

Building GREEN in Greensburg

5.4.7 Arts Center



Credit: Lynn Billman, NREL

Architecture students and faculty from the University of Kansas built the 5.4.7 Arts Center to make art accessible to everyone and to give aspiring artists a place to learn about the arts through classes, exhibits, and performances. The name 5.4.7 comes from the date the tornado devastated Greensburg, Kansas: May 4, 2007. It is the first building in Kansas to achieve a Leadership in Energy and Environmental Design (LEED®) Platinum rating from the U.S. Green Building Council.

ENERGY EFFICIENCY FEATURES

- A **south-facing building orientation** maximizes winter heat gain and use of natural light
- **Well-insulated building envelope** using cellulose insulation made from recycled newspapers maximizes energy efficiency
- A **tight north facade** protects the building from cold in winter
- **Tempered glass** protects the reclaimed wood siding from harmful UV rays and keeps the building cooler in summer
- A thick **concrete floor** absorbs the sun's heat in the winter to warm the building
- The **white roof** reflects heat away from the building to keep the building cooler
- **South-facing windows** flood the interior with natural light and heat the concrete floor
- **Energy-efficient windows** reduce heat loss in winter and keep the building cool in summer
- **Skylights** provide lots of natural light to reduce electricity use during the day
- **Occupancy sensors** turn off lights in vacant rooms to reduce electricity consumption
- **ENERGY STAR®** refrigerators and freezers in the kitchen save energy
- **Energy-efficient lights** save energy at night
- **Light colors** used on surfaces and finishes help natural light penetrate further into spaces
- **Drought-tolerant plants** on the roof shade it in summer and keep the building cooler.

RENEWABLE ENERGY FEATURES

- Three **wind turbines** produce 600 watts each of electricity for the building
- Eight **solar panels** on the roof produce electricity for the building
- An **inverter** in the basement converts power produced by the wind and solar energy systems from DC to AC for use by office equipment and appliances
- A **bank of 12 batteries** stores power produced by the wind and solar energy systems for emergency backup power
- Three 200-foot deep **geothermal wells** heat and cool the building.

WATER EFFICIENCY

- The **low-flow toilets** are self-flushing and the sink faucets are **motion activated**
- **Rainwater** is collected and stored in a 1500-gallon cistern to water the landscaping
- **Native buffalo grass** is used for landscaping because it requires little water.

SUSTAINABLE MATERIALS

- **Reclaimed lumber** from an abandoned building is used for the exterior siding
- **Sustainably harvested lumber** is used for 50% of the interior and is certified by the Forest Stewardship Council (FSC)
- The kitchen countertops are made from **compressed recycled cardboard**.

AIR QUALITY

- **Cross ventilation** is created by opening the sliding doors and skylights
- **Nontoxic products** were used, such as paints with low levels of volatile organic compounds.

LEED RATING ACHIEVED

- Platinum