

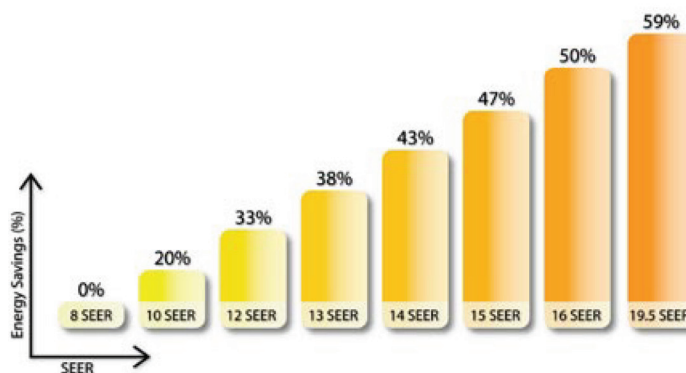
Air Conditioning Update

The face of air conditioning has changed completely over the last few years and it's going to change more, from efficiency to comfort.

A/C Efficiency

The goal of air conditioning is to get as much cooling as possible for the least amount of energy input. SEER, or **Seasonal Energy Efficiency Ratio**, is a measure of efficiency. The higher the number, the

more efficient the system. Prior to 1987 most air conditioning systems had a SEER of about 8. After '87 most were SEER 10. In 2006, a minimum SEER legislation kicked in requiring all new A/C systems to be at least SEER 13. Many of the top models are over SEER 17! If you are installing a new air conditioning system today, it is probably 30% to 50% more efficient than your old system.



Avoid Installation Problems

One way manufacturers are making their systems more efficient is by making the heat exchangers larger. The outdoor and indoor components are larger than before. This is no big deal for the outdoor unit but it can be a big problem for the indoor half of the system. If you are replacing your old air conditioner, you may find that the new coil won't fit into your old air handler. You may have to replace your air handler or furnace. This is where a good installer is worth every penny. There may be workarounds that a novice may not know about. If you are in this situation, make sure you ask if there is an alternative such as a minor ducting modification. Ask if there are other brands that will fit. Many installers only represent a few brands, sometimes as few as one. It is probably worth a second opinion if the installer has no suggestions.

Two-Stage Compressors

Modern two-stage compressors solve the capacity dilemma. What's the capacity dilemma? If the air conditioning system is sized to operate optimally on the hottest day of the season, it's probably oversized the rest of the time. An oversized system will cool the house very quickly. This means **short on cycles**. This is inefficient and it does not dehumidify the house properly. In the past, installers would err on the side of oversizing for fear of a callback on the hottest day of the season. The result is that many systems are not achieving their rated SEER and the houses are cold and clammy.

If you want peak efficiency and dehumidification without the worry of a system that can't keep up on the hottest day, there are systems that will operate at two capacities. It's like having two air conditioning systems in one package; an undersized mode that will have very long "on" cycles and a larger capacity mode to keep you comfortable on the hottest days.

New Motors - ECM

Everyone is talking about ECM. It stands for Electronically Commutated Motor. That's a mouthful, but what does it do? It uses much less electricity than a standard motor and the speed can be varied continuously. Let's look at an ECM in action on the blower for your A/C system.

Constant air flow rate: Air conditioning systems operate at maximum efficiency with a specific air flow rate across the coils. A standard air handler motor usually only has two speeds, low and high. It's unlikely that these speeds will develop exactly the most efficient air flow rate. An ECM can lock on to an air flow rate. It will maintain this rate even if your ducting system is a little sub-par or if your filter builds up dust. The ECM adjusts its speed to respond to these variables.

Control humidity: With the help of a humidistat, the system can respond to high humidity in the home by slowing the blower motor for a few minutes. The humid air gets a longer "dwell time" on the coils, sucking out more moisture.

Soft ramp: The ECM can be instructed to start slowly and ramp up to full speed over a few minutes and to ramp down at the end of the cycle. This soft ramp will maximize efficiency and dehumidification.

Run on low: The ECM can run on a very low speed between cycles to maximize air mixing in the home and get more out of your air cleaning system (filter) all with very little electricity.

New Refrigerant

Today most A/C systems use the HCFC refrigerant called R22. This is slated for phase out and will be replaced by refrigerants that have no ozone destruction capabilities such as R410a. Systems designed for R22 will not be able to use the new refrigerant. So do you need to worry? In short - no! R22 will be available for many years. The phase out starts in 2010 when new equipment will not use R22. In 2020, R22 will be available for servicing existing equipment but no new R22 will be produced. These generous timelines are longer than the life cycle of air conditioning equipment. Don't let air conditioning sales people scare you.

As you can see, a lot has changed over the last few years and there is more to come. The one thing that has not changed is that a good A/C technician is the difference between a system that is tweaked to perfection and a system that is uncomfortable and inefficient.

