



Energy Case Study: Hawkeye Buffalo Ranch

Last spring at Hawkeye Buffalo Ranch, Martha McFarland wrote on her to-do list: “Weatherize chicken coop to be more efficient for winter.” Like so many best intentions on farm to-do lists, that item did not get checked off. So when Practical Farmers of Iowa (PFI) asked McFarland to be one of five farmers to receive free energy weatherization audits for the McFarland house and one outbuilding on the farm, McFarland quickly agreed.

Martha McFarland and her father, Dan McFarland, run Hawkeye Buffalo Ranch near Fredericksburg in north-east Iowa, where they raise 40 buffalo and direct sell the meat, 20 polled Herefords, and 20 free-range chickens. Energy efficiency plays a large role on the farm where the McFarlands pasture and raise their own feed for the animals and work to be as sustainable as possible. They are concerned about money spent on the energy bill and work to reduce the cost.

For the farm energy audit pilot project to serve rural areas, Practical Farmers of Iowa partnered with Green Iowa AmeriCorps (GIA) based at the University of Northern Iowa’s Center for Energy & Environmental Education. Green Iowa AmeriCorps offers comprehensive energy services to underserved areas to help Iowans become more energy efficient. PFI’s Farm Energy Audit and Weatherization Project included the energy audit on



Bison graze at Hawkeye Buffalo Ranch.

“*We are concerned in the long run about the overuse of fossil fuel and want to be less reliant on it.*”
- Martha McFarland



Martha McFarland and her father, Dan McFarland, and loyal friend Benjamin.

the house and one outbuilding and free follow-up labor from GIA. Practical Farmers of Iowa allocated up to \$300 for each farm for weatherization supplies.

Green Iowa AmeriCorps has completed weatherizations (caulking and air sealing) on over 900 homes in just the past year. For the Practical Farmers project, GIA accepted a new challenge – working on farm outbuildings that are typically not heated and cooled as well as farm houses. Martha’s vision for the 12 ft x 26 ft chicken coop (which is part of a larger storage shed) was for a tighter, air-sealed space that would be warmer in the winter to improve egg production during cold weather.

Two members from the Cedar Falls GIA team conducted a weatherization audit in June 2014 on the chicken coop and on Dan McFarland’s farm home.





Green Iowa Americorps team members discuss weatherization options with Martha.

In the coop, the auditors found these major steps to take:

Chicken Coop Recommendations

- Tear out old, very well worn insulation on all sides of the coop space
- Seal off north and east sides of the coop from storage shed areas using 2" foam board
- Install roll-out fiberglass insulation covered with plywood on the coop ceiling
- Repair a hole in the roof
- Caulk windows on south side of coop
- Install a higher wattage light bulb in the coop during the winter to give off more heat
- Caulk around air vents on south and west coop walls



Green Iowa Americorps team members take weatherization notes on the chicken coop.

Based on the Green Iowa team's recommendations and because the chicken coop required extensive work, Martha agreed to put in some additional funds. The chicken coop project cost \$400. Seven members from the Cedar Falls and Cedar Rapids GIA sites returned three times in July to provide the free labor for the coop and home weatherization.

Martha said her expectations of the project were exceeded. "The team who did the work on the chicken coop and the farm house were wonderful. I didn't understand they would do the labor. On a farm there's so much to get done and never enough time, so this project was a no-brainer," she emphasized. "When you get extra hands to help out, you take them."

For Dan McFarland's home, the Green Iowa team conducted a weatherization audit which is similar to a utility energy audit but focuses on finding air leaks. Like many Iowa farm houses, Dan's home is old and was built in the 1870s. It qualified as a Heritage Farm in 2007 having been in the same family for over 150 years.

During the audit, the GIA team members used a blower door test to determine where air was coming into the house. For the test, they sealed off an exterior door by inserting their own "blower door" with a large fan in it. When turned on, the fan depressurized the house, creating a vacuum which allowed team members to locate possible air leaks around windows, baseboards, sill plates in the basement in all rooms of the house.

Dan takes his own steps every winter to improve his home comfort and to reduce his utility bill. He has a tankless energy efficient gas hot water heater, closes off unused rooms, installs plastic over the windows, and turns down the thermostat.

For the house, the Green Iowa team recommended:

Home Recommendations

- Switching out 15 incandescent light bulbs for more energy efficient compact fluorescent bulbs
- Caulking around several windows in the basement to seal out air leaks
- Installing weather stripping around all doors to make them seal tightly and keep cold & hot air out
- Using caulk around the interior and exterior frames on doors and windows
- Use caulk along stone work behind a wood fireplace where air was coming in
- Install outlet insulators as needed behind leaky outlets

Martha said since the energy audit her father also got rid of an old, inefficient freezer in the basement and replaced it with an energy efficient one. "I anticipate that Dad will see a difference in his electric bill for the house and I'm hoping the chickens will be warmer and egg production won't decrease during the winter."

She also noted that the Green Iowa team said Dan qualified for some special programs because he is a veteran and retired, so the McFarlands did not have to pay anything for the farmhouse weatherization supplies. Again, all of the Green Iowa team labor was free.

Martha concludes, "Someone comes in, PFI supports part of the project funding and the labor is free – who could say 'no' to that? It was a great experience. I love PFI because their projects provide really practical ideas."



Green Iowa Americorps team members saw lumber for a new chicken coop ceiling.



Green Iowa Americorps team members seal a chicken coop wall.



Green Iowa Americorps insulate the ceiling of the chicken coop.

IN PARTNERSHIP WITH:



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