Building GREEN in Greensburg



Credit: Lynn Billman, NREL

5.4.7 Arts Center

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

RENEWABLE ENERGY FEATURES

- Three *wind turbines* produce 600 watts each of electricity for the building
- 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

- 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
- 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.



Energy Efficiency & Renewable Energy



• 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



