

## RE112R22: Fundamentals of Sustainable Homes

### Course Description:

The market for sustainable homes is developing. Real estate professionals who take the time to understand the sustainable homes that homebuyers want are gaining a competitive edge and becoming their clients' trusted resource. This course explores the different building standards that go above code and strategies to make a home more comfortable and energy-efficient, helping real estate professionals find their clients a healthy, durable, and sustainable home. Gain a competitive advantage by being able to identify and communicate the benefits of sustainable homes in the market.

### Caution:

- *Real Estate Licensees should be careful not to advise the consumer in areas beyond the scope of their real estate license. It is advisable to provide the consumer with a list of experts in the field of sustainable homes to assist them.*
- *Technology and regulations subject to change, please update as needed, check for latest updates*

### 1. Objectives

When finished, learners will be able to:

- a. Identify the characteristics of a sustainable home
- b. Recognize various sustainability programs that go beyond the minimum building code requirements
- c. Identify ways to increase a home's sustainability through improving energy use, and water efficiency
- d. List various sustainable products and systems, based on third-party certifications, that will increase a home's energy efficiency and sustainability and reduce its impact on the environment.

### 2. What is a Sustainable Home?

- a. Definition  
A home either built new or retrofitted in a way to conserve resources and optimize energy.
- b. Benefits of a sustainable home.
  - i. Resilient
  - ii. Energy/water efficient
  - iii. Healthy
  - iv. Low/no carbon footprint.

- c. Home energy/water consumption opportunities
  - i. Home technology (including lighting, appliances, and heating and cooling mechanical systems) are all becoming increasingly more energy/water efficient.
  - ii. Government programs, like Energy Star and WaterSense, make it easy for homeowners to choose appliances and fixtures that consume less energy and water
  - iii. Homeowner behavioral strategies for reducing the carbon footprint/energy consumption of their home
  - iv. most of the energy usage in a home comes from: heating and cooling, windows, doors.
- d. Dispel common sustainable-home myths.
 

There is still an assumption that sustainable homes are equivalent to a yurt in the woods without electricity or running water. The learner will be able to dispel five busted myths about sustainable homes:

  - i. Sustainable homes are ugly
  - ii. Sustainability = Tree Huggers
  - iii. Sustainability is expensive
  - iv. Sustainable homes are too air tight
  - v. Sustainable means off-grid

### **3. Building Codes and Standards**

- a. Differences between 'building to code' and building/remodeling with sustainability in mind.
  - i. Main purpose of building codes is to protect public health, safety, and general welfare as they relate to the construction and occupancy of buildings and structures.
  - ii. Building code changes over the decades have resulted in more efficient homes, a home 'built to code' is built to the minimum legal requirement for energy efficiency.
  - iii. Many municipalities in MA have adopted the Stretch Code
  - iv. Building with sustainability in mind may come with some challenges in dealing with building codes.
- b. List the advantages of sustainable design programs including:
 

Include a discussion on potential value added to the real estate

  - i. ENERGY STAR
  - ii. LEED
  - iii. Passive House
  - iv. Net Zero
  - v. Pearl Certification

#### 4. **House as a System**

- a. Describe how the house operates as an interdependent, multi-connection system. A systems approach to housing does not merely look at the building alone. Four main components when looking at a house as a system:
  - i. The building envelope,
  - ii. Its mechanical systems and inner workings,
  - iii. The environment, and
  - iv. The home's occupants.
- b. Changes to one component can have a positive or negative effect on other components of a house
- c. List some interactions between components that a homeowner must consider when renovating an existing home

#### 5. **Energy & Water Efficiency**

- a. Purpose and benefits of a home energy audit including information about how energy is used in a home (how much for space heating, water heating, lighting and appliances, etc.)
- b. Pros of using a home automation system
- c. Products that homeowners can use to improve the energy and water efficiency of their home.

