# HELGASON FARMS
A Poultry Farm Case Study
Mathias Ag Program

Hilmar Helgason operates two broiler houses at his poultry farm in Rhodesdale, Maryland. He believes he is growing a healthy chicken in the best way possible, and that includes doing everything he can to be more energy efficient and keep his carbon footprint small.

Helgason Farms spends about $7,200 annually on propane to heat the 262,500 birds that are raised each year. Hilmar spends an additional $8,900 each year on electricity costs. To learn how to reduce his energy costs, he requested an energy audit on his broiler farm in 2010. The farm energy audit uncovered opportunities to save nearly 25% of the farm's energy costs through equipment replacement. In Hilmar's case, all the energy efficiency opportunities involved propane reduction. He immediately implemented some of the recommendations such as insulating his sidewalls and end wall doors. When the Kathleen A.P. Mathias Agriculture Energy Efficiency Program provided additional incentive money in 2012, Hilmar decided it was time to implement the other recommendations in the audit and save as much energy as possible.

Dropped ceiling insulation reduces the houses' heat loss by creating a greater thermal resistance. Insulation is one of the major components of energy-efficient heating.
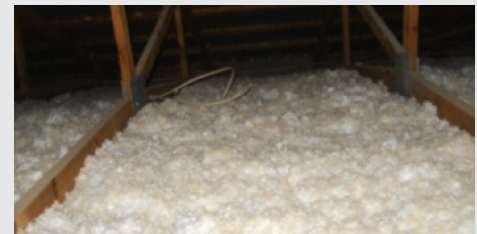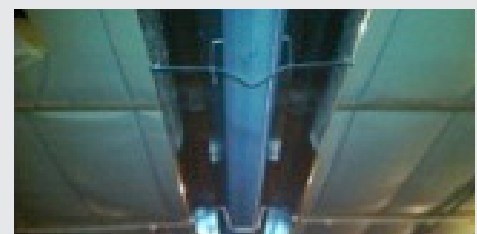
Insulated tunnel fan curtains reduce heat loss in the winter months by sealing up the tunnel fans when they are not in use. The curtains provide much more air sealing and insulation value than fan louvers.

Attic inlets recover solar heat from the attic of poultry houses. They capture and reuse the warm air from the chicken house attic on winter days. They can also help lower the relative humidity in the house and reduce litter moisture.

Radiant tube heaters are a more efficient way of warming the birds. Instead of heating the air, radiant heaters direct heat to the objects in the house such as the walls, floor and chickens.

Insulated tunnel fan curtains pay for themselves in less than four years; other measures have a longer payback but act as insurance against rising fuel costs (see Table 1). While other farms may have to deal with the consequences of higher propane costs in the future, Helgason Farms can rest easy that it has done everything possible to reduce energy costs ahead of time.

Table 1: Implemented Efficiency Measures and Associated Savings

Recommended Measure	Propane Savings (gal)	Estimated Annual Energy Cost Savings	Installed Cost	Estimated Payback in Years
Dropped Ceiling Insulation Add 6 inches of blown cellulose with an approximate R-value of R-3.2 per inch to the existing ceiling insulation.	228	$285	$9,020	31.6
Insulated Tunnel Fan Curtains Install insulated tunnel curtain material with an approximate R-value of R-2.5 on the inside of the tunnel fans. This curtain material will close off the tunnel fans in the winter when they are not in use. The curtains will be manually operated to open and close.	248	$310	$1,187	3.8
Attic Inlets Install (15) 4-way attic inlets in each house. The attic inlets will be automatically controlled by an upgrade to the existing electronic controls for Houses 1-2. The controller upgrade will add software to control the attic inlets as well as more inputs to accommodate the attic inlets controls.	687	$858	$15,702	18.3
Radiant Tube Heaters Replace (6) existing forced hot air heaters per house with (6) 100,000 Btu/hr, 50 foot radiant tube heaters and (1) 85,000 Btu/hr, 40 foot radiant tube heater per house.	866	$1,083	$18,721	17.3
Totals	**2,029**	**$2,536**	**$44,630**	**17.6**

Hilmar installed the new equipment in March 2013. "I'm always looking to reduce my operating expenses," said Hilmar. "It is great to be able to save money while also helping the environment."

These poultry house improvements can be implemented on many other farms. It is up to each grower to decide which improvements are the best investments. When faced with building a new house or improving an old one, a grower will find that retrofitting an older poultry house to make it more energy efficient often makes the most sense.