



The Economic Impacts of Business Energy Tax Credit Supported Manufacturing in Oregon – 2012 Update

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Michael Meyers, Economist
(503) 229-6179
Michael.Meyers@biz.state.or.us

Oregon Business Development Department
Global Strategies Section
121 S.W. Salmon Street, Suite 205
Portland, OR 97204

Project Description

This analysis examines the statewide economic impacts of Business Energy Tax Credit (BETC) supported manufacturing in Oregon. BETC supported manufacturers are primarily involved in the production of solar cells and related components.

Economic Impact Summary

This analysis estimates that BETC supported manufacturing provided about 1,500 direct jobs at seven Oregon businesses in 2012. These 1,500 direct jobs supported an additional 3,200 jobs in Oregon, for a total impact of about 4,700 jobs. Labor income generated by these 4,700 jobs in 2012 was an estimated \$252.1 million, with an estimated \$9 million in state personal income taxes collected by the State of Oregon. Since 2007, BETC supported manufacturing has generated an estimated \$877.1 million in labor income and \$31.2 million in state personal income taxes.

Modeling Inputs & Assumptions

- BETC supported manufacturing employment was obtained from Oregon Covered Employment and Wage information, supplied to Business Oregon from the Oregon Employment Department, for companies that have been pre-certified as eligible for the manufacturing BETC.
- Additional employment data was obtained from companies for workers hired through employment service companies.
- Direct jobs from BETC supported manufacturing are expressed as full-time equivalent (FTE) of 1,820 hours a year. Indirect and induced jobs created as a result of BETC supported manufacturing are expressed as FTEs based on actual average hours worked per employee by industry.
- Direct jobs from BETC supported manufacturing were added to the Oregon model for the following IMPLAN sectors based on company NAICS codes: Semiconductor and Related Device Manufacturing, Wholesale Trade Businesses, All Other Miscellaneous Electrical Equipment and Component Manufacturing, and Power Boiler and Heat Exchanger Manufacturing.
- Output per worker in IMPLAN sector Semiconductor and Related Device Manufacturing was lowered in the model to account for the unusually productive performance of this industry in 2010, which the author attributed to activity in non-solar cell semiconductor manufacturing. The revised output per worker was based on an adjusted figure from 2009.
- This analysis assumes that workers filling all jobs created reside in Oregon.
- The company's investment does not displace other investment in Oregon, instead it adds to the total economic capital stock of the state.

Methodology

This analysis considers the economic impact of 1,481 jobs created by seven BETC supported manufacturers on total employment, labor income, output, and state personal income tax revenue in Oregon. The total impact is the sum of the following items:

- **Direct Impacts:** The initial economic change in the economy. In this case, the employment, labor income, and taxes generated by the jobs added at BETC supported manufacturers.
- **Indirect Impacts:** The economic changes that occur due to spending for inputs (goods and services) by the industry or industries directly impacted. In this case, that includes impacts generated by companies that supply BETC supported manufacturers.
- **Induced Impacts:** The economic changes that occur due to spending by employees in the industry or industries directly or indirectly impacted. In this case, that includes impacts from BETC supported manufacturing employees and others spending their labor income in the community.

This economic impact analysis was conducted with IMPLAN, an input-output model. The study area for this analysis is the state of Oregon. Data used in the model is from 2010. Although this analysis is based on 2010 data, IMPLAN uses deflators to express impacts in 2012 dollars.

In an effort to estimate some of the tax impacts created by BETC supported manufacturing jobs, this analysis estimates Oregon personal income taxes received from labor income. An effective tax rate (ETR) for state personal income taxes for each impact (direct, indirect, and induced) is used to calculate state personal income taxes generated by wages from labor income. These rates come from 2007-2010 Personal Income Tax Statistics published by the Oregon Department of Revenue (statistics from 2011 and 2012 are not yet available). The ETRs are lower than the marginal personal income tax rates, as they represent the actual share of adjusted gross income that is ultimately collected by the Department of Revenue.

