

Office of Science and Technology (OST) Legislative Report

This report is in compliance with Chapter 363 Article 10 Section 33 passed in 2008. Please see Reference A at the end of this report.

Internal Office

Advisory Task Force

In 2008, an Advisory Task Force was created to provide guidance and assistance to the Director of the Office of Science and Technology. Members are: Dr. Timothy Mulcahy, University of Minnesota; Dr. William Sandborn, Mayo Clinic; Ms. Gail O’Kane, MnSCU; Mr. Norb Biderman, 3M; Mr. Rick Udicious, Lockheed Martin; Ms. Becky Bergman, Medtronic; Mr. Samuel Prabhakar, IBM; Mr. Kerry Marusich, Third Wave Systems; Mr. Thomas Wyrobek, Hysitron; and Mr. Patrick Lichter, Koronis Biomedical Technologies.

The Task Force met Quarterly and advised the Director on the best use of the funds for technical assistance. The Director presented two Commercialization Assistance programs detailed below, the Phase II Commercialization Planning Program and the Technology Matching Grant. Members agreed to launch both programs.

Staffing

An additional staff position was posted last fall. One-time funding restrictions made it difficult to attract qualified personnel before the posting was withdrawn. An administrative decision was made to post-pone hiring additional staff until the outcome of the 2010-2011 budgets. The funding announcement in June of 2008 of \$200,000 a year for two years will allow the director to hire additional staff. This opportunity will be more attractive based on the two-year budget.

The State Office of Entrepreneurship and Small Business Development recently hired (6/10/09) an administrative assistant and offered a portion of that person’s time to the OST.

Strategic Plan

In May 2009, additional legislation was passed that may significantly impact the direction of the OST. Please see Reference B at the end of this report. The new legislation requires a report to be submitted to legislative committees having jurisdiction over science and technology and economic development policy and finance “activities” and “recommend changes or additions to its organization, including specific recommendations for necessary legislation.” This report is due to the committees by January 15, 2010. It is expected the Committee will be made up current members of the already established and operating OST Advisory Task Force as well as additional members from related trade organizations. Due to this development the OST will continue to operate its existing programs designated by original authorizing legislation until a new direction is established.

Federal Funding Coordination

A directive for the Office of Science and Technology was to coordinate public and private efforts to secure federal funding. The overall focus was to create partnerships between government, industry and academia to develop and eventually commercialize technologies. This required bringing together various individuals and companies who may not have worked together prior to the creation of the OST. The OST saw opportunities to leverage Minnesota’s well-known medical device success with the needs of the military in treating wounded soldiers and the area of renewable energy. This requires time and planning

to coordinate groups such as the University of Minnesota, MnSCU, Mayo Clinic and small and large industry. To date:

Medical Defense – Minnesota’s medical device industry is unparalleled. The state also has had the largest number of National Guard troops deployed overseas in recent years. The OST began the process of orientating companies and institutions towards the military as a source of R&D funding. High interest led to the Annual Life Science Alley and the Design Medical Device Conferences to incorporate medical defense topics into their sessions. The Mayo Clinic and University of Minnesota are preparing two full proposals after a successful white paper submission to the Department of Defense. Both technologies will help the wounded soldier during what is called the “golden hour” for critical treatment. Three small businesses were also asked to submit full proposals as well to the US Army Medical Research Material Command.

METNET – Due to the announcement of federal stimulus funding in January 2009, the OST worked with a private company to create the Minnesota Energy Technology Network (METNET) knowing that federal funding would be released quickly, the OST felt it necessary to support a group that would provide critical technical assistance in technology partnering and proposal development due to the quick turn around time for funding requests. METNET is a membership driven organization supported by academia and small and large businesses specializing in connecting industry to federal agencies and funding opportunities. METNET was announced in late mid-April at the 3M Innovation Center. One hundred attendees represented government (state and federal), academia (UM, UMN and Mankato State) and industry (3M, Lockheed Martin {also had corporate representative} and multiple small businesses representing wind, solar, smart grid and biomass technology. Since April ’09 the following collaborations were established and proposals submitted to DOE in response to stimulus funding:

- St. Paul small business has submitted a \$25M proposal on biomass to green fuels
- St. Cloud small business partnered with NASA Glenn Research Center and the National Renewable Energy Laboratory on a \$4M proposal for flywheel energy storage
- Mankato small business partnered with a California company on \$18M battery storage technology

META - The Midwest Energy Technology Alliance (META) is currently under development. Following the METNET event in April, a group of individuals from state government, academia and large industry met to discuss how to create a forum for all parties to use as a central “networking” opportunity to continue to develop and expand working relationships to collaborate on future renewable energy projects to attract federal funding for advanced technology development and commercialization. Federal funding requirements often “highly recommend” collaborative partnering and the short deadlines can be prohibitive, especially when working with large industry and academia. A detailed capabilities template is under development that will be completed by all partnering organizations. To collaborate efficiently and effectively companies are required to complete: Energy Role (R&D); Core Technical Capabilities, Current/Future Renewable Energy Products; Key Facilities/Infrastructure; Relevant Market Channels; and Key Services. The capabilities template is tantamount to explicitly showcasing expertise in a focused area. It is hoped to formally roll-out META in July/August 2009 to incorporate all small and large industry in Minnesota seeking to be part of a proactive alliance of intellectual capital and resources in search of federal funding. This will allow small businesses to network with large corporations and academia in a mutually beneficial environment.

