

## CLACKAMAS COUNTY EMPLOYMENT FORECASTS

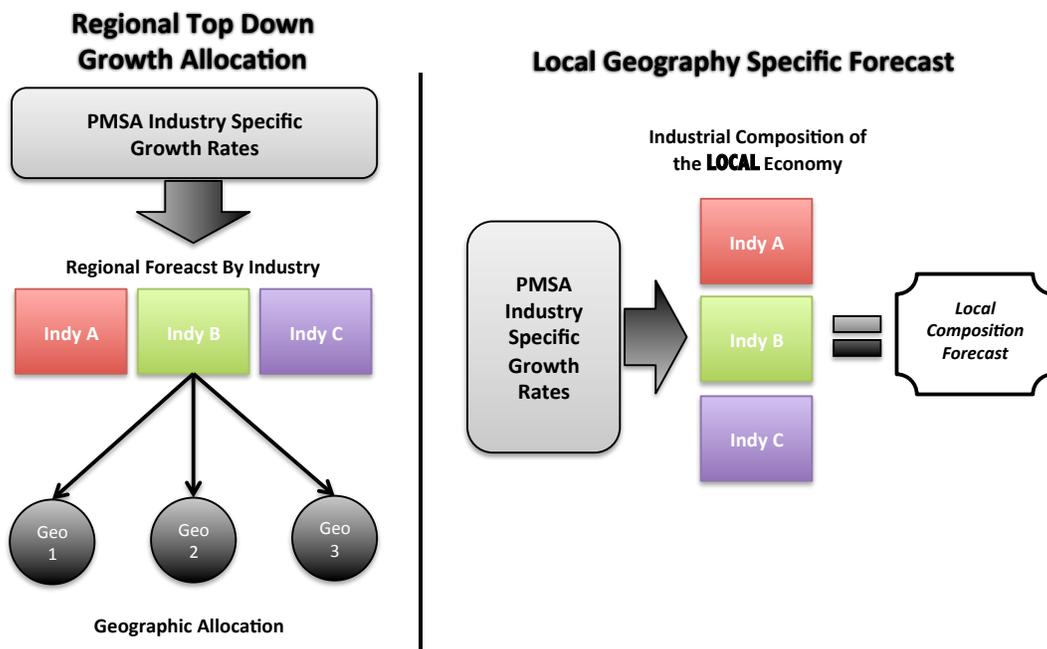
Building upon our previous assessment of economic trends and conditions, and identification of economic opportunities and targeted clusters, Johnson Economics developed a series of employment forecasts over the planning period. We have broken these forecast into two categories, baseline and alternative forecasts. The baseline forecasts generally rely on third-party growth estimates at the sector level. The alternative forecasts reflect more opportunity driven scenarios that reflect trends among local industries, foundational firms, and the policy direction of the county toward economic development.

### BASELINE FORECAST:

#### Scenario I:

The first forecast relies on regional growth rates outlined in the Metro UGR. In that analysis, growth forecasts were developed at the industry sector level for the entire Portland-Vancouver-Beaverton PMSA and then allocated down (top down approach) to unique geographies. Scenario I in this report relies on these macro variable based growth rates, but applies them to the specific industrial composition of the local economy.

Figure 22: Overview of Baseline Employment Forecast Approach



**Scenario II:**

Scenario II in this analysis uses the same local concentration approach as Scenario I. However, this scenario uses industry sector level forecasts from the Oregon Employment Department for Clackamas County only. These forecast are produced for the entire County, includes areas outside of the UGB. However, we apply them only to the insider the UGB base. Because the urban economic base is likely to grow at a faster rate than outside of the metro area, this forecast is likely to be conservative.

