Exhibit A

CITY OF FOREST GROVE

ECONOMIC OPPORTUNITIES ANALYSIS

(OREGON STATEWIDE PLANNING GOAL 9)

FOREST GROVE OREGON

A place where families and businesses thrive.

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Table of Contents

I. Introduction 2

II. Executive Summary 3

III. Economic Trends 9

Economic Growth 10

Employment Trends 12

Export Trends 14

Demographic Trends 17

IV. Local Employment & Target Industries 24

Local Employment Trends 24

Target Industry Clusters 29

V. Forecast of Employment & Land Need 34

Overview of Methodology 34

Employment Land Forecast 39

VI. Buildable Land Inventory 46

VII. Reconciliation of Land Need and Supply 50

I. INTRODUCTION

This report introduces analytical research presenting an Economic Opportunities Analysis (EOA) for the City of Forest Grove, Oregon.

Cities are required to reconcile estimates of future employment land demand with existing inventories of vacant and redevelopable employment land within the UGB. The principal purpose of the analysis is to provide an adequate land supply for economic development and employment growth. This is intended to be conducted through a linkage of planning for an adequate land supply to infrastructure planning, community involvement and coordination among local governments and the state.

To this end, this report is organized into six primary sections:

- **Economic Trends:** Provides an overview of national, state and local economic trends affecting Forest Grove, including population projections, employment growth, retail trends and a demographic profile.

- **Target Industries:** Analysis of key industry typologies the City should consider targeting as economic opportunities over the planning period.

- **Employment Land Needs:** Examines projected demand for industrial and commercial land based on anticipated employment growth rates by sector.

- **Capacity:** Summarizes the City's inventory of vacant and redevelopable industrial and commercial land (employment land) within the City of Forest Grove's boundary.

- **Reconciliation:** Compares short- and long-term demand for employment land to the existing land inventory to determine the adequacy and appropriateness of capacity over a five and twenty-year horizon.

- **Conclusions:** Summary of findings and policy implications.

The prior Economic Opportunities Analysis for the City of Forest Grove was adopted in 2009. This updated analysis reflects changes in employment, land supply, and macro-economic trends since that time. In 2014, the City has experienced large expansions of the Urban Growth Boundary adjacent to the City, including new employment land. In addition, Urban and Rural Reserves have been established outside of the UGB. This includes 320 acres of urban reserves at the western end of the city. These changes are reflected in the following analysis and inventory of buildable lands.

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II. EXECUTIVE SUMMARY

This section presents an overview of key themes and findings presented in this report. More detail on all of these subjects can be found in the following sections.

- The City of Forest Grove is an attractive and growing community, with excellent livability, and a diverse local economy and employment base for a city of its size. Located in western Washington County on the edge of the Portland Metro area, Forest Grove also enjoys inter-relationships with the region, and access to larger markets.

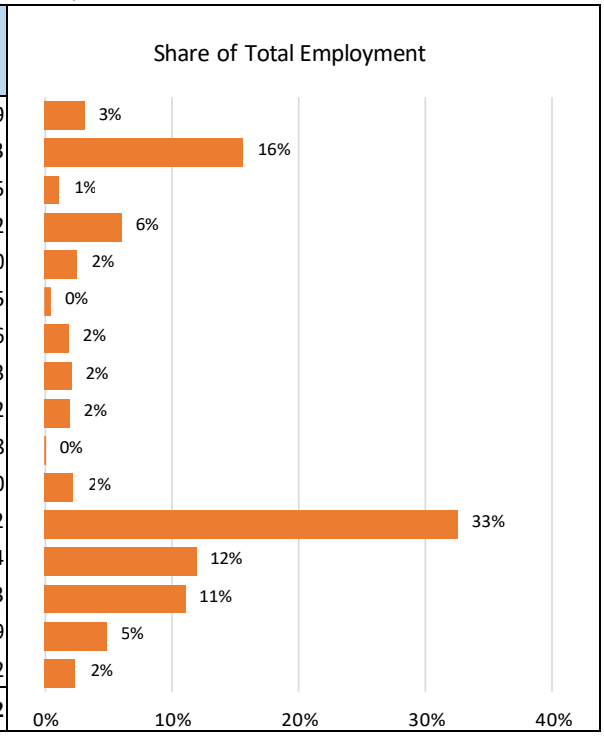
- Since 2000, the annual growth rate in employment in Washington County has exceeded the rate seen in both the state, and the rest of the Metro region. The county has added an estimated 71,500 jobs since 2000, growth of 29%. In Forest Grove, where job growth has been slow but positive, employment grew only 5% since 2000.

- The county accounts for roughly 25% of the total employment in the Portland Metro region, and 16% of the employment in Oregon. The local unemployment rate is consistently lower than the state or national rate.

- In 2018, Forest Grove has an estimated 9,250 local jobs across a range of industries. This data includes "covered employment", subject to unemployment insurance benefits, as well as an estimate of the "non-covered employment" which includes self-employed people, many small business owners, LLC partners, and other cases. The largest sectors in Forest Grove by employment share are private education services, manufacturing, health care, and leisure and hospitality (food service and tourism).

Figure 2.1: Forest Grove Estimated Employment by Industry, 2018

Major Industry Sector	2018 Covered Emp. (Estimate)	Total Emp. Total Emp. Conversion[1]	2018 Total Emp. (Estimate)
Construction	235	81%	289
Manufacturing	1,417	98%	1,453
Wholesale Trade	93	89%	105
Retail Trade	492	88%	562
Transport., Warehouseing, Utilites	161	70%	230
Information	39	88%	45
Finance & Insurance	126	72%	176
Real Estate Services	69	36%	193
Professional & Technical Services	126	69%	182
Management of Companies	7	97%	8
Administration Services	177	84%	210
Education Services	1,698	56%	3,012
Health Care	943	85%	1,104
Leisure & Hospitality	891	87%	1,023
Other Services[2]	261	58%	449
Government	222	100%	222
TOTAL	**6,958**	**75%**	**9,262**



[1] Bureau of Economic Analysis. Calculated as a five-year average between 2012 and 2016

[2] "Other Services" includes most personal services not considered retail activity, such as beauty and hair care, repairs, dry cleaning religious services, advocacy, and others.

Source: Oregon Employment Department, Johnson Economics

- "Location Quotient" analysis indicates that Forest Grove currently enjoys a greater share of employment in

manufacturing and education and health, in comparison to the county, metro, or national level. Employment in these sectors are 2.5 times higher than the national average. Forest Grove also experiences a higher share of jobs in leisure and hospitality, at 1.25 times the national average.

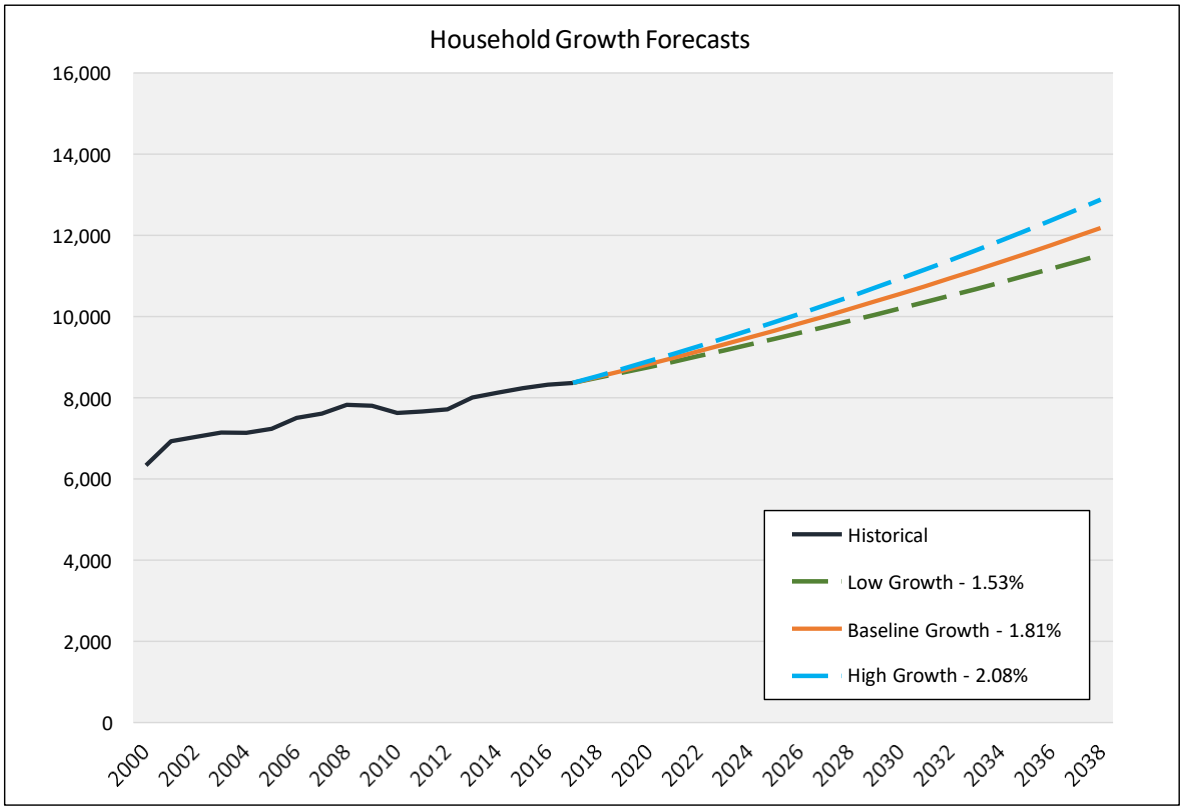
- Oregon's largest export industries are categories that are largely favorable to Forest Grove and Washington County in general. These include the products of skilled manufacturing, such as semiconductors and electronic components, as well as agricultural and process food products. Asian countries, led by China have grown rapidly as trade partners since the turn of the century.

- Based on Forest Grove's current competitive advantages, clustering and locational attributes a number of potential target industries have been identified. These industries are opportunities to grow existing businesses, attract new ones, and encourage new start-ups:

    - Agriculture, Food and Farm Products
    - Tourism and Winery Development
    - Education
    - Retirement Services
    - High Tech

- Since 2000, Forest Grove has grown by nearly 6,000 people (33%), to just under 24,000 people in 2018. Forest Grove is home to an estimated 8,500 households. The growth rate has largely matched that seen in the county. The following figure presents historical growth in households from 2000, and projected growth based on the Metro 2040 forecast. In addition to the forecasted growth rate of 1.81%, the figures presents a range of potential growth scenarios. These forecasts arrive at a range of 11,500 to 12,900 households by 2038.

Figure 2.2: Forest Grove Forecasted Household Growth: 2000 and 2038



Source: Metro 2040 Distributed Forecast, Johnson Economics

- In the most recent migration data available from the IRS (2015-2016), Washington County saw a net population gain from Multnomah County, and a net population loss to Clackamas, Clark and Yamhill Counties. In fact, more people move out of Washington County to other places in Oregon and Washington State, than migrate from those areas. Net positive migration in recent years is attributable to migrants from other states and abroad.

Projected Land Need (Demand)

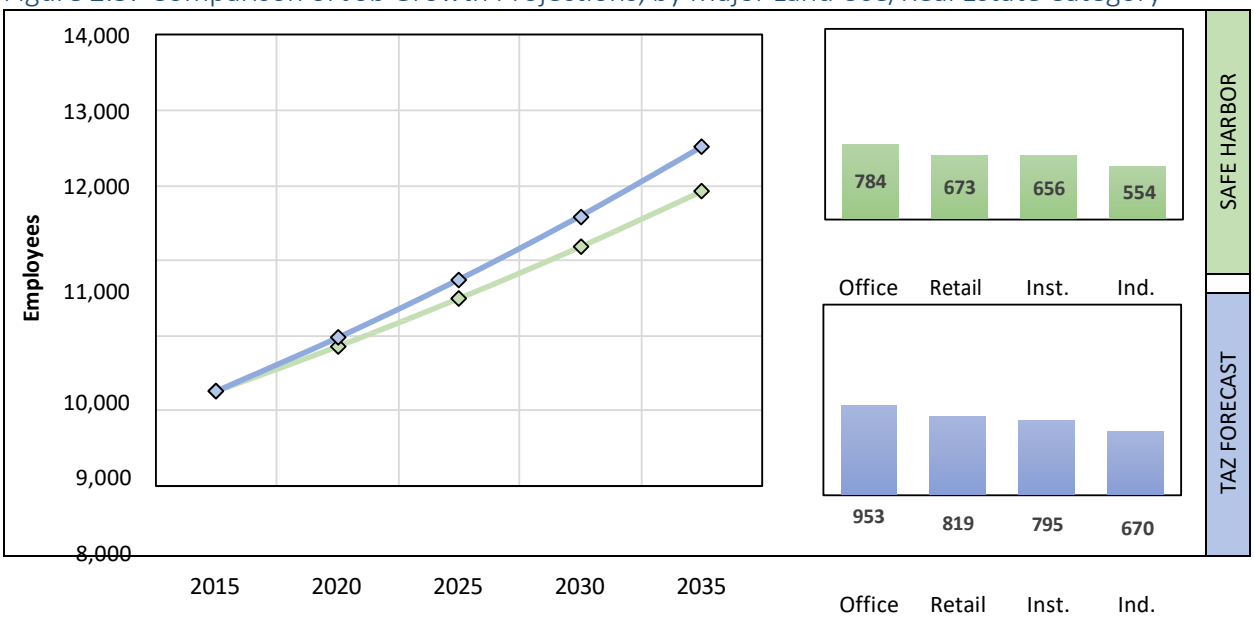
- This analysis presents to potential growth scenarios for employment, which impact the projected demand for employment land over the 20-year planning period.

- The first forecast uses the "Safe Harbor" methodology allowed by State Goal 9 statute and associated implementing rules. This approach relies on the most recent regional forecast published by the Oregon Employment Department (OED). The most recent OED forecasts for the Portland Metro area cover the period of 2014 to 2024. This analysis calculates the average annual growth rate for each industry sector from this forecast, and then applies this annual growth rate to the 20-year planning period.

- The second forecast uses a slightly higher projected growth rate derived from Metro's coordinated urban growth planning. Forest Grove and other metro-area jurisdictions work with Metro to update long-range forecasts of employment and housing by Transportation Area Zone (TAZ). The latest estimates were finalized in mid-2016, in the Metro 2040 Distributed Forecast. This forecast projected an average annual job growth of 1.51% in Forest Grove over the 2015 to 2040 period.

- The two forecast scenarios in this analysis range from 1.3% average annual growth (Safe Harbor) to 1.5% (Metro 2040). 20-year job growth estimates range from 2,665 to 3,237 jobs respectively.

Figure 2.3: Comparison of Job Growth Projections, by Major Land Use/Real Estate Category



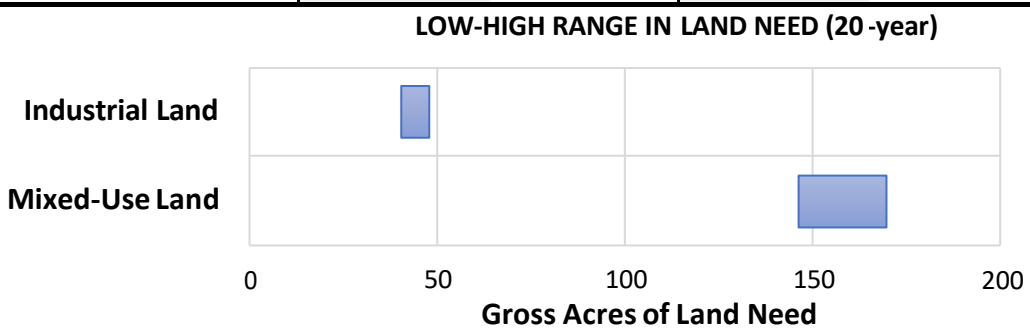
Source: Oregon Employment Department, Metro, Johnson Economics

- The projections of future employment are translated into demand for appropriate real estate space, which is then converted into a forecast of demand for employment lands. (See Section V of this report.)

- The employment projections translate to an estimated 20-year need for 186 to 217 acres of employment land to accommodate the job growth. This land need is distributed across major land use categories, but the greatest need is in general commercial land suitable for office or retail uses.

Figure 2.4: Gross Land Need, Reduced Mixed-Use Categories

Use Type	Safe Harbor Forecast		Metro 2040 (TAZ) Forecast	
	5-year	20-year	5-year	20-year
Industrial Land	9	40	11	48
Mixed-Use Land	33	146	37	170
TOTAL ACRES	**42**	**186**	**48**	**217**



Source: Johnson Economics

Buildable Land Inventory (Supply)

- The Buildable Land Inventory (BLI) used in this model is based on the most current Metro draft BLI dating to March, 2018. This BLI has been reviewed and refined by Johnson Economics to better reflect the realities on the ground, missed by Metro's more formulaic approach. This local-level review is an anticipated part of Metro's process. (See Section VI for more discussion of BLI methodology).

- There is an estimated total of 292 acres of buildable, or redevelopable land located in the city. A majority of these buildable acres (275 ac.) are located within the current City boundary. Two large parcels (36.8 ac. & 17 ac.) are located outside of the City boundary, but within the UGB.

- Most available acreage is in areas with Industrial zoning (74%). There is a smaller amount of buildable acreage in Mixed Use[1] zoning.

[1] Metro identifies most of commercial zoning in Forest Grove as having a general classification of "Mixed Use" because it also allows for some amount of residential use in addition to commercial uses. Therefore none of the parcels counted in this land inventory are considered to be "commercial" land, despite many being located in the Community Commercial zone.

Figure 2.5: Summary of Buildable Land Inventory

Land Use	Vacant		Redevelopment		TOTALS	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
Industrial	29	173.2	7	63.9	36	237.1
Mixed Use	6	22.6	5	23.8	396	55.0
TOTALS:	*35*	*195.8*	*12*	*87.7*	***432***	***292.1***
w/i City:	*33*	*178.8*	*12*	*87.7*	*430*	*275.1*
w/i UGB:	*2*	*53.8*	*0*	*0.0*	*2*	*53.8*

Source: Metro, City of Forest Grove, Johnson Economics

Reconciliation of Supply and Demand

- Current buildable land supply is estimated to be sufficient to meet short term needs, but not long term needs.
- Over the 20-year period, the buildable supply does exceed the long term demand. However, this analysis finds that the classification of available land (mostly industrial) is a poorly matched to future employment needs.
- The demand for Mixed Use and/or Commercial lands will exceed the supply of these land categories over the planning period.
- Many of the same types of uses (office and retail) can be suitable to either Commercial or Mixed Use land, so the balance between these two zoning types are somewhat fungible. In other words, some of the estimated demand for new land could be accommodated by new commercial or mixed use land, or a mix.
- This analysis indicates that there may be a significant oversupply of designated industrial land in Forest Grove, and that some of this might be repurposed for other employment uses.

Figure 2.6: Reconciliation of 20-Year Demand and Supply

SAFE HARBOR FORECAST

	DEMAND		SUPPLY		
LAND USE	**Safe Harbor Forecast**		**Buildable**	**Surplus or Deficit**	
	5-year	**20-year**	**Acres**	**5-year**	**20-year**
Industrial Land	9	40	237.1	228	196.75
Mixed-Use Land	33	146	55.0	22	(91.15)
TOTAL:	42	186	292.1	250	105.60

METRO 2040 (TAZ) FORECAST

	DEMAND		SUPPLY		
LAND USE	**Metro 2040 Forecast**		**Buildable**	**Surplus or Deficit**	
	5-year	**20-year**	**Acres**	**5-year**	**20-year**
Industrial Land	11	48	237.1	226	189.16
Mixed-Use Land	37	170	55.0	18	(114.55)
TOTAL:	48	217	292.1	244	74.60

Source: Metro, City of Forest Grove, Johnson Economics

(All subjects are discussed in greater detail in the following report.)

