research, environmental services, or other services.
- **Wholesale.** Sherwood's access to Highway 99 may make the city attractive to continued growth of wholesale businesses.
- **Services for visitors:** Growth in tourism, especially related to agriculture and wineries, will drive demand for services for visitors such as specialty retail, wine tasting rooms, restaurants, or hotels.
- **Services for residents:** Growth in population in and around Sherwood will drive growth of businesses that serve residents, such as medical services, legal services, financial services, retail, personal services (e.g., barbers), and restaurants.

Sherwood's Economic Development Policies

Note: This will be updated in the next version of the document.

Site Needs for Potential Growth Industries

OAR 660-009-0015(2) requires the EOA to "identify the number of sites by type reasonably expected to be needed to accommodate the expected [20-year] employment growth based on the site characteristics typical of expected uses." The Goal 9 rule does not specify how jurisdictions conduct and organize this analysis.

The rule, OAR 660-009-0015(2), does state that "[i]ndustrial or other employment uses with compatible site characteristics may be grouped together into common site categories." The rule suggests, but does not require, that the city "examine existing firms in the planning area to identify the types of sites that may be needed." For example, site types can be described by: (1) plan designation (e.g., heavy or light industrial), (2) general size categories that are defined locally (e.g., small, medium, or large sites), or (3) industry or use (e.g., manufacturing sites or distribution sites). For purposes of the EOA, Sherwood groups its future employment uses into categories based on their need for land with a particular plan designation (i.e., industrial or commercial) and by their need for sites of a particular size.

Based on the forecasts of employment growth in Table 12 and the average business size of business in Sherwood in 2016 (using analysis of Quarterly Census of Employment and Wage data), employment growth in Sherwood will require:

- **Industrial** employment will grow by 919 employees. The average site of industrial employers in Sherwood in 2016 was 10.9 employees per business. At that average size, Sherwood will need 74 industrial sites.
- **Retail Commercial** employment will grow by 139 employees. The average site of retail employers in Sherwood in 2016 was 20 employees per business. At that average size, Sherwood will need 7 retail sites.
- **Office & Commercial Services** employment will grow by 200 employees. The average site of industrial employers in Sherwood in 2016 was 6.6 employees per business. At that average size, Sherwood will need 117 office and commercial sites.

The potential growth industries described in the prior section are a mixture of business sizes, from small businesses to larger businesses. For the most part, Sherwood's potential growth industries have need for relatively flat sites, especially for industrial or manufacturing businesses, with access to arterial roads to connect with I-5 or key employment centers in Hillsboro or Portland.

Manufacturing and other industrial businesses likely to locate in Sherwood will have a range of space needs: (1) small-scale manufacturing space in an industrial building with many other users, (2) space in a flex services building, (3) mid-sized manufacturing, potentially in a building with a few other businesses, and (4) land to for construction of a building designed for the manufacturer. Generally speaking, mid-sized and larger manufacturers locating in the Portland Region have needed buildings from about 25,000 square feet to 100,000 square feet, on sites from five to 15 acres in size. Cite and add detail from GPI data when we receive it.

Professional and technical service businesses have a range of space need, ranging from: (1) space in an existing building, as one of several or many firms within the building, (2) space in a building dominated by one firm, potentially with manufacturing or other industrial space in the building, (3) land to for construction of a building designed for the firm. These service firms may prefer to locate in traditional office space, such as in a downtown office building, or in more flexible use space such as that traditionally built in industrial or campus industrial areas. In the case where the business needs to build a building, they are typically seeking xxx. Fill in with info from GPI.

5. Land Sufficiency and Conclusions

This chapter presents conclusions about Sherwood's employment land sufficiency for the 2018-2038 period. The chapter then concludes with a discussion about Sherwood's land base and its ability to accommodate growth over the next 20 years, as well as recommendations for the City to consider, ensuring it meets its economic growth needs throughout the planning period.

