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June 15, 2009



The BioBusiness Alliance
of Minnesota

Dan McElroy
Commissioner
Department of Employment and Economic Development
1st National Bank Building
332 Minnesota St., Suite E200
St. Paul, MN 55101-1351

RE: Contract # SPAP-07-0010-P-FY08

Dear Commissioner McElroy,

As part of the grant appropriation from the 2007 Minnesota Legislature, BioBusiness Alliance of Minnesota (BBAM) is submitting to DEED our final report. The attached report summarizes the work of BBAM from July 1, 2008 through June 30, 2009.

We are pleased to be collaborating with government, academia and the private sector to help make Minnesota a better place to invest in biobusiness. We look forward to the opportunity to continue working closely with you and your department in the future.

Warm regards,

Dale Wahlstrom
CEO/Acting Chairman
The BioBusiness Alliance of Minnesota

Attachment

Cc:

Senator Lawrence J. Pogemiller, Senate Majority Leader
Senator Tarryl Clark, Vice Chair, Rules and Administration
Senator James Metzen, Chair, Business, Industry & Jobs
Senator Ellen Anderson, Chair, Environment, Energy and Natural Resources Budget Division
Senator Jim Vickerman, Chair, Finance – Agriculture and Veterans Budget and Policy Division
Senator David Tomassoni, Chair, Finance – Economic Development Budget Division

Representative Margaret Anderson Kelliher, Speaker of the House
Representative Tom Rukavina, Chair, Higher Education and Work Force Development Policy and Finance
Representative Lyndon Carlson, Chair, Finance
Representative Al Juhnke, Agriculture, Rural Economies and Veteran Affairs
Representative Jean Wagenius, Environment and Natural Resources Finance
Representative Mary Ellen Otremba, Chair, Agriculture, Rural Economies and Veterans Affairs
Representative Kent Eken, Chair, Environment
Representative Tim Mahoney, Chair, Biosciences and Emerging Technologies

Jess Hopeman, Legislative Reference Library
Kevin McKinnon, DEED. Sarah Walbert, DEED



THE BIOBUSINESS ALLIANCE OF MINNESOTA
FINAL GRANT REPORT JUNE 2009
 STATE OF MINNESOTA
 DEPARTMENT OF EMPLOYMENT AND ECONOMIC DEVELOPMENT
 BUSINESS AND COMMUNITY DEVELOPMENT DIVISION
Re: Special Appropriation Grant Agreement
SPAP-07-0010-P-FY08

AGENCY	VENDOR NUMBER	OBJECT CODE	TOTAL AMOUNT
B22100			\$1,750,000

General Highlights

The BioBusiness Alliance of Minnesota has fulfilled the agreed upon deliverables. The detailed progress is spelled out in the deliverables section of this report. The current partnership with the state of Minnesota, Department of Employment and Economic Development (DEED), has lead to several key accomplishments:

- Completed Destination 2025, a statewide bioscience roadmap designed to:
 - Understand the state’s assets and strengths
 - Compare with the evolving global markets
 - Create a coordinated and sophisticated *statewide strategy with regional components* that grows Minnesota’s economy
- Helped secure funding for International Renewable Energy Technology Institute (IRETI) to deliver critical technology transfer services in renewable energy across the globe.
- Formed alliances with Sweden and Japan to create “soft landing strips” in Minnesota.
- Created a Minnesota Renewable Energy Simulator, a dynamic simulation model that allows users to test policy decisions that impact the outcome of Minnesota’s renewable energy economy.
- Established the Life Science Community, a statewide network of champions working in a coordinated fashion to advance the biosciences throughout Minnesota.
- Created the BIOMAP, a groundbreaking interactive map of over 2300 Minnesota bioscience assets.
- Currently working with three venture capital firms to create seed and development funds to support companies in Minnesota.
- "Fierce Biotech," the biotech industry’s daily monitor, has named Minnesota as the region in North America most likely to see a biotech-development explosion. The principal reason cited for this rating is the Elk Run project in Pine Island. The BioBusiness Alliance has been part of the project since it began.

The specific progress the BioBusiness Alliance of Minnesota has made on our agreed upon deliverables is provided in the body of this report.

Deliverables

1. Completion and periodic updating of a statewide bioscience business industry assessment of business technology enterprises and Minnesota's competitive position employing annual updates to federal industry classification data.