III. ECONOMIC TRENDS

This report section summarizes long and intermediate-term trends at the national, state, and local level that will influence economic conditions in Forest Grove over the 20-year planning period. This section is intended to provide an economic context for growth projections and establish a socioeconomic profile of the community.

Regional Context

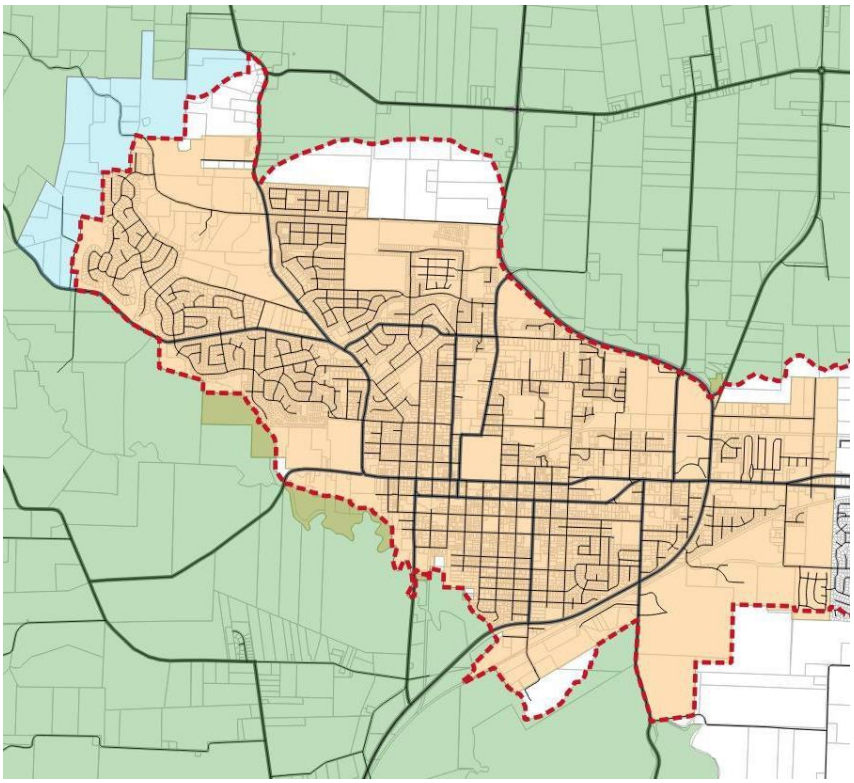
The City of Forest Grove functions in a regional economy that is influenced by broader economic trends and conditions in the Portland Metropolitan area and the nation. This section summarizes anticipated and observed national, state, and local trends and their likely influence on the Forest Grove economy.

Short-Term Trends (0 - 5 Years)

An Economic Opportunities Analysis (EOA) is primarily focused on long-term structural cycles. However, the Portland Metropolitan area is currently exhibiting trends across many metrics that are clearly indicative of structural changes in the regional status quo. Short term trends are easier to discern, as well as more relevant to current economic development needs.

Long-Term Trends (0 - 20 Years)

Economic growth in Forest Grove over the twenty-year planning period will occur in the context of long-term economic and demographic conditions.



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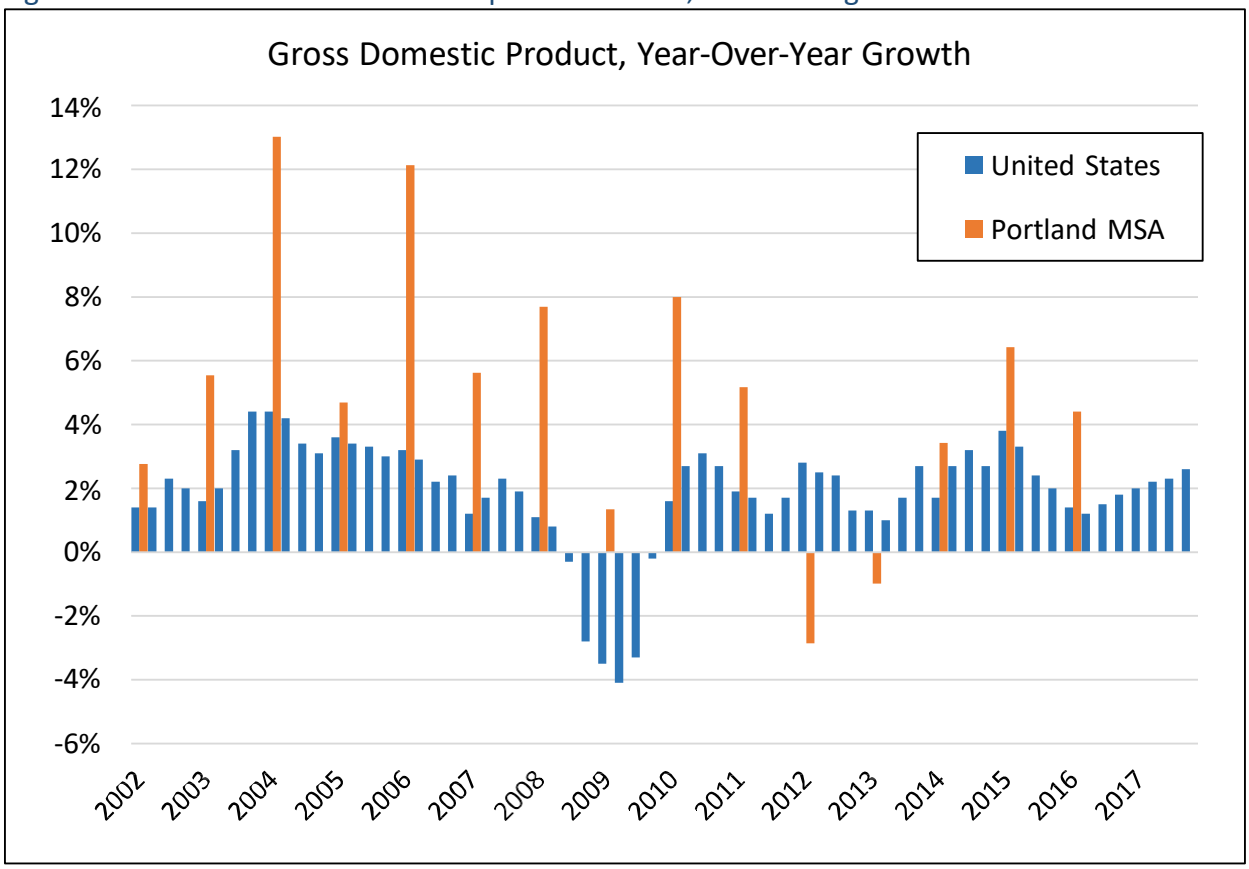
The economic opportunities analysis must identify the major categories of industrial or other employment uses that could reasonably be expected to locate or expand in the planning area. This determination is based on local economic development aspirations, grounded in observed national, state, regional, county or local trends. This review of trends is the principal basis for estimating future industrial and other employment uses.

Economic Growth

Nationally, the Great Recession which began at the end of 2007 officially brought six consecutive quarters of negative economic growth in 2008 and early 2009. The depth of and duration of this downturn was the most pronounced since World War II. The recovery and current expansion cycle has been healthy but somewhat modest to date, with credit markets remaining more stringent, businesses and consumers more cautious, and housing construction more muted than prior to the recession. This is despite a recovery that has now lasted nearly a decade.

Figure 3.1: Gross Domestic and Metropolitan Product, 2002 through 2017



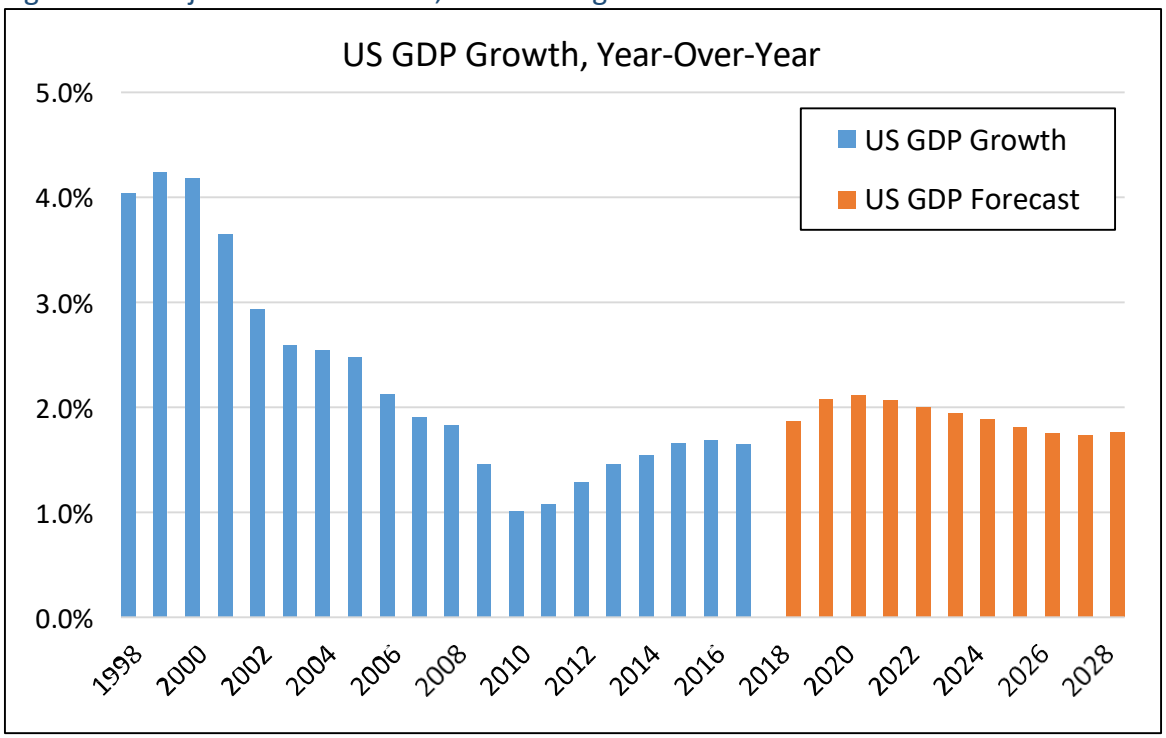
Source: US Bureau of Economic Analysis (BEA)

Recession era declines in output growth were less severe locally, a likely product of a high share of traded sector[2] industries. Similar to previous cycles, inflection points in economic cycles continue to lag national trends by several years. For example, local negative output occurred in 2012-2013, not 2008-2009. Portland Metro GDP growth tends to outpace the national growth rate, both before and after the recession.

[2] Traded sector industries are those which sell their products or services outside of the local region, state or country. These industries can grow the local economy by bringing in external wealth, rather than recirculating internal wealth. Also, they may be better buffered from local economic events, but more vulnerable to external economic events.

The Congressional Budget Office (CBO) forecasts that US growth will remain moderate in the 2% range over the near- and long-term, which would be lower growth than experienced in past expansion cycles[3]. These modest growth levels complicate Federal Reserve decisions on when to raise interest rates and to what degree, and will also tend to slow wage growth.

Figure 3.2: Projected GDP Growth, 1998 through 2028



Source: US Bureau of Economic Analysis (BEA), Congressional Budget Office

Monetary Policy Outlook: The Federal Reserve (The Fed) uses monetary policy to influence business cycles to meet targets for employment and inflation. During the great recession The Fed employed unprecedented measures to stave off a financial crisis and repair economic conditions. The Federal Funds Rate remained near 0% between 2010 and 2015. In the last few years, the Fed has raised the Funds Rate slowly and incrementally but it remains very low by historical standards.

With the current business cycle now in its eighth year, another downturn has become increasingly likely, leaving some economists concerned that very low rates will limit the Fed's ability to combat another recession by cutting rates.

[3] Congressional Budget Office, The 2018 Long-Term Budget Outlook (April 2018)

Impact on Forest Grove:

In the near-term, borrowing costs for local companies will increase over the next several years, as interest rates continue to trend upwards. However, this should occur in the context of continued economic growth. With economic performance in the region typically lagging national trends, Forest Grove should see positive economic growth exceeding national levels through 2020. Continued housing construction and business investment in capacity expansion will lead growth in coming years.

The region will continue to experience the "costs of success" that come with strong growth, including escalating housing costs and tight housing supply, as well as escalating labor costs among shortages of qualified workers. Policies that allow for continued growth in both commercial uses and housing can relieve some of these pressures by ensuring sufficient land supply.

Employment Trends

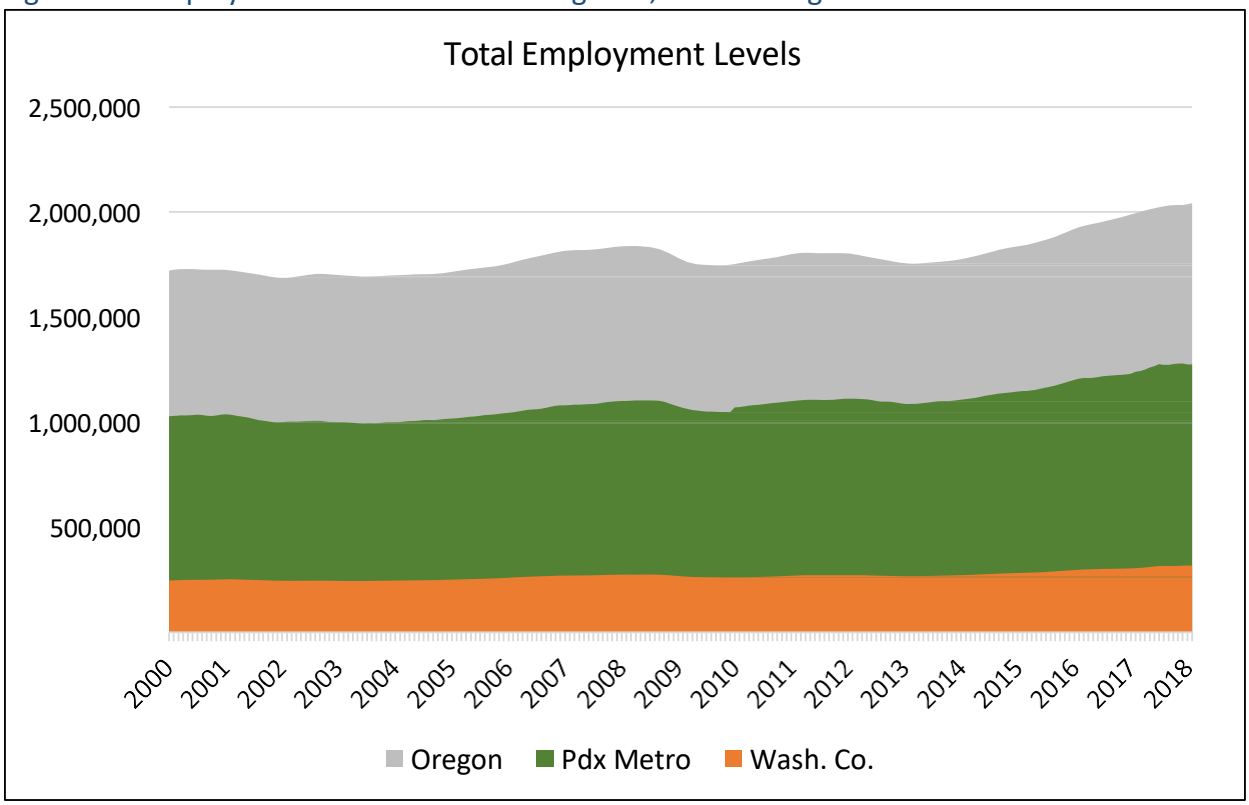
Oregon employment trends since 2000 reflect the general national economic trends including a tech-driven recession early in the century, followed by a period of robust growth led by the housing market, and development. Employment peaked in early 2008 before leveling, and then fell sharply through 2009 as a result of the recession and financial crisis.

Statewide, employment did not surpass the previous high mark until 2015, however growth in the Portland Metro area was faster. The Metro area has led the state out of the recession, with the region regaining its lost employment by 2013, and continuing strong growth since then.

Washington County has added an estimated 43,000 jobs in the last ten years, and 71,500 jobs since 2000 (growth of 16% and 29% respectively). The annual growth rate in employment in Washington County has exceeded the rate seen in both the state, and the rest of the Metro region.

Washington County accounts for roughly 25% of the total employment in the Portland Metro region, and 16% of the employment in Oregon. As discussed more in the following section, Forest Grove accounts for roughly 3% of Washington County's employment.

Figure 3.3: Employment Levels: State and Regional, 2000 through 2018



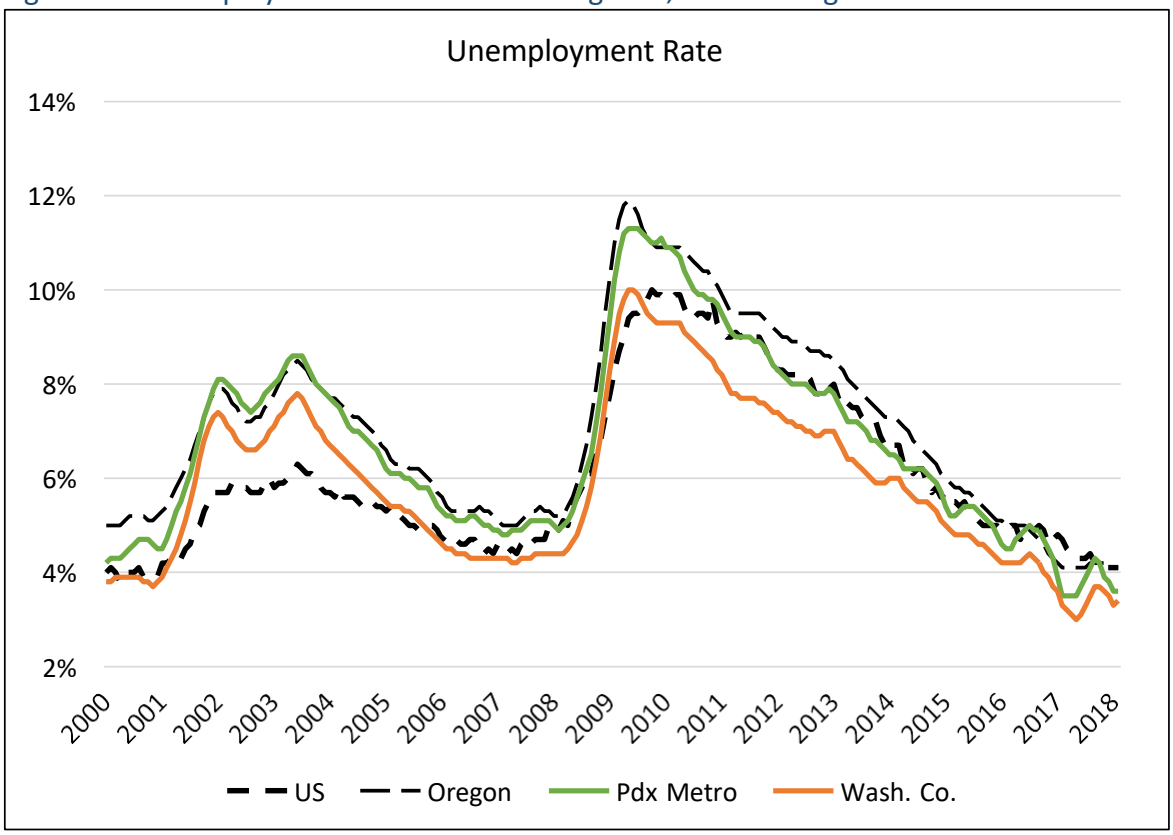
Source: Oregon Employment Department

As expected, the unemployment rate reflects these trends. After a period of elevated unemployment following the recession of the early 2000's, the rate fell until 2008 when it spiked dramatically (see following figure).

Unemployment in Oregon and the Portland Metro region generally, both spiked roughly two percentage points higher than the national average by 2009. However, the Washington County rate remained lower, peaking at roughly 10%.

