2,036
BUSINESSES ASSISTED

2,874
JOBS CREATED/RETAINED

$34.3M
TECHNICAL ASSISTANCE PROVIDED BY LABS

33
ASSISTED BUSINESSES IN ALL NEW MEXICO COUNTIES
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New Mexico Small Business Assistance (NMSBA) Program
The New Mexico Small Business Assistance (NMSBA) Program utilizes the expertise at the nation’s two premier research institutions – Los Alamos National Laboratory and Sandia National Laboratories – and identifies viable small entrepreneurs to transform new technological ideas and concepts into business realities. NMSBA is essential to New Mexico’s economic development, especially nurturing and growing small businesses. We’re proud to continue our partnership with NMSBA, along with Los Alamos and Sandia national laboratories.

Demésia Padilla  
Cabinet Secretary  
Taxation and Revenue Department  
State of New Mexico

NMSBA is a great tool in assisting New Mexico businesses and encouraging job growth in the state. I am proud of the work being done by the program to help our small businesses expand and be successful right here in New Mexico.

Jon Barela  
Cabinet Secretary  
Economic Development Department  
State of New Mexico
Dear Governor Martinez and New Mexico State Legislators,

We are pleased to share with you the 2012 Annual Report for the New Mexico Small Business Assistance (NMSBA) Program. This report showcases success stories and presents quantitative results from the past year.

During 2012, NMSBA was sought out by 349 small businesses in 27 counties for technical assistance that would help sustain and grow their companies. Thanks to the Laboratory Partnership with Small Business Tax Credit Act, the state of New Mexico, along with Los Alamos National Laboratory (LANL) and Sandia National Laboratories, invested $4.5 million of national laboratory expertise and resources to help small businesses overcome technical challenges.

Highlights from 2012 demonstrate the impact of the NMSBA Program on small businesses from various industries in all corners of New Mexico. These include an Albuquerque business owner who investigated design options and prototypes for a safer and easier-to-install fastener for a children’s shoehorn. A Santa Fe company developed devices to shorten neonatal intensive care stays and save money. A southern New Mexico company developed a fully automated, off-grid pumping system for livestock water production. A group of farmers and ranchers in eastern New Mexico received help exploring the renewable energy potential of their land. And a northwestern New Mexico company designed a device to separate natural gas from water pumped out of natural gas wells.

At this year’s NMSBA Innovation Celebration, the Wave Energy Leveraged Project received the “Honorable Speaker Ben Lujan Award for Small Business Excellence” for demonstrating the most economic impact. The NMSBA Program provided an assessment of the technology’s potential output, helping an Albuquerque company attract a six-figure investment.

The NMSBA Program has helped to create jobs, increase revenues, decrease operating costs, and attract new funding opportunities. Since 2000, 2,036 businesses representing all 33 New Mexico counties have been assisted, 2,874 jobs have been created or retained, and $34.3 million of technical assistance has been provided by our two national laboratories.

Thank you for your continued support of NMSBA. This program allows the state of New Mexico to engage our national laboratories and the small business community in promoting economic development and creating wealth throughout our great state!

Sincerely,

Belinda Snyder
Los Alamos National Laboratory

Jackie Kerby Moore
Sandia National Laboratories
In 2000, 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 New Mexico to promote economic development in the state, with an emphasis on rural areas.” As a result, Sandia National Laboratories established NMSBA to help small businesses throughout the state by providing technical support. Los Alamos National Laboratory began participating in 2007.

During 2012, NMSBA assisted 349 small businesses across the state.

NMSBA is committed to:
- Solving small businesses’ critical challenges with national laboratory expertise and resources
- Influencing New Mexico business development by building capacity, capabilities, and competencies
- Acting as an advocate for small businesses through an entrepreneurial culture

NMSBA assists small businesses in New Mexico with knowledge and technology that will help them compete. NMSBA enables these businesses to reach business goals, develop their products for commercial use, and increase profitability. Participants receive consulting on technical and operational alternatives from laboratory experts. While each company utilizes NMSBA in a different way, all use it as a means to maintain or grow their businesses.

NMSBA makes a statewide impact by:
- Enabling New Mexico small businesses to access cutting-edge technology
- Increasing New Mexico small businesses’ technical sophistication and capabilities
- Sharing knowledge and resources between laboratory personnel and small businesses to address issues and develop real-world applications

Services are provided by NMSBA at no cost. Assistance is provided in the form of lab staff hours valued at up to $20,000 per calendar year for businesses located in rural counties and $10,000 for businesses located in an urban county (Bernalillo County). The total amount of assistance is capped at $2.4 million annually for each laboratory. NMSBA may not provide assistance that is available in the private sector, and no equipment or cash can be given to a participating company.

At this year’s NMSBA Innovation Celebration, the Wave Energy Leveraged Project received the “Honorable Speaker Ben Lujan Award for Small Business Excellence” for demonstrating the most economic impact.

Left to right: David Pesiri, Director, Technology Transfer Division, LANL; Phil Kithil, CEO, Atmocean; Julia Phillips, Vice President and Chief Technology Officer, Sandia; and Patrick Duran, Field Representative and Economic Development Liaison, Office of U.S. Congressman Ben Ray Lujan.
TYPES OF SMALL BUSINESS ASSISTANCE

Individual Projects
Individual projects involve a single New Mexico for-profit small business. Projects address challenges specific to the business that can be solved with national laboratory expertise and resources. Technical assistance challenges are wide ranging. Requests for individual projects are accepted by NMSBA year-round until funding is exhausted.

Leveraged Projects
Leveraged projects allow a group of small businesses that share technical challenges to collectively request assistance. Leveraged projects address issues that are too large or complex to solve through an individual project. Proposals for projects are reviewed semi-annually by NMSBA and its advisory council.

