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Oregon Manufacturing Extension Partnership: An Economic Impact Analysis

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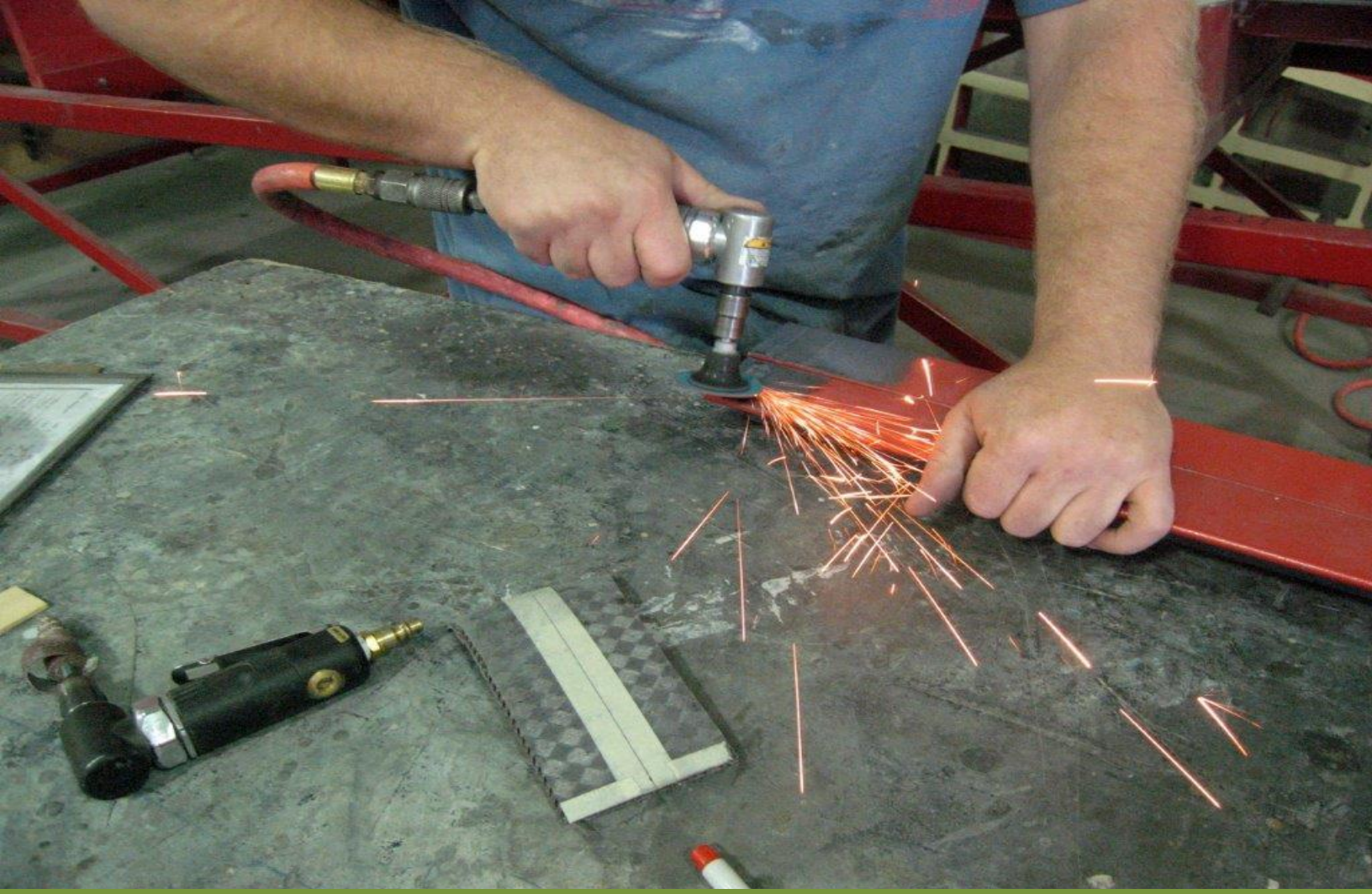

Oregon Manufacturing Extension Partnership: An Economic Impact Analysis

NeRC
Northwest Economic Research Center
College of Urban and Public Affairs

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ACKNOWLEDGEMENTS

This report was researched and produced by the Northwest Economic Research Center (NERC) with support from Oregon Manufacturing Extension Partnership (OMEP).

OMEP is a non-profit organization that aims to help Oregon manufacturers respond to the challenges of competing in an increasingly global economy. They work with owners, executives, managers and operators to assess company needs in all areas.

Every client requires a customized approach focusing on their specific obstacles to growth. Entry points range from creating improved flow on the production line, to speeding sales order processing, to training the workforce on problem solving approaches, to developing a strategy to enter new markets. Whatever the need, OMEP offers the tools, expertise, and the flexibility to engage with manufacturers at all levels.

NERC is based at Portland State University in the College of Urban and Public Affairs. The Center focuses on economic research that supports public-policy decision-making, and relates to issues important to Oregon and the Portland Metropolitan Area. NERC serves the public, nonprofit, and private sector community with high quality, unbiased, and credible economic analysis. Dr. Tom Potiowsky is the Director of NERC, and also serves as the Chair of the Department of Economics at Portland State University. Dr. Jenny H. Liu is NERC's Assistant Director and Assistant Professor in the Toulan School of Urban Studies and Planning. The report was researched and written by Jeff Renfro, NERC Senior Economist. Research support was provided by Marisol Cáceres, Janai Kessi, and Kyle O'Brien, NERC Research Assistants.

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I. EXECUTIVE SUMMARY

Historically, the manufacturing sector has been a major driver of the U.S. and Oregon economies. In the aftermath of the recent recession, governments at all levels have prioritized supporting and expanding local manufacturing efforts. The Hollings Manufacturing Extension Program (founded in 1988) is a nationwide network of nonprofits that work with managers and business owners to improve competitiveness. The Oregon Manufacturing Extension Partnership (OMEP) implements this strategy locally. OMEP consultants use data-driven techniques to identify areas of improvement for individual small- and medium-sized firms, to help them increase sales, reduce costs, or expand into new markets.

OMEP asked the Northwest Economic Research Center (NERC) to conduct an analysis of the economic impact of their work with Oregon manufacturers. NERC used data collected by a third-party survey company as modeling inputs. Participating firms are asked to estimate the effect of working with OMEP on sales, employment, investment, and new product development relative to their expected level of production without OMEP. Because it is assumed that this new economic activity would not exist without OMEP's intervention, NERC was able to aggregate and sort these into IMPLAN inputs. IMPLAN is an input-output software used to estimate total economic impacts of new activity.

Figure 1 and 2 show the direct and total employment and output impacts, respectively, in Oregon supported by OMEP from 2002-2012. We found a large amount of inter-year variability. This variability is driven by a small number of large-impact projects. The size of the impacts also varies according to the industry subsector. Projects with healthcare or medical device firms tend to result in large impacts. *Table 1* summarizes the total economic impacts for the same time period.

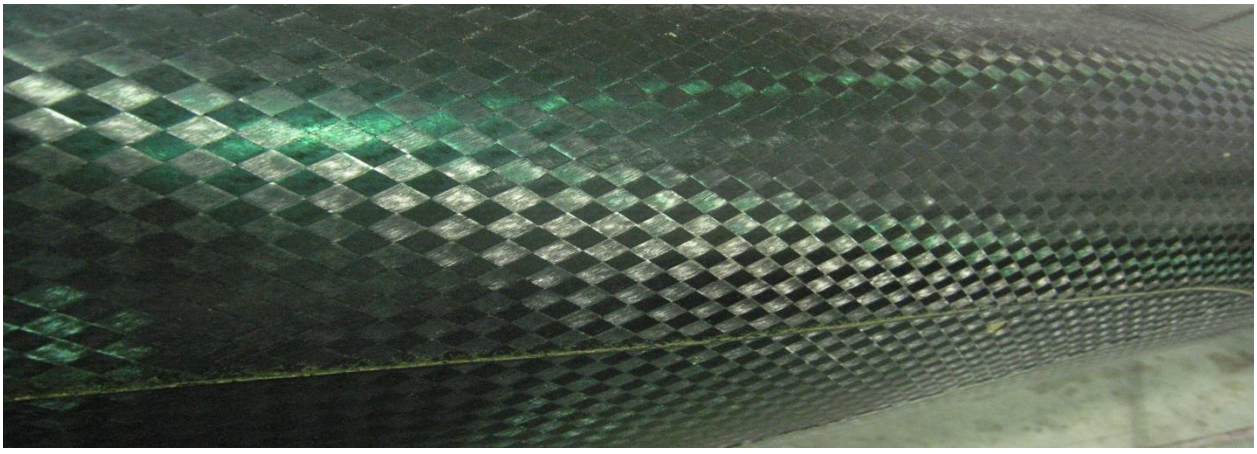


Figure 1: Oregon Employment Impacts (2002-2012)

