



North Dakota

**Centers of
Excellence**
ANNUAL REPORT
2009



the concept:

To encourage **collaboration**

between **public universities** and **private businesses**

as a means of bringing **new products and services**

to the **marketplace** which ultimately result

in the creation of **higher paying jobs**

for the citizens of North Dakota.



Table of Contents

Introduction	2
Centers of Excellence Summary	3
Advanced Manufacturing Centers of Excellence	
NDSU Center for Advanced Electronics Design and Manufacturing	5
NDSU Center for Surface Protection	6
NDSU Center for Integrated Electronic Systems.....	7
Aerospace Centers of Excellence	
UND Unmanned Aircraft Systems (UAS)	8
UND Center of Excellence in Space Technology and Operations.....	9
Agricultural Centers of Excellence	
LRSC Dakota Center of Technology-Optimized Agriculture	10
NDSU Center of Excellence for Agbiotechnology: Oilseed Development	11
NDSU Beef Systems Center of Excellence.....	12
Dakota College at Bottineau Entrepreneurial Center for Horticulture.....	13
Energy Centers of Excellence	
UND – EERC National Center for Hydrogen Technology	14
BSC National Energy Center of Excellence.....	15
WSC Petroleum Safety and Technology Center.....	16
UND Petroleum Research, Education and Entrepreneurship Center of Excellence.....	17
UND SUNRISE BioProducts: A Center of Excellence for Chemicals, Polymers and Composites from Crop Oils	18
Life Sciences Centers of Excellence	
UND Research Foundation – Center of Excellence in Life Science and Advanced Technologies	19
UND Research Foundation Center of Excellence for Passive Therapeutics.....	20
NDSU Center for Biopharmaceutical Research and Production	21
Technology & Entrepreneurial Centers of Excellence	
UND Center for Innovation.....	22
NDSU Technology Incubator	23
VCSU Enterprise University.....	24
DSU Strom Center for Entrepreneurship and Rural Revitalization – Institute for Technology and Business	25
Program Administration.....	26
Appendix A: Economic Impact Study	29



— State of —
North Dakota
Office of the Governor

John Hoeven
Governor



With just one-third of the program's funding distributed as of June 30, 2009, the North Dakota Centers of Excellence program is already having a significant economic impact in North Dakota.

According to a fall 2009 study by North Dakota State University Professor Larry Leistriz, the North Dakota Centers of Excellence program has leveraged \$19.9 million in funding into an economic impact of \$329.4 million through June 30, 2009.

At this rate of development, we shouldn't be surprised to see a \$1 billion impact when all of the projects are funded and mature.

The Centers of Excellence program has lead to the creation of 2,060 total jobs. This includes 922 jobs at an estimated annual payroll of \$44.5 million created by the Centers themselves or by partnering companies. In addition, the efforts of the Centers and their partners have supported the creation of another 1,138 jobs within the state of North Dakota.

The Centers program is built on the concept of partnering the research capacities found in our public institutions with private sector companies to generate new business opportunities. To date, the Centers have formed partnerships with 132 companies, and have obtained \$134.8 million of matching and leveraged funds, an amount far exceeding the \$31.4 million of state funds dispersed to the Centers.

The Centers are exploring cutting-edge research in the fields of energy, agriculture, life sciences, electronics, aerospace and manufacturing. These efforts could someday produce a new vaccine for West Nile Virus, new recovery techniques for oil in the Bakken formation, new lines of highly productive canola for North Dakota farmers and methods for using hydrogen to fuel our cars.

The core of this initiative is a belief in the power of science and technology to invent the business opportunities of tomorrow that will help the next generation of North Dakotans grow and prosper.

Sincerely,

A handwritten signature of John Hoeven in black ink.

John Hoeven
Governor



CENTERS OF EXCELLENCE SUMMARY

The Centers of Excellence are hubs of research and development on the campuses of North Dakota's colleges and universities and work to partner with private companies to commercialize new products and services. The centers are exploring research in the fields of energy, agriculture, life sciences, electronics, aerospace and manufacturing.

North Dakota legislators authorized funding for several pilot Centers of Excellence projects in the 2003 session before authorizing the full program. These include the UND Center for Innovation in Grand Forks, the NDSU Technology Incubator and the NDSU Beef Systems Center of Excellence in Fargo.

In 2005, the Legislature expanded this concept into the current competitive grant program. Since then, the Legislature has approved a total of \$60 million for the program. Of these funds, the Centers of Excellence Commission has awarded \$39.45 million, launching 18 new Centers of Excellence. In 2009, the Legislature established Centers of Excellence Enhancement Grants. The Enhancement Grants have been allotted \$10 million of the program funds and are available to the state's research universities, UND and NDSU, during the 2009-11 biennium.

So far, \$19.9 million of the awarded funds have been spent by the centers which have leveraged over \$130 million from the private sector and other sources. With only one third of the total available program dollars spent as of June 30, 2009, the Centers of Excellence program had the following economic benefits:

Economic Impact: \$329.4 Million

The Centers of Excellence program has had \$329.4 in estimated total economic impact to North Dakota's economy. This includes a direct impact of \$115.5 million generated by the centers and their partners.

Job Creation: 2,060 Jobs

The Centers of Excellence program has lead to the creation of 2,060 total jobs. This includes 922 jobs at an estimated annual payroll of \$44.5 million created by the centers themselves or by partnering companies. In addition, the efforts of the centers and their partners have supported the creation of another 1,138 jobs within the state of North Dakota.

Private Sector Partners: 135 Companies

The centers have formed partnerships with 135 companies. These include companies in target industries such as advanced manufacturing, energy, technology, and value-added agriculture, as well as emerging industries such as life sciences and unmanned aircraft systems.

New Businesses: 17 New or Expanded Businesses

Seventeen new or expanded businesses have resulted from the Centers of Excellence program. This includes seven new spinoff companies, five companies that expanded to North Dakota, and five companies that have expanded within the state.

Funding: \$19.9 Million Spent

Only one third of the investment allocated to Centers of Excellence was spent as of June 30, 2009. Due to careful due diligence and project requirements on the part of the program and the university system, projects are funded and dollars spent only when the required match is available and the project is ready to move forward.

Status of Centers of Excellence Investment		<i>June 30, 2009</i>
Spent		\$ 19.9 million
Disbursed to Centers (not yet spent)		\$ 11.5 million
Approved (waiting disbursement)		\$ 10.9 million
Available for Awards		\$ 20.0 million
Total		\$ 62.3 million



Center Status

These centers are still in the early stages of development. Each competitively awarded Center of Excellence has its progress monitored for six to ten years. During this time period, it is anticipated that each center will produce the results proposed at the outset of its project. No center has yet reached its maturity.

7 centers have been in operation for less than 1 fiscal year
3 centers have been in operation for 2 fiscal years
9 centers have been in operation for 3 fiscal years
1 center has been in operation for 4 fiscal years

Examples of other Key Benefits

- The WSC Petroleum Safety and Training Center provides training for 169 companies in the oil and gas industry. Over 4,000 individuals received training from the center in Fiscal Year 2009 alone.
- The UND Petroleum Research, Education, and Entrepreneurship Center is performing research that could double the recovery rate of oil in the Bakken Formation. The center is also working on a project to establish a new green energy source in North Dakota by utilizing oil field water to create electrical power.
- The LRSC Dakota Center for Technology-Optimized Agriculture is researching precision agricultural practices such as variable rate application of synthetic fertilizer. Results to date show farmers can save 8-16 percent on fertilizer costs by utilizing these practices.
- The UND Energy and Environmental Research Center's National Center for Hydrogen Technology has secured over \$53 million in sponsored research contracts.
- The NDSU Center for Agbiotechnology is evaluating the feasibility of releasing two lines of canola for the 2010 planting season. These two lines of canola outperform comparable canola lines that are currently available in the marketplace.
- The UND Research Foundation's Center of Excellence for Passive Therapeutics is using antibodies from goose eggs to develop therapeutic products which may be used to treat viral infectious diseases such as West Nile Virus, Avian Influenza, and H1N1.