Contract Projects
Legislation allows NMSBA to contract with entities that have the capability to provide small business assistance services not available in the private sector. NMSBA currently contracts for specific services with the New Mexico Manufacturing Extension Partnership and three state research universities.

New Mexico Manufacturing Extension Partnership provides training and assessments in the areas of quality and lean manufacturing principles.

University of New Mexico Management of Technology program at the Anderson School of Management evaluates the commercial potential of small business technology and identifies commercialization challenges.

New Mexico State University’s Arrowhead Center evaluates capabilities of small business technology using subject matter expertise of colleges throughout the university.

New Mexico Tech Department of Management interfaces with a variety of disciplines taught at New Mexico Tech to help accurately assess the current competitive position of small business technology.

FUTURE DIRECTION
NMSBA continues to successfully support the growth and diversification of the New Mexico economy.

As NMSBA moves into the future, it will continue to pursue its goals of broadening the types of businesses receiving assistance, adding to the range of technical capabilities and expertise from the national laboratories offered, and expanding the program’s coverage in underserved rural counties.

Through ongoing collaborations, NMSBA will continue to look for new opportunities and avenues to partner with New Mexico universities and business support programs. Utilizing the results from our annual economic impact and customer satisfaction surveys, NMSBA will pursue both short-term and long-term strategies to create more jobs and additional revenues for New Mexico.
On April 4, 2013, NMSBA hosted the annual Innovation Celebration at the Technology Ventures Corporation 2013 Deal Stream Summit. The Success Stories throughout this publication highlight the companies that were recognized at the event. The photos capture the spirit of the celebration.
If there’s one resource eastern New Mexico’s ranches have plenty of, it’s the persistent wind. Now, with help from the NMSBA Program, the region’s landowners are learning how to assess the potential of wind energy and generate sales from this natural resource.

The Coalition of Renewable Energy Landowner Associations (CRELA) is a group of ten wind power associations in eastern New Mexico representing 2,000 ranchers and farmers across two million acres of land. CRELA members approached NMSBA for help in educating landowners about assessing other uses of their land’s resources, in particular, wind energy potential.

NMSBA tapped Loren Toole of Los Alamos National Laboratory (LANL) and Craig White of the University of New Mexico to teach the “Landowners’ Institute.” This six-class series focused on siting wind turbines, assessing wind data, evaluating markets and pricing for power sales, and other wind energy topics. Toole used LANL-developed models to create wind data maps as well as assess the region’s ability to generate and transmit renewable energy to various markets. The landowners learned to interpret these virtual wind maps for any point in the CRELA region, eliminating the need for expensive meteorological towers normally used to gather wind data.

The overall focus of the Landowners’ Institute is to educate farmers and ranchers to work with renewable energy developers. After completing the course, the landowners are now armed with the information they need for intelligent negotiation in developing their land’s energy potential.

We need to know as much about the wind energy industry as we possibly can because education is power. The classes were very good at putting the data in a form that’s easy to decipher so the landowner can understand it. Education is the best return on your money there is.

- Boyd Burchard, CRELA board member
Beyond agricultural applications, humate is a little-known organic material; however, its use and importance could soon change. Michael Meyer and Timothy Strosnider each consult for and market humate products through their respective New Mexico companies, Heelstone Proprietary and Enchantment Organics. They turned to the NMSBA Program to help them find other beneficial uses of the material.

Through NMSBA, the two companies worked with University of New Mexico professors Craig White and Steve Walsh. White and Walsh conducted technology commercialization and expeditionary marketing studies and identified a surprisingly wide range of new and viable humate markets, from remediating soils damaged by forest fires or well drilling, to creating organic industrial dyes and treating autoimmune and blood diseases.

The collaboration has helped Meyer and Strosnider expand into retail opportunities for humate products. In part due to the assistance received through NMSBA, the two-year-old Heelstone has increased humate sales and profitability.

When you start from nothing but an idea, and you get the type of help we’ve gotten, it’s extraordinary. What the university has done for us is nothing short of exceptional.

- Michael Meyer, Managing Member, Heelstone Proprietary
As a registered respiratory therapist, Stephen Lueckenhoff had seen the difficulties people face using in-home medical oxygen. To use the oxygen and still get around the house, a person can have up to 50 feet of tubing leading from the oxygen concentrator machine, creating serious tripping and tangling hazards.

Lueckenhoff set out to resolve the problems by starting Inspyrd Products Corporation and inventing the Tube-B-Gone. Patients use Tube-B-Gone to retrieve and wind up to 50 feet of oxygen tubing into the device by pressing a remote control, similar to a car key. The controller allows a short retrieval of two feet or a long one of eight feet.

Through the NMSBA Program, Lueckenhoff connected with Ernie García and Ken Pohl of Sandia National Laboratories to help improve his design and take it to market. The two electromechanical design engineers helped him convert the motor to a commonly found low-voltage motor, add a radio frequency controller, and switch to a metal enclosure, all of which improved product safety and reduced manufacturing costs.

The Tube-B-Gone has received positive responses from initial tests with in-home oxygen users. Lueckenhoff can now make device refinements, seek safety approvals, and conduct final testing before production.
Putting on shoes is a difficult chore for small children just learning what eventually becomes a mundane task for adults. When Tina Bagon of Kids Hardware Kompany took the time to watch her own children, she discovered that the difficulty comes from sliding their feet into the small opening of the shoe. Bagon set out to make life easier for the little learners. Her company’s solution, the Little Piggies shoehorn, worked flawlessly. But she found the removable fastener could create a choking hazard and took the shoehorns off the market.

To resolve the issue, NMSBA at Sandia National Laboratories matched her with Trish Selcher, a design engineer, who investigated wire-forming options to redesign the shoehorn with an integrated fastener. Selcher and her team used 3D printing to provide a model for testing. They also evaluated the material Bagon used to make the shoehorns in an effort to improve colorfastness and reduce odors. Mat Celina, a member of Selcher’s team, proposed a material that can retain Bagon’s original bright colors and has no odors.