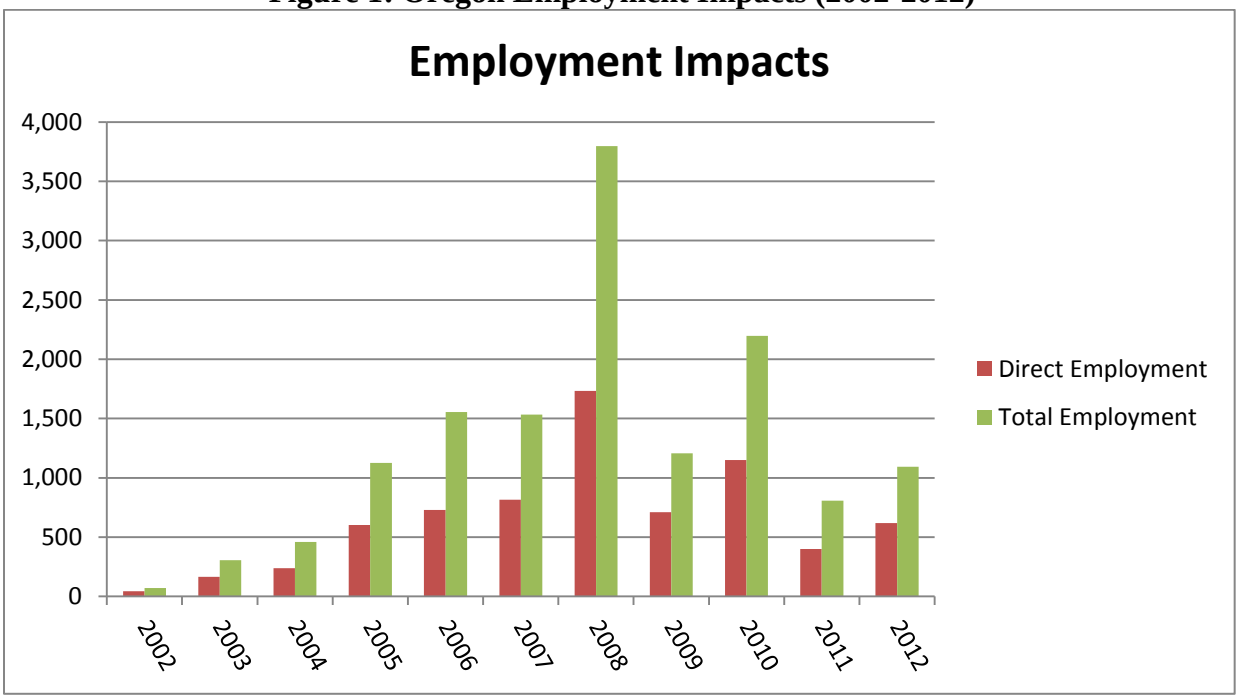
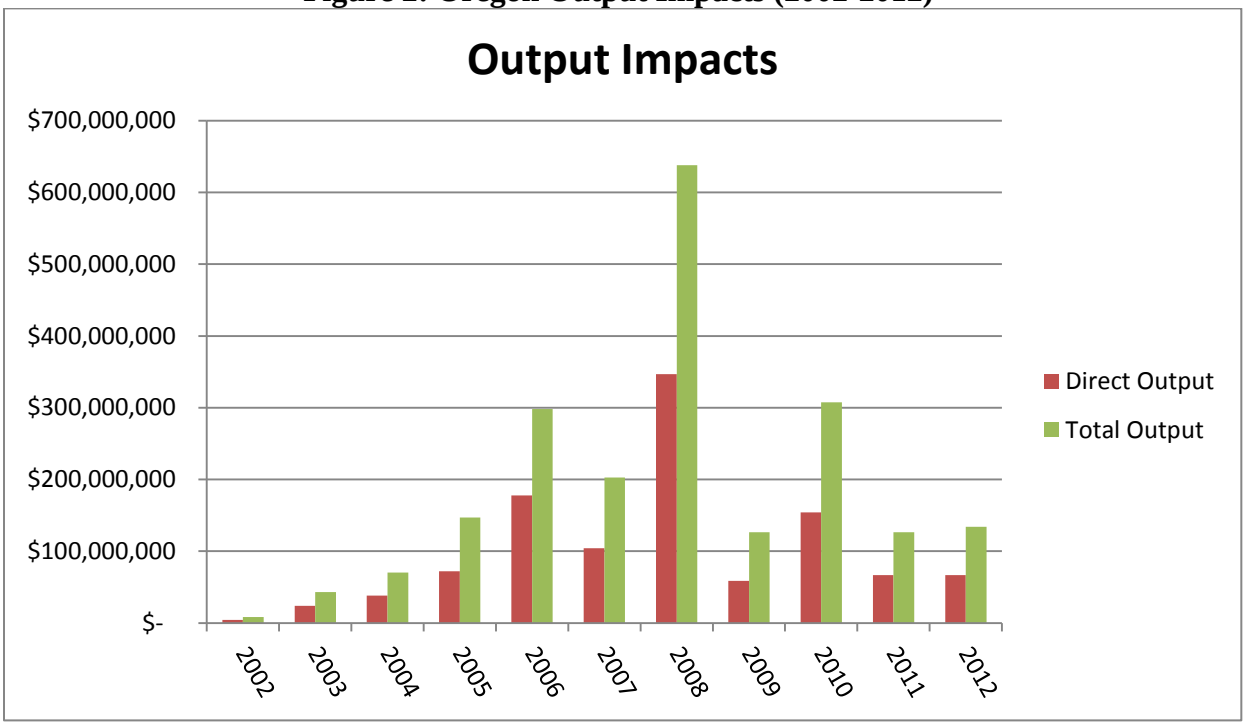


Figure 2: Oregon Output Impacts (2002-2012)[1]



[1] A reminder that the output detailed here is IMPLAN output, which is a gross measure that most likely overestimates output relative to traditional GDP.

Table 1: Total Economic Impacts (2002-2012)

Year	Employment	Labor Income	Total Value Added	Output
2002	72	$ 3,702,557	$ 5,047,628	$ 8,472,064
2003	305	$ 18,799,228	$ 26,267,409	$ 43,327,482
2004	460	$ 26,518,275	$ 37,848,488	$ 70,469,630
2005	1,127	$ 61,563,188	$ 82,432,994	$ 146,901,125
2006	1,554	$ 92,010,144	$ 134,885,559	$ 298,012,738
2007	1,533	$ 82,743,644	$ 115,008,518	$ 202,637,671
2008	3,798	$ 235,081,985	$ 338,621,948	$ 637,711,311
2009	1,207	$ 61,967,056	$ 82,287,516	$ 126,538,740
2010	2,197	$ 115,853,032	$ 162,047,171	$ 307,666,321
2011	808	$ 43,480,226	$ 61,495,653	$ 126,471,735
2012	1,092	$ 55,629,845	$ 75,764,325	$ 133,904,248
Total	14,153	$ 797,349,180	$ 1,121,707,209	$ 2,102,113,065

Table 2 shows the total economic impacts supported by OMEP for two years, broken out by region. In 2012-2013, the improvements made to firm's manufacturing processes supported a total of 641 jobs statewide. This was a decrease from the 1,307 jobs statewide supported in 2011-2012.

