

New Mexico

Summary and Analysis

New Mexico has several unique resources that position it for potential leadership in green jobs and green business development. The state has a geographical position at the intersection of the country's three grids that could position it as a leader in the development of smart-grid technologies. In addition, the state's abundant solar energy has helped it to develop that industry in the state. In addition, New Mexico has several policy innovations that are potential models for other states:

- The state's *Green Jobs Guidebook* provides a low-cost model of analysis that links potential job seekers with job and training opportunities.
- The governor has developed a green jobs cabinet and produced a roadmap for the state that analyzes special resources in the state for creating green jobs and new businesses.
- The Tres Amigas Superstation may provide general lessons to states that are attempting to figure out new ways of organizing load management in the smart grid.
- The state government has compensated for a relatively small base of research universities by drawing on the national laboratories, thereby providing a model of how to strengthen research in a state that has a relatively small population.
- The emerging frame of "return on investment" for energy efficiency and renewable-energy projects suggests a way to bridge partisan divisions in green jobs policy.

General Background Policy

Energy Goals. Since 2007 New Mexico has had a renewable portfolio standard of 20 percent by 2020 for investor-owned utilities and 10 percent for rural electric cooperatives. There are also set-asides for solar and wind energy, but there are "off-ramps" in the event that costs are excessive (DSIRE 2010). In January 2010 the New Energy Efficiency Strategy Report mandated a 20 percent reduction in per capita energy use by 2020. Continued expansion is projected to add 236,800 jobs in both renewable energy and energy efficiency by 2030.

A corporate based renewable-energy production tax credit supports wind, biomass, and solar generation of electricity (DSIRE 2010). Under Governor Bill Richardson, the State of New Mexico positioned itself as strongly supportive of green industry and green job development. Executive order 2004-19 declared New Mexico the "Clean Energy State." A series of executive orders were issued in subsequent years to create the administrative structure and capabilities for being successful in this regard. The goals included becoming a center of the North American solar industry and a leader in green-grid innovation (Office of the Governor 2010b).

Public Benefits Fund. The state does not have a public benefits fund, but under the Efficient Use of Energy Act of 2005 the state allows utilities to collect a surcharge to support energy-efficiency and load-management programs (DSIRE 2010). The state also has PACE enabling legislation (Hughes 2010).

Green-Buildings Policy. In 2005 the state government approved the Energy Efficiency and Renewable Energy Bonding Act, which allowed the state to sell \$20 million in bonds. The bonds allowed energy efficiency and solar energy improvements on public buildings that could repay the costs with long-term savings. In the same year the state also passed the Renewable Energy Bond Act, which finances schools and universities that add renewable energy installations (Dierkers 2007). Efficiency and renewable gains have the capability of directly offsetting teacher furloughs and layoffs.

In 2006 New Mexico Governor Richardson issued an executive order (2006-001) that required all new construction for the state's executive branch buildings to meet LEED silver guidelines and other energy-efficiency goals. A subsequent executive order (2007-053) for executive branch agencies set a goal of 20 percent energy consumption reduction below 2005 levels by 2015. Legislation in 2010 (SB 200) expanded on the goals for a wider range of new state government buildings and renovations throughout the state (DSIRE 2010).

Green Jobs Training. In 2010, New Mexico also released its *Green Jobs Guidebook* (State of New Mexico 2010c), which covers both occupations and educational resources in the state. Green jobs grew 50 percent between 1998 and 2007. Jobs are growing quickly in both rural and urban areas. In the past ten years, the "clean-energy sector grew by 118 percent, energy efficiency by 184 percent, environmentally friendly production by 99 percent, conservation and pollution mitigation by 35 percent, and training and support decreased by 5 percent. Unemployment in New Mexico was at 6.5 percent compared with 9.4 percent nationally in July 2009" (ibid.). The state established training centers in solar and wind technologies at San Juan Community College and Mesalands Community College (Miller 2008). Three bills were introduced before the legislature in 2010 with the goal of strengthening the research and training infrastructure: the Green Jobs Bonding Act (HB622), which targets low-income candidates, tribal communities, and veterans for green job training; the Higher Education Alternative Energy Program Awards (SB 288), which supports research and education programs; and the Development Training Funds for Green Jobs bill (SB 318), which will transfer up to \$1 million per year from the state's Job Training Incentive Program to green jobs (Miller 2009). The Department of Workforce Development received \$6 million in ARRA funding in 2010 for green jobs training.

