

Economic Impact of North Dakota Centers of Excellence Program, 2007-2013

- Final Report -

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In recent years, economic development has become increasingly linked to technology and information. As a result, policy makers have attempted to facilitate partnerships between universities and private sector businesses. The success of public-private partnerships in areas like the Silicon Valley of California, the Research Triangle of North Carolina, and the Austin, Texas area offers support for the concept of technology-based development. The Centers of Excellence program is North Dakota's initiative to participate in technology and information-based economic development.

The 2003 Legislative session authorized funding for three pilot Centers of Excellence projects. Then in 2005, the Legislature approved Senate Bill No. 2032 expanding the concept into the Centers of Excellence in Economic Development program. The legislation called for a \$50 million state investment over multiple biennia, to be leveraged on a 2-to-1 basis with private sector and other funds. Additionally, \$10 million was authorized for Centers of Excellence Enhancement Grants, \$5 million for Centers of Research Excellence, \$3 million for Base Realignment Grants, and \$4 million for Limited Deployment Cooperative Airspace Projects. Altogether, the Legislature has authorized \$72 million in funding since 2005.

As of June 30, 2013, 23 Centers had been approved by the Centers of Excellence Commission through a competitive process that began in 2005. Three centers were legislatively approved in 2003. Also, the Centers of Excellence Commission has approved 9 Centers of Excellence Enhancement Grants, Grants for 2 Centers of Research Excellence, 8 Base Realignment Grants, and 2 Limited Deployment Cooperative Airspace Projects. Seven new Centers were added between July 1, 2012 and June 30, 2013. These new Centers were: UND Center for Avian Therapeutics and Infectious Disease; UND Center for Enhanced Use Lease III and IV; NDSU Center for Advanced Technology Development and Commercialization; NDSU Center for Technology Innovative Processes and Products; NDSU Center for Life Science Research and Application; and NDSU Center for Biobased Material Science and Technology.

The purpose of this report is to estimate the economic contributions of the Centers of Excellence program for the period January 1, 2007-June 30, 2013². The analysis is based on payroll and associated expenditures reported by 28 Centers.

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²In 2009, the Centers reported their expenditures for the period January 1, 2008 to June 30, 2009. This was because of a change in reporting period from calendar to fiscal years.

Methods

The initial task in any impact assessment is estimating the direct impacts (or “first-round effects”) of the activity being studied. In this study, information on in-state expenditures as well as direct employment, were drawn from reports submitted by each center. The North Dakota Input-Output Model was used to estimate the secondary economic impacts based on these data.

The North Dakota Input-Output Model consists of interdependence coefficients or multipliers that measure the level of business activity generated in each economic sector from an additional dollar of expenditures in a given sector. (A sector is a group of similar economic units, e.g., the firms engaged in retail trade make up the retail trade sector.) For a complete description of the input-output model, see Coon and Leistritz (1989). The model estimates the changes in gross business volume (gross receipts) for all sectors of the area economy resulting from the direct expenditures associated with the Centers of Excellence program. The increased gross business volumes are used to estimate secondary employment and tax revenues based on historic relationships. The procedures used in the analysis are parallel to those used in estimating the impact of other facilities and activities (Leistritz and Coon 2008; Bangsund and Leistritz 2010, 2011; Hodur et al. 2006). Empirical testing has confirmed the model’s accuracy in estimating changes in levels of economic activity in North Dakota. Over the period 1958-2012, estimates of statewide personal income derived from the model averaged within 5 percent of comparable values reported by the U.S. Department of Commerce (Leistritz et al. 1990; Coon et al. 2014; Bureau of Economic Analysis 2014a).

Results

Period Review (July 1, 2012 - June 30, 2013)

The economic impacts associated with the Centers of Excellence program for July 1, 2012-June 30, 2013 are summarized in Table 1. The direct economic impacts of Center of Excellence and partner activities totaled \$18.9 million, based on expenditures from the 20 existing centers³, 9 Centers of Excellence Enhancement Grants, 8 Base Realignment Grants, and 2 Limited Deployment Cooperative Airspace Projects. The direct economic impacts for this period are smaller than for the previous periods.

