Did you know that more than two-thirds of U.S. households have air conditioning? You may be surprised to hear that residential air conditioning accounts for six percent of all electricity consumed in the country, at a cost to homeowners that exceeds $10 billion annually. Central air conditioning is becoming more popular in homes along the Colorado Front Range. Xcel Energy reports that 35 percent of its residential customers now have air conditioning, compared to only 22 percent in 1996. Most new homes are now equipped with compressor-based air conditioning systems.

Air conditioning is a reasonable comfort upgrade for homeowners, if done efficiently. Inefficient use of air conditioning drives up utility bills in the summer months, and increases the peak power load on the utility system during hot afternoons. This in turn forces utilities like Xcel Energy to build costly new power plants, purchase more wholesale power during high cost periods, and invest in transmission and distribution system upgrades. Rising peak power demand also leads to more power plant operation, more air pollution on those hot, often smoggy summer days, and more water consumption by power plants.

**Reducing Heat Gain**

There are a number of steps that homeowners in Colorado can take to lower energy consumption and still enjoy air conditioning. Reducing the need for cranking up the air conditioner, referred to as your home’s cooling load, is an excellent place to start.

Heat gain is the technical term that refers to the unwanted heat that enters your home in the summer. Heat gain can be reduced by sealing air leaks, better insulating the attic, ceiling or walls, shading east- and west-facing windows, and installing ENERGY STAR® windows or reflective window film (refer to pg. 16). Purchasing energy-efficient ENERGY STAR appliances and lights are other good ways to reduce a home’s cooling load.

**New Benchmark: SEER 13 Standard**

If your air conditioner is more than 10 years old, it probably has a SEER rating between 8 and 10, which is one third to one half as efficient as the best models available today. Xcel Energy currently offers homeowners a $350 cash rebate when they purchase a high-efficiency
central air conditioner with a SEER rating above 13. A minimum SEER rating of 13 is also the threshold for ENERGY STAR qualification for central air conditioners.

Starting in 2006, all new central air conditioners must have a SEER rating of at least 13 thanks to updated national efficiency standards. This important change will lead to a 30 percent efficiency improvement in high-volume, standard air conditioners. Contractors and vendors who want to sell premium, quality products will be promoting SEER levels of 14, 15, or even greater, increasing efficiency.

Room air conditioners have an EER rating rather than a SEER rating. National efficiency standards require an EER rating of at least 9.7 for the most popular types. Consumers can do better by purchasing an ENERGY STAR model which usually has an EER rating of 10.5 or greater.

**Proper Installation and Sizing**

To maximize the efficiency of your air conditioning system, proper sizing and installation are just as important as a high SEER rating. An oversized central air conditioner will cycle on and off too frequently, compromising both comfort and efficiency. Make sure your air conditioning contractor sizes the system based on the actual characteristics of your home, not just the floor area. Likewise it is important that the contractor properly matches the indoor and outdoor coils, verifies that the refrigerant charge is correct, and measures and verifies that there is adequate air flow—at least 300 cubic feet per minute (cfm) across the cooling coil.

It is worth it to pay a little more for a contractor who will size and install an air conditioner properly. A small investment up front will provide energy and cost savings over the long run. Look for a contractor that has been certified by the North American Technician Excellence (NATE) Program or the Air Conditioning Contractors of America (ACCA).

**Air Ducts Key to Comfort**

If you have a central air conditioner, it is important to make sure your air ducts are well-sealed and insulated. Unfortunately, leaky and
poorly insulated air ducts are very common in the Front Range region, meaning both loss of comfort and higher energy bills. Air ducts should be sealed with mastic, not so-called “duct tape” which does not seal well and has a short lifetime. Also, a new process called aerosol polymer duct sealing is an effective way to seal leaky air ducts in either new or existing homes. There are now certified duct sealing contractors in the Denver area. In addition to sealing, air ducts in unheated spaces should be insulated to an R-value of at least R-11 in the Front Range region. Also, air ducts should be located within conditioned space to the maximum extent possible in new homes.

It is possible to enjoy a break from the summer heat, without overstretching electricity supplies or sacrificing comfort. If tens of thousands of households followed these recommendations, it would cut peak power demand by many megawatts, reducing the need for costly new power plants along with pollutant emissions and water usage.

For More Information
- Top-rated central air conditioners, aceee.org, click on Consumer Resources.
- Room or central air conditioners, www.energystar.gov.

Howard Geller is the Executive Director of the Southwest Energy Efficiency Project (www.SWEEP.org), which promotes greater energy efficiency in six Southwestern states. Dr. Geller’s most recent book is Energy Revolutions: Policies for a Sustainable Future.

Take the Chill Off Your Bill

- Keep the house closed tight during the day. At night open windows and use fans.
- Keep the thermostat at 78° or higher. Ceiling fans can help increase comfort levels.
- Use a programmable thermostat to raise the temperature when you’re not home and at night.
- When buying or replacing an air conditioner, buy an efficient model, and make sure it is properly sized.
- Have your air ducts evaluated, if they are leaking have them sealed.
- Check your air filter monthly and replace when necessary.