Advanced Manufacturing CENTERS OF EXCELLENCE

Center for Advanced Electronics Design and Manufacturing *North Dakota State University*

Contact

1805 Research Park Drive North
Fargo, ND 58102
701.231.8956
<http://www.ndsu.edu/caedm>

Summary

The Center for Advanced Electronics Design and Manufacturing (CAEDM) performs research and development for private sector partners and collaborators. CAEDM specializes in areas including wireless sensors, electronic systems, miniaturized electronics, and prototype development. The center's efforts help partners and collaborators meet product and technology needs while enabling and promoting commercialization opportunities of new products and technologies.

State Funds

Launch Date: February 2006
Award: \$3,000,000
Disbursed to Center: \$3,000,000
Spent by the Center: \$1,414,237

Matching & Leveraged Funds

Received: \$12,387,097

Private Sector Partners

Aldevron, Bobcat Company, Crane Wireless Monitoring Solutions, Deceleration Technologies, Pedigree Technologies, PPG Industries, Tessera Technologies

Project Notes and Highlights

- CAEDM worked with Crane Wireless Monitoring Solutions (WMS) to develop a prototype of a vending machine component that has been commercialized. Fargo-based Phoenix International is manufacturing the product line.
- Killdeer Mountain Manufacturing uses methodology developed by NDSU and Crane WMS to manufacture military sensors.
- CAEDM provided electronics assembly support to Appareo Systems which aided them in the launch of their ALERTS (Aircraft Logging and Event Recording for Training and Safety) system.
- CAEDM and Crane WMS are collaborating on development of innovative new products for monitoring oil and gas systems.
- Deceleration Technologies' collaboration with CAEDM is expected to result in commercialization of its brake light illumination system.
- PPG Industries is working with CAEDM on a project to improve adhesion processes for an electronics substrate product line.
- CAEDM assisted North Dakota State College of Science in launching the Center for Nanoscience Technician Training (CNTT). The CNTT's objective is to produce more technicians in nanoscience and microelectronics which is a direct benefit to CAEDM, its private sector partners, and other industry companies.



Advanced Manufacturing CENTERS OF EXCELLENCE

Center for Surface Protection North Dakota State University

Contact

1735 Research Park Drive North
Fargo, ND 58102
701.231.6219
<http://www.ndsu.edu/csp>

Summary

The Center for Surface Protection (CSP), in collaboration with private sector partners, performs research, development, and testing of surface protecting coatings and application methods. The center and its partners work to improve product durability, to reduce corrosion, erosion, and wear properties, and to develop new or improved products and processes.

State Funds

Launch Date: May 2006
Award: \$4,000,000
Disbursed to Center: \$2,776,661
Spent by the Center: \$1,312,263

Matching & Leveraged Funds

Received: \$4,712,113
Total Anticipated: \$8,000,000

Private Sector Partners

Akzo Nobel Aerospace Coatings, Caterpillar, Inc. (formerly Gremada Industries), Invista, Marvin Windows and Doors, Technology Applications Group

Project Notes and Highlights

- The Center for Surface Protection partners with Marvin Windows and Doors to perform research and development designed to result in new or improved products. Marvin credits its ability to retain jobs and business activity in a downward, contracting industry to its involvement with the center.
- CSP is working with Akzo-Nobel Aerospace Coatings (ANAC) on a new coating that protects aircraft and other aerospace aluminum alloys from corrosion. This new, environmentally friendly coating was invented by NDSU and licensed by ANAC.
- The center reports the creation of eight jobs with over \$480,000 in total annual salary.
- CSP has access to extensive research equipment allowing for various testing and characterization capabilities which may be customized to help solve partners' corrosion and coatings challenges.
- Center personnel have given presentations at the European Coatings Expo in Nuremburg, Germany, and the International Coatings Expo in Toronto, Canada. Such presentations give the center and the State of North Dakota a significant presence in the global marketplace.



Advanced Manufacturing CENTERS OF EXCELLENCE

Center for Integrated Electronic Systems North Dakota State University

Contact

1735 Research Park Drive North
P.O. Box 6050 – Dept. 4000
Fargo, ND 58108-6050
701.231.6542

Summary

The Center for Integrated Electronic Systems will perform research and development projects to integrate electronic hardware and software systems. Such projects will enable private sector partners to create and manufacture new products, improve existing products, increase profitability, and become more competitive in the global marketplace.

State Funds

Launch Date: June 2009
Award: \$2,050,000
Disbursed to Center: \$566,171
Spent by the Center: \$0

Matching & Leveraged Funds

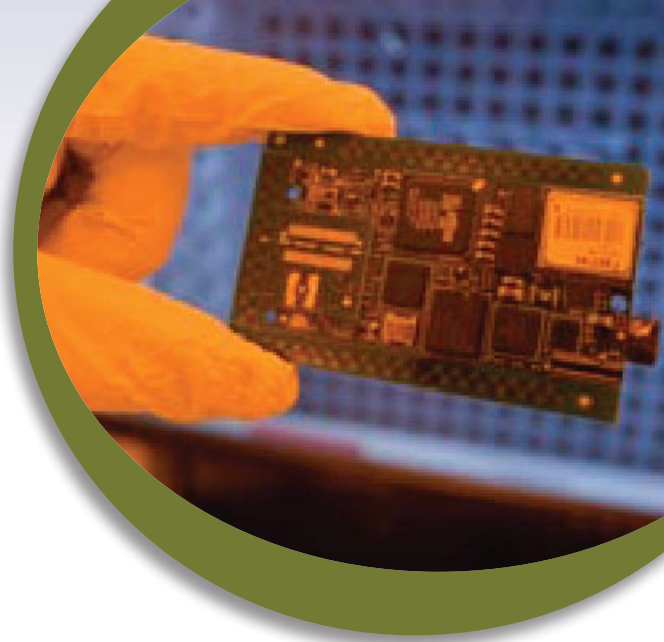
Received: \$0
Total Anticipated: \$4,100,000

Private Sector Partners

Bobcat Company, Datacom International Inc., Intelligent InSites, Pedigree Technologies

Project Notes and Highlights

- Collaborations between the center and its partners are expected to produce new or improved products in the healthcare, construction, and technology industries.
- Other products featuring integrated hardware and software have strong potential in markets such as telecommunications, data storage, sensors, and wireless technologies.



¹This center received its initial disbursement in June based upon demonstrated availability of matching funds. These matching funds were not received prior to June 30, 2009.

Aerospace CENTERS OF EXCELLENCE

Unmanned Aircraft Systems Center of Excellence *University of North Dakota*

Contact

John D. Odegard School of Aerospace Sciences
3980 Campus Road, Stop 9007
Grand Forks, ND 58202-9007
701.777.2615
www.uasresearch.org

Summary

The Unmanned Aircraft Systems Center of Excellence (UAS COE) performs research and development on UAS technologies, applications, and UAS human factors issues. The UAS COE also focuses on education and training for UAS integration into the national airspace system. Additionally, the center encourages commercialization of new UAS-related products and services and promotes private sector job growth within the state of North Dakota.

