Every Building is a Solar Building

We can either use the sun's light and solar energy,

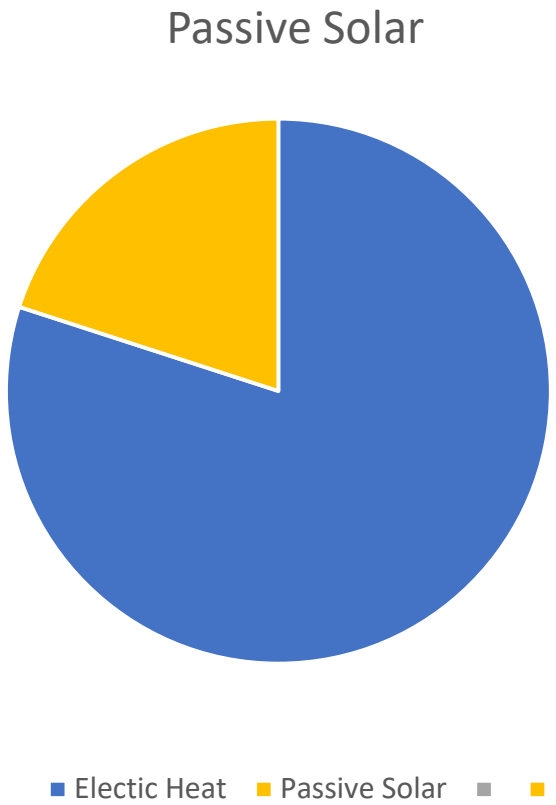
or let it go to waste.

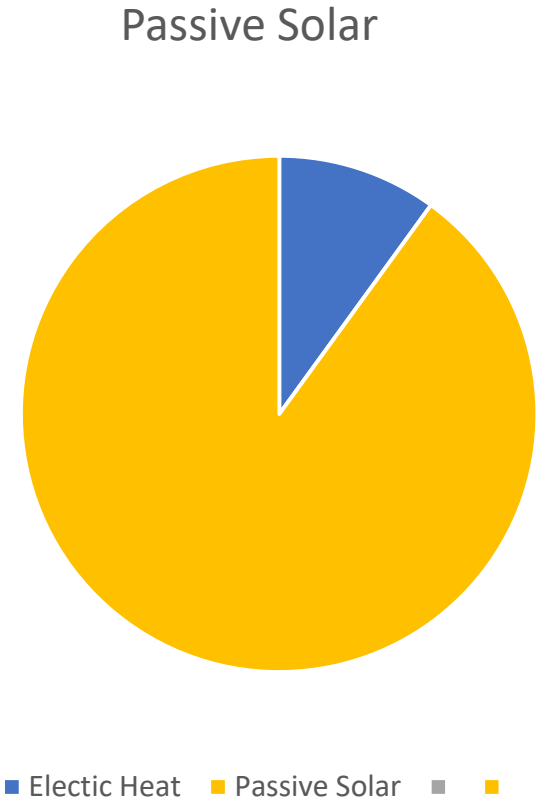
By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Even on cloudy days, buildings receive sunlight

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

The sun can provide 20 to 90% of a home's heating



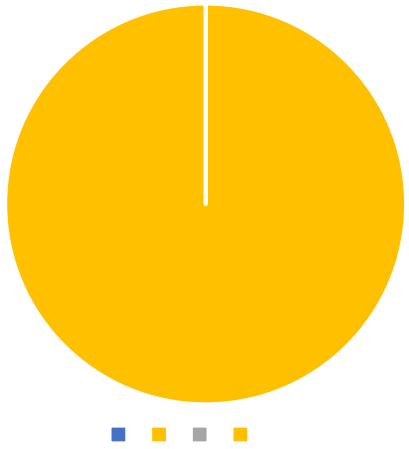


Heating by the sun is called "passive solar" .
No active or moving parts are needed.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

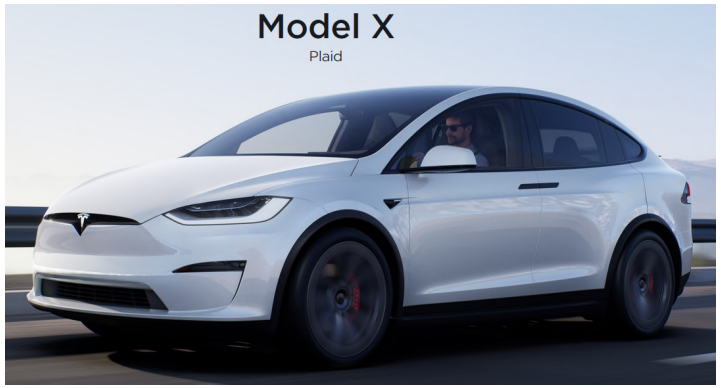
With solar PV (photovoltaic) panels, the sun can make electricity

100 % Energy from Sun



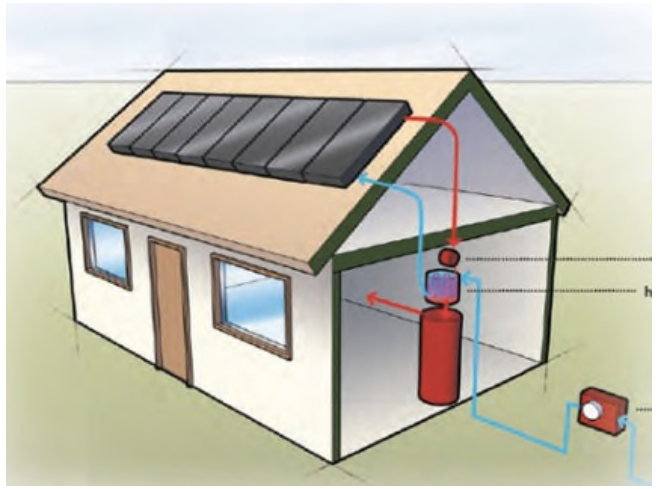
By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

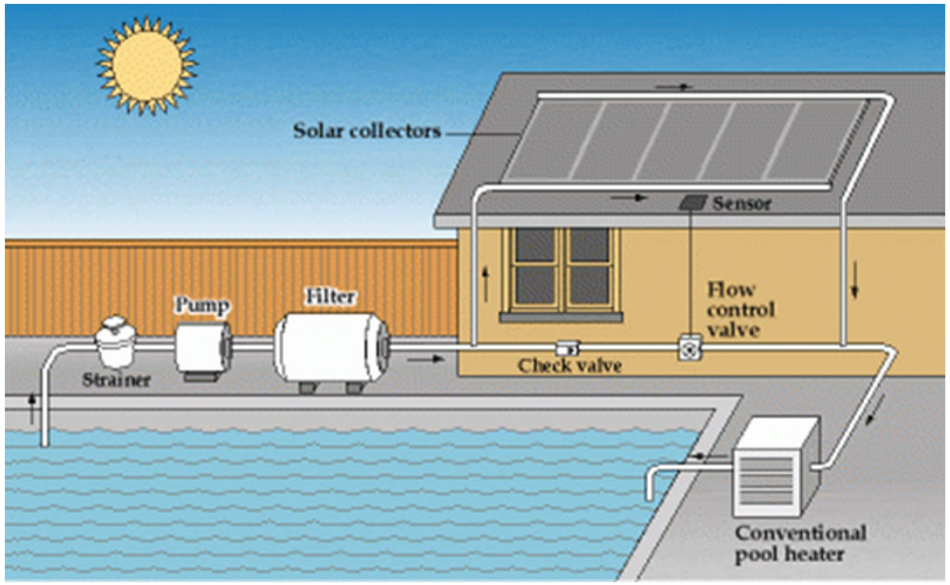
Electricity created by the sun can also power electric cars



