United States Department of Agriculture
Natural Resources Conservation Service

2013 EQIP ENERGY INITIATIVE

ARKANSAS FACT SHEET *December 2012*

Applications for the Environmental Quality Incentives Program (EQIP) and the EQIP special initiatives are taken on continuous basis. The Energy Initiative will be administered separately from the Arkansas general EQIP program, and two batching cycles are scheduled. The first deadline to meet in the competitive process is the 'sign-up' deadline, which is the final day to begin your application. The two sign-up deadlines are January 18 and March 15, 2013. The next deadline in the process is the application 'ranking' deadline, during which time the applicant must settle all issues for EQIP eligibility and make final decisions on the details of their EQIP application. The ranking deadlines are February 15 and April 19, 2013, respectively. NRCS has committed itself to completing the ranking and selection process and making funds available for the successful applications by April 1 and June 28, 2013, respectively.

Energy-Specific Plans and Practices

The following energy-specific conservation activity plans (CAPs) and conservation practices (CPS) will be available only through the Energy Initiative.

Agricultural Energy Management Plans (AgEMP)

- CAP 122-AgEMP-Headquarters and CAP 124-AgEMP-Landscape are both available.
- An application for a plan cannot be made through EQIP if the audit has already been initiated or completed. EQIP rules specify that an activity which was started prior to filing an application for assistance on that activity is no longer eligible for the program.
- AgEMPs must be prepared by a certified Technical Service Provider (TSP).
- Applicants who are funded for an AgEMP are responsible for contacting a TSP to perform the energy audit. The financial arrangement between the participant and the TSP is NOT the concern or responsibility of NRCS.
- The participant must provide NRCS a copy of the AgEMP plan in order to receive the financial assistance payment.

CPS 374 Farmstead Energy Improvement

- Building and equipment energy improvements eligible for practice payments include:
  - Attic and wall insulation, crack sealant, solar screens
  - LED, CFL, and T8/T5 linear fluorescent lighting
  - Exhaust fans and circulation fans
  - Radiant heaters and grain dryers (continuous flows)
  - Plate pre-coolers, scroll compressors
  - Electric motor systems, variable speed motor drives, and automated system controllers
- The participant must provide an energy audit to support the EQIP application.
- For the purpose of meeting the above requirement, the audit report may be an AgEMP previously completed to fulfill a CAP 122 or CAP 124 or any other audit which meets the criteria of a Type 2 audit of ASABE S612 Performing On-Farm Energy Audits. Thus, the plan can be one which was not financially assisted by EQIP.
- AgEMPs (CAPs 122 or 124) and the implementing conservation practices (such as CPS 372) cannot be contracted during the same ranking period on the same farm/land.

Other Energy-Use Reduction Conservation Practices
(these are also available through the general EQIP program)

CPS 449 Irrigation Water Management
Irrigation Water Management on cropland enables a producer to match irrigation water applications to crop requirements in both amount and timing, thereby optimizing yield for the water used and/or reducing overall annual irrigation requirements. The direct benefit to energy concerns is that reduced pumping results in reduced energy usage and reduced energy costs. Irrigation water management also limits soil erosion and movement of nutrients and herbicides from the field surface and root zone.

CPS 436 Irrigation Reservoir
Irrigation Reservoir allows a producer to reduce pumping energy and costs by providing a source of irrigation water at a higher elevation than groundwater. Much energy is used in bringing groundwater to the surface. Irrigation reservoirs also help reduce annual losses of nutrients and herbicides leaving a farm through implementation of a tailwater system to recover irrigation and storm drainage.

CPS 533 Pumping Plant
Pumping Plant is a facilitating practice within the energy initiative to allow proper implementation of irrigation reservoir and irrigation water management.

CPS 328 Conservation Crop Rotation
Conservation Crop Rotation reduces energy costs on a farm through the maintenance or improvement of soil organic matter and the resulting benefits of improved nitrogen supply from that soil organic matter and improved water storage capacity in the soil.

CPS 340 Cover Crop
The benefits of Cover Crop practices are much the same as Conservation Crop Rotation. Cover Crop reduces energy costs on a farm through the maintenance or improvement of soil organic matter and the resulting benefits of improved nitrogen supply from that soil organic matter and improved water storage capacity in the soil.

