

ENERGIZING KENTUCKY AGRICULTURE

A joint project by the Governor's Office of Agricultural Policy (GOAP) and the Kentucky Department for Energy Development & Independence (DEDI) with funding from the American Recovery and Reinvestment Act (ARRA) through the U.S. Department of Energy (DOE).





The investments are already producing savings in energy costs and energy consumption.

GREETINGS:

I am excited to share with you the details of a program that has worked incredibly well for our Kentucky farmers.

In September 2009, I announced the availability of federal stimulus funds for on-farm energy efficiency improvements in Kentucky. On-Farm Energy Efficiency and Production Incentive grants were created as a result of the partnership between the Governor's Office of Agricultural Policy and the Kentucky Department for Energy Development and Independence, with funding from the American Recovery and Reinvestment Act, through the U.S. Department of Energy.

These grants have helped farmers make their farms more energy efficient. In just over two years, this program has provided approximately \$1.3 million for energy-efficiency upgrades on farms throughout the state. The investments are already producing savings in energy costs and energy consumption – both results extremely beneficial to Kentucky's economy.

In the pages that follow, please review a few success stories that we've highlighted. This is just a sample of some of the great results our farmers have seen through this program – there are many others who have reaped the benefits of this innovative program.

Since the program has been so successful, we intend to continue our efforts by using the Kentucky Agricultural Development Fund to help even more farmers make their farm operations more energy efficient.

Kentucky farmers are instrumental to the success of the Commonwealth. Helping them lower their energy costs will make their products more cost competitive in the global marketplace while at the same time saving energy that can be used for other purposes.

Thanks to our farmers and related agribusinesses that feed millions and employ thousands. We all depend on you.

Steven L. Beshear
Governor

PROJECT SUMMARY

With the price of fuel and utility costs continually escalating, more farmers are seeking alternate ways to save energy and money. There are many energy efficient investments that can make farming operations more profitable by using less energy. By controlling energy costs, our farmers can save significant revenue and can reinvest these resources in their families and operations.

Thanks to the On-Farm Energy Efficiency and Production incentives, farmers have been able to accomplish their energy efficiency goals while reducing environmental impact. This allows Kentucky agriculture to become more sustainable and profitable.

Since the beginning of the program, some 164 grants have been awarded, totaling approximately \$1.3 million. That investment has saved nearly \$2 million in energy costs and some 243 billion BTUs. Grain producers were the “early adopters,” but over the course of the program, more poultry farms were able to cut costs and save energy. Dairy, farm shops and

greenhouses also have benefited from this initiative by reducing energy costs.

Recipients of these energy stimulus incentives have received 25% reimbursement of the actual cost of a federally qualified energy savings project up to \$10,000. The grants have provided enormous benefit to Kentucky’s farm families and positioned Kentucky agriculture as a leader in on-farm energy efficiency.

The following pages report on several “Success Stories” clearly demonstrating the value of the program.

164
grants awarded
totaling
\$1.3M



\$1.7M
in energy
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243
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saved.

SUCCESS STORY 1

ENERGY SAVINGS WHILE DRYING GRAIN



“The dryer I replaced was inefficient by today’s standards. My new system can dry grain in hours, rather than weeks. Imagine how much that will save.”

– Phillip Garnett
Christian County
Grain Operator

Many of Kentucky’s grain producers are incorporating energy efficiency by purchasing and installing energy efficient grain drying systems on their farms.

One such farmer is Phillip Garnett, a grain operator in Christian County. Garnett received funding in 2010 to purchase a new GSI Zimmerman grain drying system. This high efficiency tower dryer has improved the quality of the grain he produces and has reduced the cost of production.

All heat from the cooling grain is recycled, and computerized controls greatly reduce over drying of corn, saving five percent of the total energy used. The tower system also promotes more even drying, higher test weights, and also helps reduce operating costs by up to 25%. More efficient burners make the actual combustion of fuel even more efficient.

Result: On a projected cost of nearly \$200,000, audit results show Garnett will save more than \$110,000 a year and almost six billion BTUs annually.