Table 2: Total Economic Impacts[2]

	Employment	Labor Income	Total Value Added	Output
2012-2013				
Oregon	**641**	**$ 29,814,382**	**$ 40,352,139**	**$ 76,599,917**
Rural Oregon	199	$ 9,215,427	$ 11,614,603	$ 18,967,430
Urban Oregon	395	$ 18,802,263	$ 25,516,445	$ 50,472,221
2011-2012				
Oregon	**1,307**	**$ 80,576,325**	**$ 115,410,043**	**$ 220,888,094**
Rural Oregon	477	$ 24,231,488	$ 31,239,755	$ 56,525,262
Urban Oregon	683	$ 49,579,871	$ 73,068,845	$ 141,970,927

This activity also benefits state and local government. The additional economic activity supported by OMEP resulted in an estimated $1,916,249 in state revenues in 2012-2013, and $5,336,560 in 2011-2012. The impact on local governments from taxes and fees is estimated to be $1,035,718 in 2012-2013 and $2,941,468 in 2011-2012.

State and local government economic development agencies in Oregon have identified assisting and supporting manufacturers as a top priority for the future. The variability of OMEP's impact over time illustrated in this report is motivated by a variety of factors (the business cycle being

[2] See the footnote on page 16 for an explanation of why the rural and urban numbers do not sum to the Oregon total.

a big contributor) but consultant staffing levels also drive their contribution. Because OMEP is partially funded by public money, service levels need to be weighed against other state and local priorities, but OMEP's mission and results tie in with existing government objectives. The size of the Oregon manufacturing sector relative to OMEP's current capacity suggests that there is unmet need for these types of services. Examples from MEP organizations in other states could be used to arrive at an appropriate level of public support.

II. INTRODUCTION

The manufacturing sector is a major driver of the United States economy; the sector provides employment to an estimated of 11.7 million people in the country (direct jobs only) and represents 47 percent of total U.S. exports. If the manufacturing sector was considered to be a country itself, it would be the 10th largest world economy.[3]

While the U.S. remains one of the top manufacturing economies in the world by value, there has been an overall decrease in employment and a loss of market share over the last few decades. This trend may be reversing as U.S. exports in manufactured goods have grown steadily in recent years. The manufacturing sector in the State of Oregon is particularly strong and provides high value output. It is responsible for an important part of the State's growth; the manufacturing sector as a share of state' GDP has increased from a 25% in 2007 to a 39% in 2012 (in both years it ranked above the national average). The expansion of the computer and electronic products industry in Oregon has been the main driver of this change. The manufacturing sector is responsible for employing 10.5% of the State's workforce (8.9% is the national average) and tends to pay wages above the state median. [4]

[3] "FACTS ABOUT MANUFACTURING". The Manufacturing Institute. *2012 Annual Report*. http://www.themanufacturinginstitute.org/~/media/1242121E7A4F45D68C2A4586540703A5/2012_Facts_About_Manufacturing__Full_Version___High_Res.pdf (Accessed on January 2014).

[4] "MANUFACTURING EMPLOYMENT AND OUTPUT".The Office of Economic Analysis (OEA), State of Oregon. Posted by: Josh Lehner. January 2013. http://oregoneconomicanalysis.com/2013/06/06/manufacturing-employment-and-output/ (Accessed on December 2013).

Counteracting the loss of jobs and capacity has been a national priority for decades, but the movement away from outsourcing in some sectors and the federal government's measures to alleviate the effects of the recent recession have provided focus and resources for manufacturing assistance. In Oregon, the Oregon Manufacturing Extension Partnership (OMEP) receives funding from federal, state, and private sources to assist local manufacturers.

The Hollings Manufacturing Extension Partnership (MEP) was founded in 1988 as part of a government initiative to grow and improve the country's manufacturing sector. MEP is a program of the U.S. Department of Commerce, and it is under the management of the National Institute of Standards and Technology Agency.

MEP is a nationwide network with offices in every state across the country. Over its 20 years of work, the organization has built partnerships with local, state and federal governments; small- and medium-sized business from the private sector; and research organizations. MEP serves as a connecting point among parts of the manufacturing sector.

At a state level, The Oregon Manufacturing Extension Partnership (OMEP) is the representative organization in charge of implementing the nationwide strategy as part of the umbrella association. OMEP works as a non-profit organization, providing counseling services to small and mid-sized manufacturers throughout the State of Oregon.

OMEP works together with managers and business owners to improve businesses competitiveness in the global market. Their approach attempts to give business owners a closer inside view of their own organization; using simple ways to analyze the production process, such us, graphs, mapping or cost studies. Their goal is to identify areas where improvements in manufacturing procedures can be accomplished in order to reduce costs, increase sales, or expand into new markets.

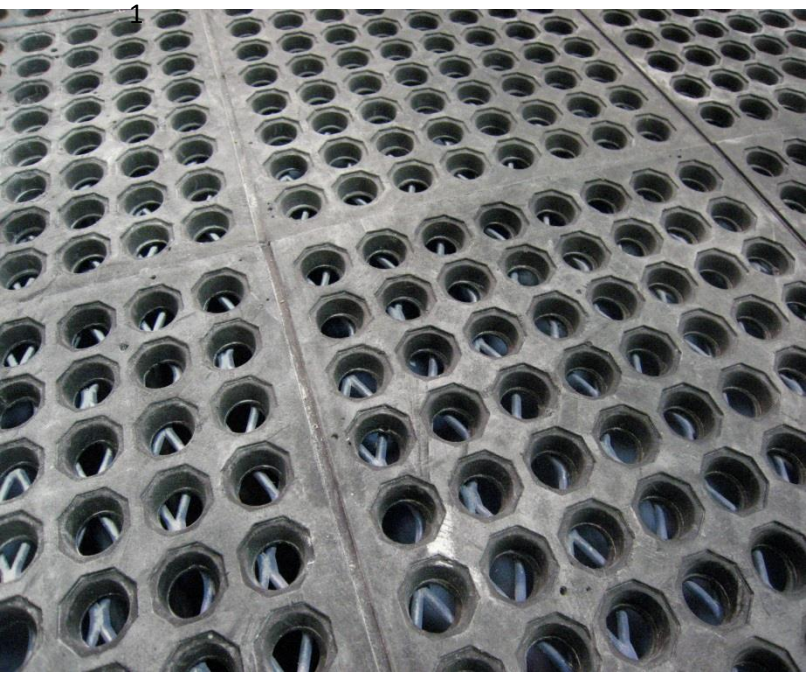
Some of the strategies recommended by OMEP might include:

- Employee and management training
- Structural reorganization
- Change in the corporate image
- Working on organizational communication
- Modification in processes to avoid redundancy
- Design more efficient factories layout
- Improvement in the production capacity
- Reduction of lead times

III. DATA DESCRIPTION AND SURVEY METHODOLOGY

In order to quantify the economic impact of OMEP's work with Oregon manufacturers, a third party surveys participating firms. Participants are asked to quantify the changes in economic activity associated with their work with OMEP consultants. The economic input-output software used to calculate the total economic impacts of OMEP's work (IMPLAN) uses new economic activity as inputs. The estimated impacts (reported in a later section) that are produced by IMPLAN assume that the activity being modeled is new activity above an expected baseline. In most cases, the participating firms would continue to operate without OMEPS's assistance. The goal of the study is to isolate the firm activity that would not exist without this assistance.

Survey respondents take the survey online, and are told that it should take approximately 15 minutes to complete. The questions are a mix of multiple choice and short fill-in-the-blank. Respondents are asked to report general information on their firm and activity, including overall sales and employment. Respondents are then asked questions about the outcomes of services they received, and if the outcomes led to increases in sales or employment. If respondents indicate an increase in sales or employment, they are asked to write in the amount.



Respondents report on:

- Increased Sales
- Retained Sales
- Cost Savings
- Plant Equipment Investments
- Information Systems Investments
- Workforce Practices Investment
- New Products and Processes (and associated sales)
- Savings from Avoided Investments
- Job Creation
- Job Retention

IMPLAN is not built to forecast future activity due to investment (or avoided investment). We report the sums of the reported investment, but are not estimating their long-term impacts. When estimating the total economic impacts of OMEP's work, we consider increased sales, retained sales, cost savings, new products and processes, and job creation and retention. These economic impacts are simpler to quantify and their connection to specific OMEP interventions is easier to establish.

