

## 374 – Farmstead Energy Improvement Specifications

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In general keeping with longstanding NRCS policy, all improvements must be fully installed, functional, and comprehensive across the planning unit (here, a building) to be certified as complete and qualify for the practice payment. For example, conversion of sidewall curtains to permanent walls must be done on both walls of a broiler house, not just the north wall. However, the following exemptions apply for poultry houses

- Radiant heaters can be installed throughout the full house or throughout the brood chamber only.
- In consideration that most exhaust fans have minimal potential for energy improvement and lengthy payback periods (greater than 10 years), entire banks of exhaust fans do not have to be replaced. In fact, only those exhaust fans identified as inefficient by the energy audit may be contracted for replacement.

### ***Exhaust Fan***

The new fan must be a model previously tested by the Bioenvironmental and Structural Systems Laboratory (BESS Lab [<http://www.bess.illinois.edu>]) or the Air Movement and Control Association (ACMA [<http://www.amca.org>]). As such, the fan will have a test report published on either of these web sites. All new fans must have an efficiency in the top quartile of fans being actively produced in the fan size class. See Iowa State University Extension publication PM2089h (August 2010).

For broiler houses, new fans must be “tunnel” fans with a nominal size of 48 inches or larger. Fans in the 48 to 56-inch size class must have an efficiency equal to or greater than 20.4 cfm/W at 0.10” static pressure. The fans must be functional, which necessarily requires that electrical wiring and controls are installed.

### ***HAF (Circulation Fan)***

Fans must be designed to function as circulation fans and for a poultry house environment. Fans cannot be exhaust fans, such as tunnel ventilation fans. The fans must be functional, which necessarily requires that electrical wiring and controls are installed.

### ***Radiant Heater***

#### **Poultry Houses**

Conventional “pancake” brood heaters must be removed. Existing forced-air space heaters may remain for supplemental heating capacity for the most extreme cold weather days. Radiant heaters may be radiant tubes, “radiant quads”, or radiant brooders.

The installed radiant heating capacity must meet the integrator’s requirements for capacity. Often, an integrator has two specifications: one for the brood end, and another for the non-brood end (or the house as a whole). If the integrator’s requirements cannot be obtained, then the installed capacity must meet the recommendations of the energy audit. The installed capacity is for Arkansas typically in the range of 35 to 45 BTU/hour per square foot of the whole house area (*this statement is for general guidance and is not a requirement of the specification*).

**Other Agricultural Buildings**

Radiant heaters should generally be radiant tubes, “radiant quads”, or radiant brooders; however, other types of radiant heaters may be appropriate for other types of agricultural buildings. The radiant heating capacity requirements for other types of agricultural buildings must meet an integrator’s requirements, if applicable, or the recommendations of the energy audit. However, the installed capacity must be consistent with the norms for the type of agricultural building concerned.

***Plate Cooler***

The plate cooler must be stably mounted and functional. Plumbing to the cooler must be complete. Auxiliary components—such as piping from the water source and piping to an appropriate disposal point—must also be installed and functional.

***Scroll Compressor***

The compressor and control panel(s) must be stably mounted and functional. Wiring, breaker switches, etc. must be installed and functional.

***Automatic Controller System***

System controllers must integrate the operation of multiple sub-systems. These controlled sub-systems must be installed and functional. Wiring, breaker switches, etc. for the controller must be installed and functional. The controller panel(s) must be stably mounted and operate the associated sub-systems.

***Variable Speed Drive***

The associated electric motor and driven equipment must be installed and functional. Wiring, breaker switches, etc. for the motor and variable speed drive must be installed and functional. The controller panel(s) must be stably mounted and operate the attached electric motor and equipment.

***Motor Upgrades***

The driven equipment (pump, fan, etc.) must be installed and functional. The motor and control panel(s) must be stably mounted and functional. Wiring, breaker switches, etc. must be installed and functional.

All classes and horsepower of motors which have a defined NEMA Premium standard must meet the efficiency for NEMA Premium. See the NEH650-20 Energy supplement for more information.