NAR's Green Designation Course

People, Property, Planet, Prosperity

Student Manual

Version 4.0

NATIONAL ASSOCIATION OF REALTORS®
OFFICIAL DESIGNATION

green

Version 4.0

National Association of REALTORS®
Green REsource Council

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Introduction

Welcome to NAR's GREEN Designation Course: People, Property, Planet, Prosperity. This course is the first step in earning a valuable market distinction as an NAR Green designee and a member of NAR's Green REsource Council.

NAR's Green Designation illustrates how real estate professionals can increase their incomes by helping clients make informed decisions about the performance and sustainability of the homes they live in, sell, and buy. When you earn NAR's Green Designation, you'll gain:

- A comprehensive understanding of how homes with green features should be marketed differently than traditional homes.
- Access to customizable members-only marketing tools to help you build your business and gain a competitive edge.
- Market research on communicating with clients interested in different facets of green.
- Improved visibility as a trusted advisor and source of information on the topic.

Course Learning Goal

NAR's GREEN Designation Course: People, Planet, Property, Prosperity covers the distinguishing characteristics that make a high-performance home. The course looks at how consumer demand for these homes is increasing and provides a detailed accounting of how high-performance features work. The course prepares real estate professionals to provide advice and provide sources of information to help homeowners improve the performance of their homes from low-cost fixes and DIY projects to retrofitting and replacing systems to big budget remodeling projects and new constructions. Ultimately, this course will show you how to apply green knowledge to enhance your business while also helping to create a more sustainable, healthy world.

What You Will Learn

Module 1: Meet the High-Performance Home

What is a high-performance home and why is consumer demand for these homes increasing?

- Observe the influence of principles of sustainability on consumer attitudes and choices and home values.
- Distinguish between homes with high-performance features, smart homes, and certified homes.
- Help clients and customers evaluate the cost-benefit balance of retrofitting, remodeling, or renovating.

Module 2:
Creating Value: Steps to Improving Home Performance

What can homeowners do on their own to improve the performance of their homes?

- Help home buyers see the potential in an existing home for resource-efficiency improvements.
- Suggest to homeowners DIY steps and easy upgrades to improve the performance of a home.
- Help consumers understand energy-efficiency ratings of homes and appliances.

Module 3: Smart Home Technologies

What makes homes smart and what is their impact on the market?

- Describe what a smart home is and the basic components that go into it.
- Help homeowners understand the benefits and implementation of smart home technologies.
- Explain how smart home technologies help achieve green goals.

Module 4: Retrofitting and Replacing Systems

What are some of the opportunities for improving the performance of an existing home?

- Describe choices for high-performance home systems – such as HVAC and water management – and the significance of ratings for home systems and materials.
- Suggest improvements to enhance the resource efficiency of a home as well as the quality of the indoor environment.
- Show the linkage between high-performance homes and value.

Module 5: Remodeling and Renewable Energy Systems

What are some of the possibilities, including alternative energy, when a homeowner can invest more time and money in upgrading a home?

- Advise clients and customers on the potential of various home renovations to increase the value of a home.
- Refer consumers to information sources for planning a remodeling or renovation project.
- Discuss the technologies and methods for renewable energy resources, including solar, wind, and geothermal power generation.

Module 6: New Custom Green Construction

What are the steps, opportunities, and choices involved in constructing a new home, and how can the real estate professional add value?

- Help clients evaluate the pros and cons of purchasing a new home with green features versus purchasing and upgrading an existing home.
- Describe the design and construction phases as well as components of new and custom high-performance homes.
- Observe the market impact of new, high-performance production homes.

Module 7: Hot Topics: High-Performance Trends

What are the latest trends in the high-performance real estate market?

- Summarize the latest trends in high-performance homes.
- Discuss the benefits of innovative high-performance features.
- Apply your knowledge about the latest trends into your green business.

Module 8: Understanding Consumer Motivations and Priorities

How has the sum of many small, environmentally conscious changes in our daily lives resulted in a big shift in societal behavior and attitudes?

- Respond to consumer perceptions of what green means in relation to home features.
- Understand consumer preferences for green home features and how these preferences are changing as younger generations enter the market.
- Match home features to specific benefits that consumers want.

Module 9: Smart Growth: The New Market Driver

How do affordability, walkability, and transportation interrelate to affect home values and create attractive communities?

- Recognize the interrelationships between green lifestyles and home values – particularly affordability – in urban, suburban, and rural settings.
- Describe the correlation between home values and public transportation that offers access to services and employment.
- Match homebuyers' priorities for walkability with communities and homes.

Module 10: Appraising and Valuing Green(er) Homes

What are the challenges to valuation of resource-efficient homes, and how can these challenges be addressed?

- Describe the benefits for consumers and appraisers of searchable green fields in the MLS.
- Help clients and customers understand the appraisal and pricing of high-performance homes with green features.
- Provide appraisers with documentation of a home's green features to assist in the valuation process.

Module 11: Being the Green Listing and Buyer's Agent

What do you need to know to be a green listing and buyer's agent?

- Ethically present the green features of sellers' homes to best advantage in marketing efforts.
- Match properties to buyers' needs, wants, and priorities in a home with green features.
- Understand the importance of educating buyers and sellers about high-performance features and their benefits.

Module 12:
Going Green: It's a Journey, Not a Destination

What is the best way to assemble a team of experts who know how to service and maintain resource-efficient homes and to build business success in this niche market?

- Find community involvement opportunities to raise awareness of sustainability and set an example through business practices.
- Identify a team of professionals who can build, rate, and maintain high-performance homes to connect green-minded home sellers and buyers with the service resources they need.
- Identify business-planning action steps to establish a market position as a Green designee.

Activities and Class Procedures

This course incorporates a variety of activities designed to involve students, such as work group assignments, exercises, and discussions. Students are strongly encouraged to ask questions and engage in class discussions and group exercises. The range of experience levels among students offers a rich opportunity for learning from your peers. Your active involvement will enrich the learning experience for yourself and others.

Green REsource Council

Established by the Real Estate Buyer's Agent Council (REBAC), a wholly-owned subsidiary of the National Association of REALTORS®, the Green REsource Council was founded to make the knowledge of green real estate practices available to everyone. The council accomplishes this by focusing its attention on providing sustainable education to real estate agents – the link to millions of home buyers, sellers, and builders.

The council awards students who successfully complete the program requirements with NAR's Green Designation and membership to our council. Designed for residential professionals, NAR's Green Designation addresses the increasing demand for knowledge and resources on both new and existing sustainable homes.

Green REsource Council members place themselves at the leading edge of green real estate, gaining access to member benefits including ongoing education, up-to-date green resources, and professionally crafted marketing tools. The council also works to promote NAR's Green Designation by growing consumer and builder awareness and supporting green real estate advocacy.

Earning NAR's Green Designation

The following requirements must be met to earn and use NAR's Green Designation:

1. Complete NAR's Green Designation Course: People, Planet, Property, Prosperity.
2. Maintain active membership status with the Green REsource Council ($98.50 annually) and the National Association of REALTORS®.

Students who successfully complete NAR's Green Designation course will receive a free year of membership in the Green REsource Council. Second year dues will be $98.50, prorated based on when you completed the course. Third year dues and every year thereafter will be $98.50.

NAR Green Designee Benefits

- National recognition as an official NAR designation
- The REsource, a monthly e-newsletter with information about resource efficiency and sustainability issues
- Ready-to-send green messages to post on Facebook and Twitter
- Customizable, downloadable marketing materials: logos, brochures, postcards, press releases, and more
- Listing in a searchable online directory of NAR Green designees, which can be viewed by potential clients and referrals
- Certificate and lapel pin

About NAR's Green Designation Program

NAR's Green Designation program is distinctly different, compared to other "green real estate" training programs, in its focus and orientation.

- **Existing homes in the resale market**
  The NAR program looks at resource-efficient features and improvements primarily from the perspective of existing homes. Many real estate training programs look at this topic from the perspective of new-home construction and certified homes. The reality is, however, that existing homes comprise about 90% of the housing stock, and most real estate professionals concentrate their businesses in the resale market.

