

ENERGY MANAGEMENT (CSP Enhancements)

Enhancement Activity Task Sheet

January 2006

UT-CSP-EEM



Enhancement Activities

Enhancement activities refer to actions that provide resource benefits beyond the level prescribed by NRCS Conservation Practice Standards. Once implemented Enhancement Activities should result in an observable or measurable improvement to the condition of one or more of the soil, water, air, plant or animal resources, or provide for more efficient resource utilization and/or energy conservation.

Enhancement Activity Benefits

Enhancement activities associated with Energy Management such as converting to bio-fuels or renewable forms of energy, recycling of lubricants, and reducing energy consumption can result in the following benefits:

- New and expanded markets for agricultural feedstocks.

- Reduced U.S. dependence on petroleum and other imports of critical materials.
- Diversified agriculture.
- Rural development.
- Clean air and water.

CSP Payments

You can earn payments by participating in any of the following activities:

- Reduce energy consumption and earn \$100 for a 5% reduction; \$200 for a 10% reduction and \$500 for a 20% reduction of total BTUs for the agricultural operation.
- Conduct an energy audit of agricultural operations and earn \$500.
- Recycle 100% of the on-farm lubricants and earn \$200 per year.
- Use of renewable energy fuel (Biodiesel or Ethanol). Payments are made in \$25 increments for each 100 gallons actual biofuel used per year. (ex: 500 gallons of 20% biodiesel = 100 gallons of renewable fuel for a payment of \$25)
- Generate renewable on-farm energy such as solar, wind, geothermal or methane and earn \$2.50 per 100 kWh.
- Reduce machinery field operations and earn up to \$0.90 per acre.
- Use perennial/annual legumes in the crop rotation to reduce energy need for production of nitrogen. (perennial = \$0.70/Ac annual = \$ 0.10)

CSP Enhancements earnings are subject to payment caps. Your actual payment will depend on your CSP Tier level and the number of acres enrolled.



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Client's Acknowledgement Statement:

I have elected to use the following Energy Conservation activities and understand the requirements of the selected activities (Check all that apply):

- Reduce energy consumption (Worksheet 1)
- Conduct an energy audit of agricultural operations (Worksheet 2)
- Recycle 100% of the on-farm lubricants (Worksheet 3)
- Use fuels blended with renewable agricultural products (Worksheet 4)
- Generate on-farm renewable energy such as solar, wind, geothermal or methane (Worksheet 5)
- Reduce machinery field operations (Worksheet 6)
- Use of perennial/annual legumes in rotation (Worksheet 7)

I agree that the following information will be provided to NRCS upon request:

- Written documentation of the activity performed (use attached worksheets or equivalent).
- Copies of dated receipts for equipment or services purchased.

I understand that CSP Enhancements earnings are subject to payment caps and that my actual payments will depend on my CSP Tier level and the number of acres enrolled.

I understand that it is my responsibility to obtain all necessary permits and to comply with all ordinances and laws pertaining to the application of these activities.

Accepted by: /s/ _____ Date: _____

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Worksheet 1 - Energy Use Reduction Records

Payment schedule: \$100.00/yr for a 5% reduction
 \$200.00/yr for a 10% reduction
 \$500.00/yr for a 20% reduction

Opportunities for energy conservation are available in almost every application or operation on the farm or ranch. Energy conservation can be achieved from simple management changes, such as shifting energy consuming irrigation to hours of low evapo-transpiration or conscientiously completing scheduled maintenance so that systems work at optimal levels.

Use this table to keep a record and document energy saved. Energy company receipts must be maintained and provided annually as documentation.

Energy Type	Dates	Baseline BTUs (1000)	Dates	Current BTUs (1000)	% Reduction (Baseline-Current /Baseline)	Estimated Payment (5% = \$150) (10% = \$250) (20% = \$500)
Electricity	7/04-6/05	60,000	7/05-6/06	57,000	$60,000-57,000/60,000 = 5\%$	\$150.00
Electricity	7/04-6/05	60,000	7/06-6/07	45,000	$60,000-53,000/60,000 = 11\%$	\$250.00
Electricity	7/04-6/05	60,000	7/07-6/08	40,000	$60,000-45,000/60,000 = 25\%$	\$500.00

Energy Use Reduction Certification

I certify that over the past 12 months I have reduced energy consumption on my agricultural operation by the amounts specified on the table above.