By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

The sun can heat water with roof panels

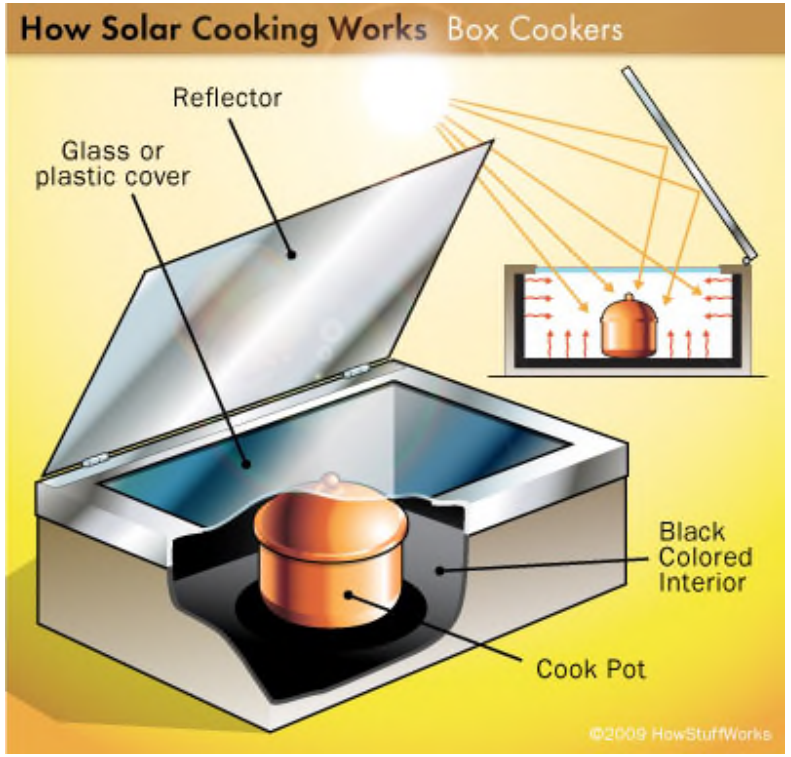




Solar heated water can be used in hot tubs and swimming pools too!

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

The sun can also cook food without electricity or wood



Build your own simple one with a pizza box!

Solar Oven Pizza box Experiment - Kids Fun Science - YouTube

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

And the sun can purify water for drinking

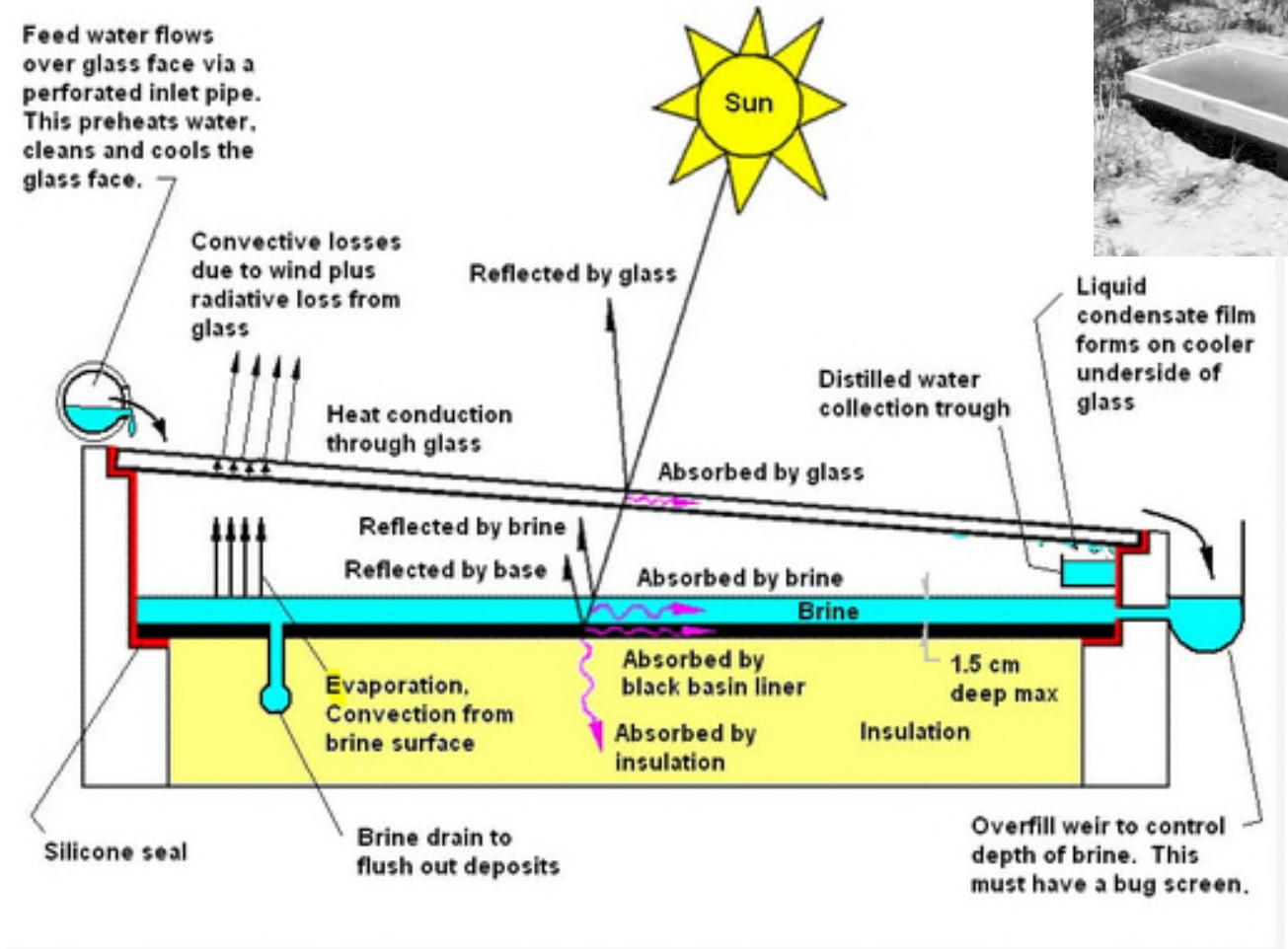
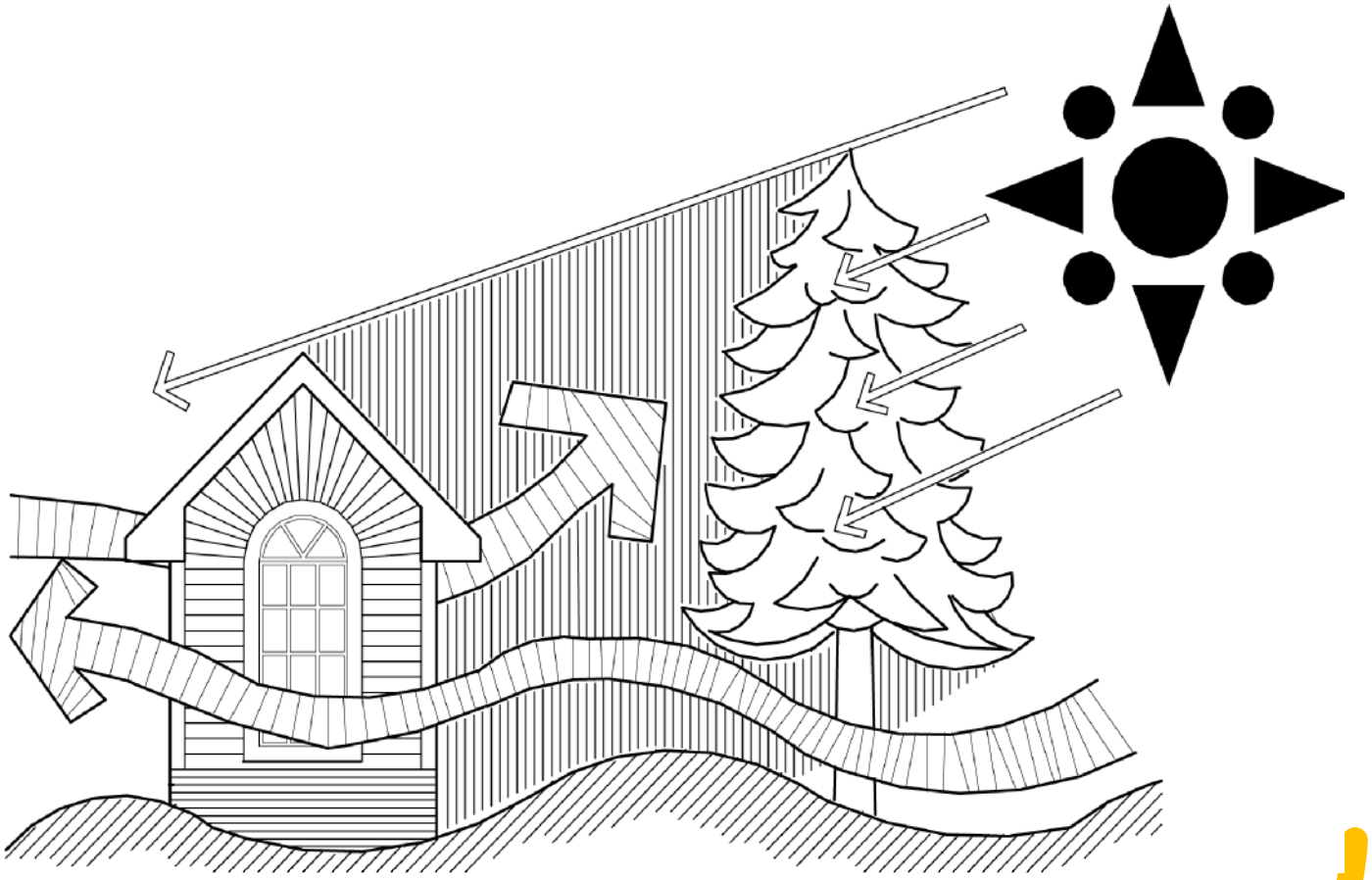