A potential shortcoming of the analysis is our reliance on self-reported impacts. Firms fill out the surveys after working with OMEP, and do not receive any difference in service due to survey responses. There is no incentive for respondents to inflate or deflate survey responses. Additionally, the survey is conducted by an outside, third party. However, even without incentives to report or collect inaccurate results, there is still the risk of respondents reporting incorrect data due to confusion or error. The survey asks respondents to report overall firm activity levels and list specific services received before asking about new economic activity. This should eliminate confusion about the appropriate activity to report. When creating inputs for IMPLAN, we compared new sales and employment numbers to overall firm activity. Some firms credit OMEP's intervention with saving the firm, and attribute most or all of their ongoing activity to OMEP. In one case, a firm reported a large increase in employment, which exceeded its overall level of employment. In this case, we chose to drop all of this activity because we had no way to estimate the degree of error. This makes the overall economic impact estimates conservative.

IV. DESCRIPTION OF IMPLAN

When conducting economic impact studies, it is important to differentiate between new economic activity, and economic activity that may just be replacing already existing activity. If expansion for one firm occurs at the expense of another, then no actual growth has been created. The survey questions ask respondents to break out this new activity, allowing us to consider only outcomes above the level of activity expected with no OMEP intervention.

IMPLAN models are constructed using Social Accounting Matrices (SAM) based on spending and purchasing data from the Bureau of Economic Analysis (BEA) supplemented by data from other publicly available sources. SAMs are constructed to reflect the actual industry interactions in a region, and include government activities that are not traditionally reflected in this type of economic analysis.

SAMs create a map showing how money and resources flow through the economy. In a simulation, new economic activity is assumed to occur in an industry or group of industries. Based on past spending and purchasing activity, IMPLAN simulates the purchasing and spending necessary for this new economic activity to occur. IMPLAN tracks this new economic activity as it works its way through the economy. Also included in SAMs are household and government behavior. In addition to following purchasing and spending through the private sector, IMPLAN also estimates the impact of changes in disposable income and tax revenue.

A production function is constructed for each industry, reflecting its connections to other industries. Economic changes or events are propagated through this process as

IMPLAN Impacts

The impact summary results are given in terms of employment, labor income, total value added, and output:

Employment represents the number of annual, 1.0 FTE jobs. These job estimates are derived from industry wage averages.

Labor Income is made up of total employee compensation (wages and benefits) as well as proprietor income. Proprietor income is profits earned by self-employed individuals.

Total Value Added is made up of labor income, property type income, and indirect business taxes collected on behalf of local government. This measure is comparable to familiar net measurements of output like gross domestic product.

Output is a gross measure of production. It includes the value of both intermediate and final goods. Because of this, some double counting will occur. Output is presented as a gross measure because IMPLAN is capable of analyzing custom economic zones. Producers may be creating goods that would be considered intermediate from the perspective of the greater national economy, but may leave the custom economic zone, making them a local final good.

new economic activity motivates additional economic activity in other parts of the supply chain, and through changes in spending habits.

IMPLAN breaks out analysis results into three types: direct, indirect, and induced.

- **Direct Impacts**: These are defined by the modeler, and placed in the appropriate industry. They are not subject to multipliers. In this case, purchasing, employment, and wage data were collected from the sources described above and placed into the appropriate industry.

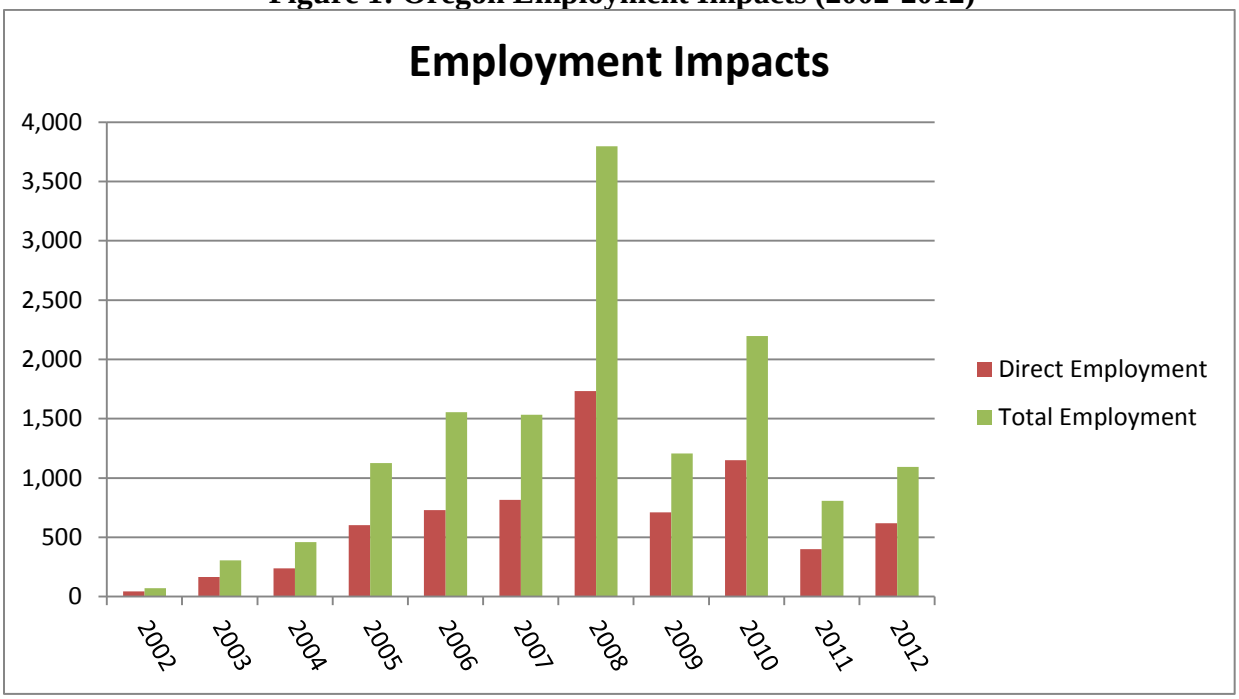
- **Indirect Impacts**: These impacts are estimated based on national purchasing and sales data that model the interactions between industries. This category reflects the economic activity necessary to support the new economic activity in the direct impacts by other firms in the supply chain.

- **Induced Impacts**: These impacts are created by the change in wages and employee compensation. Employees change purchasing decisions based on changes in income and wealth.

V. IMPLAN RESULTS

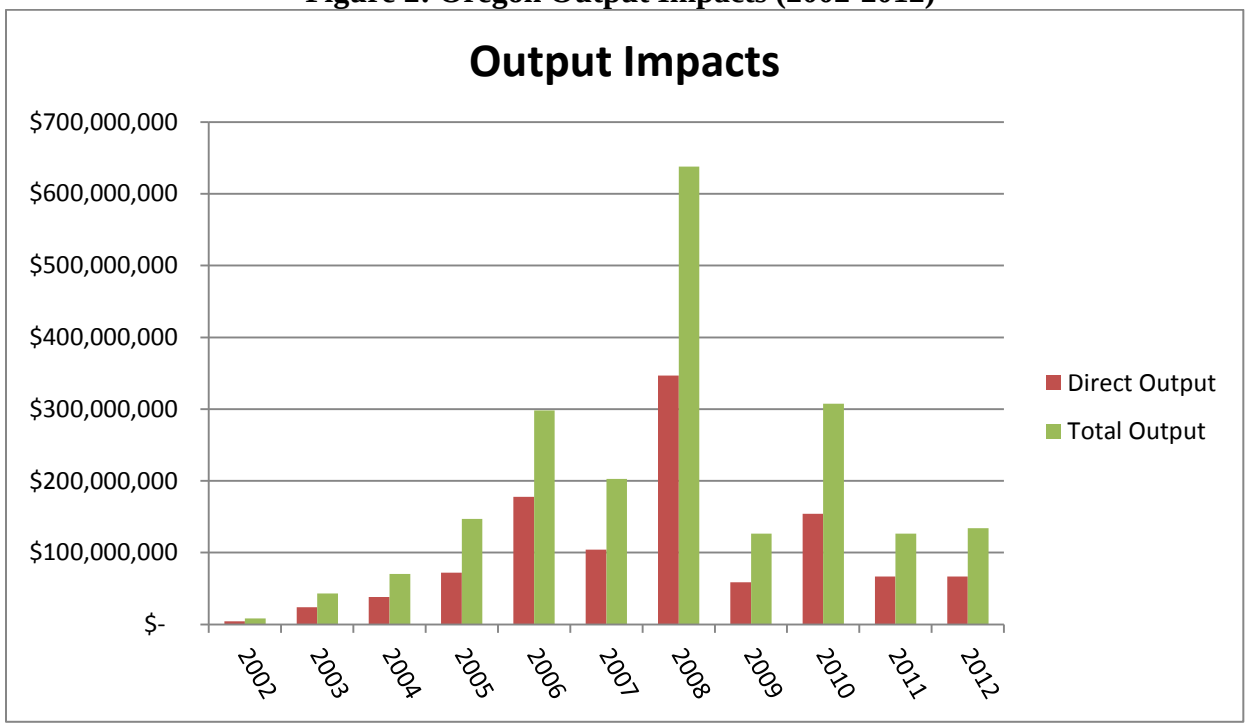
We observed a large amount of inter-year variability when reviewing the last several years of survey results. This variability appears to be driven by a small number of large-impact projects and the staffing levels at OMEP. Not surprisingly, OMEP's impact on the local economy is a function of the number of consultants working with manufacturers. The following tables show the statewide employment and output impacts of OMEP from 2002-2012[5].

