

# Salem

## Target Industry Analysis



Prepared by:  
**Community Planning Workshop**

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June 2011





## **SPECIAL THANKS & ACKNOWLEDGEMENTS**

The Community Planning Workshop would like to thank the individuals and organizations that funded and supported the Salem Target Industry Analysis. We extend special thanks to local and national businesses and organizations who took the time to speak with the CPW research team. Your input helped guide this project. This project was one of 14 projects included in the Sustainable City Year; we thank the Sustainable Cities Initiative (SCI) for including this project and for the support as one of our campus partners. We would also like to thank John Wales, Tory Banford, and Courtney Knox from the City of Salem Economic Development Department for their support and guidance throughout the project.

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### **About the Community Planning Workshop**

Community Planning Workshop (CPW) is one of the core programs of the University of Oregon's Community Service Center ([csc.uoregon.edu](http://csc.uoregon.edu)). Established in 1977, CPW provides students the opportunity to address planning and public policy problems for clients throughout Oregon. Students work in teams under the direction of faculty and Graduate Teaching Fellows to develop proposals, conduct research, analyze and evaluate alternatives, and make recommendations for possible solutions to planning problems in rural Oregon communities.

This project was conducted as part of the University of Oregon Economic Development Center – a CSC program that focuses on providing technical assistance related to economic development to communities throughout Oregon. The EDC is partially funded through a grant from the U.S. Department of Commerce, Economic Development Administration.

## **About SCI**

The Sustainable Cities Initiative (SCI) is a cross-disciplinary organization at the University of Oregon that seeks to promote education, service, public outreach, and research on the design and development of sustainable cities. We are redefining higher education for the public good and catalyzing community change toward sustainability. Our work addresses sustainability at multiple scales and emerges from the conviction that creating the sustainable city cannot happen within any single discipline. SCI is grounded in cross-disciplinary engagement as the key strategy for solving community sustainability issues. We serve as a catalyst for expanded research and teaching, and market this expertise to scholars, policymakers, community leaders, and project partners. Our work connects student energy, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

## **About SCY**

The Sustainable City Year (SCY) program is a year-long partnership between SCI and one city in Oregon, in which students and faculty in courses from across the university collaborate with the partner city on sustainability and livability projects. SCY faculty and students work in collaboration with staff from the partner city through a variety of studio projects and service-learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCY's primary value derives from collaborations resulting in on-the-ground impact and forward movement for a community ready to transition to a more sustainable and livable future. SCY 2010-11 includes courses in Architecture; Arts and Administration; Business Management; Interior Architecture; Journalism; Landscape Architecture; Law; Planning, Public Policy, and Management; Product Design; and Civil Engineering (at Portland State University).

## **About Salem, Oregon**

Salem, the capital city of Oregon and its third largest city (population 157,000, with 383,000 residents in the metropolitan area), lies in the center of the lush Willamette River valley, 47 miles from Portland. Salem is located an hour from the Cascade mountains to the east and ocean beaches to the west. Thriving businesses abound in Salem and benefit from economic diversity. The downtown has been recognized as one of the region's most vital retail centers for a community of its size. Salem has retained its vital core and continues to be supported by strong and vibrant historic neighborhoods, the campus-like Capitol Mall, Salem Regional Hospital, and Willamette University. Salem offers a wide array of restaurants, hotels, and tourist attractions, ranging from historic sites and museums to events that appeal to a wide variety of interests. 1,869 acres of park land invite residents and visitors alike to enjoy the outdoors.





# EXECUTIVE SUMMARY

This report presents the results of a focused analysis of selected target industries for the City of Salem. The purpose of this project is to support the city's objective of fostering high wage job growth in Salem, provide market data on the target industries and recommend steps to better attract the target industries. The Community Planning Workshop (CPW) evaluated four industries in this analysis: food processing, metal manufacturing, biosciences, and renewable energy. The selected industries highlight Salem's traditional economic base in agriculture and steel manufacturing and also look to emerging opportunities in the bioscience and renewable energy industries.

## Background

The Target Industry Analysis is one of several local initiatives to advance Salem's economy. In 2008, the City of Salem created the Economic Development Division (EDD) within the Department of Urban Development. The EDD's focus is to facilitate economic opportunities and private investment in Salem in partnership with the Strategic Economic Development Corporation (SEDCOR) and other partners.

The Target Industry Analysis is one of 14 projects included in the University of Oregon's Sustainable City Year (SCY). This project is also intended to complement and inform the Strategic Economic Prosperity Plan prepared by CPW in late 2010. The purpose of the Strategic Economic Prosperity Plan is to articulate an internal work strategy for EDD staff and the City's economic development partners that will serve as the foundation for the City's economic development strategies. The Target Industry Analysis complements the goals identified in plan.

## Purpose and Methods

The purpose of the project is to recommend steps the City of Salem can take to better support and grow the four target industries. Looking in depth at the growth potential of four specific industries reveals both advantages and disadvantages of doing business in Salem. This study evaluates the potential for economic growth among the target industries in Salem. By using a strategic approach to economic development, Salem can grow existing businesses, recruit prospective opportunities and promote entrepreneurship. The target industry approach provides Salem with detailed information on the opportunities and barriers to fostering growth in individual industries. Moreover, the research presented in this report can be used as a model to foster growth in other industries in the future.

CPW used a combination of quantitative and qualitative methods to understand the market strength and potential of the four target industries. CPW conducted a high-level industry analysis to assess the

market size and growth trends, employment information and industry requirements for each target industry. Case study research was also used to understand where these industries have successfully located and grown in the U.S. and how this information is applicable to Salem. With input from City staff, SEDCOR and Business Oregon, CPW narrowed the scope of research within the subsectors of each industry. Simultaneously, CPW conducted a general competitiveness assessment of Salem. Research revealed opportunity in the following sub sectors:

- **Food Processing:** small niche food processors
- **Bioscience:** medical device manufacturing
- **Metal:** metal manufacturing markets that are compatible with existing businesses in Salem
- **Renewable Energy:** solar and wind manufacturing

Based on our research, CPW worked with City staff and economic development partners to draft recommendations to help grow and attract the four target industries in Salem.

## Competitiveness Assessment

Businesses tend to make location decisions based on the objective of maximizing profit. Location based factors that impact businesses include: availability and cost of land, cost of utilities, workforce, proximity to markets, and taxes. Another factor that some firms weigh when choosing a location is the quality of life. A competitiveness assessment is one way for cities to understand the strengths and weaknesses of their business environment.

CPW conducted a competitiveness assessment to help the City better understand perceptions of Salem. The assessment provides a foundation to develop policies and programs that can improve Salem's ability to expand the local economy.

Salem has many features that make it an attractive place to do business, ranging from the availability of land and affordable utility rates, to Oregon's business friendly tax structure and a skilled workforce. Salem also faces some challenges, including distance from many U.S. markets, the absence of a research institution and a gap in the supply of capital. That said, businesses operating in Salem believe that the City is pro-business and think that the outlook for economic growth in Salem is positive. A summary of Salem's competitiveness assessment is provided below:



- **Land:** Salem has a plentiful vacant industrial land supply (1,480 acres)<sup>1</sup> at prices that are very competitive regionally.<sup>2</sup>
- **Utilities:** Oregon ranks 10th in the most affordable industrial electricity rates in the country (5.67 cents per kilowatt hour).<sup>3</sup> Combined water and waste water rates in Salem are also competitive compared to other major cities in the West (\$5.90 per 100 Cubic Feet in Salem<sup>4</sup> compared to \$9.67 in Portland<sup>5</sup> and \$13.90 in Seattle).<sup>6</sup>
- **Workforce:** Salem's workforce has a range of skills, from retail sales to manufacturing, and from health care to administration services. The average wage in Salem (\$40,560)<sup>7</sup> is below the Oregon average (\$43,550)<sup>8</sup> and national average (\$44,410),<sup>9</sup> meaning larger companies that require a less skilled workforce may be drawn to Salem. The perception that Salem's workforce is under-educated compared to the state is an obstacle for Salem. Although Census data does not show a significant difference (7 percent of Salem residents have advanced degrees compared to 10 percent in Oregon)<sup>10</sup> this perception may make it difficult for Salem to attract high paying jobs in rapidly growing industries such as advanced technologies and the biosciences.

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<sup>1</sup> Parker, Bob and Beth Goodman. (May 2011) *Salem-Keizer Metropolitan Area Regional Economic Opportunities Analysis 2012 to 2032*. ECONorthwest.

<sup>2</sup> Oregon Prospector. Web. 15 May 2011. <http://www.oregonprospector.com/>

<sup>3</sup> U.S. Energy Information Agency. February 2011. "Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State." Web. 22 May 2011.

<sup>4</sup> City of Salem. City of Salem Public Works Water rates in Salem. (2011).

<sup>5</sup> City of Portland, (2010). Ordinance no. 183832. Portland, OR.

<sup>6</sup> City of Seattle, Seattle Public Utilities. (2011). Commercial water rates Seattle, WA.

<sup>7</sup> United States Bureau of Labor Statistics. "May 2010 Metropolitan and Nonmetropolitan Occupational Employment and Wage Estimates, Salem Oregon." Occupational Employment Statistics. Web. 14 June 2011. [http://www.bls.gov/oes/current/oes\\_41420.htm](http://www.bls.gov/oes/current/oes_41420.htm)

<sup>8</sup> United States Bureau of Labor Statistics. "May 2010 State Occupational Employment and Wage Estimates, Oregon." Occupational Employment Statistics. Web. 14 June 2011. [http://www.bls.gov/oes/current/oes\\_or.htm](http://www.bls.gov/oes/current/oes_or.htm)

<sup>9</sup> United States Bureau of Labor Statistics. "May 2010 National Occupational Employment and Wage Estimates." Occupational Employment Statistics. Web. 14 June 2011. [http://www.bls.gov/oes/2010/may/oes\\_nat.htm](http://www.bls.gov/oes/2010/may/oes_nat.htm)

<sup>10</sup> United States Census, American Community Survey, 2009. "Educational Attainment: Population 25 and Older." Web. May 2011.

- **Taxes:** Oregon has the second most competitive corporate tax rate in the country.<sup>11</sup> The state’s lack of a sales tax, a franchise tax, the Single-Factor Tax, the cap on property taxes, and low worker’s compensation rates all contribute to a competitive business environment. The Single-Factor Tax, in particular, makes Oregon an attractive location for businesses that export products outside the state.
- **Quality of life:** The quality of life in Salem is perceived differently by different industries. Some metal manufacturers noted quality of life was a primary reason for initially choosing to locate in Salem, while research based industries, such as bioscience and renewable energy, prefer the amenities found in cities such as Portland and Seattle.
- **Location & Transportation:** Located along Interstate Highway 5, Salem has good north-south connectivity along the West coast. Access to rail, proximity to the Port of Portland for global distribution, abundance of nearby agriculture, and proximity to growing markets in the Northwest and California also make Salem an appealing place to do business. However, the majority of the United States population is located east of the Mississippi River, making the transportation of goods to population centers costly.

## Opportunities for Salem

Research revealed a number of opportunities for the City of Salem to help grow existing business and recruit new businesses. Some industries revealed more opportunities for growth than others. Table S-1 below summarizes key indicators for each of the target industries. Indicators are based on the prospect of higher than average wages, strong national market growth, existing market linkages in the local economy, and existing state support.

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<sup>11</sup> Cline, Robert, et al. *Competitiveness of state and local business taxes on new investment: Ranking states by tax burden on new investment*. Ernst & Young, April 2011.

**Table S-1. Assessment of key indicators for target industries**

<b>Industry</b>	<b>Local Average Wage</b>	<b>National Market Growth</b>	<b>Local Market Linkages</b>	<b>State of Oregon Support</b>
Food Processing	Low	Low	High	High
Bioscience	High	High	Low	Low
Metal Manufacturing	High	Low	High	High
Renewable Energy	High	High	High	High

**High** = above local average wage, positive national growth, local opportunity to link to existing industries, strong state support.

**Low** = below local average wage, negative national growth, lack of opportunity to link to existing industries, weak state support.

### **Food Processing**

The food processing industry has a strong historical presence in Salem that dates back to the city’s founding. In 1903 this relationship was formally acknowledge when Salem took the nickname, “The Cherry City.” Food processing in Salem continues to be an integral part of the city’s economy, employing over 4,000 people.<sup>12</sup>

Local processing continues to be a promising industry for future success. Although this industry is shrinking nationally, Salem has seen growth in this industry in the last decade. Due to already existing food processing infrastructure and close proximity to agricultural inputs, opportunity exists to increase small niche food companies. Salem is fostering a new generation of small food processors, making Salem an entrepreneurial food hub.

### **Metal Manufacturing**

Metal manufacturing companies are a historically resilient industry in Salem. Local companies are known for adapting to emerging markets by adjusting to new manufacturing and fabrication technologies. Given an aging metal manufacturing workforce in Oregon and Salem, opportunity exists to train new metal manufacturing workers. Furthermore, Salem companies can link in to increasing demand for manufactured metal in emerging industries, such as renewable energy.

### **Bioscience**

Nationally, the bioscience industry is expected to grow at an average annual rate of 1.5 percent between 2008 and 2018,<sup>13</sup> making it one of the fastest growing industry sectors nationwide. The opportunity for high

<sup>12</sup> Oregon Employment Department. “Salem MSA Year in Review, 2010,” Oregon Labor Market Information System. March 30, 2011.

<sup>13</sup> Battelle Technology Partnership Practice, “Battelle/BIO State Bioscience Initiatives 2010.” Prepared for the Biotechnology Industry Organization, May 2010.

wage jobs in a growing market drives the bioscience cluster in Oregon. Although Salem does not have a necessary research institution and Business Oregon is not focusing on biosciences, opportunity does exist to collaborate with the State and other jurisdictions to further develop the bioscience industry.

Opportunity in the medical device subsector is promising due to an existing group of medical device companies located in Salem. Salem should establish relationships with key players in the Oregon bioscience industry to position itself to capture this growing market.

## **Renewable Energy**

Renewable energy is an emerging and rapidly growing cluster in Oregon. Oregon has established itself as a leader in solar manufacturing with 14 solar manufacturing companies located between Eugene and Portland. Additionally, the state is soon to become the fourth largest producer of wind energy in the nation.

Recent and expected industry growth in Oregon provides opportunities for expansion of the existing renewable energy cluster. It also serves as an opportunity to link wind and solar companies with existing metal manufacturing companies, which would help to localize the supply chain for these products and strengthen the industry cluster. Opportunity exists for Salem to actively recruit business that fill the missing links in the local solar and wind supply chain, such as solar rack manufacturing. Effort should be made to look to link existing metal manufacturing companies to link in to this growing market.

## **General & Industry Specific Recommendations**

CPW developed implementation strategies that intend to support growth of the local economy. The purpose of these recommendations is to provide a coordinated strategy for EDD staff and its partners. Table S-2 summarizes our recommendations. The recommendations include strategies for Salem to capitalize on present and future opportunities. The **General Recommendations** are applicable to all of the target industries as well as Salem's overall economic development efforts; the **Target Industry Recommendations** are specific to each of the four industries. The strategic plan goals column cross-references the recommendations with those in the Salem Strategic Economic Prosperity Plan.

**Table S-2. Salem Target Industry Analysis Implementation Strategies**

Recommendation	Time Frame	Lead Organization	Partner Organization(s)	Strategic Plan Goals
<b>General Recommendations</b>				
G.1 Create Small Business Coordinator Staff Position	Short term/Ongoing	EDD	-	1.3
G.2 Institute a City Business Registry Program	Short term	EDD	Other City Departments	3.1.5
G.3 Establish a City-Wide Economic Gardening Program	Short term/Ongoing	EDD	SEDCOR & Business Oregon	1
G.4 Create Small Business Loan Program to Support Business Operational Costs	Short term/Ongoing	EDD	-	3
G.5 Create a "How to do Business in Salem" Guide	Short term/Ongoing	EDD	SEDCOR and other City departments	2
G.6 Host City-Sponsored Professional Development and Networking Opportunities	Short term	EDD	SEDCOR, Chamber, OMEP, Chemeketa, SBDC	1.3
G.7 Create a Place-Based Economic Development Strategy	Medium term	EDD	Other City Departments, Travel Salem, Go Downtown Salem	2.4
G.8 Favor Local Business in City Procurement of Goods and Services	Medium term	EDD	Contracts & Procurement Division	1
<b>Food Processing Recommendations</b>				
F.1 Nurture Small Businesses by Creating Partnerships with Big Businesses	Short term	EDD	-	1.3
F.2 Develop a Local Food Awareness Program	Medium term	EDD	Community Development, Travel Salem, Go Downtown Salem	2.4
F.3 Support Food Systems by Creating a Food Policy Council	Long term	EDD	Marion & Polk Counties	2
<b>Biosciences Recommendations</b>				
B.1 Develop a Relationship with the Oregon Bioscience Association	Short term/Ongoing	SEDCOR	EDD & Oregon Bioscience Association	2.3
B.2 Engage with Innovation and Technology Professionals at Oregon Higher Education Institutions	Short term	SEDCOR	EDD	2.3
B.3 Develop a Marketing Tool to Describing Why Bioscience Companies Should Locate in Salem	Short term	SEDCOR	EDD, Business Oregon & Oregon Bioscience Association	2
<b>Metal Manufacturing Recommendations</b>				
M.1 Develop a Public Database of Metal Manufacturer Capabilities and Services	Short term	EDD	SEDCOR/EDD SEDCOR & Chemeketa	3.1
M.2 Improve Workforce by Coordinating Education and Training	Medium term	EDD	Community College SEDCOR, Chemeketa & Job Growers	2.3
M.3 Develop Business Management Training for Small Metal Manufacturing Companies	Medium term	EDD	Chemeketa & Job Growers	2.3
M.4 Research Metal Manufacturing Market Opportunities	Ongoing	EDD	SEDCOR	1.4.1
<b>Renewable Energy</b>				
R.1 Support Local Metal manufacturers to Make Replacement Parts for Wind Turbines	Short term	SEDCOR	EDD	1.3
R.2 Support Local Metal Manufacturers to Produce Solar Racks	Short term	SEDCOR	EDD	1.3
R.3 Recruit Photovoltaic Manufacturers	Short term	SEDCOR	EDD	1.4
R.4 Support Local Metal Manufacturers to Make Wave Energy Parts	Medium term	SEDCOR	EDD	1.3
R.5 Create Demand for Renewable Energy Products from Salem Companies	Medium term	EDD	Solarize Salem	1
R.6 Recruit Research and Development Firms to the Salem Renewable Energy Technology Center	Medium term	SEDCOR	EDD	1.4

\*Short term = 1-2 years; medium term = 3-4 years; long term = 5-6 years

## Conclusion

The Target Industry Analysis reveals opportunities to both expand the local economy while improving Salem's sense of place and quality of life. The study includes recommendations to encourage entrepreneurship, expand established industries and attract new industries in existing and emerging markets. In collaboration with its economic development partners, the City of Salem can foster economic development using the following strategies:

- Act as a liaison between businesses to foster relationships and information sharing to strengthen the local supply chain in each of the target industries.
- Address small business concerns, while proactively fostering the types of entrepreneurial activity that can improve Salem's overall economy.
- Build relationships with industry associations and Oregon Universities to stay in touch with emerging innovation and research opportunities.
- Connect existing industry to new and emerging markets to help foster economic growth from within the existing community.
- Streamline funding, permitting and other technical information to help small and large businesses do business in Salem.
- Identify opportunities to localize the supply chain of industries located in the Willamette Valley.

These strategies can be used to grow the target industries identified in this study, but also used as a model to grow future target industries in Salem.

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# CHAPTER I: INTRODUCTION

This report presents the results of a focused analysis of selected target industries for the City of Salem. The purpose of this project is to support the city's objective of fostering high wage job growth in Salem, provide market data on the target industries and recommend steps to better attract the target industries. The Community Planning Workshop (CPW) evaluated four industries in this analysis: food processing, metal manufacturing, biosciences, and renewable energy. The selected industries highlight Salem's traditional economic base in agriculture and steel manufacturing and also look to emerging opportunities in the bioscience and renewable energy industries.

## Background

Across the U.S. the need for successful economic development is greater than ever. The recession from 2007 to 2010 stalled economic growth and the U.S. unemployment rate increased from 4.6 percent to 9.6 percent.<sup>14</sup> During the same time period the unemployment rate increased from 5.3 percent to 10.7 percent in Salem.<sup>15</sup>

This study identifies economic development strategies that the City of Salem can use to foster job growth by focusing on the four target industries. A target industry is an industry that has the strongest potential to expand or relocate in a specific geographic region. Strategies in this study were developed from in-depth market research. Specifically the strategies were informed by reviewing market reports, conducting interviews, conducting data analysis of employment statistics, and referring to case studies.

The Target Industry Analysis is one of many local initiatives to advance Salem's economy. In 2008, the City of Salem created the Economic Development Division (EDD) within the Department of Urban Development. The EDD's focus is to facilitate economic opportunities and private investment in Salem in partnership with the Strategic Economic Development Corporation (SEDCOR) and other partners. The recently completed Salem-Keizer Regional Economic Opportunities Analysis (EOA) assessed economic opportunities and the regional land supply to support economic growth.

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<sup>14</sup> Oregon Employment Department. (2011) "2011 Local Area Employment Statistics." National Labor Force Data. Web. 28 April 2011.  
<<http://www.qualityinfo.org/olmisj/labforce?stat=unemprate&periodtype=03&year=2011&month=00&ysort=asc&msort=asc&key=Continue>>.

<sup>15</sup> Oregon Employment Department. (2011) "2011 Local Area Employment Statistics." Salem Labor Force Data. Web. 28 April 2011  
<<http://www.qualityinfo.org/olmisj/labforce?stat=unemprate&periodtype=03&year=2011&month=00&ysort=asc&msort=asc&key=Continue>>.

The Salem Target Industry Analysis links with many other current projects occurring in Salem. This project is one of 14 projects included as part of the University of Oregon's Sustainable City Year (SCY). Furthermore, the target industry analysis is intended to complement and inform the Strategic Prosperity Plan prepared by CPW in late 2010. The purpose of the Strategic Prosperity Plan is to articulate an internal work strategy for EDD staff and the City's economic development partners that will serve as the foundation for the City's economic development strategies. The Target Industry Analysis complements the goals identified in the Strategic Prosperity Plan.

## **Scope of this Study**

This study is limited to four target industries identified by the City of Salem as having economic opportunity for local market growth. The purpose of the project is to provide market research and recommend steps the City of Salem can take to better support and grow these industries.

Looking in depth at the growth potential of four specific industries revealed both advantages and disadvantages of doing business in Salem. These general findings are applicable to economic development strategies in Salem no matter what industries they look to grow. For example, CPW's research revealed general information about the Salem workforce, infrastructure, land availability and access to capital.

The analysis included high-level research on each of the target industries including market size and growth trends, employment information, industry requirements and case study research to understand where these industries have successfully located and grown in the U.S. and how this information is applicable to Salem.

## **How to use this Report**

The Salem Target Industry Analysis report provides Salem with a framework to pursue economic development strategies related to the target industries. The report is intended for use as an internal document for the Economic Development Division and SEDCOR to identify specific actions related to target industry development.

It is important to note that the report does not intend to limit Salem to pursue economic development activities in only the four-targeted industries, but instead provides a model for how the city can use strategic information gathering to identify strategies to grow and attract any industry. The report provides guidance for how the public sector can play a role in supporting, expanding and attracting business. Ultimately the report is intended to provide a roadmap for strategies to overcome limitations and take advantage of economic development opportunities in Salem.

## Organization of this Study

The remainder of this study is organized as follows:

- **Chapter 2: Framework for this Study** provides the context within which to view the methods and purpose of the study. The chapter discusses economic development strategies used in the study; provides an overview of each industry, including national market trends and local opportunity for each industry; details the benefits and limitations of using the target industry approach; and describes the methodology used to conduct this study.
- **Chapter 3: Salem Competitiveness Assessment** provides an overview assessment of Salem's ability to attract and grow existing businesses. The chapter describes business location theory, provides an overview of business perspective in Salem based on interviews with Salem businesses, and finally details Salem competitiveness.
- **Chapter 4: Implementation Strategies** details recommendations to help Salem expand its local economy. The chapter begins with general recommendations followed by subsequent strategies related to each industry. An overview, participating organizations, action items, and a general time frame for implementation accompany each recommendation.

This study also contains the following appendices:

- **Appendix A** provides a detailed account of the methodology used for this study.
- **Appendix B** provides a list of experts, businesses and organizations interviewed for this study.
- **Appendix C** provides an outline of a typical site selection process.
- **Appendix D** provides a detailed industry profile for the food processing industry.
- **Appendix E** provides a detailed industry profile for the bioscience industry.
- **Appendix F** provides a detailed industry profile for the metal manufacturing industry.
- **Appendix G** provides a detailed industry profile for the renewable energy industry.
- **Appendix H** provides a list of medical device companies in Salem, Oregon.
- **Appendix I** presents a series of case studies to support the food processing recommendations.

- **Appendix J** provides a list of the key research and innovation players in the bioscience industry in Oregon.
- **Appendix K** provides an overview of two bioscience case studies. The first is a statewide initiative in Colorado; the second is a local example in Medford, Oregon.
- **Appendix L** provides a list of organizations in the renewable energy field in Oregon.
- **Appendix M** provides a map and contact information for companies in Oregon that may be able to repurpose their skills and products to participate in the solar energy industry.



## **CHAPTER 2: FRAMEWORK FOR THIS STUDY**

This chapter provides the context within which to view the methods, scope, and purpose of this study. It starts with a brief overview of our analytical approach and the benefits and limitations of using the target industry approach. Next there is a description of the methodology used to identify opportunities for Salem. This chapter ends with an overview of the target industries selected for this study, including national market trends and local opportunities for Salem.

### **Analytical Approach**

This study uses a range of economic development strategies and theories to evaluate the potential for economic growth among the target industries in Salem. By using a strategic approach to economic development, Salem can grow existing businesses, recruit prospective opportunities and promote entrepreneurship. The targeted industry approach provides Salem with detailed information on the opportunities and barriers to fostering growth in individual industries. Moreover, the research presented in this report can be used as a model to foster growth in other industries in the future.

### **Target Industry Analysis Definition**

A target industry analysis is an intentional, strategic and targeted approach to economic development. It looks at specific industries and identifies market trends, growth potential, and site requirements of the targeted industry. The analysis compares the economic characteristics, resources, and advantages of a geographic region to the industry requirements of a particular industry.

The Salem Target Industry Analysis considers the range of economic development strategies currently in use in Salem. Using cluster theory as a basis, this study uses retention, recruitment and economic gardening techniques to help identify local growth potential in the four target industries.

### **Benefits and Limitations of a Target Industry Analysis**

#### **Benefits**

The benefit of using the Target Industry Analysis (TIA) framework is to identify a community's relative strengths and uncover opportunities for growth. The TIA approach examines each industry in a comprehensive manner that allows for industry specific strategies. Concentrations of interconnected companies are identified as clusters. Industry clusters are spatial concentrations of businesses active in the same value chain; they are linked through relationships of supply, sales and competition. Identifying and supporting business clusters is a proven way to increase

productivity, stimulate innovation, create world-class competitors and achieve high value from economic development investments.<sup>16</sup>

The TIA can also serve as an overall regional brand positioning as well as a targeted community or regional positioning for each industry category. These efforts can serve as the foundation for political support for strategic planning, target industry development, and branding efforts.

## Limitations

A Target Industry Analysis is, by definition, a limited view of economic opportunities. By looking at only four industries, CPW is potentially missing opportunities in other industries and linkages between industries. Moreover, each of the four industries we reviewed has many sub industries. To the degree possible, we attempted to identify areas that have the most growth potential for Salem. Despite the considerable effort put into understanding all of the potential opportunities, we concede the analysis is not comprehensive in nature.

## Methodology

CPW used a combination of quantitative and qualitative methods to understand the market strength and potential of the four target industries. CPW cross-referenced North American Industrial Classification (NAICS) codes with data from the U.S. Bureau of Labor Statistics to understand the strength of the industries at a national and local scale. IBIS World Industry reports and state and national reports were referenced to further understand the trends in the market. CPW also interviewed representatives from local and national companies, industry experts, regional economic development officials and educational institutions to further understand opportunities for Salem to grow each target industry. A more detailed description of the methodology can be found in Appendix A; a list of businesses, government agencies and other organizations interviewed for this study can be found in Appendix B.

CPW conducted the research in the two phases.

### PHASE I RESEARCH

Phase I refined and validated the four target industries by looking at the potential of subsectors within the target industry. The profiles included the following:

- A national cluster analysis of each industry,
- An analysis of market strength at the national, state, and local level,
- A discussion of the industry requirements,

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<sup>16</sup> Searls, Kate. (2011) "Estimating Rural and Urban Minnesota's Interdependencies." United States Department of Agriculture Rural Development, Minnesota Rural Partners Inc. Web. 9 May 2011. [mnruralpartners.files.wordpress.com/2011/02/rurb-02\\_11-final.pdf](http://mnruralpartners.files.wordpress.com/2011/02/rurb-02_11-final.pdf)

- A broad overview of the supply chain, and
- An assessment of Salem’s competitive advantage to grow each industry.

Based on these findings, CPW refined its analytical approach using a combination of the following criteria: (1) the industry shows market growth at the national and/or local level; (2) the industry provides high wage jobs; (3) potential linkages to existing businesses exist in the community; and (4) Salem has an overall competitive advantage in the given industry. With input from City staff, CPW narrowed the scope of research for Phase II. Table 2-1 provides a comprehensive list of subsectors in each target industry that were analyzed and whether or not they were selected for Phase II research.

**Table 2-1. Target Industry Subsector Screening Process**

<b>Industry</b>	<b>Industry Subsector</b>	<b>Selected for Phase II Research?</b>
Food Processing	Food Manufacturing	X
	Beverage Manufacturing	X
Bioscience	Pharmaceutical and Drugs	
	Medical Devices	X
	Research Testing and Laboratories	
	Agriculture Feedstock and Chemicals	
Metal Manufacturing	Primary Metal Manufacturing	X
	Fabricated Metal Product	
	Manufacturing	X
Renewable Energy	Industrial Machinery and Equipment	
	Wind	X
	Solar	X
	Biomass	
	Hydropower	
	Geothermal	
	Wave	

Source: CPW

### PHASE II RESEARCH

In the second phase of research, CPW identified opportunities for Salem within the subsectors of each industry. Simultaneously, CPW conducted a general competitiveness assessment of Salem. This assessment highlighted Salem’s advantages and disadvantages as a place to do business.

Based on information gathered in Phases I and II, CPW drafted recommendations to help grow and attract the four target industries in Salem.

## Overview of Industries Evaluated in this Study

This section provides key conclusions, industry data and market opportunities for each of the four target industries in Salem.

The City of Salem used the following criteria to select each target industry:

- Illustrate strong growth potential both nationally and locally,
- Provide high wage jobs,
- Exhibit an opportunity to link to existing strong markets in the City and region, and
- Have historic importance to the city.

Detailed industry profiles can be found in Appendices D, E, F and G.

### Food Processing

The City of Salem selected the food processing industry because of its historic economic importance to the region and recent success of local companies like Kettle Chips. Although, Salem is no longer the nation's leading food processor, the food manufacturing industry remains an important part of Salem's economy, employing 4,300 people in December of 2010.<sup>17</sup> Moreover, the local food movement is becoming increasingly popular and raises new opportunities for small niche food companies.

#### INDUSTRY OVERVIEW

The food processing industry in the United States is characterized by growth that correlates with a growing population.<sup>18</sup> Although demand for processed food continues to increase, technological developments that improve productivity and automate production lines limit employment growth potential.<sup>19</sup> As a result, the number of people working in the food processing industry is generally shrinking even though populations continue to grow.

The following industry data characterizes the food processing industry:

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<sup>17</sup> Oregon Employment Department. "Salem MSA Year in Review: Nonfarm Employment (Not Seasonally Adjusted), 2010." Web. May 2011.

<sup>18</sup> United States Bureau of Labor Statistics. "Career Guide to Industries, 2010-11 Edition." Food Manufacturing. Web. 14 June 2011. <http://www.bls.gov/oco/cg/cgs011.htm>

<sup>19</sup> "Career Guide to Industries, 2010-11 Edition." Food Manufacturing. Bureau of Labor Statistics. Web. 14 June 2011. <http://www.bls.gov/oco/cg/cgs011.htm>

- Demand for food products is inelastic,<sup>20</sup> meaning that demand for food products does not change greatly in relation to fluctuations in price.
- Although national food processing employment decreased by 6.8 percent between 2001 and 2009, Salem employment increased by 11.9 percent.<sup>21</sup>
- In 2009, the Salem MSA employed 17 percent of Oregon's food processing workers and 11 percent of the state's food processing establishments. Beverage manufacturing saw similar increases in Salem (4 percent *decrease* in employment nationally with a 47.9 percent *increase* in Salem).<sup>22</sup>
- The average annual wage for food processing jobs increased 20.57 percent to \$25,152 between 2001 and 2009. During the same time the average annual wage for beverage manufacturing grew 24.53 percent to \$30,980.

## OPPORTUNITIES FOR SALEM

CPW's research suggests that food processing is a generally healthy industry in Salem. This is especially true for small value added food processors that are able to capitalize on the growing local food movement. Other opportunities for small food processors include an existing community of established small processors, and growing markets in nearby Eugene and Portland. Challenges faced by small food processors include inconsistent access to capital, lack of small business support, and a weak retail presence in Salem.

Less room for growth is evident for large-scale food processors that are under more direct economic pressure as a result of the recent recession. Although production runs and sales remain constant, these economic pressures have slowed hiring and in some instances resulted in significant layoffs. Moreover, many large food processors in Salem noted that consumer demand in the eastern states required them to open a new plant east of the Mississippi River, instead of expanding their existing Salem plant.

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<sup>20</sup> Price elasticity is a "measure of the responsive demand to a change in price." If a given a change in the price of a product prompts a proportionally greater change in the quantity demanded for that product, the product is price elastic. Source: "Commodity and Food Elasticities: Glossary." Economic Research Service. U.S. Department of Agriculture, 16 Sept. 2009. Web. 1 June 2010.

<sup>21</sup> Bureau of Labor Statistics. "Occupational Employment Statistics: May 2009 National Occupational Employment and Wage Estimates, United States"

<sup>22</sup> Bureau of Labor Statistics. "Quarterly Census of Employment and Wages: Combined Marion and Polk County Employment, 2009." Web. February 2011.

## Metal Manufacturing

Salem selected the metal manufacturing industry not only because of its local history, but also because of statewide initiatives to develop an advanced manufacturing cluster. Metal manufacturers such as Schnitzer Steel, Pacific Metal, and West Salem Machinery have been in operation since the 1800s. These companies have adapted to the local economy and general market trends to stay in business for over a century. The adaptability of manufacturers provides a unique opportunity for them to link with other target industries, such as renewable energy.

### INDUSTRY OVERVIEW

The United States is the largest manufacturing economy worldwide. While the global economic crisis in 2008 caused significant revenue loss for the metal manufacturing industry, demand is improving due to global demand for steel.

Research revealed the following metal manufacturing industry trends:

- Trends show that the metal manufacturing industry is steadily growing after the 2008 global economic crisis.
- Oregon continues to provide stable employment for over 8,000 employees in the primary metal manufacturing industry and about 17,000 employees in the fabricated metal manufacturing industry.<sup>23</sup>
- By 2016, primary and fabricated metal manufacturing is expected to grow by 8 percent in Oregon, creating roughly 1,900 jobs.<sup>24</sup>

### OPPORTUNITIES FOR SALEM

Given the local market conditions, there is an opportunity to serve niche market customers for small parts manufacturing, and to link metal manufacturers to specific customers in emerging renewable energy sectors such as wind turbines and solar rack manufacturing. Additionally, as the demand for skilled metal laborers grows, there is an opportunity for Salem to supply that demand by continuing to invest in workforce training and development.

## Biosciences

Salem selected the biosciences due to its strong market potential and high wage jobs. This expansive industry is growing rapidly across the nation and in Oregon. Although there are no immediate opportunities for Salem to capitalize on this industry, they should stay poised for future development.

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<sup>23</sup> Summers, Will. 25 March 2008. "Metals Manufacturing: 'Old Economy' Still Producing Job Opportunities." Oregon Employment Department. Web. 14 June 2011.  
<http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00004689#Table%201>

<sup>24</sup> Ibid.

## INDUSTRY OVERVIEW

The bioscience industry requires three necessary elements for industry growth: (1) strong research capacity; (2) access to capital; and (3) the availability of a highly skilled workforce with advanced degrees. State and regional investments in medical device development initiatives to build needed infrastructure are equally important. Without a local research institution, Salem will have a difficult time growing the drug and pharmaceutical and research and testing subsectors.

CPW found the most potential for the medical device subsector in Salem due to strong national and regional employment growth and high wages:

- The national medical device subsector represented nearly one-third of U.S. bioscience employment in 2008, with 435,509 jobs.<sup>25</sup>
- The national average annual wage in the medical device subsector is \$63,606;<sup>26</sup> average pay in Oregon is lower than the national average but higher than Salem's average at \$53,216.<sup>27</sup>
- CPW identified 34 medical device companies in Salem; a list of these companies can be found in Appendix H.