Since 2009, the unemployment has fallen steadily for nearly a decade. The unemployment rate in Washington County has remained below that of the Metro, state, or nation. While the exact definition of "full employment" and what constitutes a healthy unemployment rate differs, at its current rate of 3.4% it is near historic lows and reflects a very tight labor market.

Figure 3.4: Unemployment Rate: State and Regional, 2000 through 2018



Source: Oregon Employment Department

Impact on Forest Grove:

In the near-term, employment is expected to continue to grow and the labor market is expected to remain very tight, with growing competition for qualified labor for nearly all categories of employers. The duration of this situation will depend on the timing of the next cyclical downturn.

Over the mid- to long-term, such a downturn will surely occur, which would be expected to cause employment levels to stagnate or drop, and unemployment to rise. The positive news is that with current tight conditions, a modest drop-off might serve to return the labor market to more sustainable levels. Over a full 20-year period, multiple up and down economic cycles are to be expected.

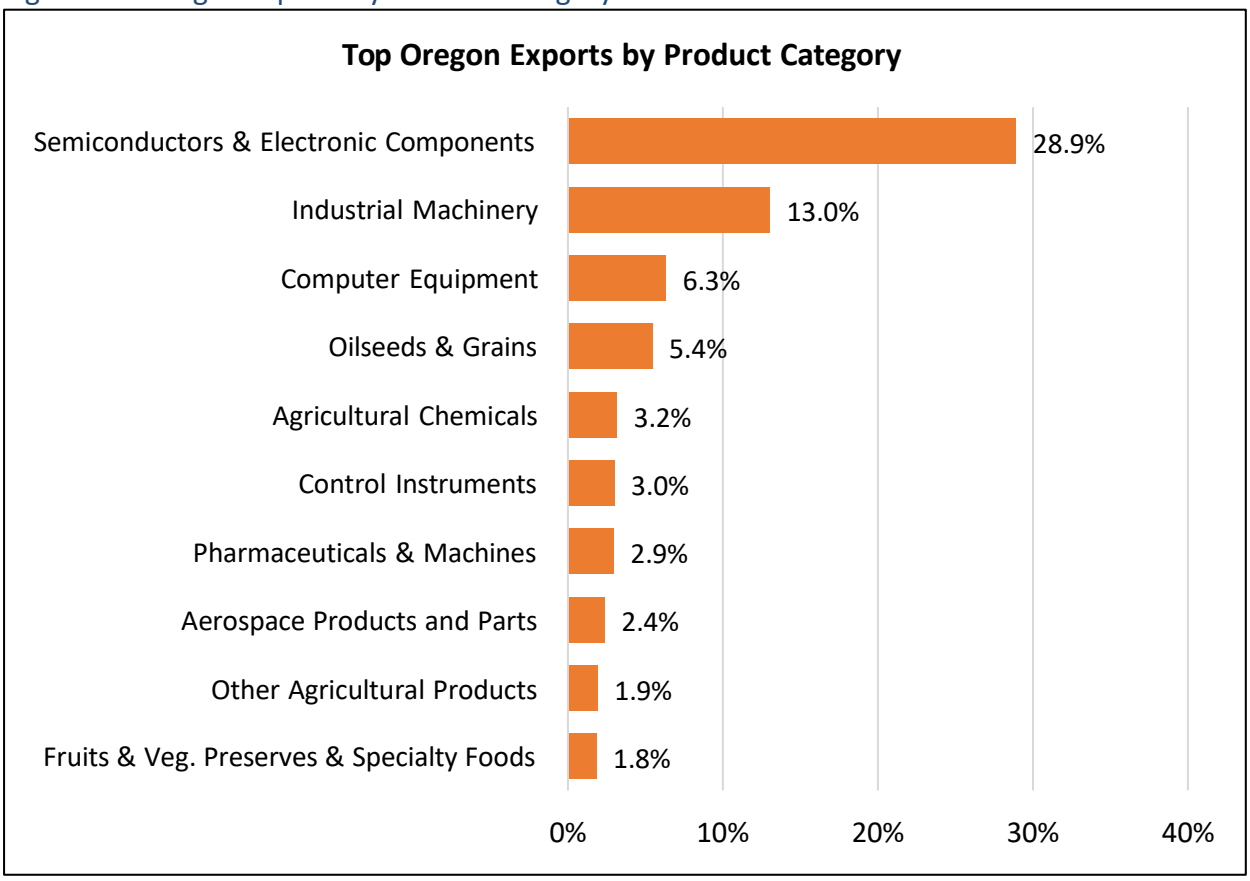
(The local employment cross-section is discussed in more detail in a following section.)

Export Trends

Oregon's Economic health is largely connected to growth in the export market. This is especially true in Washington County, which accounts for a considerable share of Oregon's traded-sector output. In 2017, Oregon's total export value reached over $21.9 billion, growing 19% over the prior five years.

Nearly 29% of state exports (by value) is in semiconductors and electronic components, an industry in which Washington County leads the state. Other technical products as well as agricultural products are also prominent components of state exports.

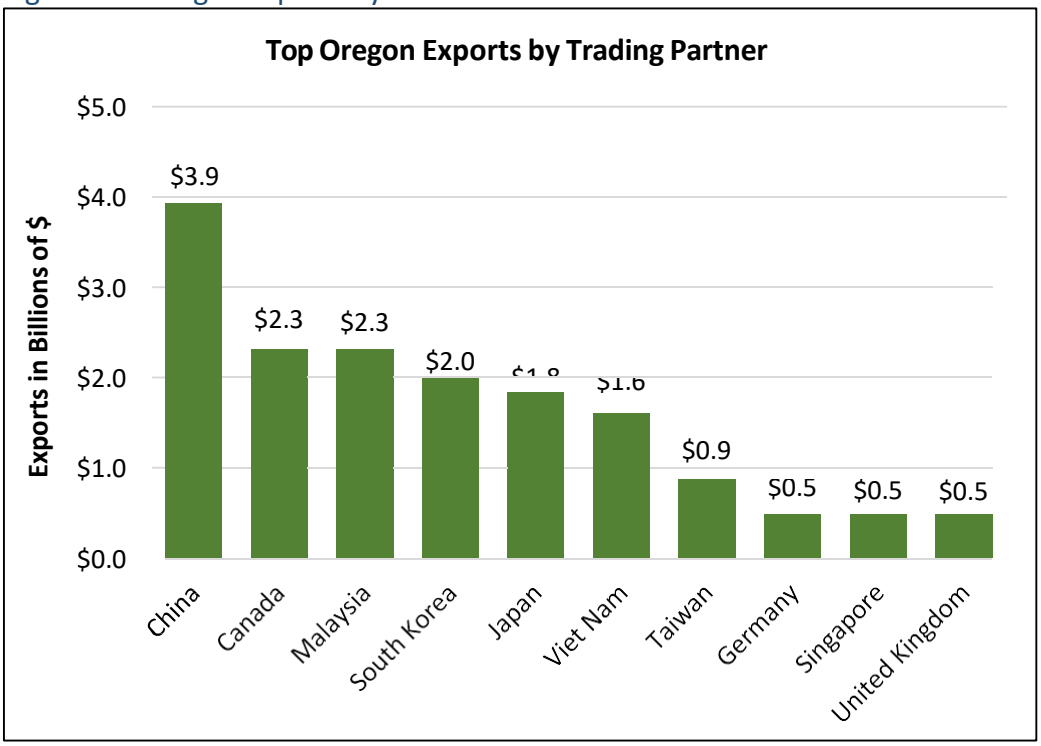
Figure 3.5: Oregon Exports by Product Category: 2017



Source: US Department of Commerce

China receives most Oregon imports by value ($3.9 billion) followed by Canada, and a number of Asian countries. Over the last decade export growth has been most robust with China (+175%), Malaysia (+114%), and Vietnam (+1,500%). Oregon's exports to Canada have actually decreased somewhat over the decade (-17%). (See following figure.)

Figure 3.6: Oregon Exports by Destination: 2017



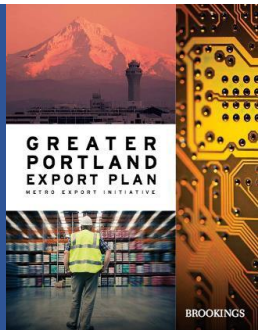
Source: US Department of Commerce

Economic development leaders in the region are confident that there is more room for growth. Increasing exports has become a central component of regional economic development strategies. The connection of export growth to job creation is clear; the Oregon Office of Economic Analysis estimates that 90,000 jobs are directly supported by Oregon exports. A key element in the Greater Portland Export Plan is catalyzing under exporting firms, emphasizing creation of global opportunities for small and medium sized firms.

Negotiations were recently concluded for a new Trans-Pacific Partnership, a free-trade agreement with twelve Pacific Rim countries, including seven of Oregon's top fifteen trading partners. As of 2018, the United States participation in this pact has been shelved or at least delayed by the current administration. Still strong support remains for rejoining the partnership, so this remains a good prospect for the future. Over 31 percent of all Oregon exports are currently with existing FTA partners, an increase of over one-third in ten years. If eventually approved, the TPP agreement could expand Oregon's export potential markedly.

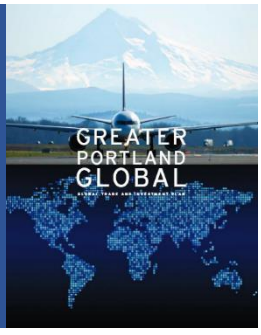
Greater Portland Export Plan (Four Strategies):

- Leverage Primary Exporters
- Catalyze Under Exporters
- Build a Healthy Export Pipeline
- Branding



Greater Portland Global

A joint project between the Brookings Institute and JP Morgan Chase. The plan's focus is on the interaction of exports and Foreign Direct Investment (FDI). A key finding was that excluding Japan; the region lacks FDI out of Pacific Rim partners.



While many structural conditions are in place to facilitate strong export expansion, prospects for growth are not without risks. Most notably, on-going and reoccurring labor disputes at the Port threaten to undermine certainty for exporting firms in the Oregon market. A long-term resolution and return of shipping business will be necessary for the region to meet its export goals.

The current US political climate has grown more hostile to trade agreements and more favorable to measures such as tariffs which have the potential to trigger reprisals from other countries and significantly impact world trade. This political climate has created significant uncertainty over whether these measures will actually be put in effect, and if so how long they might remain in place. Changes in the strength of the U.S. dollar also impact exports positively or negatively.

Impact on Forest Grove:

The manufacturing economy in Washington County has been, and will continue to be highly reliant on trends across a global marketplace. On the positive side, expanded wealth and purchasing power in emerging markets on the Pacific Rim and Latin America should continue to drive demand for products and services made in the area. However, this reliance goes hand-in-hand with exposure to global instability and volatility.

In the near-term, a stronger dollar will temper export growth, as U.S. products are more expensive to foreign buyers. Political uncertainty over the country's favorability to trade deals has the potential to create major disruptions in the short to mid-term, but may not materialize. In the long-term, structural conditions and economic development initiatives are in place for continued export growth.

The region continues to grow robustly on measures positive for the export economy including a modern, educated workforce, and continued preservation of agricultural lands, which support agricultural exports and food processing industries.

Demographic Trends

In terms of absolute numbers, the Portland Metro area has been the center of growth in population and households for decades. The region has seen the earliest and strongest economic recovery from the recent recession, and offers the greatest diversity of new opportunity for potential new arrivals. Since 2000, the four-county Portland Metro region (including Clark County) has grown by nearly 500,000 people, to 2.28 million people. This is over 27% growth since 2000 and over 60% growth since 1990.

Washington County represents 26% of region's population, at 596,000 people. It has added over 150,000 people, or 34% of its population since 2000. It was the fastest growing of the three Oregon counties during that period, and lagged just behind Clark County in growth rate.

Since 2000, Forest Grove has grown by nearly 6,000 people (33%), to 23,500 people in 2017. The City represents 4% of the county's population, and 1% of the Metro area.

(All figures courtesy of Portland State University Population Research Center.)

Figure 3.7: Forest Grove Household Trends & Short-Term Projections: 2000 - 2023

POPULATION, HOUSEHOLDS, FAMILIES, AND YEAR-ROUND HOUSING UNITS						
	2000 (Census)	2010 (Census)	2018 (Est.)	Growth Rate 10-18	2023 (Proj.)	Growth Rate 18-23
Population	17,830	21,130	23,980	1.6%	26,225	1.8%
Households	6,336	7,628	8,514	1.4%	9,311	1.8%
Families	4,128	4,909	5,479	1.4%	5,992	1.8%
Housing Units	6,702	7,845	8,920	1.6%	9,755	1.8%
Household Size	2.64	2.77	2.82	0.2%	2.82	0.0%
PER CAPITA AND AVERAGE HOUSEHOLD INCOME						
	2000 (Census)	2010 (ACS)	2018 (Est.)	Growth Rate 10-18	2023 (Proj.)	Growth Rate 18-23
Median HH ($)	$40,296	$47,296	$54,437	1.8%	$59,438	1.8%
Average HH ($)	$48,231	$60,310	$70,142	1.9%	$77,084	1.9%

Source: US Census, PSU Population Research Center, Metro, Johnson Economics

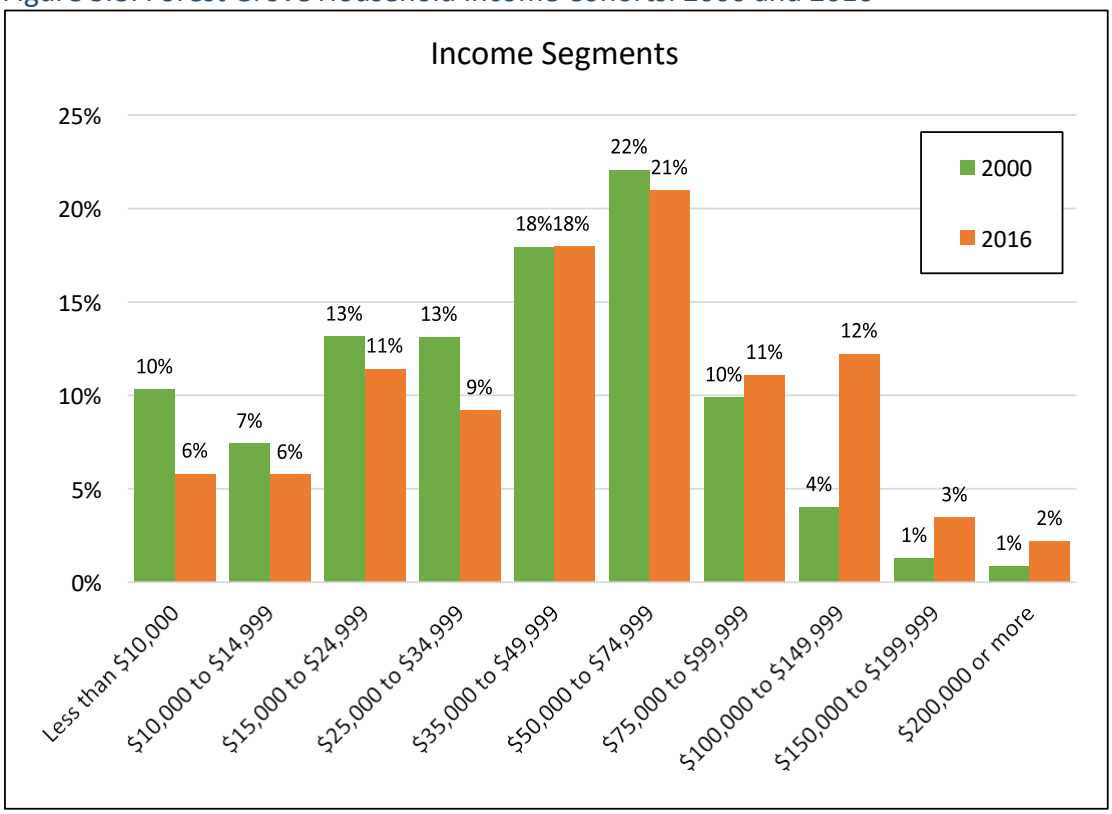
Population and Households

- As of 2018, Forest Grove is estimated to approach 24,000 people, making it the 24th largest city in Oregon.
- Forest Grove is home to an estimated 8,500 households in 2018. The percentage of families declined slightly since 2000 from 65% to 64% of all households. This is lower than the Washington County figure of 67% family households, and higher than the state's 63%.
- The Census estimates that Forest Grove's average household size has actually increased since 2000, from 2.6 to 2.8. This is smaller than the county average of 3.1 but larger than the statewide average of 2.5.

Income Levels

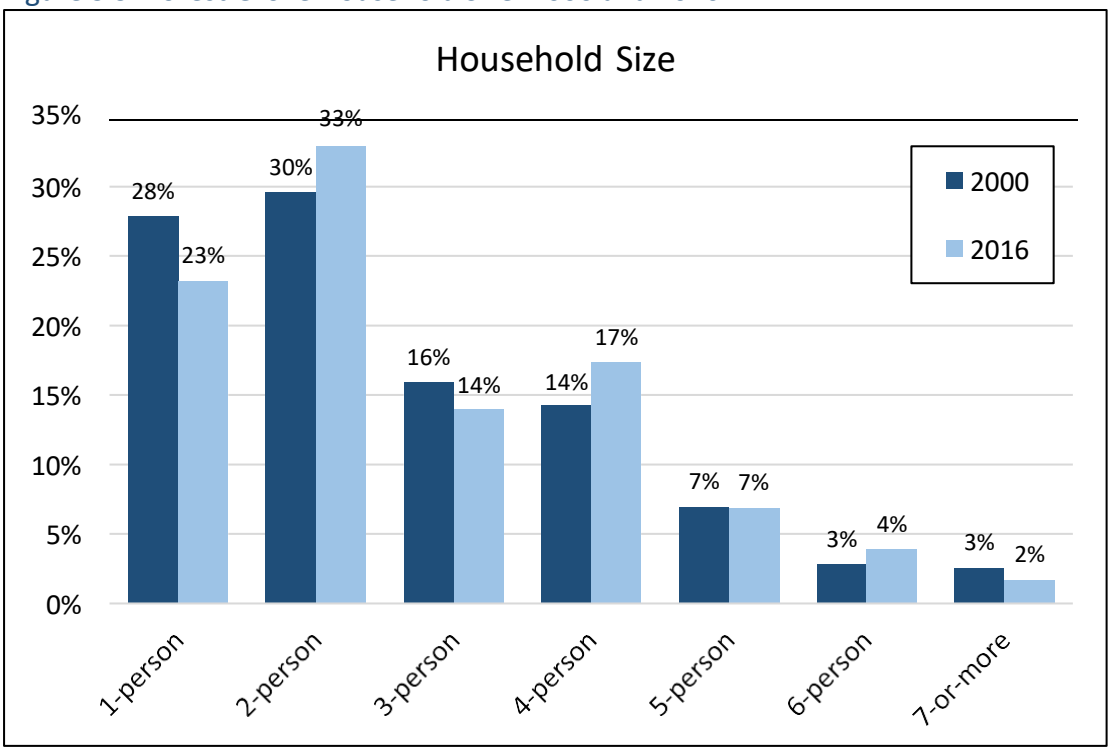
- Forest Grove's median household income was $47,300 in 2010. This was 32% lower than the median income found in the county ($62,500).
- Median income has grown an estimated 35% between 2000 and 2018.
- Figure 2 shows the distribution of households by income in 2000 and 2016 according to the US Census' American Community Survey. The largest single income cohort is those households earning between $50k and $75k, at 21% of households. 50% of households earn less than this, while 29% of households earn $75k or more per year.
- 23% of households earn $25k or less, down from 31% of households in 2000.