Figure 1: Oregon Employment Impacts (2002-2012)



[5] All monetary amounts are reported in 2013 dollars.

Figure 2: Oregon Output Impacts (2002-2012)[6]



In 2008, OMEP took on more projects, and a large number of these projects resulted in significant increases in employment and sales. Certain industries also tend to produce large economic impact numbers; throughout the study period, manufacturers working in the healthcare and medical device fields consistently reported significant sales and employment growth after working with OMEP. There were several large projects in 2008, including one firm reporting a sales increase that is by far OMEP's largest.

Oregon

In order to provide a more detailed look at the impact of OMEP's work, we have broken out the most recent annual impacts. We chose to report two years because of the variability mentioned previously. As the graphs above show, there was a large drop-off in new jobs and output following the recession. The 2012-2013 results were unusually small, even relative to the post-recession period.

[6] A reminder that the output detailed here is IMPLAN output, which is a gross measure that most likely overestimates output relative to traditional GDP.

The following tables show the total economic impact of OMEP's work from the third quarter of 2012 through the second quarter of 2013.

Table 3: 2012-2013 Impacts

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	376	$ 17,712,676	$ 20,107,082	$ 38,836,020
Indirect Effect	107	$ 5,764,437	$ 8,915,653	$ 18,501,639
Induced Effect	158	$ 6,337,269	$ 11,329,403	$ 19,262,258
Total Effect	**641**	**$ 29,814,382**	**$ 40,352,139**	**$ 76,599,917**

In 2012-2013, OMEP activity directly supported 376 jobs that would not have otherwise existed, and indirectly supported an additional 265 jobs. These jobs generated $29,814,382 in total labor income. The total increase in output associated with this activity was $76,599,917.

Table 4: Industries Affected

Description	Total Employment	Total Labor Income	Total Output
311 Food Manufacturing	174	$ 6,433,548	$ 23,005,098
321 Wood product manufacturing	52	$ 2,592,030	$ 4,186,637
327 Nonmetallic Mineral Product Manufacturing	47	$ 2,538,229	$ 20,780
326 Plastics and rubber products manufacturing	27	$ 1,502,901	$ 1,017,198
722 Food services and drinking places	21	$ 455,259	$ 1,223,873
332 Fabricated Metal Product Manufacturing	20	$ 1,175,470	$ 1,811,708
42 Wholesale trade	15	$ 1,272,766	$ 2,929,275

Table 4 shows the industries that experienced the biggest positive change based on employment. As later industry tables show, the industries most affected vary by year and region.

Table 5: Tax Impact

	Total
Oregon	
State Personal and Corporate Income Taxes	$ 989,224
Other State Taxes, fees, and licenses	$ 927,025
Total	**$ 1,916,249**
Local Governments	
Property Taxes	$ 1,007,528
Other Local Taxes, Fees, and Licenses	$ 28,190
Total	**$ 1,035,718**
Federal Government	
Federal Personal and Corporate Income Taxes	$ 2,122,549
Social Insurance and Excise Taxes	$ 3,757,446
Total	**$ 5,879,995**
TOTAL	**$ 8,831,962**

The additional income and output that are the result of OMEP's work generate additional tax revenue for local, state, and federal government. We estimate that OMEP's work resulted in an additional $1,916,249 in state tax revenues, and $1,035,718 in various local taxes and fees.

2011-2012

The 2011-2012 period had a total employment impact just over twice as large as 2012-2013. As stated earlier, the difference can be traced back to a handful of large impact firms. It is difficult to draw lessons from what appears to be normal variation. The following tables cover the period from the third quarter of 2011 through the second quarter of 2012.

Table 6: 2011-2012 Impacts

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	584	$ 47,865,395	$ 59,861,874	$ 119,278,034
Indirect Effect	296	$ 15,548,733	$ 24,864,806	$ 49,444,032
Induced Effect	427	$ 17,162,197	$ 30,683,363	$ 52,166,028
Total Effect	**1,307**	**$ 80,576,325**	**$ 115,410,043**	**$ 220,888,094**

In 2011-2012, OMEP's activity directly supported 584 jobs that would have otherwise not existed, and indirectly supported an additional 723 jobs. The jobs multiplier of 1.8 is slightly higher than the 1.7 jobs multiplier in 2012-2013. In this year, the total additional labor income supported by OMEP's work was $80,576,325 and the total increase in output was $220,888,094.

As noted earlier, during this period there was a company that reported results which we flagged as being suspiciously high. Because we did not have a method for scaling down the estimate with any accuracy, we chose to be conservative and drop the data point. It is likely that we are underestimating the impacts for this period.

Table 7: Industries Affected

Description	Total Employment	Total Labor Income	Total Output
321 Wood product manufacturing	113	$ 5,364,648	$ 2,615,439
332 Fabricated Metal Product Manufacturing	106	$ 6,169,270	$ 17,314,400
336 Transportation equipment manufacturing	90	$ 4,739,665	$ 12,780,797
722 Food services and drinking places	58	$ 1,287,720	$ 3,461,776
42 Wholesale trade	37	$ 3,080,307	$ 7,089,337
531 Real estate	37	$ 456,996	$ 5,012,364
331 Primary metal manufacturing	30	$ 2,487,555	$ 1,237,730
337 Furniture and related product manufacturing	25	$ 1,224,287	$ 7,097,772
621 Ambulatory health care services	24	$ 1,805,028	$ 2,964,088

The industries most affected by OMEP vary between the two years, reflecting the mix of clients. Wood Product Manufacturing appears high on both lists.

Table 8: Tax Impact

	Total
Oregon	
State Personal and Corporate Income Taxes	$ 2,734,885
Other State Taxes, fees, and licenses	$ 2,601,675
Total	**$ 5,336,560**
Local Governments	
Property Taxes	$ 2,865,031
Other Local Taxes, Fees, and Licenses	$ 76,437
Total	**$ 2,941,468**
Federal Government	
Federal Personal and Corporate Income Taxes	$ 6,138,918
Social Insurance and Excise Taxes	$ 9,964,380
Total	**$ 16,103,298**
TOTAL	**$ 24,381,326**