With a prototype of the new design that eliminates choking hazards, Bagon is ready to reintroduce the Little Piggies shoehorn to market again. During the collaborative process, Bagon also discovered an opportunity to market her product to children with disabilities.

Solving this problem would have taken me a year, but it only took three months with Sandia’s collaboration. Now I can put my product back on the market.

- Tina Bagon, Owner
Engineer David Simpson was developing a liquid-gas separation vessel when he sought help from the NMSBA Program. Little did he know the assistance would open up a multi-million dollar market for his oil and gas consulting business, MuleShoe Engineering.

Simpson’s vessel separates natural gas from water pumped out of natural gas wells. The device collects the gas that would otherwise be vented as waste and instead allows it to be recovered and sold. But Simpson needed an analysis of the dynamics of the device’s operation.

To help, NMSBA paired him with Marion Vance of Los Alamos National Laboratory. Vance analyzed the interaction of the fluid streams using computational models, evaluating the differing fluid velocities through the device. The velocity visualizations improved Simpson’s understanding and operation of his device but also revealed that the slower velocities in the bottom of the vessel allowed any solids in streams to fall out. Solids, such as rock, sand, or soil, create numerous problems for well operations, eventually clogging piping.

MuleShoe is currently constructing and testing a “de-silter” version of the device that automatically cleans out accumulated sand and silt from equipment, eliminating the need for manual intervention. Simpson expects the new use will open up a nearly $80 million market for his New Mexico business.

This project exceeded my expectations. It let us better understand the dynamics of how my device operates and opened up a new market that we hadn’t anticipated.

- David Simpson, Principal Engineer
In 2012, the state of New Mexico along with Los Alamos National Laboratory and Sandia National Laboratories invested $4.5M helping 349 small businesses in 27 counties to solve technical challenges. The following table contains the number of small businesses that received assistance from NMSBA and dollar value of the assistance for calendar year 2012 and cumulative from 2000 to 2012.

**Value of Program Assistance in 2012**

<table>
<thead>
<tr>
<th></th>
<th>LANL</th>
<th>Sandia</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Small Businesses Served</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>153</td>
<td>196</td>
<td>349</td>
</tr>
<tr>
<td>Rural</td>
<td>128</td>
<td>106</td>
<td>234</td>
</tr>
<tr>
<td>Urban</td>
<td>25</td>
<td>90</td>
<td>115</td>
</tr>
<tr>
<td>2000-2012*</td>
<td>448</td>
<td>1,728</td>
<td>2,036*</td>
</tr>
<tr>
<td>Rural</td>
<td>342</td>
<td>1,083</td>
<td>1,329*</td>
</tr>
<tr>
<td>Urban</td>
<td>106</td>
<td>645</td>
<td>707*</td>
</tr>
</tbody>
</table>

| Value of Assistance Provided |           |           |           |
| 2012                         | $2,204,746| $2,338,148| $4,542,894|
| Rural                        | $1,994,154| $1,662,878| $3,657,032|
| Urban                        | $210,592  | $675,270  | $885,862  |
| 2000-2012*                   | $9,793,484| $24,570,788| $34,364,272|
| Rural                        | $8,783,746| $19,276,128| $28,059,874|
| Urban                        | $1,009,738| $5,294,660 | $6,304,398|

*LANL began participating in NMSBA in 2007. † Some companies are served by both laboratories.

**Accountability & Economic Impact**

NMSBA, enabled by the Laboratory Partnership with Small Business Tax Credit Act, is accountable to the state of New Mexico for its expenditures. It measures its economic impact through client surveys conducted by Research & Polling, Inc., and economic analysis provided by economist Brian McDonald, PhD. The survey and analysis are performed six months to a year after the completion of the project.

**Benefits to New Mexico Small Business**

New Mexico small businesses continued to achieve positive results after receiving technical assistance from the national laboratories. Based on results from the 2011 economic impact survey, the information below highlights NMSBA’s impact on New Mexico companies.

**Economic Impact for Businesses from NMSBA Projects**

<table>
<thead>
<tr>
<th></th>
<th>2000 - 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Investment (ROI)*</td>
<td>$1.18</td>
</tr>
<tr>
<td>Small Business Jobs Created and Retained</td>
<td>2,874</td>
</tr>
<tr>
<td>Mean Salary</td>
<td>$38,647</td>
</tr>
<tr>
<td>Increase in Revenue</td>
<td>$145,254,992</td>
</tr>
<tr>
<td>Decrease in Operating Costs</td>
<td>$72,644,271</td>
</tr>
<tr>
<td>Investment in NM Goods / Services</td>
<td>$43,325,007</td>
</tr>
<tr>
<td>New Funding / Financing Received</td>
<td>$52,334,828</td>
</tr>
</tbody>
</table>

* ROI is based on salaries of jobs created and retained.
NMSBA identifies the areas of technical expertise of the national laboratories and their contractors utilized in NMSBA technical assistance projects. The industry sector as well as the county in which the small businesses reside are tracked to gain a better understanding of the technical challenges that were solved by the resources available and the reach of the program across the state.

**LABORATORY CAPABILITIES UTILIZED IN 2012**

- Manufacturing: 22.4%
- Engineering: 14.8%
- Business Development: 12.6%
- Energy: 10.7%
- Earth and Environmental Sciences: 9.3%
- Chemistry and Biochemistry: 7.3%
- Materials Science: 6.4%
- Biological and Medical: 5.9%
- Advanced Modeling and Simulation: 5.3%
- Math and Computer Science: 4.2%
- Astronomy and Physics: 0.8%
- Micro-Nano Technology: 0.3%

**INDUSTRIES OF SMALL BUSINESS SERVED IN 2012**

- Manufacturing: 32.2%
- Professional, Scientific, and Technical Services: 31.7%
- Agriculture and Natural Resources: 15.1%
- Oil and Gas, Utilities, and Mining: 7.0%
- Retail and Wholesale: 4.8%
- Education and Health Services: 3.1%
- Real Estate, Finance, Insurance, and Management Services: 2.5%
- Other Services (except Public Administration): 2.2%
- Media and Hospitality: 1.4%

**CUSTOMER SATISFACTION IN 2012**

Each year, NMSBA surveys the participating businesses to learn about their satisfaction with the program. In 2012, 71% of the businesses responded to the survey.