CPS 345 Residue and Tillage Management, Mulch Till
CPS 329 Residue and Tillage Management, No Till/Strip Till/Direct Seed
CPS 346 Residue and Tillage Management, Ridge Till
The direct benefit of Residue and Tillage Management practices for energy concerns is the reduced tractor fuel usage in tillage. Secondary benefits include the maintenance or improvement of soil organic matter and the resulting benefits of improved nitrogen supply from that soil organic matter and improved water storage capacity in the soil.

CPS 380 Windbreak and Shelterbelt Establishment
The direct benefit of Windbreak and Shelterbelt Establishment is the reduction in windspeed around farmstead shops, buildings, and residences which reduces the air and heat exchange between these buildings and the outdoor environment.

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CAP 122/124 – Agricultural Energy Management Plans

Planning Unit: Each
Reporting Unit: No.

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PLAN DEFINITION

An Agricultural Energy Management Plan (AgEMP) is a detailed documentation of the prior year energy consumption on the farm, an analysis of the energy consuming activities, components, and cultural practices of the current operation, and a planned strategy by which the producer will address their on-farm energy conservation concerns, objectives, and opportunities.

PLAN PURPOSE

The purpose of an AgEMP is to ***inform*** the producer of the most significant energy consuming activities and equipment on the farm and outline potential equipment improvements and cultural practices that reduce the on-farm consumption of non-renewable energy.

PLAN INFORMATION

Two types of AgEMPs are available. A *headquarters* (CAP 122) audit covers farm shops, poultry houses, dairy barns and milking facilities, grain drying and storage facilities, irrigation pumps and power units, etc. Typically, a headquarters audit examines equipment that directly consumes energy. The *landscape* audit (CAP 124) examines the energy consumed in the cultural practices (conventional tillage versus reduced tillage, continuous grazing versus prescribed grazing, etc.) used on the crop, pasture, hay, timber (etc.) farm. The landscape audit also takes into consideration the energy embedded in commercial fertilizer (such as nitrogen) and irrigation water. Generally, irrigation pumps, irrigation application equipment (center-pivots), and the associated efficiencies will be examined under the headquarters audit, whereas irrigation methods will be considered under the landscape audit.

NRCS staff employees do not provide the technical assistance for developing an AgEMP. An AgEMP must be prepared by a certified Technical Service Provider (TSP), who is a specialist with experience and training to make the necessary observations and analyses for an AgEMP. The TSP typically charges a fee for this service, and the fee is not directly the concern of NRCS. NRCS only provides financial assistance to the producer upon submission of the completed report to the local office.

CAP 122—Agricultural Energy Management Plan—Headquarters

General Information

Agricultural producer currently has minimal knowledge of and no plan for energy conservation. Producer is willing to collaborate with a certified TSP to develop an AgEMP 122 CAP in accordance with ASABE S612. The AgEMP is a grouping of conservation measures and management activities which, when implemented as part of a conservation system, will help to ensure that both production and natural resource protection goals are achieved. An AgEMP incorporates recommended measures to maximize energy conservation and efficiency. An EMP is developed to assist an owner/operator in meeting all applicable local, tribal, State, and Federal water quality goals or regulations.

From the ASABE S612 standard, the eight farm enterprises are:

Dairy	Field Crops
Swine	Fruit/Vegetables
Poultry	Aquaculture
Beef/Veal	Nursery/Greenhouse

Livestock - Small < 70 AU

Producer currently manages a small livestock operation with < 70 AU.

Livestock - Medium 70-300 AU

Producer currently manages a small livestock operation with 70-300 AU.

Livestock - Large 301-2500 AU

Producer currently manages a small livestock operation with 301-2,500 AU.

Livestock - XLarge >2500 AU

Producer currently manages a small livestock operation with >2,500 AU.

Non-Livestock - Single Enterprise

An Agricultural Energy Mgmt CAP for Non-Livestock operations with one enterprise will be planned according to the ASABE S612 standard. Producer currently manages a single non-livestock operation.

Non-Livestock - Two Enterprises

An Agricultural Energy Mgmt CAP for Non-Livestock operations (two enterprises, e.g., greenhouse and maple syrup) will be planned according to the ASABE S612 standard. Producer currently manages a non-livestock operation consisting of two enterprises.

