



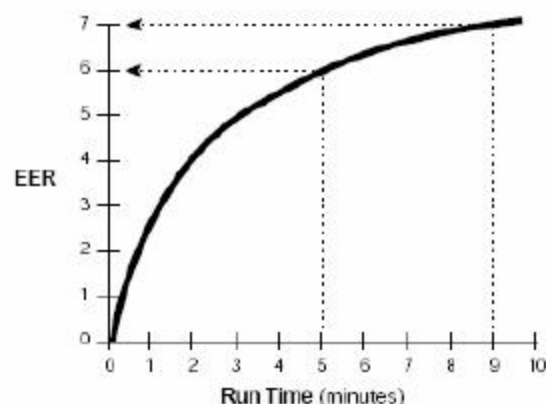
RIGHT-SIZED AIR CONDITIONERS

MECHANICAL EQUIPMENT IMPROVEMENTS

The ENERGY STAR Program promotes right-sized air conditioners where heating and cooling contractors carefully match system capacity to home cooling needs. ENERGY STAR labeled homes often include features such as increased insulation, air sealing, high-performance windows, and improved duct systems that can dramatically reduce cooling loads. As a result, smaller, less costly air conditioners can usually be installed.

It is common for contractors to install oversized air conditioners because these units provide cooling more quickly, thus avoiding any chance of not meeting the cooling demand. However, oversized air conditioners "short-cycle" or run for shorter periods of time than engineered for optimum operation. The efficiency of air conditioners is low when they first start and increases gradually, reaching peak efficiency in about 10 minutes. As shown in Figure 1 below, when operating time increases from 5 to 9 minutes, efficiency improves 17 percent. In this example, the energy efficiency ratio (EER) increases from 6 to 7. In addition, bursts of cold air from oversized units can trick the thermostats into shutting off the system before the whole house is cool. Moreover, short operation times do not allow the system to effectively remove humidity with serious repercussions on both home comfort and durability.

FIGURE 1: EFFICIENCY VERSUS RUN TIME



Air conditioning accounts for 15 percent of home energy use on average and over 40 percent in hot and humid regions. A right-sized air conditioner is an important part of an energy-efficient home and will result in improved comfort, durability, and lower utility bills.