



Project Overview:

Midwest Energy Cooperative is a member-owned electric utility providing electric distribution and an assortment of energy-related programs and services to more than 35,000 customers in 11 counties in southern Michigan and northern Indiana and Ohio.

Our inaugural Home Energy Makeover project was designed to increase the overall energy efficiency of an existing home, giving a deserving family an opportunity to enjoy increased home comfort in a more energy efficient environment. More than 60 applications were made from all over the service territory. A team of Midwest employees reviewed all nominations and made site visits, ultimately selecting the Steve and Jaime Stone-McEnaney Family of Decatur as the winner.

The program was set up as a residential pilot project under Michigan's Energy Optimization (EO) Program (P.A. 295). EO is a state mandate that requires electric utilities to implement energy efficiency programs with a goal of helping consumers reduce their energy usage by encouraging participation with approved measures. Our Home Energy Makeover is the first residential pilot to be implemented among Michigan's electric cooperatives. Our goal is to demonstrate how EO-approved measures can impact residential electric usage.

Our Family:

Enclosed is the family's initial application letter, as well as a copy of the story introducing them as our Home Energy Makeover family from the November/December issue of *Country Lines* magazine.

The Process and Measures:

The process began with an energy audit and **blower door test** on August 17 to evaluate the current status of the house in terms of energy efficiency. Brad Bartholomew from **Bartholomew Heating & Cooling and Energy Saving Services** and his team donated their services and conducted a thorough audit to determine where we could make the biggest impact with energy efficiency measures. Brad then developed a detailed work plan to guide our efforts, and has been a steadfast partner and advisor throughout the process. Brad conducted a second blower door test on November 16 to evaluate the results of the measures implemented. Lastly, conducted a final blower door on May 19.

The specific measures included:

- Installation of a highly efficient, **3-ton, 2-stage (with electric resistance back-up) Water Furnace geothermal** unit with a closed-loop, horizontal installation. The unit was provided at cost by **Water Furnace**, and all labor and installation was donated by **Water Furnace of Michiana**. Another efficiency gain from the installation of the geothermal unit is that it supplies preheated water to the water heater.
- Design and installation of all **new ductwork**. The existing ductwork was not sufficient to support the airflow needs of the new geothermal unit, so a team of Midwest Energy volunteers came in and removed all existing ductwork (as well as the non-working fuel oil furnace) to make way for the new ductwork. Gehry Gross, an instructor with the HVAC program at **Kalamazoo Valley Community College**, made this an educational and community service project for his students, designing and installing ductwork and registers that would support the air movement of the system.
- **Electrical upgrade**. **Bender Electric** donated labor and supplies to upgrade the home from 100 to 200 amp service to support the new geothermal unit.
- **Crawlspace and rim joist air sealed**. The basement space had not been properly air sealed, making it a source of significant air leakage. A team of Midwest volunteers installed a **foil-backed insulation board on basement walls** to seal leaks. **Air Tight Michigan** donated labor and materials to seal the entire crawl space, basement, and other strategic wall cavities in the main level of the home with a 2-part closed cell foam sealant.
- **Chimney removed**. **Scott Wade Construction** and **Quality Masonry** donated labor and supplies to remove the existing chimney, which was a major air sealing measure. This also provided a cold air return cavity for the new HVAC system.
- **Other air sealing measures** were implemented by a team of Midwest Energy volunteers with supplies donated by **Home Depot** in Three Rivers. This included caulking and installing foam gaskets on all electrical receptacles and light switches. **New windows were installed** throughout the house with labor donated by **Team Depot**.
- **New appliances**. To further increase energy efficiency, we upgraded existing appliances to Energy Star models, including a refrigerator, dishwasher and clothes washer. The refrigerator and clothes washer are both rated as Tier 3 appliances by the Consortium of Energy Efficiency.
- Other efficiency measures:
 - **Replaced all existing incandescent bulbs** with efficient compact fluorescent light bulbs.
 - **Installed a programmable thermostat**.
 - **Installed R4 insulated pipe wrap on all water lines**.
- As a result of the additional air sealing and new window installation, an **ERV, Energy Recovery Ventilator**, installation was necessary. Made possible by **Bartholomew Heating & Cooling and Energy Saving Services**. This unit mechanically provides the necessary 7-8 fresh air exchanges needed for the Family.
- **Energy Aware**. To assist the family in monitoring their energy usage and adapting their consumption behaviors, we installed this real time energy monitor, donated by **Markur Communications**. The monitor is hardwired into the home and provides instant feedback about electricity consumption and related costs through a wireless in-home display.

Results:

Based on the initial audit and blower door test and the follow-up blower door test conducted by Brad from **Bartholomew Heating & Cooling and Energy Saving Services**, we have achieved over a 50% reduction in air infiltration as a result of the various air sealing measures.

Estimated Value:

Although this project was developed under the Energy Optimization program, the vast majority of the products, services and labor were donated by a variety of individuals and businesses who contributed in one way or another. The estimated value of the entire project is **\$30,000**.

Our Partners:

Project sponsors who donated goods or services specific to the energy efficiency improvements in the home included:

- **Air Tight Michigan**
- **Bartholomew Heating & Cooling**
- **Bender Electric**
- **Energy Saving Services**
- **Faulkner Farms**
- **First Presbyterian Church, Decatur**
- **Harbor Habitat**
- **Home Depot (Three Rivers)**
- **Kalamazoo Valley Community College HVAC Program**
- **Markur Communications**
- **Molter Electric**
- **Quality Masonry**
- **Scott Wade Construction**
- **Southwestern Michigan College Construction Trades Technology Program**
- **Waste Management**
- **Water Furnace**
- **WaterFurnace of Michiana**

Friends of the Home Energy Makeover who provided support or advice that further contributed to the overall success of this project included:

- **Art Thayer**
- **Decatur Pet Hospital, PC**
- **Farm House Bakery**
- **Habitat of Battle Creek**
- **Habitat for Humanity, Cass and Van Buren Chapters**
- **Habitat ReStore (South Bend/Mishawaka, Benton Harbor)**
- **John Sears Construction**
- **Sarafı Joe's Ramada Inn**
- **Utility Marketing Concepts**
- **Wabash Valley Power Association**
- **Menards of Kalamazoo**
- **Michigan Habitat**
- **Northeastern REMC**
- **KEMA**
- **Lowe's of Kalamazoo**