**Forecast Results:**

Both forecasts produce similar gross employment estimates, ranging from nearly 40,000 jobs (1.4% AAGR) to over 44,000 jobs (1.5% AAGR) over the forecast period. However, the distribution of growth across industries is variably different. Note also that even in Scenario I where growth rates are derived from PMSA estimates, the overall growth rate is higher locally. This is the result of Clackamas County having a higher concentration in higher growth industries. Some additional observations:

**Figure 23: Baseline Growth Forecasts, Clackamas County in Metro UGB (2012-2035)**

Industry	BASE YEAR	SCENARIO I			SCENARIO II		
	2014	2035	#	AAGR	2035	#	AAGR
Natural Resources	465	430	-35	-0.4%	716	251	2.1%
Construction	6,667	11,336	4,668	2.6%	11,578	4,911	2.7%
Manufacturing	13,902	13,942	40	0.0%	17,406	3,504	1.1%
Wholesale Trade	8,650	11,587	2,937	1.4%	10,864	2,213	1.1%
Retail Trade	15,065	19,447	4,382	1.2%	19,885	4,821	1.3%
T.W.U.	4,122	4,946	824	0.9%	5,353	1,231	1.3%
Information	1,333	1,850	516	1.6%	1,620	286	0.9%
Finance	4,665	5,105	440	0.4%	6,393	1,728	1.5%
Real Estate	1,824	2,109	285	0.7%	2,390	566	1.3%
Professional Services	7,404	10,758	3,354	1.8%	11,962	4,558	2.3%
Management	1,418	2,178	760	2.1%	1,903	485	1.4%
Admin & Waste	6,573	10,310	3,737	2.2%	10,116	3,543	2.1%
Education	7,672	10,551	2,879	1.5%	10,663	2,991	1.6%
Health & Social Assistance	16,588	24,782	8,193	1.9%	23,195	6,607	1.6%
Arts, Ent. Rec.	1,514	1,914	399	1.1%	2,015	501	1.4%
Accommodation & Food	9,457	11,855	2,398	1.1%	13,240	3,783	1.6%
Other	4,238	6,211	1,974	1.8%	5,528	1,290	1.3%
Government	5,181	7,125	2,123	1.5%	6,185	1,004	0.8%
<b>TOTAL:</b>	<b>116,738</b>	<b>156,434</b>	<b>39,874</b>	<b>1.4%</b>	<b>161,013</b>	<b>44,274</b>	<b>1.5%</b>

- The PMSA forecast (Scenario I) anticipates zero growth in the manufacturing sector compared to a 1.1% expansion for Clackamas County forecasted by the Oregon Employment Department (Scenario II).
- A similar trend is exhibited for natural resources, an industry that has a low utilization of urban land.

- The state forecasts are much more bullish on population serving industries than the PMSA forecasts. Growth rates for finance, real estate, professional services, education & health, leisure, and retail, are all measurably higher in the Scenario II forecasts.
- Both forecasts have a similar disposition toward construction activity.
- Taken together, the forecast would represent an increase in the employment base of roughly 34% and 38% in Scenarios I and II, respectively.

#### ALTERNATIVE FORECAST

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. After all, this approach is similar to the methodology used to produce the employment forecasts in Metro's UGR and estimates for state budgeting purposes. However, forecasts grounded in broad based economic variables do not account for the realities of local businesses and trends among evolving industries. Industries continually evolve and new opportunities arise. Just ten years ago data centers barely existed in the Northwest, e-commerce business models such as Amazon were still being questioned as viable, social media was in its infancy, commercial aerial drones didn't exist, and the first smart phones were just being designed. Five years ago app development wasn't even an industry and most macro forecasts had the information sector (includes software publishing) declining or exhibiting flat growth. Any long-term forecast is wrought with uncertainty, and subject to inherent error.

The extent to which a forecast reflects discrete information about companies and industries can reduce error bands while providing value-added direction on how policy can influence outcomes.

#### Potential Deviations from Macro Forecasts

In the context of discrete knowledge about the Clackamas County economy and structural economic trends we've identified (i.e. energy market advantages, on-shoring prospects, migration trends) we derive an alternative economic opportunities based employment forecast. In part, this forecast is predicated on the notion that local economies are reflective of policy decisions, investments, and actions a community takes to successfully encourage and foster growth. We begin by identifying six critical factors that influence the growth and direction of a particular industry.