Photo by : techedmagazine.com

No need to buy bottled water!

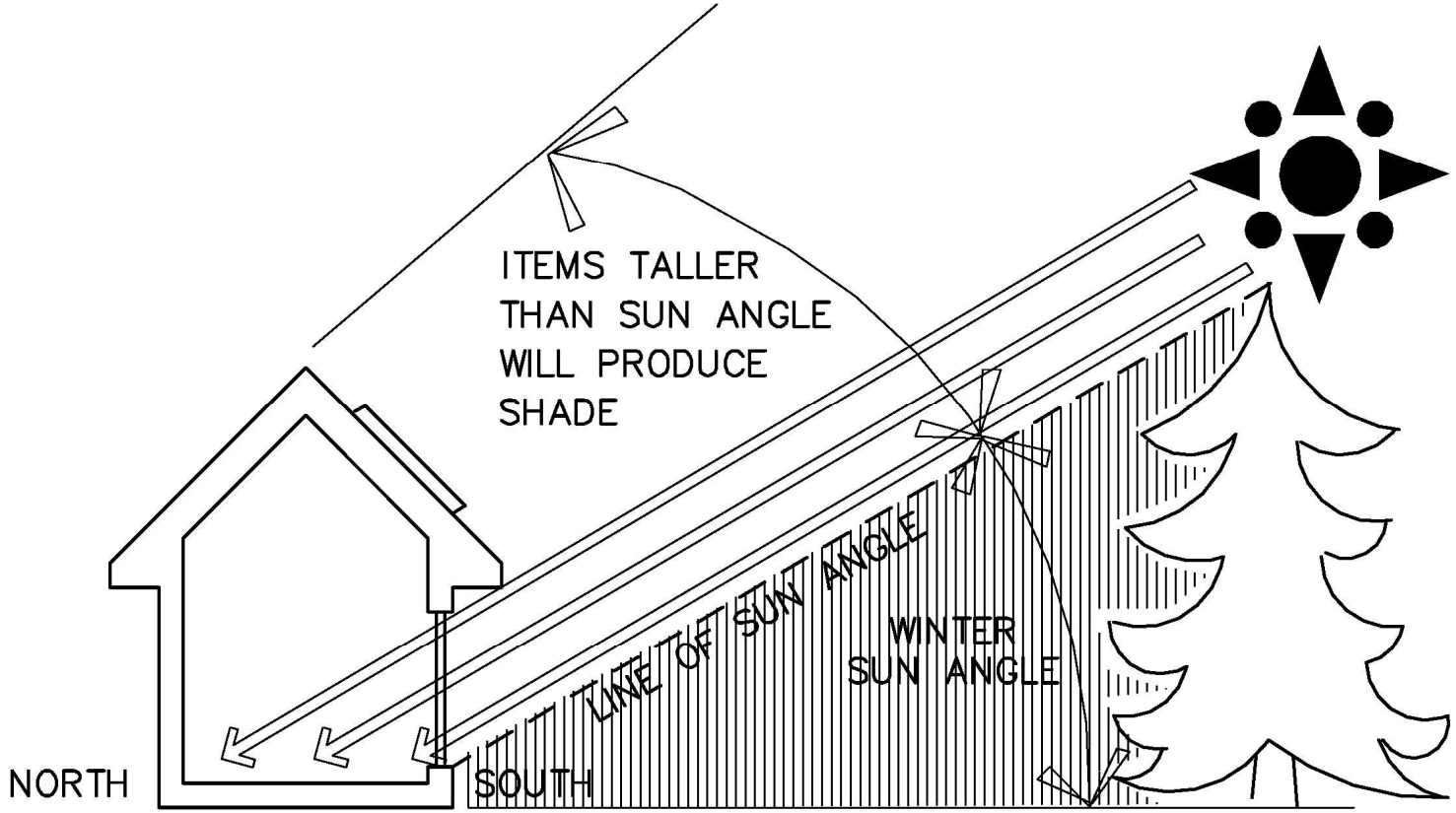
By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Lots of trees, mountains & tall buildings can block the sunshine with shade



