

United States Department of Agriculture
Natural Resources Conservation Service

Date Received:

Control No:

Field Office and TSP Certification Plan Review Checklist

**Agricultural Energy Management Plan
Conservation Activity Code (128)**

(Refer to CAP 128 Criteria for a complete listing of required documentation)

Purpose: The purpose of the checklist is to provide guidance for elements that need to be addressed or included in the Conservation Activity Plan (CAP). The checklists are recommended for use by NRCS staff and Technical Service Providers, but are not required. TSPs can use the checklist for a general guidance of elements to include in the plan, but it is still the TSP's responsibility to follow the CAP Plan Development Criteria for specific elements and the detail of each element to be included.

Agricultural Energy Management Plan	
State/County:	Date Plan Submitted:
Producer/Owner:	Technical Service Provider:
<p>Definition: An Agricultural Energy Management Plan (AgEMP) CAP 128 is a detailed documentation of energy consuming components and practices of the current farming operation and the opportunities available to the producer to explore that address their on-farm energy conservation concerns and objectives.</p> <p>Minimum components of a AgEMP, CAP 128 shall include:</p>	

A.	General AgEMP Criteria:
	<p>The CAP 128 shall be developed by a certified Technical Service Provider (TSP). A listing of AgEMP, CAP 128 certified TSPs is located at the website: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp/</p>
B.	Criteria for Specific Elements of an AgEMP:
1.	Cover Page
	<p>The AgEMP must have a cover page providing the following:</p> <ol style="list-style-type: none"> 1. Farm name, owner name (if different from farm), street address, and county/state; 2. Primary phone number of producer; 3. Primary enterprise of the farm; 4. TSP name, mail address, and primary phone number; and, 5. Date that the AgEMP was completed and delivered to the producer.

2.	Summary Report of Energy Practices
	The information contained in Tables 1, 2, and 3 (included at the end of this checklist), must be displayed in tabular form. It is not required to have the three tables exactly as shown, only that all the information contained in the tables be shown in tabular form in this section of the report.
3.	Background and Site Information – The AgEMP will provide a narrative for:
	a. Facility location(s);
	b. Type and size of the operation (e.g., description of the poultry, dairy, or swine, etc. as well as production levels, and any unusual factors that affect energy use);
	c. Producer concerns and objectives for the enterprise (i.e., description of why the producer wants an on-farm energy audit and their specific objectives); and,
	d. An aerial map or equivalent drawing indicating the farm operation to include all the structures included in the AgEMP (animal housing, shops, grain storage, processing, etc.) the headquarters and the fields that were evaluated in the farming operation.
4.	Documentation of Current Equipment and Baseline Energy Use: The AgEMP will provide comprehensive documentation of the current energy resources (e.g., electricity, natural gas, etc.) used as a part of the primary farming enterprise (See Table 1, ASABE S612, “Suggested Components within Major Activities by Farm Enterprises for Audit Assessment”, appended to Checklist) for all major activities. Each component examined shall be documented with:
	The usage and costs for the prior year energy consumption shown by energy resource.
	A description of the components, primary equipment, and/or details of the activity, as appropriate according to the amount of energy used, such as: <ul style="list-style-type: none"> a. Type and size of equipment; b. Component equipment ratings such as hp, Btu input, Btu output, efficiency; c. Auxiliary items - that enhance management such as thermostats, timers, and manual overrides of automatic systems.
	Provide an estimate of the annual energy usage for each activity.
	Provide an estimate of hours in use per year for each component evaluated.
NOTE	If a major activity is not applicable to the farm enterprise or the major activity has no opportunities for improved energy use, the report needs to state this.
5.	Energy Improvement Measures: The AgEMP will identify potential energy improvement practices that will reduce energy use and provide appropriate estimated energy savings relative to the baseline energy use for each examined improvement. For each improvement measure examined, the report must present:
	a. The estimated energy savings—first in the common sale units (kWh, gallons, etc.) and secondly in the energy units of millions of British thermal units (MMBtu);
	b. The estimated energy cost savings (\$/yr.);
	c. The estimated installed cost (\$);
	d. The simple payback period in years; and,
	e. Estimated Life in years of the recommended measure.

6.	Signature Page: The AgEMP must have a signature page providing the following:
	<ul style="list-style-type: none"> a. Farm identification; b. Farm name, owner name, street address, and county; and, c. Primary enterprise of the farm.
	<p>TSP certification statement:</p> <ul style="list-style-type: none"> a. A statement to the effect that the auditor possesses the technical expertise and experience to perform on-farm energy audits and that the report meets all the requirements of ASABE S612 (per §6.1) and NRCS CAP 128; b. The signature of the TSP, and date.
	<p>Producer acceptance statement:</p> <ul style="list-style-type: none"> a. A statement to the effect that the Plan correctly lists the farm identifying information, addresses the primary farm enterprise under the Producer's control, adequately represents the baseline conditions of the farm enterprise, adequately represents the Producer's concerns and objectives, and that the Producer has received a final copy of the Plan. b. Spaces for the signature of Producer, and date.