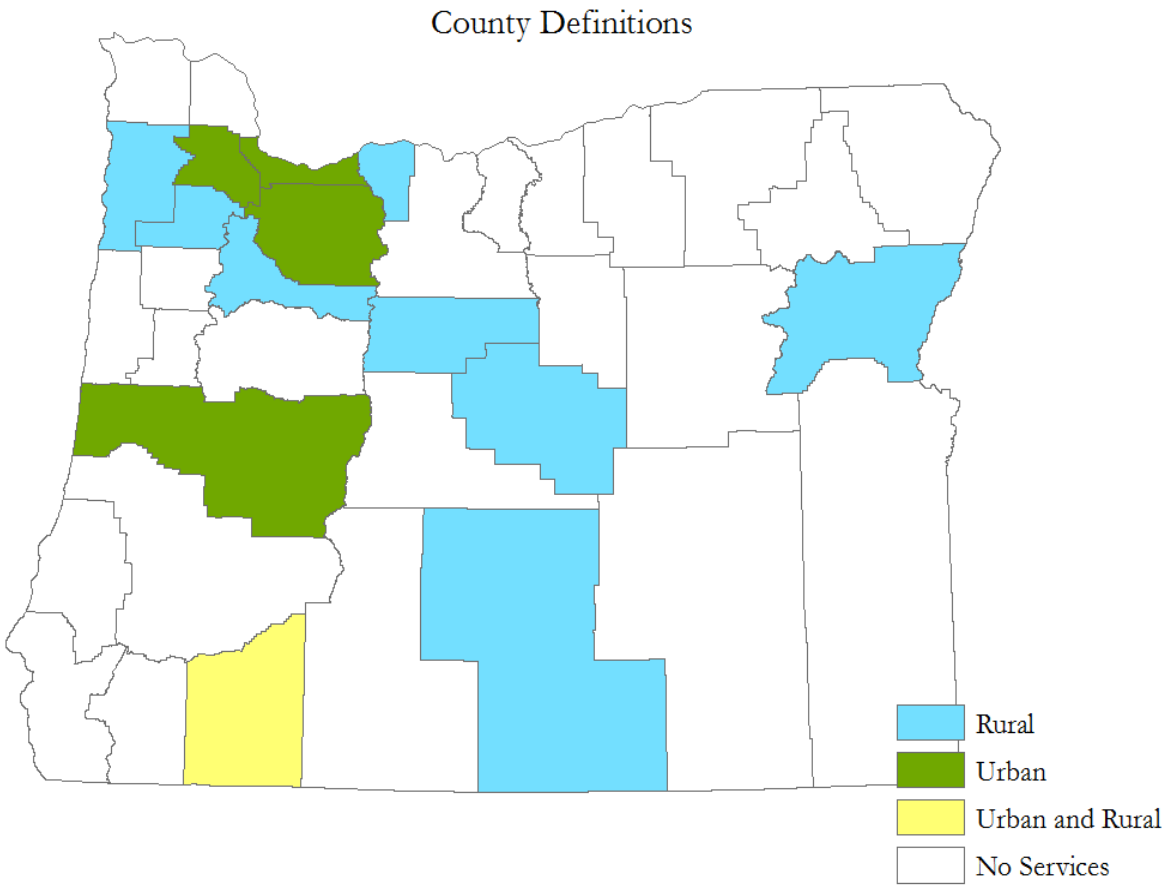
In 2011-2012, increased economic activity connected to OMEP's work contributed an additional $5,336,560 in state revenues, and $2,941,468 in local taxes and fees.

Rural/Urban Breakdown

We have also broken out results into rural and urban impacts. We used the U.S. Census Bureau's definition of rural and urban areas. Many of the participating urban firms are clustered in the Portland Metropolitan Area but there are a few represented in other parts of the state, including Medford. Marion County has an urban area centered on Salem, but all participating Marion County firms are located outside of this area and were included in the rural impacts, while the activity in Lane County took place in urban areas. *Figure 3* shows how

each county was classified, based on the location of the participating firms. For a more detailed look at impacts by county, see *Appendix A (pg. 23)*[7].

Figure 3: County Definitions



The share of overall direct employment impacts for urban and rural projects also reflects a large amount of variation. In 2012-2013, urban counties had a larger positive jobs impact due to OMEP's work which was the reverse of 2011-2012. It is interesting to note that although rural areas had a large direct increase in jobs, the urban region had a larger total job increase in both years. This is most likely due to closer supply-chain connections between urban firms. The concentration of manufacturing in urban areas increases the likelihood of firms purchasing

[7] Careful readers will note that the sum of the Total Impacts for the urban and rural areas does not equal the Oregon total. This is because there is leakage in the smaller models; activity in rural areas leads to some increase in activity in the urban areas, and vice versa. In the rural and urban models, this leakage is not captured by either model. All of this activity is captured by the full Oregon model, leading to higher indirect and induced impacts.

intermediate inputs from inside of their own economic zone. This leads to a larger leakage effect in rural areas.

Rural Oregon

2012-2013 Impacts

Table 9: 2012-2013 Impacts

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	140	$ 6,930,380	$ 7,556,970	$ 11,680,000
Indirect Effect	18	$ 836,138	$ 1,328,721	$ 2,736,213
Induced Effect	41	$ 1,448,909	$ 2,728,911	$ 4,551,217
Total Effect	**199**	**$ 9,215,427**	**$ 11,614,603**	**$ 18,967,430**

Table 10: Industries Affected

Description	Total Employment	Total Labor Income	Total Output
311 Food manufacturing	63	$ 2,302,320	$ 3,197,303
321 Wood product manufacturing	51	$ 2,511,599	$ 3,894,930
332 Fabricated Metal Product Manufacturing	20	$ 1,173,386	$ 1,800,173
339 Miscellaneous manufacturing	6	$ 909,857	$ 2,909,784
722 Food services and drinking places	6	$ 118,883	$ 334,342
531 Real estate	3	$ 27,075	$ 355,146
621 Ambulatory health care services	3	$ 185,078	$ 310,328
622 Hospitals	2	$ 154,692	$ 310,491

Table 11: Tax Impact

	Total
Oregon	
State Personal and Corporate Income Taxes	$ 289,144
Other State Taxes, fees, and licenses	$ 235,348
Total	**$ 524,492**
Local Governments	
Property Taxes	$ 230,108
Other Local Taxes, Fees, and Licenses	$ 8,391
Total	**$ 238,499**
Federal Government	
Federal Personal and Corporate Income Taxes	$ 593,150
Social Insurance and Excise Taxes	$ 1,136,231
Total	**$ 1,729,381**
TOTAL	**$ 2,492,372**

2011-2012

Table 12: 2011-2012 Impacts

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	319	$ 18,129,110	$ 20,424,489	$ 37,292,819
Indirect Effect	51	$ 2,295,909	$ 3,649,887	$ 7,280,247
Induced Effect	107	$ 3,806,469	$ 7,165,379	$ 11,952,196
Total Effect	**477**	**$ 24,231,488**	**$ 31,239,755**	**$ 56,525,262**

Table 13: Industries Affected

Description	Total Employment	Total Labor Income	Total Output
321 Wood product manufacturing	133	$ 6,503,965	$ 5,217,577
336 Transportation equipment manufacturing	90	$ 4,739,731	$ 12,779,681
332 Fabricated Metal Product Manufacturing	32	$ 1,691,747	$ 3,765,602
339 Miscellaneous manufacturing	22	$ 2,835,414	$ 9,067,847
311 Food manufacturing	15	$ 509,214	$ 4,094,436
722 Food services and drinking places	15	$ 311,195	$ 875,194
333 Machinery manufacturing	14	$ 979,572	$ 311,693
531 Real estate	7	$ 73,084	$ 958,651

Table 14: Tax Impact

	Total
Oregon	
State Personal and Corporate Income Taxes	$ 764,769
Other State Taxes, fees, and licenses	$ 633,406
Total	**$ 1,398,175**
Local Governments	
Property Taxes	$ 616,665
Other Local Taxes, Fees, and Licenses	$ 22,014
Total	**$ 638,679**
Federal Government	
Federal Personal and Corporate Income Taxes	$ 1,601,251
Social Insurance and Excise Taxes	$ 3,203,468
Total	**$ 4,804,719**
TOTAL	**$ 6,841,573**

Urban Oregon

2012-2013 Impacts

Table 15: 2012-2013 Impacts

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	235	$ 10,751,728	$ 12,517,477	$ 27,111,020
Indirect Effect	64	$ 3,964,956	$ 5,890,524	$ 11,419,398
Induced Effect	96	$ 4,085,579	$ 7,108,444	$ 11,941,803
Total Effect	**395**	**$ 18,802,263**	**$ 25,516,445**	**$ 50,472,221**

Table 16: Industries Affected

Description	Total Employment	Total Labor Income	Total Output
311 Food Manufacturing	116	$ 4,115,970	$ 20,779,276
327 Nonmetallic mineral product manufacturing	47	$ 2,538,151	$ 20,495
326 Plastics and rubber products manufacturing	27	$ 1,501,421	$ 1,008,686
332 Fabricated metal product manufacturing	13	$ 843,199	$ 2,080,681
722 Food services and drinking places	13	$ 291,749	$ 759,587
531 Real estate	10	$ 130,817	$ 1,315,206
551 Management of companies and enterprises	10	$ 984,328	$ 1,969,582
42 Wholesale trade	9	$ 849,110	$ 1,852,753
322 Paper manufacturing	8	$ 371,514	$ 391,992

