



# Home ENERGY MAKEOVER

## Reville, South Dakota

**Properly weatherizing your home will save you money.**

***But exactly how much money?***

Otter Tail Power Company decided to tackle that question by awarding seven customers free home energy makeovers. Each home presented different challenges, but the overall goals were the same:

- Make each home more energy efficient through weatherization and updated heating/cooling systems.
- Ensure heating safety.
- Maintain the integrity of each home.

# Here's what happened in Revillo

**Home:** 100 + years old, two stories, 1,248 square feet

**Owner:** Vivian

**Makeover budget:** \$7,500

**Contractor:** John Schweigel Construction, Milbank, South Dakota

## **Pinpointing problems**

Otter Tail Power Company and contractor John Schweigel Construction based their work on an energy audit, homeowner consultation, visual inspection, and blower door testing. Blower door testing measures air infiltration into a home by depressurizing the home and simulating a strong wind blowing against all surfaces. This facilitates the process of locating and sealing costly air leaks.

The two biggest sources of leaks in the home were the foundation/rim joist area and the upstairs windows. The homeowner knew the home was not energy efficient overall and already was using measures to lower home heating expenses, such as lowering the thermostat setting and closing off doorways.

## **Before and after**

### **Air leakage based on blower door test**

**Before makeover:** 2,200 cfm (cubic feet per minute)

**After makeover:** Nearly cut infiltration in half

### **Annual heating cost (adjusted for weather)**

**Before makeover:** \$1,897.41 (\$2.20/gallon propane price)

**After makeover:** Year 1: \$1,072.02  
Year 2: \$1,363.60

### **Savings:**

**Year 1:** \$825.39

**Year 2:** \$533.82



## **Windows**

### **Problem:**

Original leaky windows rattled in their framework and accounted for significant air infiltration.

### **Solution:**

Replaced all upstairs windows with new vinyl double-hung windows with insulated glass.

### **FYI:**

On average, the value of a weatherization improvement to your house is 2.2 times greater than the cost of the improvement itself.

— U.S. Department of Energy

## Attic ventilation and insulation

### Problems:

- Attic was ventilated with a single spinning ventilator.
- Attic insulation level was adequate but uneven.
- No insulation on attic access door.

### Solutions:

- Added four soffit vents to balance and adequately ventilate the attic space.
- Leveled the attic insulation.
- Sealed and insulated attic access door.



## FYI: Importance of sealing leaks

- Properly sealing air leaks from living spaces into the attic will slow or prevent warm, moisture-laden air from passing into attic spaces, where moisture can condense on cold surfaces and cause water damage to ceiling and attic structures.
- Sealing attic bypass leaks, in conjunction with sealing leaks at the lower levels of the home, slows the “chimney effect” of cold air entering the home, becoming warmed with costly home heating fuel, and then escaping through leaks into the attic space.
- When warm air escapes into the attic through ceilings or walls and warms the roof from underneath, snow on the roof melts and runs down to outside roof edges. Because the roof edge is colder, the water freezes there. Over time this creates an ice dam, which can cause structural damage to the home.



## Foundation

### Problems:

- Foundation was uninsulated, with fieldstone construction, and was a significant source of air leakage.
- Rim joist was uninsulated and extremely leaky.

### Solutions:

- Sealed leaks in the foundation and rim joist with sprayed urethane foam.
- Insulated the rim joist with two-inch extruded polystyrene insulation (Sytrafoam).

## Extra benefits

In addition to saving on heating costs, proper weatherization:

- Increases your property value.
- Extends the life of your home.
- Reduces incidence of fire and enhances overall safety of your home.
- Makes your home more comfortable.
- Shrinks your family’s carbon footprint.
- Reduces national energy demand.

Source: Oak Ridge National Laboratory



Home ENERGY  
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For more information about what you can do to make your home more energy efficient, call our **Idea Center** at **800-493-3299** or visit our web site at **[www.otpc.com](http://www.otpc.com)**.



Otter Tail Power Company is headquartered in Fergus Falls, Minnesota. It provides electricity and energy services to nearly a quarter million people in Minnesota, North Dakota, and South Dakota.