

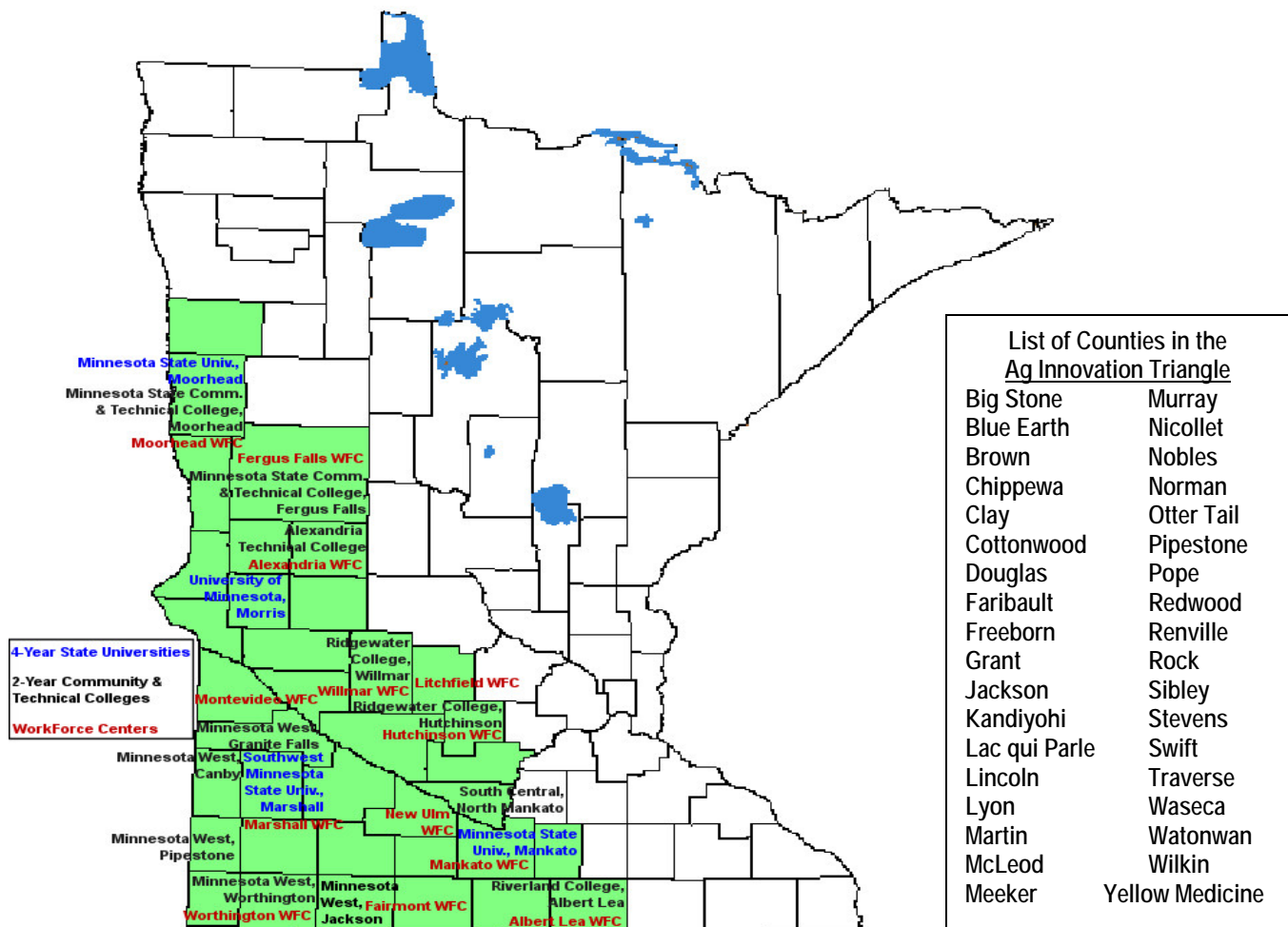
**A) Identification of the Region** (See Appendix 1A)

The Ag Innovation Triangle (*The Triangle*) is a region covering 36 geographically contiguous counties in West Central, Southwest, and South Central Minnesota, stretching from Norman County in the northwest to Freeborn County in the southeast. The region is distinctively rural, with only 42 percent of the population living in urban areas, as compared to 79 percent of the United States and 71 percent of Minnesota.

However, *The Triangle* also includes part of the Fargo-Moorhead metropolitan area and 11 micropolitan statistical areas (counties with a principal city having more than 10,000 but less than 50,000 people).

Larger cities in the region include Moorhead, Mankato/North Mankato, Willmar, Albert Lea, New Ulm, Fergus Falls, Hutchinson, Marshall, Worthington, Fairmont, and Alexandria. (See Figure 1).

**Figure 1: Map of The Ag Innovation Triangle WIRED Geography**



Despite the large number of counties – *The Triangle* covers 24,236 square miles – demographic trends and industry sectors are very similar across *The Triangle*. The region has 33,470 farms; more than 750 agriculture establishments and over 1,300 manufacturing firms that share related and supported infrastructure. To that end, the defining industries in the region are primarily built on agriculture and related manufacturing sectors. Unfortunately, both of those industries are adapting to rapid changes in technology, productivity, and global competition, while simultaneously dealing with an aging and less-educated workforce. Fortunately, a renewable energy and biotechnology industry cluster is emerging in the region that has the unique ability to transform the region's economy. More than 85 percent of the state's identified renewable energy projects are located in *The Triangle*, including fourteen of the seventeen operating ethanol plants, three of the four bio-diesel plants, and fifty-three of the sixty wind farms in the state. Only three states currently produce more wind-generated electricity than Minnesota, and Xcel Energy is currently constructing a \$300 million transmission line in the southern area of *The Triangle*. Xcel plans to add another \$700 million of transmission lines to increase its capacity to capture wind energy. At least three of the ethanol plants are pursuing expansions, and five new plants are planned to be built in the region in 2007 and 2008.

After leading the charge for renewable energy over the last several years, Governor Tim Pawlenty signed a landmark bipartisan "green energy" bill in February 2007 that set a renewable energy requirement for the state of 25 percent by 2025, further establishing Minnesota's position at the head of the pack. "In many ways, Minnesota has been the birthplace of the renewable energy movement," Governor Pawlenty said. "Today, we are leading the nation on the path to a better, cleaner, more independent energy future." If Minnesota leads the nation, then *The Ag Innovation Triangle* has the opportunity to lead the state. *The Triangle* already has a critical mass of industry, natural resources, and regional leadership, but it lacks the skilled workers required to complete the necessary transformation to a knowledge and innovation-based economy that capitalizes on the region's strength in agriculture and renewable energy.