## OPPORTUNITIES FOR SALEM

Although the medical device subsector is well established in several large cities across the U.S., (Los Angeles, Minneapolis and New York), there is potential for Salem to capture some of the market. Attention should be paid to this industry given its high wages, existing medical device companies in Salem, and strong projected national growth.

Salem is strategically located to potentially capitalize on this industry as it grows. Its position along the I-5 corridor between Eugene and Portland makes it an ideal location for bioscience companies looking to locate between three of the state's major research institutions. Moreover, 34 medical device companies already exist in Salem. Opportunity exists to link these medical device companies to emerging research and innovation at Oregon State University, Oregon Health and Science University and the University of Oregon.

CPW recommends long-term strategies to stay poised for future opportunities as this new industry matures in Oregon.

## Renewable Energy

The City of Salem chose to research the renewable energy industry because of its strong market growth and its existing presence in Oregon.

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<sup>25</sup> Battelle, "Battelle/BIO State Bioscience Initiatives 2010," Battelle Technology Partnership Practice, May 2010,18.

<sup>26</sup> Battelle/BIO State Bioscience Initiatives 2010. "Oregon Profile," 2.

<sup>27</sup> Battelle/BIO State Bioscience Initiatives 2010. "Oregon Profile," 2.

By 2017 the industry is expected to be a \$250 billion dollar industry.<sup>28</sup> Oregon has already established itself as a leader in the industry.

## INDUSTRY OVERVIEW

The renewable energy industry is characterized by strong growth and high wages, particularly in the wind and solar sectors:

- In 2010 U.S. **wind** turbine and parts manufacturing generated \$13 billion in revenue and profited \$1 billion.<sup>29</sup>
- **Wind** turbine parts manufacturing is expected to increase 2.6 percent annually between 2010 and 2015.<sup>30</sup>
- Oregon is soon to have the fourth highest **wind** energy capacity state in the U.S. Notably, Washington State is currently sixth.<sup>31</sup>
- Average pay for **wind** turbine parts manufacturing in Oregon averages 12.5 percent more than the Salem household median income at \$45,664 per year.<sup>32</sup>
- The **solar** industry is expected to grow 10.2 percent annually from 2010 to 2015.<sup>33</sup>
- In 2010 the **solar** manufacturing industry generated \$3 billion in revenue and profited \$150.7 million.<sup>34</sup>
- Currently Oregon has 14 **solar** manufacturing companies clustered between Portland and Eugene along the I-5 corridor.
- Average pay for **solar** manufacturers in Oregon averages 75 percent greater than the Salem household medium income at \$71,438 per year.<sup>35</sup>

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<sup>28</sup> Mackower, Joel, Ron Pernick and Wilder Click. (2008) "Energy Trends 2008." CleanEdge: the Clean-Tech Market Authority. Web. 14 June 2011.  
<http://www.cleantech.com/reports/reports-trends2008.php>

<sup>29</sup> IBISWorld. (2011) "Wind Turbine Manufacturing in the US." IBISWorld. 1-26.

<sup>30</sup> Ibid.

<sup>31</sup> Graine, Michael. "The State of Oregon's Renewable Energy Policies: Opportunities for Wind Manufacturing." Business Oregon: (2010).

<sup>32</sup> Bureau of Labor Statistics. "Occupational Employment Statistics: May 2009 National Occupational Employment and Wage Estimates, United States" and "Occupational Employment Statistics: 2001 National Occupational Employment and Wage Estimates, United States." [http://www.bls.gov/oes/current/oes\\_nat.htm#00-0000](http://www.bls.gov/oes/current/oes_nat.htm#00-0000).

<sup>33</sup> Molavi, Justin. "Solar Power Panels and Solar Cells Manufacturing in the US." IBISWorld. (2010): 1-31.

<sup>34</sup> IBISWorld. (2010) "Solar Power Panels and Solar Cells Manufacturing in the US." IBISWorld. 1-31.



## OPPORTUNITIES FOR SALEM

The state of Oregon is emerging as a renewable energy cluster, especially in the wind and solar categories. Strong regional momentum will help Salem to build on these emerging subsectors.

Salem's ability to provide affordable water and electricity at the hub of the already growing solar and wind cluster in Oregon add to Salem's opportunity to grow these subsectors locally. Moreover, access to the I-5 corridor and the project-ready Salem Renewable Energy Technology Center site position Salem to capture these markets.

Salem's historical strength in metal manufacturing may also serve as an opportunity for local metal manufacturers to enter the growing wind turbine manufacturing industry.

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<sup>35</sup> Bureau of Labor Statistics. "Occupational Employment Statistics: May 2009 National Occupational Employment and Wage Estimates, United States" and "Occupational Employment Statistics: 2001 National Occupational Employment and Wage Estimates, United States." [http://www.bls.gov/oes/current/oes\\_nat.htm#00-0000](http://www.bls.gov/oes/current/oes_nat.htm#00-0000).

## CHAPTER 3: COMPETITIVENESS ASSESSMENT

This chapter assesses Salem’s competitiveness for attracting new businesses and growing existing ones. It begins with an overview of business location theory, including the factors that influence a business’s decision to relocate or expand in a given location. The next section provides a snapshot of the factors that currently shape Salem’s competitiveness. Finally, the chapter provides an overview of those factors that Salem has the ability to address along with some general suggestions for how to improve those factors.

This competitive assessment is based on interviews, the business perception survey conducted in 2010 as part of the Salem Strategic Economic Prosperity Plan, a small food focus group with local food processors, and analysis of public data.

### Business Location Theory

When businesses make the decision of where to locate, one of their main objectives is maximizing profit. For most types of business, a firm’s location directly impacts its profitability. Land cost and availability, utilities, workforce, taxes, location, and quality of life are all place-based factors that businesses consider when choosing a location.

A competitiveness assessment is one way for a city to understand the strengths and weaknesses of its business environment. The findings are useful in developing recruitment and retention efforts.

Business location theory explains how firms choose their locations based on factors that are particular to that business.<sup>36</sup> Understanding this decision making process can provide insight into the competitiveness of a given location.

Business location decisions are based on location criteria and include transportation access, available real estate, size of the workforce, supply and quality of utilities, and the availability of support services. Business location decisions vary by type of business. For example, renewable energy businesses might orient their location decisions based on the availability of cheap electricity and water, while bioscience firms may choose to locate near research institutions and similar firms to leverage economies of scale for specialized inputs.

### How Businesses Make Location Decisions

When making the decision of where to relocate or expand, many businesses hire firms that specialize in site selection. Based on interviews

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<sup>36</sup> Blakely, Edward & Nancy Green Leigh. (1989) *Planning Local Economic Development: Theory and Practice*. Newbury Park, CA: Sage Publications.

with site selectors and a site selection timeline, CPW compiled the following description of how businesses work with selectors for the site selection process. See Appendix C for a detailed account of business' decision-making process.

Before contacting site selectors, businesses often have an idea of where they would like to locate. This location is generally a region or series of neighboring states. Businesses then contract with selectors who can help narrow that region into a short list of candidate cities. To do this, the site selectors compare the firm's location requirements to the specific assets of cities in the region, and develop a list of candidate cities. These requirements include access to shipping lanes, land availability, and the size of the workforce.

In the next phase, site selectors work with the firm to compare each of the candidate locations by a series of competitive characteristics. These competitive characteristics are more detailed than the location requirements and include skill sets of workforce, the availability of energy, and the cost of utilities. Other competitive characteristics include specific real estate options, the tax climate, and the nature of incentives typically offered by that location. This process narrows the list of locations to three to five semi-finalists.

At this point in the location selection process, the candidate locations are more or less equal in terms of the location requirements and the competitive characteristics. When choosing among these seemingly identical locations, businesses' final decision is harder to predict and often comes down to more qualitative aspects of a location, such as quality of life, or if one location seems like a better 'fit' with the company's mission or product. Other times, the decision is made in favor of the city that ultimately puts together the largest incentive package, or the place that has the most ideal property.

## **Factors in Salem's Competitiveness**

This section provides an overview for the business environment in Salem. It starts with a description of what businesses currently operating in Salem think about the business environment in the city. Then it describes how each of the previously mentioned business location factors shape Salem's competitiveness.

### **The Local Business Perspective**

CPW conducted the Business Perception Survey as part of the Salem Prosperity Strategic Plan in December 2010. The survey assessed how firms operating in Salem perceive the business climate in the city. Participants were contacted through the Salem Chamber of Commerce and SEDCOR membership databases. Survey questions focused on the importance of perception on the local business climate, economic development partners and strategies, economic development assistance,

and local workforce. Complete survey results can be found in Appendix B of the Salem Strategic Prosperity Plan.

- **Businesses in Salem are enthusiastic about the City's support for business.** Nearly half of respondents (48 percent) consider Salem to be a good place to do business. When asked whether or not the business climate changed in the last five years, the responses varied. 28 percent of respondents said that the business climate improved, 22 percent said it had gotten worse, and 33 percent said it was unchanged. Explanations for this range of responses included changes in the local and state government, regulations, taxes, and the economy overall.
- **Salem has several notable strengths related to business.** Survey respondents noted the following strengths of conducting business in Salem: local leadership, quality of life, the potential for economic growth, and nearby recreational opportunities. Common weaknesses include the state's uncertain fiscal situation, state and federal regulations, and state and federal tax policies.
- **Significant barriers exist to local business development.** While perceptions of the business climate in Salem were evenly mixed, the survey did show that most respondents (88 percent) believe that there are significant barriers to economic growth in Salem. Common barriers to economic development include the overall state of the economy, transportation, and regulations.
- **While most businesses perceive the City positively, areas for improvement exist.** Although significant barriers were identified, nearly 75 percent of businesses stated that Salem's city government is supportive of local business. 43 percent of respondents thought that city policies positively impacted economic growth. Two thirds of the businesses that completed the survey indicated that they knew where to find business assistance from the City and its economic development partners. This indicates that more information about how to access economic development assistance and from whom is needed.

## Land

The amount of land available for industrial and commercial uses is an important factor for businesses that are considering building a new location or expanding current facilities. Compared to other jurisdictions in Oregon, Salem has a large inventory of vacant, serviced industrial land at a competitive price. This is especially important considering Oregon's land use laws which restrict the amount and location of industrial and commercial uses across the state.

## AVAILABILITY

Salem has more than 1,480 acres of unconstrained vacant land, and approximately 765 acres of vacant industrial land available for development.<sup>37</sup> These properties are vacant and project ready.

The availability of land, the uses allowed through existing zoning, and service levels of infrastructure all impact the cost of land. Table 3-1 summarizes the acreage of vacant certified industrial parcels by jurisdiction in select cities in Oregon as defined by the Oregon Prospector.

**Table 3-1. Certified Industrial Land Comparison, Oregon MPOs**

	Name	Address	For Sale	For Lease	Acres	Price	Price per Acre	Rent	Rail Access
<b>Bend</b>	-	-	-	-	-	-	-	-	-
<b>Corvallis</b>	Corvallis Airport Industrial Park	N Airport Ave.		+	2.0- 190.0 (divisible)	-	-	\$0.09/square foot	Yes
<b>Eugene</b>	-	-	-	-	-	-	-	-	-
<b>Medford</b>	Certified NE Airport Breeze	-	+	-	10.0- 89.1 (59.0 acres are State certified)	\$23,093,116	\$259,182	-	No
<b>Portland</b>	-	14600 N Lombard ST	-	+	113.0 (divisible)	-	-	\$26,530/acre/year	-
	N Leadbetter Portland	-	-	+	45.6	-	-	\$26,136/acre/year	-
	-	5700 Block Gaffin Road		+	2.5- 45.7 (divisible)	-	-	Sale Price: \$126,324/acre / 25 acres Sale Terms: \$148,104/acre /15 acres	No
<b>Salem</b>	Mill Creek Corporate Center, Phase 1C	Kuebler Blvd SE and Aumsville Hwy SE	+	-	5.0- 46.0 (divisible)	-	-	Sale Price: \$114,000 per acre Sale terms: Cash at closing	Feasible
<b>Springfield</b>	-	-	-	-	-	-	-	-	-

Source: Oregon Prospector

Within Oregon's six metropolitan planning organizations (MPO) there are a total of six certified industrial sites. A certified industrial site has been reviewed and certified by the state based on utility and transportation access, environmental issues, and more. Certified sites are defined as sites ready for construction within six months.<sup>38</sup>

As of July 1<sup>st</sup>, 2011, three of Oregon's MPOs (Bend, Eugene, and Springfield) have no certified industrial sites available. Corvallis and Medford each have one certified site; Portland and Salem each have two. Of these certified properties, three are for sale and three are available for

<sup>37</sup> Parker, Bob and Beth Goodman. "Salem-Keizer Metropolitan Area Regional Economic Opportunities Analysis 2012 to 2032." ECONorthwest, May 2011.

<sup>38</sup> Oregon Prospector. "Certified." Web. 1 July 2011. <http://oregonprospector.com/certified.htm>

lease. Salem's two sites, and the site in Medford are all for sale. The price per acre in Medford is \$259,182. In Salem, the price ranges between \$114,000 per acre and \$148,104 per acre, depending on the site and how much land is being purchased. Portland's sites are for lease only. The lease price is \$26,000 per acre per year.

Corvallis has the largest amount of certified land available (190 acres), followed by Portland (158 acres), and Salem (92 acres).

## URBAN RENEWAL AREAS AND ENTERPRISE ZONES

Salem has eight Urban Renewal Areas (URAs) and ten enterprise zones. URAs are attractive to businesses because the City has the ability to spend either bond or Tax Increment Finance (TIF) money on infrastructure improvements. TIF funding can also be used by the city to assemble land and sell it to the developer at a reduced price.

Enterprise zones exist to support industrial expansion and create new employment. Eligible businesses that build new structures within the enterprise zone can participate in the program. Benefits include a three year, 100 percent property tax exemption, as well as a 10 percent rebate on all building and permit feeds.<sup>39</sup>

In addition to Salem's URAs and enterprise zones, the City's Mill Creek Corporate Center and Salem Renewable Energy & Technology Center (SRETC) are ideal for industrial and commercial development.

## MILL CREEK CORPORATE CENTER

The Mill Creek Corporate Center (MCCC) is located with the Mill Creek URA. The MCCC takes up 63 percent (514 of 812 acres) of the Mill Creek URA. This land was set aside to encourage regional economic development. Zoned as an Employment Center (SRC 161),<sup>40</sup> the site's land allows for a variety of uses, from warehouses to light industrial and office space. Recently, Home Depot and FedEx built facilities on this site. The Urban Renewal District (URD) plan for Mill Creek identifies more than \$40 million in infrastructure improvements that will be covered by the City's bonding authority related to the URD.<sup>41</sup>

## SALEM RENEWABLE ENERGY & TECHNOLOGY CENTER

The Salem Renewable Energy and Technology Center (SRETC) is an 80 acre site located in Southeast Salem. Comprised of small (2-5 acre) and

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<sup>39</sup> SEDCOR. "Salem, Oregon's Enterprise Zone." Web. 21 June 2011.  
<http://www.sedcor.com/pdfs/enterprise03.pdf>

<sup>40</sup> City of Salem. "Salem Revised Code, Chapter 161: Employment Center." Web. 30 June 2011.  
<http://www.cityofsalem.net/Departments/Legal/Salem%20Revised%20Codes/Employment%20Center.pdf>

<sup>41</sup> Parker, Bob and Beth Goodman. "Salem-Keizer Metropolitan Area Regional Economic Opportunities Analysis 2012 to 2032." ECONorthwest, May 2011.

midsized (10+ acre) lots, this land is zoned as Industrial Business Campus (SRC 156).<sup>42</sup> The SRETC has been set aside specifically for renewable energy producers, researchers, and manufacturers. The site currently features one tenant, SANYO Solar, who recently built a 130,000 square foot facility. The site also includes redundant power infrastructure to guarantee uptime for businesses that locate there.

#### LAND SUMMARY

Salem has a large inventory of land, both vacant and certified. The majority of these sites are already serviced by utilities, and are located near major roads for shipping. Many of these sites also receive support from the city through Urban Renewal Areas and enterprise zones. These factors contribute to making land a competitive asset for Salem.

#### Utilities

Oregon has competitive utility prices for commercial and industrial uses. Several manufacturing companies have stated that affordability of water and electricity were a significant factor in their decision to locate in the Willamette Valley. A national and regional comparison of electricity, water, and waste water rates are provided below.

#### ELECTRICITY RATES

Table 3-2 shows that Oregon ranks 17<sup>th</sup> in commercial electricity rates and 10<sup>th</sup> in industrial electricity rates in the U.S.

**Table 3-2. Electricity Rates as Cents per Kilowatt for Selected States in the U.S., 2011**

Commercial			Industrial		
Ranks	State	Price	Rank	State	Price
15	Kansas	7.94	8	Kentucky	5.09
16	Kentucky	7.96	9	Missouri	5.26
17	Oregon	7.97	10	Oregon	5.31
18	Louisiana	7.99	11	New Mexico	5.45
19	Illinois	8.08	12	Nebraska	5.53

Source: U.S. Energy Information Agency, 2011

Oregon’s industrial electricity rate is only 0.84 cents per kilowatt more expensive than the state with lowest electricity rate (Utah); Oregon’s commercial electricity rate is 1.32 cents more expensive than the state with the lowest electricity rate (Idaho).

Although on average Oregon’s overall electricity rates rank competitively, the average electricity rate in Salem is above the statewide average.

<sup>42</sup> City of Salem. “Salem Revised Code, Chapter 156: Industrial Business Campus.” Web. 30 June 2011.  
<http://www.cityofsalem.net/Departments/Legal/Salem%20Revised%20Codes/IBC%20-%20Industrial%20Business%20Campus.pdf>

There are two electricity providers in Salem. Portland Gas and Electric (PGE) service the east side of the city that is located in Marion County. Salem Electric services western Salem in Polk County. PGE rates average 5.42 cents per kilowatt hour,<sup>43</sup> but range from 5.001 to 6.89 ¢per kWh. Salem Electric’s rates average at 5.77<sup>44</sup> cents per kilowatt hour, although the rate depends on monthly usage. Businesses are charged 7.11 ¢ per kWh for the first 3,000 kilowatts, 5.80 ¢per kWh for the following 17,000 kilowatts, and 4.41 ¢ per kWh for usage greater than 20,000 kilowatts.

### WATER AND WASTE WATER RATES

Water and waste water are common businesses expenses. Manufacturing businesses, such as food processing and solar manufacturing, which use more water and generate more waste water, are more directly impacted by these costs. Salem’s water rates are highly competitive for the West coast region. Table 3-3 shows that Salem ranks third in most affordable water rates out of select cities from the Western United States.

**Table 3-3. Water and Waste Water Rates, Per 100 Cubic Feet Western Cities, 2011**

City	Water Rates	Sewer Rates	Combined Rates
Eugene, OR	\$2.02		
Portland, OR	\$2.62	\$7.05	\$9.67
Salem, OR	\$1.41	\$4.49	\$5.90
San Francisco, CA	--	--	\$4.52
Seattle, WA	\$3.62	\$ 10.28	\$13.90
Vancouver, WA	\$1.32	\$4.77	\$6.09

Sources: See footnotes below<sup>45</sup>

<sup>43</sup> Portland Gas and Electric. "Annual Cost of Service: Prices." Web. 29 June 2011. [http://www.portlandgeneral.com/business/medium\\_large/energy\\_pricing/prices/default.aspx](http://www.portlandgeneral.com/business/medium_large/energy_pricing/prices/default.aspx)

<sup>44</sup> Salem Electric. "Business Rates." Web. Jun 29 2011. <http://www.salemelectric.com/business/rates.html>

<sup>45</sup> Eugene: Eugene Water and Electric Board, EWEB. "Water rate-general service Eugene, OR." Web. May 2011.

San Francisco: San Francisco Public Utilities Commission. "Rate schedules for water service and wastewater service San Francisco, CA." Web. May 2011.

Salem: City of Salem Public Works. "Water rates Salem." Web. May 2011.

Vancouver: City of Vancouver. "Vancouver municipal code Vancouver, WA." Web. May 2011.

Portland: City of Portland."Ordinance no. 183832. Portland, OR." Web. May 2011.

Seattle: Seattle Public Utilities."Commercial water rates Seattle, WA." Web. 2011.



## UTILITY RATES SUMMARY

Compared to similar cities across the Western United States and the nation, Salem has competitive utility rates. Based on interviews with businesses currently operating in the Willamette Valley, there is a consensus that utility rates are affordable and that these rates contribute to Salem's competitive advantage.

## Employment, Workforce, and Wages

Workforce is an important component of a city's competitiveness. This section assesses Salem's employment history, the city's largest employers, average salary, and educational attainment. These trends are compared to statewide and national trends.

### EMPLOYMENT TRENDS

Employment levels in Oregon and Salem are starting to stabilize following several years of decline related to the "great recession." Recent data published by the Oregon Department of Employment shows Oregon only lost 12,600 jobs in 2010. This is down from 105,900 lost jobs in 2009. Salem lost 6,800 jobs in 2009 and 2,000 jobs in 2010. These numbers suggest that the economic climate in Oregon and Salem is improving. While there are fewer jobs than in 2007<sup>46</sup> workers are returning to the job.

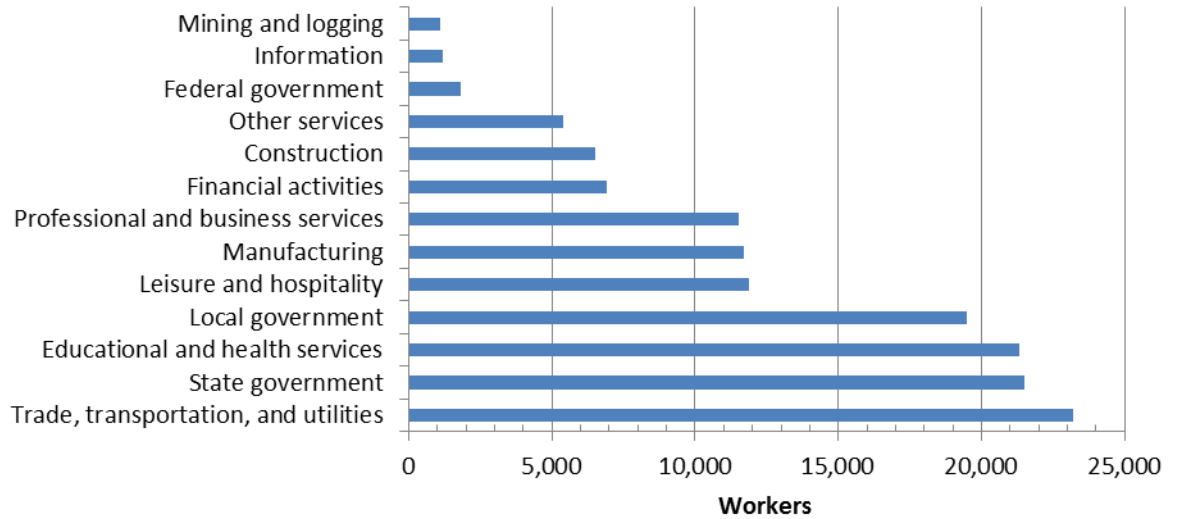
The three largest employment industries in Salem are: (1) Trade, transportation, and utilities,<sup>47</sup> (2) State government, and (3) Educational and health services. Each of these industries employs more than 20,000 people. Figure 3-1 provides the number of employees by industry in Salem in 2010.

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<sup>46</sup> Oregon Employment Department. "Oregon Statewide 2007 Covered Employment and Wages Summary Report." Web. 29 June 2011.  
<http://www.qualityinfo.org/olmisj/CEP?action=summary&areacode=01000000&indtype=N&periodcode=01002007>

<sup>47</sup> This includes retail sales.

**Figure 3-1. Number of Employees by Industry in Salem, 2010**



Source: Oregon Employment Department

### AVERAGE WAGE

The national average salary is consistently higher than the average salary in Oregon, which is in turn higher than in the Salem MSA (see Table 3-4 below).

**Table 3-4. Average Salaries in the U.S., Oregon, and Salem, 2010**

Nation	Oregon	Salem
\$44,410	\$43,550	\$40,560

Source: United States Bureau of Labor Statistics<sup>48</sup>

Salem’s lower than average wage may help to attract some industries. However, attracting low wage jobs does not fit with the City’s economic development objectives.

### EDUCATION

The educational attainment of Salem’s workforce is comparable to that of Oregon. Both in the Salem MSA and in the state, the largest percent of the population has “some college” experience (see Table 3-5 below). The number of people who have graduated high school and earned an associate’s degree is also comparable.

<sup>48</sup> U.S. Bureau of Labor Statistics. "Occupation Employment Statistics: Nation". Web. 29 June 2011. [http://www.bls.gov/oes/2010/may/oes\\_nat.htm](http://www.bls.gov/oes/2010/may/oes_nat.htm)  
 U.S. Bureau of Labor Statistics. "Occupation Employment Statistics: Oregon". Web. 29 June 2011. [http://www.bls.gov/oes/current/oes\\_or.htm](http://www.bls.gov/oes/current/oes_or.htm)  
 U.S. Bureau of Labor Statistics. "Occupation Employment Statistics: Salem MSA". Web. 29 June 2011. [http://www.bls.gov/oes/current/oes\\_41420.htm](http://www.bls.gov/oes/current/oes_41420.htm)

The biggest difference between the education level of Salem’s workforce and Oregon’s workforce is that only 14 percent of Salem have graduated college, while 19 percent of Oregon residents have graduated college.

Compared to the United States, Oregon and Salem have more residents over 25 that have some college experience, and an associate’s degree. Salem has a smaller percentage of people with Bachelor’s and advanced degrees than the nation.

**Table 3-5. Educational Attainment in the U.S., Oregon, and Salem, 2009**

Educational Attainment	Percent of		Percent of		Percent of	
	Nation	Nation	Oregon	Oregon	Salem MSA	Salem MSA
No Schooling Completed	2,115,918	1.1%	21,053	0.8%	2,605	1.0%
Some Elementary School	5,447,863	2.8%	51,743	2.0%	12,221	4.8%
Some Middle or High School	22,881,396	11.6%	209,805	8.1%	26,200	10.4%
Graduated High School, GED, or Alternative	57,861,698	29.3%	624,733	24.2%	65,335	25.8%
Some College	40,105,283	20.3%	712,160	27.5%	69,963	27.7%
Associate's Degree	14,663,437	7.4%	212,845	8.2%	23,188	9.2%
Bachelor's Degree	34,384,717	17.4%	484,488	18.7%	35,808	14.2%
Advanced Degree	19,980,460	10.1%	269,971	10.4%	17,512	6.9%

Source: U.S. Census, American Community Survey, 2009, Population 25 and Older

Employers are attracted to places with higher levels of education. This is especially true in research based industries that pay higher salaries.

#### EMPLOYMENT SUMMARY

Based on interviews with businesses in a number of industries, the perception of Salem’s workforce is mixed. Site selectors consider Salem’s workforce to be skilled, while metal manufacturers in Salem struggle to maintain a consistent quality of employment.

High paying industries like bioscience and renewable energy require a more educated workforce. The perception in these industries, which is supported up by data, is that the City lags in the number of workers with advanced degrees. Combined with the lack of research institutions in Salem, this means that it will be difficult to create high paying research jobs.

Nationwide, there is a correlation between educational attainment and salaries. Generally, the more educated a workforce, the higher the level of employment and the higher their salaries.<sup>49</sup> For some reason, even though Salem’s educational makeup is comparable to that of the U.S., salaries are considerably lower than the nationwide average. This may have to do with cost of living.

<sup>49</sup> U.S. Bureau of Labor Statistics. “Education Pays.” Web. 15 May 2011. [http://www.bls.gov/emp/ep\\_chart\\_001.htm](http://www.bls.gov/emp/ep_chart_001.htm)

## Taxes

Oregon is considered to offer businesses a competitive tax structure. Based on interviews with business owners, tax rates and the perception of tax rates directly impact a business, and often shape how businesses grow and determine where they locate.

Businesses are taxed for profits and personal income, sales, payroll, unemployment insurance, and property. Taxes are levied by federal and state governments, as well as locally by the cities and counties. Governments also offer tax incentives to create a friendlier environment for businesses. These incentives often take the form of deductions, credits, and exemptions.

Local taxes and incentives are not universally applied, and as such each industry and business must respond to different tax structure. Federal taxes are standard from state to state.

Oregon does not impose a general sales tax, distinguishing itself as one of five states without a sales tax. Additionally, Oregon does not impose the following taxes: (1) inventory tax; (2) worldwide unitary tax; (3) motor vehicle excise tax; (4) capital tax on asset value; and (5) direct levies on intangible assets.

Oregon has the second most competitive corporate tax rate in the country.<sup>50</sup>

### CORPORATE INCOME TAX / SINGLE SALES FACTOR

In Oregon, businesses are taxed on the portion of their total income that derives from sales within the state of Oregon. This corporate income tax is called the "Single Sales Factor" tax because it only considers sales originating in Oregon when determining taxes owed to the state. Other states often include additional assets and payroll, making them "multi-factor" taxes.

Single Sales Factor tax has a pronounced impact on businesses that are based in Oregon but have operations in a number of other states. In practice, this means that companies headquartered in Oregon that sell products nationally or internationally only pay Oregon corporate income tax based on the amount of income coming from sales within state lines. This system provides Oregon with a substantial advantage for traded sector businesses.

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<sup>50</sup> Cline, Robert, et al. "Competitiveness of state and local business taxes on new investment: Ranking states by tax burden on new investment." Ernst & Young, April 2011. Web. 29 June 2011.  
[http://www.ey.com/Publication/vwLUAssets/Competitiveness\\_state\\_and\\_local\\_business\\_taxes/\\$FILE/Competitiveness\\_state\\_and\\_local\\_business\\_taxes.pdf](http://www.ey.com/Publication/vwLUAssets/Competitiveness_state_and_local_business_taxes/$FILE/Competitiveness_state_and_local_business_taxes.pdf)

## PROPERTY TAXES

Businesses that own real estate must pay property taxes based on the assessed value of taxable property. The amount of property tax a business pays is based on two factors: (1) the assessed value of the property; and (2) the amount of taxes that each taxing district is authorized to collect.

Both of these factors are limited by Oregon's constitution, which establishes a maximum assessed value and puts a ceiling on how much that maximum increases each year. The constitution also places a limit on operating tax rates for most of the taxing districts in the state.<sup>51</sup>

## WORKER'S COMPENSATION RATES

Workers compensation insurance provides benefits for workers who are injured or become ill on the job. Oregon's workers' compensation rates have been declining for the past 20 years, and are among the lowest in the nation.

## TAX INCENTIVES IN OREGON

Oregon offers globally competitive tax incentives to help encourage businesses to locate in Oregon, and existing Oregon businesses to grow and prosper. States also use incentives in the form of deductions, credits and exemptions to attract new and expand existing businesses.<sup>52</sup>

- Standard Enterprise Zones—In exchange for locating or expanding into an enterprise zone, eligible (generally non-retail) businesses receive exemption from property taxes on new plants and equipment for at least three years (but up to five years) in the standard program. In addition, two other designations, Long-term Enterprise Zone and Electronic Commerce Zone, may benefit businesses locating in zones with the special status.
- The Oregon Investment Advantage—This income tax exemption program helps businesses start or locate in most Oregon counties with a 10-year waiver on all income/excise taxes related to those operations, potentially avoiding state business tax liability for that period.
- Strategic Investment Program—The Strategic Investment Program exempts a portion of large capital investments from property taxes. The program is available statewide for projects developed by “traded-sector” businesses and is most often used for manufacturing firms. “Traded sector” is defined in Oregon law as “industries in which member firms sell their goods or services

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<sup>51</sup> SEDCOR. (2011) Web. 2 June 2011. [www.sedcor.com](http://www.sedcor.com)

<sup>52</sup> Business Oregon. “Business Costs.” Web. 29 June 2011. <http://www.oregon4biz.com/The-Oregon-Advantage/Costs/>

into markets for which national or international competition exists.”

- Research Tax Credits—Corporate tax credit for qualified research and basic research conducted in Oregon.

## TAX SUMMARY

A report published in April of 2011 by Ernst & Young ranks Oregon as being the state with the second lowest effective tax rate. This means that Oregon’s business tax structure “imposes the second smallest burden on new investment.”<sup>53</sup> The state’s lack of a sales tax, a franchise tax, the Single-Factor Tax, the cap on property taxes and the decreasing worker’s compensation rates all make for a competitive business environment.

## Access to Capital

The availability of capital directly impacts the ability of entrepreneurs to start businesses and then keep those businesses running. Capital often comes from banks, investors, and civic loan programs. The amount of capital available for businesses in a given location is impacted by global and national economic markets, as well as government policies, and the amount of entrepreneurial activity in that area.

Interviews with Salem based businesses indicate that while new companies have a difficult time getting capital to start their business, it is even harder for those businesses to access capital to cover operational costs. The reason is that, as a result of the global economic downturn of the past four years, banks are less willing to lend out money. This is true despite federal attempts to encourage more loans. It is possible for businesses to get a line of credit from a bank, but it typically is not enough money to help a company grow.

Companies that are willing to give up equity as shares in their company may have some success raising money through the Oregon Angel Fund, which provides “accredited investors privileged access to the most promising startups and early-stage growth companies in Oregon and SW Washington.”<sup>54</sup> The state of Oregon has set aside money from the lottery and handed it over to third party funds for investment. These funds, the Oregon Investment Fund and the Oregon Growth Account, target investments at promising companies that show annual earnings of two to three million dollars regularly for three years.

Angel and venture funding is difficult for businesses to access. The process is rigorous, requires strong business planning, and a proven track

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<sup>53</sup> Cline, Robert, et al. “Competitiveness of state and local business taxes on new investment: Ranking states by tax burden on new investment.” Ernst & Young, April 2011. Web. 29 June 2011.

[http://www.ey.com/Publication/vwLUAssets/Competitiveness\\_state\\_and\\_local\\_business\\_taxes/\\$FILE/Competitiveness\\_state\\_and\\_local\\_business\\_taxes.pdf](http://www.ey.com/Publication/vwLUAssets/Competitiveness_state_and_local_business_taxes/$FILE/Competitiveness_state_and_local_business_taxes.pdf)

<sup>54</sup> Oregon Angel Fund. “About.” Web. 23 June 2011. <http://www.oregonangelfund.com/>

record. This type of investment is structured to take advantage of the long-term profitability of a business, and isn't always appropriate for smaller businesses.

Regardless, one challenge with raising investment money is that investors gravitate towards places that have a high level of entrepreneurial activity. Therefore, locations that have a high number of businesses starting up and becoming successful also have the most investment dollars at their disposal.

Overall, there is money available in Salem to start businesses, but this money is hard to get. It is even harder to get money through debt financing to cover operational costs. While there is investment money in Oregon that can help businesses grow, this money accumulates in locations, like Portland, where there is a higher level of entrepreneurial activity. Salem will have to work to establish an entrepreneurial business environment to attract angel and venture capital.

### **Summary of Advantages and Disadvantages**

Based on the above information, certain aspects of Salem are competitive whereas others could be improved.

- **Business Perception:** Businesses in Salem are enthusiastic about the City's support for business, and believe that Salem has potential for economic growth. Although business outlook in Salem is positive, there is significant concern about how the overall state of the economy, the City's distance from most of the nation's population, and government regulations may impact future growth.
- **Land:** Salem has ample land. Additionally, Salem's Urban Redevelopment Areas and enterprise zones add value to much of the available land.
- **Location:** Located on Interstate Highway 5 (I-5), Salem has strong access to markets and population centers along the west coast. However, since most of the country's population lives east of the Mississippi River, products manufactured in Salem need to travel a greater distance to reach that population. This extra distance will likely add to the cost of doing business.
- **Utilities:** Utility rates in Oregon and Salem also make the City a competitive place for businesses. Oregon has cheaper electricity than most states, and the water rates in Salem are competitive with other major cities in the West.
- **Workforce:** Salem's workers have a range of skills, from retail sales to manufacturing, and from health care to administration services. The average wage in Salem is below the Oregon and National averages, meaning larger companies that require a less

skilled workforce may be drawn to Salem. This also results in less tax revenue for the city.

- **Taxes:** Oregon’s tax structure is considered to be pro-business. Although the state offers a number of incentives to attract businesses, there is a perception that these plans are not implemented well.
- **Access to Capital:** Although Salem has less access to capital than other Oregon cities, there is investment and startup funding available in the state. By encouraging the success of small businesses, the city can attract more capital to the area.
- **Quality of Life:** Salem's quality of life is viewed differently by different industries. Low cost of living and easy access to recreation opportunities contribute to Salem's quality of life, though the city lacks big city amenities that attract higher paying jobs.

## What Can Salem Do?

Having identified Salem’s advantages and disadvantages, it is important to recognize that not all of these factors can be easily changed by the City. Salem’s location, federal and state taxes, transportation access, and the size of the workforce are factors that are outside Salem's control. That said, there are factors like support for business, developing a more skilled workforce, and providing more transportation options that the City can impact. By targeting development efforts around these factors, the city can start to improve its overall competitiveness.