SUCCESS STORY 2

ENERGY SAVINGS ON THE POULTRY FARM

Poultry growers generally use a lot of energy, often second only to dairy. Since the birds are raised in a consistent environment, they can't withstand major temperature fluctuations. Thankfully, technology has enabled growers to monitor the birds more closely and that has helped turn poultry into Kentucky's number one agricultural and food commodity – a \$900 million business. However, that technology has come at a price – higher energy usage and bills.

William Lewis, owner of Allen Creek Poultry in Cumberland County lost 26,000 chickens due to extreme summer heat in 2011. He sought and received a grant to help him install a new ventilation system, including tunnel doors, radiant heaters and ventilation fans.

His new hinged, insulated tunnel doors provide a better seal for a reduced energy cost.

Large box heaters were replaced by more energy efficient radiant heaters, giving off infrared rays that transfer heat in a more efficient way.

The installation of fans provide viable ventilation, especially during warm months when the right mix of air is critical to reduce heat stress, increase animal comfort and maintain productivity 12 months a year.

Result: An energy audit indicates from his investment of \$54,424, Lewis will save \$10,647 in energy costs and 575,240,000 BTUs annually.

“I’ve already seen an 80% reduction in my energy bill!”

– William Lewis
Allen Creek Poultry



“I am already seeing a \$1,500 reduction in our electric bill each month.”

– Bill Crist
Crist Dairy

SUCCESS STORY 3

ENERGY SAVINGS ON THE DAIRY FARM

Dairies are one of the most energy intensive farm industries with an average dairy using between 800-1,200 kilowatt hours of electricity per cow each year.

Knowing that, Bill Crist and his son were looking for ways to save energy and money. His Metcalfe County farm, Crist Dairy, has 500 lactating cows that are milked three times a day.

The Crists received a \$10,000 grant on their total investment of \$150,000 that included the following energy saving equipment:

1. Automatic take-offs that preset the flow level at which milking claws are removed, preventing over-milking and reducing the run-time of the vacuum system.

2. A variable speed pump with controller was purchased and installed; this can reduce energy expenses by 50% or more.

3. A plate cooler which takes advantage of the heat at which milk leaves a cow by passing it through an exchanger in the opposite direction of cool well water, separated by metal plates. The milk's heat transfers to the water for washing and cooling milk to its ultimate storage temperature.

Result: An energy audit indicates on their \$150,000 investment, the Crists will realize an annual cost savings of \$38,000 and an annual energy savings of more than one billion BTUs.

SUCCESS STORY 4

ENERGY SAVINGS IN THE GREENHOUSE



Greenhouse gardeners are just as concerned about using less energy as the dairy, poultry and grain producer. Every dollar spent on water and energy increases the cost to grow each plant. To stay competitive, costs and energy usage must be held to a minimum.

Greenhouses can be made more efficient in cold weather by using heaters that provide the required higher temperature for the growth of heat sensitive plants. James Cook, owner of Cook's Greenhouse in Daviess County, can attest to that statement.

Gas heaters have been specifically designed for effective and safe operations in moist greenhouse environments.

Thanks to a grant, he replaced two natural gas furnaces with newer models, equipped with a power exhaust feature. The exhaust routing is expected to vent inside the greenhouse versus outside for the older model. This feature raises the furnace efficiency to 93%.

Result: With an investment of \$1,740, the audit predicts Cook will realize a 16% energy cost reduction or – \$160 annually – in natural gas savings. Cook's Greenhouse also is saving more than 17 million BTUs each year due to this upgrade.

“The older furnaces had a lot of normal wear and degradation which was decreasing efficiency.”

– James Cook,
Cook's Greenhouse

SUCCESS STORIES 5 & 6

GENERATING “GREEN POWER”

West Kentucky RECC and the TVA pay Mr. Davis \$0.24 per kWh, which totals about \$15,000 annually.



In addition to helping with energy savings, the ARRA On-Farm Energy Efficiency & Production program also has succeeded in enabling Kentucky farmers to generate and sell “green power.” Here are some examples:

William Willett, a recipient in Hickman County, received grant money to aid in the purchase of a 100kW photovoltaic array system. This system, consisting of 418 panels, is one of the largest on-farm systems in Kentucky.

