

Passive Solar Home Design

This playbook describes the procedures for incorporating passive solar design principles into a home. The goal is to naturally collect, store, and distribute solar energy for heating.

Step 1: **Orientation**

Position the home with its main long axis running east-west to maximize the southern exposure of the building, allowing for maximum solar gain in the winter.

Step 2: **Window Placement**

Design the placement of windows to favor the south side. This optimizes solar collection during the winter months while minimizing unnecessary heat gain during summer when the sun is high in the sky.

Step 3: **Thermal Mass**

Incorporate materials that have high thermal mass (like concrete or brick) internally, especially in south-facing rooms. These materials absorb heat during the day and slowly release it as temperatures drop.

Step 4: **Insulation**

Ensure that the building is well-insulated. Good insulation helps retain the collected heat during the colder months and keeps the home cool in the warmer months.

Step 5: **Overhang Design**

Install appropriate overhangs or other shading devices above south-facing windows to provide shade during the summer months when the sun is high, while allowing full sunlight during the winter when the sun is lower in the sky.

Step 6: **Natural Ventilation**

Implement natural ventilation strategies such as carefully positioned operable windows or vents to allow for cooling breezes during warmer seasons and to reduce reliance on mechanical cooling systems.

General Notes

Climate Considerations

Adapt the design to the specific local climate, as solar gain may need to be maximized or minimized depending on the seasonal temperature extremes.

Landscaping

Use landscaping to provide additional shade or wind protection as needed. Deciduous trees can offer shade during summer and allow sunlight in winter when they shed their leaves.