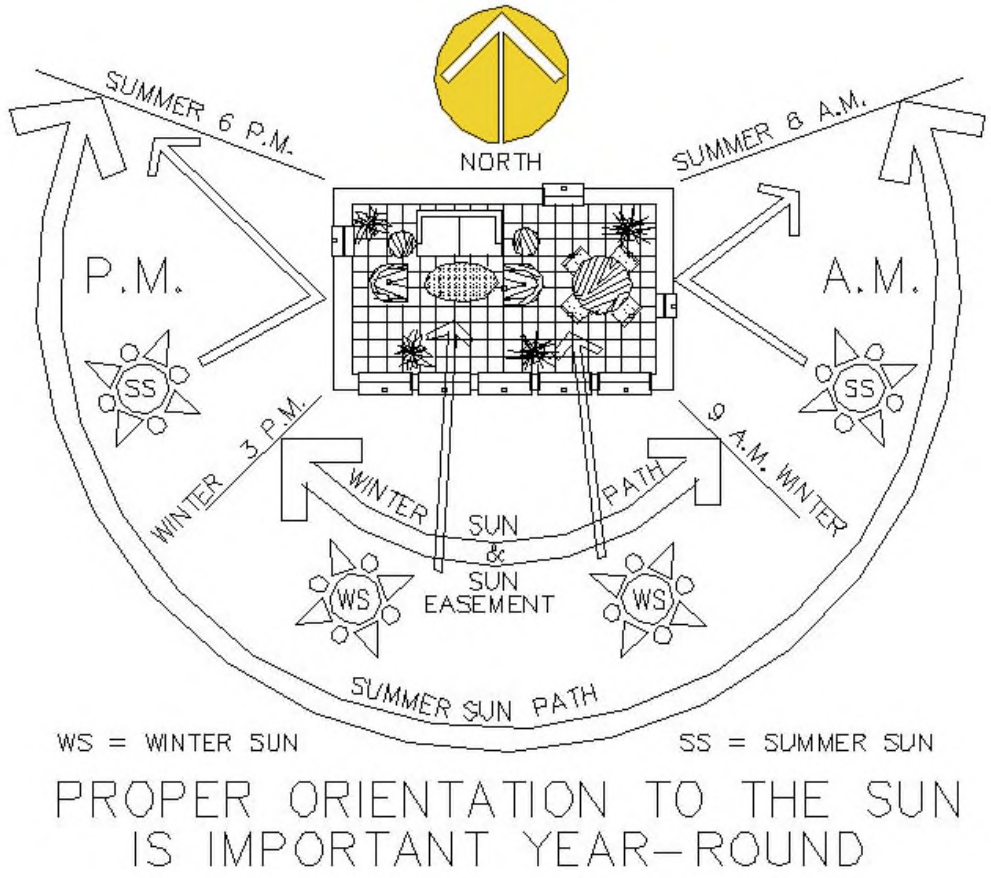
By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Keep the south side clear of things that create shadows



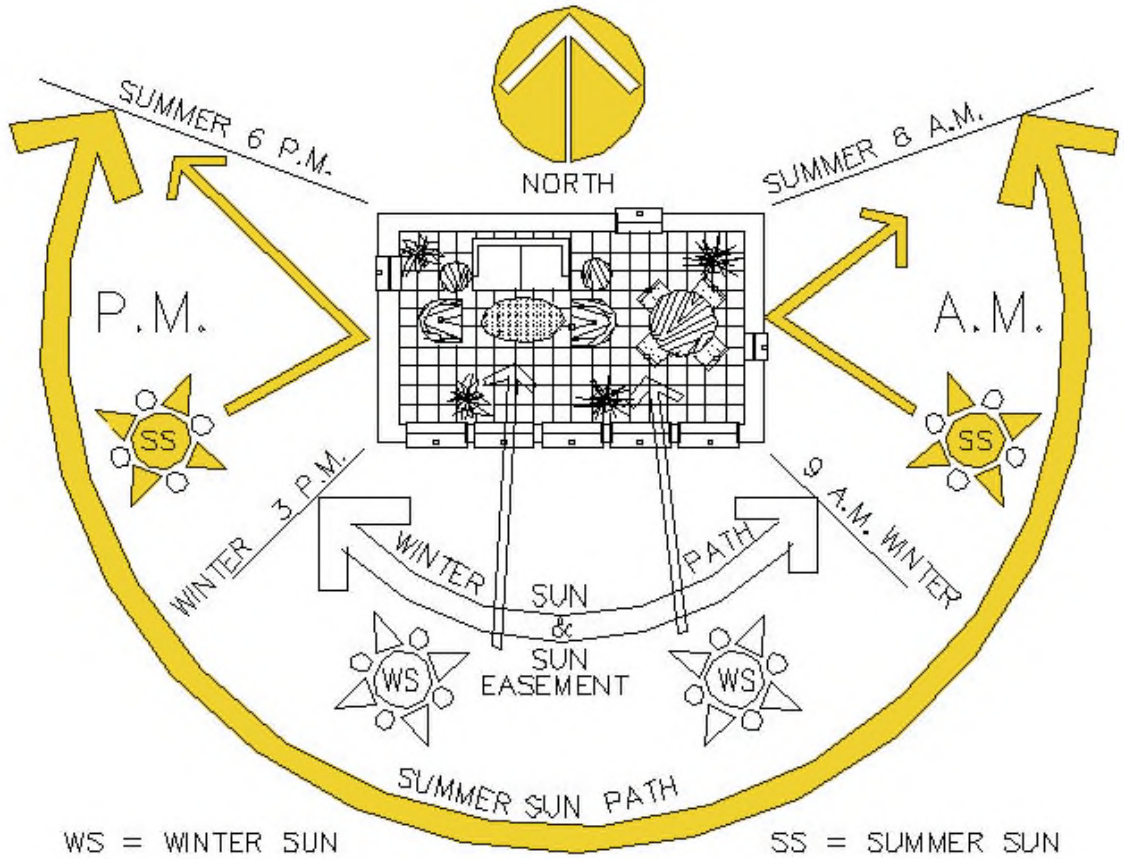
By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

The sun moves mainly across the south side of buildings



The north side of buildings receive very little sunshine.