- **Business-oriented knowledge base**
  The sequence of the course concentrates on building a knowledge base that real estate professionals can use to participate in this market niche as a specialization or a complement to their core real estate business. The brokerage of high-performance homes is a viable and profitable business specialty. As we'll see throughout the course, real estate professionals can increase their incomes by helping green-minded clients make informed decisions about the homes they live in, sell, and buy.

- **Emphasis on objective, quantifiable information**
  NAR's Green Designation program focuses on observable, objective information about improving the efficiency and sustainability of homes. It is not a course about climate change, nor does it advocate a particular viewpoint or position on environmental concerns. Keep in mind that your fellow students' viewpoints may range from skepticism to curiosity to passion about living a sustainable lifestyle. It's not necessary for all to concur on environmental issues to agree that saving money on operating a home or improving the experience of living in it are worthwhile goals.

Knowledge Base for the Course

Presentation of the course assumes that students have a foundation of knowledge of certain real estate principles and laws.

- **REALTORS® Code of Ethics**
  From time to time, course content refers to articles and standards of practice of the REALTORS® Code of Ethics. It is assumed that students know how to apply these principles in day-to-day business conduct. During the course, we will examine some of the distinct challenges involved in working with clients and customers in the green market.

- **Agency Representation**
  As the course is presented, issues involving client representation – sellers and buyers – will be discussed. As with application of the Code of Ethics, real estate professionals who work with green market clients and customers may encounter circumstances that appear to blur the lines of client responsibility. The course will examine how to remain true to agency representation principles, as defined by your state's real estate laws, in sensitive situations.

A Note About Terminology

Discussion of high-performance homes involves use of some terms – such as sustainability, environmental impact, and even the word "green" – that invoke strong feelings for some students. The program aims throughout to use objective language. Occasionally the term "green" may be used as verbal shorthand for prudent use of energy and water resources as well as avoidance of materials and conditions that have a proven deleterious impact on people and the planet. A glossary of terms used in the course and discussions of resource-efficient homes can be found in the Resources section of this manual.

Practitioner Perspective Spotlights: Building Your Business

All of the real estate professionals profiled in the course are building business success by making green, sustainable real estate part of their service mix.

MODULE 1:
Meet the High-Performance Home

Learning Objectives

At the conclusion of this module, you will be able to:

- Observe the influence of principles of sustainability on consumer attitudes and choices and home values.
- Distinguish between homes with high-performance features, smart homes, and certified homes.
- Help clients and customers evaluate the cost-benefit balance of retrofitting, remodeling, or renovating.

Sustainability and the Four P's

The real estate industry plays a vital role in helping to promote and secure a sustainable, safe, and equitable future for all. As a real estate professional, you advance this initiative by helping your clients make sound decisions in the homes they buy and sell. Increasingly, sound decisions mean sustainable ones, understanding the choices we make today will affect the way we live tomorrow. We are all in this together.

The name of this course is meant to shine a bright light on this fact. Our four P's – People, Property, Planet, and Prosperity – are, in effect, our bottom line. By being mindful of how people and the planet are inextricably tied together by where and how we live, you not only enhance your business, you make the world a more prosperous place.

What Is a High-Performance Home?

A high-performance home can go by a variety of names, such as a green home, resource-efficient home, or smart home, among other labels. For the purposes of this program, "high-performance" is used as a broad umbrella term. The primary meaning is a home that saves money on operational costs by using resources – energy and water – economically and provides a comfortable, healthful living environment for the residents. As a broad concept, high-performance can also include use of low embodied-energy building materials that originate from sustainable sources and contain no harmful substances or off-gassing volatile organic compounds (VOCs).

High-Performance Homes and Your Business

The term "high-performance home" might sound like an all-or-nothing concept – that is, a home is either high-performance or it's not. The reality is quite different, however. Not every element of a home needs to be addressed in order to improve its comfort and operation cost; it doesn't have to be a "whole-house" endeavor. As you'll learn in this course, "going green" or becoming more energy-efficient is an on-going process, not an end in itself.

It's therefore vitally important for you as a real estate professional to not only understand this distinction but also embrace it for your business. If you think of increasing the performance of a home as a process, every improvement a homeowner makes, big or small, provides an opportunity for you to celebrate and market that improvement.

Just about every replacement and remodeling job is an opportunity for greening an existing home. It opens the possibilities for choosing many of the same environmentally friendly and innovative building products and systems that go into new-home construction. Almost all of the systems and materials described in this course can be applied in the process of greening an existing home. And the more you know about these systems and materials, the more you can help your clients in a swiftly evolving real estate market.

Factors Driving the Increase in High-Performance Homes

What are the market drivers that have propelled communities, homes, and consumers past the tipping point to a new, green normal? When buyers are shopping for a home, what shapes their concerns and expectations? What personal concerns and events motivate homeowners to upgrade their homes with energy efficient or smart home features? In short, when and how did "green" become the new normal? Let's look at some of the market drivers and personal motives for upgrading a home with resource-efficient and other green features.

Consumer Demand and Awareness

Consumers can leverage technology to make everyday life easier and to gain more control of their daily tasks. However, natural disasters such as flooding, hurricanes, rising sea level, wildfire, and extreme heat due to climate change have become more frequent and are changing the way we think and how we live. Increasingly, the impact of climate change is upending entire communities.

Resiliency is the new adjective being used to describe the comeback of communities after a natural disaster. Scientists caution the survival of future generations is at stake and the time to care is now or never. Younger generations are well aware of this, having grown up seeing the impacts of climate and learning the importance of environmental values since childhood.

Millennials have comprised the largest generational group of home buyers for some time, and now Gen Zers are beginning to enter the market as well. Together, they comprise nearly 40% of all home buyers.[1] These younger buyers expect their home to reflect their values.

All of this adds up to heightened awareness of our relationship with the environment and responsibility for protecting it. Concerned consumers expect that the homes they purchase and live in will use resources wisely and provide a healthful, harm-free indoor environment.

1 National Association of REALTORS®. "2021 Home Buyers and Sellers Generational Report."

Point-of-Sale Regulations

Nearly every municipality and state in the country has adopted minimum energy-efficiency standards, which gradually raise the bar for compliance. Governments ease the cost and burden of required retrofits for current owners through point-of-sale regulations. Today, cities like Portland are leading the charge in point-of-sale regulations. Sellers of single-family homes in Portland, Oregon, are required to obtain and disclose a Home Energy Report estimating the energy-related use, associated costs, and cost-effective solutions to improve the home's efficiency. Real estate professionals should keep up to date on point of sale and similar regulations, because they have a direct impact on real estate transactions and regulators may try to hold agents responsible for reporting and compliance.

Changing Building Standards

Building codes may require replacement of old materials and systems with newer, more resource-efficient parts and materials. More often, however, the availability of materials, parts, and equipment determine consumers' choices. A stroll through the aisles of any home improvement store offers a quick lesson on how building standards have changed, largely as a result of environmental and health concerns. For example, government regulations ban the sale of toxic materials, such as lead-based paint, asbestos, and certain types of pressure-treated lumber, although these materials may still be present in older homes.