Commercialization Assistance

Commercialization Planning (CP) Program – Companies submitting a Phase II Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) proposal often have difficulty in preparing a high-quality Commercialization Plan since their focus is mainly on developing the technology. A quality CP plan is critical for receiving federal funding in the ranges of hundreds of thousands to over a million dollars. The Commercialization Planning Program was created help companies prepare their commercialization plans.

A Request for Proposal was published and a Master List of qualified Service Providers was created to provide expert commercialization assistance to such companies. Companies interview and choose the Service Provider they will work with. The CP Program pays Service Providers up to \$10,000 to prepare the Phase II Commercialization Plan. The program is marketed to all Phase II awardees and requests are made at various times of the year. To date:

Awarded:

Devicix – USDA, \$350,000

“Free-living Energy Balance Assessment and Management in Close to Real Time” – to demonstrate the effectiveness of mobile phones to quantify a wide range of important factors in overweight and weight management.

Pending:

American Medical Electronics Corp. – USDA, \$3M

“A Wearable Device for Wireless Acquisition of High Density Surface EMG Signals” - to measure muscle activity detection of new muscle characteristics, provides muscle fiber conduction velocity measurements and the evaluation of single motor unit characteristics.

Koronis Biomedical Technologies – NIH, \$1.3M + \$975,000 respectively

“Implantable Wireless Myoelectric Sensor for Prosthetic Control” – to develop and commercialization of an implantable wireless myoelectric sensor for prosthetic control.

“A New Instrument to Quantify Dyskinesia In Patients with Parkinson's Disease” – to create a new instrument to quantify dyskinesia in patients with Parkinson's disease, side effect of the levodopa that is used to reduce Parkinsonian symptoms

SIFT – OSD (Office of the Secretary of Defense), \$750,000

“Sensing Using Physical and Psychological Observations for Rehabilitating Troops (SUPPORT)” - to create comprehensive designs for a tool for recovering troops and caregivers to monitor health and well being, be alerted of potential problems, and manage treatment regimes.

In Process

Twin Star Medical – NIH

“Treatment of Cerebral Edema Using Ventricular Therapy” - free water removed from the brain following traumatic injury will minimize cerebral edema.

Technology Matching Grant

The Technology Matching Grant supports spinning out translational research from non-profit research institutions via small businesses and helps to fund additional R&D leading to eventual commercialization. The grant is to be used as leverage funding to support prototype development, pre-clinical investigations

or other related activities. Used as leverage funding, the goal is to show state investment in a promising and potentially disruptive technology small businesses plan to commercialize.

The Grant will support technologies with high potential commercial value that have received financial support from and been vetted through a rigorous commercialization process by the Institutions. Projects should focus specifically on research and development and not business development. Projects deemed appropriate and submitting a proposal must include a minimum of a \$1:\$1 match before the proposal will be considered. State match is capped at \$30,000.

VitalMedix – Hibernation technology funded by DARPA and conducted at the University of Minnesota is the basis for the formation of VitalMedix. The proposed technology will treat acute blood loss due to trauma and extend the “golden hour” for treatment. Genotoxicity testing for three components of a new drug is being conducted. Successful results will allow an Investigational New Drug (IND) application to be filed to the FDA. The project is ¾ complete. First responders and the military are target markets.

Xollai LLC – Unmanned Air Vehicle (UAV) landing technology was developed by four seniors at St. Thomas University in 2008. The technology is the first and only autonomous vision-based landing systems for small UAVs. Successful results will refine the technology and demonstrate it will work under the expected conditions; this is a Technology Readiness Level 8 which is required by the military to be included in their platform. The project is 1/3 complete. The initial target markets are the Navy and Homeland Security.

Ascir – Solid state semiconductor-based gas detector will be capable of monitoring the presence of hazardous gases at a safe, stand-off distance. The University of Minnesota exclusively licensed the technology to Ascir. Successful results will provide needed sensitivity levels for gas detection. The project began June 1, 2009. Target markets are the military and commercial markets of utilities, refineries, and chemical and power plants.

SBIR/STTR Program Assistance

The OST continues to provide assistance services to individuals/companies seeking funding through the Small Business Innovation Research Program (SBIR) and the Small Business Technology Transfer (STTR) Program. For federal fiscal year 2008, 38 small businesses received approximately \$28.3 million in federal funding to develop and commercialize technology.

As referenced above in Commercialization Assistance, one company received Commercialization Planning assistance at a \$10,000 investment by the State. They received notice of a \$350,000 Phase II award. Four projects are still pending.

Workshops

The Director presented SBIR 101 workshops in St. Paul, Rochester, St. Cloud, Mankato, Bemidji, Brainerd and Moorhead. There were no registrations for Duluth or Marshall. Fifty people attended the workshops.