Non-Livestock - Three Enterprises

An Agricultural Energy Mgmt CAP for Non-Livestock operations (three enterprises, e.g., greenhouse, maple syrup, irrigated grain) will be planned according to the ASABE S612 standard. Producer currently manages a non-livestock operation consisting of three enterprises.

Mixed Enterprises

This scenario may be used to incorporate up to three non-livestock enterprises with a livestock enterprise in the development of an AgEMP. The provided labor and acquisition of technical knowledge costs represent one non-livestock enterprise. This scenario is an 'Add-On' scenario, and up to three instances may be added to a non-livestock enterprise.

CAP 124—Agricultural Energy Management Plan—Landscape

General Information

Agricultural producer currently has minimal knowledge of and no plan for energy conservation. Producer is willing to collaborate with a certified TSP to develop a CAP 124 AgEMP-Landscape in accordance with ASABE S612. The purpose of this AgEMP is to provide the producer with specific recommendations for increasing energy efficiency and reducing energy use for each major cropping activity on the farm. The AgEMP is to provide estimates of energy savings for the landscape operations and does not include the headquarter operations. Energy usage may include, but is not limited to, irrigation pumping; manure collection and land application; agricultural practices (i.e., on-farm-use of mobile agricultural equipment). An AgEMP is developed to assist an owner/operator in meeting all applicable local, tribal, State, and Federal water quality goals or regulations.

AgEMP 124 Non-Irrigated < 50 acres

Producer currently manages a small non-irrigated operation with < 50 acres.

AgEMP 124 Non-Irrigated 50-499 acres

Producer currently manages a medium non-irrigated operation with 50-499 acres.

AgEMP 124 Non-Irrigated 500-5,000 acres

Producer currently manages a large non-irrigated operation with 500-5,000 acres.

AgEMP 124 Non-Irrigated >5,000 acres

Producer currently manages a extra large non-irrigated operation with >5,000 acres.

AgEMP 124 Irrigated < 50 acres

Producer currently manages a small irrigated operation with < 50 acres.

AgEMP 124 Irrigated 50-499 acres

Producer currently manages a medium irrigated operation with 50-499 acres.

AgEMP 124 Irrigated 500-5,000 acres

Producer currently manages a large irrigated operation with 500-5,000 acres.

AgEMP 124 Irrigated >5,000 acres

Producer currently manages a extra large irrigated operation with >5,000 acres.

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CPS 374 – Farmstead Energy Improvement

Planning Unit: Each
Reporting Unit: No.

ARKANSAS FACT SHEET *December 2012*

PRACTICE DEFINITION
Development and implementation of improvements to reduce on-farm energy use or improve the energy efficiency of on-farm equipment.

PRACTICE PURPOSE
Reduce energy use from agricultural systems or components by implementing the recommendations from on-site energy audit. The practice is applicable to all farming enterprises, including but not limited to, confined animal, grazing, and cropland.

PRACTICE INFORMATION
The practice applies to non-residential structures and energy-using systems where reducing energy use is the identified goal. This practice shall be used exclusively for implementing recommendations from a current on-farm energy audit performed in accordance with the standard ASABE S612 Performing On-Farm Energy Audits.

Where required, certify that the new, replacement, or retrofit system and related components or devices meet or exceed currently applicable federal, state, and local standards and guidelines.

Components shall meet NRCS conservation standards or industry standards, as appropriate. Common standards include NRCS 533 Pumping Plant, NRCS 372 Combustion System Improvement, ASABE EP566.1 Selection of Ventilation Fans, ASABE EP406.4 HVAC for Greenhouses, ASHRAE 90.1-2010 Energy Standard for Buildings, NEMA MG 1-2009 Motors and Generators.

CPS 374—Farmstead Energy Improvement

For all scenarios in CPS 374, associated activity plans and practices include 122-AgEMP – Headquarters and 374-Farmstead Energy Improvement. The principle resource concern addressed is Inefficient Energy Use—Equipment and Facilities.

IMPORTANT—scenario descriptions do not constitute practice specifications.

Attic Insulation

This scenario provides for the installation of additional insulation in the attic of an existing agricultural building, typically a poultry house. The added insulation must provide a minimum R-15 thermal resistance, which is equivalent to a minimum 4-inch settled depth of blown-in cellulose.