The initial Statewide Industry Assessment, *Biobusiness: Minnesota's Present Position and Future Prospects*, was completed and distributed in late 2006. In August 2007, the BioBusiness Alliance began working on a report to update the Statewide Industry Assessment by comparing Minnesota's life science investments to other states. The report, *Comparative State of Bio Investments: An Analysis of Bioscience Investment from 2002-2006 in California, Iowa, Massachusetts, Minnesota, North Carolina, Ohio, Utah, Washington and Wisconsin*, was drafted and reviewed. After the review, it was agreed upon between DEED and the BioBusiness Alliance that more time was needed to provide a more comprehensive assessment update. The update will be completed in 2010.

2. Long-term strategic planning that includes projections of market changes resulting from developments in biotechnology and the development of 20-year goals, strategies, and identified objectives for renewable energy, medical devices, biopharma and biologics business development in Minnesota.

The BioBusiness Alliance of Minnesota presented the findings of its Destination 2025 initiative to over 300 key industry, academic and public sector leaders on Jan, 28, 2009 at an event held at the Minnesota History Center. Destination 2025 is a bioscience initiative designed to help Minnesota better understand its assets and strengths, compares them with the evolving global markets and help to create and implement a coordinated and sophisticated statewide biobusiness growth strategy with regional components. The process involved over 600 people who work in and with the industry and who are experts in their area of focus.

The BioBusiness Alliance of Minnesota and Deloitte Consulting LLP prepared the following Destination 2025 documents:

- 6 industry white papers: analyze emerging global market trends and technologies that will likely influence the industries by 2025
- 6 industry vision documents: create a vision for each industry by comparing white paper findings against an analysis of Minnesota's current strengths, weaknesses and limitations
- 1 roadmap: recommendations to strengthen Minnesota's position in the life sciences

The key recommendations from the Destination 2025 roadmap are outlined below:

DESTINATION 2025'S OVERARCHING RECOMMENDATION

- Develop and empower a statewide, public-private science and technology leadership structure to develop and implement strategies to grow Minnesota's science and technology-based industry and create stable, high-quality, future-oriented jobs statewide.

MINNESOTA INDUSTRIES/MARKETS Markets are a clustering of similar products and services based on research and enabling technologies. Markets are where the highest potential for job creation exists and the domain of the private sector.

Medical Technology Cluster: medical devices, biologics and biopharmaceuticals, animal health and food

- Grow the state's job base by expanding the application of current medical device technology.
 - **Action:** Actively pursue implantable medical technology that leverages our infrastructure
 - **Action:** Re-establish Minnesota's academic leadership role in medical devices
- Develop a biologic and biopharmaceutical industry in Minnesota.
 - **Action:** Establish an implementation team of industry experts from both the animal and human health industries
 - **Action:** Leverage Minnesota's strengths in a concentrated effort to expand the state's diagnostics and monitoring industry

Agricultural and Biomass Cluster: food, renewable energy and renewable materials

- Uncover overlapping and convergent opportunities and resolve conflicting demands between the food, renewable energy and renewable materials industries.
 - **Action:** Form a public-private partnership to lead efforts in establishing a long-term vision and strategy to stabilize the market
- Establish Minnesota as a leader in sustainable biomass supply.
 - **Action:** Establish a team to coordinate efforts in building a comprehensive statewide database for biomass supply
 - **Action:** Encourage the formation of an inter-disciplinary team of agronomists, forestry experts, plant geneticists, plant breeders and ecologists to develop new strategies and technologies for minimizing the carbon and ecological footprint of biomass production while improving the profitability of the business
- Develop a combustible biomass industry.
 - **Action:** Develop an appropriate incentive program to create a market for this industry in Minnesota
 - **Action:** Appoint a cross-functional leadership team that includes representatives from the different sectors of the industry to develop appropriate strategies and policies to support the industry in Minnesota
- Position Minnesota as a world leader in engineering and processing to produce products from renewable materials.
 - **Action:** Establish policies and incentives to encourage Minnesota companies to establish business models based on renewable materials
 - **Action:** Engage Minnesota's colleges and universities in cutting-edge research and workforce development in support of renewable material-focused industries
- Support clean, green and renewable products and services.
 - **Action:** Establish incentive systems that reward integrating energy reduction with green energy consumption, thereby creating markets for clean, green and renewable products
 - **Action:** Educate the population on how to benefit and leverage carbon emissions credit systems

FOUNDATIONAL CAPABILITIES Foundational Capabilities are the fundamental building blocks that underlie any life science or business endeavor and are the domain of the Public Sector.

Education: The existence of a globally competitive educational system – serving citizens from early childhood through adulthood – will represent a critical foundation for the success of Minnesota's knowledge-based economy.