State Funds

Launch Date: May 2006
Total Award: \$2,500,000
Disbursed to Center: \$2,500,000
Spent by the Center: \$1,501,207

Matching & Leveraged Funds

Received: \$8,287,199

Private Sector Partners

AAI/Aerosonde, American Crystal Sugar Company, Appareo Systems, Boeing, Cirrus Design Corporation, Crew Training International, General Atomics, General Dynamics, Goodrich, Ideal Aerosmith, Killdeer Mountain Manufacturing, Laserlith Corporation, Lockheed Martin, Machine Visionaries LLC, Mayo Clinic, Northrop Grumman, Raytheon, Science Applications Intl. Corp., SEO Precision, Statistical Methodology & Research Design Consultants

Project Notes and Highlights

- The UAS COE provides an essential cold weather testing ground for unmanned aircraft systems.
- The center is working to resolve the “sense and avoid” issue which is a critical barrier to opening national airspace to unmanned aircraft systems.
- The center has completed significant demonstrations of UAS payloads that have commercialization potential such as PrecisionAg, Airborne Sense and Avoid, and Laser Communications.
- Efforts of the center and its partners have contributed to the creation of 50 jobs at nearly \$2.7 million total annual salary.
- Two new spinoff businesses, Machine Visionaries LLC and Statistical Methodology & Research Design Consultants, have been created.



Aerospace **CENTERS OF EXCELLENCE**

Center of Excellence in Space Technology and Operations *University of North Dakota*

Contact

UND Center for People and the Environment
4149 University Avenue Stop 9011
Grand Forks, ND 58202-9011
701.777.3543

Summary

The Center of Excellence in Space Technology and Operations will conduct research using a network of satellites that continually take atmospheric measurements simultaneously in hundreds of places around the world. This technique is new, yet well demonstrated, and will dramatically improve weather forecasts and provide data of unrivalled accuracy and resolution.

State Funds

Launch Date: June 2009
Award: \$1,000,000
Disbursed to Center: \$115,510
Spent by the Center: \$42,507

Matching & Leveraged Funds

Received: \$0
Total Anticipated: \$3,778,266

Private Sector Partners

Broad Reach Engineering Inc., GeoOptics LLC

Project Notes and Highlights

- GeoOptics will develop and operate a fleet of spacecraft, built by Broad Reach Engineering, known as CICERO which will use a remote sensing technique, known as radio occultation, to observe radio signals from Global Positioning System (GPS) satellites as they pass through the Earth's atmosphere. The resulting data will improve the accuracy of weather forecasts.
- The methodology behind CICERO has been successfully demonstrated through a government-sponsored program known as COSMIC. COSMIC is a prototype system that is slated to operate only through 2011 at which point it will be replaced by CICERO.
- Data products derived from CICERO will be sold on a world-wide market with customers such as the U.S. government, international government agencies, and private sector entities.
- A CICERO mission operations and analysis center will be established in Grand Forks. Anticipated job positions include satellite console operators, radio occultation scientists, and technology support.



²This center received its initial disbursement in June based upon demonstrated availability of matching funds. These matching funds were not received prior to June 30, 2009.

Agricultural CENTERS OF EXCELLENCE

Dakota Center for Technology-Optimized Agriculture Lake Region State College

Contact

1801 College Drive N
Devils Lake, ND 58301-1598
701.662.1600
<http://www.lrsc.edu/programs/default.asp?id=655>

Summary

The Dakota Center for Technology-Optimized Agriculture (DCTOA) focuses on technological applications in agriculture and their effectiveness on the plains of North Dakota. Products generated by this center are designed to help North Dakota farmers and ranchers lower input costs and increase profitability while having a positive impact on the environment.

State Funds

Launch Date: February 2006
Total Award: \$850,000
Disbursed to the Center: \$450,000
Spent by the Center: \$426,573

Matching & Leveraged Funds

Received: \$969,360
Total Anticipated: \$1,900,028

Private Sector Partners

Agri ImaGIS Technologies Inc., AGVISE Laboratories, Farmers Edge Precision Consulting Inc., Simplot Grower Solutions, Twete Inc., Verdi-Plus

Project Notes and Highlights

- The DCTOA is researching precision agricultural practices such as variable rate application of synthetic fertilizer. Results to date show farmers can save up to 16 percent on fertilizer costs by using these practices.
- The center is researching the potential of using site-specific control technologies for manure application. This research has the potential to reduce fertilizer costs while providing another potential use for manure generated as a byproduct of the state's livestock industry.
- The research efforts of the DCTOA and its partners have resulted in the creation of 11 jobs.
- Verdi-Plus and Site Specific Agriculture, Inc. are two new spin off companies associated with this center. A third company, Agri ImaGIS Technologies Inc., has greatly expanded its operations.
- The DCTOA partners with area farmers who provide acreage upon which new precision agriculture technologies are tested and evaluated.
- The DCTOA has developed educational modules for use by farmers who have or are considering implementing precision farming techniques. The modules will be available to the public soon and will be delivered in an electronic format that is accessible anywhere in the world. Additional market potential exists in Canada and Eastern Europe.



Agricultural CENTERS OF EXCELLENCE

Center of Excellence for Agbiotechnology: Oilseed Development North Dakota State University

Contact

P.O. Box 5636
Fargo, ND 58105-5636
701.231.7472
www.ag.ndsu.edu/research/OilseedDevCE.htm

Summary

The Center of Excellence for Agbiotechnology focuses on expanding canola production and processing in North Dakota. The center aims to identify improved oilseed genetics and develop enhanced processing techniques that lead to increased efficiency in manufacturing products, such as biodiesel, made from canola. The center will also develop business strategies to improve profitability for canola producers, handlers, and processors.

State Funds

Launch Date: May 2006
Award: \$3,500,000
Disbursed to Center: \$2,367,500
Spent by the Center: \$1,390,830.53

Matching & Leveraged Funds

Received: \$14,276,951
Total Anticipated: \$16,330,000

Private Sector Partners

Monsanto Company; Archer Daniels Midland, Inc. (ADM)

Project Notes and Highlights

- Efforts by the center to improve canola production directly benefit North Dakota farmers as the state produces approximately 90 percent of the canola grown in the United States.
- The center is evaluating the feasibility of releasing two lines of canola for the 2010 planting season. These two lines of canola outperform comparable canola lines that are currently available in the marketplace.
- The center reports the creation of 5 jobs with \$216,000 in total annual salary.
- In response to a market shift, the center is moving towards a full hybrid program. The center's initial research on open pollinated canola lines has identified canola lines that are favorable for North Dakota growing conditions. These lines will be used for the hybrid program.
- The center uses 8 testing locations across the state to gauge performance in the varied growing conditions of North Dakota.



Agricultural CENTERS OF EXCELLENCE

Beef Systems Center of Excellence North Dakota State University

Contact

North Dakota State University
Department of Animal Sciences
100 Hultz Hall
Fargo, ND 58105
701.231.7660
www.ag.ndsu.edu/research/BeefSystemsCE.htm

Summary

The Beef Systems Center of Excellence (BSCE) was established to create a model for a coordinated meat processing industry that could be implemented in other parts of the state, region, or country. The BSCE enhances NDSU's ability to provide leading research in meat science and also provides training, education, and outreach opportunities for students, businesses, and beef cattle producers.

