**Agriculture Energy Management Plan, Landscape**
**Criteria - Practice/Activity Code (124) (No.)**

## 1. Definition

A Landscape Agricultural Energy Management Plan (Landscape AgEMP) contains the strategy by which the producer will explore and address producer/grower on-farm energy savings and opportunities on the working land (crop, forest, pasture, range). A Landscape Agricultural Energy Plan conservation activity plan must:

- Meet NRCS quality criteria for soil erosion, water quantity, energy, and other identified resource concerns;
- Comply with federal, state, tribal, and local laws, regulations and permit requirements; and
- Satisfy the operator's objectives.

**Energy Definitions:**

a. Energy: Fuels (purchased propane, diesel and natural gas) and electricity used to perform stationary farm and ranch activities. This definition includes renewable energy sources.

b. Energy Management: Optimization of energy use on farms and ranches to minimize non-renewable energy consumption.

c. Energy Source: The type of fuel (liquid or gas), electricity, or renewable power used to perform farm and ranch activities.

**Tools Needed:**

One or more tools are needed to evaluate energy associated with tillage, agrichemicals,

irrigation, pasture management, and forest operations. Some tools already exist or can be made functional with minimal effort.

Tools Available to Support the Landscape Energy Assessment

| Audit Element | Tools Available or needed | Tool output |
|---|---|---|
| Field Equipment Operation | • RUSLE2 and WEPS<br>• Energy Estimator Tillage<br>http://ecat.sc.egov.usda.gov/ | • Fuel or BTU use per acre |
| Embedded Energy in Nitrogen | • Factor = 20,000 BTU's per pound of synthetic nitrogen reduced. | Fuel or Btu use per acre |
| Irrigation | • Energy Self-Assessment<br>• Energy Estimator Irrigation<br>http://ipat.sc.egov.usda.gov/ | |

**2. Landscape AgEMP Criteria:**

A. This section establishes the minimum criteria to be addressed in the development of Landscape Agricultural Energy Plan developed by a certified Technical Service Provider (TSP).

B. The Completed "Landscape Agricultural Energy Plan (124)" template that includes the following required items:

- Background and Site Information Element
- Name of owner/operator;
- Farm location and mailing address;
- Soils Map and soil map units descriptions using the Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm as a minimum printout the Soil Report > AOI Inventory> Map Unit Descriptions
- Digital Conservation plan map with;
    1. Streams, surface waters, surface drainage, wetlands on or adjacent to site
    2. Property lines
    3. Field Boundaries, name/number, acres, and land use
    4. Map scale
    5. Structural Practices Located on Map
    6. Legend
    7. Grower Name, County, State
- Total acres of the plan;
- Resource evaluations for soil erosion, water quantity, and other local concerns identified.
- Landscape Agricultural Energy Resource Assessment: This element determines and documents current energy usage, over the past annual cycle. The evaluation of energy conservation activities shall include energy used in the cultivation, irrigation, production, protection, and harvesting of agricultural/forest crops. The Landscape AgEMP shall address energy use for the following elements (as applicable):

    a. Cropland field equipment operations - estimate energy use associated with the current field equipment operations under current management and with the planned treatment applied. (Compare in common units):

        - Field equipment operations that involve equipment passing over the field(s) (cultivation, planting, harvest, manure application, etc.) (use RUSLE2 or WEPS to estimate energy use)
        - Embedded energy in synthetic nitrogen used (20,000 BTU's per pound of synthetic nitrogen).
        - Growing/producing legume nitrogen for crops - energy saved by using less synthetically produced nitrogen
        - Irrigation energy required (system type, pressures, management techniques, pumping plant management, system maintenance)

    b. Pasture field equipment operations and potential use of legumes

- Pasture management (feed and water hauling, management to reduce irrigation, fertilization, or mowing)
- Field operations (mowing, spreading manure or fertilizer, etc.)
- Changes in species composition (growing/producing legume nitrogen for crops energy saved by using less synthetically produced nitrogen, or conserving irrigation water)
- Irrigation energy required (system type, pressures, management techniques, pumping plant management, system maintenance)
- Pumping livestock water

c. Forest field / harvest operations

- Forest operations and management (forest trails and landings, identified potential energy savings in other land uses associated with windbreaks/shelterbelts)

d. Range field equipment and management

- Forage operation and management
- Pumping livestock water

- Planned conservation practices to address soil erosion, water quantity, energy, and other local resource or human concerns. Document the planned conservation practices showing the planned amount, the fields where the practice is to be applied, and the planned year of application.
- When the following practices are planned include the appropriate Jobsheet or Implementation Requirements (founding in Section IV of the State eFOTG):

| Code | Practice Name |
|---|---|
| 328 | Conservation Crop Rotation |
| 330 | Contour Farming |
| 340 | Cover Crop |
| 345 | Residue and Tillage Management, Mulch Till |
| 329 | Residue and Tillage Management, No Till/Strip Till/Direct Seed |
| 346 | Residue and Tillage Management, Ridge Till |
| 380 | Windbreak/Shelterbelt Establishment |
| 528 | Prescribed Grazing |

## C. References

- USDA Natural Resource Conservation Service National Agronomy Manual, http://directives.sc.egov.usda.gov/ Title 190,
- NRCS (State Field Office Technical Guide – FOTG)

http://efotg.sc.egov.usda.gov//efotg_locator.aspx, Select State, Go to Section IV.

3. **Deliverables for the Client – a hardcopy of the plan that includes:**

- Complete Hardcopy of the client's plan (MsWord copy of the "Plan Template"). Document the planned conservation practices showing the planned amount, the fields where the practice is to be applied, and the planned year of application.
- Completed template for **Landscape Agricultural Energy Management Plan (124)**
- Soils Map and soil map units descriptions using the Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm as a minimum printout the Soil Report > AOI Inventory> Map Unit Descriptions
- Resource assessment results (wind and water erosion, water quantity, and others identified resource concerns that may be needed) – complete in the template or add printouts from assessment tool (RUSLE2 or WEPS)
- Landscape Agricultural Energy Resource Assessment (Where RUSLE2 or WEPS was used to estimate energy, the RUSLE2 or WEPS printouts for erosion can also be used to document energy before and after planned treatment). For irrigation add the printout for the Energy Estimator, Irrigation or other data showing before and after energy savings if a different irrigation energy estimator was used.
- When the following practices are planned include the appropriate Jobsheet or Implementation Requirements (founding in Section IV of the State eFOTG):

| Code | Practice Name |
|---|---|
| 328 | Conservation Crop Rotation |
| 330 | Contour Farming |
| 340 | Cover Crop |
| 345 | Residue and Tillage Management, Mulch Till |
| 329 | Residue and Tillage Management, No Till/Strip Till/Direct Seed |
| 346 | Residue and Tillage Management, Ridge Till |
| 380 | Windbreak/Shelterbelt Establishment |
| 528 | Prescribed Grazing |

- Digital Conservation plan map with;

  a. Streams, surface waters, surface drainage, and wetlands on or adjacent to site
  b. Property lines
  c. Field boundaries, name/number, acres, and land use
  d. Map scale
  e. Structural practices located on Map
  f. Legend
  g. Grower name, county, state

4. **Deliverables for NRCS Field Office:**

- Complete Hardcopy and Electronic copy of the client's plan and deliverables.
- Digital Conservation Plan Map with fields, features, and structural practices located.
- Digital Soils Map