- Overall Satisfaction with Program: 4.5
- Satisfaction with Project Manager: 4.4
- Satisfaction with Lab Technical Staff: 4.3
- Effect of Assistance on Company: 4.1
- Would Use NMSBA Again: 4.0
- Would Recommend NMSBA Services: 4.2

**BUSINESSES ASSISTED BY COUNTY 2000-2012**

NMSBA has provided assistance in all 33 New Mexico counties during the life of the program.
Working with premature babies, Chantal Lau, a neonatology professor at Baylor College of Medicine in Houston, knew that many “preemies” must be fed by tube until their oral feeding skills are developed enough so they can go home. But to date, it is not well understood how and when preemies develop these crucial feeding skills.

Considering that costs of neonatal care approach $4,000 per day just for nursing care, Lau sought a solution. Under her New Mexico startup company, PediBioMetrix, LLC, she crafted an oral motor kinetic monitoring (OMK) system using a baby bottle, sensors, and tubing. This system, which detects preemies’ sucking, swallowing, and breathing events, assists in identifying causes for these infants’ difficulties. But though interest was high, her OMK system was too complicated and labor-intensive for nurses to replicate.

Through the NMSBA Program, Lau worked with James Watts and Larry Bronisz of Los Alamos National Laboratory. The two engineers found lower-cost, readily available sensors that reliably monitor an infant’s feeding events. The simplified sensors will allow Lau to decrease product development costs and move much closer to commercializing her OMK system to meet this growing health demand in neonatal intensive care units.

_They are providing the engineering expertise so that I can move forward on my own with some more modern technology._

- Chantal Lau, Owner
Providing continuous fresh water for livestock is a constant challenge for New Mexico ranchers. Mike and Corina Lisk of Remote Well Solutions, LLC, have developed a line of off-grid pumping systems, designed to alleviate watering problems. Although the pumping system saved as much as 60% in fuel costs alone and had other benefits, they found that ranchers were resistant to change. Remote Well Solutions took advantage of the NMSBA Program at New Mexico State University’s (NMSU’s) Arrowhead Center to address their need for business-related assistance.

The NMSBA team at the Arrowhead Center assessed the systems developed by Remote Well Solutions for their market size and demand, pricing, and competition, based on the systems’ technical comparative advantages. Remote Well Solutions’ products are fully automated, off-grid pumping systems that utilize a propane generator with an intelligent control to sense water levels, automatically turning on and off as needed. The systems’ capacity to respond automatically allows ranchers to reduce costs related to time, fuel, water, and maintenance.

Based on the information received from the Arrowhead Center, Lisk is currently working on expanding the markets for these pumping systems, including oil wells and Forest Service campgrounds. Remote Well Solutions was recently chosen as a sole-source pumping system provider for the Forest Service in New Mexico and Forest Service campgrounds in Arizona. Arrowhead Center’s assistance has also allowed Lisk to engage with an investor from the oil field industry. Lisk estimated that new market opportunities will result in 12 to 20 direct new jobs, with the potential for more jobs as the business expands.

I didn’t realize the gap between a good idea and making it a marketable product. NMSU’s Arrowhead Center introduced us to new opportunities and connected us to investors.

- Mike Lisk, Owner
Laney Smith and Tom Rock were ready to diversify their RockSmith Precision Machining, Inc., custom machine shop business. So they purchased the licenses for two Los Alamos National Laboratory tools, expecting to machine and mass-produce the intricate tools used for disabling explosive devices. But they didn’t realize they were missing some of the key elements for success: improved production output and better inventory control.

That’s where New Mexico Manufacturing Extension Partnership (NM MEP) stepped in to help. Through the NMSBA Program, Matt Moser of NM MEP analyzed the process RockSmith used to produce the tools, as well as the costs involved and the required machining time. Based on his evaluation, Moser set up a visual organization system to guide the machinists through four production stages. He then organized their inventory with production maps, color-coded bins, and shelving to match the production stages.

With the newly organized manufacturing process, RockSmith can now increase its manufacturing capacity and provide precise delivery estimates for the tools. For example, RockSmith’s initial order for 80 units took more than 11 months to produce, but after NM MEP’s assistance, the company can produce 200 units in the same amount of time. Further, by streamlining tool production, RockSmith’s owners can assign some of the work to less skilled workers, freeing up their time for higher-value custom work.

They really took our production process from just a stack of blueprints to a real system. They’ve helped us with organization so much, now we can be ready when people start placing orders.

- Laney Smith, Co-Owner, RockSmith Precision Machining
A longtime artist and sculptor, Carrie Quade of Squlptures, Inc., started Art Retreat Workshops in her studio to teach clay monoprinting. But she ran into trouble when she found that foreign materials in the clay spoiled the unique printing style and interrupted her classes.

To create the prints, batches of pigmented clay are applied with water to a clay slab, embedding the colors into the slab. After inscribing artistic designs in the clay, paper is rolled onto the slab to pull up the multi-colored design from the top layer of wet clay.

Quade found the process worked well for a weekend project, but if the slab rested for a few days, prints from the slab would show blotches or pull up clay clumps. Because artists like Quade can use a clay slab for many years, the issue seemed overwhelming.

Through the NMSBA Program, Quade worked with Amy Allen, from Sandia National Laboratories, to identify the materials in the clay causing the problem. Using a variety of testing including electron microscopy and mass spectroscopy, Allen identified the material as a surfactant, a compound that reduces the water’s surface tension.

