

## CUTTING FARM COSTS THROUGH ENERGY EFFICIENCY

**Agricultural producers can use this protocol to measure energy efficiency improvements and qualify for carbon offsets under the Alberta Offset System**

Alberta has introduced first-of-its-kind legislation in North America that gives agricultural producers new ways to benefit from helping to reduce greenhouse gas emissions. The result is the Alberta Offset System, which includes a number of protocols producers can follow in order to earn carbon offsets from documented improvements to practice changes. These may be sold in the growing carbon offset market.

Alberta Agriculture and Rural Development (ARD) has developed a series of Protocol Summary documents to provide producers with a brief introduction to each of the protocols related to agriculture – including the one you are reading here on energy efficiency. Producers interested in improving management practices through projects that meet the requirements of this protocol can get more information through the website links and contact information provided at the end of this document.

**Record keeping is critical.** To qualify for offsets, producers need to document practices for the periods both before and after they adopt emissions-reducing practice changes. This is critical not only to earn offsets, but to protect producers from liability if there is any challenge to the carbon offset credits they are claiming.

### THE OPPORTUNITY FOR PRODUCERS

Energy efficiency is one of the best opportunities producers have to slash their operational costs and reduce greenhouse gas emissions at the same time. In fact, energy costs are typically a top three cost for many operations.

This is also an area where relatively simple improvements can rapidly add up to substantial savings. In fact, with the growth in knowledge and options in the energy area, annual savings up to several thousand dollars are well within reach for many agricultural operations, through modest energy efficiency improvements. The opportunity to earn carbon offsets is a bonus that represents some extra dollars for producers in the short term.

All protocols developed for the Alberta Offset System have a primary focus on reducing emissions. At the same time, a priority has been placed on developing ones that have strong additional value or co-benefits for improving efficiency, productivity, sustainability and other important aspects of a successful agricultural operation.



## FUNDAMENTALS OF THE PROTOCOL

Here are the fundamentals of the energy efficiency protocol.

**Existing program.** The energy efficiency protocol was designed on the platform of the On-Farm Energy Assessments run by ARD, which was modeled on a similar program in Ontario and has been operational for a number of years.

**Energy assessments identify options.** A major benefit of the ARD assessments is that they offer subsidized, third-party energy assessments to qualifying producers. These assessments provide producers with a comprehensive analysis of where their energy costs go and specific options to improve efficiency, ranging from 'complex' retrofits to 'simple' "low-hanging fruit" options that can be addressed quickly and implemented at a relatively low cost.

**Process uncovers hidden costs.** The assessments address the fact that the best ways to improve energy efficiency are not always clear and can involve indirect costs that are difficult to determine from a monthly energy bill.

**Clear picture leads to solutions.** The assessments combined with the energy efficiency protocol provides producers with a systematic approach to get a clear, complete picture of where and how energy is used on their operation and what range of options they have to make improvements.

**Capturing Credits Back to 2002.** Producers may claim carbon offsets based on eligible practices adopted at any time between 2002 and the current year, as long as requirements such as having necessary records are met. However, this option will not be available after January 1, 2012 due to increased verification requirements.

## KEY DETAILS

Some key points to note:

- **Applies to pork, dairy and poultry.** The energy efficiency protocol currently applies to pork, dairy and poultry operations, with livestock housing facilities (barns). There is potential for the scope of both the program and the protocol to expand in the future.
- **Covers broad range of improvement options.** Producers can earn offsets in a wide variety of ways in which energy efficiency can be improved. The energy assessment process is a detailed analysis of the efficiency of heating, cooling, ventilation and other energy systems within a facility. Areas of improvement to these systems may include practice changes or retrofits in structural, mechanical, biological or chemical components of an operation.

- **Full assessment not required for some small changes.** Some 'simple' retrofits and practice changes can qualify for carbon offsets under this protocol without the need for a pre-project energy assessment, so long as adequate proof is available through records such as receipts and utility or fuel bills.
- **Specific requirements depend on options.** The protocol covers both simple and complex retrofits or practice changes, each with different requirements for records and assessment.

**“PRACTICE CHANGES AND RETROFITS THAT IMPROVE ENERGY EFFICIENCY CAN PAY FOR THEMSELVES MANY TIMES OVER. THE OPPORTUNITY TO EARN CARBON OFFSETS IS A BONUS THAT REPRESENTS SOME EXTRA DOLLARS FOR PRODUCERS.”**

## KEY REQUIREMENTS

The key requirements for this protocol fall into two categories.