In summer, the sun rises in the northeast & sets in the northwest

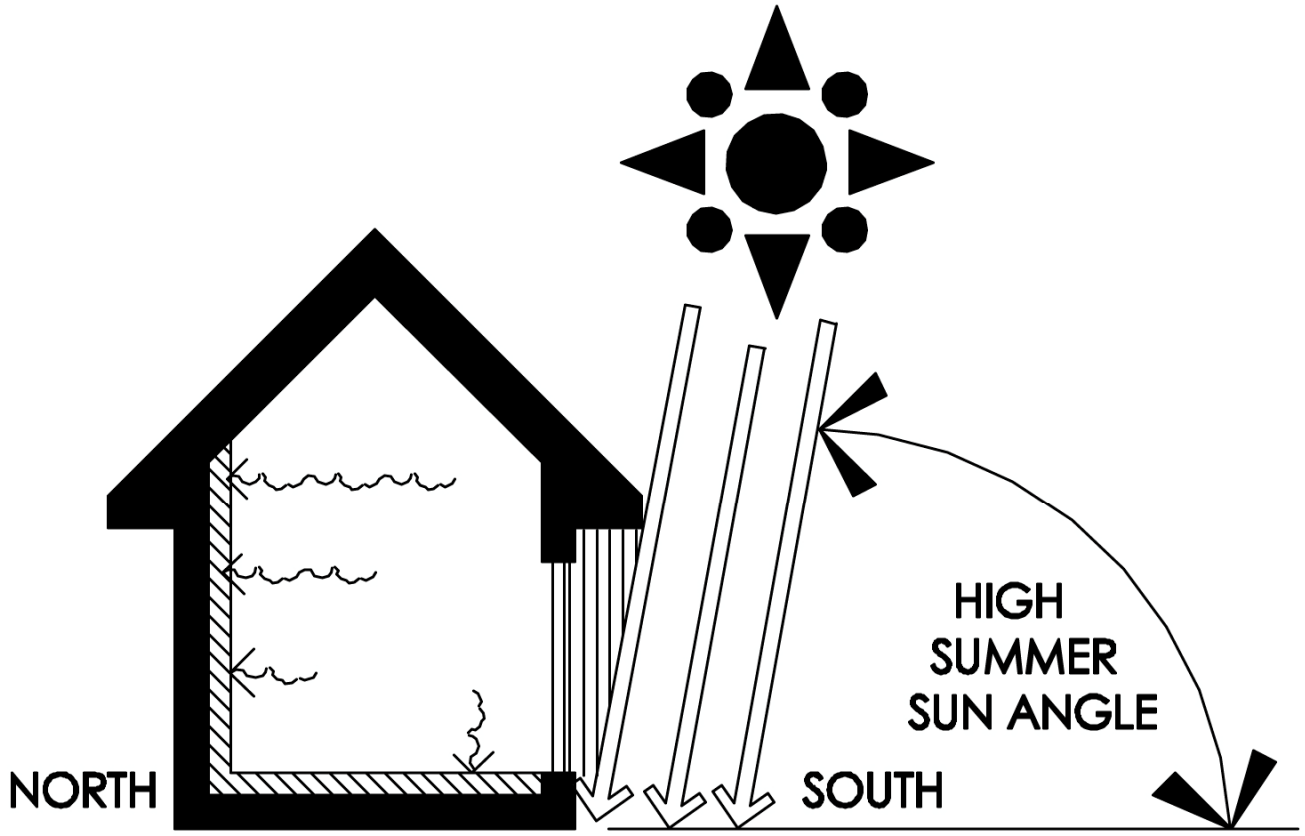


PROPER ORIENTATION TO THE SUN IS IMPORTANT YEAR–ROUND

In summer, the sun mainly strikes the roof as well as the east and west sides of buildings.

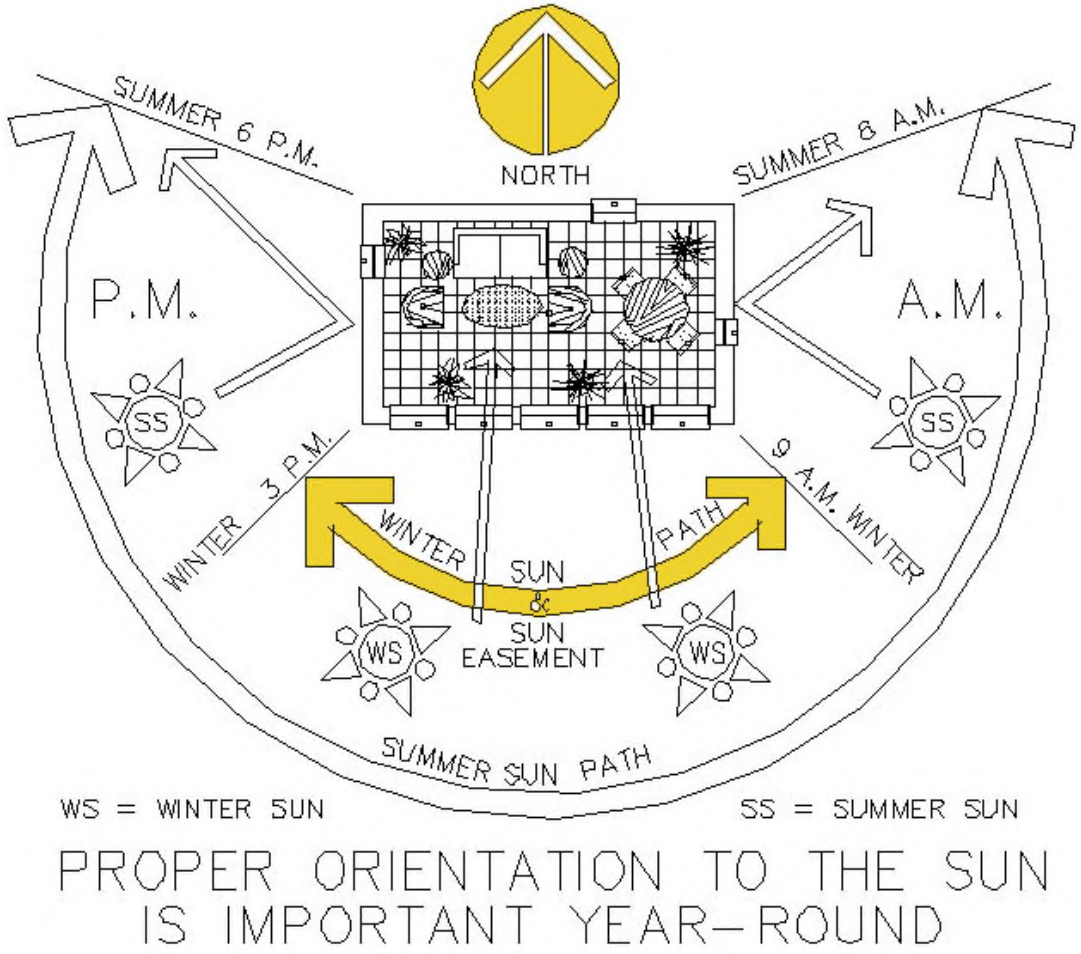
By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

In summer, the sun is higher above the horizon and almost overhead at noon.



SUMMER SUN HIGH IN THE SKY

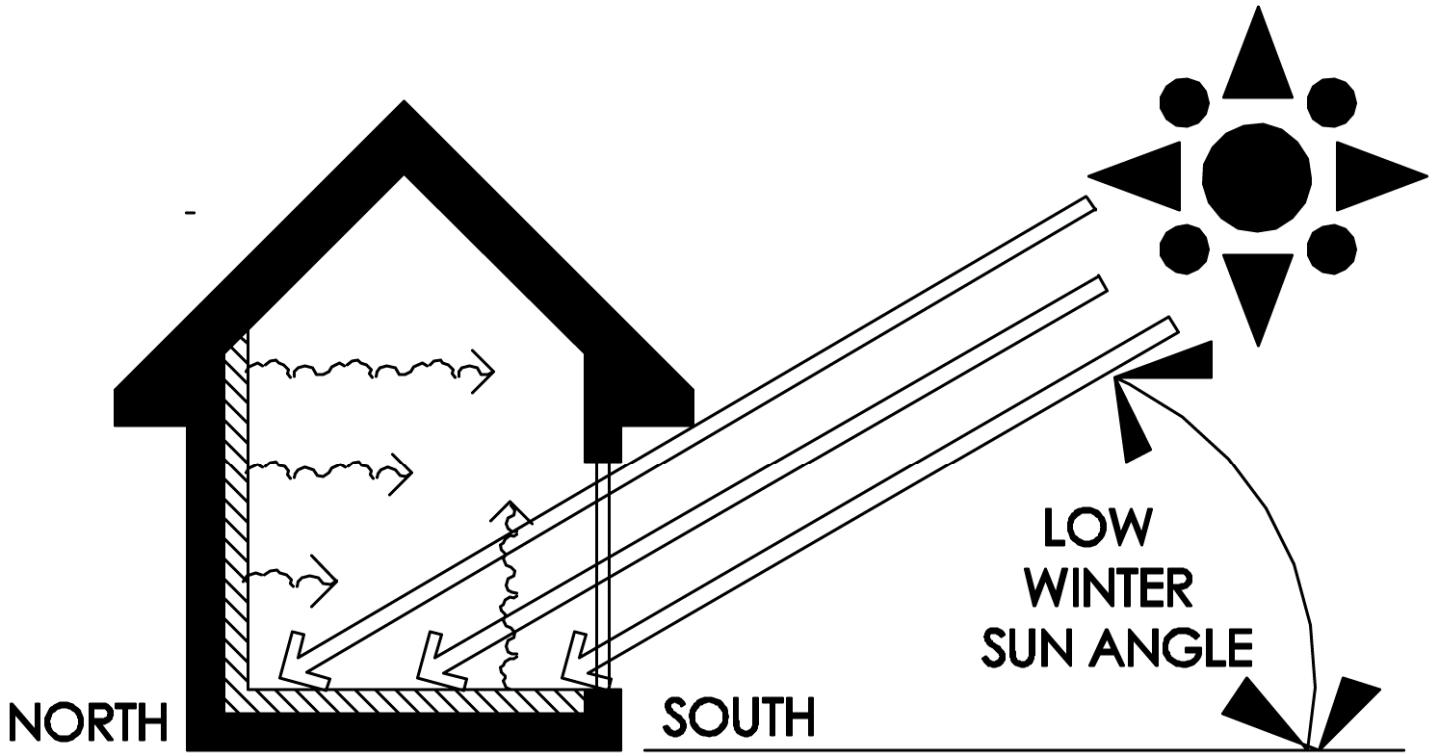
In winter, the sun rises in the southeast & sets in the southwest