### Things that Salem can Control

Infrastructure, including transportation  
Availability of project ready lands  
Workforce skills  
Business support  
Quality of life

### Things that Salem Can’t Control

Location  
Transportation access  
Size of workforce  
Taxes

CPW identified opportunities to both expand the local economy while improving Salem’s sense of place and quality of life. In collaboration with its economic development partners, the City of Salem can improve its competitiveness using the following strategies:

- Act as a liaison between businesses to foster relationships and information sharing to strengthen the local supply chain in each of the target industries.
- Address small business concerns, while proactively fostering the types of entrepreneurial activity that can improve Salem's overall economy.



- Build relationships with industry associations and Oregon Universities to stay in touch with emerging innovation and research opportunities.
- Connect existing industry to new and emerging markets to help foster economic growth from within the existing community.
- Streamline funding, permitting and other technical information to help small and large businesses do business in Salem.
- Identify opportunities to localize the supply chain of industries located in the Willamette Valley.

Using these strategies as a framework, this study includes recommendations to encourage entrepreneurship, expand established industries and attract new industries in existing and emerging markets.

## CHAPTER 4: IMPLEMENTATION STRATEGIES

This chapter presents a set of implementation strategies to help expand Salem’s local economy. The recommendations intend to articulate an internal action plan to guide the Economic Development Division staff and its economic development partners. The recommendations complement the goals outlined in the City of Salem Strategic Prosperity Plan.

This chapter begins with a framework for the implementation strategies and then summarizes the recommendations.

### Framework for the Implementation Strategies

CPW identified three common themes across each target industry that will help the City of Salem grow all industries:

- (1) **Develop a consistent, focused community brand.** Salem should continue working to create an identifiable brand that is aimed at economic development and the generation of additional family wage jobs. The brand will highlight Salem's attributes to create value and influence economic development efforts.
- (2) **Use staff effort strategically to implement economic development objectives.** CPW identified an opportunity for the city to create a liaison position to facilitate and streamline information and resources for small businesses to grow. The liaison position will help local businesses access capital; learn about new opportunities and link small businesses and entrepreneurs with workforce, training space and incubators. CPW heard across all four industries the need for small businesses to be able to contact a City point person to help them be successful.
- (3) **Work to create opportunities for success.** CPW recommends that Salem foster local business expansion by linking them with emerging economic trends. To achieve this, the City should act as a liaison and facilitate a series of focus groups and mixers with key industry players, state and regional agencies and venture capitalists to make connections and spur economic growth.

The recommendations and action items in this chapter provide a roadmap to help the Salem Economic Development Division and its partners achieve its mission. In conjunction with the Salem Strategic Prosperity Plan, these recommendations provide activities that Salem’s Economic Development Division will focus on over the next five years to both grow the target industries and strengthen the local economy.

## Phasing

The strategies are organized into two categories: (1) general recommendations for the City of Salem to advance economic development in Salem; and (2) specific recommendations for the City of Salem to help grow each target industry. The timeframe and priority of each recommendation is also listed and can be defined as follows:

- Short term: 1-2 years
- Medium term: 3-4 years
- Long term: 5-6 years
- Ongoing: strategies that will take place over the long term

## Recommendation Summary

Table 4-1 below provides a summary of the recommendations for the Target Industry Analysis.

**Table 4-1. Salem Target Industry Analysis Implementation Strategies**

Recommendation	Time Frame	Lead Organization	Partner Organization(s)	Strategic Plan Goals
<b>General Recommendations</b>				
G.1 Create Small Business Coordinator Staff Position	Short term/Ongoing	EDD	-	1.3
G.2 Institute a City Business Registry Program	Short term	EDD	Other City Departments	3.1.5
G.3 Establish a City-Wide Economic Gardening Program	Short term/Ongoing	EDD	SEDCOR & Business Oregon	1
G.4 Create Small Business Loan Program to Support Business Operational Costs	Short term/Ongoing	EDD	-	3
G.5 Create a "How to do Business in Salem" Guide	Short term/Ongoing	EDD	SEDCOR and other City departments	2
G.6 Host City-Sponsored Professional Development and Networking Opportunities	Short term	EDD	SEDCOR, Chamber, OMEP, Chemeketa, SBDC	1.3
G.7 Create a Place-Based Economic Development Strategy	Medium term	EDD	Other City Departments, Travel Salem, Go Downtown Salem	2.4
G.8 Favor Local Business in City Procurement of Goods and Services	Medium term	EDD	Contracts & Procurement Division	1
<b>Food Processing Recommendations</b>				
F.1 Nurture Small Businesses by Creating Partnerships with Big Businesses	Short term	EDD	-	1.3
F.2 Develop a Local Food Awareness Program	Medium term	EDD	Community Development, Travel Salem, Go Downtown Salem	2.4
F.3 Support Food Systems by Creating a Food Policy Council	Long term	EDD	Marion & Polk Counties	2
<b>Biosciences Recommendations</b>				
B.1 Develop a Relationship with the Oregon Bioscience Association	Short term/Ongoing	SEDCOR	EDD & Oregon Bioscience Association	2.3
B.2 Engage with Innovation and Technology Professionals at Oregon Higher Education Institutions	Short term	SEDCOR	EDD	2.3
B.3 Develop a Marketing Tool to Describing Why Bioscience Companies Should Locate in Salem	Short term	SEDCOR	EDD, Business Oregon & Oregon Bioscience Association	2
<b>Metal Manufacturing Recommendations</b>				
M.1 Develop a Public Database of Metal Manufacturer Capabilities and Services	Short term	EDD	SEDCOR/EDD SEDCOR & Chemeketa	3.1
M.2 Improve Workforce by Coordinating Education and Training	Medium term	EDD	Community College SEDCOR, Chemeketa & Job Growers	2.3
M.3 Develop Business Management Training for Small Metal Manufacturing Companies	Medium term	EDD	Chemeketa & Job Growers	2.3
M.4 Research Metal Manufacturing Market Opportunities	Ongoing	EDD	SEDCOR	1.4.1
<b>Renewable Energy</b>				
R.1 Support Local Metal manufacturers to Make Replacement Parts for Wind Turbines	Short term	SEDCOR	EDD	1.3
R.2 Support Local Metal Manufacturers to Produce Solar Racks	Short term	SEDCOR	EDD	1.3
R.3 Recruit Photovoltaic Manufacturers	Short term	SEDCOR	EDD	1.4
R.4 Support Local Metal Manufacturers to Make Wave Energy Parts	Medium term	SEDCOR	EDD	1.3
R.5 Create Demand for Renewable Energy Products from Salem Companies	Medium term	EDD	Solarize Salem	1
R.6 Recruit Research and Development Firms to the Salem Renewable Energy Technology Center	Medium term	SEDCOR	EDD	1.4

## General Recommendations

### Recommendation G.1: Create a Small Business Coordinator Staff Position

#### OVERVIEW

Based on feedback from the business perceptions survey and interviews with small business owners, it is clear that businesses operating in Salem appreciate the city's pro-business attitude. It is also clear from discussions with small businesses owners, that there is a desire for a more hands on role by the city. By creating a Small Business Coordinator staff position, the city can address small business concerns, while proactively fostering the types of entrepreneurial activity that can improve Salem's overall economy.

A small businesses coordinator would serve as the City's primary contact for small businesses and startups in Salem. This person would help businesses navigate the 'red tape' of working with a city bureaucracy, from assisting with paperwork and permitting, to putting business owners in touch with contacts in appropriate regulatory departments. This person would also help small business owners network, identify new revenue streams, and coordinate educational opportunities.

The Small Business Coordinator would have the following responsibilities, among others:

- Design and implement the small business loan program (see Recommendation G.4)
- In collaboration with SEDCOR and the Chamber of Commerce, develop City-hosted professional development and networking sessions (see Recommendation G.6)
- Oversee the creation of the "How to do business in Salem" guide (see Recommendation G.5)
- Play an integral part of the City-wide Economic Gardening program (see Recommendation G.3)

This position will be within the City's Economic Development Division and is intended to complement SEDCOR's recruitment and retention efforts.

This recommendation supports Goal 1.3 of the Strategic Prosperity Plan: *Encourage small business development and balance recruitment and retention efforts.*

#### LEAD ORGANIZATION

Economic Development Division

## ACTION ITEMS

- Develop a first-year work program for the Small Business Coordinator position.
- Create a full time staff position in the Economic Development Division.

## TIME FRAME

Short term (establish position); ongoing (implementation)

## **Recommendation G.2: Institute a City Business Registry Program**

### OVERVIEW

Through interviews, CPW heard that small business owners are unsure of where to go for information and at the same time the City doesn't have a way of tracking its local businesses. Because of this, CPW recommends that the City institute a business registry program to track, support and nurture the local business community.

In most jurisdictions around the nation obtaining a business license involves making an application and paying a nominal annual fee. Some Cities depart from this traditional method of licensing businesses and administer a combined Business Income Tax/Business License Fee.

This recommendation is not to create a business license program. Rather, we recommend Salem institute a business registry—a system that the City can use to document businesses operating in Salem as well as the characteristics of those businesses (to the extent the City desires to collect that information). Moreover, we recommend that the City only charge a nominal fee (\$10-\$25) for business registration (the fee should be set at a level that allows the City to recover the cost of administering the registry).

The implementation of a business registry will provide Salem with a baseline of how many and what type of businesses operate in Salem.

This recommendation supports Goal 3.1.5 of the Strategic Prosperity Plan: *Develop and update technology tools used for information systems to increase efficiency, accuracy, and effectiveness of data collection, Geographic Information Systems mapping, Return On Investment and other tracking mechanisms.*

### LEAD ORGANIZATION

Economic Development Division

### PARTNER ORGANIZATION

Other City of Salem departments (permitting, legal, public works and community development)

#### ACTION ITEMS

- Research business registry options to come up with a preferred program structure.
- Draft business registry implementation program; train staff.

#### TIME FRAME

Short term

### **Recommendation G.3: Establish a City-Wide Economic Gardening Program**

#### OVERVIEW

Economic gardening is an economic development strategy that focuses on improving the economy from the bottom up. Instead of focusing all of the City's efforts on recruiting and retaining large corporate businesses, cities that practice economic gardening channel their efforts to help existing "second stage" businesses grow. An economic gardening program typically focuses on entrepreneurial second stage companies that have the potential to provide the greatest impact on economic growth.

This City-wide Economic Gardening Program is meant to complement SEDCOR's recruitment and retention efforts. By diversifying economic development strategies, the city can remain a player in the discussion with large businesses that are deciding where to locate, while also making the homegrown economy more robust. Through these processes Salem can create more family wage jobs, establish itself as a regional economic hub, and improve the quality of life for the City's residents.

This recommendation supports Goal 1 of the Strategic Prosperity Plan: *Position Salem to attract and retain a diverse array of jobs and businesses.*

#### ACTION ITEMS

- Provide leadership training on economic gardening philosophy.
- Create an economic gardening program description, identifying how much effort will go into the program.
- Identify and appoint key players to a task force to draft a plan for the city's policy and plan for the economic gardening program.
- Develop an inventory of community and business assets.
- Determine what stage two businesses exist in Salem (see Recommendation G.2 Institute a City Business Registry Program).
- Connect with the broader economic gardening community by attending the annual economic gardening conference that is usually held in June in various small localities around the U.S.

- Coordinate with the regional economic gardening program in Portland.<sup>55</sup>
- Meet with State of Oregon Economic Gardening task force to point out where Salem fits into the road map.

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATIONS

SEDCOR and Business Oregon

#### TIME FRAME

Short term (establish program); Ongoing (implementation)

### **Recommendation G.4: Create a Small Business Loan Program that Supports Operational Costs**

#### OVERVIEW

Starting a small business can be hard, but money is available to those with a good business plan. It is harder for early stage businesses to get the financing that they need to prolong the life of their business. When money is available, it often requires an exchange of equity. Conversations with small food processors in Salem revealed that business owners are reluctant to continually give away ‘shares’ of their companies for the money that is necessary to operate their business.

Operating, or working, capital refers to business assets available for production, and includes payments for payroll, inputs, and other recurring business costs. Operating capital is different from capital costs. Capital costs are incurred when a firm purchases land and buildings, or pays for construction and production equipment. Capital costs cover the necessities of making a business operable, while operating capital covers the cost of running a business.

The existing Small Business Loan Program in the Fairview Urban Renewal Area (URA) is restricted by the funding source. Since the loan is financed through Tax Increment Financing, the money must be spent on capital costs. In this case, those costs must be fixed to infrastructure in the Fairview URA. Although this type of loan will help companies start production, it cannot be used to cover operating costs.

Operating costs are especially sensitive for food processors that must respond to seasonal changes in inputs and sales. Although this recommendation originates from discussions with small food businesses, it is applicable to any small business.

<sup>55</sup> Hamilton-Pennel, Christing. (2008) “Strategic Plan for a Regional Economic Gardening Program” Growing Local Economies.  
<http://www.portlandregionalpartners.com/client/pdfs/Portland%20Strategic%20Plan%20%28Economic%20Gardening%20Plan%29%20final021208.pdf>



This recommendation supports Goal 3 of the Strategic Prosperity Plan:  
*Define the needs of Salem's existing business community.*

#### LEAD ORGANIZATION

Economic Development Division, managed by the Small Business Coordinator

#### ACTION ITEMS

- Establish a loan program; write a description of the program.
- Create a panel of professionals, which can include lawyers, accountants, financiers, and business people, to evaluate and approve business plans and loan applications.
- Draft eligibility criteria for businesses to be considered for the loan.
- Develop evaluation criteria to track the success of the loan program.
- Evaluate funding sources; consider organizations such as the Small Business Association and the Oregon Small Business Development Network.
- Build incentives into the loan program if firms can show that they are able to create or retain jobs as a result of the loan.
- Help local entrepreneurs find and apply for grants and loans.

#### TIME FRAME

Short term (establish program); Ongoing (implementation)

### **Recommendation G.5: Create a “How to do Business in Salem” Guide**

#### OVERVIEW

A “How to do Business in Salem” resource guide is a way to help local businesses be more efficient with their resources, help entrepreneurs get started, guide outside companies looking to locate to Salem, and advertise Salem’s competitive advantage.

Broadly, small businesses struggle with regulations more so than larger companies. Larger businesses typically have more capital and resources to commit to permitting, fees, and taxes. This allows them to meet these demands without stalling production. A resource guide can help small businesses become more efficient with their resources by guiding them through the process of some of these regulations, thereby reducing their time spent on researching how to address regulations.

A major factor in attracting an outside company looking to relocate is the ease of doing business in a city. CPW heard in interviews from local

businesses that Salem is generally an amiable place to do business. Moreover, they stated that city government is generally responsive to company's needs. Articulating this strength in a resource guide will help to attract outside businesses and help outside businesses begin the process of locating to Salem. The guide will show companies up front that Salem is accommodating to business needs.

The document should include a conclusive list of steps and resources available to business in Salem. The document should address all phases of businesses from ideas, early stage start-ups, small business, second stage medium businesses, and finally major corporations.<sup>56</sup>

This recommendation supports Goal 2 of the Strategic Prosperity Plan: *Communicate effectively with the community, City Departments and external economic development partners to reinforce a shared purpose, define roles and define a city-wide marketing message.*

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATIONS

SEDCOR and other City departments such as Permitting, Legal, etc.

#### ACTION ITEMS

- Compile the guide in collaboration with SEDCOR and other City departments.
- Make report available on-line.
- Update document as needed.

#### TIME FRAME

Short term. Action items should be implemented as soon as possible; changes should be made to the guide on an ongoing basis.

### **Recommendation G.6: Host City-sponsored Professional Development and Networking Opportunities**

#### OVERVIEW

Although there are opportunities for small business owners in Salem to meet and share their experiences, these events, often hosted by the Chamber of Commerce and Chemeketa Community College, are targeted at a general selection of businesses. These educational networking opportunities tend to focus on short term solutions for service-based industries. Based on conversations with food and metal manufacturers,

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<sup>56</sup> For an example of a "How to Do Business" guide see the City of Burlington, Vermont's award-winning guide "Doing Business in Burlington: The Streetwise Guide for Starting, Expanding and Relocating Your Business in Vermont's Queen City." Web. 29 June 2011. [http://www.cedoburlington.org/business/doing\\_business\\_in\\_burlington/dbb\\_toc.htm](http://www.cedoburlington.org/business/doing_business_in_burlington/dbb_toc.htm)

there is a demand for networking opportunities that focus on challenges specific to manufacturing.

By hosting industry specific networking events, the City can create opportunities for business owners to meet and learn from each other. These networking sessions would provide an opportunity for businesses to talk to each other as well as provide information to the City on how they can provide business development assistance. These functions can also address industry specific concerns, such as: navigating federal and state regulations, assessing equipment, and identifying diverse financing options.

By convening these events, the City can continue to strengthen an entrepreneurial culture, which will positively impact both the business climate and the city's identity.

This recommendation supports Goal 1.3 of the Strategic Prosperity Plan: *Encourage small business development and balance recruitment and retention efforts.*

#### LEAD ORGANIZATION

Economic Development Division, managed by the Small Business Coordinator

#### PARTNER ORGANIZATIONS

Salem Chamber of Commerce, SEDCOR, Oregon Manufacturing Extension Partnership, Chemeketa Community College and the Small Business Development Center

#### ACTION ITEMS

- Partner with the Salem Chamber of Commerce, SEDCOR, Oregon Manufacturing Extension Partnership (OMEP), Chemeketa Community College, and the Small Business Development Center to identify small businesses that would benefit from networking and educational training.
- Schedule quarterly small business educational forums.
- Book instructional talent, possibly partnering with Willamette University's MBA program.
- Maintain and manage a database of small businesses in Salem so that the city can stay in regular contact with businesses.

#### TIME FRAME

Short term

## Recommendation G.7: Create a Place Based Economic Development Strategy

### OVERVIEW

Is Salem cool? CPW was asked that question several times during the course of this study. Being “cool” derives from unique community culture and character. In short, being cool is about capitalizing on Salem’s sense of place.

Michigan Governor Rick Snyder said it best while addressing his state legislature in March 2011, “Economic development and community development are two sides of the same coin. A community without place amenities will have a difficult time attracting and retaining talented workers and entrepreneurs, or being attractive to business.”<sup>57</sup> CPW discovered through interviews with businesses and industry experts that Salem has a deficient community message. The community message should embrace the assets and priorities of Salem.

Place based economic development captures and celebrates what is unique about a place. For example, Portland celebrates the unique creative class that inhabits the city in this message, “Keep Portland Weird.” Another take on this message is, “Keep Portland Beered,” a message that identifies and celebrates Portland’s beer culture and industry.

The best approach to place based economic development is to emphasize local place identity. When communities relate strongly to the local environment, the city’s heritage and its unique culture, such places develop a strong social capital of networks and trust that forms the basis of a good economy.<sup>58</sup> Place based economic development complements recruitment, retention and economic gardening strategies.

A community identity or “brand” comes from the history, culture, geography, and people of the place. It is important for Salem to create a brand that is aimed at economic development and the generation of more family wage jobs. The brand will highlight Salem’s attributes to create value and influence economic development efforts. CPW identified the following attributes that the Salem Economic Development Division can nurture and celebrate in marketing Salem as a good place to do business, among others.

1. North Downtown Redevelopment plan
2. Local Food Culture
3. Prevalent Hispanic heritage
4. Willamette River and river front park recreational amenities

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<sup>57</sup> Projects for Public Spaces. (2011) “Place-based Governance: Michigan Leads the Way.” Web. 23 May 2011. <http://www.pps.org/blog/michigan-leads-the-way/>

<sup>58</sup> Newman, Peter. (2009) “The Place-Based City” Island Press.

5. Kalapuya and Old Mill historical heritage
6. Central position in the Willamette Valley
7. State capitol
8. City life and country life
9. Trader Joes!
10. State Fair/"It's a carnival all year round."
11. You know you are in Salem when.....

This recommendation supports Goal 2.4 of the Strategic Prosperity Plan: Develop a common brand that captures the economic development goals and strategies and defines a citywide marketing message.

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATIONS

Other City of Salem Departments, Travel Salem, Go Downtown Salem

#### ACTION ITEMS

- Collaborate with Travel Salem, other City departments and Go Downtown Salem to come up with a place-making strategy.
- Host a visioning series with businesses owners and citizens to add a community voice to the identity.
- Survey citizens on values and what they like best about Salem.
- Hold a "Salem Motto" contest.

#### TIME FRAME

Medium term

### **Recommendation G.8: Favor Local Businesses in Procurement of City Goods and Services**

#### OVERVIEW

CPW found that adjusting local procurement policy to favor local products and services could help to drive local demand. A local procurement policy could assist in stabilizing and growing the target industries, particularly food processing and metal manufacturing, by creating demand for those products and services at city-operated institutions. A procurement policy that favors local businesses may cause less money to leak out of the local economy.

Interviews with Salem metal manufacturers indicated that there is a perception that local manufacturers are regularly losing city contracts to manufacturers based in other cities. Metal manufacturers believe they

will benefit from a procurement policy that prioritizes Salem based firms for construction related contracts. Similarly, the city could assist local farmers and food processors by requiring vendors with city contracts to include locally sourced food in their offerings.

The City of Salem's current purchasing policy prioritizes the procurement of materials, supplies, equipment, public improvements, and services at "the lowest cost at the lowest cost consistent with the quality and service rendered."<sup>59</sup> Salem's current purchasing policy does not explicitly support local purchasing. Although the current policy may save the city money in the short term, it may cause money to leak out of the local economy in the long term. By favoring local products and services, the city can expect higher tax revenue from local business transactions, lower social service expenses from continued employment, and more local spending due to local sourcing of parts and transportation (the multiplier effect).

Adjusting the language of Salem's purchasing policy to reflect support for local products and services would allow the City of Salem to play a more active role in driving local demand. This policy change would reflect Oregon state code, which has a preference for, "Oregon goods and services."<sup>60</sup> Similarly, both Multnomah County<sup>61</sup> and the City of Ashland<sup>62</sup> have a local preference written into their procurement policies.

This recommendation supports Goal 1 of the Strategic Prosperity Plan: *Position Salem to attract and retain a diverse array of jobs and businesses.*

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATION

Contracts and Procurement Division in the Department of Administrative Services

#### ACTION ITEMS

- In collaboration with the Contracts and Procurement Division, the Economic Development Division drafts procurement policy language to support local products and services.

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<sup>59</sup> City of Salem. "Purchasing Policy for the General Government of Salem." [introduced August 5, 2009]. Web. 16 May 2011.  
[http://www.salemct.gov/Pages/SalemCT\\_WebDocs/PURCHASING%20POLICY%20-%20ADOPTED%208.4.pdf.>](http://www.salemct.gov/Pages/SalemCT_WebDocs/PURCHASING%20POLICY%20-%20ADOPTED%208.4.pdf.>)

<sup>60</sup> State of Oregon. "ORS 279A.120." Web. 17 June 2011.  
<http://www.leg.state.or.us/ors/279a.html>

<sup>61</sup> Multnomah County. "Adopting a Local Purchasing Policy for Goods and Services to Support the Local Economy and Local Job Opportunities" Web. 14 June 2011.  
<http://www2.co.multnomah.or.us/cfm/boardclerk/viewdetail.cfm?DocID=10448>

<sup>62</sup> Ashland, Oregon. "AMC Section 2.50.020," Web. June 14 2011.

- Determine a goal that states the percent of procurement money to be dedicated to local bidders.
- Salem City Council approves amendment to city code including new language.

#### TIME FRAME

Medium term

## Food Processing Recommendations

### Recommendation F.1: Nurture Small Businesses by Creating Partnerships with Big Businesses

#### OVERVIEW

Throughout Oregon, small towns and cities like Canby and Independence, are considering opening food incubators. These incubators would be either empty spaces for food processing, or they would be City-run co-packing facilities. Cities are pursuing food incubators as an economic development strategy because they offer a way to add value to locally produced agriculture products.

Salem is close to agriculture inputs, but unlike these other locations, Salem is already processing a larger quantity of food through the city's major food manufacturers. Though the city could start an incubator to help small processors make it to market, this would require capital and expertise.

One of the major obstacles to starting new small food processing businesses is the capital costs involved in setting up a commercial kitchen and purchasing gear. Therefore, an opportunity exists for the city to encourage partnerships between small and large processors. By incentivizing the collaboration between small and large food processors, the city can: (1) help large businesses earn money during their down production times; (2) reduce the barriers to entry for entrepreneurs who want to start small food businesses; and (3) continue to make Salem a business friendly city.

This recommendation supports Goal 1.3 of the Strategic Prosperity Plan: *Encourage small business development and balance recruitment and retention efforts.*

#### LEAD ORGANIZATION

Economic Development Division, managed by the Small Business Coordinator

#### ACTION ITEMS

- Host a focus group with large food processors to gauge interest and determine the best incentives to encourage these partnerships.

- If the focus group identifies interest, work with large food processors to develop programmatic recommendations.
- Reach out to Salem’s food processors and inform them of the program.

#### TIME FRAME

Short term

### **Recommendation F.2: Develop a Local Food Awareness Program**

#### OVERVIEW

Lacking a strong retail presence, there isn’t a great vehicle for Salem to develop an identity around locally processed foods. Over time, the city can change public perception and raise awareness of all the great foodstuffs being produced in Salem. This could be part of a larger civic rebranding program and support Recommendation G.7 “Create a Place-Based Economic Development Strategy.

The goals of a local food awareness program are to: (1) increase sales within Salem; (2) create an awareness among Salem residents that quality food is being produced locally; (3) contribute to a sense of civic pride; and (4) help put Salem on the map of places in the Northwest that are producing high quality and interesting food.

Although a ‘Made in Salem’ campaign would raise the awareness of Salemites about all the food products that are being produced locally, from small food makers to the big, this campaign can also raise awareness outside Salem and throughout the Pacific Northwest that many great products are made in Oregon’s capital. By advertising all the great things that food processors in Salem are already doing, the city can start to own the conversation about what a great place Salem is.

In time, this local food awareness program could shift to other products that are made in Salem from solar cells to construction and metal.

This recommendation supports Goal 2.4 of the Strategic Prosperity Plan: *Develop a common brand that captures the economic development goals and strategies and defines a city-wide marketing message.*

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATIONS

Travel Salem, Community Development, Go Downtown Salem

#### ACTION ITEMS

- Develop a marketing plan to draw attention to Salem crafted food.



- Work with local processors (small and large) to create a “Made in Salem” labeling campaign for regional distribution.
- Advertise the Made in Salem program on busses, radio, newsletters, and retail locations.
- Profile local small food processors on a Made in Salem website.
- Incentivize the use of Made in Salem labeling by either covering printing costs or costs related to getting new labeling approved (this is especially true for products that contain alcohol).

#### TIME FRAME

Long term

### **Recommendation F.3: Support Food Systems by Creating a Food Policy Council**

#### OVERVIEW

The national increase in the number of farmers markets<sup>63</sup> mirrors the rapidly growing local food movement across the United States. Cities and counties from all over the United States are taking steps to create a strong local food presence in their community (see Appendix I for a list of case studies). In the last ten years, cities have written local food policy into their comprehensive and sustainability plans; some locations have even created separate food plans that address food policy.<sup>64</sup> These plans and policies address different food related issues ranging from food access and availability, to food literacy and education, to food distribution and processing.

Many jurisdictions, food advocacy groups, and the USDA have started using the term “food system” to describe the entire life cycle of food. Unlike the food supply chain, which focuses solely on the inputs and outputs of food production and processing, food systems are more encompassing and include everything from production and processing to distribution and consumption. By expanding the discussion about local food to a systems level, jurisdictions are able to extend the conversation beyond nutritional functions of food to issues of equity around access to local food, as well as the environmental impact of food production.

Another advantage of looking at food from a systems level is that it provides new opportunities to connect and strengthen different parts of

<sup>63</sup> Ragland, Edward and Tropp, Debra. “National Farmer’s Market Manager Survey”. USDA, 2006. “Between the year 2000, when AMS conducted its first comprehensive national survey of farmers markets, and the end of 2005, the number of farmers markets in the United States increased 43 percent, from 2,863 to 4,093, an average growth rate of 8.6 percent a year.”

<sup>64</sup> Hodgson, Kimberley, et al. *Urban Agriculture: Growing Healthy, Sustainable Places*. Chicago: American Planning Association, 2011.

the food network as an economic development strategy. This increased efficiency can have a positive impact on businesses and consumers.

Since Salem has maintained its historic ties to the food processing industry and regional agriculture, the city has an advantage compared to many cities in the U.S. This gives Salem the opportunity to focus its efforts on the economic development strategies that build on existing local food production and agriculture.

One common practice for cities and counties interested in strengthening their local food systems is to create a Food Policy Council (FPC). FPCs often consist of stakeholders, advocates, and government representatives. The purpose of an FPC is to identify and propose ways to improve local food systems, which in turn result in economic development, and may make systems more environmentally friendly and socially just.<sup>65</sup> Although there are no clear metrics to gauge the success of food policy councils as economic motivators, they have been linked to improved communications between food institutions, opportunities for new and existing food businesses (both processors and farmers) to meet and share information, and also improved coordination between different sectors in the food industry.<sup>66</sup> Studies show that support for local agriculture can result in increased local farm sales, wages, and jobs, as well as the preservation of farmland,<sup>67</sup> and it is reasonable to assume that similar attention could improve the stability and profitability of the small food processing industry as well.

CPW recommends that Salem partner with Marion and Polk Counties, the College of Agricultural Sciences at OSU, and the Oregon Department of Agriculture to increase the efficiency of local food systems through the creation of a regional food policy council. Not only can a regional partnership make it easier for local food to make it to market in Salem, but it can also bring more stability to the local food supply chain, resulting in more regular production, more resilience to industry and economic pressures, and increased wages for farmers and food processors.

This recommendation supports Goal 2 of the Strategic Prosperity Plan: *Communicate effectively with the community, City Departments and external economic development partners to reinforce a shared purpose, define roles and define a city-wide marketing message.*

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<sup>65</sup> Food First. (2009) *Food Policy Councils: Lessons Learned*. Institute for Food and Development Policy.

<sup>66</sup> Food First. (2009) *Food Policy Councils: Lessons Learned*. Institute for Food and Development Policy.

<sup>67</sup> C.S. Mott Group at the University of Michigan and the Michigan Land Use Institute. (2006) "Eat Fresh and Grow Jobs, Michigan." Web. 20 June 2011.  
<http://www.mlui.org/downloads/EatFresh.pdf>

## LEAD ORGANIZATION

Economic Development Division

## PARTNER ORGANIZATIONS

Marion and Polk Counties

## ACTION ITEMS

- The initial step should be to convene potential partners to assess interest in participation
- Partner with Marion and Polk County, the College of Agricultural Sciences at OSU, and the Oregon Department of Agriculture to conduct a food systems assessment.
- Work with Marion and Polk Counties to create a regional food policy council.
- Work with city council to pass a resolution recognizing and supporting the food policy council.

## TIME FRAME

Long term

# Bioscience Recommendations

## Recommendation B.1: Develop a Relationship with the Oregon Bioscience Association

### OVERVIEW

The biosciences are a dynamic and fast growing industry, and the national and statewide growth is very positive. CPW found three key elements for the bioscience industry: (1) strong research capacity; (2) access to capital; and (3) the availability of a highly skilled workforce with advanced degrees. Equally important are state and regional initiatives aimed at building the biosciences infrastructure for this new industry.

Bioscience is an identified industry cluster in the Oregon Business Plan, however it has come to CPW's attention that it is not an industry that Business Oregon is actively pursuing. Without the collaboration of state support, Oregon Bioscience Association, industry executives, researchers and local leaders, Salem is limited in moving forward with city specific bioscience initiatives.

The biosciences in Salem do not present an *immediate* opportunity, however Salem should not write off the biosciences completely. Salem should be ready in case state and regional efforts become more focused. For example, the Oregon Bioscience Association will be following in several other states footsteps by creating a bioscience roadmap. Salem should establish a relationship with the Oregon Bioscience Association to

point out where they fit into the roadmap and point out any overlooked strengths.

This recommendation supports Goal 2.3 of the Strategic Prosperity Plan: *Partner with universities, the State of Oregon, Salem Hospital, and others to attract more family-wage jobs. (City Council 2010 Goal V1d).*

#### LEAD ORGANIZATION

SEDCOR

#### PARTNER ORGANIZATIONS

Economic Development Division and the Oregon Bioscience Association

#### ACTION ITEMS

- Develop a relationship with the Oregon Bioscience Association.
- Attend Oregon Bioscience Association forums, held four to six times per year.
- Attend the Oregon Innovation showcase which features researchers and companies engaged in the design and the development of Oregon's leading bioscience sector – medical devices. These valuable networking events convene industry executives, researchers, local leaders and suppliers to share synergies and create collaboration. The cost for non-members is between \$30 and \$60 dollars.

#### TIME FRAME

Short term (establish relationship); Ongoing (maintain relationship)

### **Recommendation B.2: Engage with Innovation and Technology Professionals at Oregon Higher Education Institutions**

#### OVERVIEW

Higher education institutions are often the drivers of innovation in the biosciences and can help bring new products and technology to commercialization. Since these individuals facilitate the commercialization of new innovation and technology it will bode well to establish rapport with these institutions.

This recommendation supports Goal 2.3 of the Strategic Prosperity Plan: *Partner with universities, the State of Oregon, Salem Hospital, and others to attract more family-wage jobs. (City Council 2010 Goal V1d).*

#### LEAD ORGANIZATION

SEDCOR

#### PARTNER ORGANIZATION

Economic Development Division

## ACTION ITEMS

- Engage with innovation and technology professionals at Oregon higher education institutions. A list of contacts is provided in Appendix J. A list of bioscience case studies is provided in Appendix K.
- Invite key players to speak with SEDCOR and the EDD.

## TIME FRAME

Ongoing

### **Recommendation B.3: Develop a Marketing Tool Explaining Why Bioscience Companies Should Locate in Salem**

#### OVERVIEW

CPW identified opportunities for Salem in the medical device manufacturing subsector. The medical device subsector is the largest subsector in Oregon. Oregon is among the top eight states that have contributed the largest employment gains in the medical device subsector (more than 1,000 jobs each year over a seven year period).<sup>68</sup>

The national average annual wage in the subsector is \$63,606. Average pay for medical device manufacturing in Oregon \$53,216. Medical device manufacturing in Salem pays above the household medium income of \$40,560.<sup>69</sup>

The biggest challenge for Salem is the lack of a major research institution and no established bioscience cluster in the region. The biggest opportunity for Salem is to leverage its strategic geographic location as a competitive advantage for attracting medical device manufacturers. To do this, CPW recommends that Salem develop a marketing tool to distribute to the major players in the Oregon bioscience industry. The marketing material will highlight Salem's strengths to grow and attract the medical device manufacturing industry. Salem should collaborate with Business Oregon, Oregon Bioscience Association and higher education institutions to leverage Salem's position to grow this industry.

This recommendation supports Goal 2 of the Strategic Prosperity Plan: *Communicate effectively with the community, City Departments and external economic development partners to reinforce a shared purpose, define roles and define a city-wide marketing message.*

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<sup>68</sup> Battelle Technology Partnership Practice, "Battelle/BIO State Bioscience Initiatives 2010," Prepared for Biotechnology Industry Organization, May 2010.

<sup>69</sup> Bureau of Labor Statistics. "May 2010 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates." Occupational Employment Statistics. Web. 1 July 2011 [http://www.bls.gov/oes/current/oes\\_41420.htm](http://www.bls.gov/oes/current/oes_41420.htm)

## ACTION ITEMS

- Develop a marketing tool to distribute to research institutions and key players in the Oregon bioscience industry.

## LEAD ORGANIZATION

SEDCOR

## PARTNER ORGANIZATIONS

Economic Development Division in collaboration with Business Oregon and the Oregon Bioscience Association

## TIME FRAME

Short term

# Metal Manufacturing Recommendations

## Recommendation M.1: Develop a Public Database of Metal Manufacturer Capabilities and Services

### OVERVIEW

Local metal manufacturers often adapt their manufacturing operations to meet changing market demands for products, materials, and emerging technology. Metal manufacturers, such as West Salem Machinery, started their business focusing on one type of operation and later changed their focus to respond to a local market. Until about two years ago, West Salem Machinery primarily manufactured grinders for recycling materials and wood products, and now manufactures grinders for biomass and anaerobic digesters. Adapting operational capabilities allows metal manufacturers to stay in business and gain a competitive advantage in the manufacturing market.

Through interviews, CPW also learned about a metal manufacturer, Miles Fiberglass, who was contacted by Vestas to manufacture wind turbine blades. Previously Miles Fiberglass had made panels for RVs, but Vestas recognized that Miles Fiberglass had the capabilities and resources to manufacture wind turbine blades. In this case, the operational capabilities of Miles Fiberglass were useful for more than one kind of product. Other linkages that enable local metal manufacturers to link into the supply chain can be made if greater awareness of area metal manufacturer capabilities is known.

One way to create more awareness is to create a public database of metal manufacturers that notes their skills and equipment. This will help other industries find manufacturers to fabricate their product as well as create more business opportunities for metal manufacturers. It would also build a working relationship between the City of Salem and Chemeketa Community College while simultaneously developing shared knowledge base necessary to build the metal manufacturing industry.