Quade is following through on procedure recommendations from Allen, which should allow her business to resume.

I knew that the problem was something beyond my ability to solve and would be useful to everyone else who makes clay prints. The help I received—it’s something I could not have gotten anywhere else.

- Carrie Quade, President
A new energy concept that generates electricity from ocean waves has come out of the high desert of New Mexico. Two companies, Atmocean, Inc., and Reytek Corporation, both based in the state, have developed technology to transmit pressurized seawater from wave-driven pistons in the ocean to an electrical generating device onshore.

Phil Kithil of Atmocean, which owns the wave piston technology, and Phil Fullam of Reytek, a systems components company, approached the NMSBA Program with their Wave Energy Leveraged Project. To help assess the feasibility of their energy concept, NMSBA paired them with Rick Givler, a specialist in modeling physical systems at Sandia National Laboratories. Givler modeled the pump arrays under real wave conditions and determined that the system produces enough pressure and flow in the seawater through more than a mile of piping to generate electricity when it gets onshore.

Givler’s model helped Kithil show that the costs of the electricity generated onshore, taking into account existing, full-scale component costs, are comparable to other renewable energy costs and, in certain locations, could be equal to traditional energy costs. The collaborative work not only verified the project as feasible and viable in the emerging wave energy industry, it also helped Atmocean attract a six-figure investment for continued product testing and increased component manufacturing at Reytek.

“This work by Sandia was key in allowing me to project what the cost of energy is likely to be when we scale this up into a commercial scenario.”