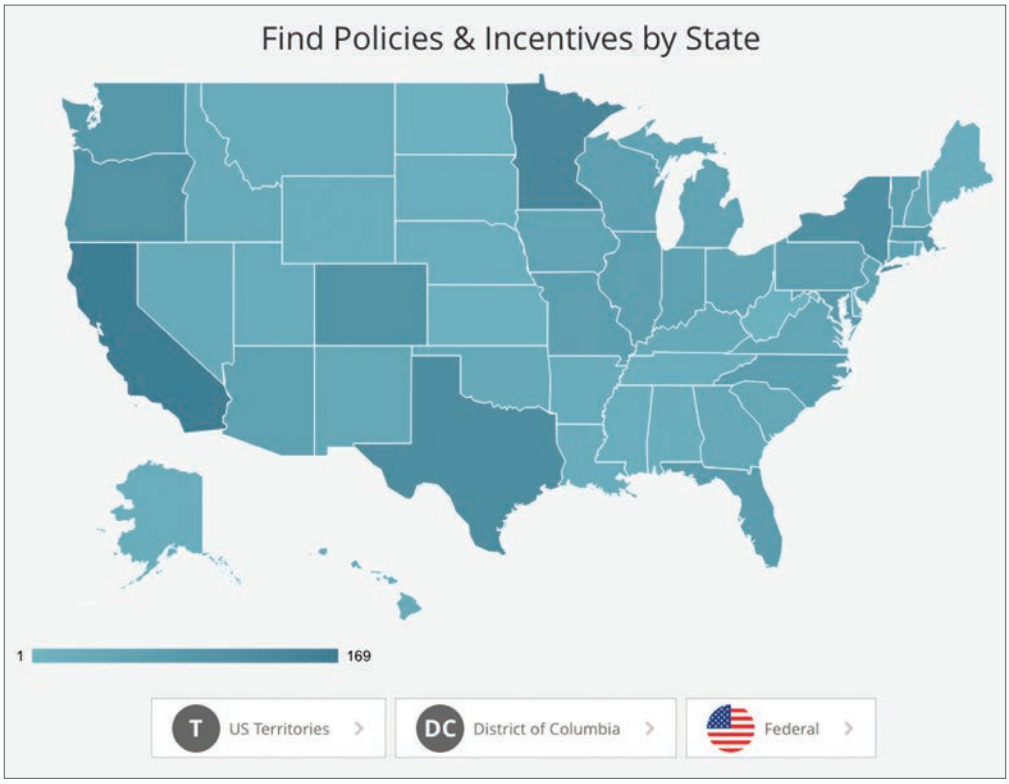
Compared to old toilets that use 3.5–7 gallons per flush, new models use 1.28 to .08 gallons or less. The EPA issues its "WaterSense" label for such high-efficiency toilets. The EPA estimates that WaterSense toilets could conserve approximately 13,000 gallons of water a year, at a consumer savings of $140 a year.[2] Similarly, in the appliance aisles, ENERGY STAR® labels are prominently displayed on dishwashers, refrigerators, and stoves, and light-emitting diode (LED) lightbulbs shoulder out energy-intense incandescent bulbs on store shelves.

2 Environmental Protection Agency, "Residential Toilets," https://www.epa.gov/watersense/residential-toilets

Incentives

Cash grants, rebates, and tax deductions provide a strong incentive as well as ease the cost of upgrades. The Database for State Incentives for Renewable Energy (DSIRE) is the most comprehensive source of information on incentives and policies that support renewable energy and energy efficiency in the United States. Established in 1995, DSIRE is operated by the N.C. Clean Energy Technology Center at N.C. State University and is funded by the U.S. Department of Energy (DOE). Real estate professionals can provide a valuable service for their clients and customers by making them aware of incentives for improving the energy efficiency of their homes. Go to www.dsireusa.org and click on your state to see available incentives.

Figure 1.1: DSIRE.org Website



Home Certifications

The market advantage provided by certified homes is a powerful incentive for increasing the efficiency of a home. There are numerous home certifications available, but three major national certifications dominate: ENERGY STAR®, Leadership in Energy and Environmental Design (LEED) of the U.S. Green Building Council, and the National Green Building Standard (NGBS) of the National Association of Homebuilders.

Certifications provide credibility in the marketplace because the quality and resource efficiency have been verified by independent raters. Buyers don't have to take the word of the real estate professionals or the seller about the green features of a home. Furthermore, construction of certified homes usually surpasses code-built homes.

With these advantages, it seems intuitive that certified homes should have a competitive edge in the market. But is there evidence to back up this belief? A number of studies focusing on local markets affirm the market edge of certified homes, but the type of advantage varies from market to market. A compilation of national and regional studies about the market performance of ENERGY STAR® homes found these results:

- **Less time on market**
  Certified homes tend to sell faster.
- **Price premium**
  In some markets, particularly those that have a high degree of environmental awareness, certified homes can fetch higher prices.
- **Higher percentage of list price**
  Even when certified homes do not command a price premium, they tend to sell at a high percentage of list price.
- **Maintain value in a down market**
  When home values are depressed, a certified home tends to sustain its market value better than a non-certified home.

Values and Lifestyles

For some homeowners, expression of their beliefs and concerns about the environment starts at home. They are passionate about living by principles of sustainability and reducing their carbon footprint through conservation, recycling, and renewable energy sources. They may make the same choices as a cost-conscious consumer, but living consistently with their values is the primary motivator. This is especially true of younger generations, as noted earlier. Personal values motivate the "eco-chic" homeowner too, but the main motivator is demonstrating that the owner is a trendsetter.

Life Events

Sometimes the impetus to upgrade a home may be a life event. The birth of a child or move-in of an elder can be big trigger events for assessing the condition of a home's interior and remediating potentially harmful conditions: for example, repainting walls with low VOC paint, sealing air leaks around windows and doors, or replacing allergen harboring carpets.[3]

COVID-19 Pandemic

The COVID-19 pandemic changed the way we think about the world around us, and this applies to where and how we live. Since the start of the pandemic, homebuyers have displayed a greater focus on security, entertainment, and energy efficiency. Over 40% of consumers bought a smart home device since the start of the pandemic.[4]

3 Market Impacts of ENERGY STAR® Qualification for New Homes. The North Carolina Energy Efficiency Alliance (NCEEA). Appalachian State University, Boone, NC. http://ncenergystar.org

4 Ratiu, George. (2020). "Smart Home Technologies Reshape Real Estate Preferences in 2020." Realtor.com. https://www.realtor.com/research/smart-home-tech-2020/

The Bottom-Line Question for Consumers

When it comes to upgrading an existing home, homeowners and buyers want to know, "Is it worth the time and expense?" How can the real estate professional respond? It's true that some choices may cost more up front, but they are an investment that pays off in the long term and often in the short term too.

The Cost-Benefit Balance

The variables at work in the cost–benefit ratio include:

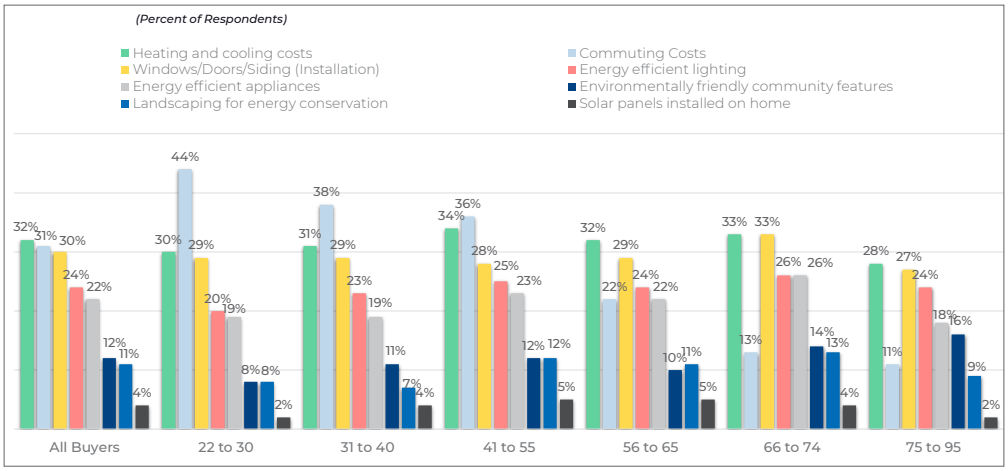
- Initial purchase and installation
- Scope and complexity of the project
- Measurability of results
- Savings on utility and resource costs
- Impact on other home systems

How do these variables interact? A system may cost more to buy and install, but less to own and operate over the long term. For example, a highly energy-efficient furnace can cost up to $1,000 more than a less efficient model, but in a cold climate with a long heating season, a savings of $50 a month would make up the extra cost in less than 2 years. Furthermore, for major systems such as heating and cooling, tax credits may help ease the initial cost outlay. And don't forget local utility companies; some may provide incentives and rebates to encourage installation of energy-efficient systems.

For home buyers, the cost of a home with resource-efficient systems may be higher than a similar conventional home. But the additional amount of mortgage payment may be more than offset by savings on utility bills.

As we will see, homeowners can choose from a range of options and cost levels from simple steps, such as weather stripping, to the costly and complex processes of a deep energy retrofit. The real estate professional can help an owner or buyer see the potential of a home by suggesting upgrades and fixes that will increase sustainability and efficiency and improve the experience of living in the home. See the range of environmentally friendly features that home buyers consider very important in NAR's 2021 Generational Trends Report.

