

**NATURAL RESOURCES CONSERVATION SERVICE  
MONTANA CONSERVATION PRACTICE STANDARD**

## **FARMSTEAD ENERGY IMPROVEMENT (NUMBER)**

### **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.

**Document current energy usage, potential energy savings, and payback period for replacement component in consistent units of kilowatt hours (kW-h), British Thermal Units (BTU), etc.**

**Replacement components shall have adequate capacity and meet or exceed currently applicable federal, state, tribal, and local standards and guidelines. Replacement components shall have adequate capacity and meet the appropriate NRCS or industry standard, such as:**

- Heating Ventilating and Air Conditioning (HVAC) per American Society of Heating, Refrigerating and Air Conditioning Engineers Standard 90.1-2010

- Ventilation fans per the American Society of Agricultural and Biological Engineers (ASABE) EP 566.1
- Greenhouse HVAC per ASABE EP406.4
- Motor efficiency per National Electrical Manufacturers Association (NEMA) 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 emissions 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 **replacement components** to achieve their 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.

**NRCS, MT  
April 2014**

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard contact the Natural Resources Conservation Service.

**NOTE:** This type of font (**AaBbCcDdEe 123..**) indicates NRCS National Standards.  
This type of font (**AaBbCcDdEe 123..**) indicates Montana Supplement.

- identify and describe the replacement components or devices.
- document current energy usage, potential energy savings, **and payback period for replacement components**.
- include a plan view showing the location of the replacement components in relationship to other structures or natural features where appropriate.
- detail drawings of the replacement components, such as piping, inlet and outlet connections, mounting, foundations, and other details 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 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 improvements. 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. 2008. Guidelines for selection of energy efficient agricultural ventilation fans. ASAE 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.