

# Research Corridor Impact Tops \$750 Million

When U.S. Senator Byron Dorgan created the Red River Valley Research Corridor his vision focused on making strategic investments in our state’s research capacity to accelerate innovation and forge a brighter economic future for North Dakota.

Since 2002, over \$300 million of federal investments in research, training & manufacturing contracts have been directed to universities, colleges and businesses throughout the state.

These investments have seeded the establishment of some of the nation’s leading research and training centers including the Center for Nanoscale Science and Engineering at NDSU, the Neurosciences Research Center at UND’s School of Medicine, the National Center for Hydrogen Energy Technology at UND’s Energy and Environmental Research Center, the National Energy Technology Training Center at Bismarck State College and the Center for Nanoscience Technology Training at NDSCS.

*“Today, the reputation of Fargo, Grand Forks and the Red River Valley Research Corridor as a center of cutting-edge research is growing. As we look to the future I am determined to continue building on the expertise and resources at North Dakota universities and to help support our high-tech business sector to generate new economic opportunities and create good-paying jobs for the state.”*

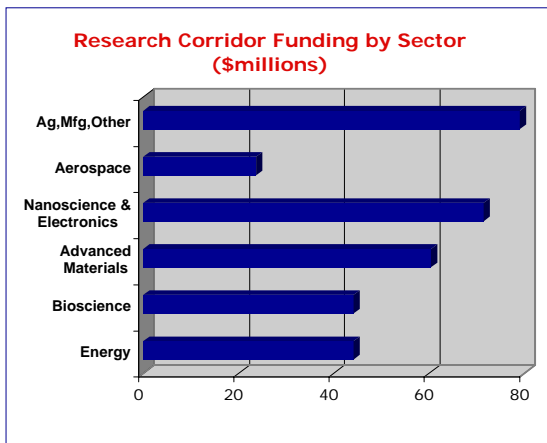
**Byron Dorgan**  
*United States Senator*

Research Corridor Impact	
2002-2006	
<b>Funded Research</b>	
Programs & Projects .....	\$311.2 million
Infrastructure .....	\$11.7 million
Total .....	\$322.9 million
Total Economic Impact .....	\$759 million
Total Direct Jobs Created .....	2,810
Total Secondary Jobs Created .....	7,864
Average Research Employee Salary .....	\$56,000

## Research Corridor Pivotal in State’s Research Output & Tech Growth

This report presents the findings of an economic impact assessment conducted by Dr. F. Larry Leistritz professor of agribusiness and applied economics at the North Dakota State University. According to Dr. Leistritz, “the Research Corridor Initiative has been pivotal in the development of leading edge research programs at both North Dakota State University and the University of North Dakota.” The study concludes that the total impact of the Research Corridor is estimated to be \$759 million since being launched just five years ago.

The Research Corridor plays a key role in holding networking events in the state to exchange information about new tech-based opportunities and to stimulate partnerships between business, universities and government. The Research Corridor also markets North Dakota’s science and technology assets outside the state and around the globe by increasing the visibility of our world class research centers, training opportunities for skilled workers in emerging industries, and our many growing high-tech companies.



## **Economic Impact of the Red River Research Corridor Initiative**

F. Larry Leistritz

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Exported services are one of the fastest growing sectors of the North Dakota economy. As the U.S. economy is becoming increasingly information- and service-oriented, professional and business services activities serving markets outside the state have become increasingly important in North Dakota (Leistritz 1993, Coon and Leistritz 1997, Coon and Leistritz 2001). Public and private research activities and related professional services, as well as high technology manufacturing, make an important contribution to the state's economic base. Foremost among these are the university-based research activities centered at North Dakota's research universities. These research programs are supported in large part from the federal government and/or from other out-of-state sources and thus constitute an important component of the state's economic base.

The Red River Research Corridor Initiative, launched by Senator Byron Dorgan in 2001, has been pivotal in the development of leading edge research programs at both North Dakota State University and the University of North Dakota. Over the past five fiscal years (beginning in FY 2002), the Senator's efforts have led to \$311.2 million in earmarked funding for research programs and \$11.7 million in funding for construction of research support infrastructure. The purpose of this report is to estimate the economic impact of this funding and the research and development (R&D) activities it supports.