State Funds

Launch Date: October 2007
Award: \$800,000
Disbursed to the Center: \$800,000
Spent by the Center: \$800,000

Matching & Leveraged Funds

Received: \$2,000,000

Partners

North Dakota Natural Beef LLC, North American Bison Cooperative

Project Notes and Highlights

- A meat processing model has been developed where North Dakota-raised beef is slaughtered, processed, and distributed all within the state.
- The BSCE is co-located at North Dakota Natural Beef's processing plant in Fargo which provides unique advantages such as availability and proximity of animal carcasses for research and educational purposes.
- Among the research being conducted by the BSCE is an examination of factors that affect beef quality and yield.
- The 2009 Legislature determined the BSCE has met its funding requirements and is not subject to the accountability requirements of the Centers of Excellence program.



Agricultural CENTERS OF EXCELLENCE

Entrepreneurial Center for Horticulture *Dakota College at Bottineau*

Contact

Dakota College at Bottineau
#22 Molberg Center
105 Simrall Boulevard
Bottineau, ND 58318
701.228.5649
<http://www.dakotacollege.edu/ech.shtml>

Summary

The Entrepreneurial Center for Horticulture is designed to grow the organic and specialty vegetable industry in North Dakota. The center will research and demonstrate production methods and provide new opportunities for product commercialization and distribution networks in North Dakota and the region.

State Funds

Launch Date: N/A
Award: \$400,000
Disbursed to Center: \$0.00

Matching & Leveraged Funds

Received: \$0.00
Total Anticipated: \$830,854

Private Sector Partners

North Star Organic Farm, North Dakota Farmers Market and Growers Association

Project Notes and Highlights

- This center is working to secure the required match and has not yet received its first disbursement of state funds.



Energy CENTERS OF EXCELLENCE

National Center for Hydrogen Technology

University of North Dakota – Energy & Environmental Research Center

Contact

15 North 23rd Street, Stop 9018
Grand Forks, ND 58202-9018
701.777.5000
<http://www.undeerc.org/NCHT>

Summary

The National Center for Hydrogen Technology (NCHT) conducts research, development, demonstration, and commercialization projects for the production and use of hydrogen as a practical fuel. Hydrogen has the potential to decrease U.S. dependence on foreign oil while at the same time decreasing the environmental impact of energy technologies. In conjunction with a large array of private sector partners, the NCHT is leading the way in developing and demonstrating hydrogen production and utilization technologies such as the hydrogen on-demand gas station, production of hydrogen from fossil and renewable fuels, and the use of hydrogen in fuel cells, combustion engines, and turbines.

State Funds

Launch Date: February 2006
Total Award: \$2,500,000
Disbursed to Center: \$2,500,000
Spent by the Center: \$2,500,000

Matching & Leveraged Funds

Received: \$47,722,245
Total Anticipated: \$54,112,573

Private Sector Partners

Aboriginal Cogeneration Corporation, Advanced Biomass Gasification Technologies Inc., Agricultural Utilization Research Institute, Air Products and Chemicals Inc., Basin Electric Power Cooperative, Biomass Energy Solutions Inc., BMC Construction, Catacel Corporation, Chippewa Valley Ethanol, CH2MHill Inc., Clean Earth Solutions Inc., Conoco Phillips, Corning, Diversified Energy Corporation, Electric Power Research Institute, Energy Conversion Devices Inc., ePower Synergies, Franklin Fuel Cells, Great River Energy, IdaTech, Kraus Global, Microbeam Technologies Inc., Minnesota Corn Growers Association, Minnesota Corn Research Council, North American Coal Corporation, North Dakota Corn Utilization Council, Porvair plc, Pratt & Whitney Rocketdyne Inc., Resurface Corporation, Rio Tinto, SGL Carbon Group, Siemens Power Generation Inc., Stelios Arvelakis, ThermoChem Recovery International Inc., TXU Generation Company, United Technologies Research Center, Westmoreland Coal Sales Company, Xcel Energy, Xethanol Corporation

Project Notes and Highlights

- The Energy & Environmental Research Center was designated as the National Center for Hydrogen Technology by the U.S. Department of Energy.
- The NCHT has secured over \$53 million in hydrogen-related research contracts.
- The new facility enhances the center's ability to research hydrogen and fuel cell technologies. This research has the potential to impact the energy, automotive and agricultural industries amongst others.
- Research demands at the NCHT have resulted in the creation of 28 jobs.
- The NCHT and private sector partners are demonstrating a method for producing hydrogen on-site and on-demand. This process increases the practicality and the potential for hydrogen, which produces zero emissions, to be used as an alternative energy source.



Energy **CENTERS OF EXCELLENCE**

National Energy Center of Excellence **Bismarck State College**

Contact

1200 Schafer Street
P.O. Box 5587
Bismarck, ND 58506
800.852.5685
www.bismarckstate.edu/energy

Summary

The National Energy Center of Excellence (NECE) is a worldwide leader in energy education and training for the energy industry. Partnerships with the North Dakota energy industry allow the NECE to build a pipeline of multi-skilled workers to meet the 21st century demands of this industry. The efforts of this center enable students and energy companies to succeed in a competitive, ever-changing industry.

State Funds

Launch Date: February 2006
Award: \$3,000,000
Disbursed to the Center: \$3,000,000
Spent by the Center: \$3,000,000

Matching & Leveraged Funds

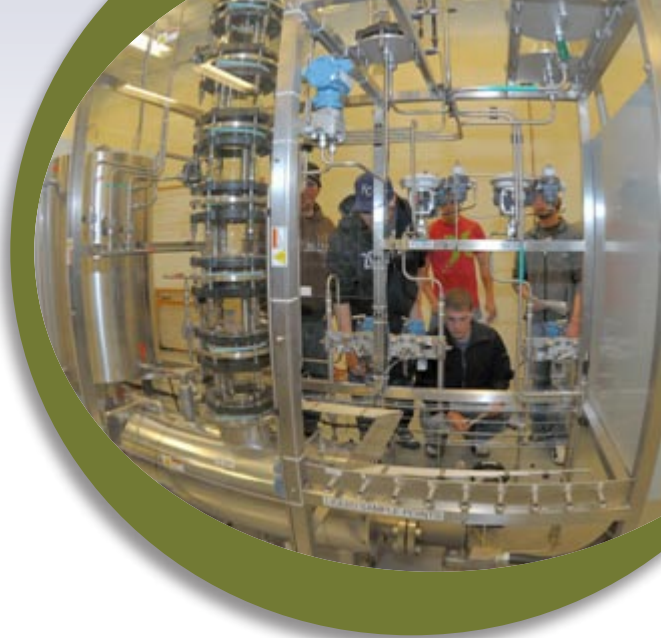
Received: \$6,397,000
Total Anticipated: \$7,342,000

Private Sector Partners

Archer Daniels Midland Co., Basin Electric Power Cooperative, Great Northern Energy Inc., Great River Energy, Headwaters Inc., Montana Dakota Utilities, North Dakota Biodiesel, Red Trail Energy, Spiritwood Station, Tesoro

Project Notes and Highlights

- The National Energy Center of Excellence provided for-credit education or non-credit company training to nearly 2,200 individuals in fiscal year 2009, which is an increase of 13% over fiscal year 2008.
- The NECE has helped create 145 jobs within the energy industry in North Dakota.
- The NECE includes state-of-the-art laboratory equipment and provides additional lab and classroom space to accommodate the growth and needs of the energy industry.
- In 2007 the U.S. Secretary of Energy officially designated BSC as the National Power Plant Operations Technology and Education Center. The designation recognizes BSC as the premier national center of education and training for operators and technicians in the energy industry.
- BSC offers a bachelor of applied science degree in energy management in addition to five associate degree energy programs and non-credit training.
- The simulation system WebLab®, developed by BSC, is incorporated in the curriculum and allows students to control energy technology laboratory equipment via the Internet. Students build hands-on skills and experience as they take control of the power generation and distribution system of a model city.
- BSC is partnering with the Army, Navy and Air Force to offer education opportunities to U.S. military students through online programs.