This recommendation supports Goal 3.1 of the Strategic Prosperity Plan:  
*Make information available, accurate and useful to support economic development strategies and business needs.*

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATIONS

SEDCOR and Chemeketa Community College

#### ACTION ITEMS

- Through established partnership with SEDCOR and the Chemeketa Community College, jointly survey the capabilities of local metal manufacturing companies.
- Compile survey results to develop a database detailing each metal manufacturer's capabilities, metals that are manufactured, capacity for expansion, etc.
- Develop a plan to keep the database up to date. One option is to link this database with the Business Registry.
- Once surveyed information of local metal manufacturers is collected, the database can be developed. Regular maintenance of the public database should occur regularly, updating metal manufacturer capabilities or allowing the metal manufacturers themselves to do so.

#### TIME FRAME

Short term

### **Recommendation M.2: Improve Metal Manufacturing Workforce by Coordinating Education and Training**

#### OVERVIEW

Existing metal manufacturing companies in Salem expressed a need for dependable, qualified employees. Due to limited time and resources, small and medium sized metal manufacturing companies do not have their own training programs. For companies that utilize highly technical computer software for design or machinery that requires specific training, this limits the number of qualified employees.

Existing workforce training programs specific to metal manufacturing include the Chemeketa Community College Welding Technology program and SEDCOR's Industrial Maintenance Operator/Mechanic (IMOM) program. However, the workforce for metal manufacturing companies is not uniform; different manufacturing positions require a variety of skills. Given this, it may benefit local metal manufacturers to develop a dynamic training program that is specific to the technical capabilities of metal

manufacturing companies in Salem. Interview findings with small and medium sized metal manufacturing companies show the following trends:

- Employees do not encompass all or many of the needed skills. For instance, an employee may be able to weld, but is not able to use computer software also required for design-based companies.
- Some metal manufacturers are willing to teach employees needed skills, but often employees do not have a positive attitude or an interest in learning. Rather, such employees are primarily concerned with getting paid rather than improving their skillset.
- A dependable workforce is difficult to come by.

This recommendation supports Goal 2.3 of the Strategic Prosperity Plan: *Partner with universities, the State of Oregon, Salem Hospital, and others to attract more family-wage jobs.*

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATIONS

SEDCOR, Chemeketa Community College and Job Growers

#### ACTION ITEMS

To address this recommendation, the City of Salem should do the following:

- Partner with Chemeketa Community College and SEDCOR's IMOM program to develop a relationship with local metal manufacturing companies and offer workforce training in other areas of metal manufacturing in addition to its Welding Technology program.
- In collaboration with Chemeketa Community College and local metal manufacturers, jointly develop a management-training curriculum and provide necessary personnel and material resources.
- Conduct a focus group with metal and other manufacturers to discuss needs, barriers, and solutions.

#### TIME FRAME

Medium term

### **Recommendation M.3: Develop Business Management Training for Small Metal Manufacturing Companies**

#### OVERVIEW

Some small and mid-sized metal manufacturing companies in Salem struggle to compete with larger metal manufacturing firms because they



lack the time and financial resources to grow their company to the next level. These companies cannot afford consulting or advertising services. Instead, these metal manufacturers develop their client base by primarily depending on word-of-mouth.

CPW also found that owners and managers of small and medium sized metal manufacturing companies are trained in the metal manufacturing trade and may not have the resources or training they need to manage their business. Providing general business management training would allow these companies to gain knowledge of business practices, which would help them to expand and become more competitive.

This recommendation supports Goal 2.3 of the Strategic Prosperity Plan: *Partner with universities, the State of Oregon, Salem Hospital, and others to attract more family-wage jobs.*

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATIONS

Chemeketa Community College and Job Growers

#### ACTION ITEMS

CPW recommends the following action items to improve the business management skills of local metal manufacturers:

- Research management training needs of local metal manufactures by interviewing business owners or general managers and trade associations. Interviews with trade associations would allow the city to understand what sort of business knowledge metal manufacturer business owners need.
- In partnership with Chemeketa Community College and Job Growers, design management training programs based on the above research.
- Offer stipends or grants to small Salem metal manufacturers seeking consultant help.
- Provide the funds for smaller metal manufacturers to work with trade associations such as Manufacturing Coalition 21.
- Act as a liaison for metal manufacturers to get involved with the Drive Oregon initiative. This would open the opportunity to get involved in industry development for electric vehicle and transportation electrification.<sup>70</sup>

#### TIME FRAME

Medium-term

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<sup>70</sup> Drive Oregon. (2010) Web June 2011. <http://driveoregon.org/about-us/>.

## **Recommendation M.4: Research Metal Manufacturing Market Opportunities**

### OVERVIEW

Staying informed about existing and future advancements in the metal manufacturing industry is an important contribution to the overall knowledge of metal manufacturing industry opportunities. Metal manufacturing market research may provide awareness of emerging opportunities to link local metal manufacturers into the existing supply chain in Salem or to other areas within the state or nation.

Changing demand for new technologies, product demand, and material usage in the metal manufacturing industry are dynamic. Staying up-to-date on emerging trends will help local metal manufacturers stay competitive. For instance, Drive Oregon is a statewide initiative to link both the car industry to the metal manufacturing industry. The initiative includes companies that produce vehicles and components. United Streetcar is another advancement in Oregon. This Portland-based company buys and manufactures streetcar parts within the U.S. Opportunity may exist for Salem companies to link in to these emerging markets.

This recommendation supports Goal 1 of the Strategic Prosperity Plan: *Position Salem to attract and retain a diverse array of jobs and businesses.*

### LEAD ORGANIZATION

Economic Development Division

### PARTNER ORGANIZATION

SEDCOR

### ACTION ITEMS

- The City's business analyst should dedicate time to metal manufacturing industry research. This includes conducting a strengths and opportunities analysis in order to determine the capacity of regional and national market opportunities in metal manufacturing.
- Perform annual review of industry research to ensure metal manufacturing knowledge about potential emerging opportunities and new technologies stays current.
- Coordinate with area metal manufacturers to share market research where further opportunities exist. Sharing knowledge about emerging industry opportunities and advancement ensures local metal manufacturing knowledge stays current.

### TIMEFRAME

Ongoing

# Renewable Energy Recommendations

## Recommendation R.1: Support Local Metal Manufacturers to Make Replacement Parts for Wind Turbines

### OVERVIEW

The wind turbine industry is a large and growing market both nationally and in the state of Oregon. The national wind turbine parts manufacturing sector was a \$10 billion industry<sup>71</sup> in 2010 and is expected to continue to grow at 2.6 percent annually between 2010 and 2015.<sup>72</sup> The regional market alone is sizeable. Industry experts stated that given the size of the market and the number of turbines currently installed and forecasted to be installed, the market for wind turbine replacement parts is highly attractive.

Wind turbines are mainly manufactured overseas. Under the current pattern of manufacturing, turbines in need of repair need to be dismantled and shipped back to their original manufacturer. However, by sourcing the parts and labor locally, wind farms can save time and money on logistics.

CPW found opportunities for local metal manufacturers to make wind turbine replacement parts. This is a state-wide effort initiated by Business Oregon to link local metal manufacturers to the wind turbine industry.

Trade associations and state initiatives are currently supporting such practices. The Oregon Manufacturing Extension Program offers up to \$250,000 in grant money for companies looking to make supply chain parts for renewable energy technology.<sup>73</sup> Moreover, Business Oregon is conducting research on the metal manufacturers in Oregon and assessing which ones are capable of supplying replacement and upgrade parts for the renewable energy industry.

One successful example of a company retooling its operations for the wind turbine industry is Miles Fiberglass and Composites in Happy Valley. Vestas in Portland approached Miles Fiberglass to help them repair blades on their wind turbines. Vestas recognized that Miles Fiberglass had the capacity and tools to make the blades based on their traditional work making fiberglass composite panels for RVs.

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<sup>71</sup> IBISWorld. (2011) "Wind Turbine Manufacturing in the US." *IBISWorld*. 1-26.

<sup>72</sup> IBISWorld. (2011) "Wind Turbine Manufacturing in the US." *IBISWorld*. 1-26.

<sup>73</sup> Oregon Manufacturing Extension Partnership. "OMEP Lands \$1.5 Million for Renewable Energy Supply Chain Initiative." Web. 3 May 2011.  
<http://www.omep.org/blog/post/2011/02/omep-lands-15m-renewable-energy-supply-chain-initiative>

This recommendation supports Goal 1.3 of the Strategic Prosperity Plan: *Encourage small business development and balance recruitment and retention efforts.*

#### LEAD ORGANIZATION

SEDCOR

#### PARTNER ORGANIZATION

Economic Development Division

#### ACTION ITEMS

The following action items can help link local metal manufacturers to leaders in the wind turbine industry. Furthermore, action items can help manufacturers access the capital, equipment, resources, and guidance they need to manufacture wind turbine parts.

- Link wind turbine manufacturing companies with local metal manufacturers by offering grants to attend wind turbine trade shows and conferences.
- Provide a web page geared to Salem metal manufacturers that provides information on the wind turbine industry. Information on the site should cover general industry information and where opportunities exist. Furthermore, provide links to other key industry supporters such as Business Oregon and the Northwest Wind Industry Alliance.<sup>74</sup> This page would also include any grant funds available for local metal manufacturers, such as the OMEP grant previously discussed.
- Provide small business development and networking opportunities for local metal manufacturers. This action item can be conducted in part with Recommendation G.6 “Host City-sponsored Professional Development and Networking Opportunities.”
- Help local metal manufacturers find and apply for loans.

#### TIME FRAME

Short term

### **Recommendation R.2: Support Local Metal Manufacturers to Produce Solar Racks**

#### OVERVIEW

According to business leaders in solar manufacturing, demand exists for additional solar rack manufacturers in the U.S. Solar racks frame the solar panel and secure the panel to its installation device. According to a solar

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<sup>74</sup> Northwest Wind Industry Alliance. (2011) “Resources.” Web. 23 June 2011. <http://www.northwestwind.org/resources.html>

manufacturer, Unirack is the primary provider of solar racks controlling nearly 60 percent of the national market.

In Oregon, solar rack manufacturing is not well represented in the northwest solar supply chain. SolarWorld is currently the only company manufacturing solar racks. Interviews with both a solar installation contractor and a solar manufacturer noted that enough demand exists for additional companies to manufacture solar racks in the northwest.

CPW identified an opportunity for local metal manufacturers to manufacture solar racks. Metal manufacturers who are capable of making solar racks have knowledge in aluminum and metal fabrication. Appendix M provides a map and contact information for companies in Oregon that may be able to repurpose their skills and products to participate in the solar energy industry.

Making solar racks not only provides an opportunity for local metal manufacturers to expand their business but also strengthens the solar manufacturing cluster in Oregon. The Oregon solar industry is looking to integrate the solar supply chain to achieve the complete process in one geographic location. Doing so protects against rising transportation costs and volatile currency exchange rates. Moreover, solar manufacturers told CPW that U.S. made solar products receive a premium price because of the demand for U.S. made solar products. Local metal manufacturers that enter this market can benefit from this growing market and help to support the growing solar manufacturing cluster in Oregon.

CPW recommends the City of Salem use a multifaceted approach to support local metal manufacturers in making solar racks. Solar manufacturers need to be made aware of local metal manufacturer's capacity to make solar racks. At the same time, the metal manufacturing industry needs to be made aware of their ability to enter this market. Currently, grant money is available to help metal manufacturers enter this market through Oregon Manufacturing Extension Program. They are offering companies \$250,000 in supporting manufacturers looking to make products for renewable energy supply chain. However, this money is available on a first come first serve basis and therefore efforts should be taken immediately.

This recommendation supports Goal 1.3 of the Strategic Prosperity Plan: *Encourage small business development and balance recruitment and retention efforts.*

#### LEAD ORGANIZATION

SEDCOR

#### PARTNER ORGANIZATION

Economic Development Division

## ACTION ITEMS

- Using the database developed in Recommendation M.1, identify which companies have the potential to enter the solar rack market.
- Identify solar panel manufacturing or installation companies operating in Oregon and connect them with local metal manufacturers that are interested in developing this market.
- Utilize a multi-faceted outreach strategy to inform these manufacturers of this emerging market.
  - Meet one-on-one with businesses.
  - Provide reference materials, both print and electronic versions on-line. Sections of this report could also be made available.
  - Help companies obtain capital. This could be made available in part by General Recommendation #2: Create a Small Business Loan Program that Supports Operational Costs.
- Help companies find and fill out grant and loan applications. OMEP has two grants available. Furthermore, OMEP is a knowledgeable resource as to the needs of manufacturers in order to stay competitive in today's market.
- Offer grants to metal manufacturing companies to send them to solar trade shows and conferences.

## TIME FRAME

Short term

## **Recommendation R.3: Recruit Photovoltaic Manufacturers**

### OVERVIEW

The solar manufacturing industry is rapidly growing and Oregon has already begun to establish itself as a national leader in the industry. Salem has already attracted one company, Sanyo, and is well suited to house more solar manufacturers. CPW identified an opportunity for Salem to build upon the existing solar manufacturing cluster in Oregon.

One attractive attribute to Salem is the Salem Renewable Energy Technology Center (SRETC). This land has been set aside for renewable energy companies, offering "project ready" land, generous tax incentives, and affordable water and electricity. PGE installed a substation on site to ensure consistent power to companies locating on the site.

Specific efforts should be made to recruit solar manufacturers whose products and services are non-existent or undersupplied in the northwest solar supply chain. CPW identified that the following products and

services are undersupplied in the northwest solar supply chain: (1) modules, (2) inverters, (3) solar racks, and (4) solar cell processing. Efforts to recruit a company that complements and supports the current Salem solar manufacturer, Sanyo, should also be a priority. These efforts also coincide with the regional attention of integrating the solar supply chain.

This recommendation supports Goal 1.4 of the Strategic Prosperity Plan: *Identify recruitment strategies that prioritize a diverse set of industries and jobs.*

#### LEAD ORGANIZATION

SEDCOR

#### PARTNER ORGANIZATION

Economic Development Division

#### ACTION ITEMS

- Focus recruitment efforts on companies who:
  - Make inverters
  - Make modules
  - Grow and supply polysilicon
  - Conduct solar cell processing
- Work with SANYO to recruit a solar manufacturer that would be compatible and complementary to their work. Recruitment efforts should build off local strengths and aim to link companies to create strong clusters.
- Host a solar conference in Salem. Potentially, this action item will show solar manufacturers that Salem is serious about supporting solar manufacturing.

#### TIME FRAME

Short term

### **Recommendation R.4: Support Local Metal Manufacturers to Make Wave Energy Parts**

#### OVERVIEW

CPW identified potential opportunities in manufacturing wave energy production equipment. We note, however, that this technology is still in the research and development phase; no private firms are currently manufacturing wave energy equipment.

The largest wave energy lab is located at Oregon State University. Currently, the first large scale wave energy production plant is being installed at Reedsport. Oregon Wave Energy Trust hopes to achieve

measurable results in wave energy technology by 2015.<sup>75</sup> Once this happens, it is plausible that there will be opportunities for local manufacturers to become involved in making parts for the wave turbine.

Currently Oregon Iron Works is building the prototype wave turbine. As testing increases, opportunities may exist for local metal manufacturers to make wave energy device parts before the product is commercialized.

Salem should position itself to capitalize on this market by linking local manufacturers with the wave energy labs in Oregon. See Appendix L for a list of contacts.

This recommendation supports Goal 1.3 of the Strategic Prosperity Plan: *Encourage small business development and balance recruitment and retention efforts.*

#### LEAD ORGANIZATION

SEDCOR

#### PARTNER ORGANIZATION

Economic Development Division

#### ACTION ITEMS:

- Meet with key members of the Wallace Energy Systems and Renewables Facility at Oregon State University. The discussion should focus around how Salem can support the development, commercialization, and manufacture of this technology.
- Identify local metal manufacturers who have the potential to make the necessary parts.
- Utilize a multi-faceted outreach strategy to inform manufacturers of this emerging market.
  - Meet one-on-one with businesses.
  - Gather and provide reference materials both print and electronic versions on-line. Sections of this report could also be made available.
- Help companies obtain capital. This could be made available in part by General Recommendation #2: Create a Small Business Loan Program that Supports Operational Costs.
- Help local manufacturers find and apply for grant and loan opportunities.

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<sup>75</sup> Oregon Wave Energy Trust. "A Blueprint for Ocean Energy Development, 2010-2015." Web. 5 July 2011, 20.



## TIME FRAME

Medium term

### **Recommendation R.5: Create Demand for Renewable Energy Products from Salem Companies**

#### OVERVIEW

Industry market reports and interviews revealed that companies tend to locate in cities that have a strong support base for the use of renewable energy products. Initiatives such as Solarize Salem, Feed-in-tariffs, and the Oregon Energy Trust have helped to create demand for solar products in Oregon. These initiatives have had the return effect of encouraging solar companies to the state.

Another way to support the renewable energy industry and Salem companies that make these products is by giving locals tax incentives to purchasing locally made renewable energy products. This not only makes the product more affordable for the consumer but supports local businesses as well.

This recommendation supports Goal 1 of the Strategic Prosperity Plan: *Position Salem to attract and retain a diverse array of jobs and businesses.*

#### LEAD ORGANIZATION

Economic Development Division

#### PARTNER ORGANIZATION

Solarize Salem

#### ACTION ITEMS

- In collaboration with Solarize Salem, create incentives for business and residents to buy renewable energy products from Salem companies and use Salem contractors to install them.
- Research renewable energy product options in order to assess the most effective energy source to use for identified facilities in Salem.
- Research the portion of city funds that are mandated for energy and utility expenses. Use this research to commit to installing a certain percentage of renewable energy to new city facilities.

## TIME FRAME

Medium term

## **Recommendation R.6: Recruit Research and Development firms to the Salem Renewable Energy Technology Center**

### OVERVIEW

Research and development is an important component of a renewable energy cluster. Some of the largest renewable energy clusters are built around research institutions. These include Boston, Massachusetts; San Diego, California; Silicon Valley, California; Pasadena, California; and Austin, Texas.

Research and development can help encourage outside companies to locate in Salem. Interviews with solar manufacturing companies found that being located near research institutions was a factor to where they locate. Salem would be more competitive in recruiting renewable energy industries by locating a research and development firm in the SRETC.

This recommendation supports Goal 1.4 of the Strategic Prosperity Plan: *Identify recruitment strategies that prioritize a diverse set of industries and jobs.*

### LEAD ORGANIZATION

SEDCOR

### PARTNER ORGANIZATION

Economic Development Division

### ACTION ITEMS

- Meet with local universities who have renewable energy laboratories to discuss how Salem can support local research and development. Starting at the local universities is important because many spin-off companies in research and development begin in the university laboratory. See Appendix L for a list of names and laboratories the City of Salem should stay in contact with.

### TIME FRAME

Short term

## APPENDIX A: METHODOLOGY

CPW used a combination of quantitative and qualitative methods to understand the market strength and potential for the four target industries. To characterize each industry, CPW analyzed industry strength by cross-referencing North American Industrial Classification System (NAICS) codes with data from the U.S. Bureau of Labor Statistics. Additionally, the team referenced IBIS World industry reports, state and national reports, and conducted interviews with business owners, industry experts and communities to characterize each target industry.

### NAICS Classification Codes

CPW used the North American Industrial Classification System (NAICS) to assess the target industry characteristics for the U.S., Oregon, and Salem MSA. The NAICS system serves as the structure for the collection, aggregation, presentation, and analysis of the US economy. NAICS groups establishments into industries based on the activity in which they are primarily engaged. Establishments using similar raw material inputs, similar capital equipment, and similar labor are classified in the same industry. In other words, establishments that do similar things in similar ways are classified together. NAICS uses a six-digit hierarchical coding system to classify all economic activity into twenty industry sectors. NAICS codes range from two to six digits wherein more digits includes more specialized industries within the broader industry. This system is uniformly shared with Canada and Mexico.

CPW used the Bureau of Labor Statistics and the Oregon Labor Market Information System (OLMIS) to analyze average wage, number of establishments and number of employees by industry for the U.S., Oregon and the Salem MSA. In some instances, CPW relied on private industry reports to classify the industry. These reports provided us with a list of codes that classified the industry. For example, the bioscience and renewable energy industries are very new. Therefore NAICS codes are not available that clearly define these industries.

### State and National Reports

To understand how each industry performed on the national level, CPW referenced existing reports written by private firms, federal and state government organizations, and trade associations. IBIS World's comprehensive market analysis reports were also used to gain a better understanding of market conditions, supply chain and market forecasts. IBIS reports are written by a team of economists and industry experts who research and analyze economic, demographic and government statistics. IBIS reports offer in-depth market analysis for many U.S. industries by 5-digit NAICS code. Each report provides key statistics and analysis on market characteristics, operating conditions, current and

forecasted performance and major industry participants. State and national reports also helped to define industry trends. These reports complemented the quantitative NAICS data.

## **Interviews**

CPW conducted over 40 interviews with business owners, industry experts and government organizations to better understand the current and future dynamics of each industry. See Appendix B for a complete list of organizations interviewed during Phase I.

CPW interviewed business owners from the local, state, and national level to develop an understanding for what each industry requires from a business location, workforce and supply chain standpoint. Questions also explored the importance of proximity to natural resources, inputs, utilities, and consumers, as well as specific industry requirements.

CPW interviewed industry experts regarding industry trends, market potential, and business requirements for each industry. Experts were asked to describe the trends that have characterized or shaped each industry, the importance of a skilled workforce, site requirements, utilities, and access to varied transportation and incentives. Experts provided CPW with an overview of the opportunities and challenges of each industry at a national and local level.

CPW also interviewed local government officials and community organizations to understand strategies that communities from across the country used to successfully grow, retain, and recruit the target industries.

Interviews with communities, business owners and industry experts provided important information that helped to guide CPW's recommendations.

## **Analysis Criteria**

Based on the information gathered from the data analysis, industry reports and interviews, we used a set of criteria to help narrow the industries to more targeted sub sector research. CPW took into account the global/national outlook for each industry, local growth potential, average wage and characteristics specific to Salem that would complement the target industry. For example, the very broad renewable energy industry was narrowed to the solar and wind subsectors because our research revealed the most potential for Salem in these areas.

## **APPENDIX B: INTERVIEW LIST**

Appendix B provides a list of businesses, government agencies and other organizations interviewed for the Target Industry Analysis.

### **Food Processing Interviews**

- EZ Orchards, Salem, Oregon
- Food Innovation Center, Portland, Oregon
- Institute of Agriculture and Trade Policy, Minneapolis, Minnesota
- Kettle Foods, Salem, Oregon
- Lane County Economic Development, Eugene, Oregon
- Minneapolis Home Grown, Minneapolis, Minnesota
- Northwest Food Processors Association, Portland, Oregon
- Oregon Cherry Growers, Inc., Salem, Oregon
- Oregon Department of Agriculture, Portland, Oregon
- Organic Fresh Fingers, Salem, Oregon
- Pretty Pickle Company, Salem, Oregon
- Truitt Brothers, Salem, Oregon
- Wandering Aengus, Salem, Oregon
- Winrock International, Arlington, Virginia

### **Bioscience Interviews**

- Bio Aesthetic Installation, Salem, Oregon
- Business Enterprise Center, Corvallis, Oregon
- City of Seattle Economic Development, Seattle, Washington
- Daniel Dental Lab, Inc., Salem, Oregon
- ECONorthwest, Eugene, Oregon
- Oregon Bioscience Association, Portland, Oregon
- Oregon State University, Intellectual Property & Licensing, Corvallis, Oregon
- Salem Hospital, Salem, Oregon
- University of Oregon Life Sciences Department, Eugene, Oregon

### **Metal Manufacturing Interviews**

- Arcimoto, Eugene, Oregon

- Belco Manufacturing, Portland, Oregon
- Dan's Steel Company, Salem, Oregon
- Green Manufacturing Initiative, Los Angeles, California
- Martin Metal Manufacturers, Salem, Oregon
- Oregon Manufacturing Extension Partnership (OMEP), Beaverton, Oregon
- Pacific Metal, Salem, Oregon
- West Salem Machinery, Salem, Oregon
- Zieman Manufacturing, McMinnville, Oregon

## **Renewable Energy Interviews**

- Advanced Energy Systems,
- Business Oregon, Salem, Oregon
- Centrosolar, Germany
- Miles Fiberglass and Composites, Happy Valley, Oregon
- Oregon Department of Energy, Salem, Oregon
- Oregon State University, Electrical Engineering & Computer Science Program, Corvallis, Oregon
- Peak Sun, Albany, Oregon
- SANYO Solar, Salem, Oregon
- Tanner Creek Energy, Portland, Oregon

## **General Interviews**

- Business Oregon, Portland, Oregon
- City of Ashland, Ashland, Oregon
- Multnomah County Purchasing, Portland, Oregon
- Oregon Employment Department, Salem, Oregon
- Oregon Small Business Development Network, Eugene, Oregon
- Site Selection Group, Dallas, Texas
- Wadley Donovan Gutshaw Consulting, Bridgewater, NJ
- Willamette University, Strategic Management, Salem, Oregon

## APPENDIX C: SITE LOCATION PROCESS

Appendix C provides an outline of a typical site selection process.<sup>76</sup> This process has been divided into four phases. In the first phase, the selectors work with the client to determine the location requirements. In the second phase, the possible locations are narrowed and a short list is created. In the third phase, the location decision is made, and in the final phase the firm chooses a specific site.

- **Phase One: The Building Blocks**
  - Laying the study's foundation, including definition of basic requirements and criteria
- **Phase Two: Screening**
  - Create a shortlist of areas and selecting 3 for due diligence.
    - Within geographic search region initially apply basic criteria
    - By integrating more restrictive criteria eventually will narrow the field to a longlist of maybe 10 areas
    - Take a closer look at each longlisted area (e.g. labor market competitors)
    - Rank / score the longlist contenders
    - Select finalists (shortlisted) locations
- **Phase Three: Evaluation / Selection**
  - Assessing finalists areas and choosing the best location
    - Field based due diligence evaluation performed including interviews with comparable employers and other pertinent entities.
    - Inspection of site/building potentials undertaken
    - Infrastructure (e.g. utilities) assessment conducted
    - Labor market viability determined, both near term and long range
    - Preliminary incentives package obtained
    - Taxes / regulations evaluated
    - Comparison of the finalist locations made on
      - Company's most internal needs
      - Areas most prominent assets / liabilities
      - Major factors assessed include
        - Business operating costs (multi-year)
        - Labor market
          - Demand / supply
          - Quality / stability

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<sup>76</sup> Wadley Donovan Gutshaw Consulting. "Site Location Decision Process." Web. June 20 2011. [http://www.wdgconsulting.com/Site\\_Location\\_decision\\_process.htm](http://www.wdgconsulting.com/Site_Location_decision_process.htm)

- Cost
  - Unionization
- Transportation
  - Costs
  - Services
- Utilities (cost, capacity, reliability)
  - Electric power
  - Telecommunications
  - Natural Gas
  - Water / Sewer
- Taxation
  - Practices
  - Rates
- Incentives
  - The package savings
- Disaster risk
- Quality-of-life / cost-of-living
- Best location chosen
- Leading Alternate location chosen
- Site / building shortlist identified in these locations

- **Phase Four: Site Selection**

- Due diligence to choose the best property with the following task components:
  - Project team
  - Project management plan
  - Budget forecast
  - Field visits / property reviews
  - Shortlist properties
  - Developer / owner RFPs
  - Incentives negotiation
  - Additions
  - Local Counsel retained
  - Finalist properties
  - Due diligence reviews
  - Final negotiations
  - Final occupancy plan
  - Site building acquisition
  - Decision announcement



# APPENDIX D: FOOD PROCESSING INDUSTRY

## PROFILE

Appendix D provides a detailed industry profile for the food processing industry.

### Context: History

Since its founding in 1847, the food processing industry has been historically important to Salem. By 1880, Salem's population grew to 2,500. This growth was fueled in part by the expansion of the region's agriculture, but also by food processing and woolen mills.<sup>77</sup> Salem became an economic hub for the region, exporting agriculture, logging, processed food and wool within the United States and internationally.<sup>78</sup>

In 1903, Salem took the nickname, "The Cherry City," in recognition of its food processing industry.<sup>79</sup> In the 1940s, when the United States was entrenched in war, there was a shortage of workers in Salem's canneries. During World War II, Salem became the largest canning city in the world.<sup>80</sup> This early success was related to access to water, a stable workforce, and bountiful agricultural products from the Willamette Valley.

Although Salem is no longer the nation's leading food processor, the food manufacturing industry remains an important part of Salem's economy, employing 4,300 people in December of 2010.<sup>81</sup>

### Industry Definition

According to the U.S. Census Bureau, food processing is the process of transforming agricultural products into "products for immediate or final consumption."<sup>82</sup> Food processing links farmers and agricultural producers

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<sup>77</sup> Marion County Historical Society. "Brief History." Web. 20 June 2011.  
[http://www.salemhistory.net/brief\\_history/brief\\_history.htm](http://www.salemhistory.net/brief_history/brief_history.htm)

<sup>78</sup> Mersinger, Monica. "Salem (Oregon) Online History - Brief History." Salem (Oregon) Online History- Home. Web. 01 Nov. 2010.

<sup>79</sup> Marion County Historical Society. "Brief History." Web. 20 June 2011.  
[http://www.salemhistory.net/brief\\_history/brief\\_history.htm](http://www.salemhistory.net/brief_history/brief_history.htm)

<sup>80</sup> Meyering, Joan Marie. "Salem (Oregon) Online History - Canneries." Salem (Oregon) Online History-Home. Web. 01 Nov. 2010.  
<http://www.salemhistory.net/commerce/canneries.htm>

<sup>81</sup> Oregon Employment Department: Salem MSA Nonfarm Employment (Not Seasonally Adjusted), 2010

<sup>82</sup> U.S. Census. "2002 NAICS Definitions: 311 Food Processing." Web. 23 June 2011.  
<http://www.census.gov/epcd/naics02/def/NDEF311.HTM>

with consumers.<sup>83</sup> From an economic development standpoint, food processing provides an opportunity to produce value-added products that yield higher wage jobs than other in the agriculture and food supply chain. Food processing can be divided into two categories:

- Food manufacturing includes converting starches into oils; canning or freezing fruits and vegetables; and packaging dairy products. Food manufacturing also involves the creation of end products such as bread, cookies, tortillas, condiments, and prepared meals.
- Beverage manufacturing includes the production of juices, bottled water, and carbonated beverages, in addition to the production of beer, wine, and liquor.

Food processing companies are supported by hundreds of firms that provide supplies and services to food manufacturers. In addition to food processing, the expanded food cluster includes farm production, packaging and machinery, as well as transportation and warehousing. Processed food products are sold to consumers via markets and grocery stores. The products of food processing are also sold to other companies that either rebrand the product or use the processed food as an input into another processed food item.

## National Industry Clusters

The food processing industry is dispersed across the country, with all states featuring some food production. Within each region, however, there are states that process significantly more food than others. These regional powerhouses typically dominate the national market. States with the biggest food processing industries include California in the West, Illinois in the Mid-West, Texas in the South, and New York in the North East. Leaders in the food processing industry are typically located near large agriculture regions.

## National Market Strength

In 2009, American consumers spent more than \$1.6 trillion dollars on food products at supermarkets, restaurants and convenience stores.<sup>84</sup> The gross domestic product for the national food processing industry in 2009 was \$189 billion dollars, up from \$173 billion in 2001.<sup>85</sup>

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<sup>83</sup> U.S. Bureau of Labor Statistics. "Career Guide to Industries, 2010-2011 Edition: Food Manufacturing." Web. 23 June 2011. <http://www.bls.gov/oco/cg/cgs011.htm>

<sup>84</sup> Plunkett Research, Ltd. "U.S. Food Industry Overview." Web. 23 June 2011. <http://www.plunkettresearch.com/food%20beverage%20grocery%20market%20research/industry%20statistics>

<sup>85</sup> Bureau of Economic Analysis. "Gross Domestic Product by State, 2008." Web. 23 June 2011. [http://www.bea.gov/scb/pdf/2009/06%20June/0609\\_gdp\\_state.pdf](http://www.bea.gov/scb/pdf/2009/06%20June/0609_gdp_state.pdf)

Historically, the food processing industry was characterized by regional family owned businesses. In recent years, families started selling their companies to publicly traded companies. These conglomerations, in turn, consolidated the industry, moving some operations overseas, creating a global food market.

In the United States, the food processing industry is not highly sensitive to economic conditions.<sup>86</sup> The rising demand for food correlates with population growth.<sup>87</sup> Additionally, demand for food products is inelastic,<sup>88</sup> meaning that demand for food products does not change greatly in relation to fluctuations in price. Although demand for processed foods continues to increase, technological developments that improve productivity and automate production lines limit employment growth potential.<sup>89</sup>

Nationally, over the last ten years, the number of employees decreased in both food processing and beverage manufacturing industries by 112,518 (see Table D-1 below).<sup>90</sup> While the number of food manufacturing establishments decreased from 2001 to 2009, the number of beverage establishments remained the same. During the same time, the average salary<sup>91</sup> for a food manufacturing job increased from \$31,990 to \$39,229 in 2009. In the beverage industry, the number increased from \$41,994 to \$49,513. From 2001 to 2009, the average salary in the United States increased 28 percent, while the average salary in food and beverage manufacturing only increased 20 percent. See Table D-4 on page 78 for a comparison of national, Oregon, and Salem MSA industry data.

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<sup>86</sup> U.S. Bureau of Labor Statistics. "Career Guide to Industries, 2010-2011 Edition: Food Manufacturing." Web. 23 June 2011. <http://www.bls.gov/oco/cg/cgs011.htm>

<sup>87</sup> U.S. Bureau of Labor Statistics. "Career Guide to Industries, 2010-2011 Edition: Food Manufacturing." Web. 23 June 2011. <http://www.bls.gov/oco/cg/cgs011.htm>

<sup>88</sup> Price elasticity is a "measure of the responsive demand to a change in price." If a given a change in the price of a product prompts a proportionally greater change in the quantity demanded for that product, the product is price elastic. Source: Economic Research Service. U.S. Department of Agriculture "Commodity and Food Elasticities: Glossary." 16 Sept. 2009. Web. 1 June 2010.

<sup>89</sup> U.S. Bureau of Labor Statistics. "Career Guide to Industries, 2010-2011 Edition: Food Manufacturing." Web. 23 June 2011. <http://www.bls.gov/oco/cg/cgs011.htm>

<sup>90</sup> U.S. Bureau of Labor Statistics. "Quarterly Census of Data and Wages: combined for NAICS 311 and 3121, 2009." Web. 02 March 2011.

<sup>91</sup> Throughout this profile, all salaries have been adjusted to 2010 rates by the Bureau of Labor Statistics.

**Table D-1. Food and Beverage Manufacturing in the U.S., 2001 and 2009**

<b>311 Food Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Establishments	29,947	28,278	-5.6%
Employment	1,554,605	1,449,172	-6.8%
Average Annual Wage (\$)	\$31,990	\$39,229	22.6%
<b>3121 Beverage Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Establishments	3,744	4,925	31.5%
Employment	175,451	168,366	-4.0%
Average Annual Wage (\$)	\$41,994	\$49,513	17.9%

Source: U.S. Bureau of Labor Statistics, 2001 and 2009

## Market Strength: Oregon

Oregon is home to 197 food processing companies. Concentrations of food processing firms are found in the Portland metro area, the Columbia Gorge, the Oregon Coast, and Southern Oregon.<sup>92</sup> Most of the businesses, though, are located in Willamette Valley.

Recognizing the state's concentration of food processors, Business Oregon has outlined a number of initiatives to strengthen the statewide food processing industry. These initiatives include a partnership with the Northwest Food Processor Association's (NFWPA) Education Research Institute to innovate at all levels of business, educate workers, and developing new products and business models.

From 2007 to 2009, Oregon shed 18 percent of its manufacturing jobs. Simultaneously, food manufacturing employment grew 2.6 percent.<sup>93</sup> Food manufacturing also remained fairly steady in the long run, losing less than one percent of jobs from 1990 to 2009.<sup>94</sup>

Oregon's GDP for food production in 2008 was \$1.9 billion, up 26 percent from \$1.5 billion in 2001.<sup>95</sup> As mentioned previously, the demand for food products is not elastic, meaning that the food processing industry is not as susceptible to economic cycles as many other industries.

<sup>92</sup> Business Oregon. "Food Processing." Web. 23 June 2011.  
<http://www.oregonbusinessplan.org/Industry-Clusters/About-Oregons-Industry-Clusters/Food-Processing.aspx>

<sup>93</sup> Oregon Employment Department. "Oregon's Food Manufacturing Sector: Steady Over Time." Published April 21, 2010. Web. 23 June 2011.  
[http://www.qualityinfo.org/olmisj/ArticleReader?p\\_search=food%20manufacturing&searchtech=1&itemid=00007006](http://www.qualityinfo.org/olmisj/ArticleReader?p_search=food%20manufacturing&searchtech=1&itemid=00007006)

<sup>94</sup> Oregon Employment Department. "Oregon's Food Manufacturing Sector: Steady Over Time." Published April 21, 2010. Web. 23 June 2011.  
[http://www.qualityinfo.org/olmisj/ArticleReader?p\\_search=food%20manufacturing&searchtech=1&itemid=00007006](http://www.qualityinfo.org/olmisj/ArticleReader?p_search=food%20manufacturing&searchtech=1&itemid=00007006)

<sup>95</sup> Bureau of Economic Analysis. "Gross Domestic Product by State, 2008." Web. 23 June 2011. [http://www.bea.gov/scb/pdf/2009/06%20June/0609\\_gdp\\_state.pdf](http://www.bea.gov/scb/pdf/2009/06%20June/0609_gdp_state.pdf)

Table D-2 shows that between 2001 and 2009, the food manufacturing and beverage industries grew in the state of Oregon, adding both establishments and employees. Oregon’s average annual food manufacturing salary of \$33,547 in 2009 was nearly \$6,000 below the national average. In beverage manufacturing, the difference was even more disparate. Oregon beverage makers earned nearly \$14,000 less than their national counterparts, at only \$35,558 per year.