### **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, Senator Dorgan's staff assembled information on the various appropriations supporting the Red River Research Corridor

Initiative. Information assembled in the course of previous research (Leistritz 2002) was used to estimate the portion of research support that represents payments to North Dakota entities. 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 activities supported by the Corridor initiative. 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 1995; Bangsund and Leistritz 2004, 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 1958-2004, estimates of statewide personal income derived from the model averaged within 4 percent of comparable values reported by the U.S. Department of Commerce (Leistritz et al. 1990, Coon and Leistritz 2006).

### **Results**

The direct and total economic impacts associated with Red River Research Corridor (Corridor) funding from FY2002 through FY2006 are summarized in the table below. [Previous research has indicated that approximately 78.4 percent of a typical research grant represents payments to entities within North Dakota; the balance would typically

represent purchases of specialized equipment from out-of-state suppliers, payments for travel to conferences, etc. (Leistriz 2002). The estimated in-state expenditures were distributed among sectors in line with recent experience.]

The direct impacts of this funding are estimated at \$255.6 million, or an average of \$51.1 million per year. The total includes \$157.4 million in payments to North Dakota households, \$42.3 million in expenditures to the retail trade sector, and \$39.2 million to the finance, insurance, and real estate sector. The level of research activity represented by these levels of spending would support about 2,810 FTE jobs directly in R&D activities, or an average of 562 jobs per year. Jobs in R&D activities also are relatively well paid; average payroll per FTE on these research projects is estimated to be \$56,000, or almost twice the North Dakota state average.

Total (direct plus secondary) impacts are also summarized in Table 1. The total economic impacts of the Corridor funding are estimated to be \$759 million. Thus, the \$255.6 million of direct impacts result, through the multiplier process in \$503.5 million of secondary impacts, for a total of \$759 million. This total includes an additional \$319 million in added income for North Dakota households and an additional \$295 million in additional sales for the retail trade sector. On an annual basis, the Corridor funding

has resulted in an average contribution to the regional economy of \$152 million over the past five years, supporting about 1,570 secondary jobs in various sectors of the economy, in addition to about 560 persons directly engaged in the supported research activities.

The Corridor funding has also enabled the universities to develop a number of partnerships with private sector entities. For example, NDSU now has a number of private sector partnerships including Alien Technology Corporation, Symyx Technologies, Inc., Akzo Nobel, and Crane Electronics. These private partners add substantially to the impact of the Corridor. In FY2006, NDSU received approximately \$27.2 million in research funding through the Corridor initiative, but the total direct economic impact of the Park tenants' operation was estimated to be almost \$49 million.

Similarly in Grand Forks a partnership between UND and Alion Science and Technology Corporation is researching methods to extend the life of military weapons systems. At UND's Center for Aerospace Sciences a Center of Excellence for Defense UAV Education will enhance the U.S. Air Force mission at Grand Forks Air Force Base.

The Research Corridor's activities extend throughout the state, intentionally including colleges, universities and companies with

<b>Direct &amp; Total Impact of the Red River Valley Research Corridor</b>		
<b>Sector</b>	<b>Direct Impact</b> •••• \$000 •••• <b>2002-2006</b>	<b>Total Impact</b>
Construction	11,700	31,122
Retail trade	42,327	204,658
Finance, insurance & real estate	39,215	75,212
Services	4,980	39,452
Households	157,356	319,173
Other		89,433
<b>Total</b>	<b>255,578</b>	<b>759,050</b>
<b>Direct employment</b>	<b>2,810</b>	
<b>Secondary Employment</b>	<b>7,864</b>	
Other Includes agriculture, mining, manufacturing and government		

innovative research, training and manufacturing capabilities. Examples of these initiatives include Killdeer Mountain Manufacturing's RFID toolkit Development with Boeing and Microsoft, a nanoscience technology training program at North Dakota State College and research of animal identification systems at Dickinson State University and NDSU's Research Extension Center in Dickinson.

### **Implications**

Exported services and high-tech manufacturing are becoming an important part of North Dakota's economic base, and university-based research activities are an important component of this sector. The Red River Research Corridor represents a major initiative to stimulate research and development [R&D] activities. The preceding analysis demonstrates that the Corridor's R&D activities already are making a major contribution to the regional economy, with the potential for even greater contributions in the future. Further, it should be noted that research and development activities provide a high percentage of relatively well-paying jobs (the average payroll per research employee is estimated at \$56,000, or nearly twice the statewide average). Thus, the Corridor is providing viable employment opportunities for North Dakota's university graduates, as well as for well-qualified individuals from around the country.

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