

National labs enhance state's visibility

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An attractive feature of New Mexico throughout the business and technological world is the location of two world-class federal facilities within the state, Los Alamos and Sandia National Laboratories. Economic development specialists, recruiters, and government officials have historically used the reputation of these two laboratories to make the state more visible in the international community. From time-to-time, both labs have been involved in international projects. Unfortunately, the labs' international presence became highly controversial recently with concerns over possible foreign espionage.

Many people do not know that both labs are doing very productive work with positive ramifications in international fields. Throughout the 1990's, Sandia National Laboratories (SNL) has been involved in technical projects in Mexico through its Mexico Renewable Energy Program. This program assists rural Mexican areas with their renewable energy needs, while at the same time it generates business opportunities for New Mexican and U.S. firms.

In the early 1990s, it became clear that most growth in the renewable energy sector would be in international markets, mostly in developing countries. SNL began exploring possibilities of expanding the U.S. renewable energies market in Mexico. According to Michael Ross, Senior Member of Technical Staff in SNL's Renewable Energy Office, "A substantial portion of Mexico's population, unlike that of the U.S., is not connected to a grid and is rural. This lends itself very well to renewable energy industries."

By 1992, SNL and its sponsors, the U.S. Department of Energy (DOE) and the U.S. Agency for International Development, put together the basis for the program which has goals of promoting the use of renewable energy systems, enhancing economic and social development in Mexico, offsetting greenhouse emissions, and creating new business opportunities for U.S. industry. Through this program, SNL focuses on rural, off-grid, productive-use applications of renewable energy, such as photovoltaics, small wind systems, small hydropower systems, and small thermal systems.

SNL has put together a versatile and multidisciplinary team that goes on-site to create the Mexican projects. At present, five SNL technicians are involved in the program. From the U.S. side, SNL collaborates closely with the National Renewable Energy Laboratory in Golden, Colorado.

In Mexico, as part of the U.S.-Mexico binational agreement, SNL collaborates and has formed partnerships with various entities. These include the FIRCO (an agency of the Mexican Agricultural Secretariat), the Nature Conservancy, the World Wildlife Fund, Conservation International, and the Chihuahua Working Group for Renewable Energy.

Since its inception, the Mexico Renewable Energy Program has successfully installed 350 energy systems, representing 233 kilowatts of power in 12 Mexican states. Approximately, 1,000 Mexicans have benefited from these installations. The program has also helped train more than 1600 engineers, suppliers, and decision-makers in renewable energy technologies.

The program itself should not mistakenly be looked upon as a federal government grant or handout. A key component of any project is being able to recoup the costs and paying for a renewable energy system. SNL looks at areas in Mexico where they not only have ability to utilize the technology, but to put it to productive use in a sustainable fashion. In Baja California Sur, this has resulted in a project to help farmers pump water for their cattle through the installation of photovoltaic systems. In Chiapas, a photovoltaic project was created to supply wildlife scientists with power at their research station deep in the jungle.

The Mexican beneficiary and partners are required to shoulder the project's costs. This can vary depending on the project, but the share of the Mexican cost burden increases over time. In many cases, multilateral entities such as the World Bank, the Inter-American Development Bank, and USAID provide start-up funds. SNL team members work on project creation, and provide technical support after the project is established. According to Ross, "We have end users contribute something to the project so that they have a sense of ownership in the project. If their money is invested in it, maintenance and care will be greater."

SNL's work in Mexico is also having the effect of helping to develop the capabilities of U.S. companies involved in the renewable energy sector. More than 70 percent of photovoltaic modules manufactured in the U.S. are for export, mainly because the growth of renewable energy systems in the U.S. lags behind that of the developing world. Creating these projects in Mexico helps U.S. companies improve both their market and products for the time that accelerated growth in the U.S. is possible.

Charles Hanley, also a Senior Member of Technical Staff with SNL's Renewable Energy Office, states that "In order for new developments to occur in the industry, you have to have ongoing projects which force firms to continue investing, learning, achieving feedback, and advancing. Since we're creating these markets elsewhere, the technology and prices in the market will become more economical. These systems are very expensive in the U.S., but however, in the future, these could become cheaper."

U.S. companies work with the SNL team to install the systems and train the end users. SNL also works with suppliers to make them realize the benefits of supplying efficient, appropriate, and economical renewable energy systems. According to Ross, "Many U.S. companies have a lot of trepidation when it comes to doing business in Mexico due to culture, financial risk, and language differences. Their work with us helps them develop the confidence and experience needed for success."

To date, the Mexico Renewable Energy Program has identified a potential \$1 billion market for U.S. renewable energy products and projects in Mexico. As more projects are created, Mexico will absorb additional U.S. exports of renewable energy equipment.

In the future, SNL would eventually like its Mexican partners to build up sufficient capacity so that they can build these projects themselves. FIRCO is currently implementing a \$30 million program in renewable energy over the next 5 years. This builds directly upon the experience they have gained with SNL and applies it nationwide.

According to Hanley, "We work to have sustainable local markets on both supply and demand side by building strong partnerships between the U.S. and Mexican renewable industries. Thus, we meet the objectives of DOE and USAID in terms of strengthening US industry, and also in terms of demonstrating that renewables can help fight global climate changes and contribute to bi-national economic development."

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