Table 17: Tax Impact

	Total
Oregon	
State Personal and Corporate Income Taxes	$ 635,351
Other State Taxes, fees, and licenses	$ 564,676
Total	**$ 1,200,027**
Local Governments	
Property Taxes	$ 613,924
Other Local Taxes, Fees, and Licenses	$ 18,104
Total	**$ 632,028**
Federal Government	
Federal Personal and Corporate Income Taxes	$ 1,363,493
Social Insurance and Excise Taxes	$ 2,364,566
Total	**$ 3,728,059**
TOTAL	**$ 5,560,114**

2011-2012

Table 18: 2011-2012 Impacts

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	245	$ 28,359,844	$ 37,915,724	$ 79,699,882
Indirect Effect	185	$ 10,427,311	$ 16,371,351	$ 30,720,943
Induced Effect	253	$ 10,792,716	$ 18,781,771	$ 31,550,102
Total Effect	**683**	**$ 49,579,871**	**$ 73,068,845**	**$ 141,970,927**

Table 19: 10 Industries Affected

Description	Total Employment	Total Labor Income	Total Output
332 Fabricated Metal Product Manufacturing	87	$ 5,033,471	$ 16,098,982
722 Food services and drinking places	36	$ 835,556	$ 2,175,423
331 Primary metal manufacturing	29	$ 2,478,176	$ 1,154,753
531 Real estate	25	$ 340,062	$ 3,418,903
337 Furniture and related product manufacturing	25	$ 1,265,254	$ 7,096,093
42 Wholesale trade	22	$ 1,996,706	$ 4,356,800
311 Food manufacturing	20	$ 773,778	$ 128,397
523 Securities, commodity contracts, and other financial investments and related activities	14	$ 401,577	$ 1,916,717
621 Ambulatory health care services	14	$ 1,081,819	$ 1,736,532

Table 20: Tax Impact

	Total
Oregon	
State Personal and Corporate Income Taxes	$ 1,742,800
Other State Taxes, fees, and licenses	$ 1,584,579
Total	**$ 3,327,379**
Local Governments	
Property Taxes	$ 1,760,775
Other Local Taxes, Fees, and Licenses	$ 48,329
Total	**$ 1,809,104**
Federal Government	
Federal Personal and Corporate Income Taxes	$ 3,980,583
Social Insurance and Excise Taxes	$ 5,833,908
Total	**$ 9,814,491**
TOTAL	**$ 14,950,974**

Metal manufacturing is better represented in Urban Oregon impacts. Metal Manufacturing and Advanced Metal Manufacturing make up a large part of the Portland Metropolitan Area's exports and are cited as a developing sector along with the High-Tech Manufacturing sector.

Other Manufacturing Benefits

As stated in the Data Description section earlier in this report, OMEP also helps firms implement long-term investments or change practices to avoid unnecessary investments. These activities do not lend themselves to short-term economic impact analysis but can have a significant long-term effect on firm activity. *Tables 21 and 22* shows the investments made as a result of working with OMEP, according to survey results.

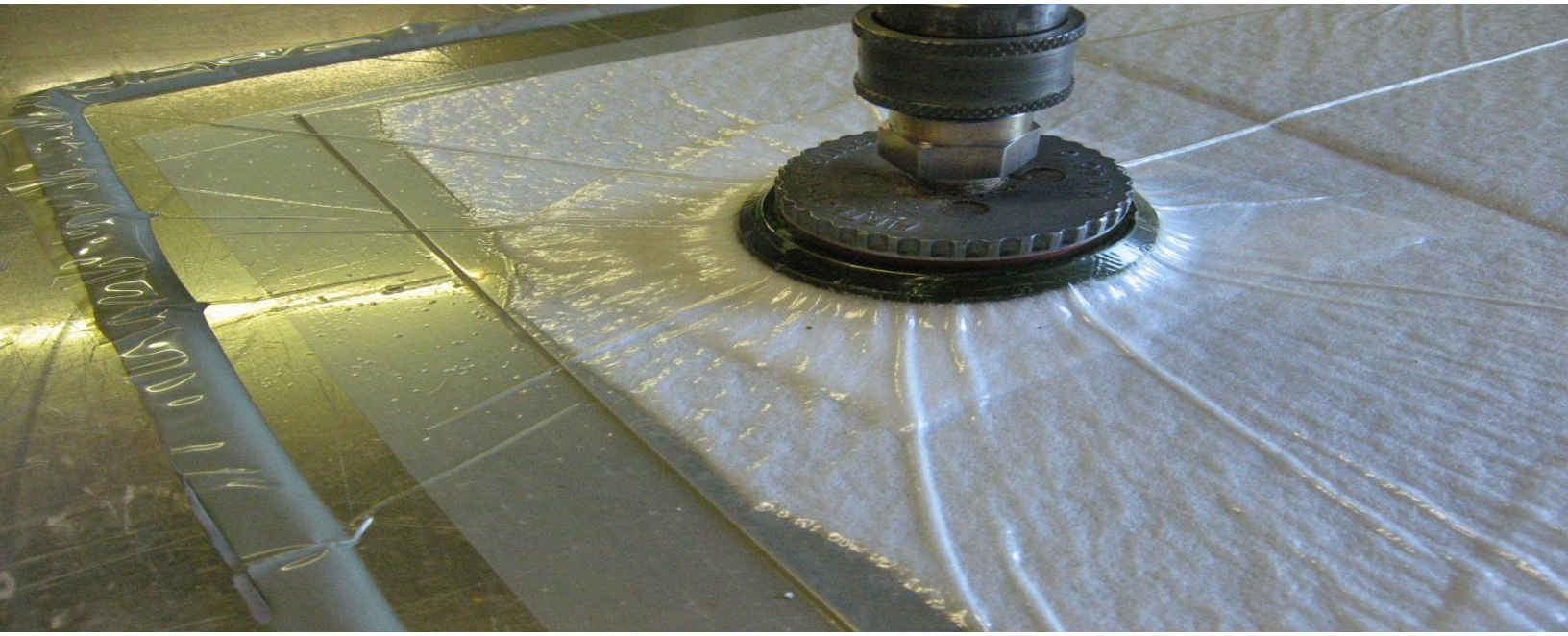
Table 21: Other Benefits 2012-2013

	Plant Equipment	Information Systems	Workforce Practices	Other Areas	Saved Investments
Oregon	**$ 11,201,000**	**$ 713,000**	**$ 755,000**	**$ 122,000**	**$ 924,000**
Rural	$ 3,717,000	$ 600,000	$ 242,000	$ 100,000	$ 677,000
Urban	$ 7,484,000	$ 113,000	$ 513,000	$ 22,000	$ 247,000

Table 22: Other Benefits 2011-2012

	Plant Equipment	Information Systems	Workforce Practices	Other Areas	Saved Investments
Oregon	**$ 8,440,600**	**$ 3,451,100**	**$ 2,143,320**	**$ 8,454,700**	**$ 1,774,500**
Rural	$ 6,490,800	$ 3,229,600	$ 1,463,520	$ 8,308,000	$ 1,315,000
Urban	$ 1,949,800	$ 221,500	$ 679,800	$ 146,700	$ 459,500

In order to calculate the additional benefits of these investments, further surveying must be performed to track the long-term impact.



VI. CONCLUSION

In order to fully isolate the effect of OMEP on participating organizations we would need access to years of sales and operational data from each firm, along with appropriate controls. During the period that we looked at in this report Oregon's recovery from the recession was weak, but underway. The survey asks respondents to isolate the business impact of OMEP services, but it is impossible to fully isolate the effect without backing data. Even in the absence of this analysis, we feel confident saying that OMEP is having a large, positive effect on the firms that it works with.

Large, technology manufacturers tend to dominate the Oregon manufacturing discussion, but as the preceding results show, smaller manufacturers like metalworkers and bakeries can produce large numbers of new jobs, particularly when given technical assistance. The aggregate effect of employment increases from small- and medium-sized firms is large, and contributes to sectors identified as priorities by Oregon's economic development agencies.

