



GEOHERMAL HEAT PUMP CASE STUDY:

## Central New Mexico Community College



**Name:** Central New Mexico Community College

**Location:** Albuquerque, New Mexico

### System Specifics:

- Closed-loop, vertical system totals:
  - 474 boreholes drilled 300 feet deep
  - 229,288 square feet of building space
- 3 systems, 3 buildings, 3 campuses
  - System in Smith Brasher Hall on Central New Mexico (CNM) Community College's Main Campus was part of a 2017 upgrade
  - Systems in Rio Rancho Campus building and Westside Campus building constructed in 2011 and 2013

### Unique Features:

- All 3 buildings are LEED certified:
  - Rio Rancho Campus – LEED Gold
  - Smith Brasher Hall – LEED Gold
  - Westside Building – LEED Silver
- Ground heat exchangers are located under parking lots and empty fields

**Cost Savings:** Rio Rancho has experienced a 48% reduction in energy costs per year

The 61,400-square-foot Rio Rancho Campus, built in 2011, is one of the largest higher education buildings in New Mexico to earn Leadership in Energy and Environmental Design (LEED) Gold Certification from the U.S. Green Building Council. Its geothermal heat pump system, along with other energy-saving measures, has reduced the building's utility costs by 48%. *Photo from Central New Mexico Community College*

### A Commitment to Future Generations

The largest community college in New Mexico, Central New Mexico Community College (CNM) is committed to achieving lower resource impacts for future generations. As part of these efforts, CNM has incorporated geothermal heat pump (GHP) systems in three buildings on three of its campuses—Rio Rancho, Westside, and the Main Campus, in Smith Brasher Hall.

CNM also uses these buildings as living laboratories. Placards and posters placed throughout the buildings explain geothermal heat pump systems, daylighting, water reuse, recycling, and other energy-efficiency measures to students, faculty, and visitors.

### Certifiably Comfortable

CNM takes its future-forward commitment even further by requiring that all new or updated campus buildings achieve a minimum Leadership in Energy and Environmental Design (LEED) Silver Certification from the U.S. Green Building Council. LEED certification ensures the buildings are both comfortable for occupants and highly energy efficient.



**Earth first.** As part of Central New Mexico Community College’s commitment to energy-efficient practices, Smith Brasher Hall is one of three buildings that now include geothermal heat pump systems. *Photo from Central New Mexico Community College*

- Built in 2011, Rio Rancho is one of the largest higher education buildings in New Mexico to earn LEED Gold Certification.
- In addition to receiving accolades for its architectural style, CNM’s Westside Campus, built in 2013, received a LEED Silver Certification.
- Renovated with a geothermal heat pump system in 2017, Smith Brasher Hall on CNM’s Main Campus is an all-electric LEED Gold building.

CNM students, faculty, and visitors enjoy year-round comfort with building temperatures holding steady at 72 degrees—even during big events in the Smith Brasher Hall auditorium.

### Lessons Learned on the Cutting Edge

Being among the first to adopt new technology has its downsides, as CNM learned when the college tried but could not find a New Mexico-based contractor to install its geothermal heat pump systems.

Hiring trained and experienced staff to manage and maintain the building automation systems and HVAC controls also proved challenging. While


CNM’s geothermal heat pumps don’t require much maintenance, staff still need to be trained to understand and operate the systems effectively. The college is addressing this need locally by offering courses in geothermal heat pump system operation and maintenance.


Finally, after experiencing the inconvenience of having air volume regulator units spread throughout Rio Rancho and Westside buildings, CNM installed the Smith Brasher Hall units in a central location to make them easier to manage and maintain.



We build our buildings to last 50 years. These geothermal heat pump systems will operate throughout the buildings’ lifetimes, which will make a huge difference for the college. ”

Marvin Martinez, Executive Director, Physical Plant,  
Central New Mexico Community College

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DOE/GO-102026-7005 • February 2026