Figure 1.2:
Environmentally Friendly Features Considered "Very Important"



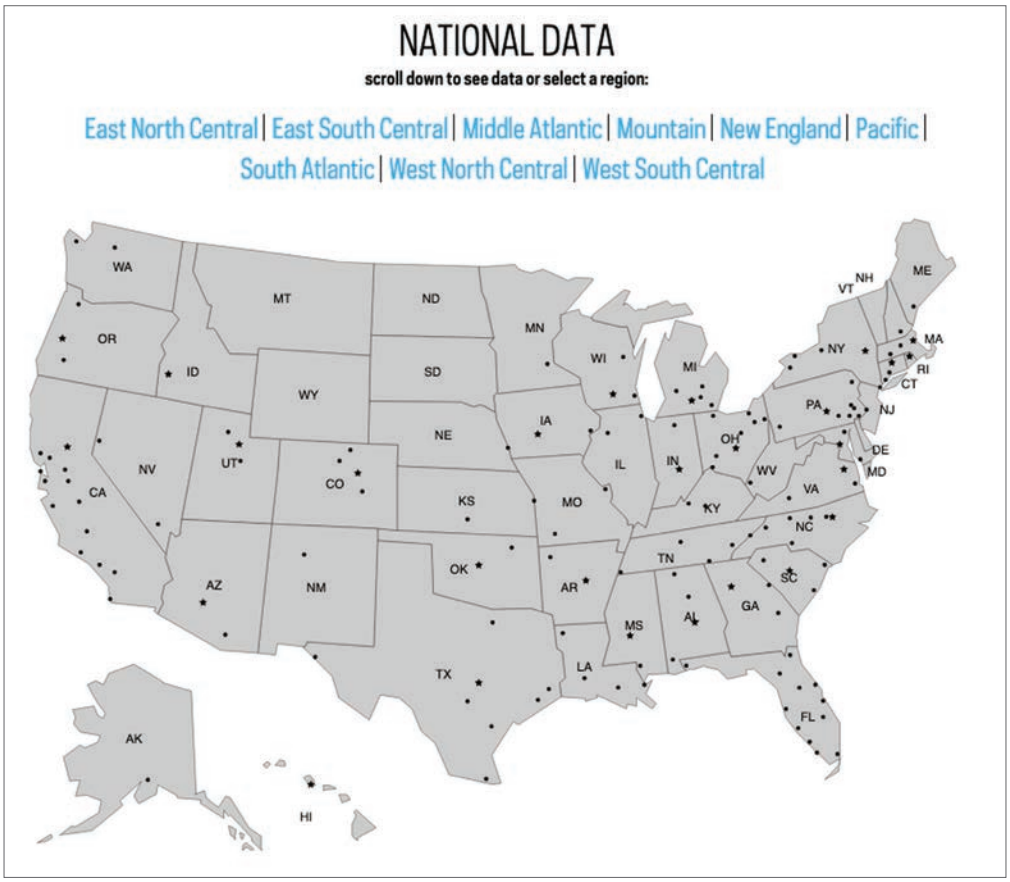
Source: Home Buyer and Seller Generational Trends Report 2021,

Recouping Costs on Resale

Which home upgrades score big with buyers? REALTORS® in 102 markets across the country each year judge the effects of 36 home improvement projects on sales prices in *Remodeling Magazine*'s annual Cost vs. Value Report, done in cooperation with the National Association of REALTORS® and *REALTOR® Magazine*.

The report provides estimated costs for midrange or upscale home improvement projects, along with the percentage of cost that owners can expect to recoup when they sell. Projects range from a new garage door to a master suite addition. Learn more and see all the projects broken down by region and market at https://www.remodeling.hw.net/cost-vs-value/2021/.

Figure 1.3: Remodeling.hw.net Website



The Bottom-Line Questions for Real Estate Professionals

How can you apply the information in this course to your business and add to your bottom-line income? How can helping your clients and customers, and maybe your community, increase your market share? How, ultimately, can being mindful of people and the planet lead to prosperity? As environmental policies continue to evolve and sustainable, eco-friendly innovations continue to be produced, the successful real estate professional will gain significant competitive advantages by building a reputation as the "green go-to" person.

Adviser and Consultant

In the modules that follow, we'll look at green home features, design, and construction from the viewpoint of how real estate professionals encounter home selling and buying with their clients and customers. As you add to your knowledge base, you'll be better equipped to help your clients and customers make informed decisions about updating, retrofitting, renovating, or buying or building new.

Source of the Source

Be the "source of the source" who can guide clients and customers to authoritative information, such as the DSIRE database of grants and incentives. Some real estate professionals who have made sustainability a major focus of their businesses find that clients and customers turn to them as a source of information about greening homes. Expanding your network to include green vendors, builders, designers, and other service providers benefits your clients and customers and enhances your reputation and credibility.

Practitioner Perspective

The Triple Bottom Line and Your Business

Kimberly Pontius
Aspire North, CEO

↘ Tell us about what the Triple Bottom Line means to you. How has it impacted how you lead at the Association?

My first exposure to the triple bottom line concept occurred in the early 2000s when I attended a college course led by a professor named Jane Grant who wrote a book on green economics. For years I had felt some internal pressure about the validity of only seeking more profit for the sake of more profit. The idea of "profit motive" becoming a three-legged stool which included social consciousness and environmental responsibility components really registered with me. Most human beings do not add the costs of distribution of resources and impacts on the natural world on their Profit & Loss statement and yet that is where the true cost of goods resides. In order to assess the actual success of a business, including nonprofits like associations, a leader must take into account the long-term impacts of decisions not only on the fiscal budget but on the more existential budget as well.

↘ Talk us through the four P's (people, property planet, prosperity) and how a REALTOR® can lead by example in these areas.

REALTORS® are currently being challenged about their relevance in the transaction process as technology negates their value. One way to reestablish that value and ensure their sustainability is to build their resilience to the ebb and flow of new technology. While the technology creates tools for efficiency in the transaction, it also creates knowledge that can be leveraged into changing how we look at our world and the people that inhabit the physical environment. Understanding the triple bottom line permits our members to tap into a whole new level of consumer value. REALTORS® become navigators and advocates for both the internal environment of a home or building and the external environment.

Moving from a transaction-based model to a systems model will be essential for our industry's future. Knowing what is happening in the home or business and its internal environment and how it interacts with the exterior environment (nature/planet

and human/social) requires a systems-thinking approach. We're seeing this lack of systems-thinking play out in the many forms of climate change and supply chains that the break in the status quo due to the global pandemic has created. The veil of how our global economy really impacts our daily lives has been lifted and REALTORS® need to take this time to reinvent themselves and their endgame strategy.

I subscribe to the quote from Henry David Thoreau that states "What is the use of a house if you haven't got a tolerable planet to put it on." Add to this the idea that shelter is a basic human need and, as a society and as REALTORS®, we should strive to see that every human being has a viable place to call home.

↘ How can a REALTOR® incorporate the four P's into their business?

Begin simply by acknowledging that profit is more than just fiat capital, that the integrity and resilience of the community you live in matters immensely. Investment in the community then also matters immensely as do people with the REALTORS® wisdom and ability in the real estate process to help make those investments soundly and sustainability.

From that starting point, transition to the information available to all members and association staff at https://www.nar.realtor/sustainability where a great deal of intelligence resides that was curated by a group of your peers. Trust me, consumers are better informed than many of our members. When the buyer side feeding frenzy abates, our members better be prepared to answer tough questions about the product they sell. It's not just a house, it is a part of a life support system that impacts lifestyles and generates quality of life feedback.

With this information, begin to assess your own business model. There are many simple things that REALTORS® can employ that will reduce waste and improve their own triple bottom line. Lowering energy consumption, reducing office waste, consolidating supply costs with others that use the same products, leverage technology, investigate an electric vehicle or use ridesharing or something other than a car. Reduce water consumption. Plant or gift a tree for every new homeowner to enjoy as a closing gift.

Reduce, reuse, recycle. Think global, act local. REALTORS® should be at the vanguard of these efforts, setting examples and sharing sage advice with their clients.

Reflection:
Your Experience With High-Performance Homes

What experience do you have working with clients interested in high-performance homes? What do you hope to learn from this course?

