

Project E²

Anyone can do this – energy efficiency techniques don't have to be expensive or difficult to install.

by Carrie Law

PAINTED WALLS, SOFT CARPET, SHINGLES AND siding...it all looks pretty typical in the newly constructed home built by Sioux Valley Energy.

"It's what's inside the walls, in the rafters, under the floor and between the studs that makes this house anything but typical," said Carol Ackerman, Sioux Valley Energy manager of marketing.

Colman, S.D.-based Sioux Valley Energy is dubbing the home "Project E2".

"It's catchy and it sums up exactly what we're trying to do...educate our members and contractors about energy efficiency, thus the name-Project E2," added Don Marker, CEO and general manager.

The goal of Project E2 was to construct an affordable, energy efficient home with "off-the-shelf" technologies (systems and products that can be purchased locally). It's located at 1801 River Bluff Drive near Brandon, S.D. – situated just south of the cooperative's Brandon Service Center. Ackerman says they chose the location so it would be visible to their members.

"Project E2 is so much more than simply building a house...that's not our business. Our business is to serve our members and distribute electricity. It is inevitable that rates will go up and power generation is not keeping up with demand.

We want our members to be able to visualize the concept of energy efficiency and the importance it has on their monthly bills and to the power grid, systemwide," said Ackerman.

Before any hammers began swinging, Sioux Valley's Marketing Department, which consists of Ackerman, Jennie Patrick and Susan Hilmoe, conducted research on income levels, housing markets and energy efficiency building practices. The group also tapped into its working relationship with the Home Builders Association of the Sioux Empire (HBASE) and the South Dakota Public Utilities Commission.

Sioux Valley Energy sent out a request for construction proposals in March to HBASE members. Thirteen applications were received and the final list was narrowed to four homebuilders. Those homebuilders were interviewed and Gregg and Cully Lebert were chosen to build the home.

"The Leberts have a great philosophy – seal up air leaks and you'll save energy," said Ackerman.

Several techniques were utilized to improve the efficiency of the home. All the framing joints, along with the sills, were caulked to seal the house up tight. In the basement, the floor was insulated with two-inch Styrofoam sheathing and the walls with one-inch Styrofoam sheathing. Insulated





R-Board sheathing, made from an environmentally friendly product, served as the exterior walls and helped provide a thermal break from the outside elements. Tyvek® house wrap was used to control air and moisture infiltration. The heel height on the roof trusses was raised to 7-¾ inches versus the standard 4 inches. This allowed room for a true thermal break and maximum insulation value.

“We really concentrated on the ‘envelope’ of the home, keeping the outside air out and inside air in,” said Ackerman. She added, “After a thorough analysis, the Marketing Department decided to install a 15-SEER air-source heat pump with an electric furnace back-up and a whole-house heated air exchanger. It is an extremely efficient system and very affordable.”

Sioux Valley utilized four types of insulation in the Project E2 home – polystyrene spray foam, blown fiber glass insulation, fiber glass batting and rigid Styrofoam sheathing. The entire ‘envelope’



Opposite & Cover: The Project E2 House at 1801 River Bluff Drive near Brandon, S.D., showcases energy efficiency techniques that can be easily obtained at typical building centers. **Above:** All of the framing joints, along with the sills, were caulked to seal the house up tight. **Inset:** Insulated S-Board sheathing served as the exterior walls and helped provide a thermal break from outside elements. Tyvek house wrap was used to control air and moisture infiltration. The envelope of the Project E2 house will have an R-value of 22.5 or greater throughout and will exceed EnergyStar® standards. *Photos by Carrie Law and Jennie Patrick, Sioux Valley Energy*

of the home has an R-value of 22.5 or greater. The home will also be supplied with compact fluorescent lighting (CFLs) along with light-emitting diodes (LEDs) under the cabinets.

The E2 home will exceed EnergyStar® standards. To qualify for an EnergyStar certification, the house must have a home energy system (HERS) rating of at least 80. Sioux Valley’s home received a 57 in a preliminary analysis. The lower the number means greater efficiency.

“The real test will be when a family moves in. Will they save money? We are confident the answer will be yes. And the best part is that anyone can do this – energy efficiency techniques don’t have to be expensive or difficult to install,” said Marker. “We want our members to realize that there is great value in spending a little extra on the ‘unseen’ things, such as insulation, HVAC systems and lighting instead of the beautiful granite counter-tops.”

Sioux Valley Energy will be holding public tours of the Project E2 home throughout the year; go to www.siouxvalleyenergy.com/e2 to check the schedule.

EnergyStar® Rating

To earn the EnergyStar® certification, homes must be independently verified as meeting EPA’s strict guidelines for energy efficiency. These homes are at least 15 percent more energy efficient than homes built to the 2004 International Residential Code, and include additional energy-saving features that typically make them 20 percent to 30 percent more efficient than standard homes.

The Project E2 home will be independently verified by a certified Home Energy Systems (HERS) rater. The HERS rater will assign the home with a HERS Index, which is a scoring system established by the Residential Energy Services Network (RESNET). The HERS Index is based off of a reference home, which is given a score of 100 and a home that uses no energy would receive a HERS Index of 0. The lower the homes HERS Index, the more energy efficient it is.

Each 1-point decrease in the HERS Index results in a 1 percent reduction in energy consumption. For example, the preliminary HERS Index for the Sioux Valley Energy Project

E2 home is a 57. This means the home would be 43 percent more efficient than the government’s reference home.

To meet EnergyStar standards, your home must receive a score of less than 80, which would make it 20 percent more efficient. For more information on how to qualify your home as EnergyStar, log on to www.energystar.gov.