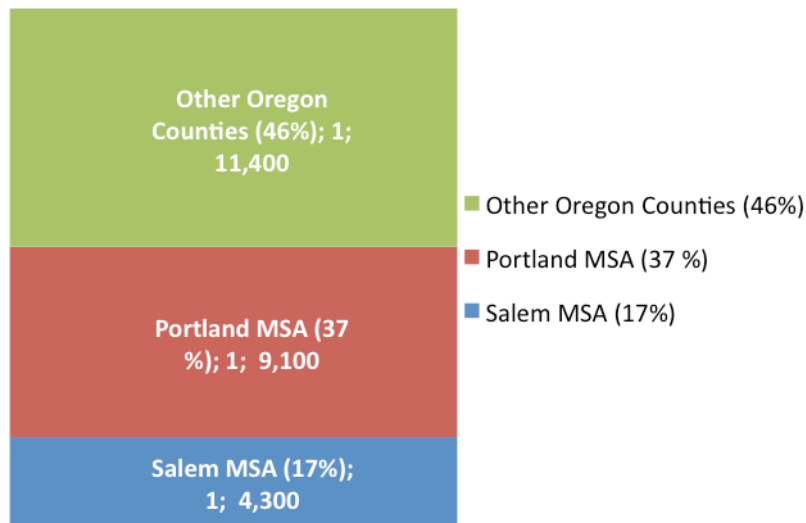
**Table D-2. Food and Beverage Manufacturing in Oregon, 2001 and 2009**

<b>311 Food Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Establishments	493	557	12.9%
Employment	22,141	23,261	5.0%
Average Annual Wage (\$)	\$27,743	\$33,547	20.9%
<b>3121 Beverage Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Establishments	114	221	93.9%
Employment	2,339	3,311	41.6%
Average Annual Wage (\$)	\$29,814	\$35,558	19.3%

Source: U.S. Bureau of Labor Statistics, 2001 and 2009

The Portland MSA has the largest share of food manufacturing employment in Oregon with 37 percent of the state's total. Salem accounts for the second largest share of employment at 17 percent of the state’s total (see Figure D-1 below).

**Figure D-1. Percentage of Food Production Employees in Oregon, 2010**



Source: Oregon Employment Department: Nonfarm Employment (Not Seasonally Adjusted), December 2010

According to the Oregon Employment Department, food manufacturing is the only manufacturing industry expected to gain employment over the next decade. Between 2008 and 2018, the number of Oregon based food

processing jobs is expected to grow 7 percent adding 1,700 jobs to the state economy.<sup>96</sup>

Five sectors make up 62.3 percent of processing sales in Oregon: frozen food manufacturing (\$1.9 billion); dairy (\$1.9 billion); fruit and vegetable canning, pickling, and drying (\$1.6 billion); breweries, wineries, and distilleries (\$1.3 billion); and bakery goods, pasta, and tortilla manufacturing (\$906 million).<sup>97</sup>

## Market Strength: Salem MSA

The Salem MSA employs 17 percent of Oregon's food processing workers and 11 percent of the state's food processing establishments (see Table D-3 below).<sup>98</sup> These companies account for about 20 percent of the statewide payroll for food processing, although the people working in this industry in the Salem area only earn 75 percent of the state average, making \$25,000 a year on average.<sup>99</sup>

In beverage processing, Salem employs 13 percent of the total beverage workers in Oregon. The average payroll in Salem is 11 percent of the state's total payroll for beverage processing. The average annual beverage salary in Marion County, \$36,343, is higher than the statewide average of \$35,558. At the same time, the average salary in Polk County is lower at \$25,616 per year.<sup>100</sup>

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<sup>96</sup> Oregon Employment Department. "Oregon's Food Manufacturing Sector: Steady Over Time." Published April 21, 2010. Web. 23 June 2011.  
[http://www.qualityinfo.org/olmisj/ArticleReader?p\\_search=food%20manufacturing&searchtech=1&itemid=00007006](http://www.qualityinfo.org/olmisj/ArticleReader?p_search=food%20manufacturing&searchtech=1&itemid=00007006)

<sup>97</sup> Oregon State University Extension Service Rural Studies Program. "Oregon Agriculture and the Economy: An update." Web. 14 February 2011.  
<http://ruralstudies.oregonstate.edu/sites/default/files/pub/pdf/OregonAgEconomyAnUpdate.pdf>

<sup>98</sup> U.S. Bureau of Labor Statistics. "Quarterly Census of Data and Wages: Combined Marion and Polk County salary data, 2009." Web. 02 March 2011.

<sup>99</sup> U.S. Bureau of Labor Statistics. "Quarterly Census of Data and Wages: Combined Marion and Polk County salary data, 2009." Web. 02 March 2011.

<sup>100</sup> U.S. Bureau of Labor Statistics. "Quarterly Census of Data and Wages: salary data for 3121 Beverage Manufacturing, 2009." Web. 02 March 2011.

**Table D-3. Food and Beverage in the Salem MSA, 2001 and 2009**

<b>311 Food Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Establishments	58	56	-3.5%
Employment	4,459	4,988	11.9%
Average Annual Wage (\$)	\$20,861	\$25,152	20.6%
<b>3121 Beverage Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Establishments	14	27	92.9%
Employment	284	420	47.9%
Average Annual Wage (\$)	\$24,878	\$30,980	24.5%

Source: U.S. Bureau of Labor Statistics, 2001 and 2009

## Industry Requirements

Key requirements for the food processing industry include access to inputs, utility costs, availability of a skilled workforce, and proximity to customer base. To understand the industry requirements for food processors, and businesses in Salem, CPW conducted a number of interviews with Salem based businesses and industry experts. CPW also referenced documentation provided by Business Oregon, North West Food Processors Association, and other published reports.

Food processing plants locate near inputs, especially agricultural producers. Proximity to major highways is an advantage for shipping. Some companies CPW interviewed reported that proximity to competition is positive because of shared workforce and cost savings related to having companies around to service food processing equipment. For example, Oregon Cherry Growers chose a location in southern Washington because it allowed them to take advantage of sharing production facilities with another company. Proximity to consumers is also a major factor for those Oregon based companies with existing plants located east of the Rockies. For example, companies in Kentucky and Wisconsin are located within a one day's drive from 60 percent of the relative country's population.

Government incentives often close the deal for opening a new plant, but they are not always a factor. Benefits from cities, counties, and states include tax incentives and tax breaks based on the number of employees.

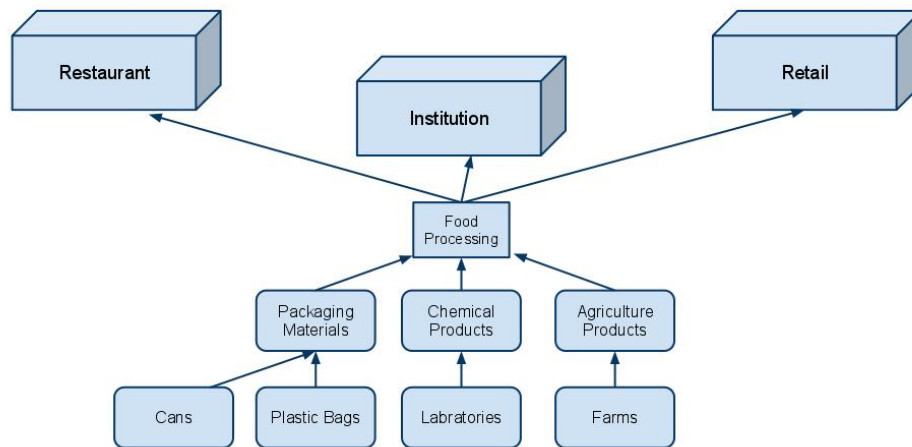
## Local Supply Chain Description

Based on interviews with local food processors, food inputs are sourced from throughout the country. Companies in the Salem MSA get some of their agricultural products from western states—California, Washington, Oregon, and Idaho. Other common inputs include water, natural gas for fryers, and ammonia for freezers. Common packaging materials include foil, glass, labels, and corrugated boxes. Proximity to inputs can be a factor. For example, there is no glass manufactured in the west, so it must be shipped from the east. Since glass is heavy, this adds a significant cost.

All of the interviewed companies produce products that are sold under their label to consumers at grocery stores and other retail locations. Some also produce ingredients for other companies like Ben & Jerry's, Sysco, and Nestle. One company has transitioned to doing most of its business in developing and manufacturing finished products sold under another company's name.

Figure D-2 below represents how a variety of production inputs come together at a food processing plant before being shipped to a variety of consumers.

**Figure D-2. Supply chain diagram for the food processing industry**



Source: CPW

## Competitive Assessment of Salem

### Advantages

Interviews with business revealed that Salem has the following competitive advantages: (1) strong support from the city of Salem; (2) relatively low cost of utilities; (3) availability of cold storage; and (3) proximity to agricultural inputs from the Willamette Valley as well as Washington, Idaho, and California.

Additionally, comparing data from Oregon State University's Oregon Agricultural Information Network (OAIN) and the Marion, Polk & Yamhill Regional Economic Profile & Strategic Assessment, there is un-tapped potential for agricultural inputs closer to Salem. Including nearby Yamhill County, the Salem MSA has over 6,850 farms, totaling more than 706,200 acres. Crops account for 83 percent of sales from this land, while livestock and poultry account for the remaining 17 percent. Half of those crop sales relate to non-food items, such as nursery and greenhouse crops. Sod and grass sales have declined in parallel to the construction industry, there is potential to convert this acreage into food production. This potential could be captured by Salem's food processing industry.



Business Oregon identified other strengths for the food processing industry in Oregon. These strengths include: (1) farmland exceeding 17.5 million acres; (2) energy management and hydro-electric infrastructure; and (3) access to the Pacific Rim via seaports.<sup>101</sup>

## Challenges

Challenges to Salem's competitiveness include (1) competition for energy supply and increasing energy prices; (2) transportation expenses, especially shipping to the population centers in the east; (3) limited fresh water supply; (4) increased regulatory environment; and (5) shortage of qualified workers to replace retiring baby boomers.<sup>102</sup>

Overall, existing food processors in Salem operate comfortably. The recent expansion of Kettle Chips suggests an ideal scenario for expansion. Recognizing that there was still growth in the market for Kettle Chips in the western United States, the company decided to expand their existing plant onto land that they already owned. Land availability and relative cost of building expansion facilities versus building a whole new plant meant that Kettle was able to move forward, increasing their output and employment by 25 percent.<sup>103</sup>

At the same time, distance from population centers and increasing wage and utility costs suggest that it is unlikely that new large food processors will open in Salem in the immediate future.

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<sup>101</sup> Business Oregon. "Food Processing." Web. 23 June 2011.  
<http://www.oregonbusinessplan.org/Industry-Clusters/About-Oregons-Industry-Clusters/Food-Processing.aspx>

<sup>102</sup> Business Oregon. "Food Processing." Web. 23 June 2011.  
<http://www.oregonbusinessplan.org/Industry-Clusters/About-Oregons-Industry-Clusters/Food-Processing.aspx>

<sup>103</sup> Interview with Kettle Chips.

**Table D-4. Food Processing Industry Data**

	National			Oregon			Salem		
	2001	2009	Percent Change	2001	2009	Percent Change	2001	2009	Percent Change
<b>311 Food Manufacturing</b>									
Establishments	29,947	28,278	-5.6%	493	557	12.9%	58	56	-3.5%
Employment	1,554,605	1,449,172	-6.8%	22,141	23,261	5.0%	4,459	4,988	11.9%
Average Annual Wage (\$)	\$31,990	\$39,229	22.6%	\$27,743	\$33,547	20.9%	\$20,861	\$25,152	20.6%

	National			Oregon			Salem		
	2001	2009	Percent Change	2001	2009	Percent Change	2001	2009	Percent Change
<b>3121 Beverage Manufacturing</b>									
Establishments	3,744	4,925	31.5%	114	221	93.9%	14	27	92.9%
Employment	175,451	168,366	-4.0%	2,339	3,311	41.6%	284	420	47.9%
Average Annual Wage (\$)	\$41,994	\$49,513	17.9%	\$29,814	\$35,558	19.3%	\$24,878	\$30,980	24.5%

Source: U.S. Bureau of Labor Statistics, 2001 and 2009

*\*All dollar amounts are adjusted for 2010 inflation.*

## APPENDIX E: BIOSCIENCES PROFILE

The biosciences are an exciting and dynamic field at the heart of an important and fast-growing new sector of the U.S. economy. As the industry expands, it has become the focus of many local, regional and state economic development strategies. This profile is intended to provide an overview of industry trends and a preliminary assessment of the viability of the bioscience industry for Salem.

### Industry Definition

The biosciences are a diverse group of industries and activities with a common link: they apply knowledge to how plants, animals, and humans function. The industry spans different markets and includes manufacturing, services, and research. The biosciences are a unique industry cluster and are constantly changing to incorporate the latest research and scientific discoveries with widespread impact on food, medicine, and the environment.<sup>104</sup>

Biosciences transcend industry classification, making the sector difficult to define and track. The existing federal industry classification system does not identify one single industry code that encompasses all bioscience activities. Therefore, defining the industry requires a careful examination of all industries engaged in bioscience-related activity. The industry is classified across 27 individual industry segments. Table E-7 on page 95 demonstrates the component industries that make up each of the four bioscience subsectors.

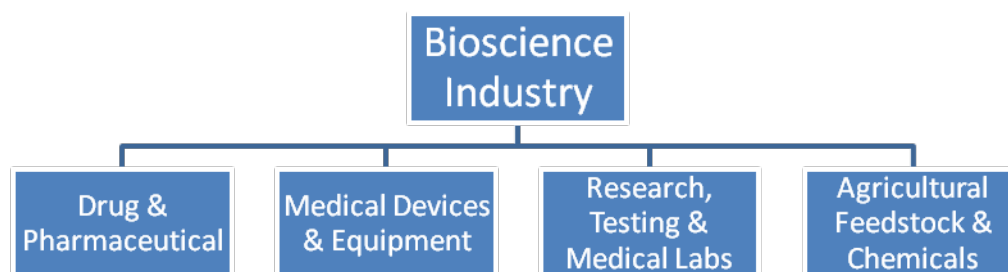
CPW identified four major subsectors that represent the core of current and likely future bioscience economic activity.<sup>105</sup> The four major subsectors of the biosciences are included in Figure E-1 below:

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<sup>104</sup> Battelle. "Battelle/BIO State Bioscience Initiatives 2010." Battelle Technology Partnership Practice. May 2010. Web. 23 June 2011.  
[http://www.bio.org/local/battelle2010/Battelle\\_Report\\_2010.pdf](http://www.bio.org/local/battelle2010/Battelle_Report_2010.pdf)

<sup>105</sup> Subsectors are derived from Battelle, an international leader in science and technology. This definition was first used to evaluate the bioscience industry on a national basis. The definition has been adopted in numerous state and regional studies. By using this definition, CPW will be able to compare the bioscience industry to other city, states and regions that rely on the definition.

**Figure E-1. Bioscience Subsectors**



Source: CPW

**Drugs and pharmaceuticals:** This bioscience sector manufactures medicinal and pharmaceutical products. Products range from anesthetics and antibiotics, to botanical extracts and cough medicine.

**Medical devices and equipment manufacturing:** This bioscience sector produces a wide range of health care products and supplies for diagnostics, surgery, patient care, and laboratories and dental supplies and equipment.

**Research, testing and medical labs:** This sector encompasses bioscience activities where human capital is a major input. Activities include biotechnology research and medical/health testing. Research includes DNA technologies, nucleic acid chemistry and protein engineering.

**Agricultural feedstock and chemicals:** Firms engaged in agricultural production and processing, organic chemical manufacturing, and fertilizer manufacturing. The subsector includes the emerging industry activity in the production of ethanol and other biofuels.

## National Industry Clusters

University research is the lifeblood that feeds the bioscience industry. The top bioscience hubs in North America have two necessary elements for industry growth: (1) strong research capacity; and (2) access to capital. The need for inter-institutional relationships within the bioscience sector has stimulated the formation of bioscience clusters.

Bioscience industries are distributed across the United States, with many states developing strong niches in certain specializations. Figure E-2 below outlines the states with large and specialized bioscience clusters. These states have an employment level that represents at least 5 percent of the U.S. total and a location quotient that meets or exceeds 1.20. A

location quotient measures the degree of job concentration within the region relative to the nation.<sup>106</sup>

**Figure E-2. States with both Large and Specialized Bioscience Subsectors, 2008**

States	Agricultural Feedstock & Chemicals	Drugs & Pharmaceuticals	Medical Devices & Equipment	Research, Testing, & Medical Laboratories
California		•	•	•
Illinois	•	•		
Indiana		•		
Iowa	•			
Massachusetts			•	•
Minnesota			•	
New Jersey		•		•
North Carolina		•		
Ohio	•			
Pennsylvania		•		•
Puerto Rico		•		
Tennessee	•			
Texas	•			

Source: Battelle Analysis of BLS, QCEW data from the Minnesota IMPLAN Group

Four states, including Illinois, Massachusetts, New Jersey, and Pennsylvania, are both large and specialized in two of the subsectors. California is the only state both large and specialized in three of the four subsectors.<sup>107</sup> It is notable that Oregon does not have a developed bioscience sector at this time.

Metropolitan Statistical Areas (MSAs) both large and small are supporting the biosciences and fostering local bioscience clusters or individual subsectors. Of the nation's 361 MSAs, 190 had an employment specialization in at least one of the four bioscience subsectors in 2008.

Metropolitan area data that measure relative employment concentration in this analysis are tabulated and presented in groups by the overall private sector employment level of the MSA. Each MSA is classified as either large, medium, or small with respect to private sector

<sup>106</sup> The LQ is the share of total regional employment in the particular industry divided by the share of total industry employment in the nation. An LQ greater than 1.0 for a particular industry indicates that the region has a greater relative concentration, whereas an LQ less than 1.0 signifies a relative underrepresentation. An LQ greater than 1.20 denotes employment concentration significantly above the national average.

<sup>107</sup> Battelle Technology Partnership Practice, "Battelle/BIO State Bioscience Initiatives 2010," Prepared for Biotechnology Industry Organization, May 2010.

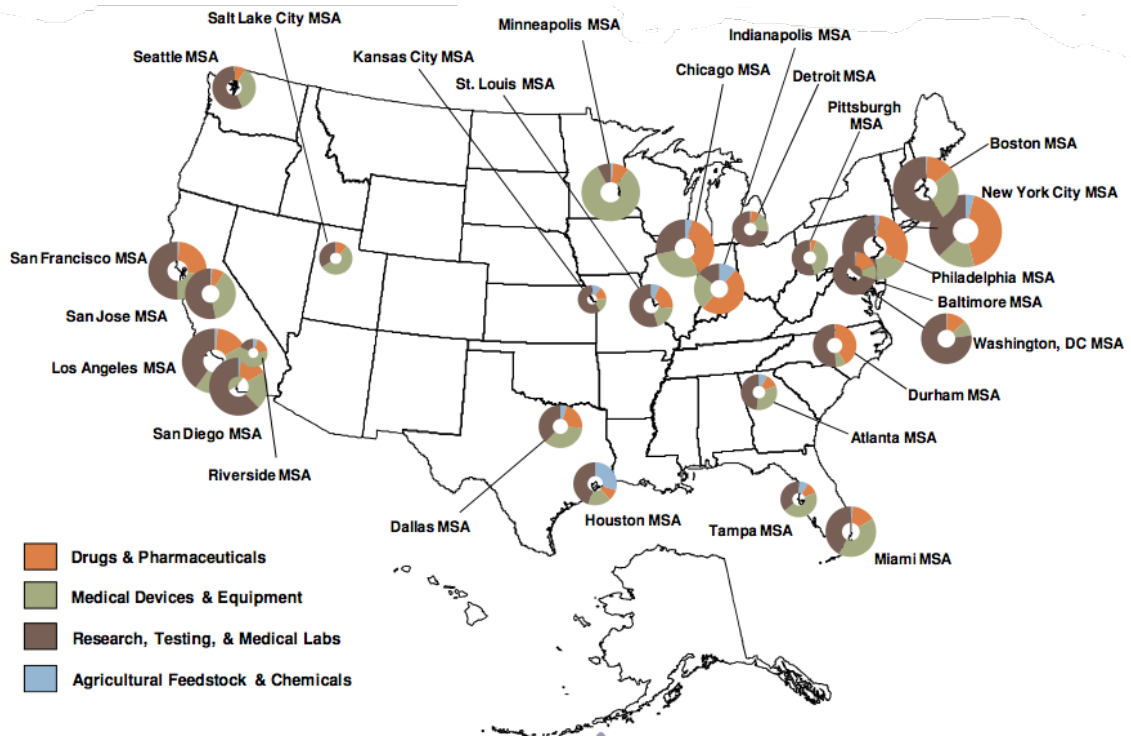
employment. A “large” MSA has total regional employment at or above 250,000. A “medium” MSA has total employment greater than or equal to 75,000, but less than 250,000. A “small” MSA has employment less than 75,000. By presenting key employment metrics among metro areas of a similar overall size, the data provide a more useful comparison.<sup>108</sup>

To measure the size, relative concentration, and overall employment impacts of the biosciences, employment, establishment, and wage data for each state and every metropolitan statistical area (MSA) were calculated for each of the four bioscience industry subsectors for 2001 and 2008. The Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) program data was used as the primary data source for this industry analysis. The QCEW provides the most accurate employment data for detailed industries at the sub-national level. Figure E-3 below provides a look at the largest 25 metropolitan areas in the biosciences in 2008.

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<sup>108</sup> Battelle Technology Partnership Practice, “Battelle/BIO State Bioscience Initiatives 2010,” Prepared for Biotechnology Industry Organization, May 2010.

**Figure E-3. The Largest 25 Metro Areas in the Biosciences, 2008**



Source: Battelle, Based off of QCEW Data

Bioscience clusters have a cumulative effect meaning that innovation generates more innovation helping clusters nationwide to become stronger with time. Bioscience research is a fundamental role in advancing these industries. Much of this research takes place at medical schools and other research institutions with substantial assistance of public funding from the National Institute of Health (NIH). As shown in Figure D-3 above, the bioscience clusters nationwide tend to locate near top higher education institutions and research centers.

When NIH funds are not available, venture capital becomes a critical element. Venture capital fosters entrepreneurship and investment for bioscience companies. The availability of a highly skilled workforce with advanced degrees in management, biochemistry, molecular biology, engineering and research science is also a key component to growing the bioscience industry.<sup>109</sup>

<sup>109</sup> Cortright, et al. "Signs of Life: The Growth of Biotechnology Centers in the U.S." The Brookings Institution Center on Urban and Metropolitan Policy, January 2001.

## National Market Strength

The outlook for the bioscience industry is very positive. The markets will be driven by a confluence of political and demographic trends—most notably population growth, an aging population, and globalization. The U.S. Department of Labor projects that the biosciences will grow at an average annual rate of 1.5 percent between 2008 and 2018, making it one of the fastest-growing industry sectors in the nation. By comparison, private sector employment is projected to grow by an average annual rate of only one percent during this time period.<sup>110</sup>

The expanding footprint of the biosciences is evident through the number of individual business establishments across the United States. Bioscience companies in 2008 operated 47,593 establishments across the country. Establishment totals in the biosciences have steadily increased, with growth of more than 28 percent between 2001 and 2008 (see Table E-1 below for details).

Bioscience employment growth greatly outpaced national employment growth from 2001 to 2008. The bioscience industry added 1,420,324 jobs in 2008, at a robust growth rate of 15.8 percent. This rapid rate of job growth was 4.5 times as much as the overall growth rate for the national private sector. During the first year of the recession in 2007, employment in the bioscience industry grew 1.4 percent, while total private sector employment declined by 0.7 percent.<sup>111</sup>

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<sup>110</sup> Battelle. "Battelle/BIO State Bioscience Initiatives 2010." Battelle Technology Partnership Practice. May 2010. Web. 23 June 2011.  
[http://www.bio.org/local/battelle2010/Battelle\\_Report\\_2010.pdf](http://www.bio.org/local/battelle2010/Battelle_Report_2010.pdf)

<sup>111</sup> Battelle, Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)



**Table E-1. Bioscience Industry in the U.S., 2001 and 2008**

<b>Drugs &amp; Pharmaceuticals</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	2,604	2,771	6.4%
Employment	304,869	311,882	2.3%
Average Annual Wage	ND	\$93,378	ND
<b>Medical Devices &amp; Equipment</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	15,166	15,227	0.4%
Employment	426,970	435,509	2.0%
Average Annual Wage	ND	\$63,606	ND
<b>Research, Testing &amp; Medical Laboratories</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	17,219	27,154	57.7%
Employment	382,026	558,140	46.1%
Average Annual Wage	ND	\$80,785	ND
<b>Agricultural Feedstock &amp; Chemicals</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	2,103	2,440	16.0%
Employment	112,653	114,793	1.9%
Average Annual Wage	ND	\$72,279	ND
<b>Total Bioscience Industry</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	37,092	47,592	28.3%
Employment	1,226,518	1,420,324	15.8%
Average Annual Wage	ND	\$45,229	ND

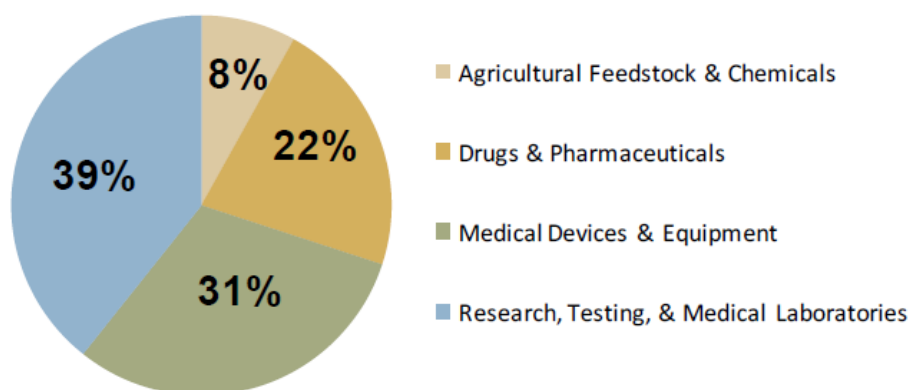
Source: Battelle, Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

Figure E-4 below outlines research, testing, and medical labs account for the highest portion of the industry, at 39 percent of total employment. Agricultural feedstock and chemicals account for 8 percent; drugs and pharmaceuticals accounts for 22 percent; and medical device and equipment accounts for 31 percent.<sup>112</sup>

<sup>112</sup> Battelle. "Battelle/BIO State Bioscience Initiatives 2010." Battelle Technology Partnership Practice. May 2010. Web. 23 June 2011.  
[http://www.bio.org/local/battelle2010/Battelle\\_Report\\_2010.pdf](http://www.bio.org/local/battelle2010/Battelle_Report_2010.pdf)

**Figure E-4. Bioscience Industry Employment by Subsector, 2008**

Source:



Battelle

### RESEARCH, TESTING, AND MEDICAL LABORATORIES

The research, testing, and medical laboratories sector is the largest of the four U.S. bioscience subsectors (see Table D-1 above). This sector has continuously grown since 2001 adding more than 176,000 jobs, or 46.1 percent, to its employment base from 2001 to 2008. Companies that provide R&D and lab services play a pivotal role in breakthrough research and the development of new products. This subsector does not engage in manufacturing specific products. When new products are developed and successfully commercialized, they often move out of the subsector by classification and into drugs and pharmaceuticals. California, with just over 100,000 jobs, has the most jobs in the subsector, followed by Massachusetts, and Pennsylvania.

### MEDICAL DEVICES AND EQUIPMENT

The national medical devices and equipment subsector represents nearly one-third of U.S. bioscience employment in 2008, with 435,509 jobs (see Table D-1 above). After the 2001 recession and three years of job loss, the subsector has grown steadily since 2004, increasing its employment base by nearly six percent or an average annual growth rate of 1.5 percent. Among the component manufacturing industries in the medical devices and equipment subsector, surgical and medical instruments, surgical appliances and supplies, and electro-medical apparatus producers have led job growth from 2004 to 2008. Medical device production is widespread with establishments in every state. The top 10 employer states account for 59 percent of the national subsector. Eight states—Minnesota, Indiana, Iowa, Florida, Oregon, North Carolina, Arizona, and Colorado, and Puerto Rico—have contributed the largest employment gains (more than 1,000 jobs each over a seven year period 2001-2008).<sup>113</sup>

<sup>113</sup> Battelle. "Battelle/BIO State Bioscience Initiatives 2010." Battelle Technology Partnership Practice. May 2010. Web. 23 June 2011.  
[http://www.bio.org/local/battelle2010/Battelle\\_Report\\_2010.pdf](http://www.bio.org/local/battelle2010/Battelle_Report_2010.pdf)

## DRUGS AND PHARMACEUTICALS

The drugs and pharmaceuticals sector was the only subsector to lose jobs between 2001 and 2008. The decline occurred between 2006 and 2008 and declined from 24 percent of its share of the national bioscience employment in 2006 to 22 percent in 2008. The majority of jobs in drugs and pharmaceuticals are in the large pharmaceutical preparation manufacturing industry. Drugs and pharmaceuticals represent the highest average wage among the four major subsectors with firms paying its U.S. workers more than \$93,000 on average in 2008 (see Table E-1 above). Industrial activity is more highly concentrated among fewer states than the other biosciences subsectors. California and New Jersey combine to make up more than one-quarter of national pharmaceutical employment.

## AGRICULTURAL FEEDSTOCK AND CHEMICALS

Agricultural feedstock and chemicals represent eight percent of the nation's bioscience jobs and employed 114,793 in 2008 (see Table D-1 above). Firms had strong momentum entering the recent recession and expanded their workforce even through the first year of the recession. Tennessee, Iowa, New Jersey, and Nebraska, were the only states to experience large employment increases (more than 1,000 jobs). The total jobs increased 1.9 percent overall since 2001. The subsector is often referred to as the "agbiosciences" because the major components of the agricultural bioscience subsector consist of agricultural feedstock and organic and agricultural chemicals. The chemicals component is much larger and has been the recent driver of job gains, particularly in the production of ethanol and biofuels.

### National Wages

The bioscience sector continues to be a source of high-wage jobs. The overall bioscience sector paid average annual wages of \$77,595<sup>114</sup> in 2008. The wage premium in the biosciences reflects a highly skilled workforce, and the strong demand for these workers in the U.S. On average, bioscience jobs paid \$32,366 more than the average annual of the total U.S. private sector, which was \$45,229 in 2008. Bioscience wages also outpace the national private sector in growth. Since 2001, earnings for biosciences industry workers have increased by 10.1 percent, compared with 3.1 percent for the U.S. private sector.<sup>115</sup>

### Performance Metrics

Beyond measurements in employment, establishment, and wage data, there are additional performance metrics used to assess the strength of the biosciences industry. The metrics include total National Institute of

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<sup>114</sup> Throughout this profile, all salaries have been adjusted to 2010 rates by the Bureau of Labor Statistics.

<sup>115</sup> Battelle Technology Partnership Practice, "Battelle/BIO State Bioscience Initiatives 2010," Prepared for Biotechnology Industry Organization, May 2010.

Health (NIH) funding, clinical trial activities, degrees awarded by higher education institutions in bioscience-related fields, venture capital investments in bioscience companies, and bioscience-related patents “invented” within the state.

Table E-2 below summarizes the performance metrics for Oregon compared to the U.S. total. Funding from the National Institute of Health is well concentrated in Oregon with per capita figures that are above average. During the last six years, \$109 million in venture capital was invested in Oregon bioscience companies. The 879 bioscience patents issued over the same six-year period were well diversified across the subsectors.

**Table E-2. Summary of State Performance in Bioscience-Related Metrics**

	Oregon	United States	% of Total	Oregon Rank*
NIH Funding, 2009	\$336,385	\$25,837,590	1.30%	21
Clinical Trials, 2009	334	5,299	6.30%	24
Higher Education Degrees in Bioscience Fields, 2008	1,869	161,811	1.20%	30
Bioscience Venture Capital Investments, 2004-2009 (\$ millions)	\$108	\$60,099		33
Bioscience & Related Patents, 2004-2009	879	75,593	1.20%	27

Source: Battelle<sup>116</sup> \*State rankings 1-52

## Funding

Despite robust growth in the bioscience industry, there are clear warning signs of threats to future bioscience industry development. Without the infusion of stimulus funding, the National Institutes of Health recorded a decline in additional research funding of \$1.7 billion or 7.5 percent from 2008 to 2009. The boost of \$4.4 billion in stimulus funding was very important and allowed NIH research funding to grow significantly in 2008. On the other hand, venture capital to bioscience companies fell a dramatic 36.7 percent between 2008 and 2009, from \$12.3 billion to \$7.8 billion.

## Market Strength: Oregon

The State of Oregon Economic and Community Development Department has adopted a “cluster-based strategy” as a means to promote economic

<sup>116</sup> NIH Funding: National Institutes of Health, Office of Extramural Research, Award Trends Dollars Awarded by State, 2004 and 2009. Clinical Trials: National Institutes of Health, Clinicaltrials.gov, trials that were initiated in 2009. Higher Education Degrees: National Center for Educational Statistics, Integrated Postsecondary Education Data System, 2008. Venture Capital: Thomson Reuters’ VentureXpert Database, 2004-2009. Patents: U.S. Patent & Trademark Office.

development throughout the state. Bioscience is identified as a high technology cluster in the 2011 Oregon Business Plan. Cluster specific priorities include improvement to local funding for seed, early- and later-stage companies.

The Oregon Business Plan strives to increase the University impact on Bioscience Industry Development. To achieve this, Oregon will (1) address the gaps of managerial talent and top scientific talent; (2) recruit research staff for relevant bioscience programs; (3) expand the Health Science Professional Management certificates available from Oregon University System; (4) ensure that there is a Biotech Management option in MBA programs within the Oregon University System; and (5) create an executive level Bioscience Mentoring Program.

Additional cluster specific priorities contain the enhancement of state bioscience industry infrastructure through a system of incubators with wet laboratory space. Concurrently with enhanced infrastructure, the coordination of incentives for private developers to build wet laboratory and clean room space.

The statewide bioscience initiative contributes to Oregon's strength in the biosciences industry. Oregon has seen positive growth across all four industry subsectors. The number of private bioscience establishments increased by 14.9 percent in Oregon between 2001 and 2008 (see Table E-3).

The largest bioscience subsector in Oregon is medical devices and equipment, which added 5,565 jobs between 2001 and 2008, or a 10.5 percent increase. Drugs and pharmaceuticals lost three establishments, a 7.9 decrease between 2001 and 2008. However, employment increased 13.7 percent, which alludes to the larger national trend that the big companies keep getting bigger. Research, testing and laboratories showed positive growth that can be attributed to additional academic research and development in the form of National Institutes of Health (NIH) funding. The agriculture feedstock and chemicals subsector displayed tremendous growth. Employment more than doubled from 352 in 2001 to 718 in 2008.

**Table E-3. Bioscience Industry in Oregon, 2001 and 2008**

<b>Drugs &amp; Pharmaceuticals</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	38	35	-7.9%
Employment	765	870	13.7%
Average Annual Wage	ND	\$39,762	ND
<b>Medical Devices &amp; Equipment</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	267	295	10.5%
Employment	4,197	5,565	32.6%
Average Annual Wage	ND	\$53,126	ND
<b>Research, Testing &amp; Medical Laboratories</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	219	311	42.0%
Employment	2,832	4,126	45.7%
Average Annual Wage	ND	\$63,129	ND
<b>Agricultural Feedstock &amp; Chemicals</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	19	38	100.0%
Employment	352	718	104.0%
Average Annual Wage	ND	\$59,446	ND
<b>Total Bioscience Industry</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	109,800	126,121	14.9%
Employment	1,332,484	1,437,750	7.9%
Average Annual Wage	ND	\$39,972	ND

Source: Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

Although Oregon is not a powerhouse in the bioscience industry, positive growth in all four industry subsectors validates a watchful eye on the biosciences.

### **Market Strength: Salem MSA**

Overall the bioscience industry grew 84.9 percent between 2001 and 2008 in the Salem MSA. The Salem MSA shows activity in two of the four bioscience industry subsectors. Medical devices and equipment added 104 jobs, or 49 percent between 2001 and 2008. During that time, the Salem MSA added just one establishment. Average annual wages are lower than the state average at \$40,353, however above the Salem MSA average annual family wage of \$33,172 (see details in Table E-4 below).