### General

All offset projects, including those using the energy efficiency protocol, must meet three basic requirements:

- **Records proving 'before' and 'after' conditions** – Producers need appropriate records that show the relevant conditions on their operations both before and after the practice change is adopted. The new approach must represent clear practice change considered beyond "business as usual" or common industry practice.
- **Clear right to claim** – The producer applying for carbon offsets can clearly show ownership of the offsets or the right to claim the offsets. In other words, they own the operation or have a legal agreement that gives them rights to offsets for that operation.

### Protocol-specific

In addition, key requirements of the energy efficiency protocol include:

- **Energy records** – Producers will require access to data that shows their energy use, in order to calculate their emissions reductions. This may include metered power and gas records, in which case standard utility bills can fill that role, and / or fuel volume delivery receipts.
- **Minimum one-year reporting period** – The records showing before and after conditions typically should cover a minimum period of one year. However, a shorter period can be used in some cases if the producer can provide justification the period is long enough to support the carbon offset claim (Access resources listed at the end of this document for details).
- **Third-party assessment (For On-Farm model)** – For projects that are based on a thorough analysis such as the assessment platform, the first step is to pinpoint and document the "before" information by having a pre-project energy assessment conducted.
  - The assessment must be completed by an independent, qualified professional.

- The analysis must cover all components of any facility or barn included in the practice change related to the protocol and must meet standards of being systematic, repeatable and verifiable.
- This service is available to a limited number of producers through ARD's On-Farm Energy Assessments. Producers have other options to arrange an assessment outside of this program.
- **Exception to third-party assessment (For some simple changes).** The third-party assessment may be waived for 'simple' retrofits or process changes that do not require thorough analysis to prove their impact on energy efficiency. In these instances, the producer is required to provide appropriate records, such as project receipts and energy bills, as proof of practice change implementation and 'before' and 'after' conditions.

### EXAMPLES OF GREATEST IMPACT

The energy efficiency options eligible with the protocol all offer a double benefit to producers – overall energy efficiency improvements, plus the ability to earn carbon offsets. Here's a look at some of the best opportunities to achieve these dual benefits, based on the results of case studies from ARD's On-Farm program.

**Swine.** The greatest potential energy efficiency savings for swine operations are typically realized through changes to lighting and heating systems, including more efficient heating mats and fluorescent lighting.

**Dairy.** Dairy farms often demonstrate the greatest efficiency improvements from retrofits to milking equipment and fans. Potential retrofits included efficiency improvements to milk pre-coolers, variable speed milk pumps and scroll compressors.

**Poultry.** The highest efficiency gains in poultry operations are often achieved through changes to ventilation and lighting systems. Recommended technologies include the use of chimney fans in the winter, natural ventilation in the summer and a transition to a more efficient fluorescent lighting.



### LEARN MORE

Producers who are interested in pursuing projects that meet the requirements of the energy efficiency protocol can access more information through the following website links:

**Alberta Agriculture and Rural Development – Climate Change:**  
[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/cl11618](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/cl11618)

**Alberta Environment – Climate Change:**  
[www.environment.alberta.ca/0923.html](http://www.environment.alberta.ca/0923.html)

**Climate Change Central – Carbon Offset Solutions:**  
[www.carbonoffsetsolutions.ca](http://www.carbonoffsetsolutions.ca)

These resources include background information, available Interpretive Guides on the protocol, as well as access to the complete Protocol Documents. Producers can also contact ARD directly at (780) 310-FARM (3276) or Toll Free at 1 (866) 882-7677.

***This document last updated: January, 2011***

*Disclaimer: The information provided in this document is intended as general guidance only, as a first step for agricultural producers considering projects for the Alberta Offset System protocols. Please consult the full Government of Alberta approved protocols and available Interpretive Guides for more complete information before making a decision to pursue practice change aimed at earning carbon offsets.*

### ACKNOWLEDGEMENT

Alberta Agriculture and Rural Development (ARD) is working on developing carbon offset opportunities in agriculture. This work is funded through the Agriculture and Agri-Food Canada (AAFC) AgriFlexibility fund.