Figure 3.8: Forest Grove Household Income Cohorts: 2000 and 2016



Source: US Census, American Community Survey, Johnson Economics

Figure 3.9: Forest Grove Household Size: 2000 and 2016



Source: US Census, American Community Survey, Johnson Economics

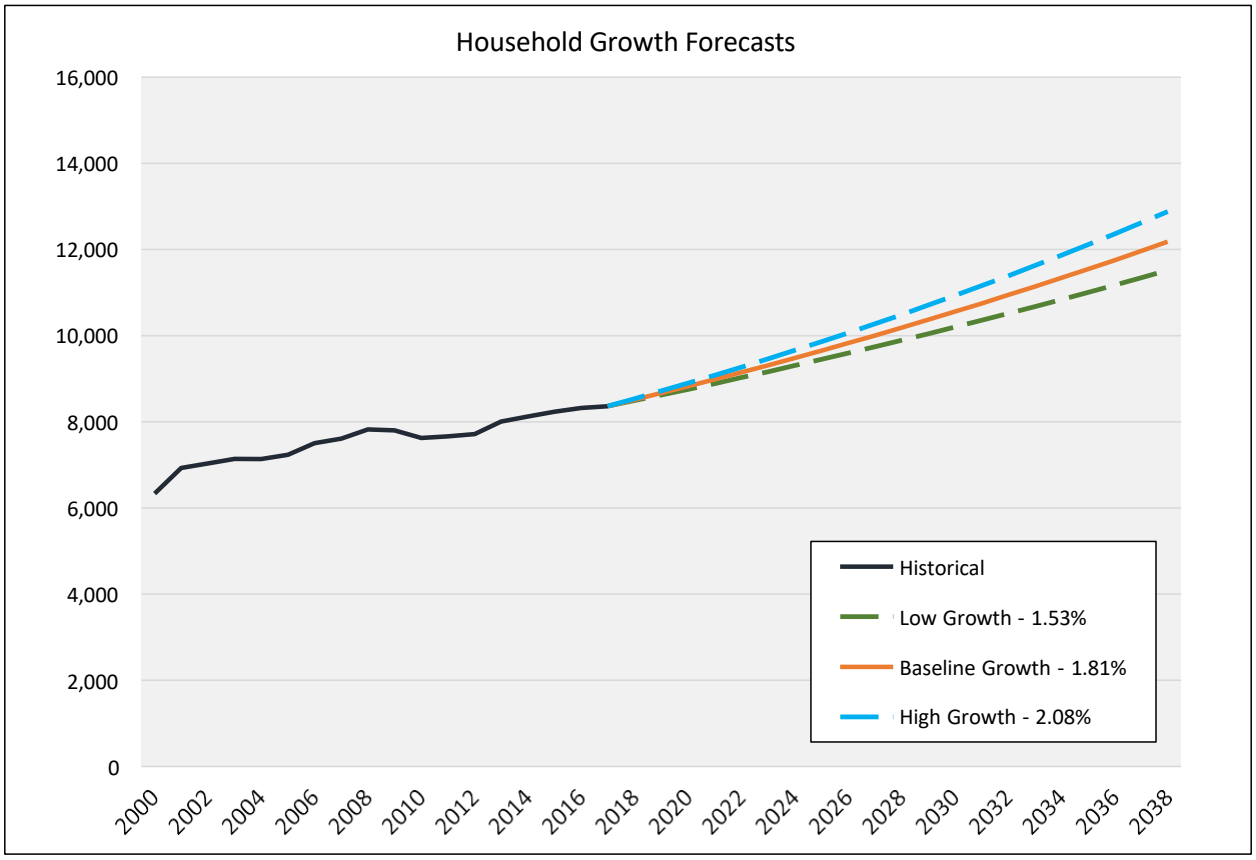
Household Growth Projections

Metro regional government periodically prepares household growth forecasts for the member jurisdictions across the region, including Forest Grove. The latest forecast dates to 2016, and is the Metro 2040 Distributed Forecast.

- The Metro 2040 forecast projected Forest Grove growing from an estimated 8,432 households in 2015 to an estimated 13,190 households by 2040. This is a growth rate of 1.81% over that period.

The following figure presents historical growth in households from 2000, and projected growth based on the Metro 2040 forecast. The forecast extends over the 20-year period of this analysis, to 2038. In addition to the forecasted growth rate of 1.81%, the figures presents a range of potential growth scenarios, assuming that the annual growth rate may end up being 15% higher or lower than the forecast. These forecasts arrive at a range of 11,515 to 12,876 households by 2038.

Figure 3.10: Forest Grove Forecasted Household Growth: 2000 and 2038



Source: Metro 2040 Distributed Forecast, Johnson Economics

Impact on Forest Grove:

The forecasted growth rate of 1.81% would represent an acceleration of the growth rate over recent years. Household growth is an important driver of economic activity including in the construction, services and shopping sectors. Forest Grove can anticipate continued growth and the need to serve more of the needs of households locally, rather than traveling for daily needs.

Anticipated Demographic Shifts

Aging of the Workforce: The aging of the Baby Boomers into their retirement years will perhaps be the greatest challenge to the U.S. economy over the planning period. By 2035 the share of the population age 65 and older will balloon to 21 percent, up from 14.5 percent today. The effects of this condition will be a decline in labor force participation, an increase in federal liability for health care services, and an increased need for replacement workers.

Millennial Generation: Millennials are now the largest demographic segment in the United States, comprising 27% of all residents and an even greater share of net-migrants. Leading into and during the Great Recession, this cohort faced a woeful labor market. Many opted to enter or continue post-secondary education, at which point the college enrollment rate for 18-24 year olds rose from 37 to 42 percent. The younger cohorts moving to the Portland Metro area tend to have higher educational attainment on average than existing residents, supporting a high-skilled workforce.

Labor Force Participation: The aging of the labor force as well as generational preferences are putting downward pressure on the labor force participation (LFP) rate. This rate measures the share of the working age population that is employed or is actively seeking work. In 2016 Oregon's rate of 63% was rebounding somewhat after hitting the lowest level on record in 2015. The "participation gap" is the difference between actual LFP and where LFP should be given underlying demographics. Currently this gap remains large despite the economic recovery, structurally reducing potential employment in the economy.

Immigrant Labor: Currently, the national political climate is shifting to the detriment of immigration of both low- and high-skilled workers from foreign countries. Increased enforcement and unwelcoming rhetoric has reduced migration from Latin America over the past year, and created trepidation and uncertainty among some current residents about their status in this country. In addition, there is currently discussion of reducing or restricting visa programs for highly skilled workers of the type used in many high tech industries.

Impact on Forest Grove:

Companies in Forest Grove may have increasing difficulty finding trained labor due to the aging of the workforce and falling labor force participation. Good migration will be necessary to meet future needs of local industries. Difficulty finding labor may accelerate investments in capital to replace labor. The economy overall is at greater risk of performing below potential.

Reduced migration may have an outsized impact on Washington County due to the importance of both agriculture and the high tech sector. The scale and impacts of measures to reduce immigration have yet to be determined, and may prove temporary, if reversed by future administrations.

Washington County, including Forest Grove has the benefit of attracting younger households, and offering high tech industries that offer good jobs to high skilled workers and those with the most up-to-date education. For these reasons, the county should remain an attractive destination for younger workers who can help counteract these trends. Forest Grove also has the benefit of a local university that provides a steady stream of young educated workers who can be recruited to remain in the community.

Household Migration

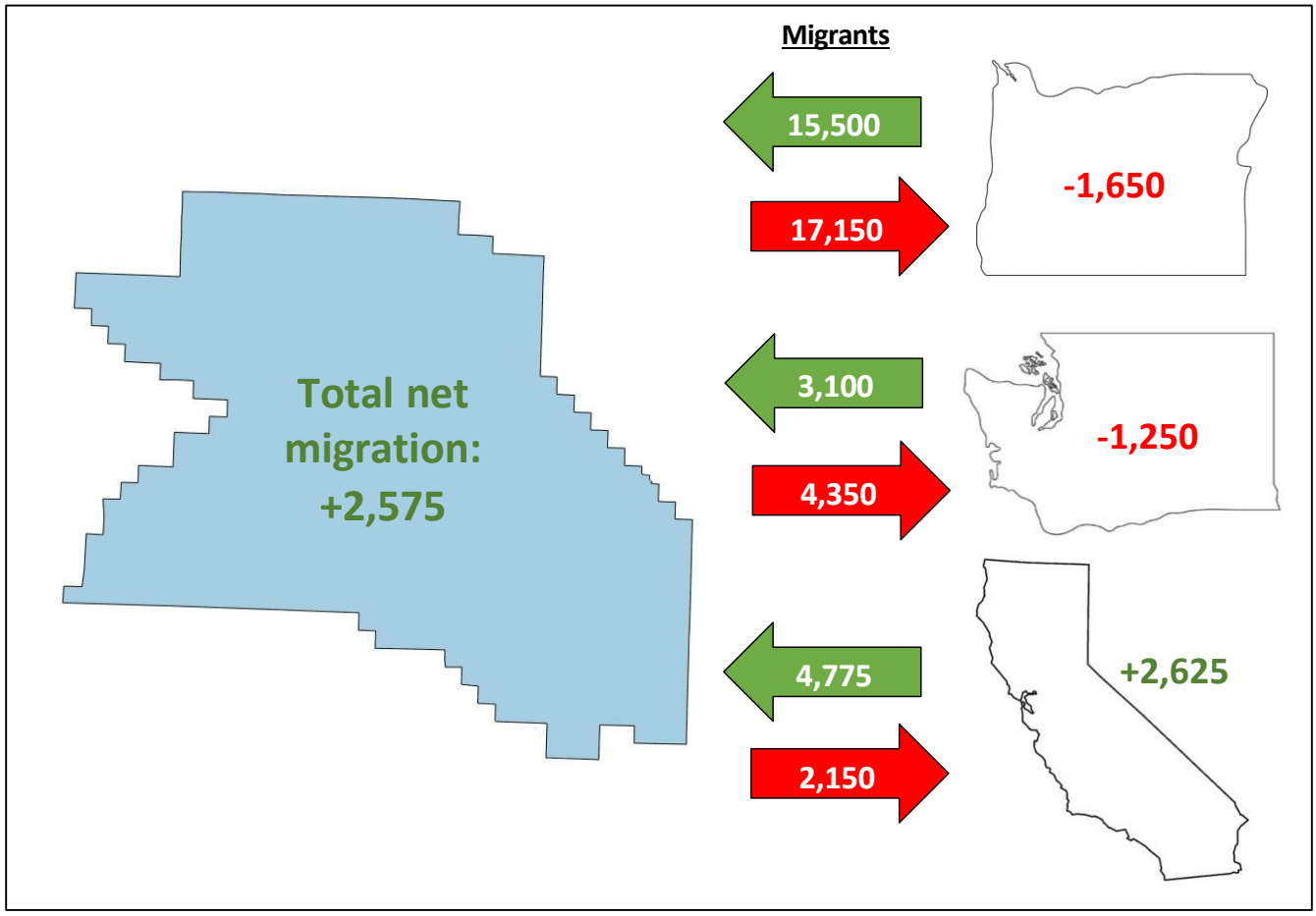
The Portland Metro area is a magnet for migrants from other major markets and abroad, with most new residents landing in Multnomah or Washington Counties to begin their new lives. However, many residents eventually transition to outlying cities.

Since 2010, Washington County has accounted for 35 percent of new migrants to the region and over 17 percent of all net-new migrants to the state of Oregon.

In the most recent migration data available from the IRS (2015-2016), Washington County saw a net population gain from Multnomah County, but a net population loss to Clackamas, Clark and Yamhill Counties. In fact, more people move out of Washington County to other places in Oregon and Washington State, than migrate from those areas (see following figure). The county does however see a strong influx of migrants from Benton and Lane Counties, likely driven by graduating students of the major state universities.

Net positive migration in recent years is attributable to migrants from other states and abroad. California is the largest contributor of new residents, followed by Arizona, Texas, and Nevada.

Figure 3.11: Washington County Migration Flows: 2015 - 2016

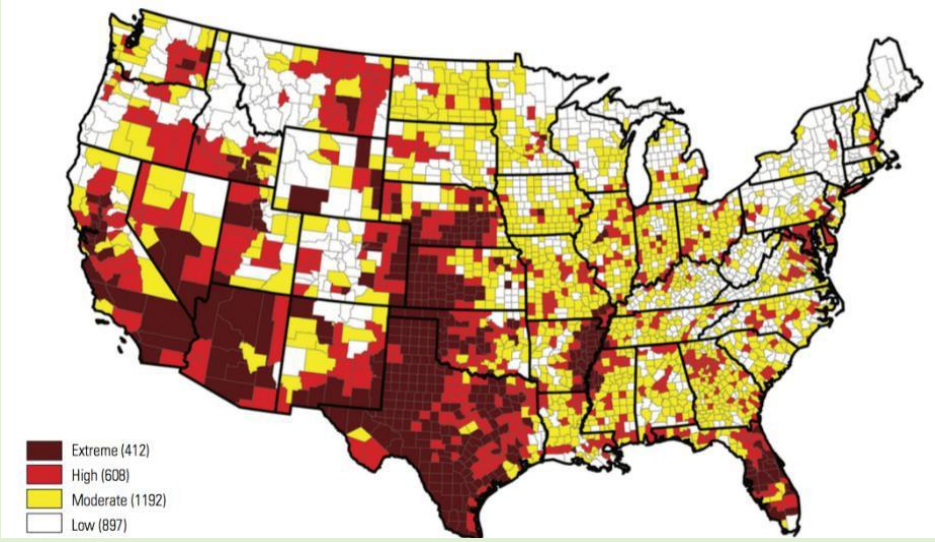


Source: Internal Revenue Service, Johnson Economics

The Pacific Northwest: A Climate Refuge?

Continued in-migration from other states will maintain sustained growth in population and labor force locally. Long-term, an acceleration of net-migration rates is increasingly likely in the context of water resource constraints in the U.S South and Southwest. The Pacific Northwest, and more specifically the Willamette Valley is among the only regions in the United States with an overall low risk of future water resource constraints. The ability of population centers in the South and Southwest to accommodate projected population growth and maintain livability standards is questionable, with proximate high resource areas like Oregon being a likely outlet to accommodate future growth.

Water Supply Sustainibility Risk, 2010 through 2050



Source: Natural Resource Defense Council (2010)

Impact on Forest Grove:

A history of strong net-migration coupled with a rosy outlook is indicative that migration-driven population growth is likely to continue throughout the planning period. This is a positive sign for industries that derive a significant share of their support from the local population base. This includes health care, retail, food services, education, financial services, housing construction, and most of the other services sector.

Multnomah County has also exhibited a doubling of its migration rate in recent years. Given the systematic relationship of flows from Multnomah to Washington County, Forest Grove may be due for a stronger influx of inter-region migrants over the next five years.

IV. LOCAL EMPLOYMENT & TARGET INDUSTRIES

Sound economies are often organized around a healthy set of industry clusters—similar and related businesses and industries that are mutually supportive, regionally competitive, attract capital investment, and encourage entrepreneurship. In his pioneering book "The Competitive Advantage of Nations", Harvard Professor Michael Porter defines clusters as "geographic concentrations of inter-connected companies and institutions working in a common industry". As an economic development strategy, specific clusters are targeted, and emerge, when a particular geography holds an innate competitive advantage in that industry—whether it is natural resources, human capital, political policies, or geography. For example, Oregon's oldest industries—namely forestry and agriculture, emerged from physical and environmental attributes and access to shipping and distribution networks. In turn, these industries spawned interrelated clusters that include Food Processing & Manufacturing, Wood Product Manufacturing, Wholesale & Distribution, Machinery Manufacturing, and host of other industries.

With shared ideas, concepts, and competition, knowledge spill-over within clusters encourages secondary effects—innovation, the creation of start-ups and spin-off industries, and opportunities for suppliers, manufacturers, and customers. In turn, effects from job creation and wages support tertiary effects such as retail, services, construction, housing and institutional industries.

In light of the baseline economic analysis above, Johnson Economics reviewed Oregon Employment Department ES-202 employment data for the City of Forest Grove to determine industries and industry clusters in which the local economy is both regionally competitive and/or has growth potential. We have identified industry clusters with an existing competitive presence in Forest Grove and potentially emerging clusters. Identified targeted industries are evaluated in greater detail below.

Local Employment Trends

In 2018, Forest Grove has an estimated 9,250 local jobs across a range of industries. Employment is estimated based on 2016 QCEW data from the State of Oregon. This data includes "covered employment", or jobs with covered wages, subject to unemployment insurance benefits. This is combined with an estimate of the "non-covered employment" which includes self-employed people, many small business owners, LLC partners, and other cases. (Methodology is further discussed in Section V of this report.) Forest Grove represent 3% of employment in Washington County, which is close but slightly less than the 4% share of the county population who live in the community.

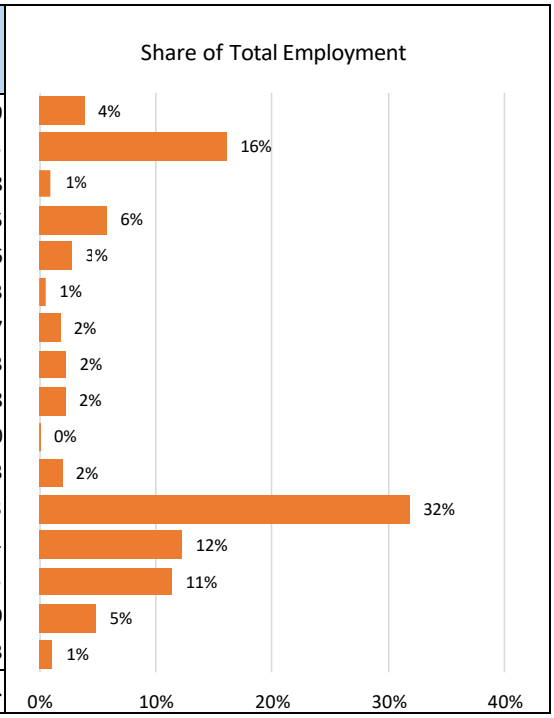
Employment Growth: Employment levels in Forest Grove have been remarkably stable since 2000, according to US Census and BEA data. While the specific firms, and employment by industry have shifted, the overall number of jobs grew just 5% over the period from 2002 – 2015 (the largest span available from this Census data set). This is an annual growth rate of 0.4% in jobs, compared to a population growth rate of roughly 1.5% over this period. This average rate was greatly impacted by the recession and economic downturn in the 2008-2010 period.

Since peaking previously in 2007, employment fell sharply during the recession in keeping with national trends. After bottoming in 2010, local employment has rebounded by an estimated 11%, and surpassed the previous peak in 2015.

Figure 4.1 presents the estimated employment profile in Forest Grove by industry sector. The largest sectors by employment share are private education services, manufacturing, health care, and leisure and hospitality (food service and tourism).