Infrastructure: Throughout our research, stakeholders cited the importance of water availability, broadband access, and other infrastructure needs.

Public policy: Establish public-sector policies that encourage private-sector investment and commitment to grow industries and jobs in Minnesota.

- **Action:** Establish angel-investment tax credits
- **Action:** Increase the availability and flexibility of R&D tax credits, investment credits, loan programs, and other financial mechanisms
- **Action:** Actively monitor trends and incentives being offered by competitive communities
- **Action:** Establish incentives to support market creation
- **Action:** Establish targeted industry-specific funds capable of providing management, as well as financial support to companies

A key consideration will be to review the full range of impacts before enacting regulatory policies.

ENABLING KNOWLEDGE CLUSTERS Enabling Knowledge Clusters are the basic knowledge and technologies that allow the development of products and the domain of academia and corporate R&D.

- Develop a nanoscience and engineering capability to leverage Minnesota’s historical strengths in materials science.
 - **Action:** Establish a statewide nanotechnology strategy
- Develop capacity in systems biology and bioinformatics to support the life science industry.
 - **Action:** Establish a statewide bioinformatics strategy
 - **Action:** Formalize a systems biology approach in education and academic research

COMMERCIALIZATION CATALYSTS Commercialization Catalysts are generic environmental and infrastructural support to convert knowledge into products. They link and leverage talent to achieve more effective and efficient use of resources, time and leadership and are the domain of the public, private, and academic sectors.

- Create a strong private-sector funding and support mechanism for startup companies.
- Resolve talent shortages and build human capital critical to the life sciences.
 - **Action:** Develop dependable sources of data about the life science workforce
 - **Action:** Leverage this data, the findings of Destination 2025 and the stakeholders convened through the BioBusiness Alliance of Minnesota’s Biosciences Education-Industry Partnership Council to develop a long-term workforce development strategy for the state
 - **Action:** Develop strategies and resources to lure top academic research talent to the state in key targeted industries
 - **Action:** Develop strategies and resources to lure seasoned executives to Minnesota to support the biologic and biopharmaceutical industry and its convergence with medical devices

3. Design and construction of a Minnesota focused bioscience business model to test competing strategies and scenarios, evaluate options and forecast outcomes.

- The Minnesota Renewable Energy Simulator was presented at a special meeting held at the Arrowhead Growth Alliance at the University of Minnesota – Natural Resources Research

Institute. The model will be used by a champion group that was formed in October, 2008 to help provide further insights regarding bioenergy opportunities for northeast Minnesota.

- As part of the Destination 2025 initiative conducted by the BioBusiness Alliance of Minnesota, the simulator has been presented at two renewable energy stakeholder meetings (October 2008 and November 2008) and will be utilized to test the strategies and recommendations put forth via the Renewable Energy white paper, Minnesota vision document and Minnesota roadmap which constitute the project deliverables.
- The simulator was presented this last fall during the general assembly at the 2008 Renewable Energy Roundtable held in Marshall, Minnesota. The insights the model is able to provide was highlighted and the presentation also included details as to how the model will be utilized as part of Destination 2025.
- The simulator was presented to the Minnesota Speaker of the House of Representatives, Margaret Anderson-Kelliher on Nov. 18, 2008 to better understand how the tool can be used by decision and policymakers for scenario planning with regard to renewable energy strategies for the state of Minnesota.
- A formal proposal for how the simulator will be transitioned to the University of Minnesota – Hubert H. Humphrey Institute of Public Affairs was presented in December 2008 to decision-makers at the Institute. The transition is directly related to an initiative targeted at establishing a System Dynamics Modeling Center at the Institute. Interim plans include identifying a graduate-level student who will provide the capacity for continued updating of necessary data which feeds the model as the industry continues to be very dynamic and ever-changing.
- A formal presentation of the simulator was given in early in 2009 to deputy commissioners representing: Minnesota Department of Natural Resources, Minnesota Department of Agriculture, Minnesota Office of Energy Security and others which highlighted several areas of opportunity the state may pursue to achieve the mandate of 25x'25.
- Representatives from The BioBusiness Alliance of Minnesota, University of Minnesota – Hubert H. Humphrey Institute of Public Affairs, and University of Minnesota – Initiative for Renewable Energy and the Environment, traveled to Sandia National Laboratories in February 2009 to discuss details around further collaboration and next stage development of the simulator focused around decision-making specific to biomass feedstock allocation for food and non-food (energy and materials) applications.
- The simulator was presented to the Minnesota House of Representatives – Higher Education and Workforce Development Finance and Policy Division in March 2009, whereby, bioenergy opportunities related to thermal heat generation was exemplified as a pathway for achieving the 25x'25 mandate while stimulating economic and community development.

