

Mini Solar House Design Challenge

Your Challenge

A developer just bought two pieces of land that share a river between them and are connected by a bridge. Because flooding is possible, the houses he wants to place on this land must be movable and he has decided to invest in tiny houses for the property. Your job is to design and create a tiny house model to propose for this village. The developer will accept many designs but he wants a living space that would be reasonable for two people to live in. Included must be a kitchen, bathroom, living space and bedroom(s). The house must be as green as possible and incorporate solar energy.



Criteria

- Each house must run at least an LED light and a fan that will be used for cooling the house.
- Each house must fit on a 9" X 12" piece of paper.
- Solar modules must be above the roof of the house.
- Your house must be made to scale where 1 sq.cm = 1 sq. foot in the real world.

Constraints

Only the following items can be used in your circuitry:

- no more than 4 solar modules - you decide voltage
- leads
- white LED
- solar motor and fan
- switch

Brainstorm & Imagine

Look at your materials and think about what you will need to do to accomplish this task.

- How will you design your house to position the solar modules at the right angle for optimal power (Azimuth)?
- How will you make the roof the right angle for the solar cells (optimal tilt)?
- Which materials would be best to use for stability and strength?
- How will you run the circuitry so that it is aesthetically pleasing and functional (parallel or series)?
- How will you design your floor plan to maximize the floor space?

Build, Test, Redesign

As you build your house, keep detailed plans with sketches and write paragraphs that will track your thinking. These will be part of your final presentation to the class (who will act as the developer).