For decades, *The Triangle* has been dependent upon agriculture for its economic vitality. But agricultural commodities are subject to price volatility, creating cycles of boom and bust. For example, the high crop prices and booming land prices of the 1970's led many farmers to take on high debt. But the 1980's brought about a return to 1960's commodity prices, coupled with tight money and high interest rates, which burst agriculture's speculative bubble. Farmland values dropped by nearly 60 percent and many farm operators found it impossible to retire their debts as their assets declined. From 1987 to 2002, the number of farms in *the Triangle* declined from 37,429 to 33,470 for a loss of 3,959 farms, or a 10.6 percent decrease. Farm foreclosures rose dramatically and the crisis had a ripple effect, negatively impacting the sale of farm machinery, seed, and fertilizer. Rural banks went into receivership and main street businesses closed up shop. Many communities in *The Triangle* were devastated – in 1986, the Minnesota Dept. of Agriculture calculated that every farm loss wiped out three non-farm jobs.

From 1970 to 2000, the population in *The Triangle* actually declined slightly, dropping from 707,321 to 705,076 people. In comparison, the population in Minnesota jumped 29.3 percent from 3.8 million to 5 million people. According to the Minnesota State Demographic Center, the population in the state is expected to rise another 27.4 percent from 2000 to 2030, while population in *The Triangle* is projected to gain just 11.4 percent, primarily due to increased life expectancies of the region's older population rather than more births or in-migration. Likewise, the region's labor force is expected to expand only 11 percent from 2000 to 2030, mostly due to older workers staying in the labor force longer. In fact, the 25 to 44 year old age labor force is expected to decline in the region through 2030. (See Table 1.)

Population Group	2000	2030	2000 - 2030 % Change
<b>Total population</b>	705,076	785,620	<b>11.4%</b>
<b>Total labor force</b>	369,943	408,580	<b>10.4%</b>
Male labor force	196,155	212,650	<b>8.4%</b>
Female labor force	173,788	195,930	<b>12.7%</b>
Age 16-24	69,872	73,500	<b>5.2%</b>
Age 25-44	159,008	155,150	<b>-2.4%</b>
Age 45-64	123,488	138,440	<b>12.1%</b>
Age 65 plus	17,575	41,520	<b>136.2%</b>

*Source: Minnesota State Demographic Center projections*

The region's workforce and demographic realities threaten to slow or halt progress in the emerging industries. *The Triangle* has the highest average age in the state and the lowest number of elementary and

secondary school students. In many parts of the region, more than 20 percent of the population is aged 65 years and over. Twenty counties currently have a negative natural rate of increase – more deaths than births – and only eight counties had positive net migration – more people moving in than moving out. Perhaps the most dynamic demographic change occurring in the region is the in-flow and settling of migrant workers for the region’s agriculture and food manufacturing industries. The number of minorities nearly tripled in the region over the last decade, with the largest concentrations locating around regional employment centers like Willmar, Mankato, Albert Lea, Worthington, and Marshall. This influx of immigrant families may provide hope for a future workforce in the region. However, the “new Minnesotans” do not come without challenges needing support and investment. In order for these workers to participate and contribute to the region’s economy, many will need English language skills and almost all will need more education and training in the higher-skilled occupations demanded by the region’s emerging industries.

Despite the current workforce challenges, *The Triangle* has many other vital infrastructure assets including an abundant source of water, wind, and fertile land; ten-ton roads and two interstate highway systems; local and regional airports; and railway service with connections to markets and suppliers. *The Triangle* is supported by stable telecommunications networks, new cellular towers, and expanding broadband infrastructure. Two of the three Agricultural Utilization Research Institute (AURI) field offices in Minnesota are in *The Triangle*; providing technical assistance, product feasibility and analysis, access to laboratory facilities, and technology-transfer services to businesses that add value to agricultural commodities. In addition; the region houses a campus of the University of Minnesota land grant college in Morris, which has recently won a national award for its innovation in renewable energies. Other research investments in biotechnology in *The Triangle* are taking place at the Center of Excellence at Minnesota State University, Mankato, which is a campus of the Minnesota State College and Universities (MnSCU) system; and at Minnesota West, a two-year community and technical college that is conducting applied research with agri-business and industry-specific training for companies like Suzlon Energy.

The region is also home to many large agri-business companies who help drive the regional economy. Some of the leading national and international companies in *The Triangle* include: Jennie-O Turkey Store, the world's largest turkey processors and marketers; Schwan Food Co., one of the world's largest frozen food providers; major meat processors like Swift & Co., Ellison Meats, Monogram Meat Snacks; feed and fertilizer producers like Big Grain, Ralco Nutrition, Form-A-Feed, Cargill, Cenex Harvest States Co-op; poultry producers like Willmar Poultry Companies, Golden Oval Eggs, Sparboe Farms; dairy product companies like AMPI, Land O' Lakes, and Cass-Clay; agriculture machinery manufacturers like AGCO, Case CNH, Redball, Suzlon Rotor Corp.; and industry-leading seed genetics companies like BASF, Monsanto, and Pioneer.

The region has six engaged and committed Workforce Investment Boards (WIBs) overseeing 13 WorkForce Centers (WFC) in cooperation with the Minnesota Department of Employment and Economic Development (DEED), reaching out to local businesses and jobseekers. *The Triangle* also encompasses five Economic Development Regions (EDRs) and three Initiative Foundation areas (supported in part by the McKnight Foundation) that are investing in the region's future. As alluded to above, the region has a strong post-secondary education infrastructure with one University of Minnesota campus, three MnSCU four-year state institutions, and twelve MnSCU community and technical college campuses, as well as a number of private colleges and training centers. Additionally, there are more than 100 local city and county economic development organizations participating in regional partnerships in *The Triangle*, with most efforts focused on renewable energy and biotechnology. Finally, local school districts and their corresponding Adult Basic Education (ABE) partners are actively engaged in the region as well.