Land Sufficiency

Table 15 shows commercial and industrial land sufficiency within the Sherwood City Limits and Tonquin Employment Area UGB. It shows:

- **Vacant and Potentially Redevelopable Unconstrained Land** from Table 2 for land within UGB. Table 15 shows that Sherwood has 94 gross acres of industrial land and 27 gross acres of commercial land.
- **Demand for Commercial and Industrial Land** from Table 13. Table 15 shows Sherwood will need a total of 62 gross acres for industrial uses and 54 gross acres for commercial uses over the 2018-2038 period.

Table 15 shows that Sherwood has:

- A 32-acre surplus of industrial land.
- A 27-acre deficit of commercial land.
- A 122-acre supply of future development land in the Tonquin Employment Area. This supply will likely meet needs for both industrial and commercial demand, resulting in a 127-acre surplus of employment land.

Table 15. Comparison of the Capacity of Unconstrained Vacant and Potentially Redevelopable Land with Employment Land Demand by Land Use Type, Sherwood City Limit and Tonquin Employment Area, 2018–2038

Land Use Type	Land Supply (Suitable Gross Acres)	Land Demand (Gross Acres)	Land Sufficiency (Deficit)
Industrial	94	62	32
Retail Commercial	7	16	(9)
Office & Commercial Services	20	38	(18)
Future Development	122	-	-
Total	**243**	**116**	**127**

Source: ECONorthwest

Conclusions and Recommendations

The conclusions about commercial and industrial land sufficiency are:

- **Sherwood is forecast for growth in both commercial and industrial employment sectors.** Sherwood is planning for growth of over 2,000 new jobs in the city over the 2018 to 2038 period. About 911 of the jobs will be in office and commercial services, 943 in industrial land uses, and 278 in retail. Growth of these jobs will result in demand for about 54 gross acres of commercial land and 62 gross acres of industrial land.
- **Sherwood has enough employment land to accommodate growth.** Table 15 shows Sherwood has enough land for employment growth over the next 20 years, accounting for the 122 acres of future development at the Tonquin Employment Area, which will provide both industrial and a limited amount of commercial employment.
- **Sherwood's wages are below average for the Portland Region and for the nearby cities of Tigard and Tualatin.** The primary reason for lower wages at jobs in Sherwood is the mix of jobs in Sherwood, with Retail and Accommodations and Food Services having the largest number of employees in Sherwood but wages below the city average. Sherwood's target industries generally have above average wages, except for some types of services for visitors and residents of Sherwood, such as Retail and Accommodations and Food Services.
- **Most new businesses will be relatively small and will require small and mid-sized sites.** Sherwood's businesses are generally small, averaging 9 employees per business. Businesses with 50 or fewer employees account for roughly 57% of private employment in Sherwood. Businesses with 9 or fewer employees account for 20% of private employment and 4 or fewer account for 10% of private employment. Growth of small businesses presents key opportunities for economic growth in Sherwood. Sherwood has about 69 sites smaller than five acres. Some of these sites may subdivide into smaller sites.
- **Sherwood will need to manage its industrial land base to ensure that there are sufficient small and mid-sized sites available for development.** Within the context of the site needs discussed at the end of Chapter 4, Sherwood will need to manage its industrial land base, including Tonquin Employment Area, to ensure that there are sufficient opportunities for small and mid-sized businesses, either through subdivision of larger sites (e.g., sites of ten acres and larger) industrial sites or through the development of some larger sites for many small businesses in one or more shared building.
- **Sherwood has a 27-acre deficit of land for commercial and retail uses.** Some of this land deficit may be accommodated in the Tonquin Employment Area, which is expected to accommodate about 380 commercial employees and which would address 15 to 19 acres of this deficit. The City will need to identify opportunities address the remaining deficit, through policies that encourage infill or redevelopment of existing commercial land or through redesignating land to commercial uses.

- **Sherwood will need to address key infrastructure needs in the City and in the development of the Tonquin Employment Area.** Transportation issues currently present barriers to business locating or expanding in Sherwood due to congestion and limited access to the major road networks. Additionally, the implementation of infrastructure development of the Tonquin Employment Area needs to be addressed to retain and attract the businesses and targeted industries in Sherwood's economic development policies.