- Phil Kithil, CEO, Atmocean
<table>
<thead>
<tr>
<th>Lab</th>
<th>Project</th>
<th>Description</th>
<th>Business Participants</th>
<th>Counties</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANL</td>
<td>Algae Cultivation in NM Produced Water</td>
<td>Los Alamos National Laboratory (LANL) conducted algae growth studies utilizing treated produced water. Cell growth was evaluated to identify and adapt algae strain(s) best suited for rapid, robust growth in produced water. In addition, chemical and geochemical analysis of the treated and untreated produced water was conducted by LANL and a custom medium was formulated. Data from both the algae growth studies and source water analysis were used to develop standardized protocols and equipment lists for growing algae in produced waters. LANL also established and tested a method to determine the protein content of the algae grown in Jal, NM.</td>
<td>Eldorado Biofuels, LLC Fulfer Oil and Cattle Company Gandy Marley, Inc. Iron J. Services VM Technology, Inc.</td>
<td>Chaves</td>
<td>$99,000</td>
</tr>
<tr>
<td>Sandia</td>
<td>Carbon Sequestration using Sustainable Agriculture</td>
<td>Sandia National Laboratories provided technical consulting regarding the proposed agricultural approach used by the small businesses, known as Intensive Production (IP). This agricultural practice implements year-round cultivation of cover crops, no and low till, living mulches, intercropping, green fallowing, application of soil amendments and soil microbial inocula. Carbon is captured, i.e., sequestered as plant biomass and finally incorporated into the soil to provide energy resources and structural C components for building soil microbial communities, soil fertility, and soil tilth while increasing soil organic matter recalcitrance, complexity, and longevity. Sandia provided technology to measure the amount and volume of C sequestered via IP.</td>
<td>Eaton Farms Keith Deputy Martinez Hay and Cattle Ramon G. Alvarez Willie Hernandez Farms</td>
<td>Dona Ana</td>
<td>$100,000</td>
</tr>
<tr>
<td>LANL</td>
<td>Detection of Bovine Tuberculosis in Cattle using a Waveguide-based Biosensor</td>
<td>Los Alamos National Laboratory completed two major tasks: 1) detection of bovine TB biomarkers in field-infected samples, and 2) adaptation of surface functionalization chemistry to inexpensive plastic waveguides. For the first task, assays were optimized and standards and controls were developed for accurate quantitation of sample results. Samples were also characterized by conventional methods for corroboration of biomarker measurements and data were statistically evaluated. The results were extremely promising, allowing for use of two different bovine TB biomarkers for detection of disease in three different cohorts of infected cows. For the second task, plastic waveguide coatings were evaluated with respect to optical properties and non-specific interactions and compared with typical silicon oxyxinitride waveguides. Although a preliminary down selection was achieved, further research is required before plastic waveguide use can be carried forward.</td>
<td>Beard Livestock aka Rita Beard Kevin Hertel, DVM MT Agricultural Enterprises Progressive Dairy Health Services Rincon Blanco Veterinary Hospital</td>
<td>Colfax</td>
<td>$96,000</td>
</tr>
<tr>
<td>Lab</td>
<td>Project Description Business Participants</td>
<td>Counties</td>
<td>Funding</td>
<td></td>
<td></td>
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<td>-----------------------------------------------</td>
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<td></td>
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<tr>
<td>Sandia</td>
<td>Effects of Biomass Conditioning in Biofuels Production: Sandia National Laboratories determined the optimal dose of STS conditioner for bacterial infection control without compromising yeast productivity. Sandia also determined the effects of STS dose on sugar yields, fermentation inhibitors generated, and breakdown of lignin and cellulose (solids composition). The small businesses provided the samples from corn ethanol plants and/or the feedstocks from cattails and apples.</td>
<td>Mountain Farms, Nichols Ranch, Oasis Algae, Inc., kfa Oasis Biofuels, River Brink, LLC, The Ryan Herco Flow Solutions, Inc, Sustainable Technology Systems, Inc.</td>
<td>Bernalillo, Eddy, Otero, Taos</td>
<td>$110,000</td>
<td></td>
</tr>
<tr>
<td>Sandia</td>
<td>Emission Testing: Sandia National Laboratories consulted with the participating companies regarding Gator system emissions and systems design including a study of the developmental needs of the system, analysis of the scale build-up during the operation of the Gator System, and recommendations for electronic monitoring and control. Additionally, Sandia provided the project other appropriate support in the design, deployment, and operation of the system when used to evaporate brackish produced water from hydrocarbon wells.</td>
<td>Biosphere Environmental Sciences &amp; Technologies, LLC (B.E.S.T), EECS, Inc, Gator Hydro-Incineration, LLC, Surefire Burner Management Systems</td>
<td>San Juan, Sandoval</td>
<td>$71,000</td>
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<td>LANL</td>
<td>Evaluation of Pecos River Salinity Sources and Recommended Remediation Strategies: Los Alamos National Laboratory (LANL) deployed continuous conductivity loggers along the Pecos River and, along with the participating small businesses, collected over eighty samples for geochemical analysis. LANL evaluated the potential to control salt input into the Pecos River by diversion of low-salinity groundwater from west of Roswell into the Pecos and by direct desalination of high-salinity inflows, both of which should minimally impact agriculture and the environment. LANL used 2010 and 2011 salinity data in a watershed management model to assist in evaluating the diversion of low-salinity groundwater to reduce Pecos River water salinity.</td>
<td>Johnny Reid Farms, Max Vasquez Farms, MJW Farms, Inc, Ogden Farms, Pardue Limited Company</td>
<td>Eddy</td>
<td>$100,000</td>
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<td>LANL</td>
<td>Metalized Explosive for Industrial Application: Los Alamos National Laboratory (LANL) identified and tested energetic material formulations for use on hot clinker targets. LANL performed thermoequilibrium calculations to access best-possible energies in formulation design. LANL also conducted performance and safety testing of various formulations.</td>
<td>EBR Development, LLC, Sci Tac LLC</td>
<td>Los Alamos, Rio Arriba</td>
<td>$40,000</td>
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<td>Sandia</td>
<td>Migration of nSIGHTS Statistical Inverse Graphical Hydraulic Test Simulator Code to Open Source Platform: Sandia National Laboratories utilized expertise of their proprietary hydraulic test analysis software, nSIGHTS, to migrate the code to an open source format in order to activate new opportunities for New Mexico small businesses.</td>
<td>HydroResolutions, LLC, Intera, Inc, Livingston &amp; Associates, PC RESPEC, Inc, Walking Water Consulting</td>
<td>Eddy, Lincoln, Otero</td>
<td>$75,000</td>
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<tr>
<td>Lab</td>
<td>Project Description</td>
<td>Business Participants</td>
<td>Counties</td>
<td>Funding</td>
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<td>LANL</td>
<td>Los Alamos National Laboratory (LANL) evaluated the feasibility of the Y Bar Ranch as a potential host site for a Small Modular Reactor (SMR). LANL conducted an SMR siting feasibility analysis to ensure that all technical requirements of the prototype reactor can be met. LANL also conducted economic impact analysis to quantify the potential effects on jobs, tax revenue, and similar indicators at the county and state level using the IMPLAN microeconomic model.</td>
<td>Stein and Brockmann Y Bar Ranch, LLC</td>
<td>Lincoln</td>
<td>$39,000</td>
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<td>Santa Fe</td>
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<td>LANL</td>
<td>Technical Support for Coalition of Renewable Energy Landowner Associations (CRELA) Renewable Energy Projects</td>
<td>Antelope Ridge Wind Farm, LLC</td>
<td>Curry</td>
<td>$94,000</td>
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<td>Los Alamos National Laboratory (LANL) evaluated the need to utilize gas-fired generation to increase firm energy sales, which required 1) an inventory of natural gas supplies, 2) an assessment of transporting gas and interconnection to gas turbine plants, and 3) a quantification of revenue benefits attributable to leveling wind farm output versus cost to install and operate firming capacity. LANL also provided technical support for CRELA’s “Landowner’s Institute” by developing training materials and conducting a multi-session landowner’s course, delivered in Tucumcari, NM. The objective of this course was to empower landowners to utilize and effectively communicate technical information. Lastly, LANL prepared technical summaries and a report to ensure that CRELA’s renewable energy projects are represented in a proactive, technically sound manner.</td>
<td>Brockman Ranches, Inc. El Yeso Ranch Company, Inc. Farming Services Company of New Mexico dba FarmKo Y L Bar Ranch, LLC</td>
<td>DeBaca</td>
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<td>Union</td>
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<tr>
<td>LANL</td>
<td>Technical Support for New Mexico’s Renewable Energy Projects (Thompson Land and Cattle)</td>
<td>Milagro Ranch Resources Thompson Cattle Company</td>
<td>Guadalupe</td>
<td>$32,000</td>
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<td>Los Alamos National Laboratory (LANL) evaluated technical options for collector transmission interconnect to maximize project return on investment. Field assessments of the interconnect options were conducted and transmission power flow performance was modeled.</td>
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<tr>
<td>LANL</td>
<td>Technical Support to Evaluate Hydro Generation for Elephant Butte Irrigation District (EBID) Farms</td>
<td>Adams Produce, Inc. Chili River, Inc. Lack Farms Porter Farms, LLC</td>
<td>Dona Ana</td>
<td>$56,000</td>
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<td>Los Alamos National Laboratory (LANL) helped to refine the design and operation of high-potential low-head hydropower sites within EBID’s canal system. LANL designed turbine test procedures, conducted field tests with EBID staff, reduced and analyzed data, and identified needed improvements to the existing hydropower configuration. LANL also collaborated with EBID to obtain Federal exemption by supplying technical information to support EBID’s filing for a multi-site exemption.</td>
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</tbody>
</table>
Los Alamos National Laboratory (LANL) evaluated various fly ash mixtures in an attempt to determine features that optimize performance of the material. LANL produced three initial test batches of product, including a fly ash/bottom ash cement, a fly ash/sand mortar, and a fly ash/Portland/sand mortar. These initial mixtures did not cure as expected. LANL then evaluated the use of octanoic acid in the admixture to address curing problems. Four different mixtures were prepared and cured for future strength testing.