Both Business Oregon and Greater Portland, Inc. have identified Clean Tech, Athletic Apparel and Outdoor Gear, and Advanced Manufacturing as key sectors for the future of the Oregon economy. Business Oregon also focuses on Forestry and Wood Products, while Greater Portland, Inc. adds Software and Technology. Both organizations focus on keeping expertise local and supporting clusters; OMEP's mission of supporting Oregon manufacturing and identifying new opportunities fits closely with the missions of both organizations.

OMEP's capacity is a function of the size of their consulting staff, and an expansion of this staff should increase OMEP's overall impact. Because OMEP is partially publicly-funded, the decision to expand funding for OMEP's work should be compared to other state priorities. Federal and state government commitment to supporting the manufacturing sector, as well as the size of the sector suggests that there is unmet need for OMEP's services. Because the MEP network is so large, Oregon can look to other states with larger organizations to arrive at the appropriate size and level of support for OMEP.

VII. APPENDIX A: 2012-2013 COUNTY RESULTS

The following tables show the summary impacts for each county included in the analysis for 2012-2013.

Baker

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	28	$ 786,502	$ 1,039,025	$ 2,080,000
Indirect Effect	2	$ 64,967	$ 125,208	$ 244,205
Induced Effect	3	$ 105,892	$ 219,982	$ 380,819
Total Effect	**33**	**$ 957,361**	**$ 1,384,215**	**$ 2,705,025**

Clackamas

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	29	$ 1,344,894	$ 1,444,011	$ 2,281,195
Indirect Effect	2	$ 85,615	$ 126,551	$ 219,409
Induced Effect	7	$ 240,107	$ 444,111	$ 724,458
Total Effect	38	$ 1,670,616	$ 2,014,673	$ 3,225,062

Crook

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	32	$ 1,847,168	$ 1,847,939	$ 35,000
Indirect Effect	0	$ 2,552	$ 3,577	$ 8,937
Induced Effect	6	$ 182,978	$ 431,916	$ 708,144
Total Effect	38	$ 2,032,698	$ 2,283,431	$ 752,081

Hood River

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	6	$ 1,035,005	$ 1,293,767	$ 2,900,000
Indirect Effect	2	$ 91,788	$ 182,505	$ 331,744
Induced Effect	5	$ 170,876	$ 335,218	$ 566,754
Total Effect	14	$ 1,297,669	$ 1,811,490	$ 3,798,498

Jackson

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	5	$ 245,878	$ 321,377	$ 1,100,000
Indirect Effect	3	$ 105,926	$ 181,383	$ 363,881
Induced Effect	2	$ 77,690	$ 144,882	$ 244,633
Total Effect	10	$ 429,494	$ 647,643	$ 1,708,514

Lake

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	50	$ 2,545,443	$ 2,586,744	$ 1,808,000
Indirect Effect	2	$ 66,113	$ 113,277	$ 257,508
Induced Effect	7	$ 188,205	$ 498,497	$ 857,100
Total Effect	59	$ 2,799,761	$ 3,198,518	$ 2,922,608

Marion

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	52	$ 2,218,830	$ 2,400,334	$ 1,845,000
Indirect Effect	2	$ 90,676	$ 152,139	$ 263,436
Induced Effect	12	$ 450,282	$ 820,117	$ 1,333,159
Total Effect	66	$ 2,759,787	$ 3,372,590	$ 3,441,595

Multnomah

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	184	$ 7,640,869	$ 9,414,757	$ 23,971,000
Indirect Effect	40	$ 2,803,215	$ 3,897,851	$ 7,418,998
Induced Effect	50	$ 2,298,273	$ 3,877,996	$ 6,523,662
Total Effect	275	$ 12,742,357	$ 17,190,603	$ 37,913,660

Washington

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	36	$ 2,528,141	$ 2,692,772	$ 2,555,000
Indirect Effect	2	$ 143,502	$ 233,044	$ 396,983
Induced Effect	12	$ 501,115	$ 902,322	$ 1,442,425
Total Effect	50	$ 3,172,758	$ 3,828,138	$ 4,394,408

VIII. APPENDIX B: 2002-2012 OREGON IMPACT RESULTS

The following tables show the total annual Oregon impacts from 2002-2012.

2002

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	43	$ 2,419,708	$ 2,847,656	$ 4,438,000
Indirect Effect	9	$ 495,923	$ 793,113	$ 1,642,159
Induced Effect	20	$ 786,926	$ 1,406,859	$ 2,391,905
Total Effect	72	$ 3,702,557	$ 5,047,628	$ 8,472,064

2003

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	165	$ 12,581,733	$ 15,571,235	$ 23,914,242
Indirect Effect	41	$ 2,223,460	$ 3,555,973	$ 7,273,360
Induced Effect	99	$ 3,994,034	$ 7,140,201	$ 12,139,880
Total Effect	305	$ 18,799,228	$ 26,267,409	$ 43,327,482

2004

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	238	$ 16,311,466	$ 20,391,815	$ 38,420,569
Indirect Effect	81	$ 4,559,431	$ 7,360,059	$ 14,883,370
Induced Effect	141	$ 5,647,378	$ 10,096,614	$ 17,165,691
Total Effect	460	$ 26,518,275	$ 37,848,488	$ 70,469,630

2005

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	603	$ 37,771,551	$ 42,046,594	$ 71,983,098
Indirect Effect	198	$ 10,712,027	$ 17,004,009	$ 35,162,687
Induced Effect	325	$ 13,079,609	$ 23,382,391	$ 39,755,341
Total Effect	1,127	$ 61,563,188	$ 82,432,994	$ 146,901,125

2006

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	729	$ 53,547,361	$ 69,753,535	$ 177,769,927
Indirect Effect	335	$ 18,778,644	$ 29,940,817	$ 60,412,070
Induced Effect	490	$ 19,684,139	$ 35,191,207	$ 59,830,741
Total Effect	1,554	$ 92,010,144	$ 134,885,559	$ 298,012,738

2007

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	815	$ 51,745,755	$ 62,122,531	$ 104,354,952
Indirect Effect	280	$ 13,379,059	$ 21,386,692	$ 44,729,030
Induced Effect	438	$ 17,618,830	$ 31,499,296	$ 53,553,689
Total Effect	1,533	$ 82,743,644	$ 115,008,518	$ 202,637,671

2008

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,734	$ 140,571,063	$ 177,845,622	$ 346,593,009
Indirect Effect	814	$ 44,290,056	$ 70,988,449	$ 138,467,404
Induced Effect	1,250	$ 50,220,866	$ 89,787,877	$ 152,650,898
Total Effect	3,798	$ 235,081,985	$ 338,621,948	$ 637,711,311

2009

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	711	$ 40,381,963	$ 45,230,218	$ 58,527,767
Indirect Effect	169	$ 8,426,494	$ 13,535,452	$ 28,016,785
Induced Effect	327	$ 13,158,599	$ 23,521,847	$ 39,994,188
Total Effect	1,207	$ 61,967,056	$ 82,287,516	$ 126,538,740

2010

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	1,151	$ 67,500,384	$ 80,657,598	$ 154,160,799
Indirect Effect	431	$ 23,614,914	$ 37,171,512	$ 78,319,779
Induced Effect	615	$ 24,737,733	$ 44,218,061	$ 75,185,744
Total Effect	2,197	$ 115,853,032	$ 162,047,171	$ 307,666,321

2011

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	399	$ 24,546,037	$ 29,705,958	$ 66,868,075
Indirect Effect	179	$ 9,660,762	$ 15,213,695	$ 31,418,777
Induced Effect	231	$ 9,273,426	$ 16,576,001	$ 28,184,883
Total Effect	808	$ 43,480,226	$ 61,495,653	$ 126,471,735

2012

Impact Type	Employment	Labor Income	Total Value Added	Output
Direct Effect	618	$ 34,305,970	$ 39,686,835	$ 66,624,441
Indirect Effect	180	$ 9,504,835	$ 14,947,742	$ 31,355,328
Induced Effect	294	$ 11,819,040	$ 21,129,748	$ 35,924,479
Total Effect	1,092	$ 55,629,845	$ 75,764,325	$ 133,904,248


NeRC