

*Volume 3: The States Go Green - New Mexico.* In Kim Kennedy White and Leslie A. Durham (Eds.) *America Goes Green: An Encyclopedia of Eco-Friendly Culture in the United States* (pages 1075-1081), Santa Barbara, CA: ABC-CLIO, ISBN: 978-1-59884-657-7.

## **New Mexico**

New Mexico is a state in the balance environmentally. Vast areas of natural wilderness and parks are contrasted by large fossil fuel reserves throughout the state. The federal government provides quite a lot of support to the state by way of three Air Forces bases, the White Sands Missile Range, and two large research facilities, Sandia National Laboratories and Los Alamos National Laboratory. The sparse population, a high percentage of which is Hispanic or Native American, depends on the oil and gas industry, tourism, and the federal government for their livelihood.

Fossil fuels have an immense presence here and natural gas production is enormous, making New Mexico one of the largest producers in the United States. The controversial extraction method known as fracking is being debated between industry and residents and this state may yet provide some of the best responses to this growing issue. Although fossil fuels are a plentiful resource and the income is important, the state's ample sunshine, wind, and investment in new technologies is paving the way for a growing renewable energy sector.

Dairy and cattle ranching dominate agriculture in New Mexico. The impacts that these activities have on air and water resources are huge, but there have been efforts to enact restrictions and hold the industry responsible for pollution.

The metropolitan corridor between Albuquerque and Santa Fe is very environmentally progressive, but even in small, rural areas, there are examples of stewardship to the land by residents.

### **Fossil Fuels and Green Energy**

New Mexico is a leading producer of natural gas in the United States. Actually, most fossil fuels, crude oil, coal and natural gas, exist in abundance in this state. A portion of the Permian Basin, one of the nation's largest oil and gas deposits, extends from Texas into southeastern New Mexico. There are three oil refineries in the southern part of the state with pipelines that connect them to local and regional markets (EIA, 2009).

Sizable oil, natural gas and coal deposits are also found in the northwest, in the San Juan basin, which extends into Colorado. The rich gas deposits of the San Juan are the biggest proved natural gas deposits in the U.S. Coalbed methane production, developed in the 1990's, is now a substantial fraction of New Mexico's natural gas output (EIA, 2009).

Energy production is important to New Mexico's economy, and natural gas is a cleaner alternative to coal. However, environmental impacts shadow the

history of natural gas development in the state. In 1967, collaboration between the U.S. government and the energy industry at that time resulted in a belowground nuclear detonation at the Gasbuggy site in northwest New Mexico (DOE, 2011). The test produced improved gas production from the fractured shale, however radiation made the site unusable. Today the U.S. Department of Energy (DOE) Legacy Management has responsibility for continued monitoring of the site.

Hydraulic fracturing, or fracking, is an oil and gas extraction technique that involves injecting fluids into a source rock, like shale, thereby generating fractures and promoting production. About half of all natural gas production in the U.S. uses fracking as of 2011. Environmental concerns have increased with increased use of the practice. The method uses large amounts of water and may have chemical additives that are harmful to the environment. If the injection wells used are not properly sealed, fluids can leak into aquifers or other wells. Improperly or poorly stored fracking fluids at the surface can also discharge into the surrounding areas and pollute air and water resources. Fracking incidents have made headlines in recent years and the U.S. Environmental Protection Agency (EPA) has begun re-examining the regulation of fracking fluids (EPA, 2011).

The increased use of fracking in surrounding states, accompanied by growing environmental concerns, have lead citizen groups to push back against the oil and gas industry in New Mexico (Matlock, 2011). Some northern counties, such as Santa Fe, Rio Arriba and San Miguel, have stopped or slowed the use of fracking with county ordinances and moratoriums. In Mora County, residents are split over the issue. Drilling Mora County is a group fighting to have drilling halted, but in the meantime they are pushing for better oversight of the industry and disclosure of the exact fluids and chemicals that are used in hydraulic fracturing wells.

While much of the state depends on the fossil fuels industry, support for expanding the use of renewable energy resources is quite strong. The state adopted a set of standards in 2007 to require 20% of electrical production from renewable sources by 2020. In addition, a large solar thermal power plant has been planned for construction near El Paso (EIA, 2011).