Several factors have changed from last year’s analysis. Centers are subject to post award monitoring for a period of six to ten years (N.D.C.C. § 15-69-04 and 54-65-03). The Centers of Excellence Commission approved three Centers to be released from post award monitoring during the 2013 fiscal year (UND EERC National Center for Hydrogen Technology, BSC National Energy Center, and WSC Petroleum Safety and Technology Center). The Legislature

³No expenditures data were available for the UND EERC National Center for Hydrogen Technology, BSC National Energy Center, WSC Petroleum Safety and Technology Center, and the NDSU Beef Systems Center. The NDSU Beef Systems Center was specifically exempted by the 2009 Legislature from reporting requirements, and the other three centers have applied for and been granted non-reporting status. In addition, two centers have concluded operations, and three centers were not able to make their expenditures data available in time for this study.

funded the creation of the NDSU Center for Technology Enterprise (now the NDSU Research and Technology Park) and the UND Center for Innovation through HB1019 during the fifty-eighth Legislative Assembly. These Centers have been voluntarily reporting data for economic impact analysis, but did not provide data this year. The NDSU Research and Technology Park not only provided information related to the expenditures within the NDSU Incubator but also compiled the expenditures of the Research and Technology Park Graduates. The absence of the Research and Technology Park Graduates expenditures data results in a substantial understatement of the economic impacts. One center, Valley City State University Enterprise University has concluded operations. The remaining Centers were not included in this Economic Impact analysis because they either had no expenditures or their expenditures did not meet the criteria to be included in this analysis. This has resulted in a significant decrease in expenditures for these centers compared to previous years. Despite all the changes since the last reporting period, the direct economic impacts (Center expenditures) were \$18.9 million. The total economic impact (contribution) was \$56.5 million. Direct and secondary employment attributed to the centers and partners totaled 409.5 full-time equivalent positions.

Reported Center of Excellence expenditures for the July 1, 2012 to June 30, 2013 period, were substantially less than those for the previous reporting period (July 1, 2011 to June 30, 2012). Several factors contributed to this reduction. Three Centers of Excellence with expenditures totaling \$8,460,573 in FY2012 were granted non-reporting status for FY2013. Data for three centers, which had \$1,164,968 in expenditures in FY2012, were not available at the time of this analysis. Twelve Centers of Excellence, that reported a \$6,587,696 reduction in expenditures from the previous reporting period, have expended their grant funds or nearly expended them. All twelve of those centers remain operational with many exploring new sources of funding. The five new Centers of Excellence that began operations in FY2013 had expenditures over \$1.0 million for that period. Data were not available to determine if the three centers that no longer report expenditures (\$8.5 million in FY2012), or the three centers whose expenditures (\$1.2 million in FY2012) were not available for FY2013 would have had expenditures at levels similar to what was reported in prior years. If those centers were at FY2012 expenditure levels for this year's analysis, Center of Excellence expenditures would be only slightly less than those reported in FY2012. Considering all the changes that have transpired from the last reporting period to the current one, the Centers of Excellence still maintain high levels of expenditures and have a substantial economic contribution to North Dakota.

Cumulative Review (January 1, 2007 - June 30, 2013)

The cumulative economic impacts of the program for January 1, 2007- June 30, 2013 are summarized in Table 2. The total direct impact was \$234.9 million and the gross business volume (direct and secondary effects) was \$691.1 million. Direct employment was 296 positions in 2007 and 270.5 positions in 2013 (Table 2). Although the job numbers have not grown in FY2013, the changes in reporting procedures and the grant status for many of the Centers has made it difficult to compare employment. Over the period, a number of secondary jobs also were supported as outlined in Table 2.

Discussion

The Centers of Excellence program is a major initiative of the State of North Dakota to facilitate the development of technology and information-based businesses and industries. The program partners the research and development expertise of North Dakota's colleges and universities with private companies to commercialize new products, services, and technologies. The economic effects of those partnerships vary among the Centers and over time as the incubation of ideas, processes, and technologies evolve. Many of the Centers have only recently been created, while others have been operational for several years. Over time, it is anticipated that state investment in these initiatives will produce positive economic benefits to the regional economy.

