

Building GREEN in Greensburg

DOE and NREL Technical Assistance



Courtesy of Federal Emergency Management Agency

After a tornado destroyed 95% of Greensburg, Kansas, in May 2007, the town made a commitment to rebuild green. For 3 years the U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) provided technical assistance to help Greensburg incorporate ambitious renewable energy and energy efficiency strategies. When completed, Greensburg will have the highest concentration of U.S. Green Building Council Leadership in Energy and Environmental Design (LEED®) Platinum and Gold buildings per capita in the United States.

DOE/NREL provided technical assistance to Greensburg, Kansas, in the following areas.

MASTER PLAN FOR REBUILDING GREEN

- Completed detailed studies on renewable energy sources, cost-effective energy options, and potential integrated energy solutions
- Worked with federal, state, and local agencies; city leaders and residents; energy consultants; and others to further the town's vision of becoming an affordable sustainable community.

HIGH-PERFORMANCE BUILDINGS

- Set aggressive energy efficiency goals for all new homes to use 30%–40% less energy than before the tornado, new city buildings to achieve LEED® Platinum, and other commercial and public buildings to be designed to LEED Platinum or Gold.

COMMUNITY WIND ENERGY

- Conducted detailed computer modeling and site measurements and analysis of Greensburg's wind resource
- Worked with local utility partners, the Kansas Energy Office, and potential power providers to help Greensburg officials pursue construction on a 12.5-megawatt (MW) wind farm.

DISTRIBUTED RENEWABLE ENERGY

- Recommended solar- and wind-friendly city ordinances
- Drafted safety and reliability ordinances, inter-connection agreement, and net-metering policies to help local distributed system owners get the most value for electricity sent back to the grid

- Completed studies on potential local and regional biomass resources for providing heat to buildings or local industries
- Assisted with planning for 50-kilowatt (kW) wind turbines at the hospital and school; several small turbines at the BTI-Greensburg John Deere Dealership; solar photovoltaic (PV) systems on the Business Incubator; and light emitting diode (LED) streetlights in major portions of the community.

ALTERNATIVE TRANSPORTATION

- Outlined opportunities for using electric and hybrid-electric vehicles, as well as alternative fuels and filling stations.

EDUCATION AND OUTREACH

- Delivered locally targeted presentations, fact sheets, training sessions, and feasibility studies; organized a special visit for K-12 students and residents by NREL's mobile RnE²EW education van
- Shared project details, successes, and lessons learned through a buildings database, numerous publications, Webinars, a Web site, and the media.

Projects completed with assistance from DOE/NREL include:

- **LEED® Platinum Buildings:** BTI-Greensburg John Deere Dealership, SunChips® Business Incubator, and Prairie Pointe Townhomes (others certifications pending)
- **Highly-efficient Commercial Buildings:** Centera Bank, City Hall, Dillons Kwik Shop, Dwane Shank GM Dealership, Greensburg State Bank, Kiowa County Courthouse, Kiowa County Memorial Hospital, The People's Bank, and USD 422 Greensburg K-12 School
- **Residential Buildings:** Of the first 190 homes built after the tornado, about half were analyzed for expected energy savings (heat and electricity), and averaged 40% less energy use than code
- **Wind Farm:** Produces 12.5 MW of energy, or enough to power every home, business, and municipal building in the town, as well as surrounding areas

DOE Web Site: www.buildings.energy.gov/greensburg | Greensburg Sustainable Building Database: <http://greensburg.buildinggreen.com/>