NREL FACTS

Public Affairs • 1617 Cole Boulevard • Golden, Colorado 80401-3393 • 303.275.4090

NREL Facilities

NREL's Visitors Center

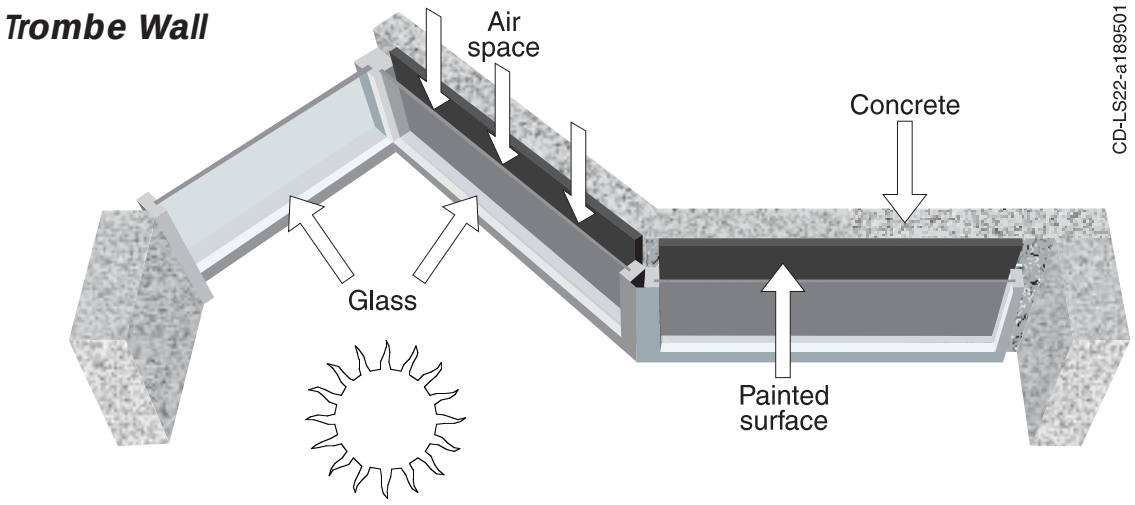
Making a statement with intelligent building design

While NREL's Visitors Center houses a variety of renewable energy and energy efficiency exhibits, the building itself makes the most powerful statement. Incorporating passive solar energy technologies, the building is a testament to how intelligent architectural design can enhance energy efficiency while still creating a distinctive visual appearance. The facility was built by the Midwest Research Institute—which manages and operates NREL for the U.S. Department of Energy (DOE)—and donated to DOE in 1994.

Passive Solar Energy Features

The dominant energy efficiency technology—and most striking architectural feature—is an innovative Trombe wall that lights and heats the exhibit hall. The huge, undulating Trombe wall has five sections, each angled in a "V" shape. On one side of the "V" are southeast-facing windows that provide natural daylighting and early morning heat. Horizontal beams in front of the windows prevent direct sunlight from entering during the summer.

On the other side of the "V" is a thick concrete wall coated with black paint and faced with glass. A small airspace separates the wall from the glass. Direct solar radiation is absorbed by the wall, trapped by the glass and conducted inward to gradually heat the exhibit hall.



In addition to the Trombe wall, daylighting is also provided by skylights and north-facing windows.

Exterior Insulation

The Visitors Center's exterior walls are designed to help improve the building's energy performance through an exterior insulation system that functions as an energy storage device. The system consists of 8 inches of concrete block, 4 inches of foam insulation and a layer of synthetic stucco on the outside. By placing the insulation on the exterior of the building, the mass provides an effective method for storing heat.

Efficient Lighting

A lighting system designed by Public Service Company of Colorado and NREL has increased the energy efficiency of the Visitors Center, decreasing energy costs and improving visitors' comfort. Decorative, functional fixtures use compact fluorescent light bulbs, motion and light sensors to turn on and off lights and exit signs illuminated by light emitting diodes (LEDs). Many of the fixtures are available commercially and can be incorporated into commercial or residential buildings.

Energy Management System

In conjunction with the Colorado School of Mines, NREL engineers are experimenting with an energy management system that will optimize the integration between the heating, ventilation and air conditioning system and the building's passive solar energy features. This system maximizes comfort while minimizing energy consumption.

Visitor Center Exhibits

The exhibit hall features various displays, interactive exhibits and videos that explain how people can use renewable energy technologies in their homes, vehicles and communities. The Visitors Center also includes a 75-person auditorium and a public reading room containing DOE documents, NREL-related fact sheets and brochures, and consumer information.

Visitor Center Activities

The Visitors Center is open for self-guided tours from 8:30 a.m. to 5 p.m., Monday through Friday. Groups are encouraged to make advance reservations. Free consumer workshops are held periodically to provide information on incorporating renewable energy into the home. The next consumer workshops are scheduled for the fall of 1998. For more information on the Visitors Center, call 384-6565.

Wind-Powered Electricity

The Visitors Center's entire electric load of approximately 4,000 kilowatt hours per month comes from the "Windsource" program of the local utility, Public Service Company of Colorado. The Windsource electricity is generated by large wind turbines sited near the Wyoming border.