4. Creation of a bioscience business resource network that includes development of a statewide bioscience business economic development framework to encourage bioscience business development and encourage spin-off activities, attract bioscience business location or expansion in Minnesota, and establish a local capability to support strategic system level planning for industry, government, and academia.

As of March 31, 2009, the Biobusiness Resource Network (BRN) has provided support to 113 companies; 52 Medical Device companies, 30 Pharma/Biologics companies, five Animal Health companies, three Food companies, 19 Renewable Energy companies and four Renewable Materials companies.

BRN and Southern Minnesota Initiative Foundation (SMIF) Partnership

Below is an example of how the BioBusiness Alliance and the Southern Minnesota Initiative Foundation are working together to grow regional biobusiness capabilities.

- **Southern Minnesota Regional Competitiveness Project**
This asset based economic development effort, led by Mark Drabenstott and his team at the Rural Policy and Research Institute at University of Columbia – Missouri, will identify the most promising economic development opportunities across 38 southern Minnesota counties. The steps in the project will be assessing three key elements: the cornerstone economic assets, the most promising economic potential in the global economic race, and the best investments on which to compete. The final step will be to create a region-wide strategy built on these key drivers of 21st century economic success. Over 600 individuals have participated in 10 local, three regional roundtable and two strategy summit discussions across southern Minnesota noting entrepreneurs, energy and aging population as significant focal points of the area.

BRN and Northeast Minnesota

- **Northeast Minnesota Strategy Study**
The purposes of the study is to identify the strengths, unique attributes and potential opportunities for biobusiness activity in northeast Minnesota and to propose recommendations that will bolster the region's ability to retain existing biobusiness and grow more sustainable biobusiness activities. Specifically, this study will:
 1. Summarize the region's biobusiness activity
 2. Identify the priorities specific to northeaster Minnesota that can support biobusiness expansion and guide the allocation of resources toward that end
 3. Indicate areas of biobusiness most promising for short-term efforts
 4. Provide guidance on strategies to achieve the greatest medium-term and long-term results

The study has been completed and the results are being shared with the northeast leadership team in June 2009. The results of the study will be publicly released in July 2009.

To date, the BioBusiness Alliance has provided support to 10 companies in northeast Minnesota: eight renewable energy companies, one medical device company looking to relocate to the state and one pharma/biologics company. The support we provided to the pharma/biologics company consisted of helping them obtain initial seed funding and completing a pre-due diligence study to validate the company's technology and marketing.

Elk Run

BRN staff assisted the Elk Run Development to place a good manufacturing practices (GMP) capability in the southeastern Minnesota to support the pharmaceutical and biologics technology that is developed at the Mayo Clinic, Hormel Institute, University of Minnesota and private sector companies. Specifically, we supported the Elk Run project in the following ways:

- Acted as a technical and business advisor to the development project.
- Assisted the development and implementation of a strategy to secure key partners and relationships critical to the project's success.
- Identified and made introductions to technical consultants to support the project.

- Connected the Elk Run Development to strategic business partners that may rent space in the development and support its efforts to build the bioscience facility.
- Stimulated the widespread conversation regarding the provision of critical infrastructure for the bioscience industry and is poised to leverage a significant amount of private investment into the state.

Elk Run is proving to be only the beginning. We already have five more companies coming to Minnesota and over \$150 million of additional private sector Venture Capital and Seed money in late stage discussion. These companies and funds cover everything from medical technology to renewable energy and materials.

International BioEnergy Days (IBED) Conference

The BioBusiness Alliance of Minnesota was part of a partnership of organizations that submitted a proposal to the Kingdom of Sweden for its International Renewable Energy Technology Institute (IRETI). On March 31, 2008 the Kingdom of Sweden's IRETI Organization Committee chose Minnesota as one of the three states, New York and Georgia being the others, to host a world-class renewable energy technology institute licensed by the Kingdom of Sweden. In Minnesota, IRETI's non-profit center for Renewable Energy is located on the campus of Minnesota State University – Mankato. This initiative is designed to:

- Enhance the economic relationship between Sweden and the United States.
- Take advantage of the advances Sweden has made in renewable energy bioscience and technology.
- Grow Minnesota's capabilities in the area of renewable energy.
- Be a catalyst for commercializing new business opportunities.