MODULE 2:
Creating Value: Steps to Improving Home Performance

Learning Objectives

At the conclusion of this module, you will be able to:

- Help home buyers see the potential in an existing home for resource-efficiency improvements.
- Suggest to homeowners DIY steps and easy upgrades to improve the performance of a home.
- Help consumers understand energy-efficiency ratings of homes and appliances.

Benefits of Making High-Performance Improvements

We often use the terms resource efficiency and energy efficiency interchangeably, and they are, of course, linked to each other. There is a difference, however, that you can share with clients in helping them make better, more sustainable decisions. The Earth's resources are limited, and so resource efficiency refers to the ways in which we utilize these limited resources in the most effective and efficient way possible. Resource-efficient systems allow us to do more with less. Energy efficiency refers to using a lower amount of energy to produce a specific result. Typically, the less energy that is expended to do something, the less pollution it causes and the less it costs. Ultimately, using fewer resources and using less energy leads to a more sustainable future.

As a real estate professional, you can help guide your clients to make decisions that will benefit themselves and the planet – and the projects don't have to be monumental or expensive. Whether selling or buying, DIY projects and appliance upgrades are often the quickest, easiest, and lowest-cost improvements.

- For sellers, upgrades can make the home more attractive and provide a competitive advantage compared to similar homes on the market.
- For buyers, upgrading an existing home may be the best option, particularly when low inventory limits choice or drives prices up.
- The real estate professional can suggest actions that sellers can take to improve the market competitiveness of a home and help buyers see the potential in an existing home.

Step 1: Do a DIY Diagnostic Check

Before diving into a list of home improvement projects, a home energy assessment is a smart place to start. Diagnostic testing, whether DIY or professional, identifies problem areas and helps prioritize projects and expenditures. What can an energy assessment accomplish?

- **Homeowners:**
  Before beginning any major renovations or system retrofits, an energy assessment can be an important part of the decision-making process. Before-and-after testing can show if desired results have been achieved.
- **Sellers:**
  A presale energy assessment can boost the marketability of a home that scores well on testing. An objective assessment can provide negotiation leverage by proving the energy efficiency of the home and the benefits it can provide – comfort, control, and cost savings.
- **Buyers:**
  An energy assessment can be incorporated into the pre-purchase inspections. An objective assessment of the home can provide negotiation leverage if retrofits are needed.

Homeowners can begin the diagnostic process on their own. Although not a substitute for professional evaluation, the DIY approach can uncover problems for fixes or further investigation.

Do-It-Yourself Home Energy Survey Checklist

The Home Energy Survey Checklist can help a homeowner begin the diagnostic process and prioritize repairs and upgrades. The DIY approach can uncover problems for quick fixes or that require further investigation. Inspect the items on the list and make notes about problems.

The following list can serve as a guide to tackling problem areas and prioritizing repairs and upgrades.[5]

❑	Gaps along baseboards, flooring edges, junctures of walls and ceilings – anywhere that two different building materials meet
❑	Insulation around electrical outlets and switch plates. Turn off power to an electrical outlet or switch, use a power tester to double-check no current is flowing to the outlet, remove the cover plate, and probe around the opened outlet with a stick or screwdriver; resistance indicates presence of insulation.
❑	Windows and doors – rattling indicates an air leak source
❑	Fireplace flue
❑	Cellar door and attic hatch (hatch should have the same insulation as the attic floor)
❑	Wall- and window-mounted air conditioners
❑	Drafts through mail slots and pet doors
❑	Exhaust fans and hoods, dryer vents
❑	Foundation seals, siding, mortar between bricks (especially building corners)
❑	Worn or improperly installed caulking and weather stripping
❑	Storm windows installed
❑	Vapor barrier underneath installation
❑	Attic vents (should not be blocked by insulation)
❑	Wrapping on water heater, hot water pipes, and furnace ducts
❑	Replacement of furnace air filters
❑	Ducts and seams (dirt streaks indicate leakage)
❑	Lighting (replace incandescent bulbs with LED bulbs)
❑	Schedule annual HVAC inspections
❑	Gaps or settling in wall insulation
❑	Blockages in rain gutters and downspouts

5 Adapted from "Common Home Problems and Solutions," www.energystar.gov

DIY Testing for Air Leaks

A simple test for air leakage can be performed using an incense stick or just a damp hand. Here's how:

1. Start by closing exterior doors, windows, and the fireplace flue and turning off exhaust fans.
2. Be sure to turn off combustible appliances such as a gas stove or fireplace log.
3. Use a large window fan to suck the air out of the room (this step makes it easier to detect cracks and leaks by lowering the air volume in a room and increasing infiltration rate).
4. Finally, light an incense stick and walk around the room. If the smoke plume wavers, it indicates moving air. Or use your damp hand – infiltrating air will feel cold.

Step 2: Professional Energy Audit

If a DIY inspection indicates problem areas and further investigation is needed, the next step in the diagnostic process is a professional audit or assessment.

Preparing for the Energy Audit

In order to get the most benefit, a homeowner should prepare the following information:

- A list of existing problem areas, such as drafty rooms
- Copies of utility bills or a summary (utility companies can usually provide a report)
- Age of HVAC systems and appliances
- Information about occupants' behavior: anyone home during the day or during working hours, how many people reside in the home
- Average thermostat settings for summer and winter, daytime, and evenings
- Rooms and additional spaces that are used or unused, such as an attic or basement

What's Inspected

The simplest and quickest diagnostic method is a walk-through energy survey, sometimes called a clipboard audit, simple assessment, screening, or preliminary audit. The walk-through survey usually doesn't include any diagnostic testing. The evaluator may look for symptoms that indicate a problem or may concentrate on a particular problem, such as comfort or health issues. A home energy survey takes about an hour to complete.

During the survey process, the evaluator does a visual inspection of:

- Building envelope – walls, windows, doors, and insulation
- Ducts
- HVAC system components
- Appliance types, characteristics, and ages
- Lighting characteristics
- Moisture indicators
- Comfort and health issues (drafts as well as cold and hot spots)
- Review of monthly or annual utility bills

The evaluation report may include items such as:

- Recommendations for improving energy efficiency
- Solutions to specific problems
- Low-cost and DIY fixes and corrective measures
- Quick cost estimates
- Simple payback period analysis
- Recommendations for a more detailed audit
- Available utility programs and incentives

Step 3: Performance Testing

The energy survey provides a static picture – a snapshot – of system components but doesn't indicate how the systems actually perform. A more technical level of analysis can be accomplished with performance testing. This level of assessment is sometimes called a performance audit, comprehensive assessment, technical analysis, or investment-grade audit for capital-expenditure decision making.

Performance testing is like taking the home for a test drive. The assessment uses performance diagnostics, such as a blower-door test, to identify issues in a home while the systems are running. Testing determines where and how energy is being lost, what systems are operating inefficiently, and what cost-effective fixes can be implemented to improve comfort, durability, and efficiency.

What Does the Assessor Do?

The assessor conducts a range of performance tests. The assessor should prepare a written evaluation report including energy usage, weak points for improvement, and recommendations for cost-savings measures. A report may include analysis of:

- Air leaks in the building envelope
- Air-flow distribution through registers and vents
- Pressure between rooms and between conditioned and unconditioned spaces such as attics
- Leakages from HVAC ducts
- Insulation effectiveness: heat-loss factor through ceiling, walls, windows, floors, and foundation
- Moisture levels in the air and building components
- Energy consumption and intermittent loads of appliances
- Potential combustion safety issues such as back drafts
- Recommendations for improvements
- Conservation measures

- Established ratings such as the Home Energy Rating System® (HERS®) and DOE Home Energy Score
- Cost-benefit analysis and projected payback times for recommended improvements
- Recommendations to contractors who can perform the work to specification

Home Energy Performance Testing (3–4 Hours)

