

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD  
FARMSTEAD ENERGY IMPROVEMENT**

(No.)

**CODE 374**

**DEFINITION**

Development and implementation of improvements to reduce or improve the energy efficiency of on-farm energy use.

**PURPOSE**

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

**CONDITIONS WHERE PRACTICE APPLIES**

The practice applies to non-residential structures and energy using systems where reducing energy use is the identified goal.

**CRITERIA**

**General Criteria Applicable to All Purposes**

Implement recommendations for components of a current 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 retrofitted 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 Natural Resources Conservation Service (NRCS) or industry standard such as the following:

- [Conservation Practice Standard \(CPS\) 533, Pumping Plant](#)
- [CPS 372, Combustion System Improvement](#)

- Heating Ventilating and Air Conditioning (HVAC) per American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 90.1-2010
- Ventilation fans per ASABE EP566.1
- Greenhouse HVAC per ASABE EP406.4
- Motor efficiency per National Electrical Manufacturers Association MG 1-2009 (Rev. 2010)

**CONSIDERATIONS**

Energy conservation and energy efficiency improvements should consider greenhouse gas emissions and ambient air pollutants. Methods may be implemented to account for greenhouse gas emission credits, if applicable. Actual greenhouse gas emission reductions would require separate documentation.

In order to reduce energy imported onto a farm, consider 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.

**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 retrofitted 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.
- Include detailed drawings of the measures and appurtenances such as piping, inlet and outlet connections, mounting, foundations, and other structural components where appropriate.

#### **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 retrofitted 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 improvements. Retain and update records for a minimum of 5 years from the beginning of operation of

measure implementation. Recommended records to be retained include the following:

- 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. 2008. Guidelines for selection of energy efficient agricultural ventilation fans. ASABE EP566.1 AUG 2008. ASABE, St. Joseph, MI.

American Society of Agricultural and Biological Engineers. 2009. Performing On-Farm Energy Audits. ANSI/ASABE S612 JUL2009. ASABE, St. Joseph, MI.

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.