Energy **CENTERS OF EXCELLENCE**

Petroleum Safety and Technology Center **Williston State College**

Contact

1410 University Avenue
Williston, ND 58801
1.866.938.6963
<http://www.wsc.nodak.edu/workforce/oilandgas/>

Summary

The Petroleum Safety and Technology Center (PSTC) trains workers for the oil and gas industry. The center works closely with its industry partners to develop and maintain state-of-the-art training programs. The hands-on training sessions are designed to help oil and gas production workers work safely and efficiently.

State Funds

Launch Date: May 2006
Award: \$400,000
Disbursed to the Center: \$400,000
Spent by the Center: \$400,000

Matching & Leveraged Funds

Received: \$1,183,044

Private Sector Partners

Baker Oil Tools, Capital Safety, GC Products, Halliburton Energy Services, Hess Corporation, Hickman Sales and Service, Howard Supply, Interstate Powersystems (aka Interstate Detroit Diesel), Key Energy, Marathon Oil Company, Modern Machine, Nabors Drilling, Nabors Well Service; Nance Petroleum, National Oilwell Varco, Schlumberger, Stewart and Stevenson, VetcoGray, Weatherford Completion, Williston Fire and Safety

Project Notes and Highlights

- The PSTC provides training for 169 companies in the oil and gas industry.
- More than 4,000 individuals were trained by the center in fiscal year 2009.
- The center has contributed to the creation of 80 jobs with \$5.4 million in total annual salary.
- At the recommendation of area oil companies, new programs designed to provide training for more technical oilfield jobs are being implemented. The availability of this training enhances trainees' ability to advance within the industry.
- Partnerships with colleges in Colorado, Wyoming, and Texas allow the PSTC to provide additional training courses to oil and gas companies operating in North Dakota.



Energy **CENTERS OF EXCELLENCE**

Petroleum Research, Education, and Entrepreneurship Center of Excellence University of North Dakota

Contact

81 Cornell Street Stop 8358
Leonard Hall Room 101
Grand Forks, ND 58202-8358
701.777.4449
<http://www.und.nodak.edu/org/preec>

Summary

The Petroleum Research, Education, and Entrepreneurship Center of Excellence (PREEC) focuses on improving our understanding of the Williston Basin oil deposits with special attention to the Bakken Formation. The center aims to develop enhanced oil recovery techniques as well as address other challenges and opportunities relating to petroleum exploration and production such as CO₂ sequestration and geothermal energy.

State Funds

Launch Date: June 2009
Award: \$3,000,000
Disbursed to the Center: \$1,110,369
Spent by the Center: \$85,058

Matching & Leveraged Funds

Received: \$6,537,171
Total Anticipated: \$7,958,373

Private Sector Partners

American Petroleum Institute, Continental Resources, Encore Acquisition Company, Hess Corporation, IHS, Marathon Oil Corporation, Schlumberger, St. Mary Land and Exploration Company, Whiting Petroleum Corporation

Project Notes and Highlights

- The U.S. Geological Survey estimates the Bakken Formation contains as much as 400 billion barrels of oil of which only 3.65 billion barrels are recoverable with today's technology. PREEC is performing research that could double the recovery rate of oil in the Bakken Formation.
- Initial research performed by the center indicates the volume of the Bakken Formation that is capable of generating oil production may be significantly larger than presently believed. Additional research will be conducted to test this hypothesis with an expected outcome of increased drilling and oil production throughout the basin.
- PREEC is pursuing the development of a new green energy source in North Dakota by using oil field water to create electrical power.
- Techniques are being developed by the center for CO₂ sequestration in the Williston Basin.
- The center reports that four jobs with \$184,000 in total annual salary have been created.
- A Petroleum Engineering degree program is being developed at the University of North Dakota. The curriculum has been designed to be unique to North Dakota and attractive to students locally, nationally, and globally.



Energy CENTERS OF EXCELLENCE

SUNRISE BioProducts: A Center of Excellence for Chemicals, Polymers, and Composites from Crop Oils *University of North Dakota*

Contact

University of North Dakota
241 Centennial Drive, Stop 7101
Grand Forks, ND 58202-7101
701.777.2958
<http://www.und.edu/org/sunrise/index.html>

Summary

The purpose of the SUNRISE BioProducts Center of Excellence is to invent, develop, and commercialize green industrial chemicals, polymers, and fiber composites using crop oils as the primary raw material. This Center of Excellence is administered by the North Dakota Sustainable Energy Research Initiative and Supporting Education (ND SUNRISE) program. The mission of ND SUNRISE includes conducting research that contributes to solving energy-related problems and leads to economic development in North Dakota.

State Funds

Launch Date: June 2009
Award: \$2,950,000
Disbursed to the Center: \$983,333
Spent by the Center: \$207,927

Matching & Leveraged Funds

Received: \$2,691,596
Total Anticipated: \$9,165,132

Private Sector Partners

Bayer Crop Science; Kadrmas, Lee, and Jackson, SUNRISE Renewables

Project Notes and Highlights

- The center aims to use crop oils to produce products that are nearly identical to existing petroleum-based products and accepted as green replacements for those existing products.
- Research demands at the center have created 6.5 jobs at UND with over \$264,000 in total annual salary.
- Although administered from UND, the center represents a collaborative effort by researchers at UND, NDSU, and Mayville State University.
- During its initial year of operation, the center will focus on conducting research and development activities at the bench scale. The center anticipates moving numerous technologies forward to pilot scale development and commercialization in following years.



Life Sciences **CENTERS OF EXCELLENCE**

**Center of Excellence in Life Sciences
& Advanced Technologies**
University of North Dakota Research Foundation

Contact

4201 James Ray Drive
Grand Forks, ND 58202
701.757.5100
www.undrf.org

Summary

The Center of Excellence in Life Sciences and Advanced Technologies (COELSAT) is a research and development hub where the focus is commercializing research and intellectual property. The facility provides research laboratories, “wet” laboratories, and office and production space to tenants. The COELSAT provides the necessary infrastructure to serve North Dakota life science and technology companies, and to attract new companies to the state.

State Funds

Launch Date: March 2007
Award: \$3,500,000
Disbursed to Center: \$3,500,000
Spent by the Center: \$3,500,000

Matching & Leveraged Funds

Received: \$11,911,286
Total Anticipated: \$12,050,000

Private Sector Partners

Alion Science and Technology, Avianax, Dakota Harvest, DMD, Ideal Aerosmith, Laserlith, Novadigm, PCL/Perkins & Will, SUNRISE Renewables, UNDRF/BORDERS

Project Notes and Highlights

- The COELSAT houses companies researching vaccine development, renewable fuels and polymers, aerospace components, and communications equipment.
- The state-of-the-art facility boasts the only Biosafety Level 3+ labs in North Dakota which allows tenants to safely perform research on infectious diseases such as West Nile Virus and Avian Influenza.
- Two new spin out businesses, Avianax and SUNRISE Renewables, have been created.
- Three companies, Novadigm, Laserlith, and Alion Science and Technology have expanded their operations into North Dakota.
- The COELSAT reports that its tenants have created 60 jobs that are housed within the facility.
- The COELSAT reports that 100 percent of available space is occupied by tenants or the UND Research Foundation.