In winter, the sun mainly strikes the south wall of buildings.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

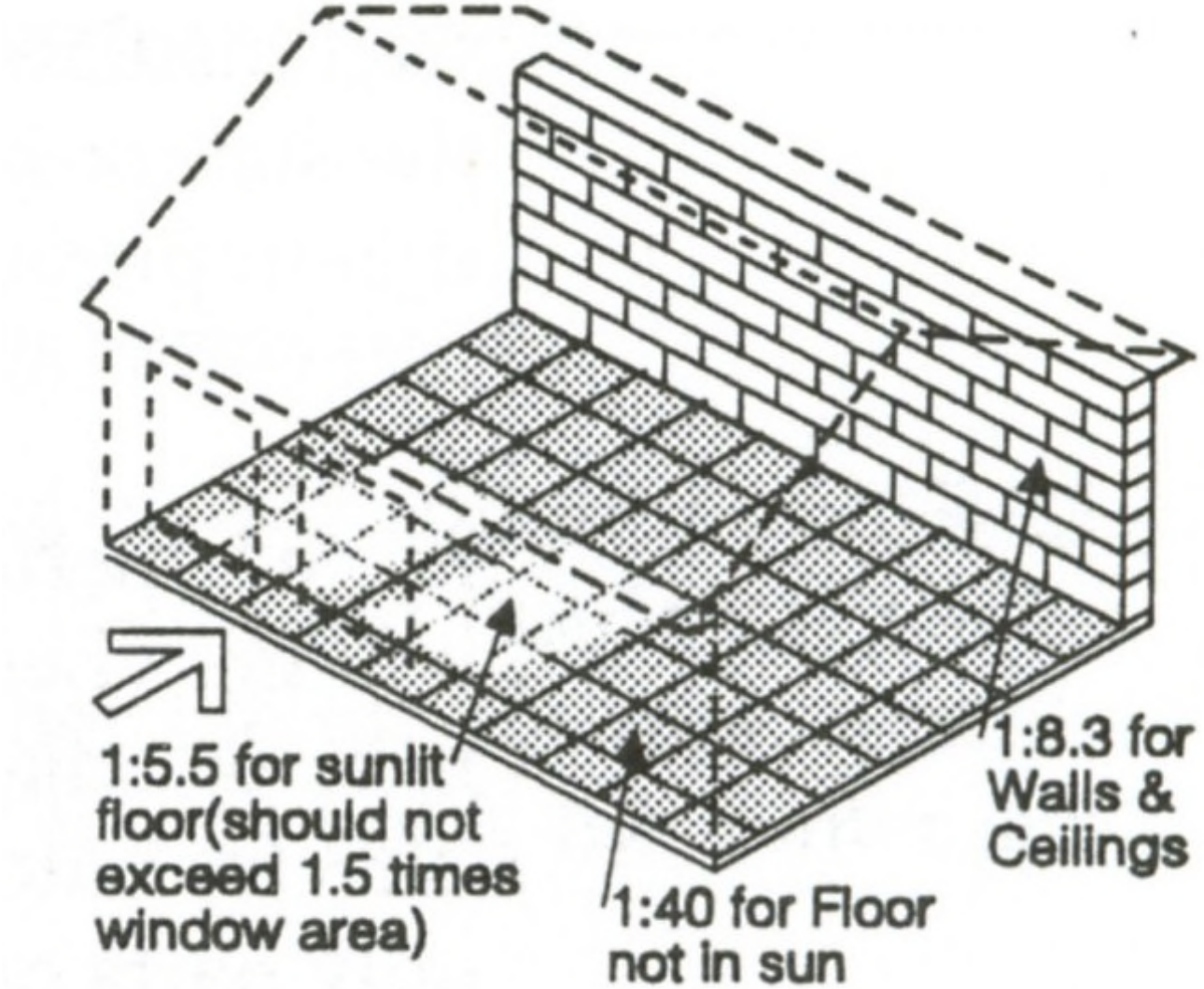
In winter, the sun is lower above the horizon and low in the sky at noon



WINTER SUN LOW IN THE SKY

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Dense materials like stone, brick, tile, concrete and sheetrock absorb and store the sun's heat



These materials provide "thermal mass" which keeps the space from overheating.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Windows on the south side let in sunshine in winter

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Windows on the east and west let in more sun in summer so should be shaded.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

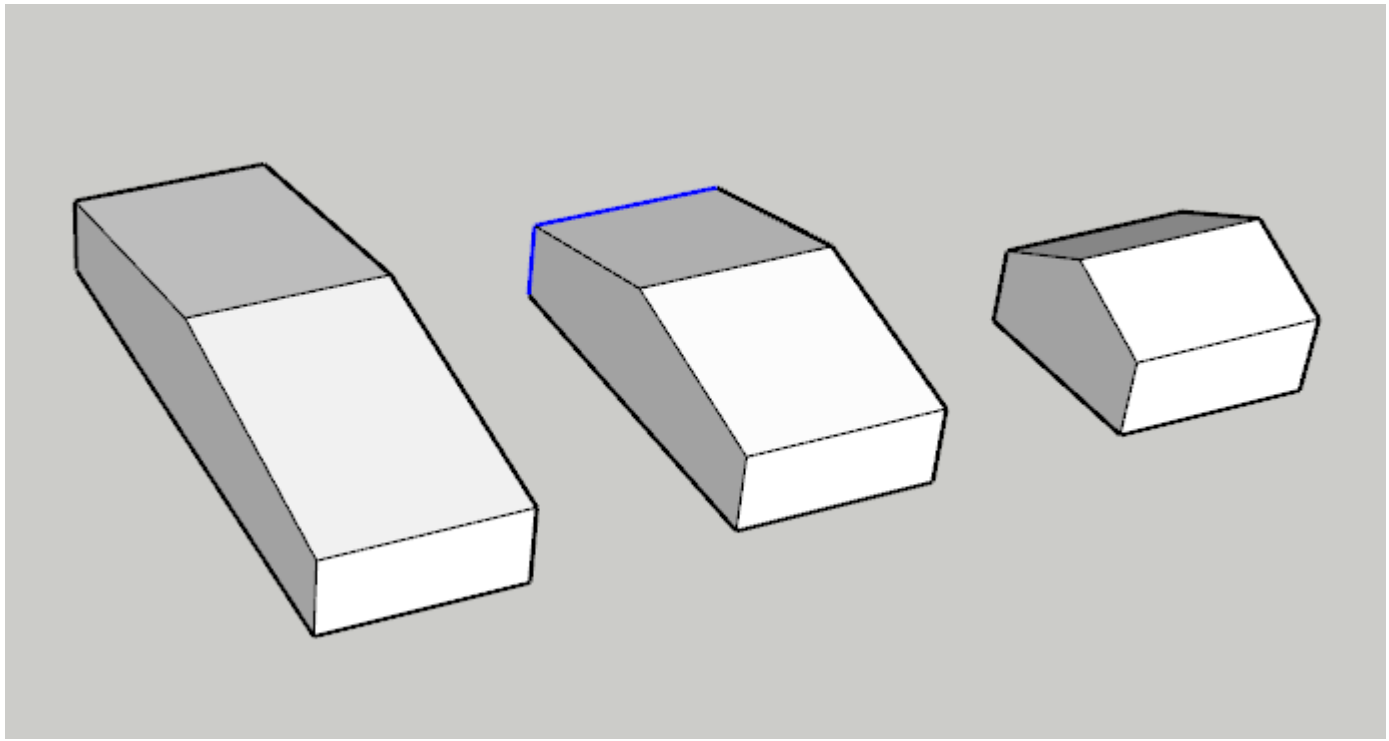
Overhangs over south windows keep out direct sun in summer