Research, testing and medical laboratories more than doubled the number of jobs from 173 to 396 between 2001 and 2008. The number of establishments increased from 21 to 34 or 62% during the same time period. In keeping with the high wage theme of bioscience jobs, research, testing and medical laboratory jobs paid an average annual wage of \$52,239 in 2008 (see Table E-4 below).

Please see Table E-8 on page 96 for a comparison of national, state and local bioscience industry data.

**Table E-4. Bioscience Industry in Salem MSA, 2001 and 2008**

<b>Drugs &amp; Pharmaceuticals</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	ND	ND	ND
Employment	ND	ND	ND
Average Annual Wage	ND	ND	ND
<b>Medical Devices &amp; Equipment</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	24	25	4.2%
Employment	212	316	49.1%
Average Annual Wage	\$38,079	\$40,353	6.0%
<b>Research, Testing &amp; Medical Laboratories</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	21	34	61.9%
Employment	173	396	128.9%
Average Annual Wage	\$44,039	\$52,239	18.6%
<b>Agricultural Feedstock &amp; Chemicals</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	ND	ND	ND
Employment	ND	ND	ND
Average Annual Wage	ND	ND	ND
<b>Total Bioscience Industry</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	45	59	31.1%
Employment	385	712	84.9%
Average Annual Wage	\$41,059	\$46,296	12.8%

Source: Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW). ND: not-disc losable data does not meet BLS or State agency disclosure standards.

Agricultural feedstock and chemicals and drugs and pharmaceuticals displayed “Not Disclosable” (ND) – data, which indicates that the data does not meet BLS or State agency disclosure standards.

It is noteworthy that one of the eight NAICS codes, 32531 within the agricultural feedstock and chemicals subsector did display activity in Marion County with a positive increase from 2001 and 2008. The 32531 NAICS code includes nitrogenous fertilizer manufacturing, phosphatic fertilizer manufacturing and fertilizer (mixing only) manufacturing.

**Table E-5. Agriculture Feedstock and Chemicals, Marion County**

<b>32531 Fertilizer Manufacturing</b>	<b>2001</b>	<b>2008</b>	<b>Percent Change</b>
Establishments	3	5	66.7%
Employment	53	75	41.5%
Average Annual Wage	\$32,178	\$44,977	39.8%

Source: Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW).

## **Industry Requirements**

### **Research and Development**

Bioscience research is a fundamental role in advancing the biosciences. Much of this research takes place at medical schools and other research institutions with substantial assistance of public funding from the National Institute of Health (NIH). There is an increasingly important need for inter-institutional relationships within the bioscience industry. When NIH funds are not available, venture capital and angel investors becomes a critical element. Venture capital and angel investors foster entrepreneurship and investment for bioscience companies.

### **State Initiatives**

The bioscience industry is still in its infancy. State and national policymakers play a key role in encouraging the growth of the bioscience industry. State and regional investments in bioscience development initiatives will be required to build the infrastructure of this new industry.

### **High Skilled Workforce**

The availability of a highly skilled workforce with advanced degrees in management, biochemistry, molecular biology, engineering, and research science is also a key component to growing the bioscience industry. In addition bioscience talent needs reassurance that there are other opportunities in the surrounding area because of the risky nature of startup companies.

### **Quality of Life**

Through an interview with the Seattle Economic Development Department, CPW discovered that quality of life issues are important to bioscience talent. A highly skilled workforce looks for excellent school systems in which to send their children. Employees in the biosciences relocating for a job are commonly moving with a spouse with an advanced degree, which makes opportunities for the spouse important.

### **Land Use**

Zoning and specific land use issues for wet laboratory and clean room space helps to facilitate the creation of the bioscience building infrastructure. Similarly, developer incentives are an important tool to



create wet laboratory and clean room space. Another way to assist developers is through urban renewal funds and local improvement districts.

## **Current Industry-Related Legislation**

Government policy plays an important role in almost every stage of the bioscience industry. Laws governing intellectual property and reimbursement profoundly affect the bioscience industry.

The ability of bioscience firms to promote and sell product hinges upon legislation and the protection of intellectual property. The U.S. patent policy is set by Congress and administered by the U.S. Patent and Trademark Office. Global complications of patent law are relevant because interpretations of the World Trade Organization's *Agreement on Trade Related Aspects of Intellectual Property Rights*.<sup>117</sup>

Most bioscience products cannot be offered for sale unless their safety and efficacy have been approved by the Food and Drug Administration (FDA). The FDA also regulates the conditions for manufacturing pharmaceuticals and for advertising them to consumers.

Finally, even after a bioscience firm succeeds in getting its product approved by the FDA, there is no guarantee that the product will be successful on the market. Securing coverage by Medicare is the single highest priority in the payment strategy for the drug. Since Medicare accounts for more than 40 percent of U.S. healthcare spending and a significant part of the federal program, Medicare is the driver when it comes to determining reimbursement.<sup>118</sup> Healthcare reform will be a significant game changer in the future and it remains unclear what impact legislation will have on the industry.

## **Competitive Assessment of Salem**

A comparison of the advantages and disadvantages of the bioscience industry in Salem is outlined in Table E-6 below.

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<sup>117</sup> Loeffler, Alicia, et al, "The Future of the Biomedical Industry in an Era of Globalization, Kellogg School of Management at Northwestern University, 2005.

<sup>118</sup> Loeffler, Alicia, et al, "The Future of the Biomedical Industry in an Era of Globalization, Kellogg School of Management at Northwestern University, 2005.

**Table E-6. Salem’s Competitive Advantages and Disadvantages for Bioscience**

Advantages	Disadvantages
Salem is at the hub of the wheel between the state’s research institutions.	No large higher education or medical research institution in the Salem MSA.
Salem has an availability of land to build out wet laboratory and cleanroom space.	The biosciences like to cluster in a campus like setting.
Positive medical device and equipment subsector growth.	Lack of a highly skilled workforce in the Salem MSA.
Positive research, testing and medical laboratories subsector growth.	

Source: Community Planning Workshop

Salem should play to its strategic geographic location. With Oregon Health and Science University (OSHU) located to the north, the University of Oregon anchoring the south and Oregon State University (OSU) in the middle, Salem is strategically located in the middle and along the major I5 corridor.

Positive growth in two of the four subsectors (Medical Devices and Equipment and Research, Testing, and Medical Laboratories) indicates a bioscience presence in the Salem MSA and thus some building blocks are in place to grow, recruit, and retain these businesses.

The challenges for Salem include the lack of a big research institution located in the Salem MSA and that there is no established bioscience cluster. Because bioscience companies like to cluster around higher education research institutions Salem does not have a clear competitive advantage. However, the strong national and state market outlooks are too large to ignore. Salem will bode well by keeping their finger on the pulse of Oregon state bioscience initiatives to leverage their strategic location.

**Table E-7. Bioscience Industry NAICS Codes**

NAICS Code	NAICS Description
<b>AGRICULTURAL FEEDSTOCK &amp; CHEMICALS</b>	
311221	Wet corn milling
311222	Soybean processing
311223	Other oilseed processing
325193	Ethyl alcohol manufacturing
325199	All other basic organic chemical manufacturing
325221	Cellulosic organic fiber manufacturing
325311	Nitrogenous fertilizer manufacturing
325312	Phosphatic fertilizer manufacturing
325314	Fertilizer (mixing only) manufacturing
325320	Pesticide and other agricultural chemical manufacturing
<b>DRUGS &amp; PHARMACEUTICALS</b>	
325411	Medicinal and botanical manufacturing
325412	Pharmaceutical preparation manufacturing
325413	In-vitro diagnostic substance manufacturing
325414	Biological product (except diagnostic) manufacturing
<b>MEDICAL DEVICES &amp; EQUIPMENT</b>	
334510	Electromedical apparatus manufacturing
334516	Analytical laboratory instrument manufacturing
334517	Irradiation apparatus manufacturing
339112	Surgical and medical instrument manufacturing
339113	Surgical appliance and supplies manufacturing
339114	Dental equipment and supplies manufacturing
339115	Ophthalmic goods manufacturing
339116	Dental laboratories
<b>RESEARCH, TESTING, &amp; MEDICAL LABORATORIES</b>	
541380*	Testing laboratories
541711	R&D in biotechnology
541712*	R&D in the physical, engineering, and life sciences (except biotech)
621511	Medical laboratories
621512	Diagnostic imaging centers

\*Includes only a portion of these industries engaged in relevant life-science research and testing activities

Source: Battelle

**Table E-8. Bioscience Industry Data**

	National			Oregon			Salem		
	2001	2008	Percent Change	2001	2008	Percent Change	2001	2008	Percent Change
<b>Drugs &amp; Pharmaceuticals</b>									
Establishments	2,604	2,771	6.4%	38	35	-7.9%	ND	ND	ND
Employment	304,869	311,882	2.3%	765	870	13.7%	ND	ND	ND
Average Annual Wage	ND	\$93,378	ND	ND	\$39,762	ND	ND	ND	ND

	National			Oregon			Salem		
	2001	2008	Percent Change	2001	2008	Percent Change	2001	2008	Percent Change
<b>Medical Devices &amp; Equipment</b>									
Establishments	15,166	15,227	0.4%	267	295	10.5%	24	25	4.2%
Employment	426,970	435,509	2.0%	4,197	5,565	32.6%	212	316	49.1%
Average Annual Wage	ND	\$63,606	ND	ND	\$53,126	ND	\$38,079	\$40,353	6.0%

	National			Oregon			Salem		
	2001	2008	Percent Change	2001	2008	Percent Change	2001	2008	Percent Change
<b>Research, Testing &amp; Medical Laboratories</b>									
Establishments	17,219	27,154	57.7%	219	311	42.0%	21	34	61.9%
Employment	382,026	558,140	46.1%	2,832	4,126	45.7%	173	396	128.9%
Average Annual Wage	ND	\$80,785	ND	ND	\$63,129	ND	\$44,039	\$52,239	18.6%

	National			Oregon			Salem		
	2001	2008	Percent Change	2001	2008	Percent Change	2001	2008	Percent Change
<b>Agricultural Feedstock &amp; Chemicals</b>									
Establishments	2,103	2,440	16.0%	19	38	100.0%	ND	ND	ND
Employment	112,653	114,793	1.9%	352	718	104.0%	ND	ND	ND
Average Annual Wage	ND	\$72,279	ND	ND	\$59,446	ND	ND	ND	ND

Source: Employment, Establishment, and Wage Data: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW)

# APPENDIX F: METAL MANUFACTURING

## INDUSTRY PROFILE

Appendix F provides a detailed industry profile for the metal manufacturing industry.

### Context: History

Oregon's long history in the metal manufacturing industry provides valuable insight into the strength of the market in Salem. Manufacturing was first seen in Salem in the mid-1800s before Oregon became a member of the United States in 1859. This coincided with community development of public schools, churches, and formalized agriculture operations.<sup>119</sup> The expansion of transportation and a steamboat, the Hoosier, in the mid-1900s helped facilitate manufacturing operations in the state of Oregon.

Many metal manufacturing companies, such as Schnitzer Steel, Pacific Metal, and West Salem Machinery, have been in business since the 1800s. These long-lasting companies have adapted to the local economy and general market trends over time to stay afloat. For instance, Schnitzer Steel began in 1906 as a one-man operation buying and selling scrap metal. The founder, Sam Schnitzer, settled in Portland, where his business developed over five generations.

Pacific Metal Corporation began in 1976 in San Francisco, where Fredrick Morrow and his partner started selling solder (Babbit metal) and type metal. The business flourished, and expanded to Portland in 1883 when the City's first transcontinental rail was built. Imports of steel sheets, tin, lead, zinc and sheet copper were received from places like England, Wales, China, Malaysia, Australia, and Belgium. At this time, metal was not imported nationally. When aluminum became popular, the company switched its operational focus. Aluminum-based manufacturing still comprises about 40 percent of Pacific Metal Corporation's business. Due to expanding demands for metal products from customers, technological advances like precision shears and saws were used to provide expeditious delivery of products to customers.<sup>120</sup> The ability of metal manufacturing companies to adapt to changing market conditions is a trend a general trend of the metal manufacturing industry in the greater Pacific Northwest.

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<sup>119</sup> Salem Online History, "A Brief History," Salem Public Library, [http://www.salemhistory.net/brief\\_history/brief\\_history.htm](http://www.salemhistory.net/brief_history/brief_history.htm) (2005-2006).

<sup>120</sup> Pacific Metal Co. Reliance Steel & Aluminum Co. Accessed February 2011. <http://www.pacificmetal.com/Stockbook/GenInfo/HistHm.htm>.

## Industry Definition

According to the United States Department of Labor, manufacturing industries are “establishments engaged in the mechanical or chemical transformation of materials or substances into new products.”<sup>121</sup> Metal manufacturing in particular is the process of transforming raw metallic material into products partially or wholly comprised of metal.

The general term ‘metal manufacturing’ accounts for hundreds of industries that involve some type of manufactured metal, depending on the type of metal and the type of construction activity being performed. The two major metal manufacturing groups analyzed for the purpose of this profile are Primary Metal Products (NAICS 331) and Fabricated Metal Products (NAICS 332).

Subsectors within primary metal manufacturing include smelting and refining ferrous and nonferrous metal, alloying metal, castings, manufacturing nails and spikes.<sup>122</sup> Subsectors of Fabricated Metal Products include Ferrous and Nonferrous Metal Foundry Products.<sup>123</sup>

Ferrous product manufacturing (NAICS 33151) activities include casting metal made from iron and steel or in consolidated secondary smelting or casting plants.<sup>124</sup> Nonferrous product manufacturing (NAICS 33152) activities include melting and pouring nonferrous metals into molds to make castings. Materials primarily used include copper, aluminum, titanium, magnesium, and zinc. Aluminum in particular is the most used nonferrous metal, encompassing 70 percent of national industry sales.<sup>125</sup>

## National Industry Clusters

Metal manufacturing predominates in the Great Lakes region where coal, iron ore and copper are most plentiful. The water system also serves as a useful transportation network for heavy loads. Much of the United States-based automotive industry is therefore found in the Great Lakes region.<sup>126</sup>

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<sup>121</sup> United States Department of Labor. *Occupational Safety and Health Information*. Washington, D.C. [http://www.osha.gov/pls/imis/sic\\_manual.display?id=4&tab=division](http://www.osha.gov/pls/imis/sic_manual.display?id=4&tab=division) (2010).

<sup>122</sup> United States Department of Labor. (2010) “Occupational Safety and Health Information.” Washington, D.C. Web. 14 June 2011. [http://www.osha.gov/pls/imis/sic\\_manual.display?id=26&tab=group](http://www.osha.gov/pls/imis/sic_manual.display?id=26&tab=group).

<sup>123</sup> Subsectors range from NAICS code 3312 to 3399.

<sup>124</sup> IBISWorld. (December 2010) “Ferrous Metal Foundry Products in the US Industry Report: 33151” IBISWorld Industry Report.

<sup>125</sup> IBISWorld. (January 2011) “Aluminum Manufacturing in the US: 33131” IBISWorld Industry Report.

<sup>126</sup> IBISWorld. (October 2010) “Iron & Steel Manufacturing in the US: 33111” IBISWorld Industry Report.

The Great Lakes region accounts for approximately 48.3 percent of the Iron and Steel Manufacturing industry in the U.S. Within this region, Indiana produces 29 percent of the iron and steel, and Ohio produces 10 percent.<sup>127</sup> The Mid-Atlantic and Southeast regions also accounts for significant amounts of iron ore and pig iron production, (at 16.4 percent and 19.6 percent of national raw steel production respectively).

## National Market Strength

The United States is the largest overall manufacturing economy in the world with 21 percent of the total GDP. Japan is the second largest (13 percent), and China is third largest (12 percent). This applies to manufacturing in general, which encompasses metal manufacturing.

The global economic crisis in 2008 caused revenue in Iron and Steel Manufacturing to drop 43.8 percent by 2009. This is largely associated with a loss in revenue from the construction and automotive manufacturing industries, which are crucial buying industries for metal manufacturing, especially steel and iron. In 2009, the recession slowed the growth of these industries, which led to a significant decline in revenue. However, demand is improving. Due to global demand for steel, steel prices are projected to increase annually 2.7 percent from 2009 to 2015. The increased steel price makes it more costly to manufacture steel products, which implies an escalation of returns for manufacturers.<sup>128</sup>

Table F-1 below shows national industry data for Primary Metal Manufacturing and Fabricated Metal. The data includes changes in the number of employees, establishments, wages (in thousands) and average pay from 2001 to 2009. Findings demonstrate that although the number of establishments and employment decreased, wages increased significantly. See Table F-4 on page 106 for a compilation of national, state, and local data.

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<sup>127</sup> IBISWorld. (October 2010) "Iron & Steel Manufacturing in the US: 33111" IBISWorld Industry Report.

<sup>128</sup> IBISWorld. (October 2010) "Iron & Steel Manufacturing in the US: 33111" IBISWorld Industry Report.

**Table F-1. Metal Manufacturing in the U.S., 2001 and 2009**

<b>331 Primary Metal Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Employees	569,917	363,744	-36.2%
Establishments	6,412	5,924	-7.6%
Wages (In Thousands)	\$25,658,854	\$19,862,170	-22.6%
Average Pay	\$45,022	\$54,605	21.3%
<b>332 Fabricated Metal Product Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Employees	1,668,100	1,305,488	-21.7%
Establishments	63,820	60,108	-5.8%
Wages (In Thousands)	\$62,471,979	\$72,722,388	16.4%
Average Pay	\$37,451	\$46,788	24.9%

Source: Bureau of Labor Statistics, 2010, Quarterly Census of Employment and Wages

## **Market Strength: Oregon**

Metal manufacturing is noted as a priority industry in the 2010 Oregon Business Plan (the Plan). The Plan recognizes the following strengths for metal manufacturing in Oregon:

- Close proximity to the coast allows for accessible importing of raw materials and exporting of manufactured finished products. This is considered a unique benefit compared to other regions.
- A diverse array of unique niche companies has anchored in Oregon.
- Historically, Oregon's workers' compensation costs and wages are lower than California's.

The Plan identifies Oregon Manufacturing Extension Partnership (OMEP) and Manufacturing 21 Coalition (MFG-21) as main organizations that support manufacturing development. OMEP is a non-profit organization that concentrates efforts on fostering growth of small businesses to increase competition. MFG 21 is a private-public advocacy organization that focuses on the manufacturing economy in Oregon and Southwest Washington.<sup>129</sup>

As of 2008, the metal manufacturing industry in Oregon had declined since its highest point in the 1990s. Despite the decline, metal manufacturing in Oregon continues to provide stable employment for over 8,000 workers in the primary metal industry and about 17,000 workers in the fabricated metal industry.<sup>130</sup>

<sup>129</sup> Oregon Business Plan. 2010. <http://www.oregonbusinessplan.org/Industry-Clusters/About-Oregons-Industry-Clusters/Manufacturing.aspx>.

<sup>130</sup> Summers, Will. (March, 2010) "Metal Manufacturing: 'Old Economy' Still Producing Job Opportunities." Oregon Employment Department. Web. 19 March 2011. <http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00004689#Table 1>.



According to the Oregon Employment Department, by 2014 Primary Metal and Fabricated Metal are expected to grow 9 percent, creating roughly 4,000 jobs based on projected market demand for manufactured metal products. In addition, based on Portland metro region statistical data, the average age for a Portland metro region metalworker is 47 years old.<sup>131</sup> On this basis, new (and presumably younger) metalworkers will replace retirees, assuming training is a requirement for metalworking positions.

Table F-2 below provides Primary Metal Manufacturing and Fabricated Metal Product Manufacturing industry trends for the State of Oregon. Similar to national trends, the average number of establishments and employment rate for both Primary and Fabricated Metal Product Manufacturing has decreased substantially, but the average annual wage has increased.

**Table F-2. Metal Manufacturing in Oregon, 2001 and 2009**

<b>331 Primary Metal Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Employees	9,583	8,115	-15.3%
Establishments	78	66	-15.4%
Wages (In Thousands)	\$469,223	\$482,469	2.8%
Average Pay	\$48,965	\$59,452	21.4%
<b>332 Fabricated Metal Product Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Employees	16,775	13,971	-16.7%
Establishments	965	915	-5.2%
Wages (In Thousands)	\$589,159	\$608,252	3.2%
Average Pay	\$35,122	\$43,536	24.0%

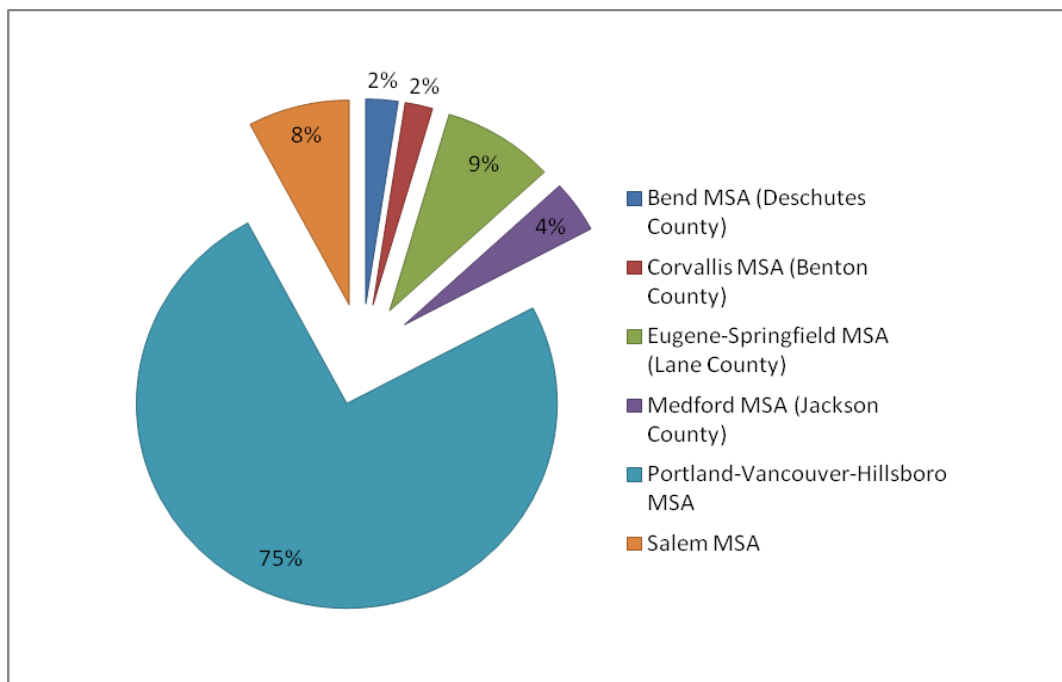
Source: Bureau of Labor Statistics, 2010, Quarterly Census of Employment and Wages

Oregon has 5,632 manufacturing companies total. Of the state of Oregon's top 10 manufacturing sectors that in total encompass 90 percent of total manufacturing, Primary Metal Products encompasses 1.5 percent and Fabricated Metal Products encompasses 1.3 percent. This provides a clear picture of the size of the manufacturing industry in Oregon. Figure F-1 below indicates that the Portland-Vancouver-Hillsboro MSA accounts for the largest percentage of metal manufacturing employment in the state.<sup>132</sup>

<sup>131</sup> Ibid.

<sup>132</sup> Oregon Employment Department. Geographic Profile of Manufacturing Employment (2010)  
<http://www.qualityinfo.org/olmisj/CES?action=geog&series=300000000&submit=Continue>

**Figure F-1. Oregon Manufacturing Employment, 2010**



Source: Oregon Employment Department, Geographic Profile of Manufacturing Employment

Oregon's largest metal manufacturing companies include Cascade Rolling Mills (produces steel mill products in McMinnville), Columbia Steel Casting (a steel foundry in Portland), and Consolidated Metco (an aluminum foundry in Clackamas).<sup>133</sup>

### **Market Strength: Salem MSA**

Marion, Polk and Yamhill Counties' Regional Economic Profile and Strategic Assessment concentrates on five industry clusters that are seen as most competitive in the area.<sup>134</sup> Of the five industry clusters, metals, machinery and equipment is described as an industry with potential for future growth in the region. The report details factors that affect the region's market economy. Within the Regional Economic Profile and Strategic Assessment, noteworthy strengths of metal manufacturing in Oregon include natural resource availability, the presence of distinct small business innovations, and populated areas with available industrial land.

Other strengths detailed in the report include: (1) access to I-5 allows businesses to reach customers in the West; (2) Marion-Polk-Yamhill

<sup>133</sup> Summers, Will. (March, 2010) "Metal Manufacturing: 'Old Economy' Still Producing Job Opportunities." Oregon Employment Department. Web. 19 March 2011. <http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00004689#Table 1>.

<sup>14</sup> E.D. Hovee & Company, LLC. (2007) "Marion, Polk, and Yamhill Counties Regional Economic Profile & Strategic Assessment," 37 and 57.

regional location is central to the state, which is a favorable access point to surrounding areas; and (3) land availability in Oregon is a regional strength. These strengths will be expanded upon in the Industry Requirements section below.

The metal manufacturing industry in Salem MSA is also characterized by local market conditions. Table F-3 below provides Primary Metal Manufacturing and Fabricated Metal Product Manufacturing industry data for Salem MSA. The number of Primary Metal Manufacturing establishments increased 12.5 percent from 2001 to 2009. However, employment has drastically decreased by 72 percent. In comparison, Fabricated Metal Product Manufacturing establishments have decreased by 2 percent and employment has decreased by 37 percent.

**Table F-3. Metal Manufacturing in the Salem MSA, 2001 and 2009**

<b>331 Primary Metal Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Employees	108	30*	-72.20%
Establishments	8	9	12.50%
Wages (In Thousands)	ND	ND	ND
Average Pay	ND	ND	ND
<b>332 Fabricated Metal Product Manufacturing</b>	<b>2001</b>	<b>2009</b>	<b>Percent Change</b>
Employees	1,718	1,081	-37.10%
Establishments	81	79	-2.50%
Wages (In Thousands)	ND	ND	ND
Average Pay	ND	ND	ND

\* = Based on 2001-2008 because 2009 is not available

ND = Not disclosable (data does not meet BLS or State agency disclosure standards)

Source: Qualityinfo.org, 2010

## Industry Requirements

Metal manufacturing site requirements depend on a number of factors, including the type of manufacturing facility and size of the company.

Based on interviews conducted with metal manufacturers in Oregon, larger companies with an expansive customer base tend to transport manufactured products locally, nationally, and in some cases internationally. For instance, Pacific Metal is a metal distributor that transports over 85,000 different products globally. The company has over 25 plants but only two are located in Oregon. For these specific sites, interstate access is a key component to manufacturing operations.

Transportation logistics are important to the metal manufacturing industry. Interviews conducted with metal manufacturers and metal distributors in Oregon noted that rail connection is presently not a primary concern, but access to interstate is vital for local businesses, such as Pacific Metal, which has about 2,500 to 3,000 active customers along I-

5. However, this is dependent on the location of customers and whether they were most accessible via interstate. This presumes that if the location of rail connections was more conducive to the customer-base, and less conducive for interstate, rail connection would be favorable.

The type of manufacturing facility determines the needs for natural resource requirements, including access to natural resources (water, natural gas for heating and cooling, and electricity). Based on interviews with local metal manufacturing companies, these site requirements are important on some level, however most interviewees noted that City regulations for the use of natural resources, especially the consumption of water, are the most important factors impacting operating costs.

The presence of a local industry cluster, particularly for RV frames, is found to be another important industry requirement for some metal manufacturing companies. For instance, Zieman Manufacturing Company in McMinnville assembles fabricated metal machine parts and RV frames. The hub of their businesses is located in Indiana, but because there is also a strong cluster of machine parts manufacturing in the Pacific Northwest as well as a strong customer base, the company is able to thrive here.

## **Current Industry-Related Legislation & Regulation**

In 2010, Oregon legislation introduced Bill 2696 regarding scrap metal, stating that a record must be kept of scrap metal business transactions between companies at the time and place of contract, and should be licensed and photographed for documentation, among other requirements (ORS 165.107, section 5, chapter 56 Oregon Laws 2010).<sup>135</sup> This may imply past business deals concerning scrap metal in the state have not been documented, meaning there may have been inaccurate data collection in the past.

## **Competitive Assessment of Salem**

### **Local Workforce Program**

A growing demand exists for a skilled workforce within the manufacturing industry, and in particular for metal manufacturing. Strategic Economic Development Corporation's (SEDCOR) Industrial Maintenance Operator/Mechanic (IMOM) program meets this need by providing a training program partnered with Chemeketa Community College Center for Business and Industry (CCBI) that intends to serve the Mid-Willamette Valley.<sup>136</sup> The program is partnered with Portland General Electric (PGE) and EDGE Business Incubator Program to prepare students for

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<sup>135</sup> State of Oregon. (2011) "House Bill 2696." Web. 22 June 2011.  
[landru.leg.state.or.us/11reg/measpdf/hb2600.dir/hb2696.a.pdf](http://landru.leg.state.or.us/11reg/measpdf/hb2600.dir/hb2696.a.pdf)

<sup>136</sup> SEDCOR. (2011) Web. 2 February 2011.  
<http://www.sedcor.com/pages/newspress.html>.

employment in the local metal manufacturing industry as well as related sectors.

Given the need for a skilled workforce, the IMOM program serves a valuable service for the local economy, manufacturing organizations, potential employees and employers. By increasing the local availability of skilled workers, it provides employment opportunities. Increased employment expands the capabilities of State manufacturing companies, and overall this trend benefits Salem’s competitive advantage.

In addition to IMOM, the Metals Industry Consortium, staffed by Worksystems, Inc., is an alliance of local manufacturing employers, state and city economic development experts.<sup>137</sup> In reaction to a growing need for a skilled workforce in industrial manufacturing, the Metals Industry Consortium supports strengthening workforce training facilities, such as a Northwest Center for Advanced Manufacturing, which is envisioned to be a “one-stop location for workforce training, applied research and development, and business support services for manufacturing clusters in the region.”<sup>138</sup>

### **Prominent Trends**

The most notable trend demonstrated by the history of Pacific Metal and Schnitzer Steel companies is that the metal-based organizations have largely changed overtime. Reasons for change depend on metal demand, technological innovations, expansion of services, and adaption to the market. This is generally characteristic of many metal-manufacturing businesses in the industry, in which the companies that have survived or thrived overtime have done so by adapting. This trend suggests that opportunity exists for these industries to link in to the emerging renewable energy industries, particularly in small parts manufacturing for the wind industry and solar rack manufacturing for the solar industry.

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<sup>137</sup> Portland Development Commission. May 2005. Accessed March 2011  
<http://www.pdc.us/new/releases/2005/0509.asp>

<sup>138</sup> E.D. Hovee & Company, LLC. Marion, Polk, and Yamhill Counties Regional Economic Profile & Strategic Assessment (58). 2007.

**Table F-4. Metal Manufacturing in the U.S., Oregon and the Salem MSA, 2001 and 2009**

	National			Oregon			Salem		
	2001	2009	Percent Change	2001	2009	Percent Change	2001	2009	Percent Change
<b>331 Primary Metal Manufacturing</b>									
Employees	569,917	363,744	-36.2%	9,583	8,115	-15.3%	108	30*	-72.20%
Establishments	6,412	5,924	-7.6%	78	66	-15.4%	8	9	12.50%
Wages (In Thousands)	\$25,658,854	\$19,862,170	-22.6%	\$469,223	\$482,469	2.8%	ND	ND	ND
Average Pay	\$45,022	\$54,605	21.3%	\$48,965	\$59,452	21.4%	ND	ND	ND

	National			Oregon			Salem		
	2001	2009	Percent Change	2001	2009	Percent Change	2001	2009	Percent Change
<b>332 Fabricated Metal Product Manufacturing</b>									
Employees	1,668,100	1,305,488	-21.7%	9,583	8,115	-15.3%	1,718	1,081	-37.10%
Establishments	63,820	60,108	-5.8%	78	66	-15.4%	81	79	-2.50%
Wages (In Thousands)	\$62,471,979	\$72,722,388	16.4%	\$469,223	\$482,469	2.8%	ND	ND	ND
Average Pay	\$37,451	\$46,788	24.9%	\$48,965	\$59,452	21.4%	ND	ND	ND

Source: Bureau of Labor Statistics, 2010, Quarterly Census of Employment and Wages

# APPENDIX G: RENEWABLE ENERGY INDUSTRY

## PROFILE

Appendix G provides a detailed industry profile for the renewable energy industry.

### Context: Key Conclusions

Based on expert interviews and renewable energy industry reports, CPW found that Salem has the most potential in expanding renewable energy support industries in solar, wind, and biomass. Potential business growth exists in manufacturing replacement and upgrade parts for wind turbines, manufacturing parts for anaerobic digesters, and expanded manufacturing of solar products. Industry opportunities in biofuels, tidal, and geothermal appear less promising as these industries are either less established or key technology components have not yet been commercialized. Opportunities in renewable energy production are limited because Salem lacks necessary renewable energy sources. Moreover, research and development is limited without a major research university within the city. Based on these findings, CPW focused its research on manufacturing and installation opportunities in the wind, solar and biomass industries.

### Tidal

The tidal energy industry is still in the research and development stage. While a test site is currently being installed in Reedsport, Oregon, it is uncertain when the technology will be commercialized. CPW suggests that Salem monitor the development of the tidal energy industry for opportunities in the future. With ideal shores for tidal energy production and Oregon State University's (OSU) largest wave energy laboratory in the world, Oregon is well positioned to capitalize on this market. Salem should establish strategic relationships with OSU and others to capitalize on future opportunity in the tidal energy market (see Appendix L for a list of contacts).

### Biofuels

Opportunities in new feedstocks of biofuels are limited to research and development because new biofuel technologies have not been commercialized. This field is moving away from food sources such as corn and soy products, moving towards cellulosic and algae sources. Cellulosic and algae-based biofuels are still in the research and development phase and have not yet been mass produced. The future of the biofuels market is uncertain and therefore CPW has left this sector out of this profile. Other more established feedstock sources such as wood are considered within the biomass sections of this report.

## Geothermal

The geothermal industry has not taken off as much as other renewable energy production technologies due to the cost of installation. According to an interview with Oregon Department of Energy (ODOE), installation of geothermal electricity plants are typically more expensive than installation of wind farms and solar energy farms and therefore have been less competitive. Geothermal sites in Oregon capable of producing electrical energy are not as abundant as sites suitable for wind energy production. Moreover, controversy over the siting of geothermal plants in Oregon public forests has stalled projects in the past. Based on these findings, CPW determined that the opportunity for geothermal in Salem is limited.

The remainder of this profile focuses on the potential of the wind, solar and biomass manufacturing and installation sectors in Salem.

## Framework for Renewable Energy Discussion

### Renewable Energy Defined

Renewable energy is energy produced by sources that are naturally replenished such as sunlight, wind, rivers and tides. The U.S Department of Energy defines five categories of renewable energy sources: biomass, hydropower, geothermal, wind and solar.<sup>139</sup> The renewable energy industry spans a vast number of fields including electricity production and distribution, manufacturing, research and development, engineering, and construction trades.

### Policy Framework

The renewable energy industry is growing due to strong national and state policies and a growing concern for global warming.<sup>140</sup> At the national level, the 2009 American Recovery and Reinvestment Act (ARRA) is a driving factor of growth in the U.S. renewable energy industry. The following are two pertinent ARRA incentives for renewable energy businesses in the U.S.:

- Production Tax Credit (PTC) offers tax credits from 1 cent to 2.1 cents per kilowatt hour of energy produced from renewable sources.

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<sup>139</sup> U.S. Energy Information Administration. Energy Sources Renewable. Web. 18 January 2010 <[http://tonto.eia.doe.gov/kids/energy.cfm?page=renewable\\_home-basics](http://tonto.eia.doe.gov/kids/energy.cfm?page=renewable_home-basics)>.

<sup>140</sup> U.S. Energy Information Administration. (August 2010) Renewable Energy Annual 2008. Washington, DC.



- The Business Energy Investment Tax Credit (BEITC) offers solar and wind projects a 30 percent tax credit and geothermal projects a 10 percent tax credit.<sup>141</sup>

Several states have passed Renewable Portfolio Standards (RPS's). RPS's mandate that a certain percentage of total energy consumption comes from renewable sources. Currently 38 states have RPS's, which has helped to develop a guaranteed customer base.<sup>142</sup>

States are also offering a number of incentives for renewable energy companies.<sup>143</sup> Property tax exemptions for renewable energy businesses exist in 34 states.<sup>144</sup> Twenty-four states offer tax credits to renewable energy businesses, 21 of which also offer property tax exemptions.<sup>145</sup>

Business Oregon, Oregon's economic development arm, defined the renewable energy industry as a priority in the 2011 Oregon Business Plan. Specifically, statewide initiatives target the solar, wind, and wave industries. Strategies that cut across all sectors include extending the state's Business Energy Tax Credit (BETC) until 2016 and increasing access to capital for related manufacturing and installation. For the solar industry, Business Oregon proposes a streamlined, on-line permitting process as well as increased private-sector participation in workforce development programs. Business Oregon's strategies for the wind industry include working with local manufacturers to create a supply chain to support the wind industry. Other relevant targeted sectors include electric vehicle industry, green-building, and energy efficiency sectors.

