

Guide to Zero Net Energy SINGLE FAMILY HOME



What is Zero Net Energy (ZNE)?

According to the U.S. Department of Energy, a zero net energy building is “an energy-efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.” Source energy refers to the raw fuel being consumed plus the delivery and production losses of the fuel when converted to an energy resource. Effectively, what this means is that the building combines high efficiency with renewable energy to meet its own annual energy consumption needs.

Wherever possible, ZNE or zero net energy (ZNE) buildings use cost-effective measures to reduce the energy needs of the building. Once built, the building uses renewable energy systems to produce enough energy to meet its remaining energy needs. ZNE buildings are performance based, not prescriptive, so a builder can be creative in how they design and build a ZNE building.

There are a number of advantages for ZNE buildings, such as lower environmental impacts, lower operating and maintenance costs, better resiliency to power outages and natural disasters, and improved energy security. ZNE buildings have a tremendous potential to transform the way buildings use energy.

SOURCES

[Source Energy](#)
[ZNE Definition](#)

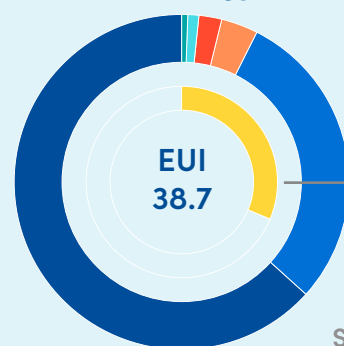
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The baseline energy model shows the annual energy consumption and how much is covered by renewable energy in the inner ring, compared to the proposed energy model that shows how much less energy is consumed by the ZNE building.

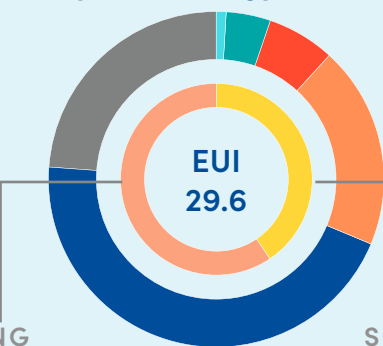
- GAS HEAT
- GAS HOT WATER
- ELECTRIC PLUGS
- ELECTRIC COOL
- ELECTRIC FANS
- ELECTRIC LIGHT
- ENERGY SAVED

Baseline Energy Model



SOLAR RNG

Proposed Energy Model



SOLAR

- ⚡ **ELECTRICITY**
Indicates the electricity savings over the baseline
- 🔥 **GAS**
Indicates the gas savings over the baseline
- 💰 **COST**
Indicates the relative cost of the energy efficiency measures

ZNE CERTIFICATIONS

[ENERGY STAR®](#)

[LEED](#)

[New Buildings Institute](#)

[Passive House](#)

[Zero Energy Ready Homes](#)