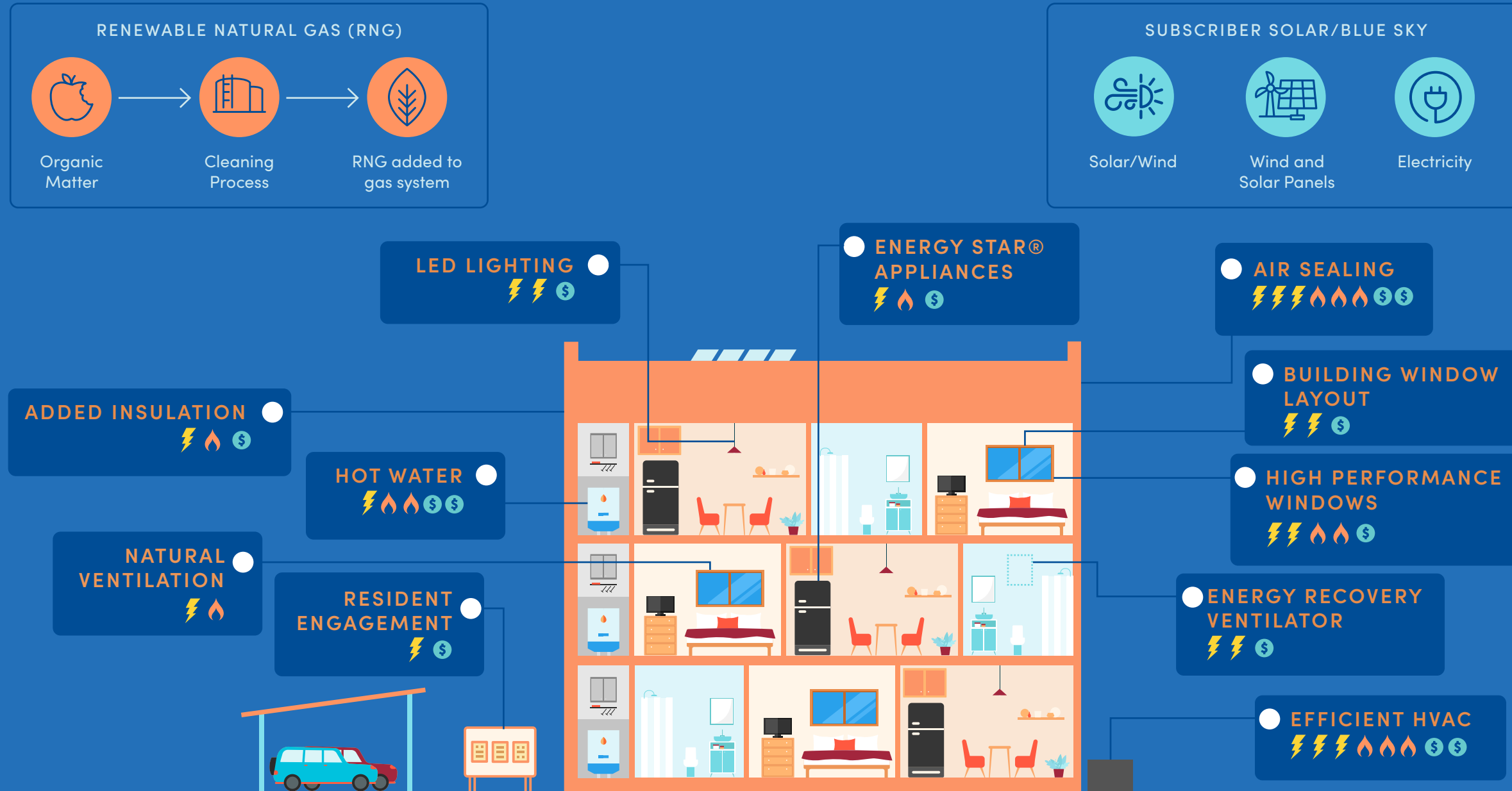


# Guide to Zero Net Energy

## MULTIFAMILY GAS AND ELECTRIC



### 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

<https://portfoliomanager.zendesk.com/hc/en-us/articles/227118647-What-are-Site-Energy-and-Source-Energy->

#### ZNE definition:

[https://www.energy.gov/sites/prod/files/2015/09/f26/bto\\_common\\_definition\\_zero\\_energy\\_buildings\\_093015.pdf](https://www.energy.gov/sites/prod/files/2015/09/f26/bto_common_definition_zero_energy_buildings_093015.pdf)

#### ZNE CERTIFICATIONS

[ENERGY STAR®](#)

[LEED](#)

[New Buildings Institute](#)

[Passive House](#)

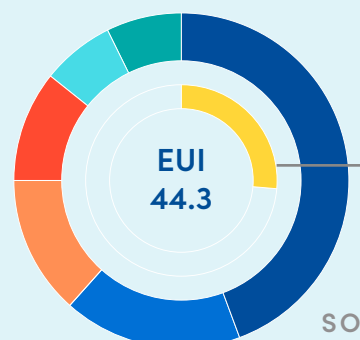
#### SPONSORS:



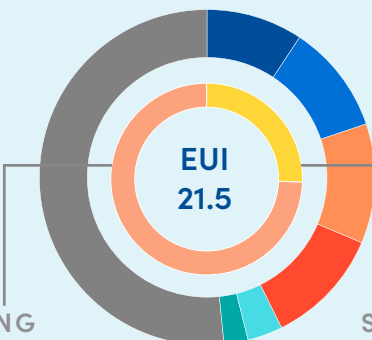
The baseline energy model shows the annual energy consumption and how much is covered by renewable energy in the inner ring, compared to the proposed energy model that shows how much less energy is consumed by the ZNE building.

- HEATING
- LIGHTS
- HOT WATER
- EQUIPMENT
- COOLING
- FANS
- ENERGY SAVED

#### Baseline Energy Model



#### Proposed Energy Model



- 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

#### Steps to a ZNE Building

##### 1 SET PROJECT PRIORITIES

The team is formed and meets to review design and set priorities.

##### 2 DEFINE ZNE

The team defines how they plan on achieving zero net energy, through energy efficiency measures and on- or off-site renewable energy generation.

##### 3 SET EUI TARGET

The team sets the target Energy Use Intensity (EUI) as the performance goal. EUI refers to the energy use per square foot in the building.

##### 4 DESIGN THE PROJECT

The team carefully considers natural climate resources such as daylighting and building orientation, and building systems such as lighting and HVAC in the project design.

##### 5 TRACK PERFORMANCE

The operations and maintenance team tracks the building energy consumption over one year to verify performance.

##### 6 CERTIFICATION(S)

After one year of building operations, the team completes zero net energy certification.