Clean-Energy Industries

General Background. In 2009, the governor established the Green Jobs Cabinet, which produced a roadmap for the state's green energy industries (State of New Mexico 2009) that became the basis for an executive order (2010-001) issued in January, 2010. Although the plan has ambitious goals, such as becoming a leader in the solar and smart-grid industries, the state lacks a clean-tech investment fund and other crucial elements that have emerged in other states. The state does offer support for businesses through tax credits and tax-free revenue bonds.

New Mexico is challenged by not being able to invest directly to recruit new business development into the state. Instead, support must flow through tax incentives or similar

mechanisms. The barrier of high start-up costs is being carefully examined with the goal of providing businesses with creative incentives that actively attract new business. Being the fifth largest state by land mass, a statewide goal is to encourage rural economic development through new renewable installations and easy access to governmental officials towards stimulating vibrant business growth (Cottrell 2010).

Biofuels. The main areas for biofuel development in New Mexico include algal biofuels and non-food crops like camelina, castor, canola and the *Pongamia pinnata* tree. The algal biofuel production at Sapphire Energy in the Las Cruces area plans to be commercially producing 1 million gallons of fuel by 2011 through an investment of \$100 million in venture capital. Another 1 million gallons is expected by 2018. New Mexico currently has a small biodiesel industry, and the state government has supported its growth by passing legislation in 2007 (SB 489) that requires a 5 percent biodiesel blend by 2012. There exists a tax credit offsetting state corporate income tax liability on each gallon of diesel fuel blended with 2% of biodiesel (U.S. Department of Energy 2010). Abengoa Bioenergy USA owns and operates the Portales-based biofuels' facility with "the capacity to convert 11 million bushels of grain sorghum into 30 million gallons of ethanol and approximately 90,000 tons of distillers grains annually...Oil seed crops grown in New Mexico show that for every 1,200 acres cultivated, about 94,000 gallons a year of fuel and 40,000 tons of meal for feed will be produced with an estimated combined worth of \$1 million" (State of New Mexico 2010e).

Geothermal. The state offers numerous sources of geothermal potential and associated hot springs. Michael Albrecht, President of TBA Power, Inc., has proposed to integrate direct use applications (green houses, fish farms, spa and resorts, etc.) into geothermal power generation facilities that circulate some 10,000 gallons of hot brine per minute. For each facility the integration would have the potential to generate about 2,000 permanent jobs. Geothermal power generation facilities alone would generate only about five permanent jobs. Currently the Pueblo of Jemez and TBA Power (Pueblo's general contractor) have managed the largest geothermal exploration project in New Mexico for about twenty-five years. The final goal is geothermal power production with an integrated direct use component. Raser Technologies of Provo, Utah, has also recently begun a geothermal project in Lightning Rock, New Mexico. A conservative estimate of the geothermal potential throughout New Mexico based on USGS findings available for short term development with existing technology appears to be around 2,000 megawatts (Albrecht 2010, Raser Technologies 2010, TBA Power 2010).

Smart-Grid and Building Technologies. The New Mexico Renewable Energy Transmission Authority actively develops new transmission projects that promote renewable energy, and it is one of only eight energy transmission authorities in the entire country (Office of the Governor 2010a, RETA 2010). With a population of less than two million, it is critical that New Mexico plans an economically and technologically feasible approach to transmitting power well beyond state borders. Several major transmission lines are being planned within the state to move power to regional demand centers with expected completion dates scheduled for as early as 2014 (Miller 2010).

