ENERGY SAVER

Energy Saver 101: Everything You Need to Know About

Home Cooling

6%

The percentage of the average household's energy use that goes to space cooling.

2/3 of all U.S. homes have air conditioners.

$11B

The amount it costs homeowners every year to power their air conditioners.

#DidYouKnow:

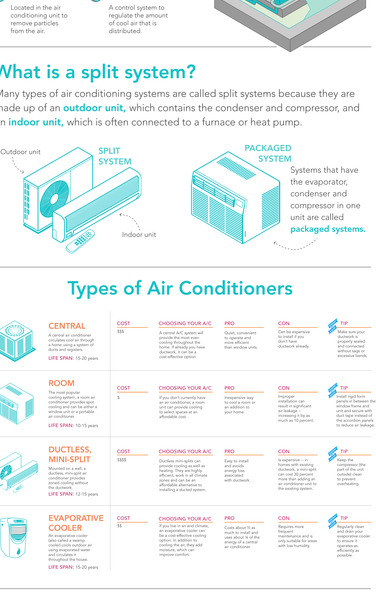
You can reduce air conditioning energy use by 20-50 percent by switching to **high-efficiency air conditioners** and taking other actions to lower your home cooling costs.

ENERGY-SAVING TIP:

The quickest way to save energy on home cooling is to regularly clean and replace your cooling unit's filters.

How an Air Conditioner Works:

Similar to how a refrigerator works, air conditioners transfer heat from a home's interior to the warm outside environment.



A Evaporator
Cooling coils remove heat and humidity from the air using refrigerant.

B Blower
A blower (or fan) circulates air over the evaporator, dispersing the chilled air.

C Condenser
Hot coils release the collected heat into the outside air.

D Compressor
A pump that moves refrigerant between the evaporator and the condenser to chill the indoor air.

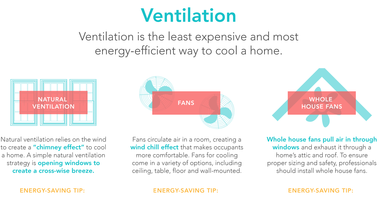
E Fan
A fan blows air over the condenser to dissipate the heat outside.

F Filter
Located in the air conditioning unit to remove particles from the air.

G Thermostat
A control system to regulate the amount of cool air that is distributed.

What is a split system?

Many types of air conditioning systems are called split systems because they are made up of an **outdoor unit,** which contains the condenser and compressor, and an **indoor unit,** which is often connected to a furnace or heat pump.



Systems that have the evaporator, condenser and compressor in one unit are called **packaged systems.**

Types of Air Conditioners

CENTRAL

A central air conditioner circulates cool air through a system of ducts and registers.

LIFE SPAN: 15-20 years

COST: $$$

CHOOSING YOUR A/C: A central A/C system will provide the most even cooling throughout the house if it has a well-sized ductwork. It can be a cost-effective option.

PRO: Quiet, convenient to operate and more efficient than window units.

CON: Can be expensive to install if you don't have ductwork already.

TIP: Make sure your ductwork is properly sealed and insulated without gaps or excessive bends.

ROOM

The most popular cooling system, a room air conditioner provides cooling and can be either a window unit or a portable air conditioner.

LIFE SPAN: 10-15 years

COST: $

CHOOSING YOUR A/C: If you don't currently have ductwork, a window unit or unit can provide cooling to select spaces at an affordable cost.

PRO: Inexpensive way to add cooling or an addition to your home.

CON: Improperly installation can result in significant air leakage – sometimes as much as 30 percent.

TIP: Install rigid foam insulation between the window frame and unit and secure with tape to prevent gaps in the accordion panels.

DUCTLESS, MINI-SPLIT

Mounted on a wall, a ductless mini-split air conditioner provides zoned cooling without the ductwork.

LIFE SPAN: 12-15 years

COST: $$$

CHOOSING YOUR A/C: Ductless mini-splits can provide cooling as well as heating. They are very efficient, work in all climate zones and can be an affordable option when installing a ducted system.

PRO: Easy to install and avoids problems associated with ductwork.

CON: Is expensive – in comparison to ducted ductwork, a mini-split can cost 30 percent more than adding an air conditioner to the existing system.

TIP: Keep the outdoor unit's fins part of the unit outside clean to prevent overheating.

EVAPORATIVE COOLER

An evaporative cooler (or swamp cooler) uses cooled, moist outdoor air using evaporated water to cool the air throughout the house.