- **Sherwood will need flexibility in its development code to provide opportunities for growing and developing businesses that both provide services and are related to manufacturing businesses.** The line between commercial businesses (i.e., businesses that locate in an office space in downtown) and industrial businesses is blurring. Many of the types of business with growth potential in Sherwood have characteristics (and site needs) of both office businesses and industrial businesses, such as scientific and technical and engineering services for Clean Tech or design services for Athletics and Outdoors. Businesses in these industries are produce traded sector goods. They may prefer not to locate in traditional downtown office space but their activities are not consistent with the traditional manufacturing activities allowed in industrial areas.

Following are ECONorthwest's recommendations to Sherwood based on the analysis and conclusions in this report.

- **Update the Economy Element of the Comprehensive Plan.** The Economy Element has not been updated in more than a decade. We recommend that the Planning Commission and City Council review the revised policies in the Sherwood Economic Development Strategy and, after making additional necessary revisions to the policies, adopt the revised goals, objectives, and implementation strategies into the Economy Element.
- **Align the City's goals for economic development with planning for infrastructure development.** Aside from ensuring that there is sufficient land to support employment growth, one of the most important ways that the City can support economic development is through planning for and developing infrastructure (e.g., roads, water, sanitary sewer, and storm water systems). We recommend that the City align its goals for economic development with infrastructure development through updates to the City's Capital Improvements Plan.

  Providing infrastructure in the TEA is necessary to allow employment growth to occur in the TEA. Without infrastructure, much of the TEA will remain undeveloped.
- **Identify opportunities to support existing businesses in Sherwood.** Retention and expansion of existing businesses is one of Sherwood's key opportunities for economic growth. The City can support businesses by understanding businesses' opportunities for growth and expansion and lowering or eliminating the barriers in Sherwood that limit growth and expansion. Some barriers are beyond control of the City, such as access to capital.

- **Work with partners to develop a broad economic development strategy for Sherwood.** The revisions to the Comprehensive Plan presented in the Sherwood Economic Development Strategy focus on land-based policies and actions. The city also needs a broader strategy for economic development that focuses on issues such as communication with existing businesses to identify barriers to expansion, economic development marketing of Sherwood's businesses and business opportunities, building business and other partnerships, and coordinating economic development efforts with local and regional economic development organizations.

  This strategy could be developed through leadership from the city leadership and city staff, with one or more staff person responsible for developing and implementing policies to encourage economic growth. The strategy should identify a focused list of actions that the City Council wants to achieve over a limited time period (e.g., 5 years), with specific assignments to partners and identification of funding sources to implement the actions.

- **Support infill and redevelopment of existing commercial and industrial land.** The buildable lands inventory identifies areas where infill and redevelopment is more probable over the 20-year planning period. Other opportunities for redevelopment may become apparent in the future. We recommend that the city support and encourage infill and redevelopment to make the most efficient use of employment land in Sherwood. The types of tools that the city offers in support of infill and redevelopment should be consistent with the city's development goals. In areas where the city wants to encourage higher intensity development, such as Old Town, the city should offer more support for redevelopment, such as financial and regulatory redevelopment incentives.

Note: the next version of the report will include more discussions about recommendations, consistent with the discussions about economic development policy that will be coming up.

Appendix A. Buildable Lands Inventory

The buildable lands inventory is intended to identify commercial and industrial lands that are available for development for employment uses within the Sherwood City Limits and Tonquin Employment Area. The inventory is sometimes characterized as *supply* of land to accommodate anticipated employment growth. Population and employment growth drive *demand* for land. The amount of land needed depends on the type of development and other factors.

This chapter presents results of the commercial and industrial buildable lands inventory for the City of Sherwood. The results are based on additional analyses of Metro's 2018 BLI completed by ECONorthwest and reviewed by City staff. The remainder of this chapter summarizes key findings of the draft buildable lands inventory. This chapter includes tabular summaries, maps, and narrative descriptions.