Sandia National Laboratories assessed the feasibility of transmitting pressurized sea water from an off-shore array of wave-driven pistons to an onshore electrical generating device. The development of a general-purpose network flow model was completed along with an assessment of the technology’s potential power output.
INDIVIDUAL PROJECTS

RURAL INDIVIDUAL PROJECTS

Chaves
- AGPOWER FP 1, LLC
- AgVentures, LLC
- Dean Baldwin Painting
- GeoScience Technologies
- Geosights Consulting
- Lincoln County Industries
- Providence Technologies, Inc.

Colfax
- Alderette Acupuncture and Herbal Medicine

Curry
- Airwest
- Elmer White Farm
- Sena & Associates
- Southwest Cheese Company, LLC

Dona Ana
- Alaska Structures Calculex, Inc.
- Darbyshire Machine, Inc.
- Hill Farm, LLC
- House Electric Window Controller Company
- Las Cruces Machine Company
- Ludwig Farms
- Mesilla Industrial Machining, LLC
- Mini Milestones
- Mte Music
- Ottesen Machine Company
- Pesticide Applications Technologies, LLC (PATCO)
- Quikbiteat, LLC
- Robert Faubion Farms, LLC
- Salopek 60 Farms, Inc.
- Silicon Mesa

Eddy
- Custom Farming
- Juva Farms
- NeuroTechnology Device Manufacturing
- Otis Mutual Domestic Water and Sewage Company
- Salado Biofuels
- Weems Farm
- Western Environmental Management Group

Grant
- CCI Associates

Guadalupe
- David Hamby Design

Harding
- Ute Creek Cattle Company

Lea
- RMS Foods, Inc.

Lincoln
- L-Bar Resources, LLC

Los Alamos
- Eberline Services, Inc.
- HyPwr, LLC
- Porcupine Holding
- Portage Environmental, Inc.
- RockSmith Precision Machining, Inc.
- Samitaur Medical Technologies, LLC
- Sun Energy, LLC
- Synthetic Cognition, Inc.
- TerraneaRFMC
- Tibbar Technologies

Luna
- Bennett Energy & Environmental, LLC
- Compass Manufacturing Services Division
- Southwest Wines
- Southwest Wines and Tasting Room aka NM Wineries

McKinley
- Cabinets Southwest, Inc.
- Newberry & Associates, Ltd.

Otero
- Killebrew Learning Systems
- Mescalero Apache Telecom, Inc.
- Mescalero Forest Products
- Remote Well Solutions, LLC

Quay
- Apache Canyon Wind Creations
- Energy Related Devices, Inc.
- Tella Innovations

Rio Arriba
- Asher Fire Hose Company
- Avanyu Energy Services
- Black Mesa Winery
- ByWater Recreation, LLC
- McFarland Instrumentation Services, Inc.
- Performance Maintenance, Inc. (PMI)
- Secure Logistics, LLC

Roosevelt
- DariConcepts
- Sunland, Inc. / Sunland Valencia Peanuts

San Juan
- Aztec Machine & Repair, Inc.
- Compressco Partners, LP
- Haulrite of Four Corners, Inc.
- Henry Production, Inc. (HPI)
- Jack’s Plastic and Welding
- King Sun Solar
- MuleShoe Engineering
- Nogen Tomrer
- Nott, Ltd. / Not Limited, LLC
- One Source Service
- PESCO, Inc.
- R & T Holdings, LLC
- Real Green Building Systems (RGBS)
- Terra Tersus, LLC
- Twin Stars
- Wines of the San Juan

San Miguel
- Environmental Building Sciences, Inc.
- Old Wood, LLC
- Randy Huston Ranch

Sandoval
- Arjuna Resources, LLC
- Aroma Fresca, Inc.
- Berglund Engineering Corporation
- Carter Holdings, LLC
- Cordova & Sons Tire Recycling & Manufacturing aka Cordova & Sons Tire Disposal & Recycling
- Enchantment Organics
- Heelstone Proprietary, LLC
- HydraTech of New Mexico
- Insight Lighting
- Inspyrd Products Corporation
- Looking New NM
- Lythik Fit
- Machine Dynamics, Inc.
- Mineris Vitae, LLC
- Security Designs, Inc. of New Mexico
- Southwest Technical Service, Inc.
- Vacsmart, LLC
- ZBOX, LLC
- Zeta Core USA, LLC

Santa Fe
- Acoustic Biosystems
- Action Estate Pros, LLC
- Advanced Ports, LLC
- Aerblock Enterprises, LLC
- Aerolenz
- Algae Growing Systems
- AM Energy
- Barson Corporation
- Cantor Properties
**Santa Fe (cont.)**
Cold Thumb Agriculture
El Milagro Herbs
Energy X Systems
Environmental Geochemistry, LLC
Fault Tolerant Technology
Glorieta Geoscience, Inc.
Good Water Company
Greifen Systems, Inc.
Healthy Living Spaces
Herbs, Etc., Inc.
HydroBio
Indepth Water Testing
Intermodal International & Associates, LLC
International Cargo Airport Solutions, LLC
ISI Technology
Kreger Design Build, LLC
M. Alexander Nugent Consulting
Mesa Tech International, Inc.
Metalicum, Inc.
MIMICRI, LLC
MS Flawless Goddess, LLC
New Mexico Algae, LLC
New Solutions Energy Corporation
PediBioMetrix, LLC
Planet Forward, LLC
Pristina Natural, Inc.
Radiant Technologies, Inc.
Qynergy Corporation
Pure Water Technologies, LLC
Prospect Geotech
PHDx Systems, Inc.
Perma Works
TransMix Safe Lock
TriLumina Corporation
VanDevender Enterprises
Verge NewTech I, LLC
Vibrant Corporation
Wellkeeper, Inc.

