

FARMSTEAD ENERGY IMPROVEMENT

(No.)
Code 374

Natural Resources Conservation Service
Conservation Practice Standard

I. Definition

On-farm energy use determination and development of methods for increasing efficiency for energy conservation.

II. Purpose

This practice may be applied as part of a conservation management system to reduce energy use.

III. Conditions Where Practice Applies

The practice applies to non-residential structures and energy using systems where reduce energy use is the identified purpose for the operator's action.

IV. Federal, Tribal, State, and Local Laws

Users of this standard should be aware of potentially applicable federal, tribal, state and local laws, rules, regulations or permit requirements governing farmstead energy improvement. This standard does not contain the text of federal, tribal, state, or local laws.

V. Criteria

General Criteria Applicable to All Purposes

Implement recommendations for components of an energy audit performed in accordance with the American Society of Agricultural and Biological Engineers (ASABE) Standard S612, Performing On-farm Energy Audits.

Where required, certify that the replacement or retrofit system and related components or devices meet or exceed currently applicable federal, state, and local standards and guidelines. Components of major activities by farm enterprises defined in ASABE S612 shall meet the appropriate NRCS or industry standard, such as:

- Wisconsin NRCS Field Office Technical Guide (FOTG) Section IV, Standard 533, Pumping Plant.

- NRCS National Handbook of Conservation Practices (NHCP) Standard 372, Combustion System Improvement.
- Lighting system per ASABE EP344.3.
- HVAC per American Society of Heating, Refrigerating and Air Conditioning Engineers Standard 90.1-2010.
- Ventilation fans per ASABE EP 566.1.
- Greenhouse HVAC per ASABE EP406.4.
- Motor efficiency per National Electrical Manufacturers Association MG 1-2009, Rev. 2010.

VI. Considerations

Energy conservation and energy efficiency improvements should result in a decrease of greenhouse gas emissions and ambient air pollutants. The implementation of this practice does not guarantee that greenhouse gas/carbon "credits" will be earned. Actual greenhouse gas emission reductions would require separate documentation.

Refer to NRCS NHCP Standard 671, Renewable Energy Systems, for possible use of renewable energy resources.

Plan progressive implementation of energy measures with ranking metrics such as life-cycle energy savings, payback period, or cost-effectiveness, etc., based on the landowner's goals and objectives.

VII. Plans and Specifications

Plans and specifications to implement the energy conservation and efficiency measures shall be in accordance with this standard and describe the requirements for properly installing the practice to achieve its intended purpose. Plans and specifications shall:

- include written specifications that describe the site specific details of installation.

- identify and describe the existing system and related components or devices.
- identify and describe the replacement or retrofit system and/or related components or devices.
- document system energy usage and resulting potential energy savings from the implementation of this practice.
- include a plan view showing the location of the measures in relationship to other structures or natural features where appropriate.
- detail drawings of the measures and appurtenances, such as piping, inlet and outlet connections, mounting, foundations, and other structural components where appropriate.

VIII. Operation and Maintenance

An operation and maintenance plan shall be developed that is consistent with the purposes of this practice, its intended life, and safety requirements.

Replacement or retrofit systems and related components or devices shall be operated and maintained in accordance with the manufacturer's recommendations.

Maintain records to document the implementation of energy measures. Retain and update records for a minimum of five years from the beginning of operation of measure implementation. Recommended records to be retained include:

- monthly utility bills, fuel purchases, and yield of agricultural commodities.
- documentation of maintenance conducted on the replacement, or retrofitted system and related components or devices.

REFERENCES

- American Society of Agricultural and Biological Engineers. 2003. Heating, Ventilating and Cooling Greenhouses. ANSI/ASAE EP406.4 JAN2003 (R2008). ASABE, St. Joseph, MI.
- American Society of Agricultural and Biological Engineers. 2005. Lighting Systems for Agricultural Facilities. ASAE EP344.3 JAN2005 (R2010). ASABE, St. Joseph, MI.
- American Society of Agricultural and Biological Engineers. 2008. Guidelines for Selection of Energy Efficient Agricultural Ventilation Fans. ASAE EP566.1 AUG 2008. ASABE, St. Joseph, MI.
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- American Society of Heating, Refrigerating and Air Conditioning Engineers. 2010. Energy Standard for Buildings Except Low-Rise Residential Buildings. ANSI/ASHRAE/IES, Standard 90.1. ASHRAE, Atlanta, GA.
- National Electric Manufacturing Association. 2006. Motors and Generators. NEMA MG1 – 2009 (R2010). Rosslyn, VA.
- USDA, NRCS Wisconsin Field Office Technical Guide (FOTG), Section IV, Practice Standards and Specifications.
- USDA, NRCS, National Handbook of Conservation Practices (NHCP).