##### 1. Population Base

*Growth in the local and regional population bases will increase demand for goods and services consumed locally. The extent of population growth will directly impact firms and industries that produce these economic activities. Examples include housing, retail, health care, financial services, and personal care.*

##### 2. Policy

*Policy decisions at the local and national level will influence the need for specific goods and services. For example, investment in infrastructure impacts demand for construction & utilities just as investment in schools or technical training programs would increase growth in the education sector. Other factors such as trade and tax policy are also impactful, among others.*

**3. Global/Exogenous Factors**

*Goods and services produced locally that are exported outside of our region will be heavily influenced exogenous factors. This would include both raw goods such as agricultural products as well as components or manufactured goods such as computer, electronic, and aerospace components.*

**4. Industrial Shifts/Trends**

*Similarly, shifting processes, production, and other trends within foundational industries will impact demand for locally produced goods. For example, the merging of microelectronics, software, and robotics across medical, automotive, and aerospace industries will increase demand for these products and the mutual interdependencies of these sectors.*

**5. Regional Economic Growth/Business Demand**

*Firms and sectors that support broad-based economic activity will be influenced by growth in foundational industries. Examples include business support activities, the movement of goods (logistics & distribution) and the construction and maintenance of new facilities and equipment.*

**6. Specific Event/Recruitment**

*The region is in the process of coordinating a regional large-lot industrial recruitment strategy. As our analysis has found, many industrial clusters organize around a particular anchor firm or groups of anchor firms. The successful recruitment of large foundational user would increase demand for ancillary, value-chain, and support products and services markedly in addition to direct employment.*

In Figure 24, we consider growth prospect for targeted industries (as well as other sectors) in the context of identified growth prospects.

Figure 24: Influence of Growth

	Population Base	Policy	Global/Exogenous Factors	Industry Shifts/Trends	Regional Economic Growth	Specific Event or Recruitment
Education	Growth correlation to population base	Public investment in expanded public education facilities			Potential for increased demand for technical training facilities in key production industries	Potential for increased demand for technical training facilities in key production industries
	Growth correlation to population base			Increasing number of office and other uses (banking, daycare, etc.) located in retail space	Some localized growth could occur above and beyond trend commensurate with daytime employment concentrations	
Retail, Food Services, and Personal Care	Growth correlation to population base				Growth in hotel accommodations will be a function of economic and tourism growth	
Leisure, Hospitality, and Recreation (nonfood)	Growth correlation to population base		Financial market stability impact on access to capital		Growth in France will in part be a function of economic growth locally	
	Growth correlation to population base	Impact on workforce training, incentive programs for industrial recruitment and retention	Foreign and domestic demand growth	Potential for a shift in production away from resource constrained regions. Expansion west for access to export markets.	Regional growth in core activities will influence demand in ancillary functions (i.e. equipment, distribution/logistics)	Regionally significant recruitment target industry
Agriculture & Food Processing	Growth correlation to population base	Impact on workforce training, incentive programs for industrial recruitment and retention	Expanding global and domestic investment seeking west coast locations	Shift in research funding to private donors, expanded integration of microelectronics, advances in processes that leverage local strengths	Regional presence in bio-technology and research is growing (i.e. OHSU, OSU)	Regionally significant recruitment target industry
Bio-Tech and Health Care	Growth correlation to population base			Increasing utilization of Information Technology and Software. Large firms internalizing these functions	Growth in business support services will in part be a function of economic growth locally	
Business Support & Back Office	Growth correlation to population base					
Computers and Electronics	Indirect impact relating to market size for end user products	Impact on workforce training, incentive programs for industrial recruitment and retention	Increasing global demand for goods, intellectual property/rights, production processes requiring more trained workforce	Microelectronics expansion into other industries, shifts in production processes	Value-chain growth coincident with anchor industry expansion	Regionally significant recruitment target industry
Construction & Real Estate	Growth correlation to population base	Local land policy impacting the character, form, and extent of development and redevelopment		Changes in character of development may impact the composition of the cluster, material sourcing, brokerage threatened by technology and software	Growth in Construction will in part be a function of economic growth locally	
General Industrial	Indirect impact relating to market size for end user products	Impact on workforce training			Growth in Misc. Industrial activities will in part be a function of economic growth locally	
General Professional Services	Growth correlation to population base	Impact on workforce training		Industries exhibiting a preference for urban locations	Growth in Misc. Industrial activities will in part be a function of economic growth locally and regionally. Many activities are supportive of regional concentrations in advanced and retail commerce	
Government and Public Admin.	Growth correlation to population base	Changes in the size of Government in relation to the population base				
Logistics, Distribution & Wholesale	Indirect impact relating to market size for end user products	Impact on workforce training		Conversion of shipping methods to natural gas, conversion to full-service facilities, E-commerce fulfillment growth	Growth will be in part a function of regional business demand	
Metals & Machinery	Indirect impact relating to market size for end user products	Impact on workforce training, incentive programs for industrial recruitment and retention	Foreign and domestic demand growth, expansions to west coast markets, shifting of investment from Asian markets.	Cheap natural gas increasing competitiveness, on-shoring, advances in technological processes	Sector provides ancillary inputs to a range of regionally significant industries (aerospce, Trans. Equip, etc.)	Regionally significant recruitment target industry relating to specialized machinery
Software Development & Computer Programming	Indirect impact relating to market size for end user products	Impact on workforce training		Changes in competitiveness with access to fiber, growing importance on productivity gains, growing automated processes, big data	Growth will be in part a function of regional business demand	
Utilities and Services	Growth correlation to population base	Incentive programs for clean-tech and renewable energy products and services	Commodity price impacts on rates		Growth will be in part a function of regional business demand	Expansion of service capacity to serve industrial sites