LIFE SPAN: 15-20 years

COST: $$

CHOOSING YOUR A/C: If you live in an arid climate, an evaporative cooler can be a cost-effective cooling option. It works by cooling the air, fills with moisture, which can improve comfort.

PRO: Costs about ⅓ as much to install and uses about ¼ of the energy of a central air conditioner.

CON: Requires more frequent maintenance and is not recommended for areas with low humidity.

TIP: Regularly clean and drain your evaporative cooler to keep it operating as efficiently as possible.

#DidYouKnow:

When there is excess humidity in the air, our body's ability to cool itself through perspiration is inhibited.

One way an air conditioner makes us feel cooler is by reducing the amount of moisture in the air.

Ventilation

Ventilation is the least expensive and most energy-efficient way to cool a home.

Natural ventilation relies on the wind to create a "**chimney effect**" to cool a home. A simple natural ventilation strategy is **opening windows to create a cross-wise breeze.**

ENERGY-SAVING TIP:

If you live in a cooler climate, take advantage of the wind to naturally cool your home.

Fans circulate air in a room, creating a **wind chill effect** that makes occupants more comfortable. Fans for cooling come in a variety of options, including ceiling, table, floor and wall-mounted.

ENERGY-SAVING TIP:

Turn off your fans when you leave the room – fans cool people, not rooms.

Whole house fans pull air in through windows and exhaust it through a home's attic and roof. To ensure proper sizing and safety, professionals should install whole house fans.

ENERGY-SAVING TIP:

In many climates, a whole house fan can provide cooling needs even on the hottest days.

Maintaining Your Air Conditioner

Annual maintenance can help improve your comfort and the efficiency of your air conditioner while prolonging the life of your unit.

Routinely replace or clean your air filters – it can lower your air conditioner's energy consumption by 5-15 percent.

Check your air conditioner's evaporator coil every year and clean it as necessary.

If your coil fins are bent, use a "fin comb" to straighten them.

If you have a split system, be sure to clean debris and leaves from the fan, compressor and condenser.

Occasionally pass a stiff wire through your unit's drain channels to prevent clogs.

For window air conditioners, inspect the window seals to keep cool air from escaping.

Hire a certified professional when your unit needs more than basic maintenance.

Common Air Conditioner Problems

Your unit isn't cooling properly

Refrigerant
Your refrigerant could be low or leaking. Call a trained technician to repair the leak and recharge the system.

Sensor Problems
If you have a window unit, the thermostat sensor could be knocked out of position. Carefully bend the wire holding it in place to properly position it.

Thermostat Issues
Check your thermostat to make sure it is set properly and it is reading the correct temperature.

Drainage Problems
Check your unit's drain to make sure it isn't clogged.

Dirty Filter
A clogged filter restricts airflow through the unit, decreasing its efficiency and reducing its ability to effectively cool the air.

Your unit isn't turning on

Electric Control Failure
Your compressor and fan controls could be worn out from having your system turn off and on too frequently. Contact a professional to check your unit's electrical connections.

Thermostat
Make sure your thermostat is working – it might need new batteries or might need to be replaced entirely.

Limited airflow

Ductwork Problems
Your ducts could be leaking air or be clogged or constricted. Work with a professional to clean and air seal your ducts.

Dirty Filter
A clogged filter restricts airflow through the unit, decreasing its efficiency and reducing its ability to effectively cool the air.

Tips for Lowering Your Cooling Costs

Install and set a programmable thermostat – it could help you save up to 10 percent on heating and cooling costs a year.

Use a fan. Ceiling fans will allow you to raise the thermostat setting about 4 degrees without impacting your comfort.

Insulate your attic and walls, and seal cracks and openings to prevent warm air from leaking into your home.

Insulate and seal ducts – air loss through ducts accounts for about 30 percent of a cooling system's energy consumption.

Don't heat your home with appliances. On hot days, consider using a outdoor grill instead of your oven.

Install energy-efficient window coverings that let natural light in and prevent solar heat gain.

Buy an ENERGY STAR-qualified AC unit – on average, they're up to 15 percent more efficient than standard models.

Use the bathroom fan when taking a shower or both and a range hood when cooking – this helps remove heat and humidity from your home.

SOURCES: Energy Saver (www.energy.gov/energysaver), the Energy Department's Building Technologies Office (www.energy.gov/eere/buildings/building-technologies-office), Energy Star (www.energystar.gov), Weatherization Assistance Program Technical Assistance Center (www.waptac.org)

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