



*Remember
the
EER!*

When buying a new cooling system, be sure to get the whole story on its energy efficiency. Central air conditioners and heat pumps are rated by the Seasonal Energy Efficiency Ratio (SEER). But SEER tells only part of the energy story. Another rating, the Energy Efficiency Ratio (EER), is equally important.

WHY TWO EFFICIENCY RATINGS?

Just as your car's gas mileage is rated for city and highway driving conditions, cooling systems have performance ratings for relatively low temperature (SEER, at 82°F) and high temperature (EER, at 95°F).

When buying a new cooling system, it is important to consider its energy efficiency under different operating conditions. Some air conditioners and heat pumps are more energy efficient than others when running on a very hot day. Others may be superior in moderately warm temperatures. But since your air conditioning system faces both cooling conditions, it needs to be efficient in both seasonal (average) and peak day operations.

A cooling system with both a high SEER (14 or greater) and a high EER (12 or greater) will ensure you of high efficiency at the full range of California summer temperatures.

WHAT DO THESE RATINGS TELL YOU?

The SEER measures a cooling system's average efficiency throughout the whole cooling season. This number is based on a national "standard" cooling load and climate. Testing is conducted at an outdoor temperature of 82°F. Since approximately one third of California's annual cooling

requirement occurs when temperatures are over 95°F, however, air conditioning performance at higher temperatures is very important.

The EER measures cooling system performance at 95°F. It measures performance on "peak days"—the hottest days, when your air conditioner is working hardest. The math behind the EER is simple: peak cooling capacity in British thermal units (Btus) per hour divided by power input in watts. A higher EER means you'll get more cooling output for every unit of power input.

CHECK THE RATINGS

The SEER is shown on the equipment's yellow Energy Guide label and in its published specifications. To find the EER, however, you will need to ask your contractor to obtain product specifications. In a hot climate, a system with a good SEER but a low EER probably won't deliver the energy savings and cost savings you're counting on.

FIND A BALANCE

Many combinations of SEER and EER ratings are available. A high SEER rating does not necessarily mean the system will also have a high EER, or vice versa. For example, two air

conditioners with the same SEER can have quite different EER ratings. Due to its higher EER, System “B” (below) delivers more cooling and has lower power consumption. In other words, you get more cooling for less money.

The EER is always a smaller number than the SEER because it is measured under tougher conditions. The objective is to find a combination of relatively high SEER and EER.

Performance Ratings for Two SEER 14 Central Conditioners

	SYSTEM A	SYSTEM B
SEER	14	14
EER	10.52	11.37
Cooling Capacity	36,000 Btus	37,800 Btus
Power Consumption	3,420 watts	3,320 watts

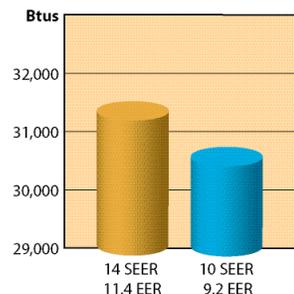
Data from *Evaluation of Four High-Efficiency Residential Split System Air Conditioners*, PG&E, August 2000.

HOW HIGH SHOULD THE RATINGS BE?

Federal law sets minimum SEER ratings. For central air conditioners and/or heat pumps, the minimum SEER is 10. Far more efficient systems are available, however, with SEERs reaching 19 or greater. An EER of 14 is close to the upper limit of current technology. It's usually best to look for a SEER of at least 13 and an EER of no less than 11.

With a high EER system you receive more than energy savings—you also get more cooling when you need it most.

Comparison of Cooling Capacity at 95°F



The graph compares the cooling capacity of two three-ton systems when the outdoor temperature is 95°F. The higher efficiency system (SEER 14/ 11.4 EER) provides 18% more cooling than the lower efficiency system (SEER 10/ EER 9.2).

IS EFFICIENCY WORTH THE COST?

In general, a more energy-efficient system has a higher price tag. However, lower electricity bills may amply repay this extra initial investment. The trade-off between energy cost savings and a higher purchase price depends on many factors, such as where you live or work, the size and age of your building, how its windows and walls absorb heat, and how often the home or business is occupied. The graph (to the right) compares annual estimated cooling costs for minimum and high efficiency systems, using as an example 10-year-old 2,000-square-foot homes in Stockton and Fresno.

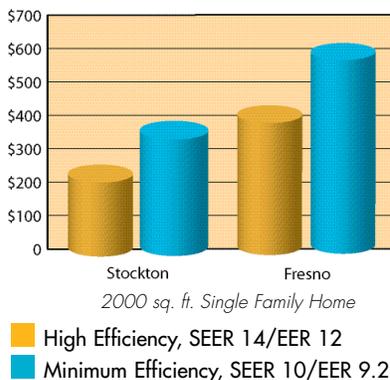
WHAT ABOUT ROOM AIR CONDITIONERS?

Unlike central systems, room air conditioners are labeled with EER ratings only. The Federal minimum efficiency rating varies by cooling capacity. The higher the EER on the Yellow Energy Guide label, the more efficient the air conditioner.

OTHER AIR CONDITIONING TIPS

Be sure your contractor calculates the cooling needs of your home or business and selects the most appropriate equipment size. An oversized air conditioner or heat pump uses more energy for the same cooling, and may make more noise, wear out sooner, and produce drafts.

Annual Central Air Conditioning Costs



Have your ducts tested for leaks, and seal them if necessary. Leaky ducts can waste more energy than a new air conditioner saves and can cause other serious problems.

Hire only licensed air conditioning contractors who understand the importance of SEER and EER ratings and can help you make the best choice to meet your needs for comfort and economy.

RELATED FACT SHEETS

- Cooling • Heating • Heat Pump • Duct Testing: Why Is It Important? • What Is HVAC System Sizing?
- A Whole-System Approach to Heating and Cooling
- Buying a Central Air Conditioner? Ask for a TXV!
- Air Conditioner Refrigerant Charge and Airflow

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