Life Sciences

CENTERS OF EXCELLENCE

Center of Excellence for Passive Therapeutics **University of North Dakota Research Foundation**

Contact

4201 James Ray Drive
Grand Forks, ND 58202
701.757.5100
www.undrf.org

Summary

The Center of Excellence for Passive Therapeutics will develop passive (antibodies) therapeutics from agriculture products for people exposed to or infected with viral infections or diseases. Once shown effective in pre-clinical and clinical trials, therapeutic products using antibodies from goose sera or eggs will be produced in their entirety in North Dakota.

State Funds

Launch Date: June 2009
Award: \$2,650,000
Disbursed to Center: \$2,134,236
Spent by the Center: \$0

Matching & Leveraged Funds

Received: \$3,983,112
Total Anticipated: \$8,400,000

Private Sector Partners

Aldevron, Avianax, Intraglobal Biologics, Mayo Clinic, Schiltz Goose Farms-North, Schiltz Goose R&D

Project Notes and Highlights

- Antibodies from goose sera and eggs will be used to develop therapeutic products that may be used to treat viral infectious diseases such as West Nile Virus and Avian Influenza.
- Two new spin out companies, Schiltz Goose Farms-North and Schiltz Goose R&D, have been created in connection with the center.



Life Sciences CENTERS OF EXCELLENCE

Center for Biopharmaceutical Research and Production *North Dakota State University*

Contact

1401 Albrecht Blvd
Fargo, ND 58105
701.231.7609

Summary

The Center for Biopharmaceutical Research and Production will design, develop, and produce biopharmaceutical products including efficient DNA vaccines. The center will fuel biopharmaceutical and life sciences sectors to discover and develop new vaccines and other biopharmaceuticals to treat some of the most challenging diseases facing humankind. The center's long-term goal is to develop vaccines and biopharmaceutical products as well as encompass pre-clinical and clinical studies in conjunction with its private sector partners.

State Funds

Launch Date: June 2009
Award: \$2,000,000
Disbursed to Center: \$1,151,350
Spent by the Center: \$0.00

Matching & Leveraged Funds

Received: \$1,405,975
Total Anticipated: \$4,742,000

Private Sector Partners

Aldevron, Clinical Supplies Management Inc., Sanford Health & Meritcare, ParaClin, PRACS Institute Ltd.

Project Notes and Highlights

- The center has the potential to rapidly identify thousands of new genes as possible biopharmaceutical vaccine candidates which will enable the design, development, and production of new biopharmaceutical vaccines for diseases with significant public health consequences.
- In its first year of operation, the center will recruit personnel, purchase equipment, begin biopharmaceutical development, and conduct initial biopharmaceutical and vaccine development work.
- The center will initially be housed in the NDSU Research & Technology Park.



Technology & Entrepreneurial CENTERS OF EXCELLENCE

Center for Innovation *University of North Dakota*

Contact

4200 James Ray Drive
Grand Forks, ND 58203
701.777.3132
www.innovators.net

Summary

The Center for Innovation operates two technology incubators, the Skalicky Tech Incubator and the Ina Mae Rude Center which was constructed using Centers of Excellence funds. The Center for Innovation supports entrepreneurs by helping launch new ventures, commercialize new technologies, and secure access to capital from private and public sources. The center's primary goals include growing entrepreneur ventures and fostering innovation.

State Funds

Launch Date: January 2005
Award: \$800,000
Disbursed to the Center: \$800,000
Spent by the Center: \$800,000

Matching & Leveraged Funds

Received: \$3,565,000

Project Notes and Highlights

- Since January 2005, the Center for Innovation has assisted in the creation of 191 jobs with \$9.13 million estimated annual payroll.
- The center has assisted 86 ventures in the incubator and helped launch approximately 150 products and ventures statewide.
- The center currently houses and services 30 businesses (with student ventures). The center has an average occupancy rate of 85-90 percent.
- The UND Entrepreneurship Program, which is supported by the center, has been ranked in the top one percent of entrepreneurship programs nationwide by Entrepreneur Magazine and Princeton Review for the past five years.
- The center hosts the Dakota Venture Group, the nation's first student-run venture fund. To date, 46 students have gained hands on experience through their participation. The Dakota Venture Group recently had its first investment exit and reports a positive return.
- The center has assisted in the development of nine angel funds around the state engaging more than 110 angel investors.
- The center provides educational content for the Innovate ND program as well as assists program participants with entrepreneur development such as business planning, financial projections and gaining access to capital.



Technology & Entrepreneurial CENTERS OF EXCELLENCE

Technology Incubator *North Dakota State University*

Contact

NDSU Research & Technology Park
1854 NDSU Research Circle North
Fargo, ND 58102
701.499.3600
www.ndsuresearchpark.com/incubator

Summary

The Technology Incubator is located in the NDSU Research & Technology Park and provides technical and business assistance to high-growth start-up companies. The goal of the Incubator is to provide a wide range of programs and services that foster the formation of technology ventures, accelerate their time to market, and ultimately increase their chance for long-term success.

State Funds

Launch Date: March 2007
Award: \$1,250,000
Disbursed to the Center: \$1,250,000
Spent by the Center: \$1,250,000

Matching & Leveraged Funds

Received: \$5,037,600

Project Notes and Highlights

- As of June 30, 2009, the Technology Incubator had 7 clients, 121 employees, and a total annual payroll of nearly \$8.8 million.
- Three clients have graduated from the Technology Incubator and include Appareo Systems, Intelligent InSites, and Pedigree Technologies. Appareo Systems recently built a 40,000 square foot facility in the NDSU Research & Technology Park.
- The Technology Incubator is recruiting entrepreneurs to participate in its newly developed Virtual Incubator. The Virtual incubator will provide opportunities for rural entrepreneurs to access the value-added programs and services provided by the Technology Incubator.
- A student employee program provides opportunities for 20 scholarship recipients to work directly with entrepreneurs in the Incubator.
- The Incubator partners with the Department of Commerce to host Innovate ND, a statewide innovation competition. Technical assistance is provided on business planning, financial projections, and pitching to investors.
- The Technology Incubator provides technical assistance to the Fargo Moorhead Angel Investment Fund in the form of deal flow, due diligence, fund administration, and portfolio management. The fund has invested in nine companies for a total investment of \$710,000.



Technology & Entrepreneurial CENTERS OF EXCELLENCE

Enterprise University Valley City State University

Contact

101 College Street SW
Valley City, ND 58702
800.532.8641
www.enterpriseuniversity.com

Summary

Enterprise University specializes in customized training curricula designed to meet the specific needs of its business partners. Enterprise University focuses on SAP, Microsoft Dynamics, Microsoft SharePoint, and Oracle Siebel training but has the capacity to develop and deliver training for any other major enterprise software. The training delivered by Enterprise University is designed to enhance employees' skills and efficiencies, and increase company profitability. Students who complete the training have the skills to pursue careers in high-demand technology fields.