This analysis does not include the impacts on property taxes, business and corporate taxes, and other taxation (excluding personal income tax) in Oregon related to direct, indirect, and induced effects, which likely create additional impacts in the state.

Economic Impact Analysis

BETC supported manufacturing has created 1,481 direct jobs at seven businesses in Oregon. These jobs have created an estimated 1,682 indirect jobs and 1,567 induced jobs, for a total impact of 4,730 jobs created in Oregon. For each job created at BETC supported manufacturers, 2.2 additional jobs were created. The 1,481 direct jobs generate \$89.1 million a year in labor income (2012 dollars). For BETC supported manufacturing jobs, about 80 percent of labor income is in the form of wages. From those wages, about \$3.4 million in state personal income taxes are collected by the State. Total impacts from BETC supported manufacturing generate \$252.1 million a year in labor income, and \$9 million in state personal income taxes (Table 2). The 2012 average annual wage in BETC supported manufacturing was \$48,817.

Since 2007, direct impacts from BETC supported manufacturing in Oregon have generated an estimated \$339.8 million in labor income, \$1.8 billion in output (sales and revenues), and \$12.7 million in state personal income taxes. Total impacts from BETC supported manufacturing in Oregon have generated an estimated \$877.1 million in labor income, \$3.2 billion in output, and \$31.2 million in state personal income taxes (Table 1).

Table 1: 2007-2012 Economic Impact Summary (2012 Dollars)

Impact Type	Employment ¹	Output	Labor Income	State Personal Income Taxes ²
Direct effect	1,481	\$1,779,791,067	\$339,763,982	\$12,655,519
Indirect effect	1,682	\$828,454,819	\$323,804,088	\$11,986,454
Induced effect	1,567	\$621,716,907	\$213,579,733	\$6,571,753
Total effect	4,730	\$3,229,962,793	\$877,147,803	\$31,213,726

¹ For direct jobs, this is full-time equivalent (FTE) jobs based on 1,820 hours a year. For indirect and induced jobs, employment is based on industry averages of annual hours worked per employee.

² Based on 2007-2010 average effective income tax rates published by Oregon Department of Revenue in Oregon Personal Income Tax Statistics.

Source: IMPLAN (2010), Oregon.

Year-by-Year Impact Summaries

All impacts are presented in 2012 dollars.

Table 2: 2012 Economic Impact Summary

Impact Type	Employment ¹	Output	Labor Income	State Personal Income Taxes ²
Direct effect	1,481	\$557,310,958	\$89,142,717	\$3,397,999
Indirect effect	1,682	\$259,621,013	\$101,561,500	\$3,768,356
Induced effect	1,567	\$178,699,388	\$61,388,539	\$1,881,890
Total effect	4,730	\$995,631,358	\$252,092,755	\$9,048,245

¹ For direct jobs, this is full-time equivalent (FTE) jobs based on 1,820 hours a year. For indirect and induced jobs, employment is based on industry averages of annual hours worked per employee.

² Based on 2010 average effective income tax rates of 4.7 percent (Direct), 4.7 percent (Indirect), and 3.9 percent (Induced) as published by Oregon Department of Revenue in Oregon Personal Income Tax Statistics.

Source: IMPLAN (2010), Oregon.

Table 3: 2011 Economic Impact Summary

Impact Type	Employment ¹	Output	Labor Income	State Personal Income Taxes ²
Direct effect	1,734	\$560,802,102	\$101,182,807	\$3,819,315
Indirect effect	1,691	\$261,067,312	\$102,109,855	\$3,788,703
Induced effect	1,670	\$190,477,863	\$65,435,113	\$2,005,939
Total effect	5,095	\$1,012,347,277	\$268,727,774	\$9,613,957

¹ For direct jobs, this is full-time equivalent (FTE) jobs based on 1,820 hours a year. For indirect and induced jobs, employment is based on industry averages of annual hours worked per employee.