Many state and local elected officials have also been instrumental leveraging investments that have moved the region forward. For example, in 1996 a group of local elected officials formed a joint powers agreement of 15 counties to form the Rural Energy Board to provide policy guidance on issues surrounding energy development. Likewise, Community-Based Energy Development (C-BED) is an organization of

farmers and landowners, main street businesses, bankers, wind developers, component fabricators, educators, renewable energy advocates, and community members interested in promoting environmental and economic benefits of renewable energy facilities that are owned and operated by members of the local community. This organization has grown significantly in the past twelve years as a result of a series of regulatory incentives, and C-BED was instrumental in passing legislation in 2005 that established a framework for qualifying owners of wind generation projects to negotiate power purchase agreements with Minnesota's electric facilities.

In sum, we believe *The Triangle* has the organizations, networks, and resources to leverage financial capital investments in the region. This WIRED project will help the region expand its statewide leadership role into a national and global leadership position in renewable energy and biotechnology by building, recruiting, retaining, and retraining the workforce. Additional resources from this grant will seek to foster more entrepreneurship and stewardship, which captures the essence of how this comprehensive initiative will link leadership to transform the region's economy.

## **B) Regional Labor Market and Economic Landscape (See Appendix 2B)**

The tight labor market and the aging population have a significant impact on the region's economy, which is still primarily based on agriculture and manufacturing. According to Quarterly Census of Employment Wages (QCEW) data from DEED, nearly 26 percent of total covered employment in *The Triangle* is in the goods-producing domain, which is 6.6 percentage points higher than the state concentration of goods-producing jobs (19.2%). Manufacturing is the largest employing industry domain in the region, with 18.2 percent of total covered employment, followed closely by healthcare and social assistance with 16.6 percent of regional jobs. Other large sectors include retail trade, educational services, accommodation and food services, construction, and public administration.

Like many areas of the state that were affected by the 2001 recession, the manufacturing sector suffered significant job loss in *The Triangle* from 2000 to 2005, most notably in food manufacturing. All

told, the sector sliced over 6,250 jobs, a 9.5 percent decline, as compared to a similar 12 percent drop statewide. Other declining industries in the region included retail trade, administrative and waste services, other services, and professional and technical services. Growing industries in the region included healthcare and social assistance, – which expanded 20 percent, or nearly 9,000 jobs – construction, educational services, agriculture, and finance and insurance. (See Table 2.)

**Table 2: Industry Employment Statistics, 2005**

NAICS Industry Title	NAICS Code	Number of Firms	Number of Jobs	Percent of Total Jobs	Numeric Job Change 2000-2005	Total Wages	Average Weekly Wages
Total, All Industries	0	24,825	326,183	100.0%	+5,017	\$9,228,064,572	\$544
Goods-Producing Domain	101	5,307	84,101	25.8%	-4,294	\$2,960,802,753	\$677
Agriculture, Forestry, Fishing & Hunting	11	752	7,082	2.2%	691	\$182,316,201	\$495
Mining	21	51	542	0.2%	-10	\$21,899,553	\$777
Construction	23	3,099	16,935	5.2%	1,238	\$603,981,112	\$686
Manufacturing	31	1,338	59,245	18.2%	-6,252	\$2,145,562,993	\$696
Service-Providing Domain	102	19,519	242,082	74.2%	9,310	\$6,267,261,819	\$498
Utilities	22	115	1,956	0.6%	23	\$114,659,612	\$1,127
Wholesale Trade	42	1,401	14,975	4.6%	61	\$607,609,914	\$780
Retail Trade	44	3,634	40,824	12.5%	-1,009	\$740,826,264	\$349
Transportation & Warehousing	48	1,479	10,421	3.2%	3	\$308,223,347	\$569
Information	51	496	6,006	1.8%	ND	\$201,803,684	\$646
Finance & Insurance	52	1,609	9,989	3.1%	636	\$370,593,971	\$713
Real Estate & Rental & Leasing	53	716	2,281	0.7%	117	\$42,669,621	\$360
Professional & Technical Services	54	1,187	6,581	2.0%	-179	\$231,140,113	\$675
Mgmt. of Companies & Enterprises	55	78	2,309	0.7%	129	\$117,398,743	\$978
Administrative & Waste Services	56	820	7,401	2.3%	-685	\$153,494,440	\$399
Educational Services	61	511	28,837	8.8%	758	\$926,563,173	\$618
Healthcare & Social Assistance	62	1,860	54,101	16.6%	8,980	\$1,461,539,690	\$520
Arts, Entertainment, & Recreation	71	438	3,141	1.0%	-115	\$30,888,006	\$189
Accommodation & Food Services	72	1,792	24,477	7.5%	53	\$214,561,300	\$169
Other Services, Ex. Public Admin.	81	2,023	9,967	3.1%	-486	\$168,250,832	\$325
Public Administration	92	1,211	16,743	5.1%	257	\$524,387,314	\$602

Source: DEED Quarterly Census of Employment & Wages (QCEW) program

Most geographic areas also have high numbers of jobs in these service sectors, so they do not define or set the region apart. *The Triangle's* distinguishing industries – those that have a higher than expected concentration of statewide industry employment – are quite unique and strengthen the identity of the region. For example, the region has nearly two-thirds of the state's employment in animal production (62.7 percent), and more than one-third of the statewide food manufacturing jobs (37.7 percent). Other distinguishing industries include agriculture support activities (30.5 percent), electrical equipment and appliances manufacturing (23.0 percent), nursing and residential care facilities (22.0 percent), crop

production (21.4 percent), merchant wholesalers of nondurable goods (20.4 percent), truck transportation (20.2 percent), and machinery manufacturing (20.0 percent).

With the exception of nursing care facilities, which have grown to serve the region's older population, the defining industries are all built on the strength of the region's agricultural and manufacturing foundation. Animal and crop production, agriculture support, and food manufacturing are interdependent and several industry networks exist within the region. But other direct links are highlighted by merchant wholesalers of nondurable goods – which includes grocery products, farm products, chemicals, and petroleum wholesalers – and machinery manufacturing – including farm machinery and food processing machinery. And the region relies heavily on truck transportation to get their products to larger consumer markets. But QCEW data does not include a complete count of agriculture jobs in the region, as most family farms do not report covered employment. Instead, the number of farms in the region (33,470 farms) easily outnumbers establishments (24,571 establishments). These farms are highly interconnected with, and a key input for, many of the region's distinguishing industries as described above.