State Funds

Launch Date: May 2006
Award: \$1,000,000
Disbursed to the Center: \$1,000,000
Spent by the Center: \$686,336

Matching & Leveraged Funds

Received: \$5,132,124

Private Sector Partners

Chrysler Group Global Electric Motorcars LLC, Eagle Creek Software Services, Eide Bailly Technical Consulting

Project Notes and Highlights

- Enterprise University helped launch Eagle Creek Software Service's Valley City location by training employees on Siebel Customer Relationship Management software.
- The center has helped create 74 jobs in North Dakota.
- Enterprise University has influenced and supported an effort at Valley City State University to add SAP and Microsoft business process management software applications to the curriculum. Students have gained valuable experience and have enhanced their ability to meet the needs of North Dakota businesses.
- Certificate programs in Customer Relationship Management and Enterprise Application have been established and are available to the public through Valley City State University.
- The center has collaborated with the Information Technology Council of North Dakota and contributed towards its "IT Career Awareness Program."



Technology & Entrepreneurial CENTERS OF EXCELLENCE

**Strom Center for Entrepreneurship & Innovation -
Institute for Technology and Business
Dickinson State University**

Contact

1679 6th Avenue West
Dickinson, ND 58601
701.483.2756
http://www.dickinsonnd.com/Business_StromCenter.asp

Summary

The Strom Center for Entrepreneurship and Innovation – Institute for Technology and Business is focused on helping businesses start or expand in rural North Dakota. The institute offers services in marketing, human resources, and business technology with an emphasis on helping area businesses adapt and implement new technologies. The institute is equipped to assist companies ranging from manufacturers to small businesses and entrepreneurs.

State Funds

Launch Date: October 2006
Award: \$1,150,000
Disbursed to the Center: \$1,150,000
Spent by the Center: \$637,090

Matching & Leveraged Funds

Received: \$4,826,657
Total Anticipated: \$5,219,952

Private Sector Partners

DLN Consulting, Kadrmas Lee and Jackson, Killdeer Mountain Manufacturing (KMM), WildInspire

Project Notes and Highlights

- The institute has helped KMM implement supply chain transparency technology which allows for efficient coordination of KMM's five facilities in rural North Dakota
- The institute's efforts have helped KMM create 154 jobs at \$3.6 million total annual salary in rural North Dakota.
- A certificate program designed to enhance leadership and communication skills has been developed and customized for KMM. The program may be customized for other companies and is also available to the public.
- A three year strategic plan has been developed and a needs assessment survey of area companies is being conducted in order for the institute to better serve area businesses.
- The institute actively collaborates with entities and initiatives such as the Small Business Development Center, Innovate ND, and the Manufacturer's Round Table.



PROGRAM ADMINISTRATION

Management and Oversight of Centers of Excellence

The Centers of Excellence program is overseen by a Commission comprised of members from the State Board of Higher Education and the North Dakota Economic Development Foundation. The Centers of Excellence Commission, with assistance from the North Dakota Department of Commerce, manages the application process, makes funding recommendations for projects, and oversees the post-award monitoring of the centers.

North Dakota Economic Development Foundation:



Mark Nisbet,
*Chairman, North Dakota
Principal Manager
for Xcel Energy, Fargo*



Tim Hennessy,
*Vice Chairman, Regional President
for U.S. Bank in Western
North Dakota, Bismarck*



Kathy Gaddie,
*President,
Ryan Auto Group,
Minot*

State Board of Higher Education members:



Duaine Espesgaard,
*Retired Regional President,
Bremer Financial,
Grand Forks*



Jon Backes,
*Attorney, McGee,
Hankla, Backes, and
Dobrovolny, P.C., Minot*



Sue Andrews,
*Executive Director
of the YMCA
of NDSU, Fargo*

Selection Process

Each proposed center must complete an extensive application and approval process. The Centers of Excellence Commission reviews each proposal first, recommends whether or not it should be funded and stipulates any conditions for funding.

The Centers of Excellence Commission approves proposals based on the extent to which they meet the following criteria:

- Uses university or college research to promote private sector job growth and expansion of knowledge-based industries or use university or college research to promote the development of new products, high-tech companies, or skilled jobs in this state;
- Creates high-value private-sector employment opportunities in this state;
- Provide for public-private sector involvement and partnerships;
- Leverages other funding, including cash from the private sector;
- Increases research and development activities that may involve federal funding from the national science foundation experimental program to stimulate competitive research;
- Foster and practice entrepreneurship;
- Promote the commercialization of new products and services in industry clusters;
- Become financially self-sustaining;
- Establish and meet a deadline for acquiring and expending all public and private funds specified in application;
- Has community support; and
- Includes collaboration among institutions.



Proposals must include detailed documentation of private-sector participation and the availability of \$2 in matching funds for each \$1 of state funds. Of the \$2 of matching funds, at least one dollar must be cash, of which at least fifty cents must be from the private sector. Matching funds may include dollars raised in collaboration with private-sector partners and other funding entities and may include cash and in-kind assets with itemized value. Private sector participation may be established through equity investments or through contracts for services with private sector entities. In making recommendations, the Commission, Board, Foundation, and Budget Section will give major consideration to the portion of the matching funds provided in cash by the private sector.

Each approved proposal is passed to the North Dakota Economic Development Foundation Board, the State Board of Higher Education, and the Legislature's Budget Section for approval.

Funding Process

Funding requests are made to the Centers of Excellence Commission which determines whether applicable funding requirements and conditions have been met before approving requests. In order to receive its initial disbursement, a center must demonstrate private sector participation in the project and availability of the statutorily required matching funds.

As of 2008, award funds are distributed in disbursements consistent with a center's budget and timeframe outlined in the approved award. This process allows the Commission to review a center's progress and level of matching funds received prior to distributing subsequent disbursements, thus increasing the accountability of the program. Prior to 2007, award funds were distributed to a center in one lump sum at the outset of the project.

Accountability

A center must use the funds to enhance capacity and leverage state, federal, and private funding sources. A center may not use the funds to supplement funding for current operations or academic instructions, or to pay indirect costs. Beginning in the 2009-11 biennium, funds may not be used for infrastructure. Each center is allowed only one award per biennium.

The Centers of Excellence Commission is responsible for monitoring the centers with assistance from the North Dakota Department of Commerce. The process includes site visits, third party audits and an in-depth annual review of each center. Additionally, the centers provide Commerce reports on major developments, timelines and substantial variations from their proposal.

The University of North Dakota Center for Innovation in Grand Forks and the North Dakota State University Center for Technology Enterprise and the Beef Systems Center of Excellence both in Fargo were approved and appropriated funds prior to the creation of the Centers of Excellence Commission. These centers do not fall under the jurisdiction of the Centers of Excellence Commission but have voluntarily submitted information to be included in this report in order to provide a more complete picture of the Centers of Excellence program.

Performance Audit

(NOTE: Performance Audit was completed after June 30, 2009)

Beginning in 2008 and concluding in 2009, the State Auditor's Office conducted a performance audit of the Department of Commerce including the Centers of Excellence program. The purpose of the audit was not to assess the impact of the program or individual centers, but to determine whether the administration of the program provides adequate accountability for the use of state funds.

Upon completion of the performance audit, the State Auditor's Office issued 15 recommendations for ways to improve the program. The Centers of Excellence Commission has taken action on all fifteen recommendations.



Centers of Excellence Enhancement Grants

In 2009, the Legislature directed that \$10 million of the funds appropriated to the Centers of Excellence program be used for Centers of Excellence Enhancement Grants during the 2009-11 biennium. The Enhancement Grants are available to the state's research universities for use in infrastructure or enhancement of economic development and employment opportunities.

Appropriate use of funds include a grant to enhance economic development and employment opportunities associated with the Grand Forks air force base; infrastructure and economic development projects or programs to accommodate growth in proximity to or at the Grand Forks air force base; and infrastructure and economic development projects or programs to enhance the capacity of a research university to interface and collaborate with private industry on research, development, demonstration, and commercialization of technology.