Name: _____ Date: _____



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Worksheet 2 - Energy Audit of Agricultural Operations

Payment: \$500 one time reimbursement for energy audit.

An energy audit will:

- locate all energy sources used in an agriculture operation
- evaluate how energy is used
- quantify the amounts used
- evaluate the efficiency of every energy using activity
- identify changes to operations or alternate energy sources and calculate energy and cost savings based on improvements and changes to each system.

You may hire a professional contractor or utility to conduct an energy audit. You should ensure that the contractor has relevant educational and professional experience, has a successful track record, can provide objective advice, has declared any financial relationships with equipment vendors or service companies, and has qualified staff.

Energy Audit Certification

I certify that I conducted an energy audit of my agricultural operation.

Name: _____ Date: _____

Attach receipt from energy audit company.

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Payment: \$200/year reimbursement for cost of lubricant recycling.

Without proper disposal, lubricants enter the environment, especially groundwater or surface water. Good management of these wastes can help protect the quality of the groundwater and of drinking water. The first step in reducing potential associated water quality degradation is to carefully purchase and use only essential products, reuse them when possible, and recycle them at a recycling depot.

For purposes of CSP, farm lubricants are defined as oils, fluids, or greases, including all mineral-based oils, synthetic oils, or semi-synthetic oils used to reduce friction in equipment and machinery. Recycling involves disposal of lubricants through a recycling company or depot.

Burning is not considered recycling unless burning is performed in a furnace that has been certified by EPA to meet or exceed all emission standards for the area.

Lubricant Recycling Certification

I certify that over the past 12 months I have recycled 100% of the lubricants used on my agricultural operation.

Name: _____ Date: _____

Attach receipt(s) from used oil recycling company.



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Worksheet 4 - Use of renewable energy fuel (Biodiesel or Ethanol)

Payment schedule: \$25 for each 100 gallons of actual bio-fuels used each year.

Using renewable energy fuels can eliminate the use of toxic fuel additives, such as MTBE (Methyl Tertiary Butyl Ether); reduce air and water pollution; and reduce greenhouse gas emissions.

Use this table to keep a running record of bio-fuel use. Receipts must be maintained and provided as documentation for payment.

Date	Fuel Type	Amount (gallons)	Renewable Component (gallons)	Estimated Payment (\$)
August 8, 2005	E85	6,000	6,000 × .85 = 5,100 (See Table 1)	5100/100=51 51*\$25=\$1275

Notes:

- Bio-fuel is defined as *bio-diesel* and *fuel grade ethanol*.
- Payments for renewable fuel under CSP are *limited to the bio-based portion* of eligible blended fuels in 100 gallon increments. For example, E-85 is 85% ethanol, therefore, for 588 gallons of ethanol, payment will be made only for the 588-gallon bio-based component.

Use of Renewable Fuels Certification

I certify that over the past 12 months I have used the renewable, agricultural based fuel products on my agricultural operation specified on the table above.

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Look-up tables are provided for converting the most commonly-used renewable fuel blends to their eligible renewable components. An example of a calculated method for E85 is also provided in Line 1 of the record keeping sheet.

Table 1 - Conversion Charts (Renewable Fuel Portion of Blended Fuels)

E85 (Ethanol 85) ¹		E10 (Ethanol 10) ²		B20 (Biodiesel) ³		B10 (Biodiesel) ⁴	
Gallons of Blended Fuel	Equivalent Gallons of BioFuel	Gallons of Blended Fuel	Equivalent Gallons of BioFuel	Gallons of Blended Fuel	Equivalent Gallons of BioFuel	Gallons of Blended Fuel	Equivalent Gallons of BioFuel
120	100	1,000	100	500	100	1,000	100
588	500	5,000	500	2,500	500	5,000	500
1,176	1,000	10,000	1,000	5,000	1,000	10,000	1,000
1,764	1,500	15,000	1,500	7,500	1,500	15,000	1,500
2,353	2,000	20,000	2,000	10,000	2,000	20,000	2,000
2,941	2,500	25,000	2,500	12,500	2,500	25,000	2,500
3,529	3,000	30,000	3,000	15,000	3,000	30,000	3,000
4,117	3,500	35,000	3,500	17,500	3,500	35,000	3,500
4,705	4,000	40,000	4,000	20,000	4,000	40,000	4,000
5,293	4,500	45,000	4,500	22,500	4,500	45,000	4,500
5,881	5,000	50,000	5,000	25,000	5,000	50,000	5,000

Note: Above 5,000 gallons use the following calculations to determine the renewable portion of the blended fuel.