Unfortunately, the region's two defining industries are facing significant challenges. According to the USDA, "agricultural productivity has more than doubled over the past 50 years. The rapid adoption of new technology, improved crop varieties, improved insect and disease control, and other changes have boosted agricultural productivity so that more production can be obtained from the same cropland base."<sup>1</sup> According to the Census of Agriculture, the number of farms in the state of Minnesota declined from 110,747 in 1969 to 80,839 in 2002, but the number of acres in farm land has remained relatively stable, from 28,785,240 in 1969 to 27,512,270 in 2002. The average size of farm has increased from 260 acres in 1969 to 340 acres in 2002, and the number of farms that are 1,000 acres or more has increased from 1,935 in 1969 to 6,389 in 2002. But even as many farms are getting larger to accommodate technological advances and increased equipment costs, the majority of the farmers in the region are getting older and are not being

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<sup>1</sup> <http://www.ers.usda.gov/Briefing/LandUse/majorlandusechapter.htm>

replaced by the next generation. Twenty years ago, nearly 25 percent of farm operators in Southwest Minnesota were under 35 years of age, while just over 11 percent were 65 years and over. Since then the younger farming population has declined nearly 70 percent as the number of farm operators who have reached retirement age has jumped more than 50 percent. Now only one in ten farmers is under the age of 35; while one in five farmers is 65 years or older.

Manufacturing has also faced significant changes over the last five years, following a statewide recession in 2001 and the difficult challenges of automation, globalization, and off-shoring. The recession sliced over 6,250 manufacturing jobs in *The Triangle*, and the region has also reported more than 200 mass layoff events from 1995 to 2005, leading to more than 40,000 worker separations and 35,000 initial claims for unemployment insurance filed. Additionally, The U.S. Dept. of Labor certified 29 manufacturing sites as Trade Adjustment Act-related events in the region between 1997 and 2007, affecting thousands of workers. Despite recent losses though, manufacturing still provides one in every five jobs in the region and local manufacturers have been recovering in the last two years. As they've started expanding again, many employers are reporting difficulty finding skilled workers. In addition, certain manufacturing specialties have been expanding in the region, including chemical manufacturing (which includes ethanol production) and wind turbine manufacturing, requiring new skills. Employment in ethanol production has increased 158 percent between 2000 and 2006, making it one of the most important distinguishing industries in *The Triangle*. Total employment in *The Triangle* has increased only 7.1 percent over the same period. Other ag-based industries with lesser amounts of value-added impact have declined or experienced slower growth. For example, crop production employment has declined by 20 percent over six years, while animal production has grown by 13.4 percent. As referenced in *Cluster-Based Strategies for Growing State Economies*, "Rural clusters often depend more on a sense of how local businesses relate to one another than on comparative concentrations or scale. In rural areas, clusters may need larger areas, more diverse membership, and more active cooperation to be called a cluster". The report also identifies renewable

energy in Southwestern Minnesota as a “distinctive and dominant micro-cluster that would not easily be found by analyzing data”.

When surveyed in late 2001, workers in the region said that the most important factor they consider when choosing a job is the pay. Unfortunately, the median wage in *The Triangle* is only 75 percent of the comparable rate in the Twin Cities metro area – nearly a \$5 per hour difference – and the wage gaps are more pronounced for the higher skilled occupations. Consequently, a high percentage of the young and entry-level workforce – especially among the best and brightest – has been leaving the region for the job opportunities and higher salaries in other parts of the state. The remaining labor force in the region is less educated than other parts of the state, and tend to earn lower incomes. (See Table 3 and 4.)

**Table 3: Minnesota Salary Survey Data, 4th Qtr. 2006**

Occupational Title	Median Hourly Wage	
	Southwest Region	State of Minnesota
Total, All Occupations	<b>\$13.36</b>	<b>\$16.48</b>
Management Occs	<b>\$32.28</b>	<b>\$42.14</b>
Business & Financial Oper. Occs	<b>\$21.68</b>	<b>\$25.11</b>
Computer & Mathematical Occs	<b>\$24.55</b>	<b>\$32.88</b>
Architecture & Engineering Occs	<b>\$23.91</b>	<b>\$28.67</b>
Life, Physical, & Social Science Occs	<b>\$22.40</b>	<b>\$26.86</b>
Farming, Fishing, & Forestry Occs	<b>\$11.53</b>	<b>\$11.68</b>
Installation, Maint., & Repair Occs	<b>\$16.20</b>	<b>\$19.42</b>
Production Occupations	<b>\$13.04</b>	<b>\$14.88</b>
Transportation & Mat'l Moving Occs	<b>\$12.93</b>	<b>\$14.19</b>

Source: DEED Minnesota Salary Survey, 4<sup>th</sup> Qtr. 2006

**Table 4: Educational Attainment Rates**

Educational Attainment	Ag Innovation Triangle		State of Minnesota	United States
	Number	Percent	Percent	Percent
Less than H.S. Diploma	77,007	17.1%	12.1%	19.6%
High School Diploma	156,269	34.6%	28.8%	28.6%
Some college, no degree	104,706	23.2%	24.0%	21.0%
Associate degree	35,163	7.8%	7.7%	6.3%
Bachelor's degree or higher	78,005	17.3%	27.4%	24.4%
<b>Total Pop., 25 years &amp; over</b>	<b>451,150</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: U.S. Census Bureau

Median household incomes in *The Triangle* were also comparatively low, ranging between \$34,369 in Big Stone County and \$49,593 in Nicollet County in 2004, according to the U.S. Census Bureau. None of the 36 counties in the region surpassed the state median household income of \$51,202, and more than half of the counties had median incomes less than 80 percent of the state level.

With lower wages leading to a smaller number of entry-level workers and a projected decline in the 25- to 44-year-old workforce, the region is dealing with a very tight labor force. *The Triangle's* annual unemployment rate was 3.9 percent in 2006, which was lower than the state rate (4.0 percent) and the U.S. rate (4.6 percent). For example, Rock County's unemployment rate dipped to 2.8 percent in 2006, and

seven other counties had rates below 3.5 percent. With the exception of the Micropolitan areas, the region is not a big draw for workers, either. In fact, nearly three out of every four workers (74.9 percent) in *The Triangle* work in their county of residence, which is significantly higher than the state rate (66.3 percent).

Average travel times to work were generally short for workers in the region, with most workers driving

<b>(Place of Work for Workers)</b>	<b>Ag Triangle</b>	<b>Ag Triangle</b>	<b>State of Minnesota</b>	<b>United States</b>
Total Workforce	348,675	100.0%	100.0%	100.0%
Worked in county of residence	258,592	74.9%	66.3%	73.3%
Worked outside co. of residence	69,017	20.0%	31.6%	23.1%
Worked outside state of residence	21,066	6.1%	2.0%	3.6%

*Source: U.S. Census Bureau*

less than 25 minutes. Much of the region borders North Dakota, South Dakota, and Iowa, leading to a slightly higher percent of workers

driving outside the state for work, but those commuters still account for only 6 percent of the workforce.