In 2008 New Mexico launched a "smart green grid" initiative, which involved collaboration among the state government, utilities, electricity cooperatives, and research centers

at government laboratories and universities (Robinson-Avila 2009). The state has also partnered with Japan's New Energy and Industrial Technology Development Organization, which will provide up to \$30 million in funding and cooperation with nineteen Japanese companies (State of New Mexico 2009). Using Internet-based technologies, the system will monitor energy use and remotely enable and disable energy sources for the grid, including distributed renewable energy sources. The system will be modeled on the state's supercomputer and tested in "microgrids," probably before 2014. When federal stimulus money became available in 2009, the state's Computer Applications Center submitted a \$50 million proposal for smart-grid technology development (State of New Mexico 2009).

In October 2009 the state announced Tres Amigas Superstation, which would link the country's three electricity grids—Eastern, Western, and Texas—near the city of Clovis, New Mexico. The planned superstation would occupy a twenty-two-square-mile private project on state trust land and would eventually have thirty gigawatts of transmission capacity, which would enable it to transmit renewable energy from the Southwest to the rest of the country (Associated Press 2009). Tres Amigas allows for a national transmission hub to be positioned where the three power interconnects are closely located. Via the use of voltage source converters (the latest proven technology of alternating current – direct current converters) at each of the nodes connected via a closed looped direct current transmission system, Tres Amigas controls the direction and magnitude of energy flow between the Western Electric Coordinating Council Interconnect, Eastern Interconnection (via the Southwestern Power Pool), and ERCOT in Texas, thereby increasing the efficiency of all three grids. The Tres Amigas Superstation promotes and facilitates the infusion of energy from various renewable projects to multiple high demand load centers located in the three grids, and it enables the diversified renewable energy sources to follow hourly demand fluctuations throughout a large portion of North America. This allows strategic decision making by load serving entities to meet the demand with appropriate energy (where it is coming from and when it will come), thereby optimizing energy resources. The Tres Amigas Superstation and the new renewable development projects will bring additional green jobs into the state. The first facility of its kind in the world, the Tres Amigas Superstation was granted permission on March 19, 2010, to negotiate price of transmission services to ensure fair prices. Governor Bill Richardson expects that the project could generate the spending of billions of local dollars and significant construction jobs throughout eastern New Mexico (Barbara 2010).

Solar. New Mexico has targeted the state's solar manufacturing industry for development in its green economy roadmap (State of New Mexico 2009). New Mexico State University hosts the Southwest Regional Experiment Station-Southwest Technology Development Institute, which does solar research, and Northern New Mexico College, which is located near the Los Alamos National Laboratory, hosts the Solar Energy Research Park and Academy. The Sandia National Laboratories performs solar testing and manages the Concentrating Solar Power Program. In the sustainable community of Mesa del Sol, near Albuquerque, two new solar research facilities were added in 2010 (Office of the Governor 2010d). New Mexico's solar manufacturing industry includes Schott Solar, Advent Solar, Emcore, Skyfuel and Sundrop.

Wind. New Mexico has in place 596 megawatts of online wind capacity with 545 megawatts of wind capacity planned to go online in the future (Mesalands Community College

2010). New Mexico ranks twelfth in the nation for wind production and has the highest per capita wind energy usage throughout the U.S. The Public Service Company of New Mexico generates 4 percent of annual energy production from wind, which is considered one of the highest of any utility (State of New Mexico 2009).

Albuquerque and Santa Fe

Sustainability Plans. The city of Albuquerque has received high rankings as a sustainable city, with especial attention given to its achievement of receiving 20 percent of its energy from wind. In 2005 the city launched its Renewable Energy Initiative (R-05-329). The initiative included an effort to green public buildings, a rebate program for renewable energy use by residents, an amendment to the industrial revenue bond process to allow points for renewable energy use, and green purchasing guidelines for the city government (Gordon et al. 2006). In 2009 the city's Climate Action Task Force issued recommendations for a climate action plan that included forty-nine recommendations for initiatives to promote carbon neutral buildings, increased levels of renewable energy, public and bicycle transportation, local food, and zero waste (City of Albuquerque 2010a, 2010b). Whereas Mayor Martin J. Chávez was a strong advocate of sustainability, after the transition to Mayor Richard Berry a new conversation emerged that focused on attracting new businesses evaluating green projects based on their return on investment. The "return on investment" framework has tended to replace the traditional sustainability approach to reducing large-scale ecological impacts as in global warming.