Figure 4.1: Forest Grove Estimated Employment by Industry, 2018

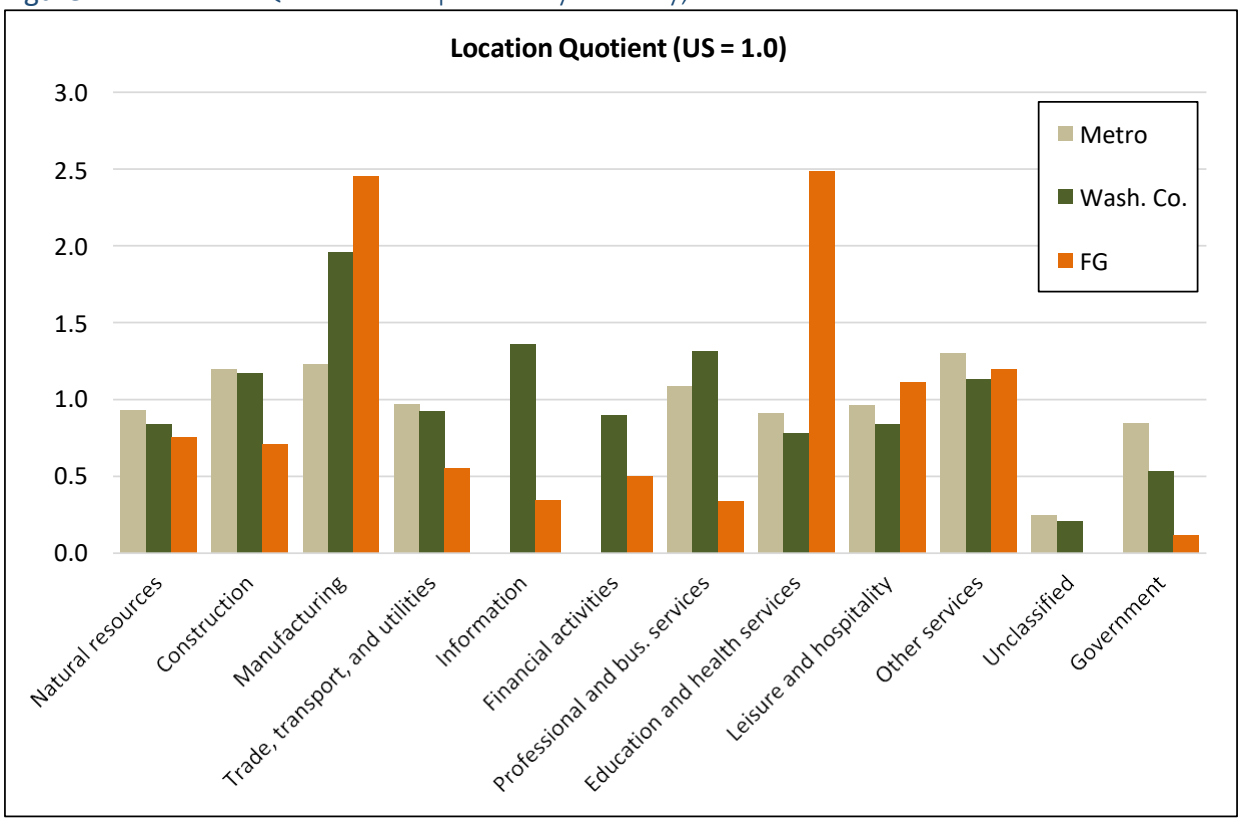
Major Industry Sector	2018 Covered Emp. (Estimate)	Total Emp. Total Emp. Conversion[1]	2018 Total Emp. (Estimate)
Construction	292	81%	359
Manufacturing	1,448	98%	1,485
Wholesale Trade	79	89%	88
Retail Trade	468	88%	535
T.W.U.	179	70%	256
Information	46	88%	53
Finance & Insurance	120	72%	167
Real Estate Services	76	36%	213
Prof. & Technical Services	144	69%	208
Management of Companies	9	97%	10
Administration Services	154	84%	183
Education Services	1,657	56%	2,938
Health Care	969	85%	1,134
Leisure & Hospitality	917	87%	1,053
Other Services	261	58%	449
Government	103	100%	103
TOTAL	**6,922**	**75%**	**9,234**



[1] Bureau of Economic Analysis. Calculated as a five-year average between 2012 and 2016

Source: Oregon Employment Department, Johnson Economics

Figure 4.2: Location Quotient Comparison by Industry, 2018



Source: Bureau of Labor Statistics, Oregon Employment Department, Johnson Economics

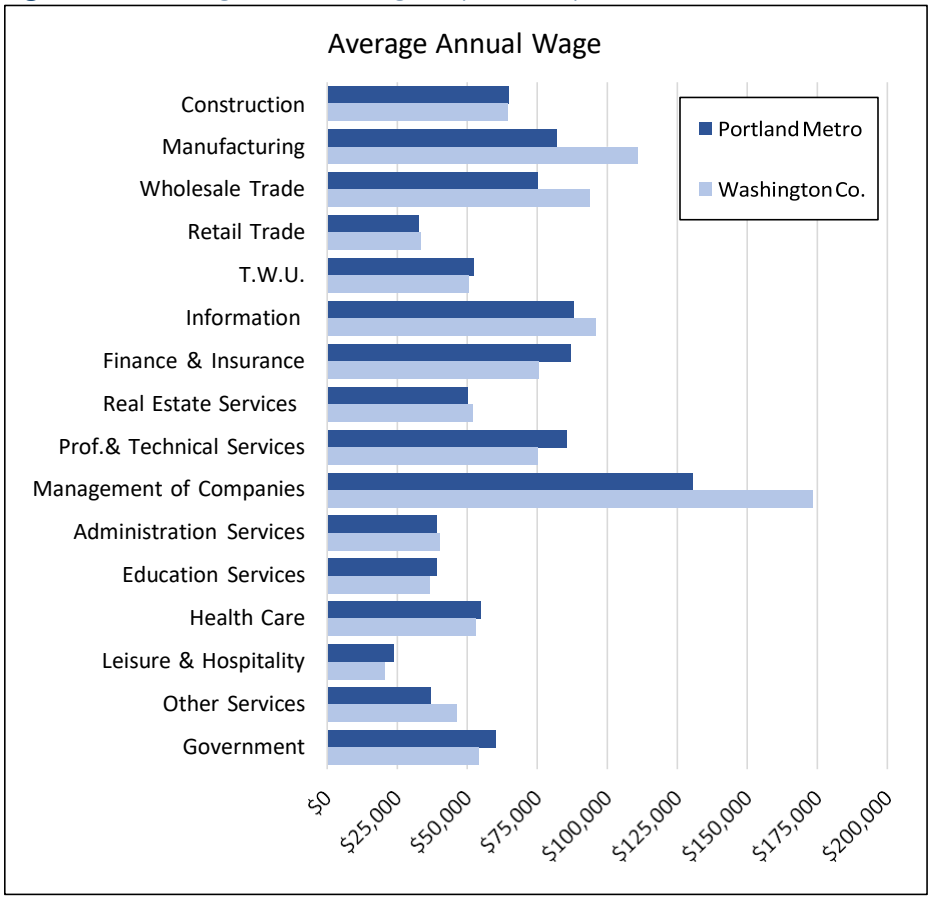
Location Quotient: Figure 4.2 (previous page) presents a comparison of "location quotient" (LQ) of various industry categories. LQ presents a measure of the prevalence of a given industry in a smaller geography, in comparison to how prevalent that industry is nationally. LQ is an indicator of what sectors may be particularly strong or weak in a given locality.

All industry categories are assumed to have a quotient of 1.0 on the national level, and a locality's quotient indicates if the local share of employment in a given industry is greater or less than the share seen nationwide. For instance, a quotient of 2.0 indicates that locally, that industry represents twice the share of total employment as seen nationwide. A quotient of 0.5 indicates that the local industry has half the expected employment.

As Figure 4.2 shows, Forest Grove currently enjoys a greater share of employment in manufacturing and education and health, in comparison to the county, metro, or national level. Employment in these sectors are 2.5 times higher than the national average. Forest Grove also experiences a higher share of jobs in leisure and hospitality, with an LQ of 1.25. In most other categories, Forest Grove has a lower share of employment than the comparisons.

Average Wages: Figure 4.3 shows the average wages in the Portland Metro area and Washington County by industry sector.

Figure 4.3: Average Annual Wages by Industry, 2017

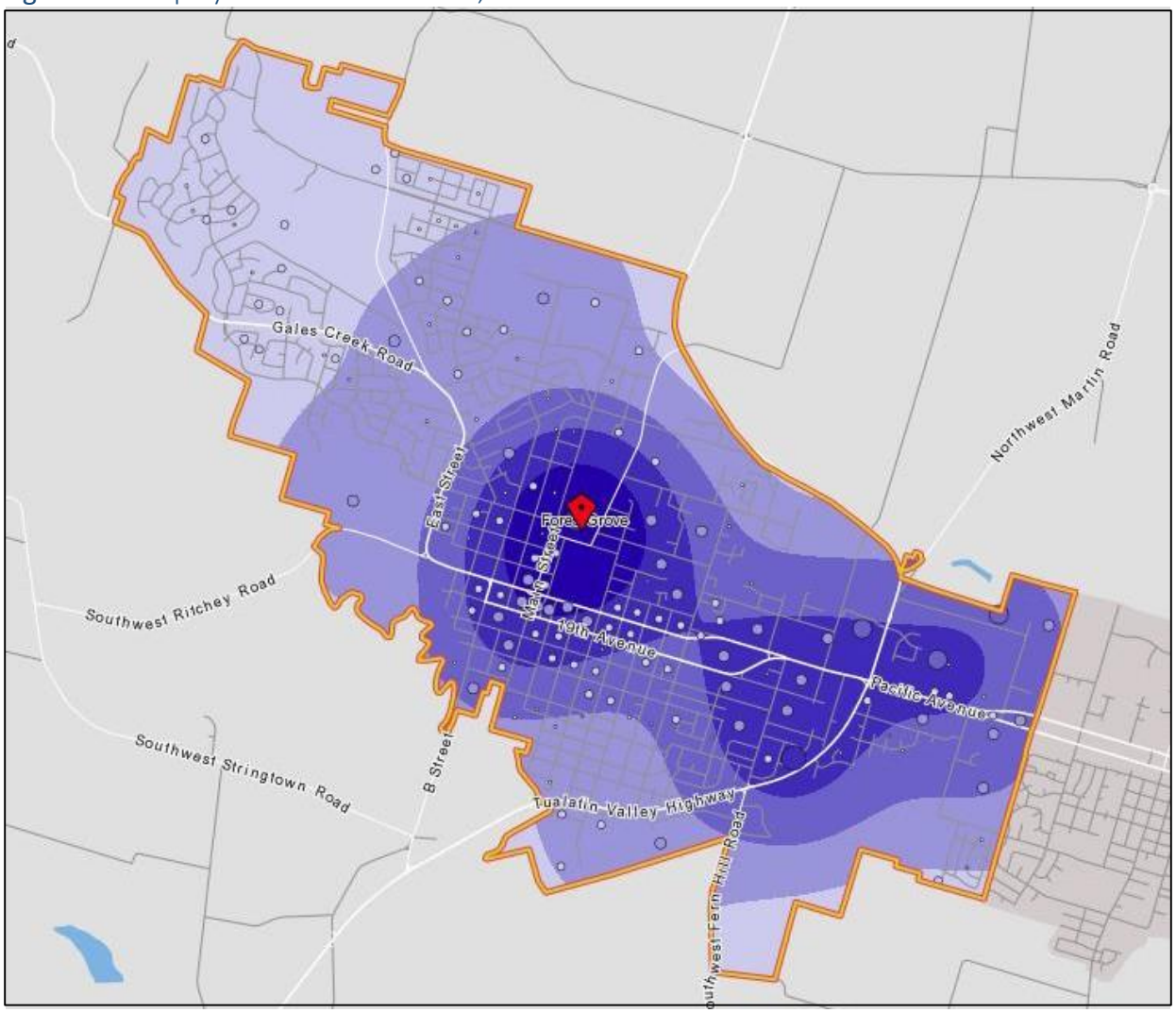


Source: Oregon Employment Department, Johnson Economics

The manufacturing sector which is prominent in Forest Grove enjoys some of the higher average wages among industries, and particularly in Washington County. It should be noted that some of the Washington County averages are likely higher due to the presence of major companies such as Intel and Nike in other parts of the county. Other prevalent industries such as education, health care, and tourism tend to support lower average wages.

Employment Concentrations: Figure 4.4 shows the general concentration of employment in Forest Grove. Most is located between the eastern City boundary, and the Downtown/Pacific University area to the west. Employment tends to be concentrated along the Pacific Avenue axis.

Figure 4.4: Employment Concentrations, 2015



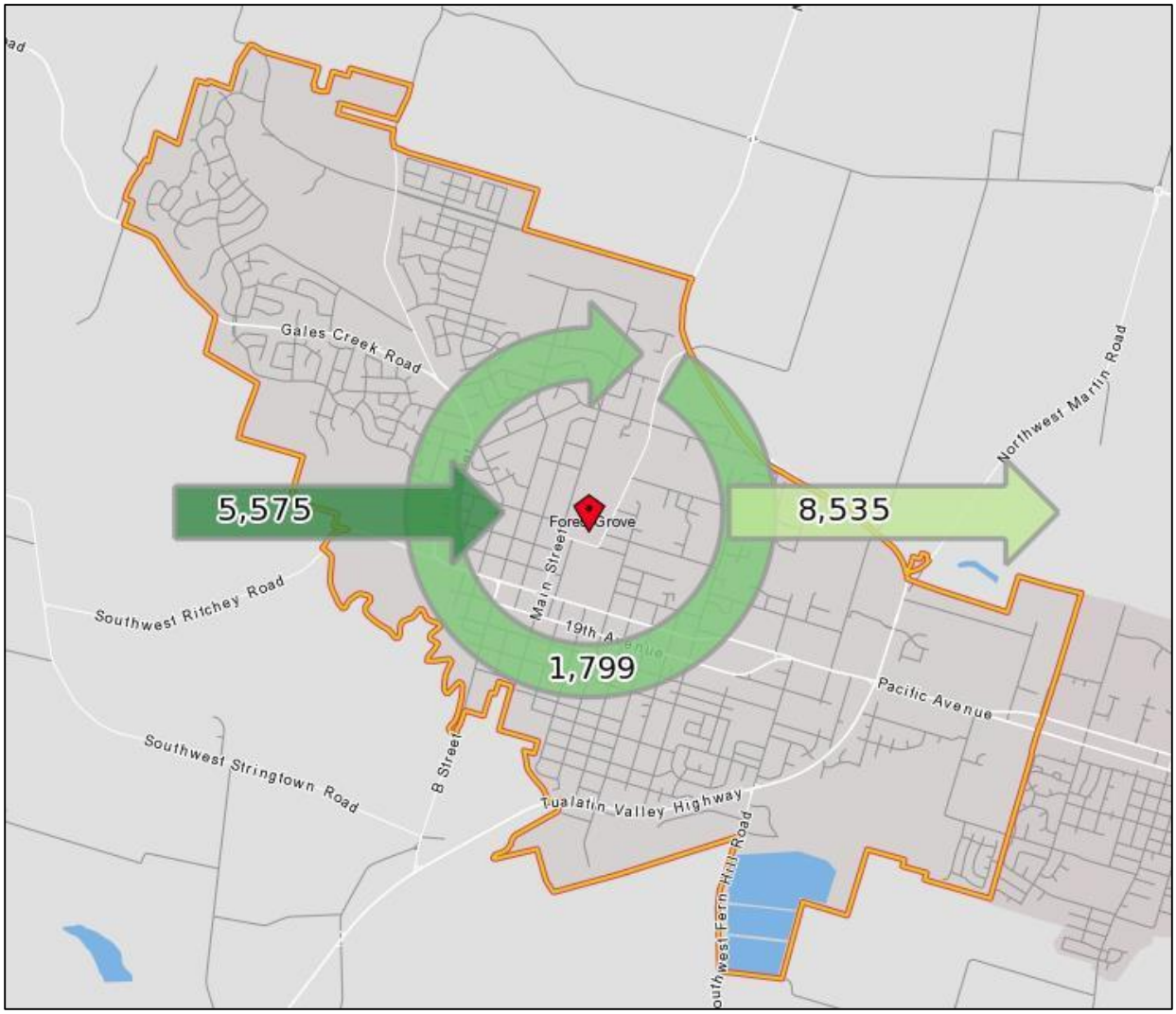
Source: US Census, Johnson Economics

Commuting Patterns: Most employed residents commute out of Forest Grove for employment. This is a pattern that is common to many communities, particularly in an interconnected metropolitan area. Of local jobs, an estimated 24% are held by local residents, while 76% are held by others who commute into

the area. An estimated 83% of local residents who are employed, commute elsewhere.

(The employment totals shown in Figure 4.5 are from a different data set and do not match the employment estimates presented in Figure 4.1. They are presented here to demonstrate the overall pattern.)

Figure 4.5: Commuting Patterns, 2015



Source: US Census, Johnson Economics

* * *

Target Industry Clusters

This section discusses potential target industries for Forest Grove based on the community's historical strengths and advantages, as well as its established economic development goals. These are industries where Forest Grove might focus efforts to grow local business and attract new businesses.

Agriculture/Value-Add Food Products

The proximity of Forest Grove to high quality farmland and the City's quality water supply has created opportunities for growth in food processing and specialty agriculture products. The city already has an existing economic base in food processing (Lieb Foods, Chaucer Foods, Old Trapper, New Seasons Foods), nursery & tree products (Hines Nursery, EF Nursery), and specialty beverages (Sake One, McMenamins, wineries). The agriculture and food processing cluster in Forest Grove has continued to experience solid growth over the last few years, with most major companies adding to their workforce. State employment data indicate that the sector has added roughly 150 employees locally since the recovery took hold in 2013, job growth of nearly 75%. Moreover the nature of Forest Grove's specialty products—breweries, wineries, distilleries, etc. is closely related with leisure & tourism in the region.

Cluster Strengths

- Proximity to high-quality farmland and water supply.
- Existing food processing industry with workforce expertise.
- Has the ability to support a growing tourism industry.
- Geographic access to export markets.
- Certainty of long-term agricultural land supply with designation of rural reserves near Forest Grove.

Cluster Challenges

- Over time, the continued urbanization of Washington County will reduce agricultural growth on the margin.
- Declining food prices and rising input costs.
- Potential restrictions on immigrant labor workforce.

Tourism & Winery Development

The wine industry in Oregon is expected to continue its accelerated growth trend exhibited in recent decades. Since 2000, the number of vineyards in Oregon has more than doubled from under 500, to nearly 1,100. Meanwhile, the number of wineries has quadrupled from roughly 140 to over 700.

Oregon's wine industry growth is largely attributed to growing worldwide popularity and increased market share of Pinot Noir. Oregon's climate is ideal for cultivating the Pinot Noir grape, which began in the Forest Grove area. Pinot grapes account for 65% of Oregon production. Forest Grove has the opportunity to become the center for wine based tourism in North Willamette Valley wine country, and enjoys better accessibility from much of the metro region, in comparison to Yamhill County.

The City of Forest Grove has undertaken efforts to "brand" the city, giving it a regional identity. The concept of Forest Grove as a "Gateway to Wine Country" is a popular option, facilitated both by Forest Grove's proximity to the metro area and by abundant outdoor recreation activities. The Washington County Visitors Association (WCVA) actively promotes the local wine industry. In the past, Forest Grove has been discussed as the location for a "North Willamette Valley Wine Center", which could feature tasting facilities for regional wine makers, lodging, and convention center, perhaps in partnership with the McMenamins Grand Lodge or winery property.

The development of a winery based tourism industry is supportive to other industries as well. For example, agri-tourism typically attracts a relatively affluent patronage that is likely to support higher-end restaurants and shops, enhancing the urban amenities and livability of the community.

Cluster Strengths

- Geographic position near the Chehalem Mountain and Ribbon Ridge American Viticulture Areas, and outdoor recreation opportunities.
- An attractive downtown core, including Pacific University.
- Regionally drawing amenities such as Grand Lodge, Fern Hill Wetlands, Scoggins Valley Park/Henry Hagg Lake.
- Cluster development would provide tertiary benefits to other industries.
- Local wineries are currently small in scale, leaving high growth potential.

Cluster Challenges

- Limited connectedness between winery locations and downtown.
- Need to continue to build awareness as a wine country gateway.
- Regional competitiveness with other Willamette Valley wine districts.
- Wineries have noted that the permitting process in Washington County is difficult and convoluted, a competitive disadvantage relative to other wine counties.

Education

In addition to an attractive sense of community, Forest Grove's livability is accentuated by its quality public school system. Increasingly considered a livable bedroom community, Pacific University and the public schools form one of the largest employment sectors in Forest Grove.

While employment in public education can be expected to grow commensurately with family households in the region, broader growth in the education sector will be born out of Pacific University. Over the last decade, the school has been in an expansionary phase. In 2005 the school complete an $11 million LEED certified library, and new residence halls were completed in 2006 and 2008. In spring 2008, the University completed Berglund Hall, which now houses the School of Education. As of 2016, the Forest Grove campus had 2,400 undergraduate and graduate students on site, along with 720 faculty and staff. The university plans to grow enrollment at the local campus to 2,800 students and 900 employees by 2030. Pacific University will continue to be a key cornerstone of the community in terms of residents, employment, and cultural activities and land use.