(See Table 5.)

The Small Business Development Centers (SBDC) in *The Triangle* were busy in 2006, helping more than 758 small business clients and creating or retaining 1,824 jobs. SBDC assistance led to business capital investments of \$42.4 million, according to the SBDC 2006 Annual Report. According to the United States Patent and Trademark Office, *The Triangle* spawned only 725 utility patents from 1990 to 1999, which was less than 5 percent of the state total. However, the emerging renewable energy and bioscience cluster in the region holds promise for increasing local innovation.

Quite obviously, the region is at a turning point. With an aging population, an entry-level workforce comprised of new Minnesotans, an experienced labor pool that is less educated and unprepared for new technologies, and a heavy reliance on industries that are experiencing significant changes; *The Triangle* is in need of an economic transformation through regional leadership and shared vision. Fortunately, a renewable energy industry cluster is emerging that has the promise to transform the above issues in significant ways. The number one challenge for *The Triangle* is to increase the region's skilled talent pool. With this WIRED grant, we seek to foster more entrepreneurship in the region and to improve recruitment, retention, and credentialing of talent by aligning and enhancing education and training resources. The

renewable energy and biotechnology industry has the opportunity to drive research and development and create additional products that use agricultural inputs and entrepreneurship. Equally important, it lays the foundation for new firms and new ideas that can create new products for the agricultural industry. With this human “knowledge capital”, the region can drive agriculture to provide solutions for energy production and other value-added products. *The Triangle* welcomes this challenge, with leadership positioned to embrace the opportunity and residents ready to learn and succeed.

### C) Strength of Partnership

*The Triangle* is based on a common vision to transform, innovate, and develop talent to propel the regional economy. The Executive Leadership Board is made up of strategic partners who represent an existing alignment of education, workforce development, economic development and private sector businesses that will guide the WIRED grant implementation process. A comprehensive list of all key partners is included as Appendix 3C and 4C. A list of the Executive Leadership Board follows in this narrative, along with a brief description of our team members’ proven service, leadership and strength of partnership.

- **The Southwest Minnesota Workforce Council (SWWFC)**, Minnesota Workforce Service Area (WSA) 6; Juanita Lauritsen, Executive Director, co-lead and fiscal agent for the WIRED proposal and Mike Harmon, WIB Chair; representing 5 additional **WIBs** (Northwest, Rural MN CEP, Central MN, South Central, and Southeastern MN) with their accompanying 13 WFCs.)
- **Department of Employment & Economic Development (DEED)**; Connie Ireland, Regional Administrator, Dan McElroy, Commissioner, and Bonnie Elsey, Workforce Development Director; co-lead, representing 13 WFCs, three economic development leads, the Minnesota Trade Office, Small Business Development Centers, and SBIR/STRR.
- **Southwest Initiative Foundation (SWMIF)**; Sherry Ristau, CEO and President; representing two

additional **McKnight Initiative Foundations**( Southern Minnesota Initiative Foundation, SMIF and West Central Initiative Foundation, WCIF)in the region.

- **Fagen, Inc.**; Ron Fagen, President and CEO; representing project management, design and engineering and a national leader in biofuels plant construction.
- **Prairie Holdings Group**; Wayne Freese, CEO/Chairman; representing seven companies in agribusiness and bio-technology.
- **Poet LLC**; Jeff Broin, CEO; representing 20 ethanol plants in nine states, including four in Minnesota.
- **Minnesota Precision Manufacturer's Association (MPMA)**; Jaime Nolan, Executive Director; representing 275 component manufacturers and their suppliers.
- **Agriculture Utilization Research Institute (AURI)**; Teresa Spaeth, Executive Director; representing an organization created and funded by the state to identify and expand existing markets for agriculture products, and develop renewable energy from agricultural commodities and co-products.
- **Energy Consortium**; Chad Couaette, Chair; convenes and facilitates ten Minnesota energy companies, government entities, and education to solve workforce issues in the energy sector.
- **Minnesota State Colleges and Universities (MnSCU)**; Richard Davenport, President Mankato State; representing two four-year MnSCU colleges (Minnesota State University, Moorhead and Southwest State University); and Ron Wood, President **Minnesota West Community and Technical College (MWCTC)**; representing twelve two-year community and technical college campuses (Alexandria Community and Technical College, Minnesota State Community and Technical College, Ridgewater Community and Technical College, Riverland Community College and South Central College).
- **University of Minnesota (U of M)**; Richard Hemmingsen, Director – IREE; representing the University of Minnesota and Initiative for Renewable Energy and the Environment (IREE).
- **Southwest/West Central Cooperative (SW/WCC)**; (K-12 Service Co-op); Tom Hoff, Coordinator;

representing 142 school districts in the region.

- **Southern Minnesota Economic Development Professionals (SMEDP)**; Glenn Thuringer, Chair and also Worthington Regional Economic Development Corporation (WREDC) director; representing over twenty local and regional economic development professionals.
- **Southwest Regional Development Commission (SWRDC)**; Jay Trusty, Executive Director; representing four additional regional development commissions in the region.
- **Adult Basic Education (ABE)**; Pat Thomas, Director of Marshall Adult Basic Education; representing eight ABE Consortiums in the region, providing contextual learning curricula for English Language Learners.

The combined efforts of the organizations represented have begun to transform the regional economy of *The Triangle*. In 2005, the combined efforts of these partners landed the world's largest fully integrated wind power company, Suzlon. Suzlon is headquartered in India and the company does business in 40 locations worldwide. Impressed by the shared vision and collaboration of state and local partners, Suzlon chose to open a plant in Pipestone, initially hiring 275 workers with plans to expand its workforce. The City of Pipestone, Chamber, DEED, and local economic developers assisted Suzlon in finding a site in a JOBZ zone. JOBZ, authored by Governor Pawlenty with support from rural communities, is Minnesota's initiative to stimulate economic development activity in Greater Minnesota by providing local and state tax exemptions to new and expanding businesses. MnSCU (MWTC) and DEED partnered to offer Suzlon a Minnesota Jobs Skills Partnership grant customizing training for the necessary skills of their workforce. Pipestone County, City of Pipestone and SW Foundation also contributed financial resources for the training of Suzlon's employees. The area WFCs, through the leadership of the SWWFC, recruited workers for the new plant. Since Suzlon located in Pipestone, over thirty new businesses related to renewable

energy production and support are inquiring about locating manufacturing facilities in *The Triangle*. There is no doubt more skilled workers will be needed to fill the regional demand.