Oregon's BETC is a prominent incentive to attract renewable energy businesses to Oregon. Companies can receive a tax credit for up to fifty percent of eligible project costs. Eligible costs include high efficiency combined heat and power, renewable energy resource generation, and renewable energy resource equipment manufacturing facilities.<sup>146</sup>

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<sup>141</sup> DSIRE. "Federal Incentives/Policies for Renewables and Efficiency." DSIREusa.org. Database of State Incentives for Renewables and Efficiency, December 2010. Web. 30 Jan 2011.

<sup>142</sup> U.S. Energy Information Administration. (August 2010) Renewable Energy Annual 2008. Washington, DC.

<sup>143</sup> DSIRE. "Tax Credits For Renewables." DSIREusa.org. Database of State Incentives for Renewables and Efficiency, December 2010. Web. 30 Jan 2011.

<sup>144</sup> DSIRE, . "Property Tax Incentives For Renewables." DSIREusa.org. Database of State Incentives for Renewables and Efficiency, December 2010. Web. 30 Jan 2011.

<sup>145</sup> DSIRE. "Tax Credits For Renewables." DSIREusa.org. Database of State Incentives for Renewables and Efficiency, December 2010. Web. 30 Jan 2011.

<sup>146</sup> Oregon Department of Energy. "Business Energy Tax Credit." Oregon.gov. Web. 20 January 2010. <http://www.oregon.gov/ENERGY/CONS/BUS/BETC.shtml>

Strong policies in support of renewable energy are important factors that enable renewable energy production to compete with oil and coal energy production. Currently energy produced by oil and coal are significantly less expensive than renewable energy sources.<sup>147</sup> From an expert interview, CPW found that natural gas and coal energy are produced at 5 cents a kilowatt while wind is 8 cents a kilowatt and solar is 10 cents a kilowatt.

Oregon is also actively targeting global markets. In a recent press release, Governor Kitzhaber emphasized the need for Oregon businesses to expand sales to Asian markets.<sup>148</sup> Economic development representatives from Oregon met with SANYO Electric Logistics Co. Ltd about establishing more operations in Oregon.<sup>149</sup> SANYO already has a plant in Salem that makes wafers for photovoltaic panels (PVs).

## Methodology

The information in this profile is based on renewable energy industry documents written at the national and state level, IBIS reports, interviews, and data from the Bureau of Labor Statistics (BLS). The BLS uses industry codes provided by the North American Industry Classification System (NAICS) to supply labor data by industry.

NAICS has not exclusively classified business segments in the renewable energy industry and therefore the industry looks larger than it is. For instance, the industry code for electrical contractors and other wiring installation encompasses solar installation but also includes other services unrelated to solar installation.

Solar manufacturing and solar installation are both made up of two industry codes. CPW aggregated these codes to describe each sector as a whole. This methodology was taken from a study on New York's clean energy labor development.<sup>150</sup> CPW defined the renewable industries using the following NAICS codes:

Solar Manufacturing:

- 334-Computer and Electronic Product Manufacturing
- 335-Electrical Equipment, Appliance, and Component Manufacturing

Solar Installation:

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<sup>147</sup> IBISWorld. (2010) "Wind Power Generation in the US." *IBISWorld*, 1-32.

<sup>148</sup> IBISWorld. (2011) "Kitzhaber Wants Boost in Asian Trade." *Portland Business Journal*.

<sup>149</sup> IBISWorld. (2011) "Kitzhaber Wants Boost in Asian Trade." *Portland Business Journal*.

<sup>150</sup> Joseph, Anthony and Frank Surdey. "New York State's Clean Energy Industry: Labor Market and Workforce Development Intelligence." Office of Workforce Policy, Innovation and Improvement New York State Department of Labor. (2009): 1-20.

- 23821-Electrical Contractors and Other Wiring Installation
- 23822-Plumbing, Heating, and Air-conditioning Contractors
- 23816-Roofing Contractors

Wind Manufacturing:

- 333611-Turbine and Turbine Generator Set Units Manufacturing

Wind Installation:

- 237130-Alternative Energy Structure Construction

The biomass industry is particularly difficult to define using NAICS codes because it encompasses a number of different technologies. Biomass refers to any energy generation coming from biological organisms. This can include biofuels made from corn, soy, and other crops as well as algae.<sup>151</sup> It also includes technology in anaerobic digestion which uses second hand waste materials such as wood by-products and even plastic bottles to create energy.<sup>152</sup> A final major technology is in co-generation plants. These plants take external byproducts of waste streams and turn them into electricity. For example, cogeneration technology is being used at waste sites where the methane gasses created by the decomposing waste is captured and turned into electricity.<sup>153</sup> CPW therefore did not include data on the biomass industry in this profile.

## National Industry Clusters

Renewable energy companies tend to locate in states that have policies that benefit the industry, strong research institutions, and a history in the energy field. Figure G-1 shows a concentration of renewable energy companies in the Northeastern United States, California and Florida. States with the highest number of renewable energy businesses are Massachusetts, Texas, New York, California, and Florida.<sup>154</sup> There is a direct correlation between the location of renewable energy industries and prominent research universities.

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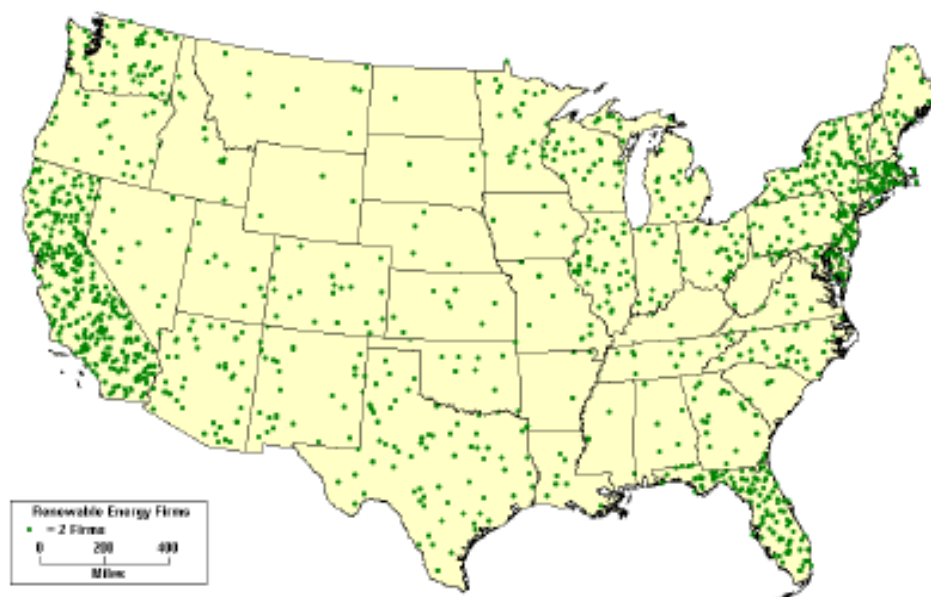
<sup>151</sup> Acore. (2010) "U.S. Renewable Energy Quarterly Report." American Council on Renewable Energy, 1-20.

<sup>152</sup> Acore. (2010) "U.S. Renewable Energy Quarterly Report." American Council on Renewable Energy, 1-20.

<sup>153</sup> Acore. (2010) "U.S. Renewable Energy Quarterly Report." American Council on Renewable Energy, 1-20.

<sup>154</sup> David, Levy and David Terkla. (2006) Massachusetts' Clean Energy Cluster. University of Massachusetts, Boston, 7.

**Figure G-1. Distribution of Renewable Energy Businesses in the U.S., 2006**



Source: University of Massachusetts<sup>155</sup>

## Wind Clusters

Germany dominates the wind turbine manufacturing sector, employing an estimated 100,000 employees. The U.S. is close behind Germany with 85,000 wind turbine manufacturing employees.<sup>156</sup> China is gaining ground in wind turbine manufacturing, growing at an estimated annual rate of 39 percent.<sup>157</sup>

In the U.S., Texas, California, New York and Ohio employ the highest number of wind turbine manufacturing professionals.<sup>158</sup> Texas has one of the largest capacities for wind generation and the largest number of wind turbine businesses.<sup>159</sup> According to expert interviews, businesses such as parts producers, installers, and maintenance businesses locate closely to the wind farms. Research and development firms in the wind industry tend to locate closely to research institutions.

<sup>155</sup> David, Levy and David Terkla. (2006) Massachusetts' Clean Energy Cluster. University of Massachusetts, Boston, 7.

<sup>156</sup> Global Wind Energy Council. Regions. Global Wind Energy Council.net (2010) 7 March 2011. <http://www.gwec.net/index.php?id=9>.

<sup>157</sup> Global Wind Energy Council. Regions. Global Wind Energy Council.net (2010) 7 March 2011. <http://www.gwec.net/index.php?id=9>.

<sup>158</sup> Sterzinger, George and Matt Svrcek. (2004) "Wind Turbine Development: Location of Manufacturing Activity." Renewable Energy Policy Project, 1-66.

<sup>159</sup> IBISWorld. (2010) "Wind Power Generation in the US." IBISWorld, 1-32.

## Solar Clusters

Solar manufacturing companies tend to locate in states with generous incentives. In the U.S., solar manufacturing companies are concentrated in the Great Lakes Region, California, Arizona, and Oregon.<sup>160</sup> In the Great Lakes region, policies have been geared towards attracting solar manufacturing to revamp their economy after the significant loss in auto manufacturing jobs.<sup>161</sup> California and Arizona's prominent solar energy production sector has prompted the growth in solar manufacturing companies. Market demand from California combined with tax incentives and low labor costs have made Oregon an attractive location for solar manufacturing. Solar manufacturing companies in Oregon capitalize on the California market, while benefitting from lower manufacturing costs.

## National Market Strength

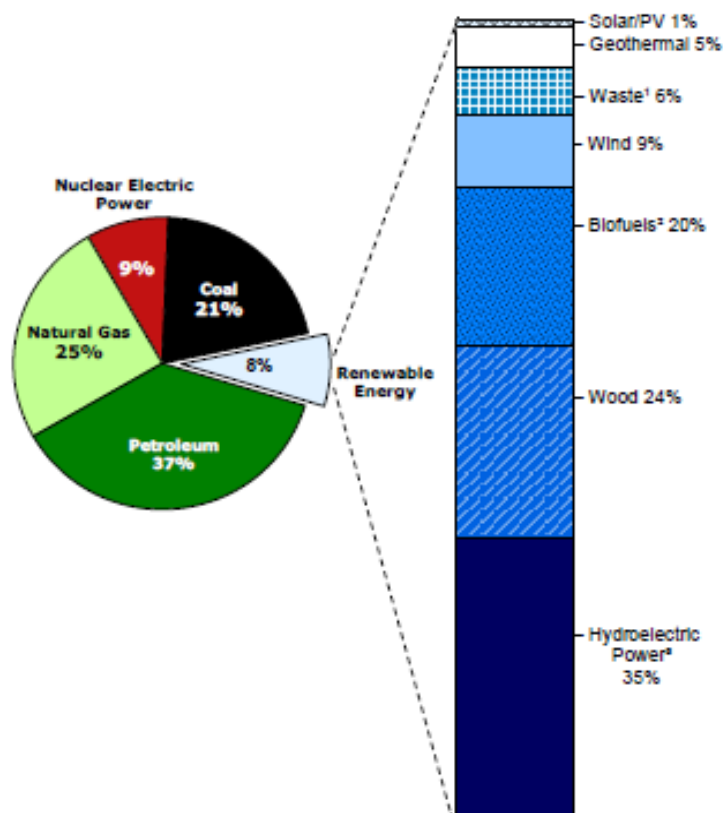
In 2009, renewable energy supplied eight percent of the U.S. total power usage. Figure G-2 below provides a breakdown of the renewable energy sources in the U.S.

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<sup>160</sup> Molvai, Justin. "Solar Power Panels and Solar Power Cells Manufacturing in the US." *IBISWorld*. (2010): 1-32.

<sup>161</sup> Molvai, Justin. "Solar Power Panels and Solar Power Cells Manufacturing in the US." *IBISWorld*. (2010): 1-32.

Figure G-2. Energy Production by Source in the U.S., 2009



Source: U.S. Energy Information Administration / Annual Energy Review 2009

Total revenue for the renewable energy industry is expected to more than double 2007 levels by 2017, making it a \$250 billion dollar industry in the United States.<sup>162</sup> All sectors of the renewable energy industry are expected to grow faster than the national economy.<sup>163</sup>

## Wind

Wind power generation and wind turbine manufacturing are expected to grow quickly. Wind power generation capacity is expected to grow 11.5 percent annually between 2010 and 2015.<sup>164</sup> Wind turbine manufacturing will benefit from the increased demand of wind generated electricity and is expected to grow 2.6 percent annually from 2011 to 2016.<sup>165</sup> U.S. wind turbine and parts manufacturing in 2010 generated \$13 billion in revenue and profited \$1 billion.<sup>166</sup>

<sup>162</sup> Mackower, Joel, Ron Pernick and Wilder Click. (2008) Energy Trends 2008. CleanEdge.

<sup>163</sup> DSIRE. (2010) "Tax Credits For Renewables." DSIREusa.org. Database of State Incentives for Renewables and Efficiency, December 2010. Web. 30 Jan 2011.

<sup>164</sup> IBISWorld. (2010) "Wind Power Generation in the US." IBISWorld, 1-32.

<sup>165</sup> IBISWorld. (2011) "Wind Turbine Manufacturing in the US." IBISWorld, 1-26.

<sup>166</sup> U.S. Energy Information Administration. (August 2010) Renewable Energy Annual 2008. Washington, DC.

Wind turbine and parts manufacturing in the U.S. grew rapidly between 2001 and 2009. Table G-1 shows that the number of employees increased 15 percent, while the number of establishments increased 30 percent nationally. Average annual pay increased 21 percent.<sup>167</sup> In comparison, the national average wage increased 28 percent during that same time period.<sup>168</sup>

**Table G-1. Manufacturing of Wind Generation Equipment in the U.S., 2001 and 2009**

	2001	2009	Percent Change
Employees	22,612	26,093	15.4%
Establishments	215	279	30.0%
Wages (In Thousands)	\$1,453,775	\$2,029,884	40.0%
Average Pay	\$64,293	\$77,794	21.0%

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

Table G-2 shows that the number of establishments for wind installation only increased 1 percent between 2001 and 2009. Average annual pay increased by 45 percent, suggesting continued growth and demand for skilled workers in this field. Despite these increases, the number of employees dropped by 4 percent.

**Table G-2. Wind Installation in the U.S., 2001 and 2009**

	2001	2009	Percent Change
Employees	137,289	132,052	-4.0%
Establishments	7756	7850	1.0%
Wages (In Thousands)	\$5,596,471	\$7,801,643	39.0%
Average Pay	\$40,764	\$59,080	45.0%

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

Economists from IBIS World project an increase in wind installation over the next two years. Thereafter installation will continue to increase but at a lower rate. This is due to infrastructure of transmission lines lagging behind the demand for wind.<sup>169</sup> Without adequate transmissions lines, the power generated by wind farms will not make it to market.

## Solar

In the U.S., solar panel manufacturing and solar power generation are expected to grow quickly. The solar power generation of Mega Watts

<sup>167</sup> Not inflation adjusted.

<sup>168</sup> Bureau of Labor Statistics. "Occupational Employment Statistics: May 2009 National Occupational Employment and Wage Estimates, United States" and "Occupational Employment Statistics: 2001 National Occupational Employment and Wage Estimates, United States." Web. 23 February 2011.  
[http://www.bls.gov/oes/current/oes\\_nat.htm#00-0000](http://www.bls.gov/oes/current/oes_nat.htm#00-0000).

<sup>169</sup> IBISWorld. (2010) "Wind Power Generation in the US." *IBISWorld*, 1-32.

(MW) grew by 37 percent annually between 2004 and 2009 in the US.<sup>170</sup> Nationally, solar power generation in 2010 generated \$57 million in revenue and \$7.4 million in profit.<sup>171</sup> The industry is expected to grow 5.7 percent annually from 2010 to 2015.<sup>172</sup> Solar manufacturing will be directly affected by the increase in solar power generation. Solar manufacturing is projected to grow annually at 10.2 percent from 2010 to 2015.<sup>173</sup> In 2010 the solar manufacturing industry generated \$3 billion in revenue and profited \$150.7 million.<sup>174</sup>

Although the solar manufacturing industry is expected to grow, there has been a dip in the market. According to interviews with experts in the field, a shortage of polysilicon in 2008, a key ingredient in solar panel manufacturing, caused a jump in prices and a decline in manufacturing. Moreover, in 2008, China began aggressively pursuing solar panel manufacturing. Competition among solar manufacturing companies worldwide has therefore increased significantly. Table G-3 shows that total number of employees decreased by 35 percent and total number of establishments decreased by 14 percent. Despite this lag in solar manufacturing, average pay of employees increased by 33 percent, outpacing the national average by 5 percent.<sup>175</sup>

**Table G-3. Solar Manufacturing in the U.S., 2001 and 2009**

	2001	2009	Percent Change
Employees	2,300,147	1,503,954	-35.0%
Establishments	30333	26220	-14.0%
Wages (In Thousands)	\$135,294,750	\$116,552,032	-14.0%
Average Pay	\$52,515	\$69,631	33.0%

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

Solar installation companies have remained more stable than solar manufacturing. Table G-4 shows that from 2001 to 2009, the number of solar installation establishments fell by 27 percent while number of employees remained the same. Average pay increased at a lower rate

<sup>170</sup> Acore. (2010) "U.S. Renewable Energy Quarterly Report." American Council on Renewable Energy, 1-20.

<sup>171</sup> IBISWorld. (2010) "Solar Power Generation in the US." IBISWorld, 1-30.

<sup>172</sup> IBISWorld. (2010) "Wind Power Generation in the US." IBISWorld, 1-32.

<sup>173</sup> IBISWorld. (2010) "Solar Power Panels and Solar Cells Manufacturing in the US." *IBISWorld*, 1-31.

<sup>174</sup> IBISWorld. (2011) "Wind Turbine Manufacturing in the US." IBISWorld, 1-26.

<sup>175</sup> Bureau of Labor Statistics. "Occupational Employment Statistics: May 2009 National Occupational Employment and Wage Estimates, United States" and "Occupational Employment Statistics: 2001 National Occupational Employment and Wage Estimates, United States." [http://www.bls.gov/oes/current/oes\\_nat.htm#00-0000](http://www.bls.gov/oes/current/oes_nat.htm#00-0000).



than manufacturing, at only 26 percent. Solar installation is made up of traditional construction trades, which considerably affected by the recession. Thus the health of the industry is significant given that the rest of the construction industry is down.

**Table G-4. Solar Installation in the U.S., 2001 and 2009**

	2001	2009	Percent Change
Employees	1,011,265	1,012,683	0.0%
Establishments	167784	121710	-27.0%
Wages (Total Thousands)	\$37,914,429	\$48,161,952	27.0%
Average Pay	\$34,718	\$43,804	26.0%

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

## Biomass

Over 10GW of biomass energy generation capacity exists in the U.S. Sources include landfills, municipal solid waste, woody biomass and other biomass sources. Woody biomass is gaining market interest for direct combustion co-firing coal plants. This is particularly true in the Northwest and South East U.S. due to availability of forestlands.<sup>176</sup>

Biofuels continue to supply a sizeable portion of our energy consumption. There is a movement away from corn-based ethanol and biodiesel from vegetable oils towards cellulosic biofuels. Cellulosic refineries are being set up to demonstrate the scale-up process. Another round of biofuel research is already underway. DOE and companies such as Exxon and BP have invested in algae biofuel start-ups in the US. It is expected that there will be continued support for advanced biofuels in both meeting aggressive renewable fuels standards and address energy security.<sup>177</sup>

## Market Strength: Oregon

Oregon has an abundance of renewable energy sources and ranks third in capacity for renewable energy generation in the U.S.<sup>178</sup> Oregon has a high capacity for wind generated energy—soon to be ranked 4<sup>th</sup> in the US in terms of wind energy production<sup>179</sup>—and the highest capacity for wave

<sup>176</sup> Acore. (2010) "U.S. Renewable Energy Quarterly Report." American Council on Renewable Energy, 1-20.

<sup>177</sup> Acore. (2010) "U.S. Renewable Energy Quarterly Report." American Council on Renewable Energy, 1-20.

<sup>178</sup> DSIRE. "Tax Credits For Renewables." DSIREusa.org. Database of State Incentives for Renewables and Efficiency, December 2010. Web. 30 Jan 2011.

<sup>179</sup> Grainey, Michael. (2010) "The State of Oregon's Renewable Energy Policies: Opportunities for Wind Manufacturing." Business Oregon.

and tidal generated energy. Oregon ranks 9<sup>th</sup> in generated solar energy in the US.<sup>180</sup>

## Wind

Wind manufacturing in Oregon is relatively small with only 13 establishments and 180 employees. Table G-5 shows a decrease in employees but a small increase in establishments occurred between 2001 and 2009. Business Oregon, in partnership with the Portland Development Commission, PGE, and Northwest Renewable Energy, is working with local manufacturers to help develop a more robust supply chain to support the growth of wind energy production in Oregon.

**Table G-5. Manufacturing of Wind Generation Equipment in Oregon, 2001 and 2009**

	2001	2009	Percent Change
Employees	244	180	-26.0%
Establishments	12	13	8.0%
Wages (In Thousands)	\$9,737,539	\$8,676,073	-11.0%
Average Pay	N/A	\$45,664	

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

Table G-6 shows wind installation establishments and total employees decreased significantly between 2001 and 2009. Meanwhile, wages increased significantly and are higher than the national average. The wage increase could mean a demand in skilled labor for wind installation companies.

**Table G-6. Wind Installation in Oregon, 2001 and 2009**

	2001	2009	Percent Change
Employees	2,038	1,731	-15.0%
Establishments	153	114	-25.0%
Wages (In Thousands)	\$86,987	\$110,056	27.0%
Average Pay	\$42,683	\$63,591	49.0%

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

Vestas, a prominent wind manufacturing company in Portland, is not included in the data above. According to interviews with government officials, Vestas supplies nearly 500 jobs in Oregon. Vestas is a European company and leader in wind turbine manufacturing.

## Solar

Oregon has 15 solar companies primarily in solar manufacturing. From business and expert interviews, CPW found the four most cited factors attributing to attracting these companies include (1) Oregon's general

<sup>180</sup> Oregon Department of Energy. (2010) "Business Energy Tax Credit." Oregon.gov. Web. January 20, 2010. <http://www.oregon.gov/ENERGY/CONS/BUS/BETC.shtml>

support of sustainable industries; (2) available workforce who have experience with semi-conductors and wafers; (3) inexpensive electricity and water; and (4) tax incentives most notably the Business Energy Tax Credit (BETC).<sup>181</sup> Table G-7 lists the 15 solar manufacturing companies in Oregon, some of which are also involved in research and development.

**Table G-7. Solar Companies in Oregon as of January 2011**

Company	Location	Current Jobs	# of Projected Jobs
Solar World	Hillsboro	1,000 employees	1,145 employees
Sanyo Solar	Salem	200 employees	200 employees
<a href="#">Solexant[1]</a>	Gresham	--	200 employees
PV Powered/Advanced En	Bend	135 employees	210 employees
MEMC/Solaicx	Portland	80 employees	150 employees
<a href="#">SoloPower[2]</a>	Wilsonville	--	140 employees
MEI LLC.	Albany	100 employees	100 employees
Peak Sun	Millersburg	50 employees	50 employees
Mr. Sun	Portland	30 employees	30 employees
Azuray	Durham	30 employees	30 employees
Oregon Crystal	Gresham	30 employees	30 employees
PV Trackers	Bend	25 employees	25 employees
<a href="#">Spectrawatt[3]</a>	Hillsboro	20 employees	20 employees
SIC Processing	Portland	20 employees	20 employees
FT Solutions (Ferrotec)	Fairview	20 employees	20 employees
<b>Total</b>		<b>1,740 employees</b>	<b>2,370 employees</b>

Source: Graine, Michael W. (2011) "Solar Manufacturers in Oregon." Business Oregon

Average pay for solar manufacturing in Oregon is extremely high at \$71,438 (see Table G-8). However, the data show a 29 percent decrease in total number of employees between 2001 and 2009.

**Table G-8. Solar Manufacturing in Oregon, 2001 and 2009**

	2001	2009	Percent Change
Employees	49,551	35,365	-29.0%
Establishments	414	426	3.0%
Wages (In Thousands)	\$3,555,890,496	\$3,311,130,707	-7.0%
Average Pay	N/A	\$71,438	N/A

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

Solar Installation has remained steady over the decade. Table G-9 below shows that between 2001 and 2009, the number of solar installation companies remained the same, while the number of establishments increased 6 percent. Wages increased 16 percent, which is less than the

<sup>181</sup> Hildebrand, Krista. (2011) "SANYO to Build New Manufacturing Facility in Salem, Oregon." October 16, 2008. Oregon Economic Development Association. Web. 20 January 2011. [http://www.oeda.biz/07files/pressreleases/sanyo\\_oedapr.html](http://www.oeda.biz/07files/pressreleases/sanyo_oedapr.html)

national average wage increase for the same time period.<sup>182</sup> There is some distortion in the data since it includes companies capable of solar installation who may not in fact be solar installers at this time.

**Table G-9. Solar Installation in Oregon, 2001 and 2009**

	2001	2009	Percent Change
Employees	12,308	12,260	0.0%
Establishments	1506	1595	6.0%
Wages (Total Thousands)	\$426,065	\$474,257	11.0%
Average Pay	\$22,724	\$26,438	16.0%

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

### **Biomass**

Oregon has 78 biomass plants, 25 of which make electricity for a total of 340 MW.<sup>183</sup> Oregon research and development companies are researching cellulosic biofuels. There is some promise in making biofuels out of grass seed. At this time, it is not being mass-produced, but efforts are underway to scale up the process.

### **Market Strength: Salem MSA**

Salem is well-positioned to attract and grow the solar, wind and biomass manufacturing industries. The Renewable Energy Technology Center (SRETC), access to affordable land, State incentives and regional support are Salem’s strongest assets. Another significant strength is the level of collaboration across state and private agencies. Companies and associations such as PGE and SEDCOR are strategically recruiting potential companies while also helping local businesses grow. One significant example has been the attraction of SANYO in the SRETC. The City of Salem, SEDCOR, PGE and other economic development partners collaborated on this project.

### **Wind**

Table G-10 shows the number of establishments that are or potentially could manufacture wind turbine parts in the Salem MSA. Salem is home to a total of eight establishments with 211 employees. Average pay is \$48,827, significantly higher than the Salem average.

<sup>182</sup> Bureau of Labor Statistics. “Occupational Employment Statistics: May 2009 National Occupational Employment and Wage Estimates, United States” and “Occupational Employment Statistics: 2001 National Occupational Employment and Wage Estimates, United States.” [http://www.bls.gov/oes/current/oes\\_nat.htm#00-0000](http://www.bls.gov/oes/current/oes_nat.htm#00-0000).

<sup>183</sup> Oregon Department of Energy. “Business Energy Tax Credit.” Oregon.gov. Web. January 20, 2010. <http://www.oregon.gov/ENERGY/CONS/BUS/BETC.shtml>

**Table G-10. Manufacturing of Wind Generation Equipment in the Salem MSA, 2009**

	<b>2009</b>
Employees	211
Establishments	8
Total wages	\$10,302,505
Average Annual Pay	\$48,827

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

NAICS data shows that there are no known wind turbine installers in Salem.

## **Solar**

CPW found that the solar industry is moving towards an integrative process in the Salem region. Currently companies typically specialize in certain steps of the manufacturing process rather than making the solar panels from start to finish. Companies in the solar manufacturing industry are looking to conduct the entire process within their own operations or create a consortium of companies located in geographic proximity to one another to facilitate solar manufacturing from start to finish. This strategy would curb transportation costs drastically. Through interviews CPW found that manufactured solar products made in Oregon can be shipped across the pacific up to three times before the product is ready for market.

Salem can potentially capitalize on companies looking to integrate supply chains given the number of existing solar manufacturers in the Willamette Valley. Salem is particularly well situated to capture such companies due to SANYO's plant location on Salem's SRETC. Companies looking to integrate the solar manufacturing process and share resources can locate adjacent to an already established solar manufacturer.

Four solar manufacturing companies are located in Salem according to NAICS data. The four companies noted here are not on the list of overall solar manufacturing companies in Oregon. This is because their work does not directly go towards making solar manufacturing pieces. However, their work and research is related to solar manufacturing processes and in some cases they are contracted from solar manufacturing companies. Table G-11 shows the number of employees, wages and average pay of the four companies in the Salem MSA.

**Table G-11. Solar Manufacturing in the Salem MSA, 2009**

	<b>2009</b>
Employees	71
Establishments	4
Wages	\$1,943,951
Average Pay	\$27,380

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

Table G-12 shows that there are 54 solar installation establishments in Salem. However, as noted previously, these are not solely solar installers. Rather these numbers show both existing and potential solar manufacturing companies.

**Table G-12. Solar Installation in the Salem MSA, 2009**

	<b>2009</b>
Employees	727
Establishments	54
Wages	\$ 40,089,478
Average Pay	\$ 55,144

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

## **Biomass**

No biomass manufacturers currently exist in Salem. However, West Salem Machinery is looking to expand into this market. They currently manufacture chippers and grinders that prep biomass materials for energy production mainly through anaerobic digesters.

## **Salem MSA Businesses Related to Renewable Energy**

A number of companies located in Salem may not be directly working in the renewable energy industry but offer services related to the industry. These companies, including engineering services, environmental consulting, and metal manufacturing, provide an opportunity to link in to this industry. Table G-13 details total employment, total wages, and average annual pay of related industries.

**Table G-13. Related Industries in the Salem MSA, 2009**

<b>Engineering Service</b>	<b>2009</b>
Employees	377
Establishments	38
Total Wages	\$24,788,820
Average Annual Pay	\$65,753
<b>Environmental Consulting</b>	<b>2009</b>
Employees	58
Establishments	25
Total Wages	2879738
Average Annual Pay	\$49,651

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

## Local Supply Chain

### Solar

Manufacturing of photovoltaic units is a complex process. Figure G-3 shows the three major steps turning ingots into wafers, wafers into cells, and finally installing the cells onto the solar panels. Semiconductors and chemicals to assist the solar cell manufacturing process are also part of the process.

**Figure G-3. Solar Manufacturing Supply Chain**



Source: Hemlock Semiconductor. "Polycrystalline Silicon for the Manufacture of Solar Products." Hemlock Semiconductor. (2011) March 9, 2011. [http://www.hscpoly.com/content/hsc\\_prod/solar\\_markets.aspx](http://www.hscpoly.com/content/hsc_prod/solar_markets.aspx)

According to an interview with a local solar manufacturing company, each step involves different equipment and different expertise. For this reason, solar manufacturing plants typically specialize in only one of the steps. A

typical solar manufacturing process may include the following steps: (1) Polysilicon is shipped from China to Oregon where the polysilicon is made into ingots; (2) the ingots are then made into wafers and semiconductors; (3) the wafers and semiconductors are shipped back to China for solar cell manufacturing; (4) the solar cells are then shipped to Canada to be installed onto panels.

Solar manufacturers are looking for opportunities to integrate the solar panel manufacturing process from start to finish within one plant or, if not feasible because of costs of equipment and expertise, within the same geographic location.

## **Wind Manufacturing**

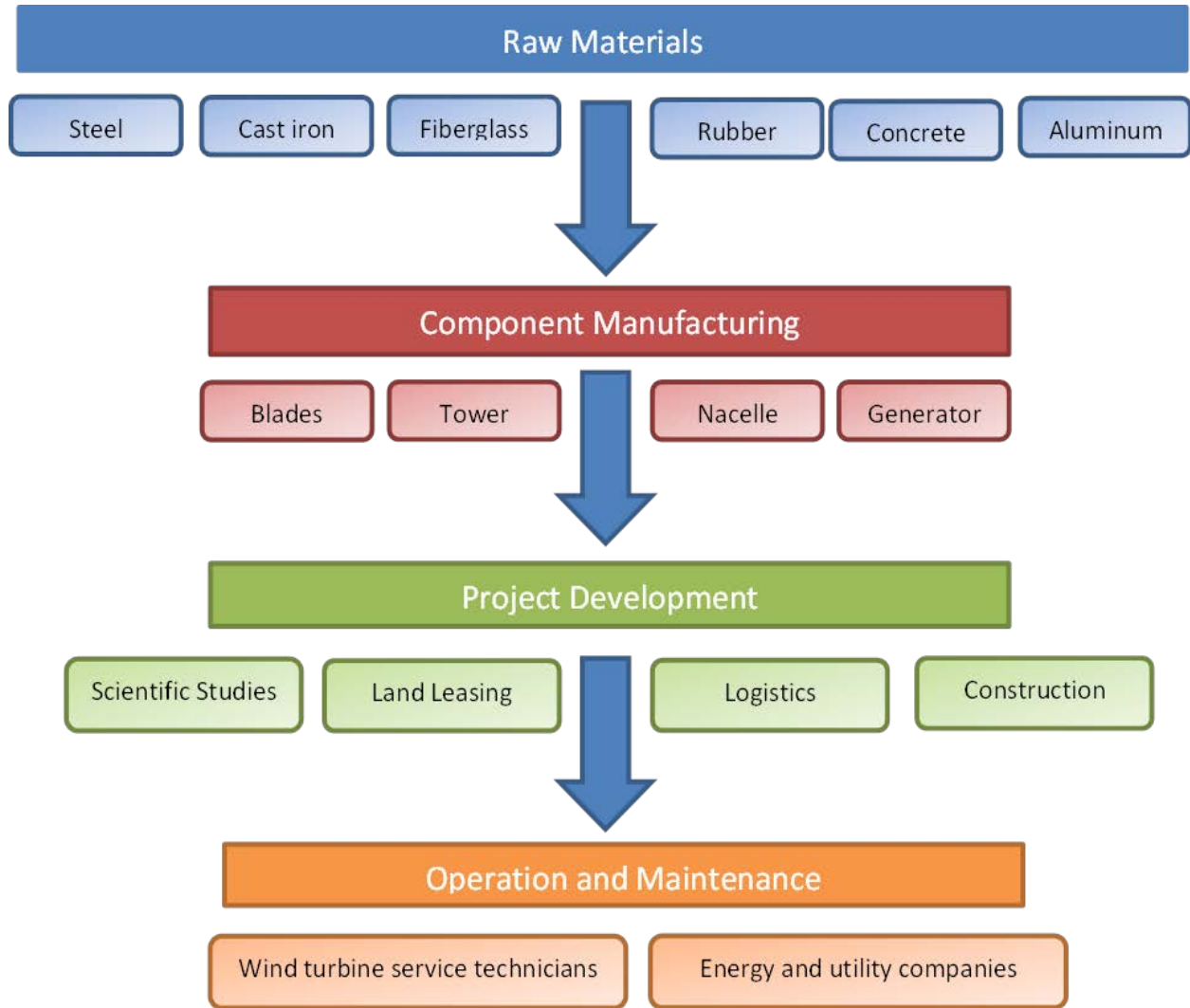
Wind turbine manufacturing incorporates skills in the metal and electrical manufacturing. Twenty key components go into the manufacturing of a wind turbine.<sup>184</sup> Figure G-4 below shows raw materials (steel, cast iron, aluminum, rubber, and fiber glass) as inputs into the process. Key parts of the wind turbine include the wind turbine itself, the tower, rotor blades, bearings, main shaft, gearbox, generator and nacelle housing. These parts are shipped to the wind farm along with cables and wires necessary for transferring the power generated to the grid. On site, the tower, blades, and turbine are assembled and then installed.

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<sup>184</sup> Sterzinger, George and Matt Svrcek. (2004) "Wind Turbine Development: Location of Manufacturing Activity." Renewable Energy Policy Project, 1-66.



Figure G-4. Wind Turbine Supply Chain



Source: CPW

## Industry Requirements

Requirements for the renewable energy industry are based on interviews from renewable energy industry experts, business leaders, and communities who have been successful in attracting and growing renewable energy businesses.

Based on our interviews, access to capital is cited as a requirement across all renewable energy sectors. In the renewable energy industry access to capital can be difficult because the technologies are relatively new. Moreover, the recent recession has made it more difficult to find capital.

A second factor cited across all renewable energy industry sectors is government support. Coal and gas electricity are less expensive to produce. The renewable energy industry needs support through tax credits and abatements in order to compete with other energy sources.

Meanwhile, permanent demand helps stabilize the industry. Renewable Energy Profile Standards (RPS) are one way to create a mandatory minimum demand.

## **Solar**

Solar manufacturers noted accesses to talent pools and support from the local government as necessary attributes for site location. The latter was emphasized by two of the solar manufacturers interviewed stating that the cost of manufacturing has not come down far enough for solar energy generation to be competitive with coal and gas electricity generation. Moreover, one solar business noted that since China entered the market, solar manufacturing competition has increased considerably. Many companies in the U.S. have moved their manufacturing operations to China. Solar manufacturers state that access to tax incentives and abatements mitigate costs and keep U.S. solar manufacturers competitive.

Other solar companies noted inputs such as access to water and affordable electricity as important industry requirements. Companies making wafers and semi-conductors for solar panels stated that affordable utilities are particularly important to them as water and electricity are two major inputs in the manufacturing process.