Our assessment of macro forecasts and local economic concentrations and growth prospects yield the some **potential** deviations from baseline estimates. Here, we review the most critical. Applicable baseline AAGR's from Scenario I are in parentheses.

**Natural Resources (-0.4%):** Low macro level estimates are likely to be driven primarily by negative trends in forestry, mining, and other agricultural sectors. In Clackamas County, however, the sector is largely driven by nursery stock, an industry that is more closely related to construction activity. Oregon is also the largest exporter of nursery stock in the nation.

**Wood Products Manufacturing (-0.4%):** Similarly, negative growth forecasts in the sector are certainly related to a downturn in milling and forestry related activities, which have been declining for years. In Clackamas County the sector is primarily concentrated in products serving the construction industry, namely kitchen cabinetry, wood windows, doors, and countertop manufacturing.

**Food Manufacturing (-0.4%):** Most of the employment in local food manufacturing is concentrated in commercial baking and locally produced and consumed goods. While there is a threat to growth of a large user leaving the county, there is at least an equal likelihood of these users expanding or new users or businesses finding local advantages. Also, beverage manufacturing is growing regionally at an accelerated pace. Clackamas County has a strong beverage wholesaling presence but has no beverage manufacturing businesses. This is an opportunity for industry expansion. Other opportunities include leveraging the cluster strengths in distribution and packaging to see additional frozen or prepared foods industry presence. In other words, the cluster has considerable upside opportunities will limited downside risk.

**Other Non-Durable Goods (0.3%):** National forecasts are predicted to decline markedly with PMSA forecasts coming in very low. "Other non-durable goods" generally includes textiles, apparel, chemicals, printing, and plastics. Some of these sectors such as textiles and apparel face increasing growth threats in off-shore production. Others such as chemicals and printing do not, and are tied to regionally concentrated industries such as bioscience and distribution. Clackamas County's other non-durable goods sector does not have an apparel or textile presence.

**Paper Manufacturing (-2.4%):** A significant share of local employment is in an industry subsector that faces considerable production challenges. There is a very real likelihood that declines in this sector a measurable larger than PMSA forecasts. The sector could nearly disappear in Clackamas County.

**Metals & Machinery (-0.7%):** This sector is among the largest and most specialized in Clackamas County. It is an industry that is anchored by large publically traded anchors. It is an industry that could benefit from on-shoring and domestic energy advantages. Negative growth would be a reversal of the 10-year trend in Clackamas County. There is an isolated threat to the machinery subsector, which could see a reversal as technology becomes more integrated in mechanical processes. Alternatively both metals categories should at least maintain a status quo trend locally.