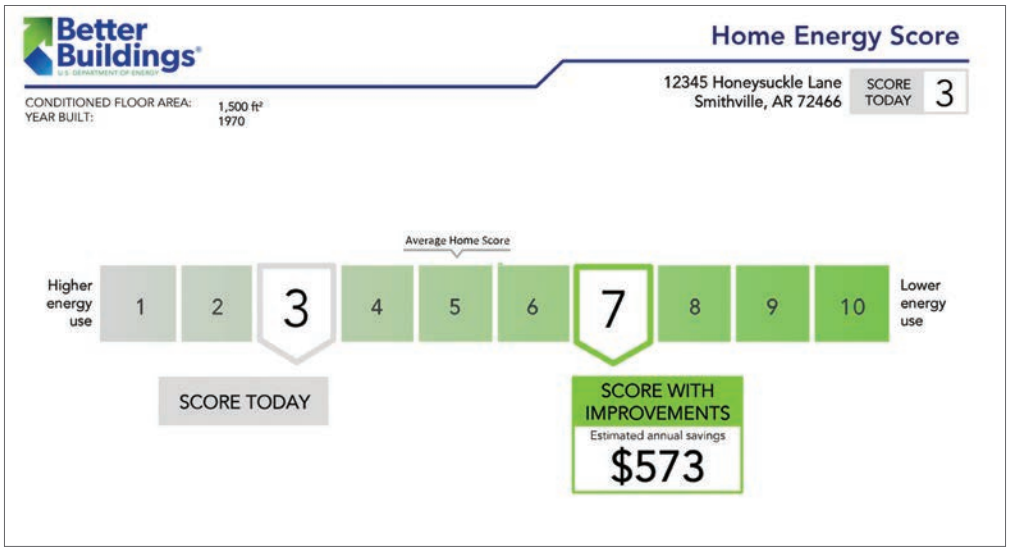
Thorough performance testing includes diagnostics such as a blower-door test, duct-blaster test, and thermographic imaging.

- **Blower-Door Test**
  This test measures air infiltration by gauging how airtight a home is. The lower the score, the better. A blower-door machine is simply an electric fan that mounts inside an exterior door jamb combined with an air pressure sensor called a manometer. The fan sucks air out of the house until the interior pressure drops to a preset level (50 pascals). The more cubic feet of air leaving the building during the test period, the leakier the home's air barrier envelope is.
- **Duct-Blaster Test**
  This test measures the airtightness of air ducts and is often used in conjunction with a blower-door test. Registers and vents are temporarily sealed in order to pressurize the system by using a small fan to blow air into ductwork. The tighter the duct seals, the higher the pressure maintained and the lower the volume of air needed to maintain pressure levels.
- **Thermographic Scanning**
  This test uses infrared technology to identify air leaking through building-envelope defects such as insulation gaps. It is often combined with a blower-door test. The auditor may use a handheld scanner to pan the area and note temperature differences. The most accurate inspection device is a thermal imaging camera; air leaks appear as black streaks in the camera's viewfinder.

Home Energy Score

The Department of Energy (DOE) administers the Home Energy Score program through a network of partners, including utilities, state agencies, local governments, nonprofits, and contractor associations. A Home Energy Score assessor collects information during a walk-through. Along with the score, the homeowner receives a report with suggested upgrades, an estimate of potential utility bill savings, payback period, and potential carbon footprint reduction. A Home Energy Score is useful before planning energy-related home improvements. The score can help homeowners understand how to integrate energy upgrades into a home improvement project. Having documentation of before-and-after home energy scores to show energy-usage improvements can enhance sales appeal.

Figure 2.1: Sample Home Energy Score



Source:
https://betterbuildingssolutioncenter.energy.gov/home-energy-score/home-energy-score-about-score

Home Energy Rating System (HERS®)

The Residential Energy Services Network (RESNET®) administers the HERS® Index that measures energy efficiency. Diagnostic testing may include a blower-door test, duct leakage test, combustion analysis, and infrared imaging. Testing analyzes the amount and location of air leaks, leakage from HVAC ducts, effectiveness of insulation, and potential combustion safety issues. The closer the score is to zero, the less energy is being used. The report shows the overall energy performance of a home and identifies cost-effective improvements to increase both comfort and energy-usage performance. The HERS® rating is required for application for an energy-efficient mortgage as well as qualification for the ENERGY STAR® certification.

Home Energy Audits

Performing a home energy audit is the first step toward cutting utility costs and making your house more comfortable.

What's an audit?

Audits, or energy assessments, are examinations of a home's exterior construction or envelope and the systems within the home. Audits measure the amount of energy a property uses and identify why and where energy is being lost. Frequent causes of energy loss are leaky windows, a poorly sealed attic, ductwork tears, and invisible cracks.

How it works

Professional auditors rely on various tools, the most common being blower door tests and thermographic inspections.

The tests, requiring three to four hours, help auditors discover where there's air infiltration or loss and pinpoint hidden, hard-to-reach spots where insulation is lacking or failing.

An auditor uses the test results, along with other data about your heating and cooling habits and utility costs, to identify the home improvement projects that will boost a home's efficiency.

Benefits

By making upgrades following a home energy assessment, homeowners can save between 5% and 30% on energy bills, according to the U.S. Department of Energy.

And repairs aren't always big, high-ticket items. For example, some upgrades, such as air sealing and insulation, can be completed using a DIY approach. For examples, visit energystar.gov or energy.gov.

Costs

The cost of a professional audit can vary based on size and location, but it's often possible to get free or low-cost audits through utility and government rebate programs. Locate programs through the Database of State Incentives for Renewables & Efficiency at dsireusa.org.

Prepare for an audit

List all problem areas, like drafty or hot spaces, and compile copies of your utility bills.

Also offer information about your habits, including:

- The number of residents living in the house and whether people are home during the day
- Average thermostat settings for summer and winter and during the daytime and evenings
- Unused rooms, like the attic, basement, or spare bedroom

Locate professionals

For auditors and energy experts, contact:

- Building Performance Institute, bpi.org.
- Energy Star, energystar.gov.
- Residential Energy Services Network (RESNET), natresnet.org.

EQUAL HOUSING OPPORTUNITY

REALTORS® who have earned National Association of REALTORS'® Green Designation (www.greenresourcecouncil.org) can refer you to local experts who can assess your home's performance.

NATIONAL ASSOCIATION of REALTORS® *Official Designation* | green

This graphic is from the Green REsource Council's "Green Client Handouts" and is available as a customizable consumer handout for all GREEN designees. For more information visit green.realtor.

Finding an Energy Professional

When seeking an energy surveyor or auditor, a good place to start is often with the local utility company. Some maintain their own staff of surveyors or can provide a list of professionals. When selecting an energy assessment professional, ask what types of inspections and tests will be performed and what the analysis report will contain.

Assessments for certifications like LEED and ratings like HERS® or DOE Home Energy Score require specially trained and certified professionals who can be located through the organizations' websites:

- **LEED Professional Directory, U.S. Green Building Council**
  www.usgbc.org/people
- **HERS®**
  www.resnet.us/directory/raters
- **DOE Home Energy Score**
  https://betterbuildingssolutioncenter.energy.gov/home-energy-score/home-energy-score-about-score
- **Building Performance Institute**
  www.bpi.org/individual_locator.aspx

As with any professional, it is a good idea to ask for references and check with the Better Business Bureau for complaints. Online rating sites are a great source of customer satisfaction information.

Step 4: Take Action!

With the information from the energy assessments, what are the next steps? Whether preparing a home for sale, shopping for a home, or fixing particular issues, there are a variety of DIY options. This final section provides a list of items to consider fixing or upgrading around the home, a detailed look at eco-friendly appliances and lighting, and some strategies for becoming more resource efficient in the yard.

DIY Improvement Ideas

- Weather strip around doors and windows
- Seal air leaks around building envelope incursions (do not use duct tape)
- Caulk window trim and around window panels
- Install a programmable thermostat
- Hang thermal drapes for heat retention or blocking
- Change furnace air filters
- Seal heating ducts
- Shade windows with awnings
- Switch to LED lightbulbs
- Install solar garden lights
- Install motion and occupancy sensors or timers on lights
- Put up a clothesline for drying clothes outside
- Track energy usage with a monitoring application
- Clean refrigerator coils
- Fix leaky faucets
- Install low-flow faucets and showerheads
- Wrap hot water heater and pipes
- Install a hot water circulating pump

Rapid Reflection

What would you add to this list?

Home Appliances

After heating and cooling, large appliances are the next significant source of home energy use. Although the dollar savings from any one appliance may not seem like much, when all are added together, the enhanced energy efficiency of upgraded appliances can make a significant impact on a household's utility expenditures.

