

## ZERO ENERGY HOUSE AS ENVIRONMENT SAVING TECHNOLOGY

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Nowadays there is a growing imbalance between energy supply and demand. Energy demand growth is exceeding production growth, leading to increased supply scarcity. Energy generation, transportation and consumption contribute to GHG emissions and associated air pollution. That's why great attention is paid to ecological problems and development of green technologies in order to prevent global warming process. One of these novations is Zero-energy house (ZEH).

A zero-energy house, also known as a zero net energy building, or Net Zero Building, is a popular term to describe a building with zero net energy consumption and zero carbon emissions annually.

Zero Energy Housing is a term applied to a house or residential development that produces as much energy from renewable sources as it consumes on an annualized basis.

A ZEH combines state-of-the-art, energy-efficient construction techniques with renewable energy systems (usually solar and wind power) to create as much energy as it uses on an annual basis. Because solar and wind power are unpredictable, most ZEH's are connected to the local electrical grid. When the home can't produce enough power to meet its needs—at night or on a cloudy winter day, for instance—the homeowner purchases energy from the utility provider.

On the other hand, when the house is producing more energy than it needs, the extra energy is sent back into the utility grid. In some cases, the home's electric meter literally spins in reverse. If, over the course of the year, the home produces as much energy as it consumes, it can be considered a zero energy home.

Although net-zero energy homes have a higher initial cost of building, there are numerous advantages to building/owning a NZEH. These benefits include:

- isolation for building owners from future energy price increases;
- increased comfort due to more-uniform interior temperatures;
- reduced total cost of ownership due to improved energy efficiency;
- the value of a ZEB building relative to similar conventional building should increase every time energy costs increase;
- future legislative restrictions, and carbon emission taxes/penalties may force expensive retrofits to inefficient buildings.

Disadvantages:

- initial costs can be higher - effort required to understand, apply, and qualify for ZEB subsidies;
- very few designers or builders have the necessary skills or experience to build ZEBs;
- without an optimized thermal envelope the embodied energy, heating and cooling energy and resource usage is higher than needed. ZEB by definition do not mandate a minimum heating and cooling performance level thus allowing oversized renewable energy systems to fill the energy gap.

Thus, Zero-energy house is an effective way of saving environment from pollutions and adverse effects of energy generation, transportation and consumption. Utilization of these buildings can make our life more comfortable and healthier.