#### 6. **Heating and Cooling**

- a. Primary parts of a home responsible for heat/cooling loss. The typical home loses significant amounts of heat that they produce. List where homes lose the most heat, including areas of home such as windows/doors, walls, attics, and basements/floors.
- b. Identify the strengths and weaknesses of various types of insulation: fiberglass, cellulose, spray foam, mineral wool, natural fiber, and magnesium oxide.
- c. Explain the benefits of high efficiency windows.
  - i. Aesthetic beauty of a naturally lit home
  - ii. Energy efficient – less heat loss
  - iii. Protect furniture, floors Low E windows
  - iv. Added comfort and noise reduction they provide.
- d. Discuss the benefits of heat pumps and the types of heat pumps available on the market.
  - i. How they work
  - ii. How efficient they are
  - iii. What temperature is a heat pump most effective

## 7. Indoor Air Quality

- a. Explain the importance of indoor air quality (IAQ) and how poor air quality can signal other issues in the home that can undermine the home's sustainability, increase energy costs, and become costly if not rectified.
- b. Identify common building supplies and furnishings that contribute to poor air quality. Identify hotspots in a home that can affect the indoor air quality including furniture, formaldehyde, walls and carpets, and burning wood, oil, or gas.
- c. Discuss home ventilation basics that will help prevent mold and other air quality issues in a home. The learner will be able to explain the basics of the two types of home ventilation: natural ventilation and mechanical ventilation.

## 8. Land and Neighborhoods

- a. Identify the impact of location on a home's sustainability
  - i. Site, terrain, water runoff
  - ii. Sun exposure and the orientation of the house (passive and active solar)
  - iii. Wind direction for natural ventilation
  - iv. Reduce exposure to harsh elements
  - v. Communicate these considerations to clients considering building a new home or renovation
- b. Influence of design/ site plan on sustainability (passive solar design)
  - i. Angle the home towards the sun.
  - ii. Incorporate large windows on the sun-facing side of the home.
  - iii. Window overhang S facing windows to prevent summer heat
- c. List the "big 5" appliances that have the largest impact on energy costs: refrigerator, dishwasher, stove/oven, washer, dryer
- d. Define "embodied energy: measurement of how much energy is used in producing the item or material, and how homeowners can begin considering its impact when making choices for their home.
- e. Discuss the pros and cons of various standard roofing materials. More sustainable roofing options are considered those that last longer, can be recycled, and/or have lower embodied energy or are sourced from non mined or fossil fuel-based materials.  
Top five more sustainable roofing options on the market today:
  - i. Terracotta Tiles
  - ii. Living or Green Roofs
  - iii. Cedar Shingles
  - iv. Slate Roofing
  - v. Synthetic Slate Roofing
- f. Overview of solar panel systems, including wiring, batteries, and inverters.

- g. Decarbonization and electrification:
  - i. They are built or renovated, to have an efficient building envelope that minimizes heat loss through ample insulation, high-efficiency windows, and minimal air leakage.
  - ii. They have high-efficiency electric space heating systems, such as heat pumps.
  - iii. Hot water is provided by a high-efficiency electric hot water system. d. Electric induction cooktops - Cooking with induction is faster, safer, and more energy efficient than cooking with conventional electric or natural gas appliances.

**9. Communicating the value and benefits to your clients**

- a. Overall benefits:
  - i. Health: indoor air quality, noise reduction, formaldehyde-free
  - ii. Wealth: energy efficiency, water savings, durability, resale value ■
  - iii. Planet: local sourcing, carbon footprint, and emissions
- b. Listing a sustainable home
  - i. Recognize and accurately market the attribute/ features of sustainability
  - ii. Use of MLS Green Fields
  - iii. Assess the potential value
    - 1. Appraisal Green Addendum
    - 2. Gather documentations on systems/ features
- c. Working with buyers
  - i. Understand and incorporate the buyers more specific requests
  - ii. Educate on homeownership costs
  - iii. Request trained appraiser when appropriate

**Suggested Handouts:**

Appraisal Green Addendum

**Related courses:**

- RE105R18 - Selling the sun
- RE86R14 - High Performance Green Homes