Figure 2.2: Most Efficient Home Appliance Features

Refrigerator:	*with bottom freezer*	✓	~~side-by-side~~	✗
Ice dispenser:	*in-freezer*	✓	~~through-the-door~~	✗
Freezer:	*chest*	✓	~~upright~~	✗
Oven:	*self-cleaning*	✓	~~non-self-cleaning~~	✗
Cooktop:	*ceramic or halogen (induction)*	✓	~~electric coil/gas~~	✗
Clothes Washer:	*front-loading*	✓	~~top-loading~~	✗
Clothes Dryer:	*with moisture sensor*	✓	~~with temperature sensor~~	✗

ENERGY STAR® APPLIANCES

Nearly all consumers recognize the ENERGY STAR® label for appliances. Choosing ENERGY STAR® appliances lowers energy costs and provides opportunities for tax credits, incentives, and product rebates.

The EPA estimates the following savings for ENERGY STAR® appliances:

- Refrigerators: **20%**
- Clothes washers: **37%**
- Dehumidifiers: **15%**
- Dishwashers: **10%**
- Freezers: **10%**
- Air cleaners and purifiers: **40%**
- Water heaters: **10%–20%**
- Water coolers: **45%**

BUYERS SHOULD KNOW...

When listing or showing homes, it's important to note the following facts about ENERGY STAR® appliances:

- Although ENERGY STAR® appliances certainly contribute to energy savings, their presence does not constitute an ENERGY STAR®-qualified home.
- The EPA has been labeling ENERGY STAR® appliances since 1992, and energy-efficiency standards have changed a lot over two decades; an old appliance may carry an ENERGY STAR® label but fall short of current standards.
- ENERGY STAR® standards are baseline qualifications; there may be more energy-efficient products on the market in every category.
- Standards change over time and products may be added or dropped from the list. For example, programmable thermostats were once not rated, but now smart thermometers are.
- Don't expect to find ENERGY STAR® labels on the following home appliances because they are not included in the rating program: residential microwave ovens, ovens, ranges; solar products (other than water heaters); and space heaters.
- There are a number of products that are not ENERGY STAR® labeled but still contribute to energy efficiency.
- For a list of residential ENERGY STAR® rated appliances see the Resource section of this manual, or go to www.energystar.gov/products.

Efficient Appliances

Though the mantra "reduce, reuse, recycle" is a foundation of the sustainability movement, in some cases, reusing isn't best. Replacing old appliances with new, efficient models is the surest way to cut long-term energy costs.

Aging appliances

ENERGY STAR®, an Environmental Protection Agency program, has simplified the shopping process by offering the ENERGY STAR® label for appliances.

Such products, whether they're dishwashers, clothes washers, or freezers, have been vetted to be certain they use less energy and natural resources and help you save money.

Expect savings

Product tags typically outline the appliance's benefits.

Some examples:

- A full-sized ENERGY STAR® clothes washer uses 15 gallons of water per load, instead of the 23 gallons used by a standard machine. It saves 27,000 gallons of water over the machine's lifetime.
- ENERGY STAR® refrigerators use about 15% less energy than non-certified models. Opting for a certified new fridge rather than a standard one can save you $80 in energy bills over the lifetime of your fridge. Calculate potential savings at energystar.gov.
- Dishwashers with the ENERGY STAR® label are, on average, 10% more energy efficient and 20% more water efficient than standard models. Pre-1994 dishwashers cost $40 per year more in energy than those with the ENERGY STAR® label.

Recycle old appliances

If appliance upgrades aren't in your budget, use what you have efficiently by:

- Running full loads of laundry or dishes.
- Washing clothes in cold water to save $63 per year.
- Turning off the drying feature on your dishwasher.
- Hanging out clothes to dry in the sun.
- Keeping the refrigerator away from direct sunlight and setting the temperature between 36 and 38 degrees F. Set the freezer temperature between 0 and 5 degrees F.

EQUAL HOUSING OPPORTUNITY

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NATIONAL ASSOCIATION of REALTORS® *Official Designation* | green

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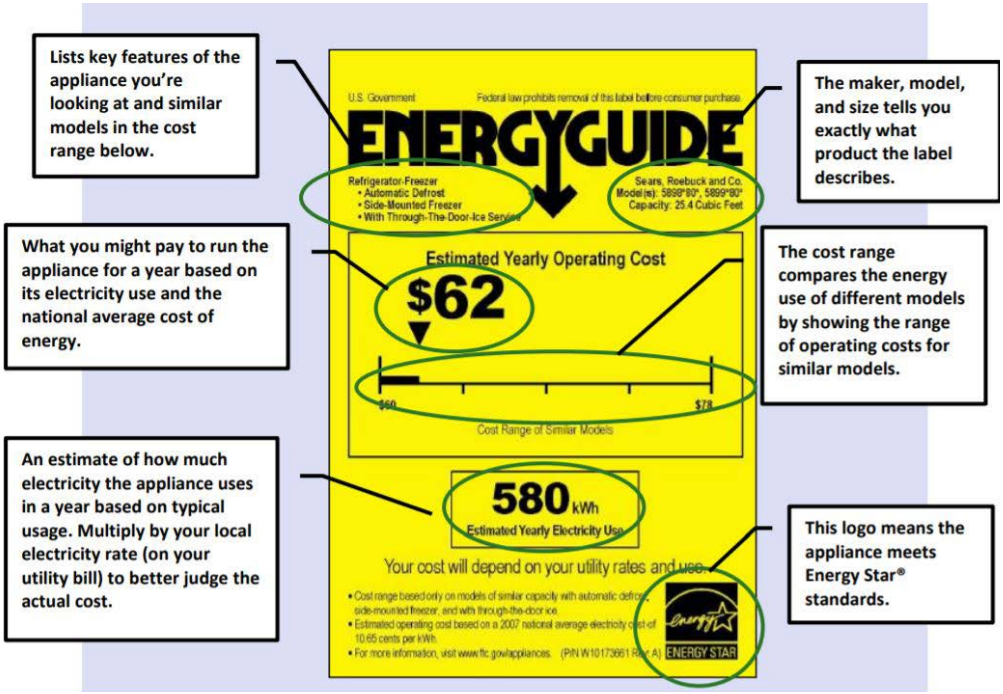
ENERGYGUIDE LABELS

Although not a certification, the bright yellow EnergyGuide label affixed to many appliances provides valuable information about energy consumption and operational costs for appliances. EnergyGuide labeling is required by the Federal Trade Commission (FTC) so that consumers can compare appliances and make informed purchase decisions.

Look for the yellow EnergyGuide label on washing machines, dishwashers, refrigerators, freezers, water heaters, central and window air conditioners, furnaces and boilers, heat pumps, and pool heaters.

Figure 2.3: Sample ENERGY STAR® Label



Lighting

In the average home, lighting accounts for about 15% of energy usage. Many homeowners would be surprised to learn that conventional multi-bulb light fixtures, such as dining room and foyer chandeliers, are high-wattage fixtures and the bathroom vanity is one of the highest usages. Replacing incandescent bulbs in these fixtures with LED bulbs is a simple option. Also consider that outdoor lights are left on the longest and should be the first ones replaced if not able to change all the lighting on the property at once.

LED bulbs use up to 90% less energy than incandescent bulbs and last up to 25 times longer than traditional bulbs. High prices slowed early adoption of LED bulbs, but prices have dropped considerably, now making these bulbs an affordable choice. According to the DOE, the average household would save approximately $225 a year by replacing incandescent bulbs with LED bulbs.

LIGHTBULB BAN?

Misinformation abounds regarding the phase-out of incandescent lightbulbs, and research studies show that the majority of consumers are unaware of new regulations. Although traditional incandescent lightbulbs are not banned nationally, the 2007 Energy Independence and Security Act (EISA) set tougher energy efficiency standards for 40–100-watt bulbs – the most common sizes used in households. Consequently, production of old-style incandescent bulbs is phasing out because the bulbs cannot meet EISA standards. In addition, some states have in fact banned some types of incandescent bulbs, and more states have legislation in the pipeline. Check your state for latest news on regulations.

LIGHTBULB PHASE OUT: A MARKETING OPPORTUNITY?

