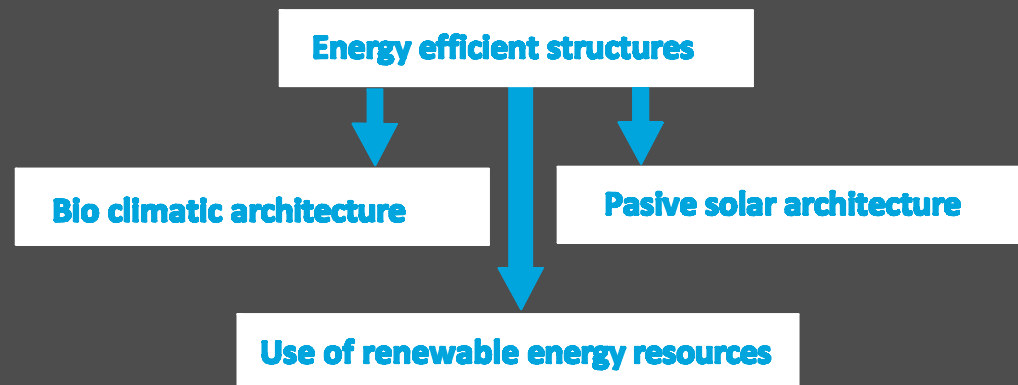


# ENERGY EFFICIENCY

Learning Activity: Reflections on Housing, Task: Identifying critical concepts,  
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*Definition by a dictionary*

Energy efficiency, sometimes simply called efficient energy use, is using less energy to provide the same level of performance, comfort, and convenience.



Architects can achieve energy efficiency in the buildings they design by studying the macro-and micro-climate of the site such as

- landscaping,
- ratio of built form to open spaces
- location of water bodies
- orientation
- planform, and
- building envelope

Energy resource efficiency in new constructions can be effected by adopting an integrated approach to building design. The primary steps in this approach would be to:

- *Incorporate solar passive techniques in a building design to minimise load on conventional systems (heating, cooling, ventilation and lighting)*
- *Design energy-efficient lighting and HVAC systems (heating, ventilation and air-conditioning)*
- *Use renewable energy systems (solar photovoltaic systems/ solar water heating systems) to meet a part of building load*
- *Use low energy materials and methods of construction and reduce transportation energy*

## Solar Powered House Design

**Top prize in the Solar Decathlon competition**

This solar powered house isn't typical German House design. With a goal of designing an energy-efficient home plan, the team from 'Dresdner university' took to the drawing board and came up with this architecture project: two-storey, cube-shaped house, with a facade and roof clad in solar cells which will produce 200 percent of the home's energy. This eco house design is also highly insulated and equipped with automated-louver window shades to reduce unwanted heat-gain.

*This house is totally independent what relates to use of energy, and that means it is good example of energy efficient architecture.*



## zeroHouse

Zero house is completely self-sufficient home that produces its own energy, water, and is completely customizable, just versatile. It meets all requirements for energy efficient house.

**- generates its own electrical power**

High-efficiency solar panels produce power and store it in an onboard bank of batteries. Fully charged, zeroHouse can operate continuously for up to one week with no sunlight at all.

**- collects its own water**

A rainwater collection plane gathers and diverts water into an elevated 2700 gallon cistern. All plumbing fixtures are gravity-fed, eliminating the need for power-consuming pumps.

**- processes its own waste products**

All organic waste is processed in a digester unit located beneath the house. It converts the waste into clean, dry compost that needs to be removed only twice a year.

**- is completely automatic**

All functions of the house are monitored by an array of sensors and regulated by a "house brain" that can be controlled through any laptop computer. zeroHouse is fully customizable for personal usage patterns, from the weekend getaway to extended-stay living.