**Computers and Electronics Manufacturing (1.3%):** This is an industry that has competing prospects locally. On one hand firms are facing increasing foreign competition, on the other some firms are brining foreign production back home in light of workforce needs and intellectual property concerns. The industry should exhibit structural expansion resulting from integration into other sectors such as automotive components, avionics, bioscience, and electromedical devices. This sector arguably has the best opportunity for one or more large-scale business recruitments in the broader metropolitan region.

**Wholesale Trade (1.4%):** PMSA forecasts call for stable growth in wholesaling in light of declining or stagnate manufacturing activity. In the event that manufacturing does decline measurably in key sectors such as food, metals, and computers, we would expect this forecast to be optimistic.

**Alternative Forecast Scenario III & IV:**

Based on all our proceeding research and analysis, Johnson Economics developed alternative growth scenarios reflecting supplemented growth rates for select subsets of industries. This process involved a complex matrix of actual firms and subsector industries disaggregated into cluster groups. Industries that were not given a cluster designation received a growth rate similar to its macro sector rate as in Scenario I or II. Segments of industries that were considered part of a large cluster ecosystem received an alternative forecast based on the overall local growth prospects of the cluster. Consider the following example:

*The PMSA growth forecast for fabricated metals is -0.5% AAGR. In other words, the regional forecast is for a 20-year contraction of -9% in the industry. However, our analysis reveals that “X%” of the local fabricated metals sector directly provides materials used in heavy & civil, and buildings construction—a sector that is forecasted to **expand** by 66% over the same period. As such, our model generates an alternative growth rate for **this subset** of fabricated materials subsectors based on its linkage to the growing construction sector as well as alternative assumptions about the underlying growth trends of the industry. As in most forecast models, this analysis also includes a sensitivity metric to create a lower and upper bound forecast.*

*Large-Lot Overlay*

In addition to the analysis above, our employment forecasts also consider the direct and indirect/induced impacts of regionally significant large-lot recruitments on Clackamas County’s employment base, and by extension land demand. The region has identified improving large-lot industrial competitiveness as an economic development objective. Metro maintains an inventory of all large industrial sites greater than 25 acres and the readiness of such lands to accommodate potential users. Clackamas County in its own right has undertaken considerable efforts to improve and market its large-lot industrial land supply. The County has developed an award winning online search tool to inventory sites and site conditions and market sites to the business and development community. As an extension of this project, the County completed its Strategically Significant Employment Lands Project. This analysis developed detailed concept plans and readiness assessments on 21 large industrial sites across the county. It also identified the economic impacts and job creation associated with each concept plan. And finally, Clackamas County is participating in the Greater Portland Partnership for Economic Advancement’s (GPPEA) Large-Lot Demand and Recruitment Strategy.

Quantifying demand for large industrial sites is much different than trended economic analysis, as these sites reflect the decisions of individual firms that cannot be measurably predicted by economic variables. Rather, we must consider if the region is likely to be competitive in attracting users over the 20-year planning period. For this process, we lean on the site-specific work conducted by Clackamas County as a part of its Strategically Significant Employment Lands Project. That analysis identified a number of sites in the UGB that would be competitive options over that time frame. Upon review, we have selected two sites we consider to be most likely to develop. They are summarized here:



#### Clackamas Industrial Site-0 (CIAO):

The site is 62 gross acres with roughly 39 acres considered to be developable after accounting for natural resource mitigation and slope. The analysis found this site to be among the least constrained in the study. CIAO benefits from a location in the Clackamas Industrial Area, which includes a critical mass of metals, machinery, food processing, and distribution users. The site has had recruitment interest in recent years. The unique quality of the site is that the County itself owns the site, and is motivated to see an economically productive user on site. This condition alone makes the likelihood of an industrial siting on CIAO highly likely over the 20-year period. The conceptual development plan for CIAO was designed for an advanced metals or machinery manufacturer capable of delivering 550 jobs on site at full build-out. Ancillary impacts elsewhere in the regional economy totaled 993 jobs. For the purpose of this analysis, given the location of the site and proposed user, we assume that Clackamas County would capture one-third of ancillary impacts.



