Correct Sizing of Heating Equipment

WARNING

Rural Energy Enterprises, Inc. does not accept liability for the improper use of this information. Installation, service, and maintenance of heating equipment should be performed by a qualified technician. Improper installation, adjustment, alteration, service, or maintenance can cause property damage, personal injury, or loss of life.

Correct system sizing requires considering many factors other than simply reading the nameplate of the existing unit. Key factors for correctly sizing a heating and cooling system include the following:

1. The local climate
2. Size, shape, and orientation of the house
3. Insulation levels
4. Window area, location, and type
5. Air infiltration rates
6. The number and ages of occupants
7. Occupant comfort preferences
8. The types and efficiencies of lights and major home appliances (which give off heat).

Homeowners should insist that contractors use a correct sizing calculation before signing a contract. This service is often offered at little or no cost to homeowners by gas and electric utilities, major heating equipment manufacturers, and conscientious heating and air conditioning contractors.

Many factors affect a home's heating or cooling requirement, or "load." A good estimator will measure walls, ceilings, floor space, and windows to determine the room volumes, and will assess the R-value of the home's insulation, windows, and building materials. A close estimate of the building's air leakage is also necessary. A blower door test is the best way to measure air leakage.

A good estimate will also include an inspection of the size, the condition of seals on joints and insulation, and location of the distribution ducts in forced air systems. The placement of supply and return registers should be appropriate for the system type and size.

The orientation of the house also affects heat gain and heat loss through windows. Overhangs can reduce solar gain through windows. Make sure the contractor uses the correct design for the outdoor temperature and humidity in your area.

Spare no effort to size your heater appropriately. An undersized heater will not provide adequate heat on the coldest days, and an oversized heater will not burn on high fire enough to keep the heat exchanger or exhaust, dried out. Condensation from oil exhaust contains sulfuric acid and other highly corrosive compounds that will corrode parts, resulting in higher maintenance costs and shortened life of the heater.