Yes	No	Checklist Approval
		I have reviewed this Agricultural Energy Management Plan, and have found the documentation to meet the Criteria for Conservation Activity Plan 128.
		NRCS Representative Name and Title (print or type):
		NRCS Representative Signature
		Date:
Notes (If "No" is checked, include reasons for denial, comments, missing items that need to be added, etc.):		

Table 1: Summary of Energy Improvements (Examples of recommended measures shown.)

Recommended Measure	Estimated Annual Reduction in Energy Use				Estimated Costs, Savings, Payback, and Prioritization for Implementation				
	Electric Savings (kWh)	Natural Gas Savings (ccf)	Propane Savings (gal)	Other ¹	Energy Savings (MMBtu)	Installed Cost [a]	Annual Cost Savings [b]	Payback in Years [a/b]	Est. Life in Years
Lighting	25,210				86	\$1,740	\$2,094	0.8	7
Seal Air Leaks			477		44	\$1,500	\$809	1.9	8
Insulate Brood Curtain			98		9	\$450	\$167	2.7	10
Exposed Foundation Wall Insulation			383		35	\$5,621	\$651	8.6	20
Curtain to Solid Insulated Sidewalls			442		41	\$7,168	\$754	9.5	20
Totals:	25,210		1,400		215	\$16,479	\$4,475	3.7	

Table 1 Notes

- 1) Use the *Other* column to aggregate any miscellaneous sources of energy.
- 2) Estimated Life is expected useful life of the equipment recommended with standard O&M activities.

Table 2: Annual Energy Savings if Recommendations are Fully Implemented

Fuel	Current Usage	MMBtu Usage	Savings	MMBtu Savings	% Savings
Electricity (kWh)	135,920	464	25,210	86	18.5%
Propane (gal)	4,214	386	1,400	129	33.2%
Natural Gas (ccf)					
Diesel Fuel (gal)					
Other					
Totals		850		215	25.2%

Table 3: Estimated Annual Reduction of Pollutants. (Examples of environmental benefits for recommended measures from Table 1 shown.)

Environmental Benefits						
Recommended Measure	Energy Savings (MMBtu)	Greenhouse Gases			Air Pollutant Co-Benefits	
		Estimated CO ₂ (lbs)	Estimated N ₂ O (lbs)	Estimated CH ₄ (lbs)	Estimated SO ₂ (lbs)	Estimated NO _x (lbs)
Lighting	86	37,902.5	0.62	0.46	125.42	35.12
Seal Air Leaks	44	6,036.2	0.19	0.95	0.05	4.77
Insulate Brood Curtain	9	1,240.1	0.04	0.20	0.00	0.98
Exposed Foundation Wall Insulation	35	4,846.7	0.15	0.77	0.04	3.83
Curtain to Solid Insulated Sidewalls	41	5,593.3	0.18	0.88	0.04	4.42
Totals:	215	55,618.8	1.18	3.26	125.56	49.12

Table 1 – Suggested Components within Major Activities by Farm Enterprises for Audit Assessment

Major Activity	Components	Farm Enterprises							
		Dairy	Swine	Poultry	Beef/ veal	Field crops	Fruit/ vegetables	Aquaculture	Nursery/ Greenhouse
Lighting ^{1,7,10}	lamps, timers, sensors	X ⁶	x	x	x		x	x	X
Ventilation ^{2,7,10,11}	fans, control system, variable drives, humidity control	x ⁶	x	x	x		x	X(aeration)	x ^{8,9}
Refrigeration ^{5,7,10}	compressor, evaporator/chiller, motor, insulation	milk, products ⁶		eggs			commodity	x	Veg/cut flowers
Milk harvesting ^{7,10}	pumps, motors, controllers	x ⁶							
Controllers ^{7,10}	master system automation	x	x	x				x	x
Other motors/ pumps ^{3,4,7,10}	Types, compressors	X ⁶	x	x	x	x	x	x	x
Water heating ^{7,10,12}	heater, energy source, insulation, recovery, waterers	x ⁶	x	x	x				
Air Heating/ Bldg environment ¹⁰	heater, energy source, insulation, recovery, variable drives	x	x	x	x		x		x ^{8,9}
Drying ¹⁰	energy source, airflow (motors/fans), handling equipment					x			
Waste handling	collection and dispersal equipment/methods	x	x	x	x			x	
Air Cooling	energy source, airflow (motors/fans), control systems, evaporative	x	x	x	x				x ^{8,9}
Cultural Practices	planting, tilling, harvesting, engine driven equipment						x	x	
Crop/feed Storage					x	x	x	x	x
Water management	wells, reservoir, recycled	x	x	x	x	x	x	x	x
Material handling ^{7,10}	equipment, motors, pumps	x ⁶	x	x	x	x	x	x	x
Irrigation ¹⁰	motors/engines, pumps, power source					x	x		x

Table 1 used courtesy of the American Society of Agricultural and Biological Engineers, ASABE S612, July 2009.