#### Wilsonville Industrial Development Site-1 (WIDS-1)

This site includes 30 net-developable acres in Wilsonville. The site is fundamentally strong with a strategic location within Wilsonville's high-tech cluster and offers excellent visibility and access. Development constraints are also very limited, making the site increasingly marketable. The concept planning and economic analysis identified this site as being ideal for a single high-tech manufacturer of computers, electronics, or components. The plan assumed up to 720 jobs on-site at full capacity. Indirect and induced job creation was estimated at over 2,800 jobs. Ancillary impacts are much greater for high-tech users because of higher wages paid to households and broad value-chains. For the purpose of this analysis, given the location of the site near other jurisdictions and the location of value chain sourcing, we assume that Clackamas County would capture only one-fifth of regional ancillary impacts.

#### Impact on Growth Scenarios

In our forecast scenarios, the lower bound forecast assumes that only the CIAO site develops over the planning period, while the upper bound forecast assumes both sites have successful recruitments sometime in the next 20-years. Further, we ignore any potential impacts that a recruitment outside of Clackamas County would have on local businesses and household spending.

**Forecast Results:**

The Scenario III forecast estimates roughly 1.5% annual growth on the way to projecting over 44,000 new jobs. Meanwhile, the Scenario IV forecast projects 1.8% annual growth and over 53,750 new jobs. Collectively, these scenarios reflect a more optimistic outlook for the manufacturing sector in light of potential large-lot recruitments and an alternative perspective on the growth prospects for local manufacturers of metals, machinery, and electronic products, as well related industries within these clusters. Alternative forecasts also reflect less optimistic estimates for industries that are likely to be increasingly threatened by technological displacement. Examples include the impact of automation on the finance and real estate industry and growing e-commerce impacts on brick and mortar retail.

**Figure 25: Alternative Scenario Employment Forecasts**

Industry	BASE YEAR	SCENARIO III			SCENARIO IV		
	2014	2035	#	AAGR	2035	#	AAGR
Natural Resources	465	534	69	0.7%	548	83	0.8%
Construction	6,667	10,936	4,269	2.4%	11,508	4,841	2.6%
Manufacturing	13,902	19,017	5,114	1.5%	20,984	7,082	2.0%
Wholesale Trade	8,650	11,979	3,329	1.6%	12,740	4,090	1.9%
Retail Trade	15,065	19,134	4,069	1.1%	19,652	4,587	1.3%
T.W.U.	4,122	5,124	1,003	1.0%	5,377	1,256	1.3%
Information	1,333	1,903	570	1.7%	2,070	737	2.1%
Finance	4,665	5,216	551	0.5%	5,423	758	0.7%
Real Estate	1,824	2,028	204	0.5%	2,131	307	0.7%
Professional Services	7,404	11,751	4,347	2.2%	12,958	5,554	2.7%
Management	1,418	2,132	714	2.0%	2,353	935	2.4%
Admin & Waste	6,573	10,099	3,526	2.1%	11,075	4,502	2.5%
Education	7,672	10,384	2,713	1.5%	10,722	3,051	1.6%
Health & Social Assistance	16,588	24,317	7,729	1.8%	25,841	9,252	2.1%
Arts, Ent. Rec.	1,514	1,878	364	1.0%	1,953	438	1.2%
Accommodation & Food	9,457	11,621	2,164	1.0%	12,030	2,573	1.2%
Other	4,238	6,108	1,870	1.8%	6,362	2,124	2.0%
Government	5,181	6,597	1,416	1.2%	6,782	1,601	1.3%
<b>TOTAL:</b>	<b>116,738</b>	<b>160,759</b>	<b>44,021</b>	<b>1.5%</b>	<b>170,509</b>	<b>53,770</b>	<b>1.8%</b>