Green-Building Initiatives. With respect to buildings, in 2007 Albuquerque launched the Energy Conservation Code, which requires that new buildings be 30 percent more energy efficient than past benchmarks. New and renovated city buildings will also achieve a 50 percent energy reduction in fossil fuel usage in comparison with the average for similar city buildings as established by the U.S. Department of Energy. For the private sector, the city issues voluntary certificates for buildings that meet its green standards (City of Albuquerque 2010a, 2010b).

Santa Fe has a low-interest program through HomeWise that allows participants to borrow money at an attractive 4 percent fixed interest rate for up to a thirty-year term. Income qualified homeowners within city limits can borrow up to \$30,000 for both energy-efficiency and renewable-energy projects. Over \$750,000 has been loaned out through the program on projects such as increased insulation in walls and roofs, solar air and water heating systems, photovoltaic systems, and energy-efficient windows and doors. An important stipulation of the program is that the contractors hired to do the work must be from Santa Fe County. The program logic allows for the relatively "low hanging fruit" of energy conservation and efficiency upgrades to be made before more expensive renewable-energy purchases are set. Nick Schiavo, Santa Fe's Energy Specialist, notes the importance of growing jobs locally for both manufacturing and service sectors. His belief in having higher tax credits for various renewable and efficiency products made nationally creates the incentive or motivator towards bringing jobs back to America. Unfortunately, under the current federal tax credit setup for renewable energy, many dollars leave the country to purchase photovoltaic panels manufactured overseas. An example of how General Electric reinvested in the American worker can be attributed to the ARRA stimulus funds, because ARRA dollars stipulated that the lamps and ballasts for lighting projects must be

manufactured in the U.S. General Electric modified one of its existing U.S. manufacturing facilities to begin production of lamps and ballast to meet this criteria.

Santa Fe County continues to work on launching New Mexico's first Property Assessed Clean Energy (PACE) Program, which, pending federal approval, allows homeowners and businesses to obtain loans for renewable energy systems and repay them through property taxes (New Mexico Business Weekly 2010).

Green Jobs Training. In 2008 the city of Albuquerque developed a green jobs corps modeled on the one in Oakland, California, and Mayor Martin Chávez introduced a green jobs pledge for mayors at the International Council for Local Environmental Initiatives (ICLEI). Mayor Richard Berry's approach to green job growth is through an emphasis on energy efficiency and solar.

Green Business Initiatives. The city of Albuquerque has worked with the state government to develop a solar industry. The 2005 Renewable Energy Initiative included an allocation of up to \$1 million in tax credits and incentives for solar firms that located in the city. The city has also benefited from the state government initiatives by becoming the headquarters of the some of the solar energy companies that have located in the city, such as Advent Solar. The city helped to recruit Schott AG, a German firm that relocated its solar manufacturing facility to the city starting in 2008. The city's economic development office foregrounds the solar energy research and economic development assistance of the Sandia National Laboratories (City of Albuquerque 2007). As a result, the elements are in place for the region to transition from a solar energy manufacturing cluster to a solar energy innovation cluster.

Acknowledgements

We thank the following for interviews and/or comments on the draft: Michael Albrecht (President TPB Power, Inc., Los Alamos, New Mexico), John O'Connell (environmental planner, City of Albuquerque), Frank Barbara (environmental planner, City of Albuquerque), Frank Barbera Director of Reliability Assurance, Tres Amigas Superstation), Sarah Cottrell (Deputy Secretary, New Mexico Environment Department), Ken Hughes (Clean Energy Specialist, State of New Mexico), Brendan Miller (Green Economy Manager, New Mexico Economic Development Department), and Nick Schiavo (energy specialist, Santa Fe).

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