



Case Study in Building Science: Sun Prairie High School

What is Building Science?

Building Science is the branch of science dealing with construction, maintenance, safety, and energy efficiency of buildings. By incorporating building science topics or lessons into the curriculum, you bring real life situations to the classroom. It is important to inform students (future home buyers) how to recognize a comfortable, durable, and energy efficient home.

Students Building Wisconsin ENERGY STAR® Homes

In classrooms and construction sites across the state, technology education students are gaining the skills they will need to become effective members of tomorrow's building workforce. Led by innovative educators and community partners, these students are learning what it takes to be outstanding employees by building Wisconsin ENERGY STAR Homes.

The Wisconsin ENERGY STAR Homes Program uses the Environmental Protection Agency's (EPA) strict guidelines for energy efficiency as a basis of the "certification process" for each home. In addition, homes must comply with specific building requirements for final certification from the Wisconsin ENERGY STAR Homes Program. Four basic areas of building science and performance are addressed through the certification process: air flow, heat flow, moisture flow, and indoor air quality. When implemented correctly, the standards and guidelines can enhance a home's comfort, safety, durability, and energy efficiency.

The goal of students building Wisconsin ENERGY STAR Homes is to introduce them to energy efficient building techniques. Other benefits include promoting awareness about the environment, energy efficiency, and health, while teaching students and the community how to save energy. These students will be building tomorrow's residential inventory. By supporting their

education today, we can be sure that tomorrow's homes will be high quality and energy efficient.

There are many examples of students building Wisconsin ENERGY STAR Homes in Wisconsin. One example is at Sun Prairie High School. This is the second year instructor Tommy Sanders and the students at Sun Prairie have built a Wisconsin ENERGY STAR Home.

Sun Prairie Students Gain from Constructing Wisconsin ENERGY STAR Homes

The 2007-08 Home Construction Class completed this year's home on the last day of school. The 1454 sq. ft. home has an average energy cost of only \$109/month and also qualifies as a Green Built Home, a national award winning green building initiative that reviews and certifies new homes and remodeling projects that meet sustainable building and energy standards. This home earned 134 points total—of which 10 points were acquired through obtaining the Wisconsin ENERGY STAR Homes certification—surpassing the 60 point requirement.

An offer on this home was accepted on June 6th, less than 4 weeks after it was listed on the market. Tommy Sanders explains, "I think Wisconsin ENERGY STAR Homes certification contributed to the quick sale. Other factors I believe contributed include Green Built, simple floor plan, no center beam or posts in 8' 9" sidewall basement, installation of egress window in basement for expansion/finish, 24' x 28' garage, rear deck, fireplace, better-than-average construction, and a fair market price."

Schools that have been involved with Wisconsin ENERGY STAR Homes projects: (as of Summer 2008)

- Appleton School District
- Hartford Union High School
- La Follette High School - Madison
- Lakeland Union High School - Minocqua
- Merrill High School
- Northland Pines High School - Eagle River
- Parker/Craig High Schools - Janesville
- P.J. Jacobs Junior High School - Stevens Point
- Rhineland High School
- Sheboygan North & South High Schools
- Sun Prairie High School
- Stevens Point Area Senior High

Schools that have been involved with Home Performance with ENERGY STAR projects: (as of Summer 2008)

- Kiel High School



Benefits of Working with Area Professionals

Sun Prairie students worked with consultant Mark Fredenberg of EMF Home Inspection, Inc. in Cottage Grove, Wisconsin. Working with a professional in the field of energy efficiency is a great way to introduce students to careers in the energy field while showing them how to build energy efficient homes and test their performance. Sanders explains that Mark was “gracious enough to conduct final testing with 25 additional students present from an 8th grade class.”

Sanders states, “Now and in the future, it is critical that energy efficient construction methods and materials be utilized as standard practice. While the expense of some types of systems can be cost-prohibitive, the methods, materials and modifications of traditional systems carries little additional expense. A consultant partnering with Wisconsin ENERGY STAR Homes can assist you with information and advice about implementing these methods and materials.”

How to Get Started

If you’re interested in building a Wisconsin ENERGY STAR Home with your students, the first step is to contact a consultant that will guide you through the certification process. A list of consultants can be found on the Focus on Energy Web site at focusonenergy.com. The consultants can do their testing while students are at the job site to show them the tests they perform to ensure energy efficiency and tightness in the house.

Rich Urban, a consultant working with Rhinelander, Minocqua, and Eagle River students expresses his enthusiasm about working with student-built home projects stating, “I hope to show the students that building science is important in today’s world. They can build a high performance home from site selection to the final piece of trim, using building science as a tool.”

The Wisconsin K-12 Energy Education Program (KEEP) was created to help promote energy education in Wisconsin. KEEP receives its primary funding through Focus on Energy. KEEP offers professional development opportunities, fun student involvement projects, educational energy resources, networking opportunities and more for Wisconsin’s public and private K-12 schools. For information about KEEP, call 715.346.4770 or visit www.uwsp.edu/keep.

Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment and control the state’s growing demand for electricity and natural gas. For more information call 800.762.7077 or visit focusonenergy.com.

Wisconsin ENERGY STAR Homes is one of the Focus on Energy Residential Programs. New homes are constructed to meet program standards and are estimated to be more than 25 percent more energy efficient than homes built to Wisconsin’s Uniform Dwelling Code. To date, the more than 350 builders who have partnered with the Wisconsin ENERGY STAR Homes Program have constructed more than 9,000 new homes. For information about the program, call (800) 762-7077 or visit focusonenergy.com.

Home Performance with ENERGY STAR is one of the Focus on Energy Residential Programs. It is designed to provide owners of existing Wisconsin homes a cost effective way to reduce their energy bills and enhance the safety and comfort of their homes. To participate, a homeowner must have a comprehensive home evaluation and work completed by consultants and contractors partnering with the program. To date more than 3,500 whole house projects have been completed under the Home Performance with ENERGY STAR Program. For information, call 800.762.7077 or visit focusonenergy.com.



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