Taller south walls and taller windows need longer overhangs

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

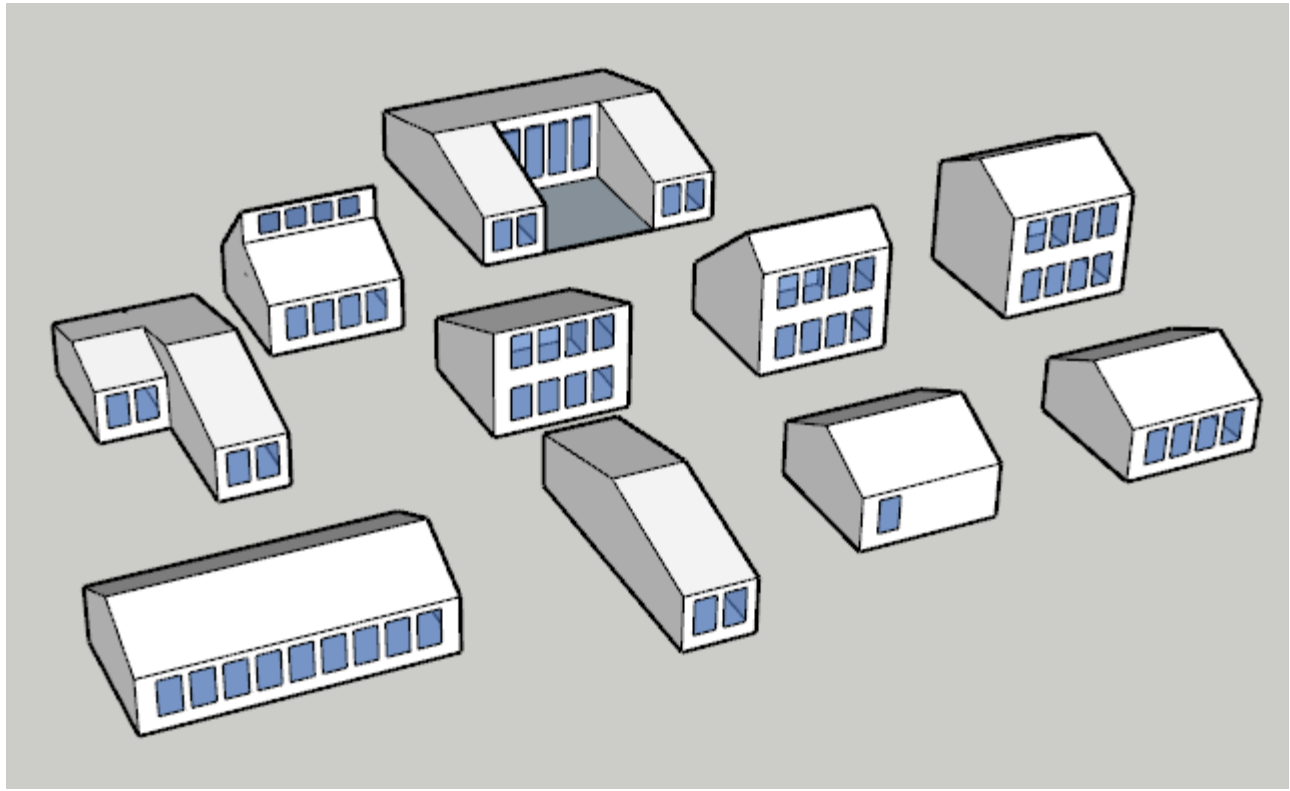
Overhangs over south windows still let in lower sun in fall and winter.

Smaller buildings use less energy than larger buildings

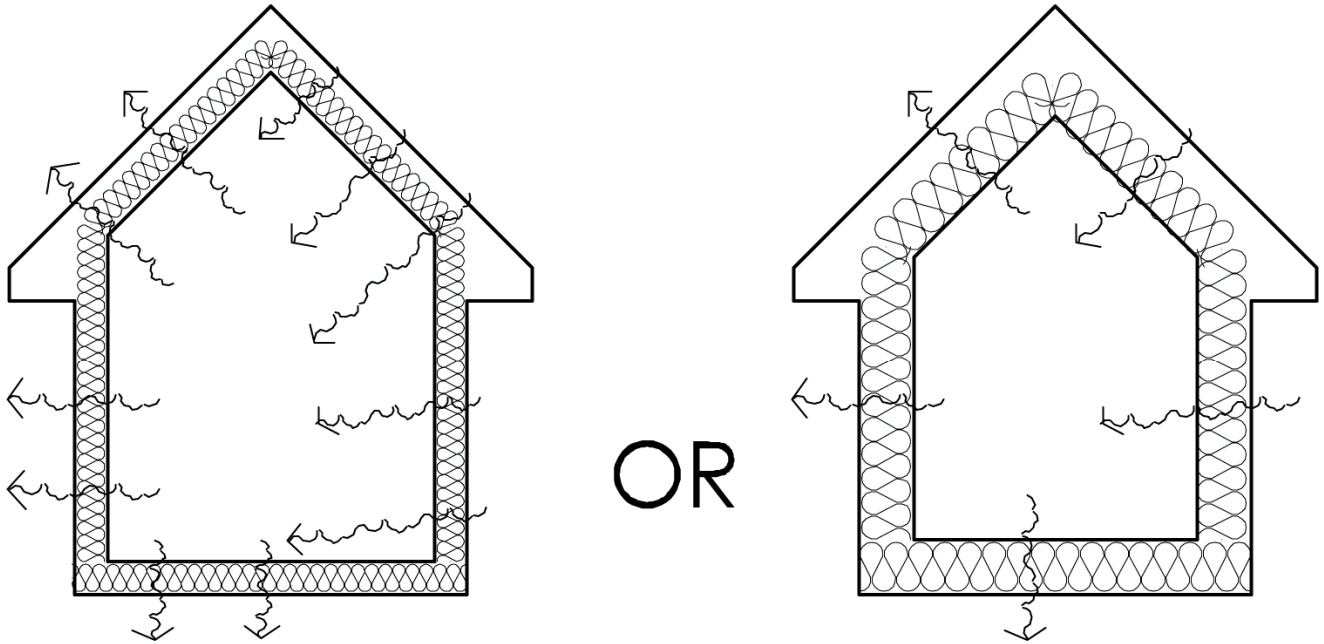


By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Some building shapes allow for more south windows



