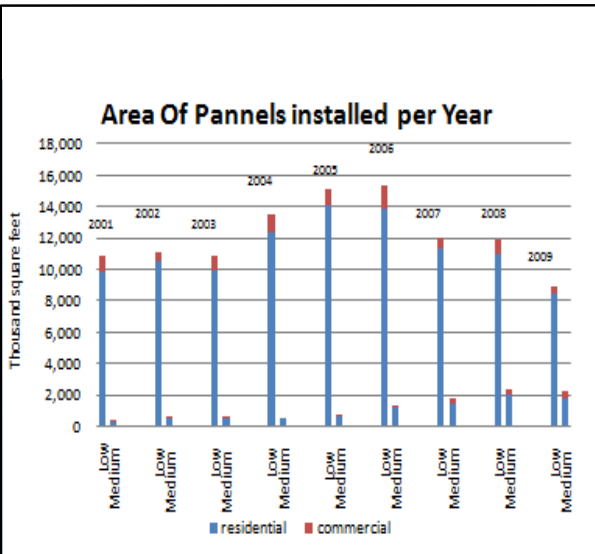
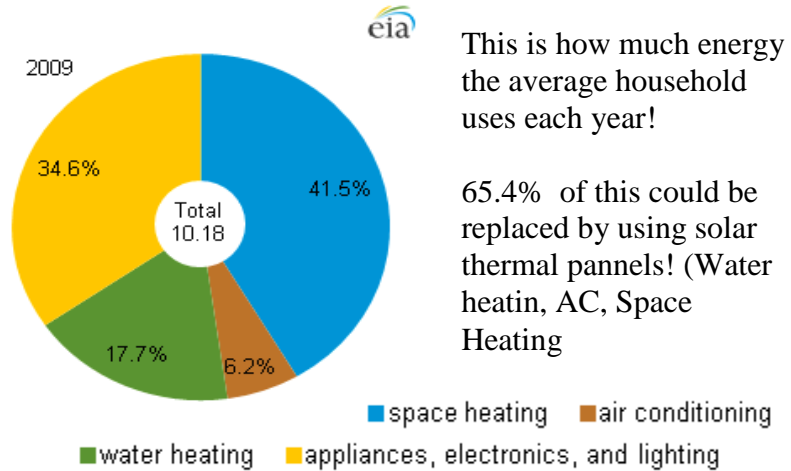


Solar Thermal Energy (For Building Applications)



How much can this technology reduce CO2 emissions



Types of Collectors

Low temperature collectors < 110 degrees F
Used to heat pools and for space heating

Medium temperature collectors : 140-180 degrees F

High temperature collectors : >180 degrees
Generate electricity (concentrated Solar)

Liquid heaters

Heat water to be used directly or heat a transmission fluid for heating.

Flat plate collectors:

Copper tubes covered by a flat plate. Water passes through small copper tubes and absorbs heat.
Less effective in lower temperatures

Evacuated tube collectors:

Vacuum tubes contain a transmitting fluid. The hot fluid moves upward toward a hot water reservoir. The spent cold fluid flows back down to the bottom of the tube. The tube is self insulated and works in cold temperatures, unlike the flat panel

Solar air heat collector:

A plate covering a chamber of air. The air is heated then pumped throughout a building.

Thermal energy storage:

Stores collected heat energy in a heat collection medium such as salt for later use.

Used when electricity is more expensive or when heat can not be collected as easily

Other Technologies

Integral Collector Storage (ICS):

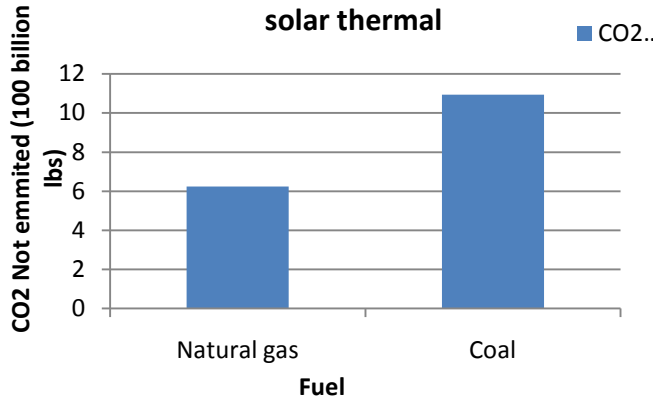
Collects energy directly into an energy storage unit

Thermosiphon: Moves hot water naturally without using a pump

Heaters only supply 80% of heat

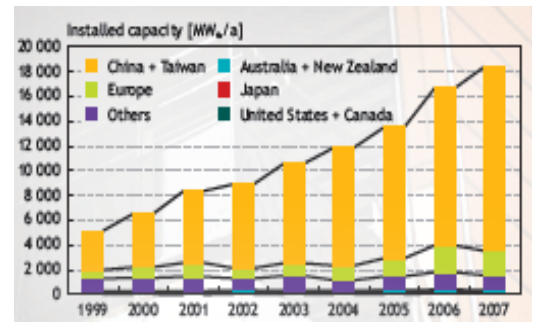
Use a Photovoltaic panel to drive a liquid or air pump. Or supplies last 20% of heat/AC

CO2 Not emitted by using switching to solar thermal

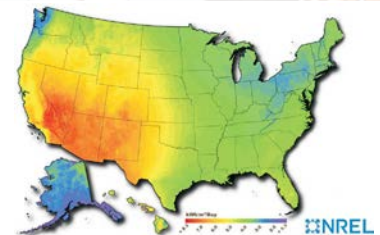


Powerplants produce this much CO2 each year supplying electricity to homes for heating and cooling.

Where It's used and where it should be used



This map shows Solar potential Solar energy in Kilowatt hours per day per square meter. This does not directly correspond to Solar Thermal energy but shows which locations get the most heat (red)



Policy:

30% of the cost of the System is tax deductible.

Solar thermal Cooling:

Any of the techniques used to heat a transmission fluid can be used to evaporate a cooling agent that can be used to cool the room.

This requires another power source to drive the AC unit. Possibly Photovoltaic.

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