Methodology

The general structure of the buildable land (supply) analysis is based on the methods used for Metro's buildable lands inventory included with the 2018 Urban Growth Report, Appendix 2.[73] ECONorthwest used GIS data with the Metro BLI as a starting point for determining buildable employment land in Sherwood. The buildable lands inventory uses methods and definitions that are consistent with OAR 660-009 and OAR 660-024. The steps in the inventory were:

- Generate employment "land base." This involved "clipping" the tax lots in the Sherwood City Limits and Tonquin Employment Area that were designated as employment lands in the Metro BLI[74] and intersecting them with the comprehensive plan layer. The GIS function was followed by a quality assurance step to review the output and validate that the resulting dataset accurately represents all lands designated for employment use in the Sherwood City Limits and Tonquin Employment Area.
- Classify lands. Each tax lot was classified into one of the following categories, using Metro's classification system as a starting point and reviewed by City staff:
    - Vacant land
    - Potentially redevelopable land[75]

[73] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018. https://www.oregonmetro.gov/sites/default/files/2018/07/03/UGR_Appendix2_Buildable_Lands_Inventory.pdf

[74] Metro defined employment land by zone as "ZONE_GEN in ('COM','IND','MUR')."

[75] Metro used a "strike-price method" to determine redevelopment potential for each taxlot. A full description of the method is available in the 2018 Urban Growth Report: https://www.oregonmetro.gov/sites/default/files/2018/07/03/UGR_Appendix2_Buildable_Lands_Inventory.pdf.

ECONorthwest used the acres from the result of this method ("net_emp_acres_stike_price" field in the GIS data) to determine the potentially redevelopable acres, and subtracted the constrained acres, since Metro did not factor in constraints in the strike price method, to determine buildable acres.

- Developed or exempt land

- Identify constraints. The City identifies areas in steep slopes (over 25%), landslide hazard areas, wetlands, public facilities, floodways, Title 3 stream and floodplain protection areas, and Title 13 riparian corridors and upland habitats. These areas are deducted from lands that were identified as vacant or potentially redevelopable. To estimate the constrained area within each tax lot, all constraints listed above were merged into a single constraint file, which was overlaid on tax lots.[76]
- Evaluate redevelopment potential. According to statewide planning rules, redevelopable land is land on which development has already occurred, but on which, due to present or expected market forces, there is potential that existing development will be converted to more intensive uses during the planning period. Lands determined to be redevelopable have been categorized as "potentially redevelopable" for the purpose of this analysis.[75]
- Tabulation and mapping. The results are presented in tabular and map formats with accompanying narratives. The maps include lands by classification and maps of vacant and partially vacant lands with constraints.

Definitions

Metro developed the buildable lands inventory with a tax lot database from RLIS. The tax lot database is current as of March 2018. The inventory builds from the database to estimate buildable land by plan designation. A key step in the buildable lands inventory was to classify each tax lot into a set of mutually exclusive categories. Metro classified all tax lots in Sherwood into one of the following categories:

- *Vacant land*.[77] Any tax lot that is "fully vacant (Metro aerial photo)"; or "with less than 2,000 sq. ft. developed AND developed part is under 10% of entire tax lot"; or that is "95% or more 'vacant' from the GIS vacant land inventory."
- *Potentially redevelopable land*.[78] For taxlots that were not classified vacant or exempt, Metro included all other employment land taxlots in the strike-price model. Taxlots with a value greater than zero in the "net_emp_acres_strike_price" field in the Metro BLI GIS layer were considered to have redevelopment potential. The value in that field for each tax lot is the number of acres that is potentially redevelopable, not including constrained

[76] Note that some taxlots that were designated as potentially redevelopable in the Metro BLI (which again, did not factor in constrained land) resulted in a negative buildable acres calculation when factoring in constraints. This is due to the taxlot-level analysis and that some constraints may not overlay the potentially redevelopable taxlot area. The buildable acreage for these taxlots was adjusted to zero, so as to not subtract from the total buildable area result.

[77] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018. p. 20. https://www.oregonmetro.gov/sites/default/files/2018/07/03/UGR_Appendix2_Buildable_Lands_Inventory.pdf.

[78] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018. https://www.oregonmetro.gov/sites/default/files/2018/07/03/UGR_Appendix2_Buildable_Lands_Inventory.pdf

acres. Tax lots with a "net_emp_acres_strike_price" value of zero were considered developed.