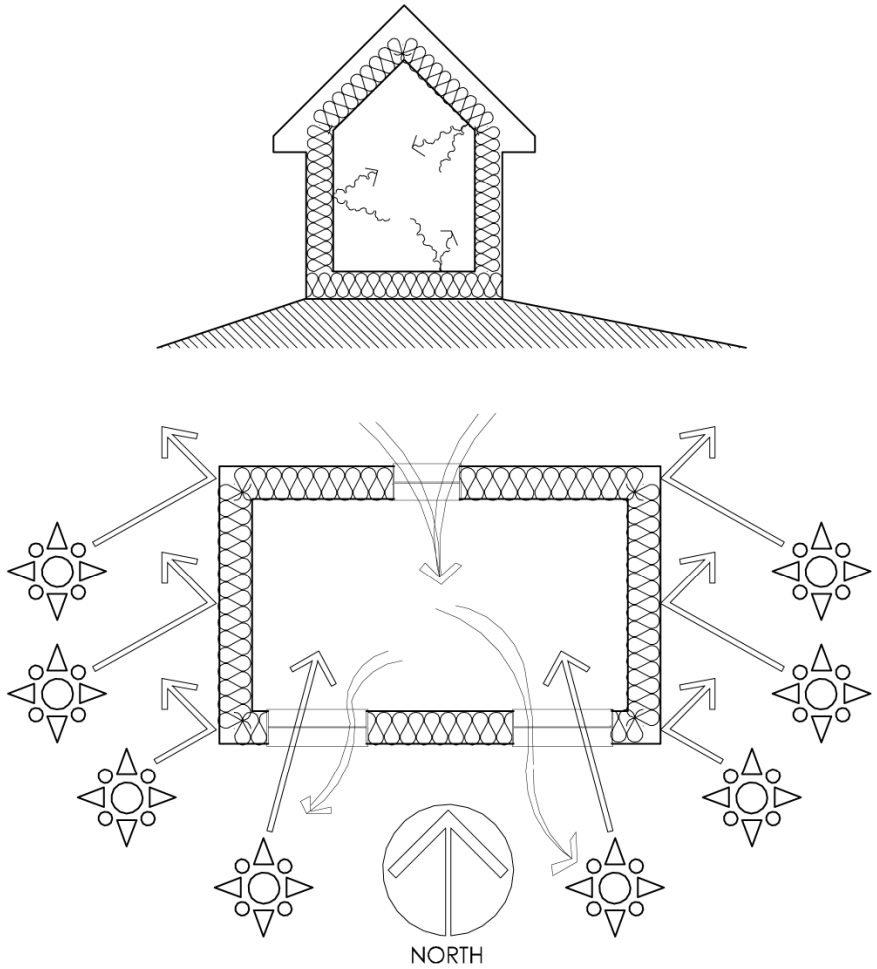
Thicker building insulation keeps in more heat in winter



Roofs, walls, and floors need to have insulation to keep the heat (from both the sun and from heaters) from escaping to the air and earth.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Insulation also keeps the heat out during summer



Roofs and walls need insulation to keep the heat out so that an air conditioner does not need to take out too much unwanted heat and use extra energy.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Insulation and caulking seals cracks which keeps out cold winter air and hot summer air

A well-sealed house also keeps out bugs, dust and humidity. The heating and cooling systems then use less energy.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Simpler building shapes are easier to build and insulate

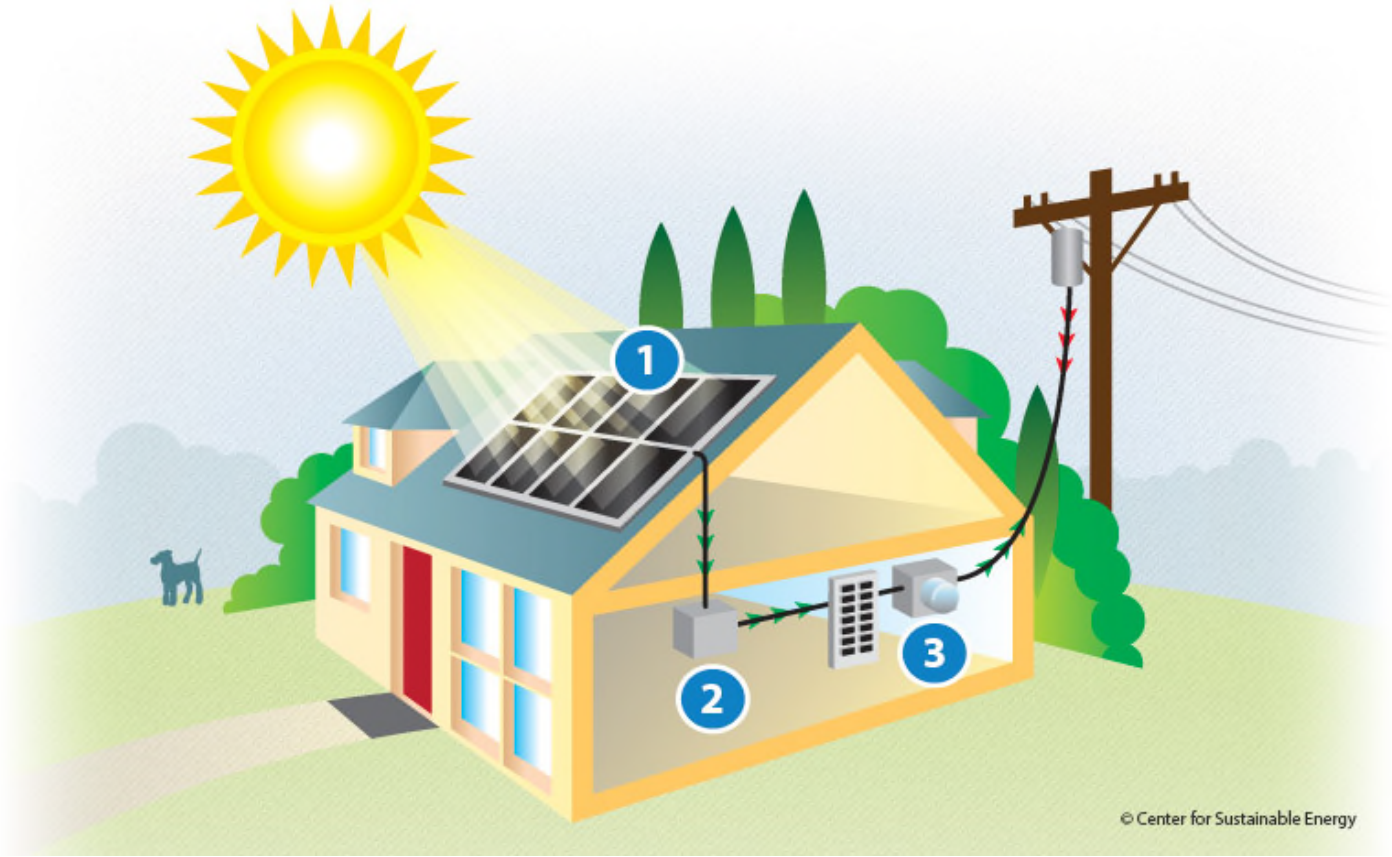
Complicated shapes can be hard to build and often leak water, air and energy more easily.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

A large, south-facing roof provides a surface on which to put solar panels

But solar panels can also work pretty well on east and west facing roofs too if that is the only option

Solar panels turn sunlight into electricity



The electricity is used by lights, appliances, TV's, computers, air conditioners, hot water heaters and electric cars.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

A well insulated building uses less energy to heat and cool

Fewer solar panels are then needed and the building costs less to construct.

This home also collects rainwater from the roof.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

South-facing windows collect sunshine for heating.

South-facing roofs with solar panels make electricity for the home.

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Every Building is a Solar Building

Will you use the sun's light and solar energy, or let it go to waste?

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division

Many free resources… just like sunshine!

www.solarenergyworkbook.com

AMERICAN SOLAR ENERGY SOCIETY

www.ases.org - Join Today!

By Debbie Rucker Coleman, Architect, Sun Plans; Vice-Chair ASES Solar Buildings Technical Division