The vitality of our partnerships is defined by each organization's strengths. The SWWFC has an established reputation as a national trendsetter in rural workforce development through its leadership of an 80-county H1B healthcare worker training grant, which was inclusive of ten WSAs. Their success in the delivery of an employer-led consortium and services to minorities, has been recognized by the McKnight Foundation as a best practice. Also known for their leadership in forming partnerships, they developed a virtual regional strategy with two neighboring WSAs three years ago to leverage resources and improve services on behalf of the region's residents.

The SWMIF was recognized for providing MnSCU with the resources to develop industry educator curriculum to provide career awareness to educators in the SWWC Service Cooperative. The Cooperative will disseminate the information to 142 school districts in *The Triangle*. The Minnesota Dept. of Education is implementing a career pathways and entrepreneurial curricula to aid the expansion of Science, Technology, Engineering and Math (STEM) programs.

The SWMIF also increased public awareness of alternative energies by participating in the Minnesota State Fair and at major bioscience conferences including the national BIO Trade Show; by creating marketing strategies and a regional brand through a website entitled the "*Renewable Energy Marketplace*." The SWMIF has promoted business investments in the *Bio-Industry Marketplace* by convening regional meetings and facilitating discussions with angel investors, venture capitalists, and other financial institutions. The SWMIF recently launched an initiative for small businesses, *Step up Your Business to Success*, representing a collaborative effort of partner organizations such as SBDCs and local chambers that share industry knowledge and expertise with small businesses. The SMIF, in partnership with MnSCU and private industry, has also launched an initiative to raise the capital to fund a \$2 million Mobile Science Lab in order to broaden science experiences for K-12 students in the region.

Governor Pawlenty named Minnesota State University, Mankato as a Center of Excellence in Engineering and Manufacturing. This provides the campus additional resources to conduct applied research in engineering and biofuels, where a new emissions lab is under development in partnership with DEED and Blue Earth County. MSU-Mankato and Minnesota West have also received funding from the U.S. Department of Energy to further their research in renewable energy. The campuses collaborate with business to accelerate the commercialization of technologies and establish innovative test beds for new product development, and are developing articulation agreements for bioscience and engineering for one-year certificates, two-year associate degrees, and four year degrees. In addition, MWTC has partnered with Prairie Holdings Group to use their laboratories for training in bioscience-related fields since the campuses do not have the equipment necessary for hands on training. MnSCU (SCC), with leadership from Poet, LLC, is also providing training opportunities for Poet's Minnesota workforce through a DEED-sponsored Minnesota Job Skills Partnership program (MJSP) a grant to develop curricula for bio-fuels industries.

The University of Minnesota Initiative for Renewable Energy and the Environment (IREE) has positioned the U of M and the state as national leaders in the development of energy and products from renewable resources. Since 2003, the U of M has provided funding for over 115 research projects focused on renewable energy and the environment including 60+ multidisciplinary research projects. Additionally, IREE has collaborated with more than 130 external organizations including business and industry partners, universities and higher education institutions, state and federal agencies and departments, national laboratories, trade organizations, foundations, non-governmental organizations and foreign embassies.

DEED, co-lead on the WIRED proposal, oversees Minnesota's WFC System including WIA, Wagner-Peyser, Vocational Rehabilitation, Veterans, TAA/TRA, UI, and state employment and training programs. As the state's economic development department, DEED oversees the Small Business Development Centers (SBDC), JOBZ, Job Skills Partnership Grants, Community Development Block Grants,

SBIR/STTR, as well as the Minnesota Trade Office (MTO). DEED is heavily invested in *The Triangle* partnership and has named a bioscience and renewable energy industry specialist to support the regional transformation. DEED is driving sectoral strategies statewide and leads the state's team for the National Governor's Association Sectoral Academy (NGA). DEED also invested in curricula for all WFC staff on "Demand Driven Strategies." In addition, DEED provided the financial resources to train 75 regional leaders on the MicroEconomics of Competitiveness (developed by Michael Porter at Harvard ) to prepare its own workforce and its strategic partners' workforce with knowledge about the role that firms and industry clusters play in driving regional economies. DEED will act as a coordinator and liaison with other state departments including the Minnesota Departments of Transportation (MNDOT), Commerce, Agriculture, and Labor & Industry. DEED will leverage resources in order to market and promote business accelerators/incubators and promote *The Triangle*.

Established in 2006, the Energy Consortium convenes and facilitates Minnesota energy companies, government entities, and education partners to solve industry workforce issues. The consortium includes Xcel Energy, a national leader in renewable energy investments with the Renewable Energy Trust and a contributor of \$50,000 to the Center for Energy Workforce Development (CEWD). The Consortium is a member of and utilizes the clearinghouse functions of CEWD for identification and dissemination of career paths and skills sets.

The third annual regional bio-science and bio-fuels conference was sponsored by Worthington Regional Economic Development Corporation, SMEDP's, SWMIF, SWRDC, SWWFC, DEED, AURI, and MnSCU to promote innovation, technology, and workforce development. Since 2006, AURI has also led a statewide effort to engage all stakeholders in renewable energy with a twofold plan to grow renewable energy knowledge, application and utilization.

The Minnesota Precision Manufacturer's Association (MPMA) has served as the voice of the precision contract manufacturing industry in Minnesota for the past 50 years. MPMA will convene and meet with

manufacturers in the region to build the relationship necessary for workforce development professionals to help build their capacity to develop a talented workforce.

The Southwest Regional Development Commission (SWRDC) works with communities to create comprehensive plans that support regional strategies. In addition, many private sector businesses have come together to invest time and money in the SWMIF, who manage the financial investments in support of the regional strategy to build a strong economy around alternative energy and value-added agriculture products. The partnership companies include: DanMar & Associates, Suzlon Manufacturing, Ag-Chem Equipment, BEI Environmental Contracting, Hussong Manufacturing, SMI & Hydraulics, Sunrise Agri-Fuels, First Farms & Merchants Bank, 1<sup>st</sup> National Bank, MinnWest Bank, Granite Falls Ethanol, Bushmills Ethanol, FUMPA, MinnWind, North Star Ethanol, 3M, the Schwan Food Co., Heron Lake Bioenergy, Jennie-O Turkey Store, and Swift & Co.