Cluster Strengths

- Population and enrollment growth on the horizon.
- Pacific University is an attractive asset to the Downtown Core.
- Potential to foster greater connections and partnerships with the university.

Cluster Challenges

- Perceptions within the community of limited partnerships between Pacific University and Forest Grove at large.
- Volatility in public school funding.

Retirement Services

Largely the result of the general livability of the area and small-town community atmosphere, Forest Grove has an existing retirement aged population base far exceeding most jurisdictions in Washington County. According to the Census, the percent of the population age 65 and older is higher in Forest Grove than in Washington County as a whole (12.5% vs. 10%). Moreover, four of the City's top 25 employers are nursing care or elderly home facilities. Forest Grove's composition of employment in Nursing and Residential Care Facilities is nearly three times the national average.

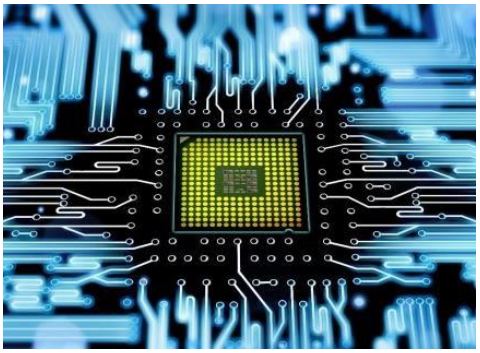
In addition to direct retirement care services, roughly 23% of the City's population is aged 55 and older. These households provide broad support for leisure and financial activities in the local economy. Over the next five years, the retirement age household population is expected to continue to grow in Forest Grove as the large Baby Boomer

generation continues to reach retirement. The city's pastoral setting, approachable size, local university, tourism attractions all within access of the larger Metro area will continue to make it attractive to retirees.

Cluster Strengths

- Livability and leisure activities
- Favorable demographics
- National growth in retirement segments, met by insufficient facilities

High-Tech



In 1980, Tektronix moved its circuit board manufacturing plant to a site in Forest Grove and high-tech has played a major role in the local economy ever since. The Tektronix operation, later becoming Merix and now TTM Technologies, has grown to become among the top three circuit board manufacturers in the United States and remains the largest employer in Forest Grove by a sizable margin. Additionally, Westak of Oregon is another circuit board manufacturer in the top ten list of employers in Forest Grove. The concentration of employment in High-Tech in Forest Grove is better than 15 times the national average.

While circuit board manufacturing is a significant part of the existing economy, its share of growth on the margin is not likely to be high. Rather, marginal high-tech growth is likely to be derived out of the firms that are connected to the cluster of high-tech industries centered in Hillsboro. Forest Grove's livability in addition to utility rates makes it an attractive location to capture economic spillover from Hillsboro's on-going development and economic growth in semiconductor and solar component manufacturing.

Cluster Strengths

- Proximity to Oregon's largest High-Tech manufacturing center.
- Existing major High-Tech employers in Forest Grove.

Cluster Challenges

- Forest Grove's workforce composition does not match the needs of High-Tech firms.
- Uncertainty with respect to the future cost of utilities have limited industrial marketability of Forest Grove.
- Lack of direct transportation connections to the north Hillsboro employment area.

Comparison of Target Industries

The target industries presented here offer different advantages and challenges in terms of overall job growth, average wages and competitive advantages. The following table shows the relative performance of these industry categories between 2010 and 2016 based on QCEW data from the city of Forest Grove.

- In terms of total job creation, the tourism "accommodation and food service" category gained the most employment during this time and is forecasted to continue growing in our region. Tourism-

related jobs are generally fairly low-paying, but provide an important base of opportunity for part-time workers, low-skilled and first-time workers.

- Manufacturing of food and agricultural products also experienced rapid growth and offers solid middle-class wages. Employment in this category grew by a very strong 80% between 2010 and 2016.
- Durable goods manufacturing including high-tech and electronics manufacturing is estimated to have lost some employment during this period, but remains a source of well-paying jobs. This industry is expected to continue to grow and Forest Grove maintains the ability to attract these firms as part of the greater Washington County high-tech area.
- Educational services added a strong number of jobs, though it was lower in terms of percentage growth. Average wages in this category are high, and this is forecasted to remain a solid source of good local jobs.
- Health care and social services, including retirement services, saw modest relative growth in jobs. Wages in this category are lower than in manufacturing, but higher than tourism-related jobs. Given the aging of the population, it is forecasted that health care and retirement communities will continue to be a growth industry for many decades.

Figure 4.6: Recent Performance of Target Industry Sectors (2010 – 2016)

Naics Code (2 Digits)	Industry Sector	Job Growth 2010 - 2016[1]		Average Annual Wage	Forecasted Growth Rate[2]
	Manufacturing Categories				
31	Food Product, Textiles, Leather, Apparel	152	80%	$43,097	2.1%
32	Wood, Paper, Packaging, Chemicals, Plastics	49	29%	$46,580	-0.7%
33	Metal, Machinery, Electronics, Equipment Misc.	-194	-19%	$47,506	0.7%
61	Educational Services	119	8%	$54,488	1.5%
62	Health Care and Social Assistance	20	2%	$31,952	1.8%
71	Arts, Entertainment, and Recreation	-31	-48%	$16,357	1.5%
72	Accommodation and Food Services	181	32%	$18,668	1.8%

[1] Estimates of Covered Employment based on QCEW data from 2010 and 2016.

[2] Employment forecasts are from Oregon Employment Department, for Wash. & Mult. Counties, 2014-2024

Source: Oregon Employment Department, Johnson Economics

Each of the industries presented here are a compelling target for future employment and economic development activity, either because Forest Grove already enjoys a competitive advantage, or because the quality of jobs (as in high tech) make it an attractive target for continued focus.

V. FORECAST OF EMPLOYMENT & LAND NEED

Introduction

Goal 9 requires that jurisdictions plan for a 20-year supply of commercial and industrial capacity. Because employment capacity is the physical space necessary to accommodate new workers in the production of goods and services, employment need forecasts typical begin with a forecast of employment growth in the community. The previous analysis of economic trends and targeted industries set the context for these estimates.

This analysis produces estimates of employment growth by broad industry sector. Forecasts are produced at the sector or subsector level (depending on available information), and subsequently aggregated to two-digit NAICS sectors. Estimates in this analysis are intended for long-range land planning purposes, and are not designed to predict or respond to business cycle fluctuation. OAR 660-024-0040(1) specifically acknowledges the less certain nature of long-range planning forecasts:

> *"The 20-year need determinations are estimates which, although based on the best available information and methodologies, should not be held to an unreasonably high level of precision."*

The projections in this analysis are built on an estimate of employment in 2018, the commencement year for the planning period. Employment growth will come as the result of net-expansion of businesses in the community, new business formation, or the relocation/recruitment of new firms. Forecast scenarios consider a range of factors influencing growth, as well as consideration of third-party estimates from both public and private sources.

Long-range forecasts typically rely on a macroeconomic context for growth. Inflections in business cycles or the impact of a major shift in employment (i.e. a major unknown recruitment) are not considered.

Overview of Methodology

Updating the Base Year

The first analytical step of the analysis is to update covered employment to the 2018 base year. Our foundational Forest Grove specific QCEW dataset provides covered employment by industry through 2016. To update these estimates, we use observed industry growth rates for Washington County between 2015 and 2017 (summary level county employment data is released on more timely basis than place level detailed data).

Conversion to Total Employment

The second step in the analysis is to convert "covered"[4] employment to "total" employment. Covered employment only accounts for a share of overall employment in the economy. Specifically, it does not consider sole proprietors or commissioned workers. In Washington County, non-covered workers have averaged 16% of the employment base over the last five years. The differential is obviously most common

[4] The Department of Labor's Quarterly Census of Employment and Wages (QCEW) tracks employment data through state employment departments. Employment in the QCEW survey is limited to firms with employees that are "covered" by unemployment insurance.

in real estate, where commissioned workers comprise an unusually large share of jobs. Taken together, the assumed 2018 total employment base for Forest Grove is 9,262 jobs.

Figure 5.1: Conversion of Covered to Total Employment

Major Industry Sector	2016 Employment[1]	'15-'17 Annual County Δ[2]	2018 Update	Total Emp. Conversion[3]	2018 Estimate
Construction	184	13.0%	235	81%	289
Manufacturing	1,392	0.9%	1,417	98%	1,453
Wholesale Trade	75	11.6%	93	89%	105
Retail Trade	453	4.2%	492	88%	562
Transport., Warehouseing, Utilites	148	4.2%	161	70%	230
Information	28	18.7%	39	88%	45
Finance & Insurance	119	3.0%	126	72%	176
Real Estate Services	65	3.3%	69	36%	193
Professional & Technical Services	131	-2.0%	126	69%	182
Management of Companies	8	-4.0%	7	97%	8
Administration Services	168	2.5%	177	84%	210
Education Services	1,593	3.3%	1,698	56%	3,012
Health Care	925	1.0%	943	85%	1,104
Leisure & Hospitality	779	6.9%	891	87%	1,023
Other Services	241	4.1%	261	58%	449
Government	217	1.1%	222	100%	222
TOTAL	**6,526**	**3.3%**	**6,958**	**75%**	**9,262**

1 2016 Quarterly Census of Employment and Wages (QCEW), Oregon Employment Department

2 Oregon Employment Department, Washington County. Inputed at lowest NAICS and aggregated to sectors

3 Bureau of Economic Analysis. Calculated as a five-year average between 2012 and 2016

Source: Oregon Employment Department, Johnson Economics

Scenario 1: Safe Harbor Forecast

The Goal 9 statute does not have a required method for employment forecasting. However, OAR 660-024-0040(9)(a) outlines several safe harbor methods. The most applicable for Forest Grove is 660-024-0040(9)(a)(A), which recommends reliance on the most recent regional forecast published by the Oregon Employment Department (OED). This method applies industry specific growth rates for the Portland Metro Workforce Region (Washington and Multnomah County) to the 2018 Forest Grove base.

The most recent OED forecasts for the Portland Metro area cover the period of 2014 to 2024. This analysis calculates the average annual growth rate for each industry sector from this forecast, and then applies this annual growth rate to the 20-year planning period. This method results in an average annual growth rate of 1.3%, with total job growth of 2,665 jobs. This results in nearly 12,000 local jobs by 2038.

(The alternative Safe Harbor option [660-024-0040(9)(a)(B)] would utilize the population growth rate the City's most recent 20-year coordinated population forecast, and apply this rate to employment as well. The forecasted population growth rate from the Metro 2040 population forecast is a higher 1.7% per year. Because this method is less precise than applying industry-by-industry growth rates, for first method is used here.)

Figure 5.2: Summary of Safe Harbor Forecast

		20-Year Forecast				2018 - 2038	
Industry	**2018**	**2023**	**2028**	**2033**	**2038**	**#**	**AAGR**
Construction	289	321	356	396	440	151	2.1%
Manufacturing	1,453	1,507	1,563	1,621	1,681	228	0.7%
Wholesale Trade	105	112	119	126	134	29	1.2%
Retail Trade	562	601	642	686	733	171	1.3%
Transport., Warehouseing, Utilites	230	242	254	267	281	51	1.0%
Information	45	47	50	53	57	12	1.2%
Finance & Insurance	176	182	188	195	202	26	0.7%
Real Estate	193	197	201	206	210	17	0.4%
Professional & Technical Services	182	206	232	262	296	114	2.4%
Management of Companies	8	9	10	11	12	5	2.5%
Administration Services	210	229	251	274	299	89	1.8%
Education	3,012	3,179	3,356	3,542	3,739	727	1.1%
Health Care	1,104	1,209	1,324	1,450	1,588	484	1.8%
Leisure & Hospitality	1,023	1,116	1,218	1,330	1,451	429	1.8%
Other Services	449	477	507	538	571	122	1.2%
Government	222	225	227	230	233	12	0.3%
TOTAL	**9,262**	**9,858**	**10,499**	**11,187**	**11,928**	**2,665**	**1.3%**

Source: Oregon Employment Department, Johnson Economics

In the years after the recession of 2007-2009, it has been customary for employment forecasts in Economic Opportunities Analyses to consider refill rates of the vacant real estate, left by job losses and economic decline. However, in the current environment, employment levels have returned to their pre-recession levels and real estate vacancies are below market equilibrium. Therefore, refill was not considered in all scenarios presented in this analysis.

Scenario 2: Transportation Area Zone Forecast (Metro)

Forest Grove and other metro-area jurisdictions work with Metro to update long-range forecasts of employment and housing by Transportation Area Zone (TAZ). The latest estimates were finalized in mid-2016, in the Metro 2040 Distributed Forecast. This forecast projected an average annual job growth of 1.51% in Forest Grove over the 2015 to 2040 period.

Beginning with the allocation of employment growth by industry specified in the Safe Harbor Forecast, Johnson Economics developed a TAZ-based forecast scenario reflecting Metro's projected rate of job growth in Forest Grove.

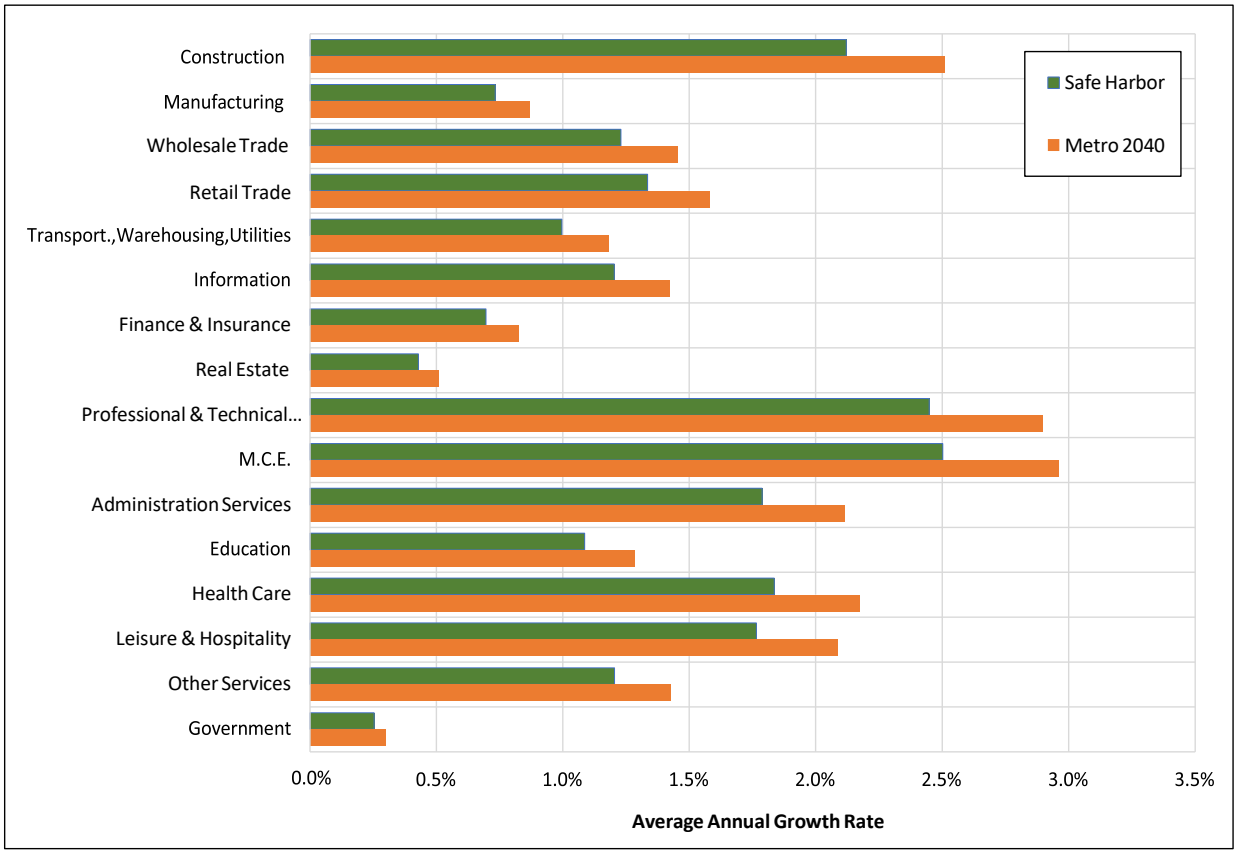
This approach yields average annual growth of 1.5% over the planning period and the creation of 3,237 jobs. Strong growth in education, health care and tourist sectors is forecasted. Manufacturing, construction, and retail are secondary growth sectors.

Figure 5.3: Summary of TAZ Based Forecast

		20-Year Forecast				2018 - 2038	
Industry	**2018**	**2023**	**2028**	**2033**	**2038**	**#**	**AAGR**
Construction	289	327	370	419	474	185	2.5%
Manufacturing	1,453	1,517	1,584	1,654	1,727	274	0.9%
Wholesale Trade	105	113	122	131	140	35	1.5%
Retail Trade	562	608	658	711	769	207	1.6%
Transport., Warehousei ng, Utilites	230	244	259	274	291	61	1.2%
Information	45	48	51	55	59	15	1.4%
Finance & Insurance	176	183	191	199	207	31	0.8%
Real Estate	193	198	203	208	214	21	0.5%
Professional & Technic al Services	182	210	243	280	323	140	2.9%
Management of Compar ies	8	9	10	12	14	6	3.0%
Administration Services	210	233	259	287	319	109	2.1%
Education	3,012	3,211	3,422	3,648	3,888	876	1.3%
Health Care	1,104	1,229	1,368	1,523	1,696	592	2.2%
Leisure & Hospitality	1,023	1,134	1,257	1,394	1,546	523	2.1%
Other Services	449	482	518	556	596	147	1.4%
Government	222	225	229	232	236	14	0.3%
TOTAL	**9,262**	**9,971**	**10,743**	**11,583**	**12,499**	**3,237**	**1.5%**

Source: Metro, Johnson Economics

Figure 5.4: Comparison of Growth Scenarios by Industry



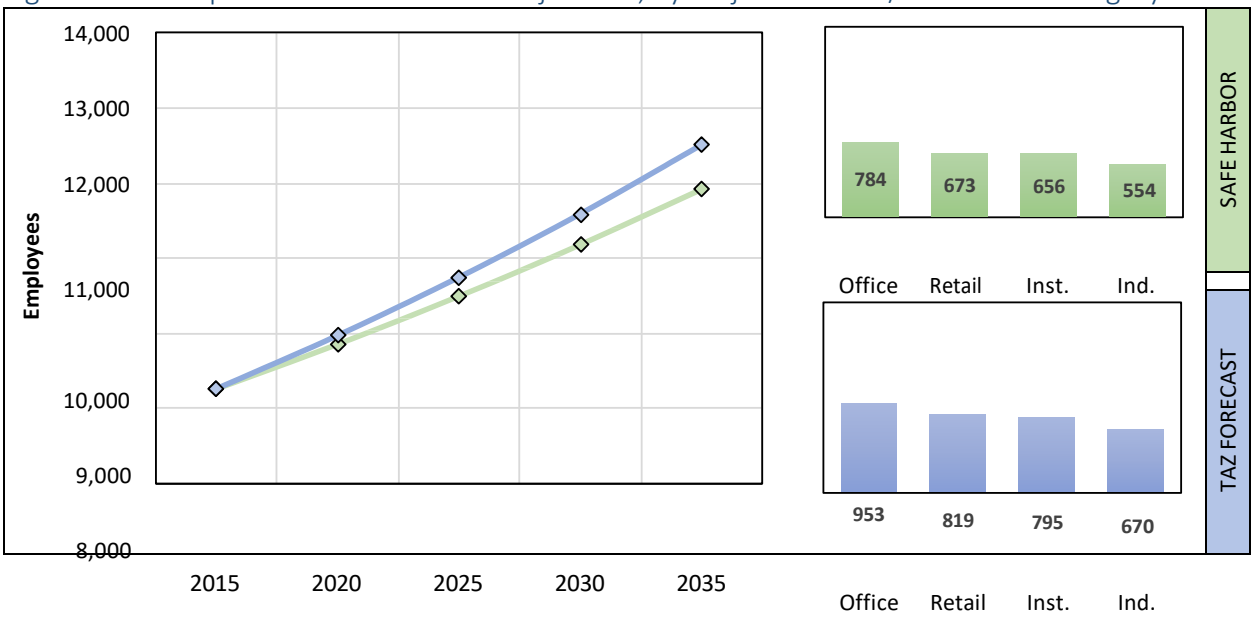
Source: Oregon Employment Department, Metro, Johnson Economics

Summary of Employment Growth Scenarios

The two forecast scenarios in this analysis range from 1.3% average annual growth to 1.5%. 20-year job growth estimates range from 2,665 to 3,237 jobs.