The federal government has provided incentives to states to develop “smart grids”, where digitally enable electrical grids respond to supply and demand quickly allowing the grid to perform more efficiently and conserve energy use. The Green Grid Initiative is New Mexico’s response to this new federal energy drive. The proposal calls for far-reaching changes to update the aging electrical grid, modernizing it as a smart grid and also incorporating green and renewable energy components (Robinson-Avila, 2009).

Most recently, the state has an arrangement with Pegasus Global Holdings, a private company, to create a center in the state to test a new green energy city. The proposed 20 square mile center will be a place to conduct trials on new technologies and clean energy initiatives on a model “city” (Pegasus Global Holdings, 2011).

## **Milk and Water**

Agriculture in New Mexico is a small part of the economy with a diverse set of products, ranging from dairy farming and cattle ranching to growing chili peppers, cotton, peanuts, and hay. The warm, dry climate is perfect for growing grasses and grazing herds, and consequently dairy farms are the largest segment of the agricultural industry (USDA, 2011). While dairy farming as an industry is dwarfed by the military and oil and gas operations in this state, the activities of some of the larger dairy operations have a disproportionate affect on the air and water resources.

Dairy farming in the United States has changed considerably over the past four decades, with each farm growing in herd size but shrinking in area. Rather than allowing animals to graze, these concentrated operations pack more cows into smaller areas and bring the feed to the cows. One chief consequence of this new model is the amount of manure produced is also concentrated on a smaller plot of land. Animal waste is held in ponds, solids are separated out for compost, and liquids are sprayed onto fields as fertilizer. This system rarely works seamlessly and so the manure has frequently leaked into nearby water resources. The liquid waste from manure can carry nitrates and antibiotics and bacteria such as *E. coli*, salmonella, and listeria into the water. This hazardous mix can pollute areas far downstream or seep into aquifers. Although federal laws are in place to protect these resources, it is usually up to the individual states' environmental departments to enforce the laws and also to enact stricter, local regulations to deal with specific issues.

New Mexico's Environment Department came face to face with a large dairy business, ParaSol, in 2008 and for the first time since the 1980's, denied their permit to construct a new 2000-cow facility near the town of Caballo. The motivation came from a department hydrologist named Bill Olson, and a citizen's group based in Caballo lead by resident Jerry Nivens. Letters and visits to the department made the difference and the permit was denied. Although a fight from ParaSol ensued, the resulting negotiations streamlined and strengthened the permitting process. In the end, ParaSol gave up the fight to build the facility near Caballo (Ogburn, 2011).

This victory for the environment was a long time coming. The history of dairy operations in New Mexico was much like those in many western states. The industry exerted pressure on state environmental departments through powerful lobbies, allowing their dairy businesses to avoid or relax many environmental regulations. Although more than half of dairy farms in New Mexico have polluted ground water, none have started the mandated clean-up.

However, the department is still turning things around and pressure from citizens groups continues to make a difference. In 2010, the New Mexico Environment Department denied a second permit and the newest department Secretary has publicly thanked concerned citizens for protecting the environment. The state has also passed new, stringent regulations for the containment and monitoring of waste from dairy operations. Other western states with large dairy operations are watching to see what happens in New Mexico and

this new direction may inspire stronger environmental protections and regulations in neighboring states (Ogburn, 2011).

## **The Progressive Urban Corridor**

The cities of Albuquerque, Rio Rancho and Santa Fe encompass a majority of the residents of New Mexico. This corridor of cities in the northern part of the state has a culture that is progressive and green in most of the surrounding areas. It is home to higher education, arts, research and a diverse population. There are green building initiatives and a green real estate market, a push to change transportation infrastructure, and even a green filmmaking industry.

The largest city in New Mexico is Albuquerque, with a population of over 900,000 in 2011. It is a scenic place situated in the north central part of the state, with the Sandia Mountains rising high above the city to the east and the Rio Grande running through it. This is home to Kirkland Air Force base, Sandia National Laboratories and Petroglyphs National Monument.

As a fast growing urban area, the municipal government of Albuquerque has been responsive to the need to control urban sprawl and consider the impact that an expanding city has on the environment. With the passage of the Planned Growth Strategy, the city involves residents in creating a scheme for managing infrastructure and resources to address city improvements and expansion in a comprehensive and environmentally sustainable way. By developing building plans with the entire metropolitan area in mind, space can be utilized more efficiently and better building materials can be employed, leading to energy and water resources being conserved. This allows transportation to become more efficient as well, decreasing the dependency on cars and improving air quality. Community centers and transit oriented corridors have replaced traditional suburban development plans.