- *Developed land.*[79] Tax lots with a "net_emp_acres_strike_price" value of zero were considered developed.
- *Exempt land*.[80] Land that is classified as either, "tax exempt with property codes for city, state, federal and Native American designations; schools; churches and social organizations; private streets; rail properties; tax lots under 1,000 sq. ft. (0.023 gross acres); parks, open spaces and where possible private residential common areas." Metro used GIS data and Assessor's data to determine the status of exempt land. ECONorthwest included all tax lots classified as exempt land in the developed land tabular and mapping information, but these tax lots can still be distinguished in the GIS data layer.

ECONorthwest initially classified land using Metro's categories and generated maps for City staff to review. City staff had previously reviewed Metro's analysis for Sherwood, but there were a few updates to tax lots that had redeveloped since that review. ECONorthwest adjusted the classification accordingly and noted manual changes in the GIS data layer.

Development constraints

The physical constraints used in the Sherwood buildable lands inventory include: areas subject to landslides, areas with slopes greater than 25%, lands within the 100-year flood plain, Metro's Title 3 land (including Water Resource Conservation Areas), lands within Metro's Title 13 Habitat Conservation Areas (Class I and II, A and B), Wetlands, and public facilities.

Land base

Table 16 summarizes all land included in the employment land base (e.g., lands with plan designations that allow employment). ECONorthwest used this land base in the buildable lands analysis for Sherwood. The land base includes traditional employment designations with Sherwood's city limits—Commercial and Industrial—along with land designated for future development in the Tonquin Employment Area as of May 2018. According to Metro RLIS data, within Sherwood's city limits there are about 171 acres in 134 tax lots with a commercial plan designation, and about 478 acres in 115 tax lots with an industrial plan designation. The Tonquin Employment Area is located on the eastern edge of Sherwood's city limits and is in the Metro UGB. It has about 282 acres in 24 tax lots.

[79] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018. https://www.oregonmetro.gov/sites/default/files/2018/07/03/UGR_Appendix2_Buildable_Lands_Inventory.pdf

[80] Appendix 2 Buildable Lands Inventory, 2018 Urban Growth Report (Discussion draft). Metro. June 2018. pp. 20-21. https://www.oregonmetro.gov/sites/default/files/2018/07/03/UGR_Appendix2_Buildable_Lands_Inventory.pdf.

Table 16. Acres in Sherwood City Limit and Tonquin Employment Area, 2018

Plan Designation/Area	Tax Lots	Total Acres
Commercial	134	171
Industrial	115	478
Tonquin	24	282
Total	**273**	**931**

Source: Metro RLIS, 2018 BLI, & ECONorthwest analysis.

The next step in the inventory was to classify lands into mutually-exclusive categories that relate to their development status. The categories include:

- Vacant land
- Potentially redevelopable land
- Developed land
- Except land

ECONorthwest used the rules described in the prior section to perform a preliminary classification, based on Metro's previous analysis. The next step was to show the results in map form for City staff to review and suggest changes. ECONorthwest completed the manual classification changes, as noted in the GIS data layer.

Table 17 shows commercial and industrial land in Sherwood by classification (development status). The results show that Sherwood has 931 total acres in commercial and industrial plan designations. Of the 931 acres in the UGB, about 407 acres (44%) are in classifications with no development capacity, and of the remaining 527 acres, 282 acres (30%) are constrained and 242 acres (26%) have development capacity.