Figure 5.5 presents the job growth projections considering the rates at which different sectors utilize varying space/land typologies (Office, Retail, Institutional, & Industrial). This aggregation was developed consistent with methods outlined in the 2014 Urban Growth Report. The results show the greatest number of new jobs in office-using industries, followed by retail, institutional, and industrial. These projections are converted into the need for specific real estate categories and land use categories in the following section.

Figure 5.5: Comparison of Job Growth Projections, by Major Land Use/Real Estate Category



Source: Oregon Employment Department, Metro, Johnson Economics

Figure 5.6 below, shows how the projected job growth sectors relate to the City's industry clusters.

Figure 5.6: Comparison of Job Growth Sector with Forest Grove's Industry Clusters

Job Growth Sectors	Industry Clusters
Office	Health Care, Education, Retirement Services (Financial Services)
Retail	Tourism, Retirement Services (Leisure & Hospitality)
Institutional	Education, Health Care
Industrial	Manufacturing, Value Added Farm Products, High Tech

The estimates in the preceding analysis are useful in creating a baseline understanding of macroeconomic growth prospects. They are common and broadly accepted approaches when looking at large geographic regions. This approach is similar to the methodology used to produce the employment forecasts in Metro's Urban Growth Report and estimates for state budgeting purposes.

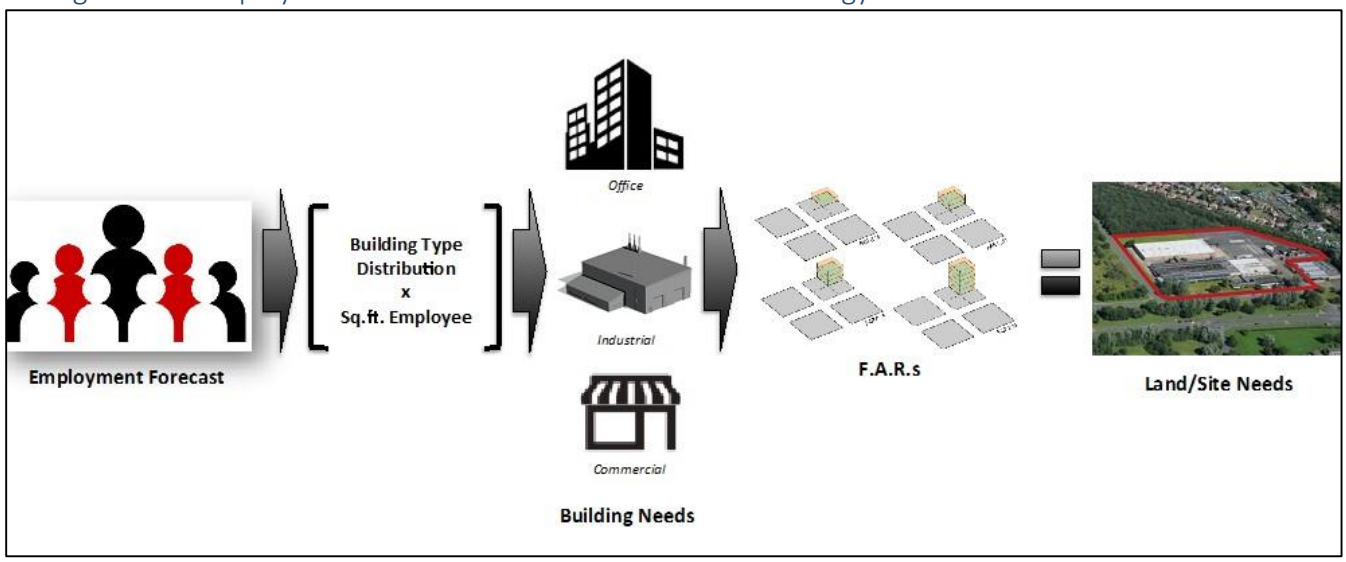
Forecasts grounded in broad-based economic variables cannot account for all of the realities of local businesses and trends among evolving industries. Industries continually evolve and new products and businesses arise, with changing real estate and land use needs. There is always uncertainty inherent in long-range growth forecasts.

Employment Land Forecast

This analytical step in the EOA process translates estimates of employment growth into forecasts of land need over the planning period. With slight modifications based on best available information for Forest Grove, our approach closely follows the generally accepted methodology used in Metro's 2014 Urban Growth Report.

This approach is a three-step process; beginning with a conversion of employment forecasts by industry into the building typologies in which those economic activities typically locate. As an example, insurance agents typically locate in traditional office space. However, a percentage of these firms also locate in commercial retail space adjacent to retail anchors. Cross-tabulating this distribution provides an estimate of employment in each typology.

Figure 5.7: Employment Forecast to Land Demand Methodology



The next step converts employment into space using estimates of the typical square footage exhibited within each typology. Adjusting for an acceptable level of standard structural vacancy the analysis arrive at an estimate of total space demand for each building type.

Finally, it considers the physical characteristics of individual building types and the amount of land they typically require for development. The site utilization metric commonly used is referred to as a "floor area ratio" or FAR. For example, assume a 25,000 square foot general industrial building requires roughly two acres to accommodate its structure setbacks, parking, and necessary yard/storage space. This building would have an FAR of roughly 0.29.

The approach in this analysis deviates from the Metro approach in that retail trade and food services are treated separately. Demand for these services is more closely correlated to households, and more specifically household spending growth. Net space and acreage demand originating from the retail trade and food services sectors are determined by a separate methodology documented in Appendix A of this report.

OAR 660-009-0015(2) does not specify a methodology for conducting land need analysis. However, it does specify that, "the economic opportunities analysis must identify the number of sites by type reasonably

expected to be needed to accommodate the expected employment growth based on the site characteristics typical of expected uses…. Industrial or other employment uses with compatible site characteristics may be grouped together into common site categories". Consistent with the administrative rule, this analysis will end with a determination of land need in broad land use categories (Commercial, Industrial, Mixed-Use).

Baseline Land Demand Analysis

To demonstrate the process used and underlying assumptions, this report will develop land need estimates in a step-by-step process, clearly presenting underlying assumptions. For brevity, this process will be presented for the Safe Harbor Forecast scenario only. Final results will show alternative forecast outcomes.

In this analytical step we allocate employment growth into standard building typologies. The building typology matrix was developed for the 2014 Urban Growth Report, and represents the share of sectoral employment that locates across various building types. Johnson Economics added a category for Data Centers, which varies broadly from any category in the Metro matrix. Further, household-driven demand for retail trade and food services have been removed from this step, to be added later. However, demand for retail space driven by other sectors still exists in this analysis because firms outside of retail trade utilize retail space (beauty salons, banking, couriers, day care, insurance, real estate, etc.).

Figure 5.8: Conversion of Employment Forecast to Building Typology

Industry	'18-'38 Growth
Construction	151
Manufacturing	228
Wholesale Trade	29
Retail	*NA*
Transport., Warehousing, Utilities	51
Information	12
Finance & Insurance	26
Real Estate	17
Professional & Technical Services	114
Management of Companies	5
Administration Services	89
Education	727
Health Care	484
Leisure & Hospitality	429
Other Services	122
Government	12
TOTAL	**2,495**

Building Typology Matrix						
Office	Institutional	Flex/BP	Gen. Ind.	Warehouse	Data Center	Retail
14%	0%	18%	40%	18%	0%	10%
8%	0%	24%	60%	8%	0%	0%
8%	0%	22%	20%	40%	0%	10%
15%	0%	12%	13%	55%	0%	5%
20%	0%	20%	30%	0%	20%	10%
72%	1%	5%	1%	1%	0%	20%
72%	1%	5%	1%	1%	0%	20%
72%	1%	5%	1%	1%	0%	20%
79%	5%	8%	0%	0%	0%	8%
72%	1%	5%	1%	1%	0%	20%
30%	53%	5%	1%	1%	0%	10%
30%	53%	2%	0%	0%	0%	15%
20%	1%	7%	1%	1%	0%	70%
72%	1%	5%	1%	1%	0%	20%
43%	35%	5%	1%	1%	0%	15%

Employment Growth by Typology						
Office	Institutional	Flex/BP	Gen. Ind.	Warehouse	Data Center	Retail
774	**654**	**192**	**229**	**100**	**2**	**543**

Source: Oregon Employment Department, Metro, Johnson Economics

Under the Safe Harbor scenario, employment in office space represents the greatest share of growth, followed by institutional uses (hospitals, schools, government facilities) and industrial.

Employment growth estimates by building type are then converted to demand for physical space. This conversion assumes the typical space needed per employee on average. This step also assumes a market clearing vacancy rate, acknowledging that equilibrium in real estate markets is not 0% vacancy. We assume a 10% vacancy rate for office, retail, and flex uses, as these forms have high rates of speculative

multi-tenant usage. A 5% rate is used for general industrial and warehouse—these uses have higher rates of owner occupancy that lead to lower overall vacancy. Other uses assume 0% vacancy.

Demand for space is then converted to net acres using a standard floor area ratio (FAR) for each development form. Higher ratios for retail and office uses indicate an expectation that these uses will locate in the town center or mixed-use space at a higher rate on the margin. These calculations indicate a 20-year need of 124 net-developable acres across all development forms for the Safe Harbor forecast.

The combined space and FAR assumptions further provide estimates indicated of job densities, determined on a per net-developable acre basis.

Figure 5.9: Conversion of Building Typology to Land Need

	General Use Typology							
	Office	**Institutional**	**Flex/BP**	**Gen. Ind.**	**Warehouse**	**Data Center**	**Retail**	**Total**
Employment Growth (Non-Retail):	774	654	192	229	100	2	543	2,495
Average sq. ft. per Employee:	350	600	990	600	1,850	5,000	500	585
Floor Area Ratio (F.A.R.):	0.40	0.25	0.25	0.25	0.25	0.35	0.35	
Market Vacancy:	10%	0%	10%	5%	5%	0%	10%	
Implied Job Density (jobs/net acre):	49.8	18.2	11.0	18.2	5.9	3.0	30.5	20.1

	Net Acres by Building Typology							
	Office	**Institutional**	**Flex/BP**	**Gen. Ind.**	**Warehouse**	**Data Center**	**Retail**	**Total**
Net Acres Required:	17.1	36.0	19.2	13.2	17.9	0.8	19.6	123.8

Source: Metro, Johnson Economics

Commercial office and retail densities are 50 and 30 jobs per acre, respectively. Industrial uses range from 18 for general industrial to six jobs per acre for warehouse space.

Retail Demand: The methodology in this report treats retail and food service driven demand differently than other uses. These uses are more directly correlated with growth in households, consumer spending power, and established non-resident spending patterns. This methodology is detailed in Appendix A with critical steps summarized here:

- Household growth estimates are coordinated with the Metro 2040 projection of household growth in Forest Grove.
- Due to coordination with a single adopted growth forecast, there is no variance in household spending-driven retail support across scenarios.
- Estimates of the average spending per household by retail sector is provided by a third party data service (Environics Analytics).
- The existing rate of non-resident retail support is assumed to remain constant at 13%.
- Net calculated retail acres are allocated to building typologies consistent with the non-retail methodology.

Combined growth in household and non-resident spending is expected to support an additional 35 net acres. The majority of support will go to commercial retail building typologies.

Combining retail need with all other industries, this analysis finds **a total 20-year need for 160 net developable acres of employment land.**

Figure 5.10: Forecast of Land Need by Building Type, Including Retail Need

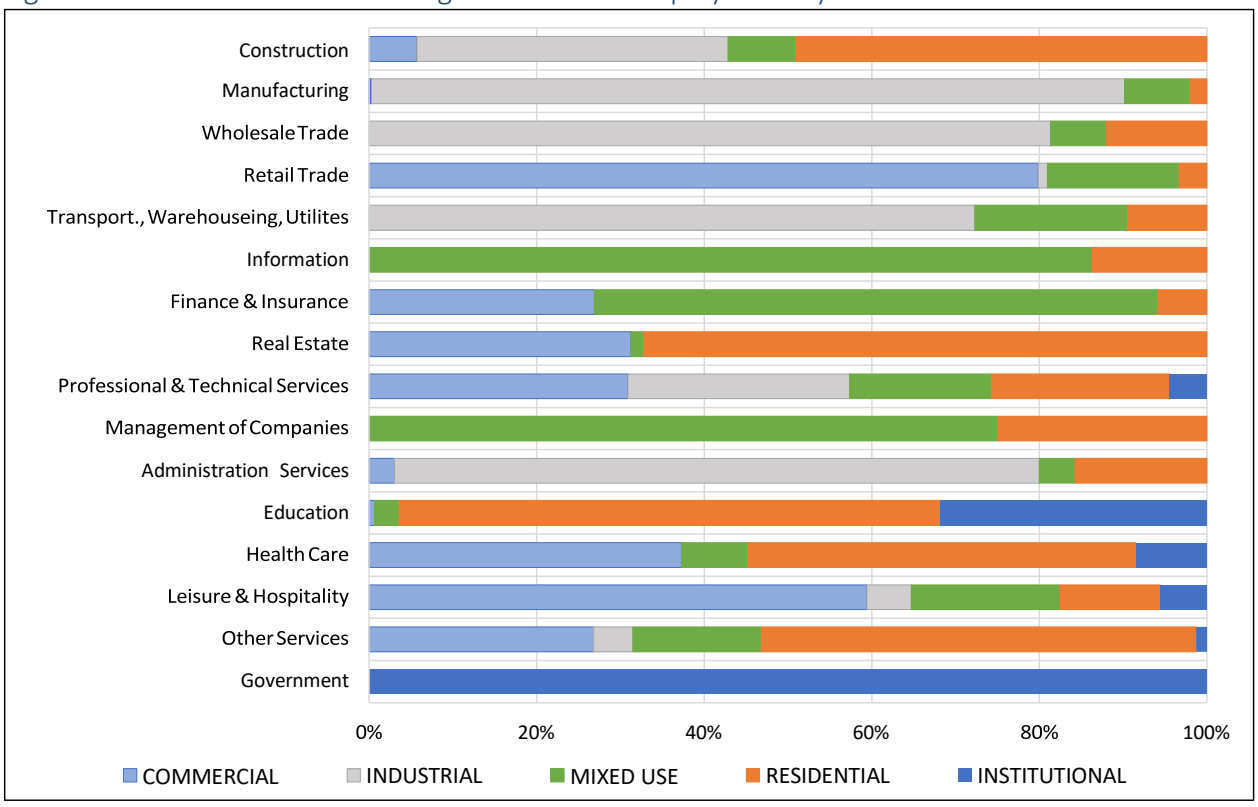
	Net Acres by Building Typology							
	Office	Institutional	Flex/BP	Gen. Ind.	Warehouse	Data Center	Retail	Total
Non-Retail Demand	17	36	19	13	18	1	20	124
Allocation of Retail by Type	*15%*	*1%*	*7%*	*1%*	*5%*	*0%*	*72%*	*100%*
Retail Demand	5	0	2	0	2	0	26	35
Total Net Acres Required	**22**	**36**	**22**	**13**	**20**	**1**	**46**	**160**

Source: Environics Analytics, Johnson Economics

Converting Land Demand by Building Typologies into Land Use Categories

The Buildable Lands Inventory in the Economic Opportunities Analysis inventories vacant, partially vacant, and potentially redevelopable land by broad land use category. To facilitate a direct comparison, the demand is aggregated into similar land use categories (as allowed under OAR 660-009-0015(2)). To make this determination, Johnson Economics used G.I.S. analysis of 2016 QCEW data to determine the share of employment by industry that is located in each broad zoning class (Figure 5.10).

Figure 5.11: Distribution of Existing Forest Grove Employment by Zone Class



Source: Oregon Employment Department, Metro RLIS, Johnson Economics

As Figure 5.11 shows, there is a lot of current employment in Forest Grove that is located (at least by address) in zoning classes that are considered to be primarily residential. However, industrial and commercial zones are also well-represented. (For this analysis the Community Commercial zone is classified as "commercial", while the Town Center Transition, and Town Center Core zones are classified as "mixed use.")

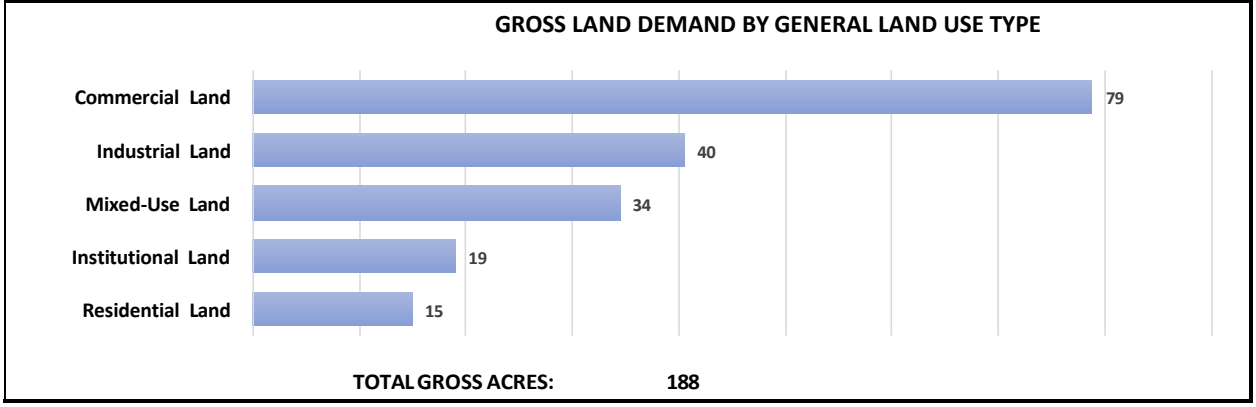
Because the purpose of this Goal 9 analysis is to determine the supply and demand for proper employment land, it is assumed that a much smaller share of future employment growth will be accommodated in residential zoning classes.

The final analytical step of this analysis is to adjust demand estimates to account for future infrastructure. The state defines net buildable acres as being absent future right-of way, indicating that gross land need is greater than net-buildable. For this analysis, we assume a 15% gross-to-net ratio for commercial, institutional and mixed-use areas. Industrial areas assume a 25% ratio because Forest Grove's new industrial areas have a higher likelihood of requiring additional right-of-way, open space and public services.

Figure 5.12 shows the conversion of estimated need by building type, to need for gross acreage of land for the Safe Harbor scenario. The analysis results in a finding of total need for 188 gross acres of employment land, including some employment (mostly self-employment) that will take place in residential zones. Roughly half of the land need is found for commercial land (80 acres), followed by industrial land, and mixed-use land.