One measure of the positive benefits to the North Dakota economy is how effectively the Centers have leveraged state appropriations with non-state funds. As of June 30, 2013 the Centers have collectively obtained \$204.3 million in matching and leveraged funds. Over that same period, the Centers collectively spent \$53.4 million in state funds. The Centers have leveraged about \$3.80 in additional non-state funds for \$1 of state funds.

Another measure of the effects of the Centers of Excellence program is job creation. Since 2008, the Centers have created an average of 853 direct jobs in the state. When secondary employment is included, the Centers have supported nearly 1,167 jobs per year. Further, the direct jobs created by the Centers are relatively high paying. The Centers reported direct employment of 270.5 jobs with wages and benefits totaling \$16,992,985 in fiscal year 2013. Salaries and benefits averaged about \$62,820 per job, nearly 15 percent higher than the state average for the same period (Bureau of Economic Analysis 2014b).

The gross business volume attributable to the Centers is considerable. With a direct economic impact of \$234.9 million and total impact of \$691.1 million for the period January 1, 2007-June 30, 2013, the economy-wide effects are encouraging especially considering that several Centers have only recently been established.

Clearly the Centers of Excellence program has produced positive economic outcomes for the state. Matching and leveraged dollars indicate that the Centers have been successful in creating valuable partnerships with private companies. These partnerships have resulted in job creation, growth in economy-wide business volume, and additional state-level tax revenue. The economic effects of the Centers of Excellence program to date are encouraging.

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Table 1. Period Review -- Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence and Partner Activities, July 1, 2012 through June 30, 2013

Economic Sector	Expenditures/Receipts		
	Direct	Secondary	Total
	----- \$000 -----		
Construction	1,298	1,503	2,801
Communications & public utilities	283	1,911	2,194
Retail trade	1,382	12,469	13,851
Finance, insurance & real estate	1,714	2,788	4,502
Business & personal services	933	1,052	1,985
Professional & social services	198	1,594	1,792
Households	13,057	11,720	24,777
Other ¹	0	4,647	4,647
Total ²	18,865	37,684	56,549
Employment (full-time equivalents)	270.5	139	409.5

¹ Includes agriculture, mining, transportation, manufacturing, and government.

² Direct, secondary, and total impacts reflect the conclusion of operations at Valley City State University Enterprise University and UND Unmanned Aerial Systems Crew Resource Management Center. In addition, four centers no longer are required to report their expenditures, and data from three centers were not available.

Table 2. Cumulative Review -- Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence and Partner Activities, January 1, 2007 through June 30, 2013

Economic Sector	Expenditures/Receipts		
	Direct	Secondary	Total
	----- \$000 -----		
Construction	42,069	17,469	59,538
Communications & public utilities	4,250	22,764	27,014
Retail trade	15,088	145,535	160,623
Finance, insurance & real estate	24,251	37,554	61,805
Business & personal services	10,415	12,335	22,750
Professional & social services	4,635	18,179	22,814
Households	133,308	146,249	279,557
Other ¹	850	56,177	57,027
Totals	234,866	456,262	691,128
Employment Review ²	-----full-time equivalent positions -----		
July 1, 2012 - - June 20, 2013	270.50	139.00	409.50
July 1, 2011 - - June 30, 2012	1,082.00	265.00	1,347.00
July 1, 2010 - - June 30, 2011	973.00	355.00	1,328.00
July 1, 2009 - - June 30, 2010	1,017.20	318.00	1,335.20
January 1, 2008 - - June 30, 2009	921.50	492.00	1,413.50
January 1, 2007 - - December 31, 2007	296.25	408.00	704.25
Estimated State Tax Collections	----- \$000 -----		
Personal Income Tax	2,000	2,194	4,194
Sales and Use Tax			7,437
Corporate Income Tax			1,147
Totals			12,778

¹ Includes agriculture, mining, transportation, manufacturing, and government.

² Employment cannot be summed across years. Employment figures were presented for each analysis period for sake of comparison over time. Secondary employment for the January 1, 2008-June 30, 2009 figure represents an annualized estimate for the period.