Result: Willett’s total project cost was \$513,164. The power he generates should yield \$35,000 annually in revenue. He is being paid \$0.24 per kWh by West Kentucky RECC and the Tennessee Valley Authority (TVA).

Ron Davis of Marshall County received funding to help purchase and install a 32.9 kW photovoltaic array system on his farm. The system is composed of 140 solar panels that can produce up to 180 kWh of electricity daily.

Result: Ron Davis’s total project cost was just under \$200,000. West Kentucky RECC and the TVA pay Davis \$0.24 per kWh, which totals about \$15,000 annually in revenue.

ARRA ON-FARM ENERGY EFFICIENCY & PRODUCTION PROGRAM SUMMARY

Fifty-seven counties have benefited from the On-Farm Energy Efficiency & Production Program. The chart (pictured below) provides a summary of those results.

Enterprise	2009 - March 2012
Grain	78
Poultry	55
Dairy	17
Other	14
Total	164

Summary	Total
Grant Awards	\$ 1,343,709
Project Costs	\$ 16,953,546
Energy Savings	\$ 1,761,273
BTU Savings	243,534,246,197

The numbers listed are estimates until the program is complete.

“These grants have helped farmers make their farms more energy efficient.”

– Steven L. Beshear
Governor

MULTI-COUNTY ENERGY INITIATIVE

In addition to the individual projects that were funded, a Multi-County Energy Initiative was undertaken. This included several projects that involved cooperative efforts among a variety of entities including farmers, higher education groups, associations and the private sector. The primary goal of all projects was to emphasize energy efficiency and renewable energy projects in Kentucky; this initiative is proof that Kentucky continues to move forward as a leader in energy conservation and efficiency.

“Through these investments Kentucky’s farmers will experience long-term benefits.”

– Dr. Leonard K. Peters
Secretary
Kentucky Energy and
Environment Cabinet

Applicant Name	ARRA Funding
Kentucky Forage & Grasslands Council	\$ 100,000
South Kentucky RECC	\$ 10,150
Mammoth Cave RC&D	\$ 10,000
Western Regional Center for Emerging Technologies	\$ 25,000
Commonwealth Agri-Energy, LLC	\$ 100,000
Total	\$ 245,150

THE FUTURE

Because the 2009-2011 ARRA On-Farm Energy Efficiency & Production program has been so successful, it will continue.

Federal funding for this program has expired. However, the Kentucky Agricultural Development Board has been so impressed with its result that board members have unanimously approved two million dollars to implement a program using Kentucky Agricultural Development Funds. The new state program will be modeled after its federal counterpart.

This is a wonderful way to continue a legacy program of the American Recovery and Reinvestment Act and extend a helping hand to additional farmers who want to improve energy efficiency or production within their operations. The benefits of these projects, and future projects, will be recognized for generations to come. For more information, visit our website at ag-energy.ky.gov.



THE FINAL WORD:

As the American Recovery and Reinvestment Act (ARRA) grants come to a close in 2012, we recognize the On-Farm Energy Efficiency and Production Initiative as being another success story for Kentucky. I commend the staff at the Governor's Office of Agricultural Policy (GOAP) for providing the opportunity to help our farms become more energy efficient and applaud Kentucky's farmers who have taken part in the grant program.

Not only have we been able to provide approximately \$1.3 million to Kentucky's farmers for energy investments, but we also know that through these investments Kentucky's farmers will experience long-term benefits. Over the last 3 years, the farmers who have implemented these energy savings projects have become energy ambassadors in their local communities by sharing their experiences and positive results.

I'm most encouraged that the Kentucky Agricultural Development Board has recognized the continued need for this program by approving the use of Agricultural Development Funds to implement a similar grant program. This action clearly demonstrates commitment by the board to help Kentucky's farmers continue to become more energy efficient and provide a legacy of efficiency for future generations.

Kentucky's farm families are keenly aware of the importance of using our resources wisely; they have been doing so for generations. This program merely provided a path to the more efficient use of our energy resources. We are proud to have been a partner with GOAP in that effort.

Dr. Leonard K. Peters
Secretary
Kentucky Energy and Environment Cabinet





For more information, contact the Governor's Office of Agricultural Policy
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