However, Albuquerque's green building codes have been put to the test. Finding the codes burdensome, building contractors challenged the legality of the new standards. Led by the Air Conditioning, Heating and Refrigeration Institute (AHRI), they sued the city in the U.S. District Court of New Mexico in 2008. The court granted a preliminary injunction on the implementation of the new energy efficiency standards because they found that they exceeded the federal standards. Although the new building codes are not yet enforceable in Albuquerque, the final decision on the legality of the standards is still pending (Columbia Law School, 2011).

Santa Fe is the capital of New Mexico, and at nearly 7,200 feet in elevation, it is the highest state capitol in the United States. It is a center of arts and culture as well as a vibrant science and technology focus with its proximity to Los Alamos National Laboratory, the Santa Fe Institute, and the National Center for Genome Resources.

Sustainable living in the city is modeled through Santa Fe's Residential Green Building Code (Santa Fe 400, 2011). The code continues to be revised

and is flexible in interpretation and implementation, in part as a response to the legal issues that plagued Albuquerque's green building codes. This flexibility also enables innovative solutions and new technological developments to be incorporated into the building codes. Construction goals include efficiency and techniques that take advantage of the northern New Mexico climate, such as traditional passive solar adobe structures. In addition, residents should enjoy lower operating costs while the environment benefits from fewer impacts.

Santa Fe hosts a fledgling filmmaking industry. The New Mexico Film Office, based in Santa Fe, has a Green Filmmaking Program, part New Mexico's Green Filmmaking Initiative. It is a volunteer program available to television and film producers wanting to be more environmentally sensitive in the course of conducting their business in New Mexico. Materials are made available to instruct productions on recycling, making local or organic purchases, donating unused/unwanted items to local organizations, using non-toxic or low-toxic supplies, leasing hybrid/electric vehicles and using alternative fuels, managing water resources and harvesting rainwater, and other waste reduction procedures (NM Film Office, 2011).

## **Green Zia**

The state Environment Department implemented a program called the Green Zia, under the Pollution Prevention program. The program encourages environmental leadership from businesses and other groups throughout the state by providing guidelines for sustainability and then rewarding those organizations that are the most successful. This volunteer program has eligibility requirements and several levels that can be achieved through multiple years of participation and compliance. Organizations must go beyond adhering to local ordinances and laws and make a substantial contribution to the environment through conserving energy or water, or improving the natural world through significant reductions in waste or pollution (NM Environment Department, 2011).

A Green Zia "Gold Level" was awarded to the Tempur-Pedic company for 2010-2013. This mattress and pillow manufacturer has an enormous 850,000 square foot facility in Albuquerque and distributes products throughout the world. The company has been recognized for its continuing energy efficiency and waste reduction achievements. The company also sets laudable minimal to zero-landfill and recycling standards.

Another company that has been recognized by the Green Zia program at the "Silver Level" is the Raytheon Diné Facility. The company has a 68,500 square foot missile systems manufacturing facility that is leased from the Navajo Nation. Located at the Navajo Agricultural Product Industry near Farmington, the manufacturer employs mostly Native Americans, at 85 percent of their 255 person workforce. The company is noted for hazardous waste reductions and a corporate sustainability program.

The general attitude of New Mexicans towards the environment is one of balance. A recent survey found that many residents of the state firmly believe

that economic progress can, and must, co-exist with environmental protections (State of the Rockies Project, 2011). The Green Zia program embodies this belief.

## **Conclusion**

The landscape of New Mexico is renowned for deserts, mountains and caves. There are 13 national parks and many state parks. Over a million visitors every year find their way to this state to see Carlsbad Caverns and Guadalupe Mountains National Parks, White Sands National Monument, the Gila Cliff Dwellings, Petroglyph National Monument, and much more. Native American culture blends with a strong Hispanic heritage to make this a unique place in the southwest.

New Mexicans understand the continual balancing act that must be performed between developing the many military, federal research and fossil fuel resources and maintaining the natural beauty that makes this state the “land of enchantment”.

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