

Agricultural Energy Management Plan Criteria Conservation Activity Plan Code (122)(No.)

Definition:

An Agricultural Energy Management Plan (AgEMP) contains the strategy by which the farmer/rancher will explore and address his/her on-farm energy problems and opportunities.

AgEMP Criteria:

This section established the minimum criteria to be addressed in the development of AgEMPs

I. General Criteria:

- A. Assesses farm operation and develops a plan to reduce energy use on the farming operation.
- B. Complies with federal, state, tribal, and local laws, regulations and permit requirements.
- C. Provides all required National Environment Policy Act (NEPA) Documentation and other environmental compliance documentation, including National Historic Preservation Act, Endangered Species Act, Environmental Justice, Air Quality compliance. At a minimum, the plan will contain a completed Resource Concerns and Special Environmental Concerns worksheet (CPA-52) as a checklist. Reasons/justifications for data gaps or planning limitations and biases should be provided in a brief statement here.
- D. An AgEMP shall be developed by NRCS partners and certified Technical Service Providers (TSP). The specific criteria required for each type of certification for TSP is located on the TSP web site (TechReg) at: <http://techreg.usda.gov/>. If specific certifications are not available, a qualified individual or entity must assume liability through a mandated certification statement.

II. The AgEMP plan shall address and document the following elements:

- A. Background and site information;
- B. Energy audit per performing on-farm energy audit (ASABE Draft X612) for the Headquarters' Operation and the Landscape (Working Lands);
- C. Energy conservation planned;
- D. (Optional) Renewable energy production assessment;
- E. References.

III. AgEMP Element Specific Criteria

- A. Each of the AgEMP elements will address specific criteria. The degree to which these elements are addressed in the development and implementation of a site-specific AgEMP is determined by the General Criteria in Section 2.A and the specific criteria provided for each element of the AgEMP identified below.

- B. Background and Site Information - This element provides a brief description of:
1. Name of owner/operator
 2. Facility location(s) and mailing address
 3. Type and size of the operation
 4. Resource Concerns and Special Environmental Concerns: Extract from State's current CPA-52, Environmental Evaluation Worksheet—in National Environmental Compliance Handbook—includes benchmark conditions for all resource concerns and special environmental concerns (e.g. soil, water, air, plants, animals, social and economic concerns. This is just a checklist and the level of resolution for inventory of these resource concerns may vary depending upon the nature, size, and intensity of possible positive and negative effects to these resources.
 5. Landowner concerns
- C. Energy Audit per Performing On-farm Energy Audit (ASABE Draft 612). This element determines and documents current energy usage, over the past annual cycle, and provides cost-effective alternatives and recommendations for energy conservation of each farm enterprise. A field crop system and livestock production system on the same farm would be considered two separate enterprises. The evaluation of energy conservation activities shall include energy used in the cultivation, protection, harvesting, processing and storage of agricultural crops and in the feeding, housing, and processing of farm animals and animal products, and wildlife enhancement activities.
- D. Criteria for Headquarters Energy Audit
1. Document the baseline condition, the “no action” alternative.
 - a. Livestock type and facilities description
 - b. Non-livestock production facilities
 2. Address enterprise specific management operations as required by the audit type
 3. Describe activity and primary equipment involved with each headquarters operation
 4. Document type of energy resource used and current energy consumption by major activity at the farm headquarters.
 5. Describe components of Major Activities
 - a. Manufacturer
 - b. Equipment component factory ratings (HP, efficiency, BTU use)
 - c. Management use efficiencies (ex. manual/automatic controls)
 - d. Estimated annual energy use
 6. Summary of energy use by energy resource
 7. Assessment - Alternatives Development