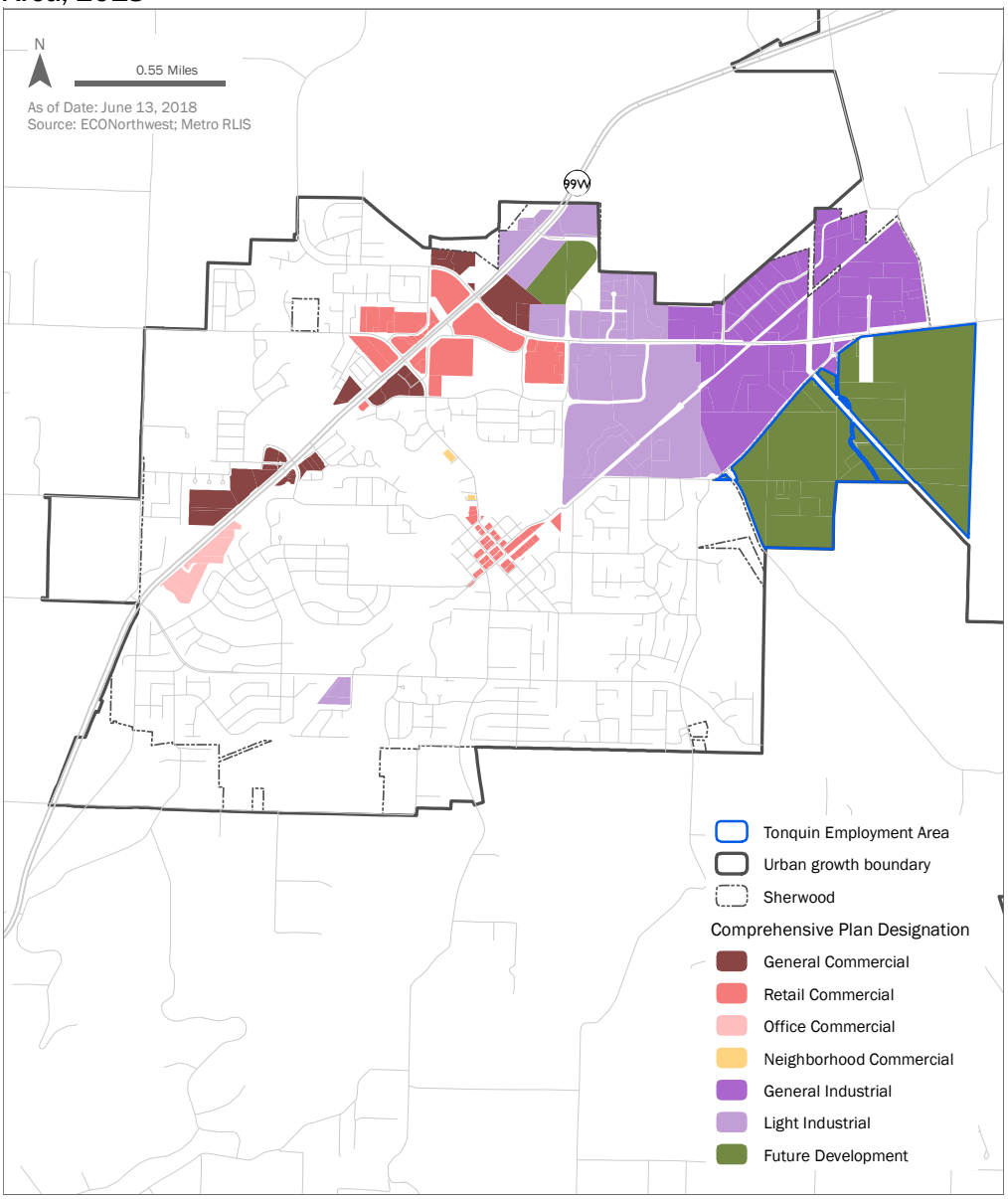
Table 17. Employment acres by classification and plan designation, Sherwood City Limits and Tonquin Employment Area, 2018

Plan Designation	Tax Lots	Total Acres	Acres with No Development Capacity	Constrained Acres	Total Unconstrained Buildable Acres
Commercial	**134**	**171**	**134**	**10**	**27**
General Commercial	31	62	42	5	15
Neighborhood Commercial	2	1	1	0	0
Office Commercial	11	16	6	5	5
Retail Commercial	90	92	85	0	7
Industrial	**115**	**478**	**257**	**128**	**94**
General Industrial	66	238	153	29	56
Light Industrial	49	240	104	99	38
Tonquin	**24**	**282**	**16**	**144**	**122**
Future Development	24	282	16	144	122
Total	**273**	**931**	**407**	**282**	**242**
Percent of Total		**100%**	**44%**	**30%**	**26%**

Source: Metro RLIS, 2018 BLI, & ECONorthwest analysis.