The Centers of Excellence Commission approves proposals based on the extent to which they meet the following criteria:

- Use university or college research to promote private sector job growth and expansion of knowledge-based industries or use university or college research to promote the development of new products, high-tech companies, or skilled jobs in this state;
- Create high-value private sector employment opportunities in this state;
- Leverage other funding;
- Create infrastructure and economic development projects or programs to enhance the capacity of a research university to interface and collaborate with private industry on research, development, demonstration, and commercialization of technology;
- Positively impact economic development in the state;

Additional criteria to be considered for applications relating to the Grand Forks Air Force Base:

- Enhance economic development and employment opportunities associated with the Grand Forks air force base resulting from action by the federal defense base closure and realignment commission.
- Provide infrastructure and economic development projects or programs to accommodate growth in proximity to or at the Grand Forks air force base.

The approval process for Enhancement Grants does not include the Board, Foundation, or Budget Section. The approval process concludes with the Centers of Excellence Commission.



APPENDIX A: Economic Impact Study

Economic Impact of North Dakota Centers of Excellence Program, 2007

F. Larry Leistritz, Dean A. Bangsund, and Nancy M Hodur¹

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 federal funds. The Legislature approved \$20 million for the initiative in the 2005-07 biennium, which launched 11 different Centers throughout the state (for additional information, see Goettle 2008). The 2007 and 2009 Legislatures approved additional funding for the program. As of June 30, 2009, 18 Centers had been approved by the COE Commission through a competitive process since 2005, and 17 of those Centers had received funding.

The purpose of this report is to estimate the economic impacts of the Centers of Excellence program for the period of January 1, 2008 - June 30, 2009. The analysis is based on payroll and associated expenditures reported by each Center.²

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 2004 & 2007, 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 1958-2006, 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 2008).

¹The authors are respectively professor and research scientists in the Department of Agribusiness and Applied Economics, North Dakota State University, Fargo.

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 year.



Results

Period Review (January 1, 2008 - June 30, 2009)

The economic impacts associated with the Centers of Excellence program for (January 1, 2008 - June 30, 2009) are summarized in Table 1. The direct impacts of Center and partner activities total \$56.5 million, based on expenditures from 18 Centers.³ The total economic impact (contribution) was \$160.4 million. Direct employment by Centers and partners totaled 921.5 and total employment effects totaled 1,615.5.

Cumulative Review (January 1, 2007 - June 30, 2009)

The cumulative economic impacts of the program for January 1, 2007 - June 30, 2009 are summarized in Table 2. The total direct impact was \$115.5 million and the total impact was \$329.5 million. The Centers and their partners directly employed more than 921 persons and total jobs generated was 2,059.

Discussion

The Centers of Excellence program is North Dakota's major initiative to participate in technology and information-based economic development. Although many Centers are in early stages of development, the economic effects of the program to date are encouraging. With a direct impact of \$115.5 million and total impact of \$329.5 million for the period of January 1, 2007 - June 30, 2009, the program's contribution to North Dakota economy is already considerable. Further, the jobs resulting from Center activities are relatively high paying. The Centers reported direct employment totaling 921.5 and a payroll of \$44,476,980, for an average of \$48,266 per job – subsequently above the state average. Another measure of the Centers' success is their ability to obtain matching funds and leverage funds. To date, the Centers have obtained \$134.8 million of matching and leveraged funds, an amount far exceeding the \$31.4 million of state funds dispersed to the Centers to date. To date, the Centers have spent \$19.9 million of the state funds that have been dispersed.

References

- Bangsund, Dean A., and F. Larry Leistritz. 2004. *Economic Contribution of the Sugarbeet Industry to Minnesota, North Dakota, and Eastern Montana*. AAE Rpt. No. 532. Fargo: North Dakota State University.
- Bangsund, Dean A., and Larry Leistritz 2007. *Economic Contribution of the Petroleum Industry to North Dakota*. AAE Rpt. No. 599. Fargo: North Dakota State University.
- Coon, Randal C., and Larry Leistritz. 2008. *North Dakota Input-Output Model Data Base*. Fargo: North Dakota State University.
- Coon, R. C., and F. L. Leistritz. 1989. *The North Dakota Economy in 1988: Historic Economic Base, Recent Changes, and Projected Future Trends*. Agr. Econ. Stat. Series No. 45. Fargo: North Dakota State University.
- Goettle, Shane. 2008. *Preliminary North Dakota Centers of Excellence 2007 Annual Report*. Bismarck: North Dakota Department of Commerce.
- Hodur, Nancy M., Dean A. Bangsund, F. Larry Leistritz, and John T. Kaatz. 2005. "Estimating the Contribution of a Multi-Purpose Event Facility to the Area Economy," *Tourism Economics* 12 (2): 303-316.
- Leistritz, F. Larry and Randal C. Coon. 2008. *Socioeconomic Impacts of the Langdon Wind Energy Center*. AAE Rpt. No. 627. Fargo: North Dakota State University.
- Leistritz, F. Larry, Steve H. Murdock, and Randal C. Coon. 1990. "Developing Economic Demographic Assessment Models for Substrate Areas." *Impact Assessment Bulletin* 8 (4): 49-65.

³No expenditures were reported for the NDSU Beef Systems Center of Excellence as they were specifically exempted by the 2009 Legislature from reporting requirements of the COE program. While funded, the NDSU Center for Integrated Electronic Systems has no expended any funds over the study period.

TABLE 1

**Period Review – Direct, Secondary, and Total Impacts
of North Dakota Centers of Excellence and Partner Activities
January 1, 2008 - June 30, 2009**

Sector	Expenditures/Receipts		
	Direct	Secondary	Total
	-----	\$000	-----
Construction	17,498	3,852	21,350
Communications & public utilities	788	5,175	5,963
Retail trade	1,629	32,274	33,903
Finance, insurance & real estate	4,053	12,408	16,461
Business & personal services	3,008	2,773	5,781
Professional & social services	1,100	3,911	5,011
Households	28,386	31,212	59,598
Other ¹	0	12,346	12,346
Total	56,462	103,951	160,413
Employment	921.5	730	1,651.5

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

TABLE 2

**Cumulative Review – Direct, Secondary, and Total Impacts
of North Dakota Centers of Excellence and Partner Activities
January 1, 2007 - June 30, 2009**

Sector	Expenditures/Receipts		
	Direct	Secondary	Total
	-----	\$000	-----
Construction	35,515	7,848	43,363
Communications & public utilities	2,011	10,456	12,467
Retail trade	8,095	65,628	73,722
Finance, insurance & real estate	12,224	19,679	31,903
Business & personal services	4,237	5,568	9,805
Professional & social services	2,152	7,918	10,070
Households	50,381	70,379	120,760
Other ¹	850	26,585	27,435
Total	115,465	214,060	329,525
Personal Income Taxes (\$000)	921.5	1,138.00	2059.5
Sales & Use Taxes (\$000)			3,413
Personal Income Taxes (\$000)			1,811

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





John Hoeven, Governor
Shane Goettle, Commerce Commissioner
William Goetz, Chancellor of ND University System

Centers of Excellence Commission Members:

Mark Nisbet, Chairman
Tim Hennessy, Vice Chairman
Kathy Gaddie
Sue Andrews
Jon Backes
Duaine Espeguard

Centers of Excellence

ANNUAL REPORT

2009

www.ndcentersofexcellence.com