Proximity to other similar companies and research institutions was also cited as important factors but not as important as talent pools, government support, affordable electricity, and affordable water. One interview suggested this was changing as companies are looking to integrate the manufacturing process.

Proximity to research institutions was the final factor cited. However, this was not a key determinant. However, companies with access to innovations in solar products can give a company a considerable competitive advantage.

## **Wind**

Currently the majority of wind turbine manufacturing is done in Europe. Several U.S. companies make small parts for turbines, the biggest of which is GE with wind turbine parts manufacturing plants located in the U.S., China, and Europe. We have not been able to speak with a wind turbine manufacturer yet. From the literature we have found that wind turbine manufacturing industry requirements are similar to other metal and electrical manufacturing needs. This includes necessary manufacturing equipment, skills, and knowledge.

Manufacturers also benefit from being located near where the wind turbines are being installed. Some of the pieces are simply too large to be trucked long distances. This is less of a concern if the manufacturer focus is on smaller parts. Other requirements include access to talent pools and capital.

Interviews with experts in the field noted that Iberdrola and Vestas, two large international wind companies, located in Portland due to Portland's access to the Vancouver, Washington port which is a leading port for wind turbines received from Europe and China. They also chose their respective sites based on its proximity to the Columbia Gorge where the majority of wind farms in Oregon are located. Meanwhile, quality of life factors have been cited as a reason why Vestas chose Portland.

## **Biomass**

Industry requirements for biomass are access to research institutions, manufacturing capabilities, and access to capital. In general, the biomass industry requires applicable equipment and knowledgeable workforce. Companies such as West Salem Machinery have been able to adapt their manufacturing practices to make products for biomass plants by retraining their workforce.

## **Competitive Assessment of Salem**

Salem's general market strength is in land availability for solar and wind manufacturing companies. Specifically, Salem's Renewable Energy and Technology Center (SRTC) offers "project ready" sites for companies looking to locate and/or expand in the region. Companies locating on the site are eligible to receive both the BETC and local enterprise zone benefits.<sup>185</sup> Enterprise zone benefits offer industrial and manufacturing firms a three to five year property tax exemption and include a 10 percent rebate on certain building permit fees. An additional four to five year property tax exemption can be made if additional local requirements are met.<sup>186</sup>

## **Solar**

Costs of land, water, and electricity make Salem a competitive market for solar manufacturing. For example, the process of turning ingot into wafers—the product that is then turned into solar cells—uses a significant amount of water and electricity. This is also true for making semi-conductors which are another important step in the solar manufacturing process. Creating lower operational costs for solar manufacturing is pivotal in securing the longevity of the solar industry in the U.S. Oregon has the third lowest industrial electricity rates in the nation.<sup>187</sup> Affordable

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<sup>185</sup> Economic Development Division. "Salem Renewable Energy and Technology Center (SRETc)." City of Salem.net. Web. January 20, 2010.  
<http://www.cityofsalem.net/Departments/UrbanDevelopment/DepartmentProjects/RenewableEnergyCenter/Pages/default.aspx>

<sup>186</sup> Economic Development Division. "Enterprise Zone." City of Salem.net. Web. January 20, 2010.  
<http://www.cityofsalem.net/Departments/UrbanDevelopment/FinancialResources/Pages/EnterpriseZone.aspx>

<sup>187</sup> Graine, Michael. (2010) The State of Oregon's Renewable Energy Policies: Opportunities for Wind Manufacturing. Business Oregon.

land, electricity, and water create a significant advantage for Salem to attract solar manufacturers.

Moreover, its proximity to California gives Oregon and Salem a competitive edge. California is a major buyer of solar panels and having a close proximity to that market while being able to produce at a less expensive cost than California is significant. Other cost reducing incentives such as tax incentives and credits are also important. Interviews from solar manufacturers revealed that Oregon's BETC was a crucial locational requirement.

A final benefit to Salem is its proximity to a number of solar manufacturing plants. This is especially true where a number of plants specialize in different steps of the manufacturing process. Salem is centrally located to capitalize on the solar industries' movement towards integration.

## **Wind**

Oregon produces a significant amount of power via wind which has led to a number of wind industry businesses to locate in the Portland and the Colombia Gorge, namely Vestas and Iberdrola. A few parts manufacturers are also located along the Colombia Gorge.

Salem does not have a competitive advantage in wind installation because most of the wind farms are along the Colombia Gorge. However, there is a potential for general contractors to enter the field of energy efficiency installations within the agricultural industry. According to a general contractor who specializes in energy installations, their agriculture customer base has grown considerably.

## **Biomass**

Salem's greatest opportunity for biomass is to expand West Salem Machinery. They currently manufacture grinders and chippers that are used for anaerobic digesters and wood-fired power plants.

**Table G-14. Renewable Energy Industry Data**

	National			Oregon			Salem	
	2001	2009	Percent Change	2001	2009	Percent Change	2009	
<b>Wind Turbine Manufacturing</b>								
Employees	22,612	26,093	15.4%	244	180	-26.0%	Employees	211
Establishments	215	279	30.0%	12	13	8.0%	Establishments	8
Wages (In Thousands)	\$1,453,775	\$2,029,884	40.0%	\$9,737,539	\$8,676,073	-11.0%	Total wages	\$10,302,505
Average Pay	\$64,293	\$77,794	21.0%	N/A	\$45,664		Average Annual Pay	\$48,827

	National			Oregon			Salem	
	2001	2009	Percent Change	2001	2009	Percent Change	2009	
<b>Wind Turbine Installation</b>								
Employees	137,289	132,052	-4.0%	2,038	1,731	-15.0%	Employees	n/a
Establishments	7756	7850	1.0%	153	114	-25.0%	Establishments	n/a
Wages (In Thousands)	\$5,596,471	\$7,801,643	39.0%	\$86,987	\$110,056	27.0%	Total wages	n/a
Average Pay	\$40,764	\$59,080	45.0%	\$42,683	\$63,591	49.0%	Average Annual Pay	n/a

	National			Oregon			Salem	
	2001	2009	Percent Change	2001	2009	Percent Change	2009	
<b>Solar Manufacturing</b>								
Employees	2,300,147	1,503,954	-35.0%	49,551	35,365	-29.0%	Employees	71
Establishments	30333	26220	-14.0%	414	426	3.0%	Establishments	4
Wages (In Thousands)	\$135,294,750	\$116,552,032	-14.0%	\$3,555,890,496	\$3,311,130,707	-7.0%	Wages	\$1,943,951
Average Pay	\$52,515	\$69,631	33.0%	N/A	\$71,438	N/A	Average Pay	\$27,380

	National			Oregon			Salem	
	2001	2009	Percent Change	2001	2009	Percent Change	2009	
<b>Solar Installation</b>								
Employees	1,011,265	1,012,683	0.0%	12,308	12,260	0.0%	Employees	727
Establishments	167784	121710	-27.0%	1506	1595	6.0%	Establishments	54
Wages (In Thousands)	\$37,914,429	\$48,161,952	27.0%	\$426,065	\$474,257	11.0%	Wages	\$40,089,478
Average Pay	\$34,718	\$43,804	26.0%	\$22,724	\$26,438	16.0%	Average Pay	\$55,144

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

# APPENDIX H: MEDICAL DEVICE COMPANIES IN SALEM

Appendix H provides a list of medical device companies in Salem, Oregon as of June 2011.

**Table H-1. Medical Device Companies in Salem, Oregon**

Company Name	Primary NAICS	Primary NAICS Description
Alliance Dental Laboratory	33911604	Dental Laboratories
Alphadry Medical LLC	42345028	Medical Equip Merchant Whls
Aspen Dental	62121003	Offices Of Dentists
Bio Medical	33911401	Dental Equip & Supplies Manufacturing
Bio-Esthetic Restorations	33911604	Dental Laboratories
Bio-Tek Medical Inc	33911201	Surgical & Medical Instrument Manufacturing
Capital City Dental Lab Inc	33911604	Dental Laboratories
Cascade Dental Lab	33911604	Dental Laboratories
Chrowl Dental Lab	33911604	Dental Laboratories
Civilux Inc	33911604	Dental Laboratories
Daniel Dental Lab Inc	33911604	Dental Laboratories
Dicke Safety Products	33911315	Surgical Appliance & Supplies Manufacturing
DME Rental-Neurocare Inc	33911203	Surgical & Medical Instrument Manufacturing
Drop-Dead Gorgeous Dentures	33911603	Dental Laboratories
Excel Dental Labs	33911604	Dental Laboratories
Eyeglass Factory	62132003	Offices Of Optometrists
Grider Dental Lab	33911604	Dental Laboratories
Hill Dental Laboratory	33911604	Dental Laboratories
Ladies First Inc	33911203	Surgical & Medical Instrument Manufacturing
Liberty Denture Clinic	33911603	Dental Laboratories
Magee Dental Lab	33911604	Dental Laboratories
Mary's Smile Dental Lab	33911604	Dental Laboratories
Mid-Valley Dental Surgery	33911604	Dental Laboratories
Nels, Hvass	33911603	Dental Laboratories
Precision Dental Restoration	33911604	Dental Laboratories
Rose Paper Products Inc	42413006	Industrial Paper Merchant Whls
Salem Dental Lab	33911604	Dental Laboratories
Salem Denture Ctr	33911603	Dental Laboratories
Salem Laser-Skin Rejuvenation	33451003	Electro-Medical Apparatus Manufacturing
Sports Doc Emergency Response	33911206	Surgical & Medical Instrument Manufacturing
Superior Arts Dental Lab Co	33911604	Dental Laboratories
Supra Products Inc	33911203	Surgical & Medical Instrument Manufacturing
UTC Fire & Security	33299910	Misc Fabricated Metal Prod Manufacturing

Source: Quarterly Census of Employment & Wages

## APPENDIX I: FOOD CASE STUDIES

Appendix I presents a series of case studies to support the food processing recommendations.

### Food Innovation Center – Portland, Oregon

The Food Innovation Center is an extension of Oregon State University that also partners with the Oregon Department of Agriculture. The Food Innovation Center (FIC) offers client based services for farmers and food processors in Oregon. These services are typically offered for a fee.

One service that the FIC offers to food processors is guidance on product development. Specifically, processors approach the FIC for guidance on how to develop a specific product, and the center works with the client to develop a recipe and manufacturing process. Other services provided by the FIC include: packaging engineering, shelf life studies and consumer sensory testing. Additionally, the center conducts scholarly research into agricultural economics and marketing.

By working with food processors and producers, the FIC is in a position to observe statewide food trends. In recent years, employees of the FIC have observed the state's food processors responding to consumer demand for: 1) locally sourced ingredients, 2) Earth friendly packaging, and 3) products that consumers can purchase directly from processors.

The Food Innovation Center expects these trends to continue and to shape the types of new food processing businesses that start within Oregon.

#### Contact:

Sarah Masoni, Product Development Manager  
(503) 872-6655 | [sarah.masoni@oregonstate.edu](mailto:sarah.masoni@oregonstate.edu)

### Minneapolis Home Grown – Minneapolis, Minnesota

Homegrown Minneapolis is a program run by the City of Minneapolis. The program's mission is to, "improve the growth, sales, distribution, and consumption of healthy, locally grown foods within the city and the surrounding region."<sup>188</sup> The program was initiated in 2008 by Mayor R.T. Ryback and is a partnership between the city planning office and the Minneapolis Department of Health and Family Support. Most program funding comes from the Minnesota Department of Health. As a result of this partnership, the early focus of Homegrown is on the public health

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<sup>188</sup> Homegrown Minneapolis. "Building a Healthy, Local Food System for All Minneapolis Residents." Web. 28 June 2011. <http://www.ci.minneapolis.mn.us/dhfs/homegrown-home.asp>

aspects of food systems. In addition to the Department of Health and Family Support, Homegrown has partnerships with non-profits throughout the city the help to implement program objectives. These non-profits have their own funding mechanisms.

When Homegrown launched in 2008, the initial work plan unfolded in three phases. The first phase was a brainstorming effort that included the participation of stakeholders and ventured to identify all the issues that encompass the phrase, "local food." In the second phase, city council set up a task force to process the findings from the first phase and structure a plan to determine how those ideas can be incorporated in Minneapolis. This phase is expected to be completed in 2011. The final phase takes the recommendations from the previous phase and develops them into citywide food policies.

Throughout this process, goals were set on an annual basis. Some of the work has also been incorporated into the comprehensive plan, especially around land use and urban agriculture. The city council has also requested stability indicators, though the work is pending.

As mentioned, Homegrown is in the early stages of the process. Once the urban agriculture and public health components are fully conceived and implemented, the programmatic attention will turn to using these systems, and developing new systems that can address program goals while also improving the regional economy.

**Contact:**

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June Mathiowetz, Homegrown Minneapolis Coordinator  
(612) 673-2027 | [june.mathiowetz@ci.minneapolis.mn.us](mailto:june.mathiowetz@ci.minneapolis.mn.us)

## **Institute for Agriculture and Trade Policy – Minneapolis, Minnesota**

The Institute for Agriculture and Trade Policy (IATP) is a Minneapolis based research and advocacy group that tracks and promotes sustainable food movements throughout the planet.<sup>189</sup> The institution focuses its resources on analyzing how international trade agreements impact domestic farm policies, developing new economic models for agriculture, and advocating making food safer and healthier.

In the United States, the IATP has observed that as awareness of the "local food" movement grows, that growth is outpacing the ability of regional food systems to fulfill that demand. The Local Foods Program at the IATP is working with farmers and communities to develop strategies

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<sup>189</sup> Institute for Agriculture and Trade Policy. "About IATP." Web. 5 July 2011.  
<http://www.iatp.org/>



that address gaps in the middle stage of the supply chain, especially around aggregation and distribution. By making aggregation and distribution more efficient, the IATP hopes that it can help regional food systems meet the growing demand for local food.

In working with communities from throughout the United States, director of the Local Foods Program at the IATP, JoAnne Berkenkamp, has been tracking the policy side of the local food movement. She notices many city officials and advocates that are drawing attention to local food systems.

**Contact:**

JoAnne Berkenkamp, Local Foods Program Director  
(612) 870-3410 | [jberkenkamp@iatp.org](mailto:jberkenkamp@iatp.org)

**National Overview**

In January 2011, the American Planning Association published a report that provides an overview for local food and urban agriculture in the United States as part of their Planning Advisory Service. The report, called, “Urban Agriculture: Growing Healthy, Sustainable Places,” details the role that planners can and are playing in fostering urban agriculture and drawing attention to local food. A supplement to that report includes extensive documentation about what different communities throughout North America are doing to support local food systems. These tables, excerpted below, show that many communities are adapting policies to strengthen their food systems. As the tables show, however, these efforts are piecemeal as communities develop new strategies for improving local food systems.

Table I-1 below provides examples of cities that are addressing food issues through food charters, comprehensive plans, and sustainability plans. The table also indicates which food systems topics the plan addresses. These topics range from: rural agriculture and food processing to food waste and disposal.

**Table I-1: An Overview of How North American Cities Address Food Systems**

	City	Plan name and date	Food Systems Topics						
			Rural Agriculture	Food Processing	Food Distribution	Food Retail	Food Access and Availability	Food Literacy and Education	Food Waste and Disposal
Food Charters	Philadelphia	Philadelphia Food Charter, 2008	X	X	X	X	X	X	X
	Toronto, Ont.	Food Charter, 2001					X	X	X
	Vancouver, B.C.	Vancouver Food Charter, 2007	X	X	X	X		X	X
Comprehensive Plans	Ashville, N.C.	Ashville City Development Plan 2025, 2003	X	X			X	X	X
	Berkeley, Calif.	City of Berkeley General Plan: A Guide for Public Decision-Making, 2001			X		X	X	X
	Boise, Idaho	Blueprint Boise, 2010					X	X	X
	Dane County, Wis.	Comprehensive Plan, 2007	X	X	X	X	X	X	X
	King County, Wash.	King County Comprehensive Plan, 2008	X	X	X	X	X		X
	Madison, Wisc.	City of Madison Comprehensive Plan, 2007	X		X	X	X		X
Sustainability Plans	San Francisco	Sustainable San Francisco, 1997	X	X	X	X			X
	Baltimore	The Baltimore Sustainability Plan, 2009	X	X	X	X	X	X	X
	Kansas City, Mo.	City of Kansas City Climate Protection Plan, 2008		X	X	X	X	X	X
	Cleveland	Reimagining a More Sustainable Cleavland, 2008	X	X	X		X		X

Source: Hodgson, Kimberley, et al. "Planning Advisory Service, Report Number 563 – Urban Agriculture: Growing Healthy, Sustainable Places." Chicago, IL: American Planning Association, 2011.

# APPENDIX J: BIOSCIENCE CONTACT INFORMATION

Appendix J provides a list of the key research and innovation players in the bioscience industry in Oregon.

Organization	Name	Title	Phone	Email	Website
Oregon Bioscience Association	Dennis McNannay	Executive Director	(503) 501-9401	<a href="mailto:dennis@oregonbio.org">dennis@oregonbio.org</a>	<a href="http://www.oregonbio.org/">http://www.oregonbio.org/</a>
Oregon Health & Science University (OHSU)	Timothy Stout	Vice President For Technology Transfer and Business Development	(503) 346-0360	<a href="mailto:stoutt@ohsu.edu">stoutt@ohsu.edu</a>	<a href="http://www.ohsu.edu/xd/research/techtransfer/about/index.cfm">http://www.ohsu.edu/xd/research/techtransfer/about/index.cfm</a>
Oregon Health & Science University (OHSU)	Arundeeep Pradhan	Associate Vice President For Technology Transfer and Business Development	(503) 494-8200	<a href="mailto:pradhana@ohsu.edu">pradhana@ohsu.edu</a>	<a href="http://www.ohsu.edu/xd/research/techtransfer/about/index.cfm">http://www.ohsu.edu/xd/research/techtransfer/about/index.cfm</a>
Oregon Nanoscience and Microtechnologies Institute (ONAMI)			(541) 713-1348		<a href="http://onami.us/">http://onami.us/</a>
Oregon State University	Brian Wall	Director, Intellectual Property & Licensing, Office of Commercialization and Corporate Development	(541) 737-9058	<a href="mailto:Brian.Wall@oregonstate.edu">Brian.Wall@oregonstate.edu</a>	<a href="http://oregonstate.edu/research/occd/">http://oregonstate.edu/research/occd/</a>
Oregon State University	Mary Philliips	Associate Director, Intellectual Property & Licensing, Office of Commercialization and Corporate Development	(541) 737-4437	<a href="mailto:Mary.Phillips@oregonstate.edu">Mary.Phillips@oregonstate.edu</a>	<a href="http://oregonstate.edu/research/occd/">http://oregonstate.edu/research/occd/</a>
Portland State University, Department of Physics	Dr. John Carruthers	Distinguished Professor of Physics	(503) 725-8929	<a href="mailto:carruthe@pdx.edu">carruthe@pdx.edu</a>	
University of Oregon, Research and Graduate Studies	Kimberly Espy	Vice President For Research and Innovation	(541) 346-3176	Will begin June 30th, 2011	<a href="http://research.uoregon.edu/">http://research.uoregon.edu/</a>
University of Oregon, Research and Graduate Studies	Don Gerhart	Associate Vice President For Research and Innovation and Director, Office of Technology Transfer	(541) 346-3234	<a href="mailto:gerhart@uoregon.edu">gerhart@uoregon.edu</a>	<a href="http://research.uoregon.edu/">http://research.uoregon.edu/</a>
University of Oregon Department of Chemistry	Andrew H. Marcus	NanoBiotechnology /NanoMedicine, Nanoscale Metrology and Nanoelectronics	(541) 346-4809	<a href="mailto:ahmarcus@uoregon.edu">ahmarcus@uoregon.edu</a>	

## APPENDIX K: BIOSCIENCE CASE STUDIES

Appendix K provides an overview of two bioscience case studies. The first is a statewide initiative in Colorado; the second is a local example in Medford, Oregon.

The bioscience industry requires state and regional initiatives before it can thrive in any one municipality. To gain an understanding of how Salem can link into state and regional initiatives, CPW reviewed two case studies: (1) Colorado provides an example of a broad state initiative; and (2) Lebanon, Oregon provides a more localized perspective.

These two case studies are intended to help Salem identify strategies to leverage their strengths in the biosciences industry

### Colorado

In 2003, Colorado committed to making the biosciences a key driver of the state's future economy. The public and private sectors developed a road map to grow Colorado's bioscience industry.

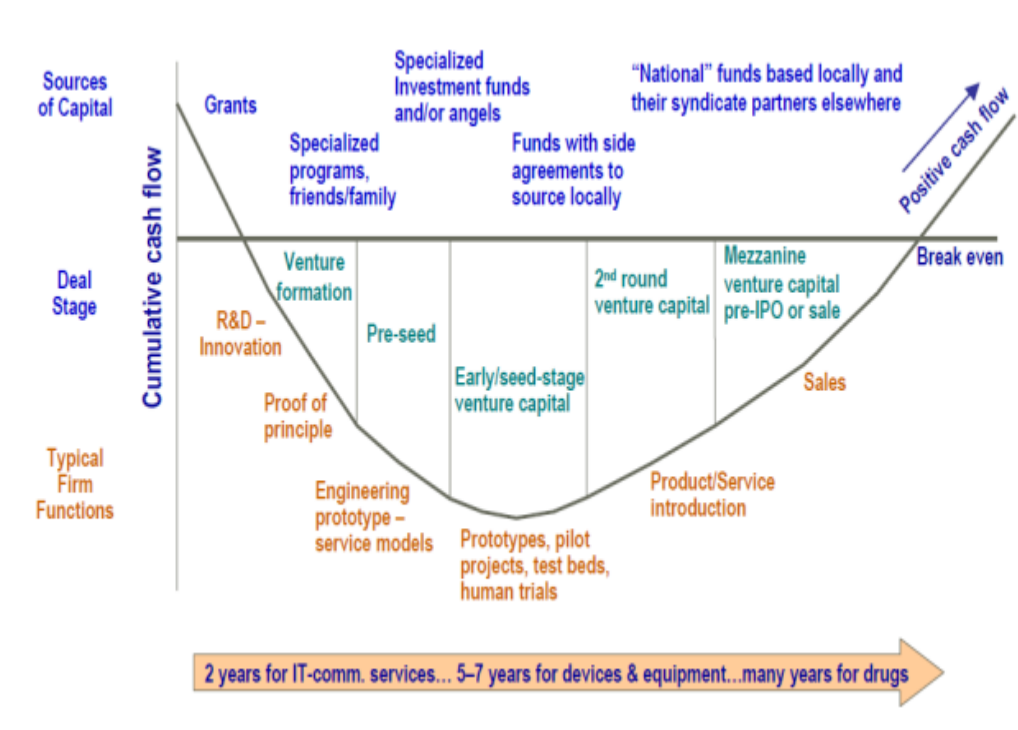
With the support from the Colorado BioScience Association and stakeholders, the state developed a Roadmap.<sup>190</sup> The Roadmap lists five individual strategies with corresponding actions for short term (1-3 years) and mid-term (3-5) year actions.

Strategy #1: Ensure availability of capital for bioscience companies at all stages of their development: Actions to address this policy include using tax policy to encourage investment by angel investors, exploring options to create a refundable or transferable R&D tax credit for bioscience companies, continuing to fund commercialization, marketing Colorado bioscience opportunities to out-of-state investors and venture funds, and making investments in private venture funds. Figure N-1 below illustrates the different stages of capital needs.

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<sup>190</sup> Colorado Bioscience Roadmap 2008, downloaded from the world wide web on April, 28, 2011. [www.fitzscience.com/media/docs/.../stateplan08.pdf](http://www.fitzscience.com/media/docs/.../stateplan08.pdf)

**Figure N-1. Bioscience Capital Flow**



Source: Colorado Bioscience Roadmap

Colorado recognizes that it is integral to have a robust capital community that is both oriented toward early-stage investment and committed to each stage of bioscience development. Colorado developed action items that ensure investment and growth in this industry that will pay back the state and local communities handsomely in high quality jobs in the knowledge and green manufacturing economy.

Strategy #2: Create a robust technology commercialization infrastructure in Colorado to rapidly move discoveries into the marketplace: Actions to address this policy include creating a Colorado Drug, Diagnostic, and Device Development Institute and the addition of bioscience capacity to local business development and entrepreneurial support networks. .

A gap that exists in the bioscience supply chain is the ability to translate innovative discoveries into a commercialized product. Colorado recognizes the need for a conduit to conduct due diligence to determine market potential. In addition support is needed in engineering optimization to develop the technology into prototypes that meet the demands of the marketplace.

Strategy #3: Ensure that Colorado is attracting, retaining, and producing, individuals with skills needed to meet the future bioscience workforce needs. Colorado plans to address this by the creation of a Non-Profit Foundation to develop and support bioscience programs to ensure that

Colorado has the talent to meet future bioscience needs instead of relying on talent that is imported.

Strategy #4: Promote Colorado's position as a leading bioscience center. Action items for this policy include maintaining dedicated bioscience staff in the state's economic development division. Additionally by developing and implementing a brand and marketing strategy and communications campaign.

Along the same line, Salem could leverage its competitive advantage toward the medical device subsector in a "Why Bio in Salem?" marketing tool.

Strategy #5: Establish Colorado's bioscience future by making a long term commitment to bioscience industry development. Colorado plans to do this by identifying revenue sources and creating a fund to support bioscience policies, programs, and infrastructure investments over the long term.

Colorado recognizes the sectors contribution to the state economy and is accordingly making investments in the biosciences.

Colorado has made strides in creating an environment that is supportive of the biosciences and is seeing the industry approach critical mass. The lesson learned from Colorado at the state level is to revisit the initial strategic plan to reassess the changing bioscience landscape to address gaps in the infrastructure.

The strategies and actions outlined in the roadmap provide directions to both the public and private sectors. This roadmap is beneficial because it engages stakeholders throughout the process.

Salem will have limited success leveraging its strategic geographic location towards the biosciences without state and regional support. The lesson for Salem is to collaborate with state and regional initiatives as this new industry matures.

## **Lebanon, Oregon**

Lebanon, Oregon provides a regional example of a community positioning itself to grow the bioscience industry."

To differentiate itself from other places, Lebanon, Oregon has attracted the second medical school in the state. Western University of Health Sciences has chosen Lebanon as the location of a new campus. A bioscience incubator will be built as part of the Health Sciences complex.

The approved new campus of Western University will be built on the 50-acre Samaritan Campus Center adjacent to Lebanon Community Hospital in Lebanon. The Northwest campus' parent organization, COMP Pomona, founded in 1977, has graduated a total of 3,828 physicians since 1982.

The medical school took a great champion, someone with resources and vision for Lebanon, this person was Larry Mullens, PHD administer at Good Samaritan Hospital. Dr. Mullens has created a very expansive system for health care in the Willamette Valley. It was his brainchild to have a research facility and school in a hospital in Lebanon.<sup>191</sup> To pursue economic development initiatives in the biosciences Lebanon, Oregon highlights the importance of creativity.

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<sup>191</sup> Interview with Bill Ford of the Corvallis Business Enterprise Center on March 3<sup>rd</sup>, 2011.

## APPENDIX L: RENEWABLE ENERGY CONTACT INFORMATION

Appendix L provides a list of organizations in the renewable energy field in Oregon.

Organization	Name	Title	Phone	Email	Website
Oregon Built Environment & Sustainable Technologies Center (Oregon BEST)	Oregon BEST Solar Energy Research Network		(503) 725-9849		<a href="http://oregonbest.org/research/solar-energy-research">http://oregonbest.org/research/solar-energy-research</a>
Oregon State University, Northwest National Marine Renewable Energy Center	Robert Paasch	NNMREC Director	(541) 737-7019	<a href="mailto:paasch@engr.oregonstate.edu">paasch@engr.oregonstate.edu</a>	<a href="http://nnmrec.oregonstate.edu/">http://nnmrec.oregonstate.edu/</a>
Oregon State University, Oregon Process Innovation Center for Sustainable Solar Cell Manufacturing (OPIC)	Dr. Chih-hung Chang	OPIC Director & Associate Professor	(541) 737-8548	<a href="mailto:chih-hung.chang@oregonstate.edu">chih-hung.chang@oregonstate.edu</a>	<a href="http://opic.oregonstate.edu/">http://opic.oregonstate.edu/</a>
Oregon State University, School of Electrical Engineering and Computer Science	Terri Fiez	Professor		<a href="mailto:terrifiez@oregonstateuniversity.edu">terrifiez@oregonstateuniversity.edu</a>	<a href="http://eeecs.oregonstate.edu/research/members/fiez/">http://eeecs.oregonstate.edu/research/members/fiez/</a>
University of Oregon, High Performance Environments Lab			(541) 346-8187		<a href="http://hipe.uoregon.edu/">http://hipe.uoregon.edu/</a>
University of Oregon, SuNRISE Laboratory	Fuding Lin	Technical Director	(541) 346-0977	<a href="mailto:flin@uoregon.edu">flin@uoregon.edu</a>	<a href="http://camcor.uoregon.edu/sunrise/">http://camcor.uoregon.edu/sunrise/</a>
Oregon State University, Wallace Energy Systems and Renewables Facility	Annette von Jouanne	Director	(541) 737-0831	<a href="mailto:avj@eeecs.orst.edu">avj@eeecs.orst.edu</a>	<a href="http://eeecs.oregonstate.edu/wesrf/index.php">http://eeecs.oregonstate.edu/wesrf/index.php</a>



# APPENDIX M: MAPPING THE SOLAR SUPPLY CHAIN

To support recommendations for the renewable energy industry, CPW conducted a sample study to identify firms in Oregon that may be able to repurpose their skills and products to participate in the solar energy industry. Though this section specifically focuses on solar, the methods that were used can be replicated for other sectors in renewable energy or other industries.

## Methodology

To map the firms that have potential to link to the solar supply chain in Oregon, the first step is identifying the types of businesses that have that potential. To determine this, CPW referenced a report by the Institute for Emerging Issues called *Renewable Energy in North Carolina: The Potential Supply Chain*.<sup>192</sup> In this report, the researchers identified industry subsectors that have the highest likelihood of transferring skills and production to support renewable industries (wind, solar, biomass, and geothermal). The subsectors in this list were organized by their NAICS code.

Using those NAICS codes as a starting point, CPW searched for Oregon based firms that operated under those codes using *ReferenceUSA*. The results of the query were compiled into a database that was sorted by NAICS code. This database was then imported into ArcGIS, and then geocoded so that the individual firms could be identified by their location on a map. The firms were then color coded, by subsector.

Finally, CPW highlighted the Salem MSA (Marion and Polk Counties) to identify which of the firms are located in or near Salem.

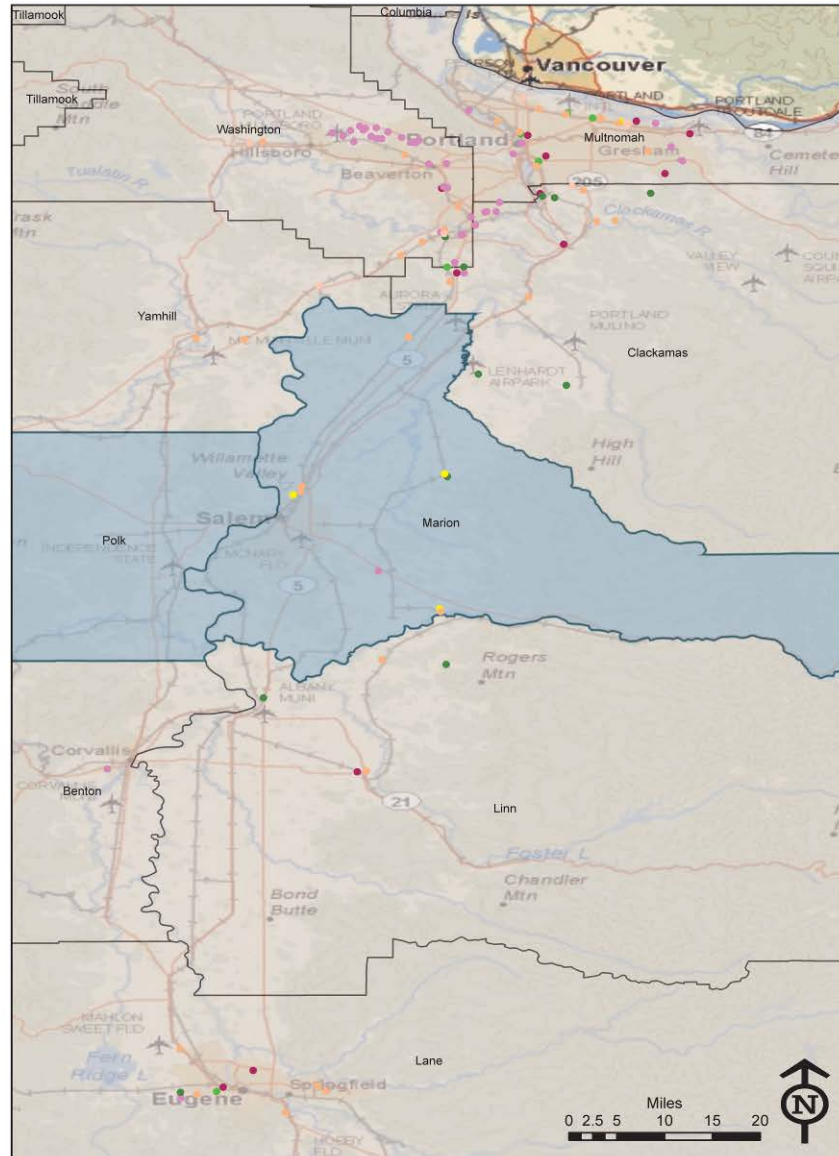
## The Map

Figure M-1 shows the location of firms in Oregon that are located along the Interstate Highway 5 (I-5) corridor between Portland and Salem. CPW identified a strong cluster of companies with potential to contribute to the solar supply chain throughout the I-5 region. Although the largest agglomeration of these firms is focused around Portland, there is a variety of firms near Salem that can start to participate. Those firms manufacture: plastic materials & resin, fabricated metal products, architectural & structural metals, and semiconductors & related devices.

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<sup>192</sup> Debbage, Keith. "Renewable Energy in North Carolina: The Potential Supply Chain." August 2008. Web. February 2010. <http://www.ncsu.edu/iei/programs/energy-environment/documents/debbage-report.pdf>

**Figure M-1. Oregon Firms along the I-5 Corridor with Potential to Link to the Solar Manufacturing Supply Chain**



- 23891: Site Preparation Contractors
- 3323: Architectural & Structural Metals Mfg.
- 3321: Fabricated Metal Product Manufacturing - Forging and Stamping
- 3272: Glass & Glass Product Mfg.
- 3252: Plastics Material & Resin Mfg.
- 3344: Semiconductors & Related Device Mfg.
- 3359: Other Electronic Equipment and Component Mfg.
- Salem Metropolitan Statistical Area



SOURCE: ReferenceUSA, United States Census, and DeLorme World BaseMAP

COMPILED: Community Planning Workshop

## Contact Information for Companies Located in the Salem MSA

Table M-1 lists companies, by manufacturing product or service, with the potential to participate in the solar manufacturing process. As mentioned above, these companies list just a few firms, by industry. A more in depth analysis will likely yield more firms.

**Table M-1. Select Firms in the Salem MSA that Have Potential to Link to Solar Manufacturing**

Company Name	Address	City	State	ZIP Code	County	Phone	Employee Range	Square Footage
<b>NAICS 3252 - Plastics Material &amp; Resin Manufacturing</b>								
Pacific Corrugated Plastic	6402 Miller Rd	Hubbard	OR	97032	Marion	(503) 263-3330	1 to 4	2,500 - 9,999
Bamberger Polymers Inc	PO Box 220	Silverton	OR	97381	Marion	(503) 873-4483	1 to 4	2,500 - 9,999
<b>NAICS 3321 - Fabricated Metal Product Manufacturing - Forging and Stamping</b>								
Pipe Tool Specialty	1301 Candlewood Dr NE	Keizer	OR	97303	Marion	(503) 390-6794	1 to 4	2,500 - 9,999
Willamette Valley Underground	PO Box 888	Stayton	OR	97383	Marion	(503) 991-7407	5 to 9	10,000 - 39,999
Silverton Foundry	600 Pine St	Silverton	OR	97381	Marion	(503) 873-6826	5 to 9	10,000 - 39,999
<b>NAICS 3323 - Architectural &amp; Structural Metals Manufacturing</b>								
Robert Lloyd Sheet Metal	207 N 3rd Ave	Stayton	OR	97383	Marion	(503) 581-1119	50 to 99	40,000+ - 10,000 -
ASC Building Products	4063 Salem Industrial Dr NE	Salem	OR	97301	Marion	(503) 390-7174	20 to 49	39,999
Fabral Inc	4570 Ridge Dr NE	Salem	OR	97301	Marion	(503) 393-8161	50 to 99	40,000+ - 2,500 -
Holland Custom Fabricator Inc	10691 Main St NE	Donald	OR	97020	Marion	(503) 678-3097	1 to 4	9,999
<b>NAICS 3344 - Semiconductors &amp; Related Device Manufacturing</b>								
Control Process Systems	8447 Bronco Dr SE	Salem	OR	97317	Marion	(503) 749-1602	5 to 9	40,000+

Source: ReferenceUSA (search by NAICS code)