Figure 5.12: Projection of Gross Land Demand by General Zoning Class (Safe Harbor Scenario)

	Net Acres						
	Office	**Institutional**	**Flex/BP**	**Gen. Ind.**	**Warehouse**	**Data Center**	**Retail**
Total Net Acres Demanded	**22**	**36**	**22**	**13**	**20**	**1**	**46**
	Matrix of Land Type Allocation						
Commercial Land	43%	44%	31%	12%	28%	0%	63%
Industrial Land	14%	0%	37%	68%	48%	100%	4%
Mixed-Use Land	21%	19%	18%	14%	17%	0%	20%
Institutional Land	12%	23%	7%	1%	2%	0%	7%
Residential Land	10%	14%	7%	4%	5%	0%	6%

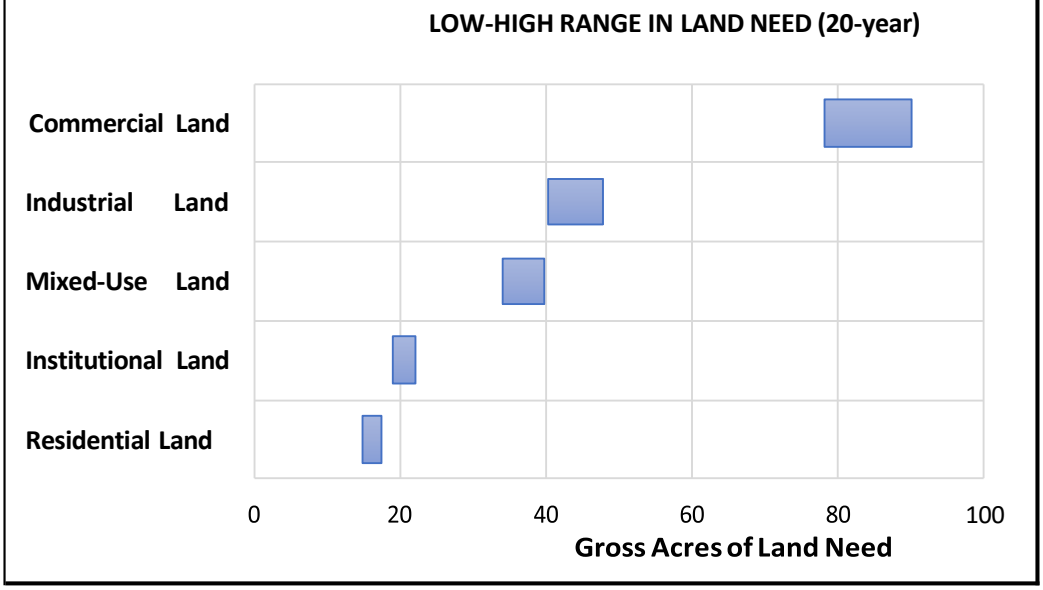


Source: Johnson Economics

Replicating the previously establish methodology for the second employment forecast scenario (Metro 2040), we calculate a range of short and long-term land need by use type. The following figure presents estimates of short-term (5-year) and long-term (20-year) land need by category for the two scenarios. Total need estimate ranges from 186 gross acres to 217 gross acres, with a similar range found for each land use category. *While a range in need forecasts are presented here, the City of Forest Grove is required by statute to adopt a single forecast scenario.*

Figure 5.13: Gross Land Need, Comparison of Job Growth Forecast Scenarios

Use Type	Safe Harbor Forecast		Metro 2040 (TAZ) Forecast	
	5-year	20-year	5-year	20-year
Commercial Land	17	78	20	90
Industrial Land	9	40	11	48
Mixed-Use Land	8	34	9	40
Institutional Land	4	19	5	22
Residential Land	3	15	4	17
TOTAL ACRES	**42**	**186**	**48**	**217**



Source: Johnson Economics

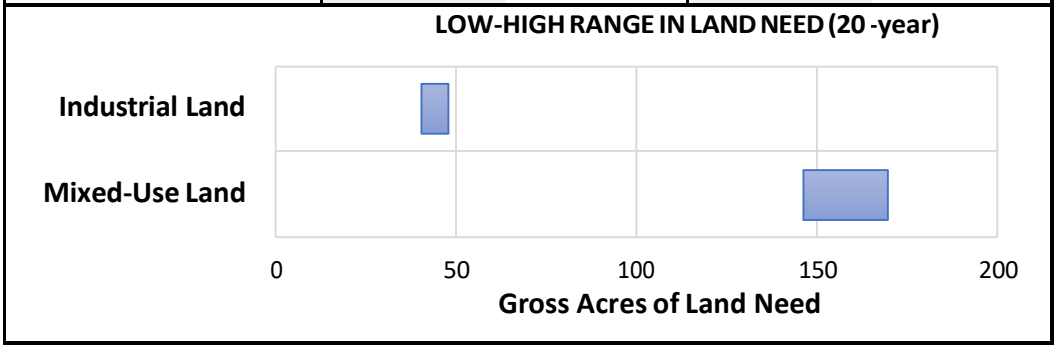
Figure 5.14 shows the land use categories presented above consolidated to two major categories: Industrial and Mixed Use. This is because most commercial land found in Forest Grove is in mixed-used zoning designations. The consolidated categories fold the demand for commercial, institutional and residential land into the demand for mixed use land. This also reflects two assumptions:

- Institutional uses of the future are likely to be located within a different zoning designation, until they are developed, at which time that land may be rezoned to Institutional.
- In the future, the policy goal will be to locate as much marginal new employment as possible in appropriate employment zones, and not residential zones.

With these points in mind, the following figure consolidates these zones, resulting in a greater need for mixed use land (146 acres in the Safe Harbor scenario, and 170 in the Metro 2040 scenario.)

Figure 5.14: Gross Land Need, Reduced Mixed-Use Categories

Use Type	Safe Harbor Forecast		Metro 2040 (TAZ) Forecast	
	5-year	20-year	5-year	20-year
Industrial Land	9	40	11	48
Mixed-Use Land	33	146	37	170
TOTAL ACRES	**42**	**186**	**48**	**217**



Source: Johnson Economics

Additional Considerations in Land Demand

Beyond a consideration of gross acreage, there is a significantly broader range of site characteristics that industries require to accommodate future growth. We summarize some key findings here:

- Industrial buildings are generally more susceptible to slope constraints due to larger building footprints. For a site to be competitive for most industrial uses, a 5% slope is the maximum for development sites. Office and commercial uses are generally smaller and more vertical, allowing for slopes up to 15%.

- Most industries require some direct access to a major transportation route, particularly manufacturing and distribution industries that move goods throughout the region and beyond. A distance of 10 to 20 miles to a major interstate is generally acceptable for most manufacturing activities, but distribution activities require 5 miles or less and generally prefer a direct interstate linkage. Visibility is highly important to most commercial activities and site location along a major commercial arterial is commonly required.

- Railroad access is preferred for most manufacturing activities, with the exception of high-tech. Some users require direct on-site access while others generally make use of a local or regional hub.

- Access and capacity for water, power, gas, and sewer infrastructure is more important to industrial than commercial operations. Water/sewer lines of up to 10" are commonly required for large manufacturers. Appendix A details utility infrastructure requirements by typology. Fiber telecommunications networks are likely to be increasingly required in site selection criteria for many commercial office and manufacturing industries. Medical, high-tech, creative office, research & development, and most professional service industries will prefer or require strong fiber access in the coming business cycles.

VI. BUILDABLE LAND INVENTORY

A Buildable Lands Inventory (BLI) was conducted to determine the amount of buildable land in the major land use categories that is currently available in Forest Grove. The buildable land currently available may accommodate some or all of the 20-year need for gross land need determined through the analysis outlined above. If the current BLI within the city is insufficient to accommodate the projected need, the need for additional land or efficiency measures may be considered.

Metro Draft Buildable Land Inventory

This analysis takes as its foundation the on-going BLI analysis conducted by the Metro regional government as part of its Urban Growth review process. The latest Metro draft BLI dates to March 2018. It uses a formulaic approach that applies a general methodology to tax lots across the Metro jurisdictions, including Forest Grove. It relies on the local jurisdictions to review the findings and point out errors.

Johnson Economics took the Metro draft BLI as its basis for this analysis, but a number of misidentified parcels were identified making further revisions necessary. This analysis presents a revised tally and BLI map based on the Metro draft that better represents market-driven development capacity and the actual disposition of some misidentified parcels. The revised BLI is designed to address the requirements of Statewide Planning Goal 9 (OAR 660-009-0015).

Revisions to Metro Draft BLI

Because the Metro BLI is applied across the region formulaically some errors are expected that local review is meant to catch. Some major issues with the draft are:

- *It appears to use old tax lot GIS layer.*
- *Identifies some heavily developed lots as re-developable.*
- *Includes a few small fragmented parcels that are poorly configured for future development.*

Regression Method

The Metro BLI uses a regression analysis to estimate the likelihood of redevelopment over a 20-year period. This results in an estimation of "re-developable acreage" that is actually a fraction of the total acreage of the included parcels (for instance, if a 50 acre parcel has a 20% change of redevelopment, then it counts as 10 re-developable acres.) This approach attempts to give an estimate of the infill and redevelopment activity that could happen averaged across all parcels whether they do or don't redevelop. This methodology has some flaws, but when the results are summed up, the total re-developable acreage does not add up to a large total amount. Therefore the estimated re-developable acreage calculated through this method was preserved here (shown in yellow on the map.)

Re-developable (Strike Price vs. Regression)

Metro also provided an estimate using a "strike price" method that was used previously (shown in orange on the map). This method tends to identify larger and more prominent parcels of employment land that might redevelop over time. Because these parcels are more prominent, they have been reviewed separately here, and are distinguished from the "regression" parcels in the summary tables and the following maps.

In reviewing these major parcels, some of those identified by Metro are now developed and therefore removed from this count. Two large parcels were identified as "redevelopable" were reclassified as "vacant" as they do not appear to have any significant development on them.

"Mixed Use" land classification

Metro identifies most of commercial zoning in Forest Grove as having a general classification of "Mixed Use." For this review, this classification has remained in place, meaning that none of the parcels counted in this BLI are considered to be "commercial" land, despite many being located in the Community Commercial zone.

Buildable Land Inventory Results

The following table summarizes the findings of buildable lands within Forest Grove's current Urban Growth Boundary. There is an estimated total of 292 acres of buildable, or redevelopable land located in the city.

A majority of these buildable acres (275 ac.) are located within the current City boundary. Two large parcels (36.8 ac. & 17 ac.) are located outside of the City boundary, but within the UGB. The 36.8 acre parcel is currently planned for employment use, with "Business Industrial Park" zoning. This acreage is included here as industrial land. The 17 acre site is pre-certified as a general industrial site.

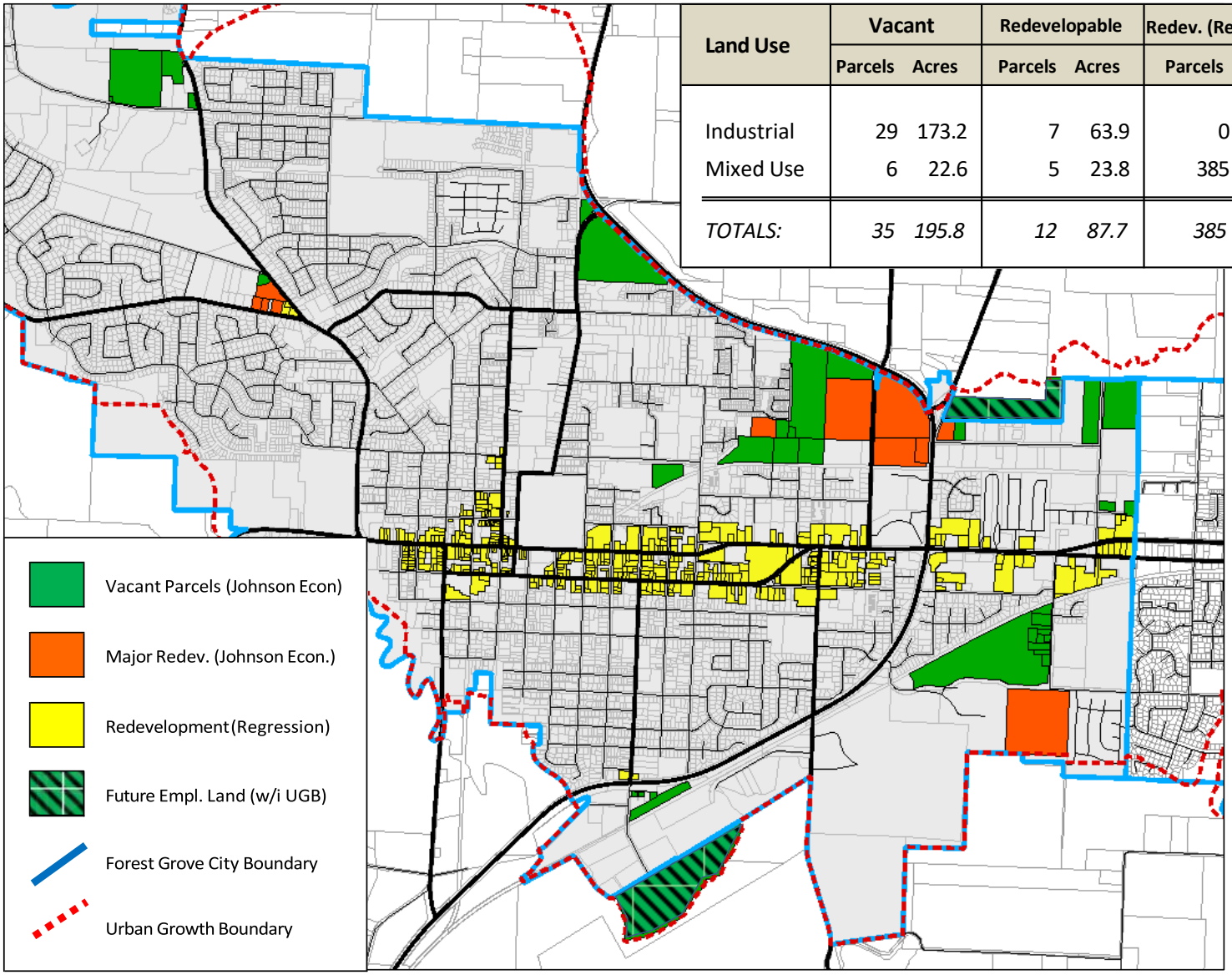
Figure 6.1: Summary of Buildable Land Inventory

Land Use	Vacant		Redevelopable		Redev. (Regression)[1]		TOTALS		
	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres	Share
Industrial	29	173.2	7	63.9	0	0.0	36	237.1	74%
Mixed Use	6	22.6	5	23.8	385	8.6	396	55.0	17%
TOTALS:	*35*	*195.8*	*12*	*87.7*	*385*	*8.6*	***432***	***292.1***	***92%***
w/i City:	*33*	*178.8*	*12*	*87.7*	*385*	*8.6*	*430*	*275.1*	*86%*
w/i UGB:	*2*	*53.8*	*0*	*0.0*	*0*	*0.0*	*2*	*53.8*	*17%*

Source: Metro, City of Forest Grove, Johnson Economics

- Most available acreage is in areas with Industrial zoning (74%).
- There is a much smaller amount of buildable acreage in Mixed Use zoning. (Forest Grove's main commercial zones are counted as having a general Mixed Use classification under the regional land use methodology, because they allow for some housing.) This Mixed Use acreage includes what has been identified as "redevelopable" under Metro's regression methodology. While it looks like a large amount of land on the following map (in yellow), the regression analysis of likely redevelopment amounts to a relatively small amount of acreage (8.6 ac.)
- While significant current employment is found in the city's residential zones, it is assumed that the public policy goal is to house future employment growth outside of residential zones to the greatest extent possible. Therefore, no residential acreage is included in the Buildable Lands Inventory for employment.

Figure 6.2: Buildable Land Inventory, Employment Land, Forest Grove



Land Use	Vacant		Redevelopable		Redev. (Regression)[1]	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
Industrial	29	173.2	7	63.9	0	0.0
Mixed Use	6	22.6	5	23.8	385	8.6
TOTALS:	*35*	*195.8*	*12*	*87.7*	*385*	*8.6*

Source: Metro, City of Forest Grove, Johnson Economics

Figure 6.3: Buildable Land Inventory, Summary of Parcels by Size (Vacant and Major Redevelopment Parcels)

	# OF TAXLOTS, by PARCEL SIZE									
	Parcel Size (ac.):	*<.25*	*.25 - .50*	*.50 - 1*	*1 - 2*	*2 - 5*	*5 - 10*	*10 - 20*	*20 - 50*	*>50*	**TOTAL**
LAND USE	Industrial	2	5	5	6	6	4	5	3	0	36
	Mixed Use	5	1	0	2	0	0	1	1	0	10
STATUS	Vacant	3	6	5	7	4	3	3	3	0	34
	Redevelopment	4	0	0	1	2	1	3	1	0	12
	Total	***7***	***6***	***5***	***8***	***6***	***4***	***6***	***4***	***0***	***46***

	POTENTIAL GROSS BUILDABLE ACRES, by PARCEL SIZE									
	Parcel Size (ac.):	*<.25*	*.25 - .50*	*.50 - 1*	*1 - 2*	*2 - 5*	*5 - 10*	*10 - 20*	*20 - 50*	*>50*	**TOTAL**
LAND USE	Industrial	0.4	1.9	3.7	8.5	20.6	27.5	79.8	94.7	0.0	237.1
	Mixed Use	0.4	0.4	0.8	2.8	0.0	0.0	18.5	23.5	0.0	46.4
STATUS	Vacant	0.5	2.3	4.5	9.4	15.5	19.9	49.1	94.7	0.0	195.8
	Redevelopment	0.3	0.0	0.0	2.0	5.2	7.6	49.2	23.5	0.0	87.7
	Total	***0.8***	***2.3***	***4.5***	***11.3***	***20.6***	***27.5***	***98.3***	***118.2***	***0.0***	***283.5***

Source: Metro, City of Forest Grove, Johnson Economics

* Does not include parcels identified as potential redevelopment sites through regression analysis (8.6 acres total, all of Mixed Use zoning.) These are not included because they total nearly 400 parcels all with different probabilities of redeveloping in the plan period.

Figure 6.3 presents a summary of parcels identified in the Buildable Lands Inventory by size (other than those identified as potentially re-developable through Metro's regression analysis.) The identified vacant or major redevelopment parcels total 46 sites.

- Most sites identified are industrial. These are well-distributed across a range of sizes, including 8 parcels over 10 acres and 3 over 20 acres. This includes one 36.8-acre site and one 17-acre site located outside the city boundary, but inside the UGB.
- The mixed use parcels are generally small, other than large Neighborhood Mixed Use parcels at the northern boundary of the city.

VII. Reconciliation of Land Need and Supply

Figure 7.1 presents the reconciliation of the findings of 20-year employment land need (Section V) with the estimated supply of buildable lands (Section VI).

Figure 7.1: Reconciliation of 20-Year Demand and Supply

SAFE HARBOR FORECAST

	DEMAND		SUPPLY		
LAND USE	**Safe Harbor Forecast**		**Buildable**	**Surplus or Deficit**	
	5-year	**20-year**	**Acres**	**5-year**	**20-year**
Industrial Land	9	40	237.1	228	196.75
Mixed-Use Land	33	146	55.0	22	(91.15)
TOTAL:	42	186	292.1	250	105.60

METRO 2040 (TAZ) FORECAST

	DEMAND		SUPPLY		
LAND USE	**Metro 2040 Forecast**		**Buildable**	**Surplus or Deficit**	
	5-year	**20-year**	**Acres**	**5-year**	**20-year**
Industrial Land	11	48	237.1	226	189.16
Mixed-Use Land	37	170	55.0	18	(114.55)
TOTAL:	48	217	292.1	244	74.60

Source: Metro, City of Forest Grove, Johnson Economics

Major Findings

- Current buildable land supply is estimated to be sufficient to meet short term needs, but not long term needs.
- Over the 20-year period, the buildable supply does exceed the long term demand. However, this analysis finds that the classification of available land (mostly industrial) is a poorly matched to future employment needs.
- The demand for Mixed Use lands to accommodate commercial uses will exceed the supply of these land categories over the planning period.
- Many of the same types of uses (office and retail) can be suitable to either Commercial or Mixed Use land, so the balance between these two zoning types are somewhat fungible. In other words, some of the estimated demand for new land could be accommodated by new commercial or mixed use land, or a mix.
- This analysis indicates that there may be a significant oversupply of designated industrial land in Forest Grove, and that some of this might be repurposed for other employment uses.