ABE works in partnership with businesses, post-secondary institutions, and K-12 representatives to develop a curriculum to deliver functional foundational math skills to entry-level and incumbent workers throughout southwest, central and east central Minnesota.

#### **D) Strategies for Transformation (See Appendix 5D and 6D)**

The mission of *The Ag Innovation Triangle* is to boost innovation and cultivate new technologies in order to achieve a competitive advantage through business and talent development. The number one goal of this initiative is to achieve long-term sustainable economic vitality and compete in a global economy through the retention, creation, and attraction of an educated and skilled workforce.

Minnesota's goal, as reiterated by Governor Pawlenty, is to position itself as a leader in renewable energy and biosciences and is dependent on the *Ag Innovation Triangle's* ability to deliver regional economic transformation. For this purpose, *The Triangle* will form an Executive Leadership Board (ELB) made up of strategic representatives from agricultural and manufacturing businesses, WIBs, SWWFC, Economic development professionals, SMEDP, Regional Development Commissions, SWRDC, the Energy

Consortium, Initiative Foundations, SWMIF, MN Department of Employment and Economic Development (DEED), AURI, University of Minnesota (U of M), Minnesota State Colleges and Universities (MnSCU), Minnesota State University (MSU), Mankato MSU-M, Minnesota West Community and Technical College (MWCTC), and ABE. The ELB will identify and assign the action team members responsible for each action item. The ELB will integrate the asset mapping that has already occurred across *The Triangle* by WIBs, MnSCU, RDCs, and AURI into one document to lead the common vision for *The Triangle*. The lead partner organizations for the action items are identified in the Strategies for Regional Transformation Chart (Appendix 6D). This chart is a reference guide for this section to clearly identify the action teams with their action items.

As mentioned previously, the Action Now Coalition led by the Agricultural Utilization Research Institute (AURI) developed a rural partnership model as a result of engaging more than 115 representatives from business, education, private companies, government and non-profits. *The Triangle* acknowledges their work and plans to adapt their model in this proposal. The findings of the Action Now Coalition are the foundation for the challenges identified by AURI in April of 2007.

The challenges as identified by AURI are: 1) leadership to transform the geo-political boundaries and create one common vision; 2) public awareness of the necessity to work regionally think globally; 3) financial investments in new technologies and marketplaces; 4) applied research in agri-technology to move from test beds to incubator businesses; and 5) attract and grow the necessary talent to sustain the region's economy.

*The Triangle's* ELB has identified its four key strategies to address the challenges and they are: **1) Regional Leadership & Identity Action Team, 2) Talent Development, 3) Break-through Research, and 4) Entrepreneurship/Business Growth.**

The **Regional Leadership & Identity Action Team (RLIAT)** will leverage DEED's resources to develop a statewide marketing campaign to market the region's economic assets. Plans are underway to

market *The Triangle* at a national trade show. Community and student forums will be convened across *The Triangle* to engage every citizen. The ELB will identify and model collaborative Best Practices that have been successful in areas within the region and transfer to others. The ELB will also be responsible to market and replicate Best Practices in talent development and leveraging resources.

The **RLIAT** will foster innovation by looking globally. This can be accomplished through the assistance of the Minnesota Trade Office to develop new relationships with other countries, such as Brazil, which has one of the boldest renewable energy programs in the world. *The Triangle* will look for product diversification as international competition in the marketplace increases. The Action Team will form a learning consortium by working with other mid-western states and neighbors.

The **RLIAT** will also lead the alternative energy and bioscience workforce gap analysis which will include job vacancy surveys and job analysis of occupations in demand. The outcome of job analysis will create a clear roadmap for career ladders in the renewable energy field, agricultural bioscience occupations, and advanced manufacturing. A website will be established to communicate the regional workforce skill shortages and link to educational opportunities to fill the gaps in the region. Minnesota's Job Bank will be used to help recruit the talented workers needed in the region.

Another goal of the **RLIAT** will be to inform youth and their parents of the emerging industries in *The Triangle*. Youth Science and Technology Exploration camps and internship programs will be developed and hosted by MnSCU campuses for 500 students. This Action Team will invite 200 students to a Youth Energy Summit already in the planning stages, followed by a competition in 20 communities for high school students. In addition, 100 scholarships will be provided to minority students to encourage their participation in summer camps.

In order build the 21<sup>st</sup> century bioscience and renewable energy workforce, education and training is critical. The **Talent Development Action Team (TDAT)** will be structured to include activities for K-12 education, post-secondary education, incumbent workers, dislocated workers, and new immigrants. This

TDAT will coordinate and align with business and industry, ABE, and the WFCs. A critical action item resulting from the workforce gap analysis involves educating the professional P-16 educators on the new skill requirements developing in their region. Educators need to be informed and knowledgeable on how science is applied in the production of bio-fuels, other alternative energies, and related manufacturing businesses. This action item includes training 100 educators. The region also plans to expand Project Lead the Way (PLTW), a nationally licensed curriculum, to 12 additional school districts. The Action Team will also develop a pilot training program with five manufacturing companies in the region by implementing the National Manufacturing Skills Standard Certificate in partnership with one MnSCU institution.

Science, Technology, Engineering and Math (STEM) programs will be made relevant to students in *The Triangle*. The Minnesota Department of Education, in cooperation with local school districts, will support this effort. An action plan to develop a pilot “global school” will be implemented in one area school district. The global school will go beyond the STEM program in an effort to design and develop curricula that identify global industry standards for education and skill development. WIA incentive scholarships will be awarded to students enrolling in this pilot program. Access to the Mobile Science Lab will be expanded to connect youth with science opportunities.

The TDAT will leverage the WIB’s resources to engage incumbent workers and dislocated workers in career pathways in the renewable energy and bioscience occupations, and advanced manufacturing. The WFCs will develop information about career paths and skills required for each occupation. The WIBs will award scholarships to applicants pursuing education in these targeted industries. The Action Team’s goal is to increase the average wage for individuals in these fields by \$3.00 per hour and to increase the number of people pursuing these occupations by 30 percent over the three year period. The WFCs will offer Work Keys assessments for applicants interested in these occupations at all 13 WFCs in *The Triangle*.

Many students and adults in the area are non-English speaking new Minnesotans. ABE will assess students and workers using the Work Readiness Credential developed by the US Chamber of Commerce

and teach curriculum that will enhance their readiness for post-secondary education. ABE will also be actively engaged with local businesses to increase the English language and basic skills of incumbent workers. The Action Team's goal is to increase the number of new immigrants served by 25 percent. The Team's goal is to increase the wage earnings of new immigrants served in *The Triangle* by 20 percent over the three year period.