A “Business Planning for Scientists and Engineers” workshop was cancelled by the presenter due to family emergency. It will be rescheduled. Twenty-five people were registered.

Other

Science and Technology (S&T) Day

In late January 2009 an S&T Day was held at the capitol to showcase Minnesota's small high-tech companies and their products. Due to logistics limitations only 22 companies could be accommodated and many had to be turned away. Legislators were briefed on the latest successes, challenges and issues in technology development.

Federal Grant Writing Workshop

For the 3rd consecutive year the Director of the Office of Science and Technology presented a federal grant writing workshop for Congressman Kline's office. Seventy people attended.

Conference Session Coordinator

The OST collaborated with the Defense Alliance of Minnesota to develop medical defense sessions at the annual Life Science Alley and UMN Design Medical Device Conferences. The sessions focused on how to work with the Army Medical Materiel Command and Airworthiness, Certification and Evaluation testing for medical devices in fixed wing aircraft.

Academic Commercialization

Numerous meetings have been held at the Mayo Clinic and University of Minnesota to discuss using federal funding to commercialize their technologies. The meetings are now leading to grant requests to help fund high-risk technology development and commercialize products.

Reference A

Chapter 363, MN Laws 2008 Article 10 Section 33:

Sec. 33. [116J.657] OFFICE OF SCIENCE AND TECHNOLOGY.

Subdivision 1. Establishment. An Office of Science and Technology is established in the Department of Employment and Economic Development to do the following:

(1) coordinate public and private efforts to procure federal funding for collaborative research and development projects of primary benefit to small and medium-sized businesses;

(2) promote contractual relationships between Minnesota businesses that are recipients of federal grants and prime contractors, and Minnesota-based subcontractors;

(3) work with Minnesota nonprofit institutions including the University of Minnesota, Minnesota State Colleges and Universities, and the Mayo Clinic in promoting collaborative efforts to respond to federal funding opportunities;

(4) develop a framework for Minnesota companies to establish sole-source relationships with federal agencies; and

(5) coordinate workshops, assistance with business proposals, licensing, intellectual property protection, commercialization, and government auditing with the University of Minnesota and Minnesota State Colleges and Universities.

For the purposes of this section, "office" means the Office of Science and Technology

established in this subdivision.

Subd. 2. **Technology partnering with a prime contractor.** The office must develop a program to assist small businesses competing for a small business innovation research award by matching the applicant with a larger company. Prime contractors are matched to small businesses through a prescreening process that may result in a letter of support for the applicant designed to increase the chance of receiving a Small Business Innovation Research (SBIR) award.

Subd. 3. **Collaborate to commercialize.** The office must develop a program to use the federal high-risk research and development investment program to encourage the development of new technologies, products, and business development and to reduce development risks by encouraging alliances between medium-sized companies and innovative small businesses.

Subd. 4. **Technology matchmaking.** The office must assist businesses in identifying qualified suppliers and vendors through a program to serve as a conduit for Minnesota-based companies to network with firms able to support their success. Firms outside Minnesota can participate in the technology matchmaking network if one of the participating companies is located in Minnesota.

Subd. 5. **Commercialization assistance.** The office must provide commercialization assistance to Minnesota firms that have received a Phase I Small Business Innovation Research (SBIR) or a Phase I Small Business Technology Transfer (STTR) award and are submitting a Phase II proposal. Local service providers must assist the applicant with developing and reviewing the required commercialization plan prior to Phase II submission. The office may provide SBIR Phase I proposal technical review.

Subd. 6. **Report.** The commissioner of employment and economic development must report to the committees in the house of representatives and senate having jurisdiction over bioscience and technology issues on the activities of the Office of Science and Technology by June 30, 2009.

Reference B

Chapter 78, MN Session Laws 2009, Article 2 Section 16

Sec. 16. [116J.6581] MINNESOTA SCIENCE AND TECHNOLOGY ECONOMIC DEVELOPMENT PROJECT.

(a) The commissioner of employment and economic development shall lead a public-private project with science and technology experts from public, academic, and private sectors to advise state agency collaboration to design, coordinate, and administer a strategic science and technology program for the state designed to promote the welfare of the people of the state, maximize the economic growth of the state, and create and retain jobs in the state's industrial base through enhancement of Minnesota's:

- (1) high technology research and development capabilities;
- (2) product and process innovation and commercialization;
- (3) high technology manufacturing capabilities;
- (4) science and technology business environment; and
- (5) science and technology workforce preparation.

(b) Project membership shall consist of science and technology experts from

public, academic, and private sectors. A member must have a background in science or technology in order to serve on the project. The project members shall consist of at least 13 members as follows:

(1) a representative of the University of Minnesota;

(2) a representative of Minnesota State Colleges and Universities;

(3) the chief executive officer of Mayo Clinic or a designee; and

(4) six chief executive officers or designees from science- or technology-oriented companies and four representatives from science- and technology-oriented trade organizations.

(c) The commissioner of employment and economic development must report by January 15, 2010, to the legislative committees having jurisdiction over science and technology and economic development policy and finance on the activities of the project and must recommend changes or additions to its organization, including specific recommendations for necessary legislation.