² Based on 2010 average effective income tax rates of 4.7 percent (Direct), 4.7 percent (Indirect), and 3.9 percent (Induced) as published by Oregon Department of Revenue in Oregon Personal Income Tax Statistics.

Source: IMPLAN (2010), Oregon.

Table 4: 2010 Economic Impact Summary

Impact Type	Employment ¹	Output	Labor Income	State Personal Income Taxes ²
Direct effect	1,397	\$382,611,788	\$71,353,336	\$2,526,311
Indirect effect	1,148	\$176,975,598	\$69,166,755	\$2,566,376
Induced effect	1,154	\$131,659,979	\$45,229,399	\$1,386,525
Total effect	3,699	\$691,247,365	\$185,749,490	\$6,479,212

¹ For direct jobs, this is full-time equivalent (FTE) jobs based on 1,820 hours a year. For indirect and induced jobs, employment is based on industry averages of annual hours worked per employee.

² Based on 2010 average effective income tax rates of 4.4 percent (Direct), 4.7 percent (Indirect), and 3.9 percent (Induced) as published by Oregon Department of Revenue in Oregon Personal Income Tax Statistics.

Source: IMPLAN (2010), Oregon.

Table 5: 2009 Economic Impact Summary

Impact Type	Employment ¹	Output	Labor Income	State Personal Income Taxes ²
Direct effect	774	\$184,940,794	\$46,892,827	\$1,732,038
Indirect effect	562	\$87,145,329	\$33,968,373	\$1,233,561
Induced effect	664	\$75,747,782	\$26,022,084	\$797,723
Total effect	2,000	\$347,833,905	\$106,883,284	\$3,763,322

¹ For direct jobs, this is full-time equivalent (FTE) jobs based on 1,820 hours a year. For indirect and induced jobs, employment is based on industry averages of annual hours worked per employee.

² Based on 2009 average effective income tax rates of 4.6 percent (Direct), 4.6 percent (Indirect), and 3.9 percent (Induced) as published by Oregon Department of Revenue in Oregon Personal Income Tax Statistics.

Source: IMPLAN (2010), Oregon.

Table 6: 2008 Economic Impact Summary

Impact Type	Employment ¹	Output	Labor Income	State Personal Income Taxes ²
Direct effect	381	\$83,888,297	\$25,914,595	\$984,531
Indirect effect	255	\$39,560,556	\$15,444,087	\$573,042
Induced effect	340	\$38,736,150	\$13,307,360	\$428,864
Total effect	976	\$162,185,003	\$54,666,042	\$1,986,437

¹ For direct jobs, this is full-time equivalent (FTE) jobs based on 1,820 hours a year. For indirect and induced jobs, employment is based on industry averages of annual hours worked per employee.

² Based on 2008 average effective income tax rates of 4.8 percent (Direct), 4.7 percent (Indirect), and 4.1 percent (Induced) as published by Oregon Department of Revenue in Oregon Personal Income Tax Statistics.

Source: IMPLAN (2010), Oregon.

Table 7: 2007 Economic Impact Summary

Impact Type	Employment ¹	Output	Labor Income	State Personal Income Taxes ²
Direct effect	50	\$10,237,128	\$5,277,701	\$195,325
Indirect effect	27	\$4,085,012	\$1,553,519	\$56,416
Induced effect	56	\$6,395,745	\$2,197,238	\$70,812
Total effect	133	\$20,717,885	\$9,028,458	\$322,553

¹ For direct jobs, this is full-time equivalent (FTE) jobs based on 1,820 hours a year. For indirect and induced jobs, employment is based on industry averages of annual hours worked per employee.

² Based on 2007 average effective income tax rates of 5.0 percent (Direct), 4.6 percent (Indirect), and 4.1 percent (Induced) as published by Oregon Department of Revenue in Oregon Personal Income Tax Statistics.

Source: IMPLAN (2010), Oregon.