Feature Measure: nominal floor area of the building

Unit: square feet

Sealant

This scenario provides for the interior-face sealing of the cracks in the exterior walls of an existing agricultural building. This scenario is not intended to provide additional insulation on the flat planes of the building panels. Rather, the intent is to seal the cracks which may exist at the linear junctions of the flat planes and to seal miscellaneous holes. Thus, in a poultry house, the common sealing lines are the ridge cap, gable ends, eaves, and the junction of exterior walls with the footer plate. The sealing must be performed by a professional contractor spraying the areas with a sealant approved for poultry production facilities. Sealant is not merely spray foam from a can.

Feature Measure: nominal length of the building

Unit: feet

The payment schedule provides separate scenarios and payment amounts for Open-Truss buildings and Drop-Ceiling buildings.

Wall Insulation

This scenario provides for the conversion of obsolete sidewall curtains and other flexible walls of an agricultural building, typically a broiler house, to insulated permanent walls. The sidewall curtain is removed, a permanent exterior wall is installed in the former curtain, the entire wall area from footing to eave is reinsulated, a vapor barrier is installed, and appropriate protective layers are installed over the insulation. Various construction options are acceptable; see the applicable job sheet for specifications.

Feature Measure: wall area rebuilt/reinsulated

Unit: square feet

Greenhouse Screen

This scenario provides for the installation of a mechanically controlled screen or blanket to control solar radiation and heat transfer from an agricultural greenhouse. The screens are typically installed flat across the house from gutter to gutter or truss to truss, and along the sidewalls as necessary. The mechanical screen system consists of controls, a drive motor, support cables, and the shade screen, which may be knitted, woven, or non-woven strips of aluminum fiber, polyethylene, nylon or other synthetic material.

Feature Measure: area of screen installed

Unit: square feet

LED

This scenario provides for the replacement of inefficient light bulbs, such as incandescent bulbs, in an existing agricultural facility with light-emitting diode (LED) bulbs. Old bulbs are replaced with new bulbs on a 1:1 ratio, and replacement of light fixtures is not necessary. The typical use of these LED bulbs is for 'Grow-Out' bulbs in a broiler house. As such, these bulbs must be dimmable and designed for poultry house use. Arkansas policy states that existing CFL bulbs are not eligible for replacement with LED bulbs. Typically, a 40x400' broiler house requires 40 bulbs, and a 40x500' broiler house requires 50 bulbs.

Feature Measure: the number of bulbs installed

Unit: each

CFL

This scenario provides for the replacement of inefficient light bulbs, such as incandescent bulbs, with compact fluorescent (CFL) bulbs. Old bulbs are replaced with new bulbs on a 1:1 ratio, and replacement of light fixtures is not necessary. The typical use of these CFL bulbs is for 'Brooding' bulbs in a broiler house. As such, these bulbs must be designed for poultry house use but do not require dimming ability. Typically, a 40x400' broiler house requires 20 bulbs in the brood end of the house only, and a 40x500' broiler house requires 24 bulbs.

Feature Measure: the number of bulbs installed

Unit: each

Linear Fluorescent

This scenario provides for the replacement of an inefficient lighting system, such as incandescent bulbs or T12 fluorescent fixtures, with a high-efficiency linear fluorescent system using T8 or T5 bulbs. The replacement of the light fixtures is usually required. The fixtures must use single electronic ballast. Appropriate disposal of existing lamps, ballasts and other materials is required.

Feature Measure: the number of fixtures installed

Unit: each

Exhaust

This scenario provides for the replacement of a conventional exhaust fan in an agricultural building with a high-efficiency exhaust fan. Typically, the new fan will feature a 48" or greater diameter and low RPM speed. Typically, these fans are 'tunnel ventilation fans' installed in a broiler house.

Feature Measure: the number of fans installed

Unit: each

HAF (Circulation Fan)

This scenario provides for the installation of stir fans in an existing agricultural building (typically a broiler house or greenhouse) to force the mixing of the inside air to reduce stratification and promote uniform temperature and moisture of the air. The acronym HAF means 'horizontal air flow', but a vertical blowing fan (like a household ceiling fan, also called a paddle fan) is often used in an open-truss building. In a 400- to 500-ft long broiler house, 6 to 8 stir fans are typically used, with 6 being the more prominent number.