**Santa Fe (cont.)**
PureColor, Inc.
Radiation Detection Solutions, LLC
Rio Grande Neurosciences
Ronald Frost
Santa Fe Brewing Company, Inc.
Santa Fe by Design Water Treatment
Santa Fe Spirits
Shaking Oak Productions, LLC
Sigma Labs dba B6 Sigma, Inc.
Member 6 Sigma
Sculptures, Inc. dba Art Retreat Workshops
STAR Cryoelectronics, LLC
Sunner Associates, Inc.
Viola Productions

**Socorro**
Armijo Farm
Geochemical, LLC
Nu-H2O, LLC

**Taos**
Anasazi Gold, LLC
Musicode Innovations
Paradise Power Company, Inc. dba PPC Solar
Private Label Select, Ltd. Company
ThermaSun, Inc.

**Torrance**
EarthGift Group, The dba EarthGift Herbals

**Union**
Brown Ranch Properties, LLC
Gallegos Wind Farm
Greatskin.com
Hittson Land & Cattle, Company, Ltd.
Hutchinson Family, LP

**Valencia**
Jumping Bean Party Rentals dba Concrete Impressions USA
R & A Simons Systems
Simons Systems, LLC
Soil Secrets, LLC
Szaloy Wind Farm North
Trees That Please

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**URBAN INDIVIDUAL PROJECTS**

**Bernalillo County**
360 Solutions, Inc.
ABQMR, Inc.
Affordable Solar Group, LLC
Affordable Solar Installation, Inc.
Albuquerque Delicate Dentistry
American Clay Enterprises
Analytical Solutions, Inc.
Angstrom Thin Film Technologies, LLC
Apple Canyon Gourmet Company
Applied Technology Associates (ATA) / A-Tech Corporation / ATA Sensors
Aqua Membranes, LLC
Armed Response Team, Inc.
Assila
Azano Pharmaceuticals
Bell Group, The / Rio Grande Bio-Detector, LLC
Black Mesa Coffee Company, Inc.
BML Services, LLC
BMT USA, LLC
Bogue Machine Company
Bosco Tech
Bye UAS, Inc.
Century Sign Builders
Chakra, LLC
Chase Ergonomics
Chocolate Cartel
Cicero, LLC
Comet Solutions
Continental Machining Company
Daniel B. Stephens & Associates, Inc.
Dapwood Furniture
Ika Ramblin Wood, Inc.
Desert Paper & Envelope Company, Inc.
DiGregory Brothers, Inc.
Direct Power & Water Corporation
Diversified Tooling Corporation
EarPod, LLC
EnviroGlass, LLC
EnviroLogic, Inc.
Excel Manufacturing
ExerPlay, Inc.
Fiore Industries, Inc.
Firewheel Casting
Galisteo Consulting Group, Inc.
Gluten Free Gourmet Foods, Inc.
Growstone
Hydro Resources, Inc. aka HRI Energy
IEC Electronics Corp - Albuquerque, dba General Technology Corporation
Improve Group, The
Incitor, Inc. dba Incitor, LLC
Jaguar Precision Machine Corporation
KD Consulting
Kei and Molly Textiles, LLC
Kids Hardware Company
Leo S. Gomez Consulting
Lifeline Building Sciences, LLC
Lifehouse International, Inc.
Little Piggies Shoehorn Company, LLC
Lotus Leaf Coatings, Inc.
M & M Futures, LLC
MacAleese Companies, Inc., The dba Safe Zone Systems
Management Sciences, Inc.
Marla Bell, LLC
Marpac
Matt Channon Consulting
Mesilla Partners
Mich Casa Company
Mojo27 Company, LLC
MVD Express
My Sacred Fig
Noor Mfg Company, Inc.
Obregon SW
OGB Architectural Millwork, Inc.
Old 85 Precision Metals, LLC
Oligocene, Inc.
Orion International Technologies, Inc.
Perma Works
PHDx Systems, Inc.
Pocagua Consulting
POD, Inc.
Precision Grinding, Inc.
Prospect Geotech
Pure Water Technologies, LLC
Qody Corporation
Radiant Technologies, Inc.
Red Rock Roasters
Relios, Inc.
RLP Dosimetry
Sacred Power Corporation
Sage Technology Partners, Inc.
Sandia Performance, LLC
Sentient Business Systems, Inc.
Senz EA
Sharp Hydrographix
Sharp Informatics
Sierra Peaks
Sites Southwest
Skorpios Technologies, Inc.
SoilCo, LLC
South Valley Soap
Steady Yeddy, LLC dba Levitator, LLC
Superior Machine
TEAM Technologies, Inc.
Rka TEAM Specialty Products
TH Chem, Inc.
Tim Aydelott Productions
Toltec Enterprises, Inc.
Transcore AMTECH
Technology Center
TransMix Safe Lock
TriLumina Corporation
VanDevender Enterprises
Verge NewTech I, LLC
Vibrant Corporation
Wellkeeper, Inc.
Thank you to all the small businesses for participating in the NMSBA Program and for creating jobs and economic wealth for New Mexicans.

Thank you to all the Los Alamos and Sandia national laboratories’ Principal Investigators who applied their expertise and knowledge to help New Mexico small businesses solve their technical challenges.

Thank you to the Governor’s Office and the New Mexico State Legislature for supporting the Laboratory Partnership with Small Business Tax Credit Act.

Thank you to the Advisory Council for their leadership, advice, and guidance in support of the NMSBA Program.

Thank you to Los Alamos Connect, the principal economic development investment of Los Alamos National Security, LLC, managed by the Regional Development Corporation, for its support of NMSBA and sponsorship of the Innovation Celebration.

Thank you to Technology Ventures Corporation for their gracious sponsorship of the Innovation Celebration.

And a final thank you to the staff who work every day to ensure the success of the NMSBA Program.