Map 2 shows commercial and industrial land in Sherwood by plan designation.

Map 2. Map of employment land by classification, Sherwood City Limits and Tonquin Employment Area, 2018



Vacant buildable land

The next step in the commercial and industrial buildable land inventory was to net out portions of vacant tax lots that are unsuitable for development. Areas unsuitable for development fall into three categories: (1) developed areas of partially vacant tax lots, (2) areas with service constraints (5 tax lots within the UGB east of I-5 have no access to infrastructure such as water and sewer), (3) areas with physical constraints (areas with wetlands, floodways, riparian setback areas and steep slopes).

Table 18 shows unconstrained buildable acres for vacant and potentially redevelopable land by plan designation. The results show that Sherwood has about 242 net buildable acres in commercial and industrial plan designations. Of this, 11% (27 acres) is in the commercial designations, 39% (94 acres) is in industrial designations, and 50% (122 acres) is designated as future development in the Tonquin Employment Area.

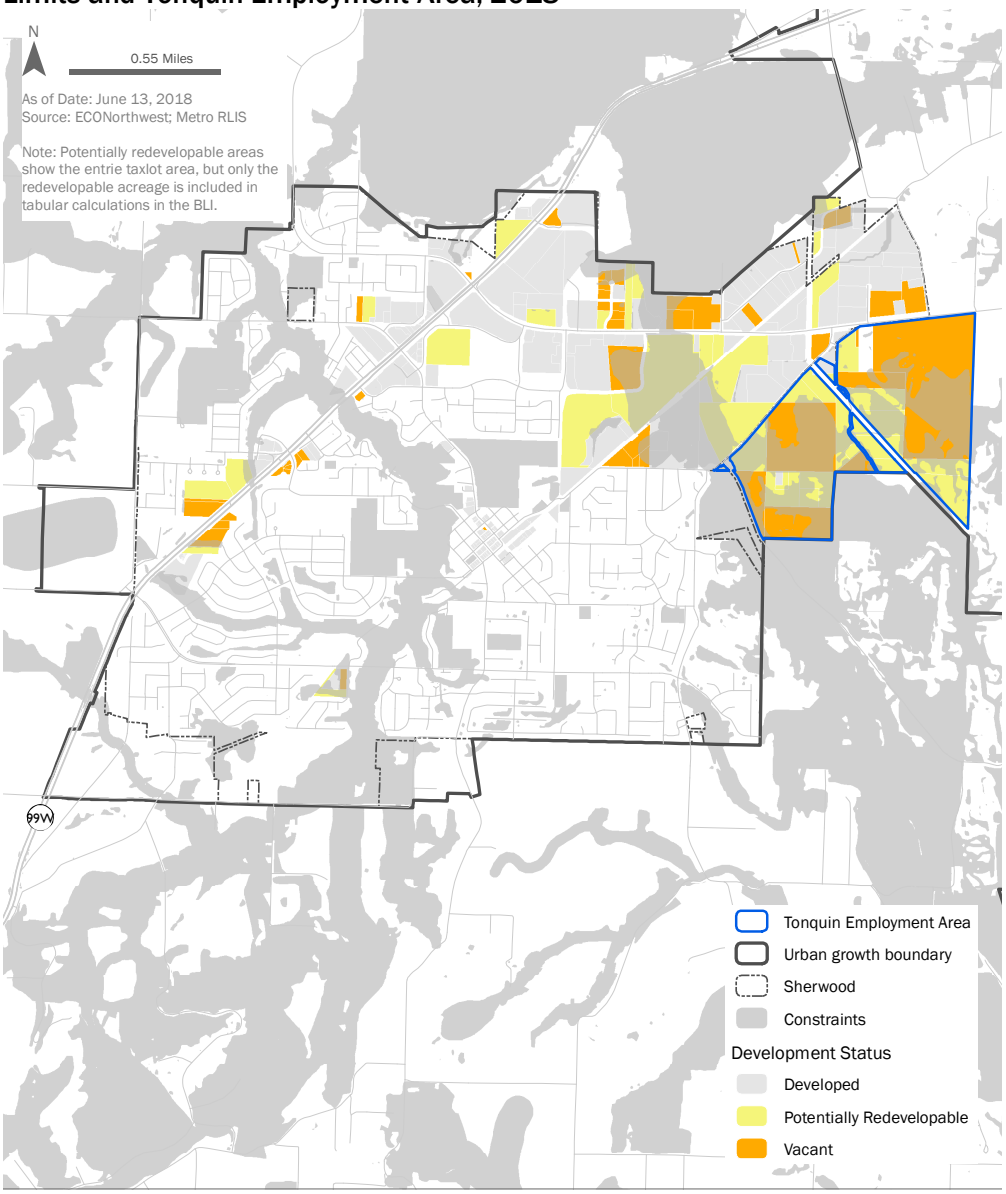
Table 18. Employment land with unconstrained development capacity (Vacant, Potentially Redevelopable) by plan designation, Sherwood City Limits and Tonquin Employment Area, 2018