Feature Measure: the number of fans installed

Unit: each

Radiant Heater

This scenario provides for the replacement of conventional heaters (which provide heat by heating the air) in an existing agricultural building with new radiant-style heaters. Radiant tubes, "radiant quads", and radiant brooders are all acceptable. The scenario is typically used to replace obsolete "pancake" brood heaters in the renovation of a broiler house. The scenario payment includes costs for the materials and labor to remove of old heaters, re-plumb gas lines, cables and wench systems, and install the new heaters and includes all other associated costs.

Feature Measure: radiant heating capacity

Unit: 1000 BTU/hour

Please refer to the Amendment 22 Policy document for instructions on the amount of radiant heating to contract. As an example of the order of magnitude, a typical 40x500 broiler house at 45 BTU/hour per square foot will require 900,000 BTU/hour of heating capacity.

Plate Cooler

This scenario provides for a heat exchanger to transfer a large amount of heat into or out of an agricultural product in an existing production system. Typically, the scenario is used to install a plate cooler to remove a large amount of heat from milk before the milk enters a bulk storage tank, which significantly reduces the heat load on the bulk tank refrigeration system.

Feature Measure: rated capacity of the plate cooler

Unit: gallons/hour

Scroll Compressor

This scenario provides for the replacement of a reciprocating compressor in an existing agricultural refrigeration system with a new scroll compressor. The scenario is typically used to retrofit the milk cooling system of a dairy. The scenario payment covers costs for the new scroll compressor, associated controls, wiring, and miscellaneous materials to retrofit an existing refrigeration system, but the scenario does not include a new condenser (the radiator typically positioned outdoors) or evaporator (the unit located inside the bulk tank being cooled).

Feature Measure: nameplate horsepower of the compressor

Unit: horsepower

(Continuous Flow) Grain Dryer

This scenario provides for the replacement of an existing manually-controlled continuous-flow grain dryer with a computer-controlled continuous flow dryer. The microcomputer-based control system adjusts the burner and/or the grain flow rate to achieve a consistent and accurate moisture content of the exiting grain. The typical operation requires a capacity of 860 bushels per hour.

Feature Measure: rated capacity of the dryer

Unit: bushels/hour

Automatic Controller System

This scenario provides for the installation of an automatic control system on an existing manually-controlled agricultural system. Components typical to such a system include a logic controller and/or a data logger, software, sensors, switches and/or relays, communication links, and wiring. Note—single component controllers (such as variable speed drives for electric motors, control units for a grain dryer, etc.) are not system controllers. System controllers operate multiple components. A broiler house controller is great example as it controls lights, curtains, fans, ventilation openings, etc.

Feature Measure: each controller installed

Unit: each

Variable Speed Drive (for an Electric Motor)

A variable-speed drive (VSD) provides a modern practical method to vary the speed of an electric motor and the attached machinery. This scenario provides for the installation of a VSD to an electric motor to drive existing agricultural machinery—such as an irrigation pump, vacuum pump, ventilation fan, etc. The VSD works by varying the frequency of the input power from the standard 60 Hz, and for that reason the unit is sometimes called a variable-frequency drive or VFD. A VSD typically provides connections for a limited number of sensors (such as for flow rate or pressure head), displays a digital readout of the measurements and other system parameters, and automatically controls the motor based on those measurements. The scenario pricing includes the cost of typical appurtenances such as control blocks, line filters, and lead wires to the VSD. But, the scenario does not include an electric motor.

Feature Measure: nameplate horsepower of the attached electric motor

Unit: horsepower

A VSD can only drive a three-phase motor. Luckily, some VSDs can accept single-phase input power to drive a three-phase motor. Check with the local power company regarding the specific installation site.

Motor Upgrades

These scenarios provide for the replacement of an existing standard efficiency motor with a new high efficiency motor. The existing motor must drive existing agricultural machinery—such as an irrigation pump, vacuum pump, ventilation fan, etc. These scenarios can be used to convert an internal combustion (IC) power unit to an electric motor system, but note that the old IC unit must be disabled. When recommended by the energy audit, a variable speed drive can be contracted alongside the electric motor to maintain the variable-speed flexibility normally associated with an IC power unit.

Feature Measure: nameplate horsepower of the installed motor.

Unit: horsepower

The payment schedule provides differing payment rates for the following horsepower ranges:

- > 100 HP
- ≥10 and ≤ 100 HP
- >1 and <10 HP
- ≤ 1 HP