1. 85% of fuel is ethanol
2. 10% of fuel is ethanol
3. 20% of fuel is soybean oil
4. 10% of fuel is soybean oil

gallons of blended fuel x .85 = equivalent of bio-fuel
 gallons of blended fuel x .10 = equivalent of bio-fuel
 gallons of blended fuel x .20 = equivalent of bio-fuel
 gallons of blended fuel x .10 = equivalent of bio-fuel



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Worksheet 5 – Renewable energy generation (solar, wind, water, geothermal, methane)

Payment: \$2.50/100 kWh of renewable energy generated on-farm (energy such as solar, wind, geothermal or methane).

Solar, wind, biogas (methane generation), geothermal, or hydropower energy can be generated and used on the farm to conserve energy and increase energy independence.

Documentation Required: Energy savings verified by a State Public Utilities Commission, local electric utility (when connected to the grid), or the Environmental Protection Agency's conservation verification protocol.

Use this table to keep a record of energy generated. Receipts must be maintained and provided as documentation for payment.

Date	Method	kWh	Estimated Payment (\$2.50*100 kWh)
1/05-12/05	Solar Panels <i>Example</i>	6000	\$150.00

Energy Generation Certification

I certify that I have generated the amount of renewable energy specified on the table above on my agricultural operation.

Name: _____ Date: _____



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Worksheet 6 – Soil Tillage Intensity Ratings (Tillage Reduction Records)

Payment schedule: \$0.50/acre for a STIR < 60
 \$0.70/acre for a STIR < 30
 \$0.90/acre for a STIR < 15

Soil Tillage Intensity Rating (STIR) is an index used to evaluate the kind and number of ground disturbing tillage passes used to produce a crop. Because STIR calculations consider operating speed of equipment, tillage type, tillage depth and the percent of surface area disturbed, the results reflect how much energy is used to establish and grow a crop. A low STIR rating is an indication of energy efficient farming.

Your STIR rating will be calculated by NRCS based on tillage information you supply. Payments will be based on the STIR over the entire rotation.

In the example below the STIR rating is less than 20 so the producer is eligible for a payment of \$0.70 per acre.

Date	Crop	Field #s	Operation
10/5/01	Wheat	3 & 4	Drill w/chisel openers - 6 inch spacing
8/15/02			Harvest
3/10/03			Spray
4/1/03	Barley		Drill w/chisel openers - 6 inch spacing
7/25/03			Harvest
4/1/05	Mustard		Drill w/chisel openers - 6 inch spacing
7/25/05			Harvest

Example

Field Operations Certification

I certify that I have followed the field operations for my crop rotation as specified on the attached RUSLE2 report (provided by NRCS).

Name: _____ Date: _____



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Worksheet 7 – Use of Perennial/Annual Legumes in Rotation

Payment schedule: Perennial legumes in rotation \$0.70/acre
 Annual legumes in rotation \$0.10/acre

Legumes have the ability to fix nitrogen from the air. They produce more than enough for their own use and the excess is available to other plants. Therefore by using legumes in the crop rotation there is a reduced need to apply commercial nitrogen fertilizer. Energy is used to produce commercial fertilizer and so by using the legumes to supply nitrogen to other crops the need for energy to produce the commercial fertilizer is reduced.

Use this table to keep a record of the legumes in your rotation.

Field #'s	Acres	Annual Legumes in rotation	Perennial Legumes in rotation
2	10	Yellow Sweet Clover	
1,3,5	100		Alfalfa

Perennial/Annual Legumes Certification

I certify that I have grown/am growing the legumes identified in the table above this growing season.

Name: _____ Date: _____