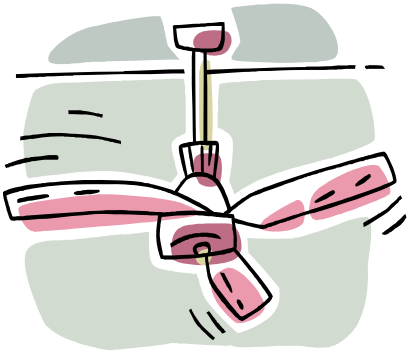
Ceiling Fans

Tips for Maximizing Energy Savings

A consumer tip sheet



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Ceiling fans are one of the most popular and generally well regarded of all home energy efficiency features. They have a very pragmatic appeal to those who want to cut summer electric bills. At the same time, they offer a decorative alternative to typical light fixtures. So it should come as no surprise that two-thirds of American households now have ceiling fans. Home improvement centers do a brisk and growing business in sales to do-it-yourselfers, and it's not uncommon to find ceiling fans installed by builders in nearly every bedroom and living area in many new homes.

But while ceiling fans can help cut summer energy use, they can also be substantial energy users–depending on how they are used and what kind of lights, if any, are part of the fan package. Because ceiling fan lights are often the brightest, most centrally located, and most conveniently switched fixtures in the room, they get used about three to four hours per day. And, since ceiling lights don't tend to be efficient lights, these light kits actually use more electricity than the fan motors do, even though the fan motors often run for more hours per day.

Based on our own modeling and input from fan manufacturers and utilities, we believe a typical ceiling fan with light kit consumes about 300 kwh/year. ENERGY STAR® labeled models cut that consumption to approximately 120 kwh/year, while providing equal or greater light output and airflow. This means that an ENERGY STAR labeled ceiling fan can save you more energy than an ENERGY STAR labeled refrigerator compared to a typical new model of each! Look for the first ENERGY STAR labeled in Lowe¹s, Home Depot, and other retail stores in early 2002.***Here are some tips on buying the right fan and using it efficiently.***

Do a little comparison-shopping.

The fans with the best blade and motor designs are 3 to 9 times as efficient as the worst models, and are often quieter as well. Look for models with the highest air flow efficiency (CFM/watt) at each of their three speeds. These numbers will appear in a special information box on each ENERGY STAR labeled fan package, and will begin to appear on many standard fan models as well. The ENERGY STAR website (www.energystar.gov) can also help consumers find the names of manufacturers and retailers that sell highly efficient fans.

Buy an energy-efficient light kit for your fan.

About 80% of the possible savings from a more efficient ceiling fan happen in the lighting. So be sure any new fans you buy contain ENERGY STAR labeled lighting. The designs with built-in ballasts and pin-based fluorescent lamps will probably be more efficient than ones with screw-based compact fluorescents, but both are much better than incandescent lamps. With a bit of searching, you can also find very small (subcompact) fluorescent bulbs to use in your existing fan.

ENERGY STAR labeled lighting in most cases will cut your fan¹s total lighting energy use by 60 to 80%, and keep you from changing light bulbs nearly as often. Remember - multiple low wattage incandescent bulbs generally provide even less light than a single bulb with the same total wattage. For that reason, you may be happier with fans that have a single, central light globe than ones with multiple "stalks" or globes.

Fans are for people, not rooms.

Room air temperatures are normally 20ºF—30ºF cooler than body temperature. Ceiling fans can improve occupant comfort at a given room temperature by creating a wind-chill effect when they blow relatively cool air across the skin. Because the furniture and the thermostat are already at roughly the same temperature as the room air, they can't "feel" the wind-chill. So when you leave the room, switch the fan and its light off–you'll save energy and money.

For every season, turn, turn, turn….

During the summer, a ceiling fan increases comfort by blowing air downward on room occupants. But that same wind-chill can actually feel like a draft in winter, which is why ceiling fan motors should be reversed to blow air upward in winter. This helps disperse the warm air that tends to gather near ceilings, distributing it more evenly throughout the room, especially around the perimeter and near the floor.

Fan direction is normally controlled by a slide switch on the motor housing. Usually, the up position corresponds to upward airflow and the down position to downward airflow. This may be a little inconvenient to reach, but throwing that switch twice a year will pay for itself in improved comfort and energy savings.

It also helps to pay close attention to the downrod length of a fan, particularly in rooms with tall ceilings. Generally speaking, a fan will provide a greater "wind chill" effect if it¹s close to you than if it¹s far away. So if you have a 12 foot ceiling, you¹re better off using a 3 or 4 foot downrod than mounting the fan only 6 inches or a foot down from the ceiling. Fans that mount right next to the ceiling (so-called "hugger" models) are often highly inefficient, since they have difficulty bringing in fresh air behind the blades to push downward.

Dial in the savings with thermostats.

Ceiling fans can save quite a bit of energy if summer users raise air conditioning thermostats. In the Florida climate, these net savings are roughly 14% for a 2° F increase, according to the Florida Solar Energy Center. The reason is no big mystery; ceiling fan motors use only 10 to 100 watts, depending on size and speed. By contrast, central air conditioners gobble 2,000 to 5,000 watts, while room air conditioners consume 600 to 3,000 watts.

Savings are also possible on the heating side. Electric space heaters typically devour 600 to 1,500 watts per room. So any time you can run a ceiling fan instead of one of these guzzlers to achieve the same level of comfort, you are saving energy.

But the trick is in the thermostat. The Florida Solar Energy Center found no difference between the air conditioner thermostat settings in Florida houses that had ceiling fans operating and those that didn't. As a result, the houses that were using ceiling fans had even higher energy bills!

The lesson is simple: Give the thermostat dial a spin if you want to save energy. You may find that ceiling fans are the perfect way to extend the shoulder season as well–shortening the number of days you need air conditioning in the summer and central heating in the winter.

Know your limits.

Ceiling fans can supplement traditional HVAC systems, but cannot duplicate the wide range of functions they perform: ventilation, filtration, humidification, dehumidification, heating, and cooling. Unlike whole-house fans or even box fans in an open window, ceiling fans are not *ventilation* devices; they are *circulation* devices. They don't bring cooler air into a home or vent warm, humid air from it.

Though some ceiling fans now include filters within their blades to trap particles and odors, most have no real effect on the relative staleness of air in a room. The way to get rid of stale air is to exhaust it from the room and bring in fresh or filtered air to replace it. And don't count on ceiling fans to cool things off by themselves on a really hot day; if the air in the room becomes as warm as body temperature, that "breeze" won't provide much wind-chill.

Source: Home Energy Magazine. For more information about saving energy in the home visit, www.homeenergy.org.