The opportunity to lessen our dependency on foreign oil and encourage new business growth around the new emerging industries is immense. The **Entrepreneurship/Business Growth Action Team (EBGAT)** will develop entrepreneurial training for individuals willing to take the challenge. Technical assistance will be provided for an additional 300 small businesses or new start-ups in *The Triangle* over the three year period. The Action Team's goal will be to increase job growth by 15 percent. DEED provides technical assistance for businesses to complete the STTR/SBIR applications.

Another **EBGAT** role is to align and encourage public and private investments in agricultural value-added products. The team will develop actions to engage angel fund investors and financial institutions for seed capital. Minnesota's JOBZ tax free zones have already been successful in attracting private sector investment and capital in the region.

The **EBGAT** will also promote mentorship programs linking entrepreneurs with regional business leaders, angel investors, and financial institutions. New mentorship opportunities will be created in five communities. Minority entrepreneurial mentorship networks will also be established in five communities. Local schools will utilize the Kaufman Foundation entrepreneurial curricula for K-12, and the curricula will be implemented in 50 school districts. "Starting Your Own Business" will be showcased in 40 school districts for parents and students to encourage future entrepreneurs.

Another outstanding resource in *The Triangle* is the Minnesota Center of Engineering and Manufacturing Excellence, Mankato and the Minn West Technology Campus (a private non-profit business accelerator) in Willmar. They support and promote small business incubation for the development and

growth of technology businesses. The Worthington Bioscience Industrial Park is an example of public/private partnership that provides training opportunities and laboratory access for teaching and research. The Action Team will support and promote business incubators/accelerators and leverage local, state and federal resources. The Action Team's goal will be to assist in the development of one new technology incubator/accelerator within the three year period.

The **Breakthrough Research Action Team** will encourage academic and industry partnerships. The University of Minnesota will take the lead in basic research. Currently there are many opportunities and challenges in R & D such as developing more appropriate enzymes that are effective, efficient and cost effective from different biomass sources; developing organisms to ferment mixed sugars to ethanol; transforming cellulosic biomass into bioenergy; and developing processes that integrate other renewable energies in the process of biomass (i.e., wind, solar, biogas). There are also opportunities to address the reduction of CO<sub>2</sub> emissions and other pollutants. The U of M and MnSCU institutions will collaborate with business to accelerate the commercialization of technologies in the region through the establishment of innovation test beds.

The region can further its strategic opportunities by diversifying in breakthrough biotechnology research. Minnesota is an established leader in ethanol production. Local investment by farmers in ethanol production has proven to be profitable which leads to new opportunities for investment in emerging biotechnology industries. There is no standard industrial classification that the U.S. Census Bureau has adopted for this new domain of biobusiness. *The Triangle's* emerging biobusiness economy is critical to the future sustainability of the region and needs to act strategically and decisively to position itself to be a leader in this industry.

*The Triangle* is on the cusp of transforming itself into a knowledge-based biotechnology region. The region has identified the blueprint to transform to a vibrant economy through leadership, public awareness, financial investments, innovation and applied research, and talent development.

## E) Leveraged Resources

*The Triangle* will leverage existing investments in agriculture, energy, and biosciences. Most of the innovations in this proposal will be “incubated” within the context of these existing initiatives. In this respect *The Triangle* will be leveraging and aligning requested and existing resources, which include:

Minnesota West Community and Technical College (MWCTC) requested \$2 million from the state legislature to construct a training and testing facility in partnership with Newport Labs for incubator firms developing new agricultural processes and products, including those related to renewable energy. MWCTC also received a \$400,000 MJSP grant to train 372 Suzlon workers for the wind industry, and established curricula for the biosciences, wind, and biofuels industries. Suzlon Rotor Corporation provided a private sector match of \$1,126,321 to train those 372 workers.

Minnesota State University, Mankato (MSU,M) requested a \$5 million allocation from the state legislature for business loans, \$1.5 million for applied research, \$500,000 for shared equipment between education and business, and \$500,000 for workforce education. The Center for Engineering and Manufacturing Excellence, Mankato established the Emissions and Engine Efficiency lab with private sector and state funding totaling \$1.2 million.

AURI, MnSCU, and the U of M received \$10 million for a Next Generation Research Energy Initiative for basic and applied research in renewable energies. MSU-M and MWCTC also received a \$500,000 U.S. Department of Energy biofuels research award. The Energy Consortium received \$80,000 from the MnSCU Chancellor's office to develop a workforce strategy for the energy industry. The U of M, MWCTC, MSU-M, and Cargill have applied for \$125 million from the U.S. Dept. of Energy to support further research into renewable energies. If funded, an additional \$125 million has been requested from the state legislature to include workforce development. The University of Minnesota, Morris campus has received \$800,000 from the legislative commission on Minnesota resources and \$2.5 million from the state of Minnesota for research on converting wind to hydrogen power. They have received \$6 million from

the Dept. of Energy for biomass research gasification, and an additional \$1.8 million to develop an energy toolbox.

AURI, MnSCU, the U of M, and public and private sector organizations have formed the Action Now Coalition, funded by the legislature, to focus on the advancement of bioenergy in rural Minnesota. BioBusiness Alliance, AURI, MnSCU, and the U of M are developing a 20-year strategic plan to create a sustainable renewable energy economy in Minnesota, under the direction of the Sandia National Lab.

The West Central Initiative Foundation (WCIF) has leveraged over \$118 million for workforce, community and business development, and early childhood programs. Likewise, the Southern Minnesota Initiative Foundation (SMIF) leveraged over \$100 million to support business and community development, \$2 million for a mobile science lab project, and \$125,000 for a BioIndustry Marketplace Initiative. The Southwest Minnesota Initiative Foundation (SWMIF) leveraged over \$100 million to support business and community development, established loan programs of up to \$500,000 to serve entrepreneurs, businesses, regional centers, and small communities, as well as a renewable energy loan program. The SW Foundation has also developed initiatives around the Renewable Energy Marketplace for youth, entrepreneurs, businesses, and communities.

Prairieland Community Development Corporation has \$38 million available for an intermediary relending program for small businesses that do not qualify for SBA 504 loans, SBA 504 business loans, or New Market Tax Credits.

The Southwest Minnesota Workforce Council and partner Workforce Service Areas will provide leadership throughout the region to align and leverage activities, goods and resources. They have already committed WIA funds to be used for talent development in demand industries in the region.