SAND2010-7252P

2011 FLC State & Local Economic Development Award
Section B – Nomination Narrative

New Mexico Small Business Assistance Program

Award Criteria

1. **Nominees must include FLC laboratory employees, and can include employees of state and/or local economic development groups directly involved in the initiative.**

Nominees for this award are Sandia National Laboratories, Los Alamos National Laboratory, and the State of New Mexico Economic Development Department. The New Mexico Small Business Assistance (NMSBA) program is a catalyst for the transfer of cutting-edge technology from two of our nation's leading national laboratories to a wide range of small businesses across New Mexico—all made possible through legislation passed by the State of New Mexico. This is a public-private partnership involving the State of New Mexico, Los Alamos National Laboratory, Sandia National Laboratories, and small businesses in New Mexico for the purpose of strengthening the economy in New Mexico.

2. **The nomination must provide a clear explanation of the partnership, the innovative approach to addressing a need, and demonstrable results.**

The NMSBA Program allows Los Alamos National Laboratory and Sandia National Laboratories to provide technical assistance to small businesses throughout New Mexico in exchange for the two Labs receiving a credit against the gross receipts taxes they pay to the State of New Mexico.

In 2009, the NMSBA Program achieved record levels. Over the year, the two laboratories provided $4.3 million in assistances to 320 companies throughout New Mexico. These projects provided cutting-edge scientific and engineering expertise, helping the businesses bring new products to market, troubleshoot existing processes, maintain or expand their work forces, reduce operating costs, and increase profitability.

Since its inception ten years ago, the NMSBA Program has assisted 1597 small businesses in all corners of the state for a total value of $20,645,590. The majority of these projects has been in rural areas and includes counties that normally would not have had access to the services of New Mexico's two national laboratories.

3. **The nomination should include background on the context in which the initiative operates and why it was created including information about the geographic area the initiative serves.**

Small businesses, particularly in rural counties, often run into technical challenges in which they do not have the ability to solve. To help these companies, the New Mexico State Legislature created the Laboratory Partnership with Small Business Tax Credit Act, for the purpose of "bringing the technology and expertise of the national laboratories to small businesses in the state, with an emphasis on rural areas." This Act established the New Mexico Small Business Assistance (NMSBA) Program in 2000 to help small

businesses throughout the state by providing technical support from the national laboratories located in New Mexico. Sandia National Laboratories (SNL) launched the program in 2000 and Los Alamos National Laboratory (LANL) joined in 2007 when they became eligible by paying gross receipts taxes to the state.

4. **The nomination must describe the specific roles, goals, objectives, and contributions of each nominee.**

The roles, goals, objectives, and contributions of Sandia National Laboratories and Los Alamos National Laboratory are to help small businesses solve critical challenges by providing technical assistance. For the State of New Mexico, they leverage the assets of two national laboratories in order to help small businesses in every corner of New Mexico create and retain jobs, increase revenues, and decrease operating costs.

5. **The nomination must describe any innovation or creativity demonstrated by the nominee(s), including mechanisms utilized.**

Here are some examples and small business highlights from the NMSBA Program in 2009.

SimTable: "NMSBA helped build research developed at the Santa Fe Complex into a marketable product." – Stephen Guerin, CTO of SimTable

Failures of leadership have been cited as a factor contributing to wild land fire accidents. There is no substitute for experience with fighting actual wildfires, but experience can be hard to come by and tragically unforgiving. Fortunately, there are tactical decision games, such as sand table exercises, that allow firefighters to practice situational assessment, to consider and select courses of action, and to practice communicating those decisions on three-dimensional (3D) terrain models.

SimTable, a company located in Santa Fe, New Mexico, can predict and display fire behavior using an interactive, 3D, agent-based model. The SimTable™ combines the tactile nature of a sand table with applied high-level mathematics. Partners Chas Curtis and Stephen Guerin developed a program capable of forecasting fire behavior utilizing slope, terrain, wind speed, wind direction, vegetation, and other factors. They have also programmed algorithms to model human response to fire. The SimTable™ calibrates the topography of the sand and indicates where to adjust the piles so the 3D sand table agrees with the projected Geographic Information System data from the target region. The topography of the area can then be seen in color-coded representations of a slope or switched to a Google Earth image.

When Guerin and Curtis sought to make the simulation more interactive, they approached the NMSBA Program for assistance. This resulted in the involvement of Dr. Rohan Loveland of LANL's Space and Remote Sensing Sciences Department, who provided assistance by developing algorithms for object-tracking machine vision. Now the SimTable™ "sees" movement and objects through a camera and can project the "screen" anywhere.

SimTable is a 2010 recipient of a Los Alamos National Security, LLC Venture Acceleration Fund (VAF) award. According to Curtis, the company anticipates hiring two engineers to work on the design and manufacturing of the SimTable™ by the end of the year.

Trinity Medical Corporation: "Without NMSBA's assistance, I would be spinning my wheels. Sandia's Bob Winters was the right person at the right time."– Daniel Barela, Founder of Trinity Medical Corporation

Daniel Barela, the founder of Trinity Medical Corporation, currently serves as an Emergency Medical Services (EMS) Flight Paramedic. Barela noticed that often there are not enough hands available to apply pressure on the esophagus to prevent passive regurgitation and pulmonary aspiration while performing CPR. Barela scoured medical literature and clinical studies to determine the most effective amount of pressure and application method. Barela's research resulted in an invention that can be applied to the throat as an alternative to hand pressure.

Once Barela designed a prototype for the medical device, he sought a way to construct the device to apply specific and accurate pressures: too little and the device would not prevent aspiration, too much and the device could block airflow. To help Barela with material choices and mechanical design, the NMSBA Program looked to Sandia's Organic Materials Department in Advanced Manufacturing for assistance.

Barela showed the device to Bob Winters, a specialist in innovative prototype fabrication, materials technology, and engineering design. Winters helped Barela develop a "water faucet" feature that incorporates spring action precision to maintain appropriate pressure with components to "lock-out" further adjustment. Without NMSBA's assistance, Barela says, "I would be spinning my wheels. Bob Winters was the right person at the right time."

Having met this technical milestone in the development of his invention, Barela currently seeks a second patent for his revised prototype. Winters optimization of the new prototype into an injection-moldable design will allow the medical device to be mass-produced. As a result, Trinity Medical is seeking clinical trials at University of New Mexico and is in position to pursue additional investment capital. Once Trinity Medical wins FDA approval for the medical device, the company can move into production with plans to manufacture two million units a year in Albuquerque.

6. **The nomination must describe what has been the impact to date, and how that impact is determined.**

An independent company, Research and Polling Inc, conducts annual surveys of NMSBA Program participants after the completion of the projects. From 2001 through 2009, NMSBA has helped companies create and retain over 1500 jobs at an average annual salary of more than $38,000; increase revenues by more than $82 million; reduce operating costs by more than $45 million; and invest in other New Mexico goods and services by more than $19 million.

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