- a. Describe the planned energy saving actions
 - b. Document energy savings for the major activities at the farm headquarters as BTU's, KW hours, etc.
 - c. Simple payback period (in years) of proposed changes
- E. NRCS Landscape (cropland, pastureland, forestland, etc.) Farm Energy Audit Content.
The Audit shall address energy use for the following elements (as applicable):
- Field equipment operations
 - Embedded energy in agrichemicals
 - Irrigation
 - Pasture management
 - Forest operations
1. Specific Criteria for each element as identified below:
 - a. Cropland field equipment operations - estimate energy use associated with the current field equipment operations (Compare in common units):
 - Tillage
 - Planting
 - Harvest
 - Manure application
 - Chemical applications
 - b. Identify potential energy savings associated with alternative activities. Analysis may include, for example:
 - Number and type of field operations
 - Trips to the field
 - Trips across the field
 - Precision farming practices
 - Equipment maintenance and calibration
 - Size of tractor relative to implement
 - Alternative fuels
 2. Embedded energy in agrichemicals
 - a. Estimate indirect energy use associated with agrichemicals used in the operation
 - b. Identify potential indirect energy savings associated with alternative management activities. Analysis may include, for example:
 3. Quality of nutrient management plan

4. Potential adjustments to crop rotation
5. Precision application techniques
6. Irrigation
 - a. Estimate energy used in current irrigation system
 - b. Identify energy savings associated with alternative equipment and management activities. Analysis may include, for example:
 - c. System type
 - d. System pressure
 - e. Irrigation water management techniques
 - f. Pumping plant evaluation
 - g. System maintenance
7. Pasture management
 - a. Estimate direct energy used in pasture management including:
 - b. Watering facilities
 - c. Pasture maintenance/renovation
 - d. Identify energy savings associated with alternative equipment and management activities. Analysis may include, for example:
 - Impact of grazing management on reseeding requirements
 - Hauling distance for water/feed vs. water facility development
 - Other
8. Forest operations
 - a. Estimate current energy use associated with forest harvest system
 - b. Identify efficiency options associated with forest harvest system. Analysis might include (but not be limited to):
 - Forest trails and landings
 - Potential road closures (access control)
 - Types of equipment used
 - Identify potential energy savings in other land uses associated with windbreaks/shelterbelts
 - Other
9. Other issues

Tools Available/Needed to Support the Audit

Audit Element	Tools Available or needed	Tool output	Already existing?
Field Equipment Operation	<ul style="list-style-type: none"> RUSLE2 Cropland Energy Estimator (CLE). Size of tractor relative to implement(s) used 	<ul style="list-style-type: none"> Fuel or BTU use per acre Table to identify ideal tractor size for specific implements based on ASABE equipment standard 	<ul style="list-style-type: none"> Yes (RUSLE2 and CLE*) No
Embedded Energy in Agrichemicals	<ul style="list-style-type: none"> CLE CLE upgrade 	Embedded energy in agrichemicals applied. (Current tool does not automatically adjust for management changes)	<ul style="list-style-type: none"> Yes (Upgrade needed)
Irrigation	<ul style="list-style-type: none"> Energy Self-Assessment CLE Upgrade 	Fuel or Btu use per acre	<ul style="list-style-type: none"> Yes (Upgrade needed)
Pasture Management	TBD	Fuel or Btu use per acre or per system	No
Livestock Operation	Energy Self-Assessment	Energy use index	Yes (CSP)
Forest Operations	TBD	Practice Standards	TBD

*CLE = Cropland Energy Estimator

A. Renewable Energy Production Assessment (**Optional**): This element identifies the potential for renewable energy production on-farm. On-site assessments for wind, solar, biogas and potentially other renewable resources will be conducted by a certified specialist. A baseline on-farm energy audit is required prior to this assessment.

1. At least one renewable energy alternative needs to be documented that impacts one of the major activities defined in the energy audit.
 - i. Utilize on-farm energy audit results and additional on-site assessment to develop load analysis, load profile and provide any additional efficiency recommendations
 - ii. Identify suitable location(s) for renewable energy system(s), considering landowner objectives.
 - iii. Provide recommendations for system type(s) and size(s) based on the farm's energy production goals.
 - Include basic description/scope, cost range and payback period

2. References

This element lists the technical documentation sources used for the AgEMP and may include the actual documents or web sites that contain the technical documentation useful for the producer.