

**The Economic Effects on Michigan of the
New Research and Development Facility for Ceradyne, Inc.**

Prepared by the Michigan Economic Development Corporation utilizing Regional
Economic Models, Incorporated (REMI) software.

September 14, 2004

Abstract

Ceradyne, Inc. is considering building a research and development facility in Wixom, Michigan. This facility would provide research and development services for advanced ceramic products used in the defense, health and automotive industries. The new facility would employ up to 52 people by the end of 2009. We estimate that by 2014, this location will have generated a total of 69 jobs in the state. Total state government revenues through 2014, net of MEGA costs and adjusted for inflation, would increase by \$1.36 million (2004 dollars) due to the location of the facility.

The purpose of this study is to estimate the potential economic and fiscal benefits to Michigan of Ceradyne, Inc. locating a research and development facility in Wixom. Investment activity would take place between 2005 and 2014 with an investment of \$2.7 million. The facility would employ an additional 52 people and would be at full production by 2009.

The estimates of the benefits attributable to the project include the total number of jobs created in Michigan (by major industry, including spin-off jobs), and the associated personal income and state government revenue. Benefits net of the MEGA incentive package, from 2005 to 2014, are shown in the attached table. The MEGA incentive package includes relief from 100 percent of the single business tax for the period 2005 to 2009, and a tax credit to the company equal to 100 percent of the state income tax rate on the payroll (gross wages) of employees hired at the facility for the period 2005 to 2014.

The total employment effects, reported in the first line of the table, include the direct jobs created at the facility itself plus spin-off jobs. The spin-off jobs are created from two sources, increased purchases from Michigan suppliers and spending by people who receive income due to the increased economic activity. In 2009, the first year of full operations, an additional 67 jobs are generated in the state. The total number of jobs (direct plus spin-off) for every direct job introduced constitutes the "employment multiplier." The employment multiplier for the expansion averages .87 over the period 2005 to 2014. Sectoral detail on the employment is also shown in the table.

Personal income is shown in the next section of the table. Personal income is defined as the income of Michigan residents from all sources, after deduction of contributions to social insurance programs but before deduction of income tax and other personal taxes. As shown in the table, if Ceradyne, Inc. were to locate in Michigan under the incentive program, state personal income in 2009 would be higher by \$4.00 million (in current dollars) than it would be without the facility, and in 2014, it would be \$5.46 million higher. Adjusted for inflation, these numbers in 2004 dollars would be \$3.68 million in 2009 and \$4.63 million in 2014.

The gain in economic activity results in higher government revenues. We estimate that in 2006, the first year of full operations without investment activity, the facility would generate \$106,000 in additional gross state revenue, and that the MEGA package would provide a \$87,000 incentive to Ceradyne, Inc. Thus, the new facility would increase state revenues in 2006 by \$19,000, net of MEGA costs.

Over the period 2005 to 2014 state government revenue is projected to increase by \$2.58 million (in current dollars) due to the new Ceradyne, Inc. facility. The MEGA incentive package for the company is forecast to cost \$1.04 million over the period, resulting in a net increase in state government revenue of \$1.53 million. Adjusted for inflation, the total net increase in state government revenue from 2005 to 2014 would be \$1.36 million in 2004 dollars. These calculations do not include any revenue losses due to the property tax abatement or the investment tax credit. If the costs of the abatement and the tax credit were included, the net revenue gain to state government would be slightly less.

None of the estimates include the nonmeasurable effects that would produce additional economic and fiscal benefits for Michigan, such as the intangible advantages of influencing other location and expansion decisions.

Ceradyne, Inc.
Economic and Fiscal Effects on Michigan - Net Benefits with the Incentive Package

| Economic/Fiscal Indicator | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | Total |
|--|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Total Employment | 7 | 27 | 25 | 27 | 67 | 68 | 66 | 68 | 68 | 69 | |
| Manufacturing | 3 | 14 | 14 | 15 | 36 | 36 | 36 | 37 | 37 | 38 | |
| Non-Manufacturing | 4 | 13 | 11 | 12 | 31 | 32 | 30 | 31 | 31 | 31 | |
| Retail Trade | 1 | 4 | 3 | 4 | 9 | 10 | 9 | 9 | 9 | 9 | |
| Services | 2 | 5 | 5 | 5 | 13 | 13 | 12 | 13 | 13 | 13 | |
| Other | 1 | 4 | 3 | 3 | 9 | 9 | 9 | 9 | 9 | 9 | |
| In Current Dollars (Thousands): | | | | | | | | | | | |
| Personal Income | \$336 | \$1,373 | \$1,465 | \$1,617 | \$3,998 | \$4,303 | \$4,547 | \$4,883 | \$5,157 | \$5,463 | \$33,447 |
| Gross State Revenue | 26 | 106 | 113 | 125 | 308 | 331 | 350 | 376 | 397 | 421 | 2,576 |
| Mega Cost | 22 | 87 | 105 | 118 | 177 | 97 | 102 | 106 | 112 | 117 | 1,043 |
| State Revenue Net of MEGA Cost* | \$4 | \$19 | \$8 | \$7 | \$131 | \$234 | \$248 | \$270 | \$285 | \$304 | \$1,533 |
| Adjusted for Inflation (Thousands of 2004 Dollars): | | | | | | | | | | | |
| Personal Income | \$331 | \$1,329 | \$1,395 | \$1,515 | \$3,684 | \$3,900 | \$4,053 | \$4,281 | \$4,445 | \$4,629 | \$29,867 |
| Gross State Revenue | 26 | 103 | 108 | 117 | 284 | 300 | 312 | 330 | 342 | 357 | 2,302 |
| Mega Cost | 22 | 84 | 100 | 110 | 163 | 88 | 91 | 93 | 96 | 99 | 946 |
| State Revenue Net of MEGA Cost* | \$4 | \$19 | \$8 | \$7 | \$121 | \$212 | \$221 | \$237 | \$246 | \$258 | \$1,356 |

* These estimates do not include any state government revenue losses due to the Investment Tax Credit, the Renaissance Zone Credit or the property tax abatement.