As part of IRETI, the International Bio Energy Days (IBED) conference was held in Mankato, MN Sept 28-Oct 3, 2008. The following are key points and outcomes of the IBED congress:

- There were 327 congress attendees
- There were exhibitors from over 60 organizations and companies representing Sweden, Norway, Ireland and the U.S.
- BBAM fulfilled over 30 company requests for business matchmaking meetings
- Scandinavian Cleantech Export Association formally requested support from BBAM as an outcome of the congress. The response is being formulated.
- Nine companies are engaged in on-going dialogue regarding business opportunities with Life Science Community partner organizations – i.e., APEX, Life-Science Innovations, Worthington EDC, etc.
- Discussions have started regarding the exchange of students, teachers or both from the Arlington BioSmart Program and a similar school in Lidköping, Sweden.
- Discussions are beginning between Minnesota State University, Mankato and the University in Lidköping for student teams to work together to transfer technology from Sweden to the U.S.
- One U.S. based organization received approximately \$5-10 million in potential business. The business owner said it would be a mistake not to hold the conference in Minnesota again next year. He said the gathering of the Minnesota bioenergy companies was invaluable.

Minnesota Life Science Community

The BioBusiness Alliance has developed the Minnesota Life Science Community concept, whose mission is to “Drive growth of a knowledge based economy.” The critical components of Minnesota’s Life Science Community are:

- Developing, creating and identifying champions with significant technical and industry knowledge
- Inventorying the state’s bioscience business strengths and capabilities
- Providing academic support for work force development, research and technology
- Business Acceleration capability (money, management, technical know-how)
- Appropriate policies
- A strategy and community that supports it.

These six components are the tools by which Minnesota’s success in bioscience business development and growth can be evaluated. These criteria will also be used to measure competing business development strategies, reviewing business development options and outcomes.

BIOMAP is an interactive web tool that is the most comprehensive identification of Minnesota’s business assets and capabilities in the six key bioscience markets. This tool will continue to grow and become more robust in the coming year. The map will assist in producing several favorable outcomes:

- Enables Minnesota to visually compete on par with global best practices
- Ability to respond quicker to site selection requests

The further development of the Minnesota Life Science Community informational and technology capabilities will lead to the accomplishment of several goals:

- Shift focus to Minnesota customers (create, expand, recruit)
- Finding and filling holes in the state’s bioscience/biobusiness capabilities
- Create and enhance bioscience public/private partnerships
- Better demonstrate the state’s bioscience economic development capabilities
- Leverage existing resources more effectively
- Increase number of biobusiness leads
- Increase number of landed firms in the six identified biobusiness areas
- Compete at a global level more effectively
- Ability to demonstrate the pipeline of knowledge-based jobs for the state

SUMMARY

The BioBusiness Alliance has met the grant matching fundraising requirements and has met or made exceptional progress on all of the deliverables. The presentation of the Destination 2025 project on January 28, 2009 was a milestone for the organization. With the completion of the Destination 2025 project, the information and strategy is in place to spur Minnesota’s growth in biobusiness.

The Biobusiness Resource Network, phase III in the growth and development of the BioBusiness Alliance, is positioned to help spur the growth of Minnesota’s biobusiness by providing even more support to companies looking to do business in Minnesota.

THE BIOBUSINESS ALLIANCE OF MINNESOTA
FINAL GRANT REPORT JUNE 2009
STATE OF MINNESOTA
DEPARTMENT OF EMPLOYMENT AND ECONOMIC DEVELOPMENT
BUSINESS AND COMMUNITY DEVELOPMENT DIVISION
Re: Special Appropriation Grant Agreement
SPAP-07-0010-P-FY08

AGENCY	VENDOR NUMBER	OBJECT CODE	TOTAL AMOUNT
B22100			\$1,750,000

Financial Report through June 2009

Approved Project Activities	Total Funds Required for the project	Total Funds Secured for the project	Actual State funds paid	Total BBAM Matching Funds Secured	Matching Cash Raised	Matching In-kind Support Raised
Statewide Industry Assessment	\$280,000	\$245,534	\$140,000	\$105,534	\$69,210	\$36,324
Destination 2025	\$1,610,000	\$1,745,474	\$805,000	\$920,474	\$258,770	\$661,704
Creation of BioBusiness Resource Network	\$1,610,000	\$1,545,475	\$805,000	\$732,434	\$549,970	\$182,464
Total	\$3,500,000	\$3,528,443	\$1,750,000	\$1,758,442	\$877,950	\$880,492

1. Cash figures reflect actual cash paid in support of the Project Activities by the submission date of this report and not pledges payable to support the projects going forward.
2. In-kind figures reflect all services and goods provided in support of the Project Activities, including work provided by other organizations.