Plan Designation	Uncon-strained Vacant Acres	Unconstrained Potentially Redevelopable Acres	Total Unconstrained Buildable Acres
Commercial	**14**	**13**	**27**
General Commercial	8	7	15
Office Commercial	4	1	5
Retail Commercial	2	5	7
Industrial	**45**	**49**	**94**
General Industrial	27	29	56
Light Industrial	17	20	38
Tonquin	**82**	**39**	**122**
Future Development	82	39	122
Total	**141**	**101**	**242**
Percent of Total	**58%**	**42%**	**100%**

Source: Metro RLIS, 2018 BLI, & ECONorthwest analysis.

Map 3 shows commercial and industrial land in Sherwood by development status with development constraints.

Map 3. Map of employment land by classification with development constraints, Sherwood City Limits and Tonquin Employment Area, 2018



Source: Metro RLIS, 2018 BLI, & ECONorthwest analysis.

Table 19 shows the size of lots by plan designations for buildable employment land. Sherwood has 49 lots that are smaller than 2 acres (with 35 acres of land). Sherwood has 29 lots between 2 and 10 acres (126 acres of land), and 3 lots between 10 and 60 acres in size (81 acres of land).

Table 19. Lot size by plan designation, buildable acres, Sherwood City Limits and Tonquin Employment Area, 2018

	Buildable Acres in Tax Lot (vacant, potentially redevelopable)				
Plan Designation	<1	1 - 1.99	2 - 4.99	5 - 9.99	10 - 59.99
Acres					
Commercial	**6**	**6**	**10**	**5**	**0**
General Commercial	4	2	4	5	0
Neighborhood Commercial	0	0	0	0	0
Office Commercial	2	1	3	0	0
Retail Commercial	1	3	3	0	0
Industrial	**7**	**7**	**35**	**19**	**25**
General Industrial	1	3	21	19	12
Light Industrial	6	4	14	0	13
Tonquin	**2**	**6**	**24**	**34**	**56**
Future Development	2	6	24	34	56
Subtotal	**16**	**19**	**68**	**58**	**81**
Taxlots					
Commercial	**12**	**4**	**3**	**1**	**0**
General Commercial	8	1	1	1	0
Neighborhood Commercial	0	0	0	0	0
Office Commercial	2	1	1	0	0
Retail Commercial	2	2	1	0	0
Industrial	**18**	**5**	**11**	**3**	**2**
General Industrial	4	2	6	3	1
Light Industrial	14	3	5	0	1
Tonquin	**6**	**4**	**6**	**5**	**1**
Future Development	6	4	6	5	1
Subtotal	**36**	**13**	**20**	**9**	**3**

Source: Metro RLIS, 2018 BLI, & ECONorthwest analysis.

The data in Table 19 suggest that Sherwood, within the city limits, has no large sites in commercial plan designations. Sherwood does, however, have industrial sites larger than 10 acres, which is a total of 25 acres. In addition, the Tonquin Employment Area has 5 sites between 5 and 10 acres and 1 site larger than 10 acres.