The lightbulb phase-out can offer a marketing opportunity, because it provides a reason to get in touch with clients and deliver valuable information. For those who are unaware of the phase-out, your news could assist them the next time they shop for new bulbs and help them avoid the "Where-the-heck-is-that-60-watter-I-always-use?" frustration. Also, news about the long-term savings offered by LEDs likely will be welcome information. You could offer to do a lightbulb audit and help people swap out their inefficient bulbs for more efficient ones.

Be sure to school yourself in all the nuances of bulbs so you can be prepared when people ask for recommendations. Try out and recommend the interactive app at https://www.energystar.gov/products/choose_a_light. The app shows which efficient lightbulb is the best replacement for existing inefficient bulbs. It's also a tool you can use to up your value, do walk-throughs, and suggest bulb replacements in clients' homes. Or, go to the Natural Resource Defense Council guide at www.nrdc.org/energy/lightbulbs/files/lightbulbguide.pdf.

Lawn and Garden: Resource-Efficiency Makeover

So far, we've focused on energy usage inside the home, but there are also simple DIY strategies for being more resource efficient outside the home. What are some DIY possibilities for a lawn and garden makeover that conserves water and manages runoff?

- **Permeable surfaces**
  Permeable paved surfaces – roads, parking lots, driveways, sidewalks, etc. – allow rainwater to seep through, preventing soil-eroding runoff. Permeable surface options include porous asphalt, porous concrete, roller compacted pebbles, and interlocking block pavers.

- **Bio swales and rain gardens**
  These features mimic the action of natural wetlands by collecting storm water runoff from roofs, driveways, and other impermeable surfaces, and they also provide food and shelter for wildlife. Bio swales are basically ditches that slope to a particular point, and rain gardens are planted on level surfaces. By slowing and retaining storm water runoff, they facilitate aquifer restoration. Plants must be able to tolerate standing water.

- **Plantings**
  Unlike grass, deep-rooted plants aid rainwater. Native plant species are already adapted to the natural environment and, in a dry climate, require less watering. Grouping plants by their watering needs makes watering easier and more efficient. Landscaping that uses drought-resistant plants is sometimes referred to as xeriscaping. Trees can contribute to the energy efficiency of the home – evergreens block wind and leafy trees provide cooling shade.

- **Rain barrels**
  An old technology adapted for modern use is the simple rain barrel. Rainwater can be used for irrigation without any need for filtering. Reuse for household purposes, such as washing clothes or flushing toilets, requires filtering through a dual plumbing system.

- **Irrigation**
  Another adaptation of an old technology is a simple drip-irrigation system. Drip irrigation delivers water directly to plant roots through soil or underground tubing thus reducing water loss through evaporation and excess runoff. Irrigation sensors and timers and rain shutoff devices on lawn sprinklers prevent losses through unnecessary watering.

Practitioner Perspective

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↘ What either inspires or blocks homeowners from implementing updates?

Inspiration comes from previous pain or pleasure points. Pain includes high utility bills and discomfort. The pleasure is in knowing firsthand that something better exists.

↘ How do your seminars help homeowners understand the benefits and take action?

Many don't understand green and don't know who to ask about it. We should own the responsibility to coach clients and help them understand the full impact of the triple bottom line (people, planet, profit).

↘ What should be homeowners' first DIY upgrades?

Look at local utility programs and rebates and get an audit. Start with basics, like switching incandescent bulbs to LEDs.

↘ Does your education work bring new clients?

We get paid by selling real estate, but we're here to answer, "What's the best water heater?" We're a value to clients, so referrals do come. We can gain more business, and those who provide value get those calls.

↘ What's your advice to real estate professionals who want to develop this part of their business?

Find your "why" for doing this and figure out the extra value you add to your community and clients. You need to stay ahead of clients, but you can't be an expert on everything. So, develop strategic partners who are experts in their fields. Green has value for everyone, and you need to know enough to add value.

Reflection:
DIY Projects and Your Business

What are some simple projects and testing that you have done, or plan to do, in order to start your transition to a more resource-efficient lifestyle? How are your first steps going to aide in the first steps of your future clients?

MODULE 3:
Smart Home Technologies

Learning Objectives

At the conclusion of this module, you will be able to:

- Describe what a smart home is and the basic components that go into it.
- Help homeowners understand the benefits and implementation of smart home technologies.
- Explain how smart home technologies help achieve green goals.

What Is a Smart Home?

The smart home concept has been around since the 1990s. Early smart home applications included programmable thermostats and lighting, home security systems, and closed-circuit TV surveillance. Homeowners' adoption of the technology, however, was slowed by high cost as well as lack of connectivity and embedded technologies that provide data. What changed?

In simplest terms, what changed is the rapid convergence of technologies that are part of everyday life: mobile phones and tablets, downloadable apps, embedded sensors, and Wi-Fi internet connectivity. As a result, smart home technology is now widely available, affordable, and usable by the rest of us – the non-techies. Furthermore, the technologies and applications are developing at warp speed.

But real-world smart home technologies are less about the gadgets themselves and more about solving everyday household problems, increasing energy and resource efficiency, and improving the overall experience of living in a home. These are all desirable to homebuyers and should be what real estate professionals are focusing on with their clients – it's not about any individual products, it's about how those products can benefit the user.

How Does a Smart Home Work?

Let's start by clarifying some common terms. "Home automation" refers to the ability to remotely control electrical devices in a home. The more automated the home becomes, the more interconnected are the devices within it.

The "Internet of Things" (or IoT) is another term commonly used in conjunction with smart homes. This term refers to everyday objects that are now able to connect to and be controlled through the internet; any home automated device is an IoT device. Ultimately, IoT devices automate your home, and the more automated a home is, the "smarter" it becomes.

It's important for real estate professionals to see "smartness" in degrees. Each incremental use of an IoT makes a home smarter, and therefore increases its performance as well as its desirability in the market.

The basic components of a connected smart home are:

1. Appliances, devices, and home systems with embedded sensors that can report data and accept commands via a wireless hub.
2. A hub that communicates with an internet modem.
3. Apps – phone or tablet – that enable communication with the hub via the internet.

Here's a simple, everyday example of the application of smart home technology:

- **Device**
  The Connected Cree® LED lightbulb contains small sensors that communicate with an Amazon Echo. The bulbs fit standard light sockets and look like conventional lightbulbs.
- **Hub**
  The Amazon Echo connects with an internet modem.
- **App**
  An app downloaded to an iOS or Android device – a mobile phone or tablet – syncs up with the bulbs and enables remote control.

Lights can be scheduled to turn off and on automatically, turned on for added security when the homeowner is away from home, and monitored for lights left on unintentionally. The technology is:

- **Widely available**
  The components can be purchased at a home improvement store or online.
- **Affordable**
  Bulbs, which have a 22-year life, cost about $8 each and the hub about $70. The downloadable app is free.
- **Usable by non-techies**
  Bulbs screw into standard light sockets and sync automatically with the hub.

What Does a Smart Home Do?

There are definitely degrees of intelligence in smart home devices and apps. What do the smartest devices and apps do?

- **Monitor**
  Home operations, safety, and security 24/7.
- **Alert**
  Homeowners to security breaches and unsafe conditions, such as carbon monoxide build up.
- **Secure**
  The home with digital locks, motion sensors, and webcam surveillance of the interior and exterior.
- **Control**
  Home systems like lighting, temperature settings, and door locks via the internet.
- **Respond**
  To commands by remote control.
- **Compile**
  Data on home operations and resource usage, such as electricity usage – important data for those who generate their own power and sell power back to the grid. Some devices and apps can track electricity usage by appliance so homeowners can identify which appliances use the most and when.
- **Learn**
  Usage patterns, such as thermostat settings for waking and sleeping hours, and report anomalies, such as a thermostat set too high.
- **Schedule**
  Appliances to run at specified times, such as running the dishwasher or the washer and dryer during off-peak hours.
- **Sense**
  The presence or absence of occupants, adjust lights, and raise or lower temperature settings.
- **Integrate**
  Home systems, such as security and alarms.

Smart homes are intelligent because the information they produce makes homeowners smarter and puts them in control, whether at home or away.

Smart Home = Green Home (If You're Smart About It)

It's easy to assume that the smarter a home is, the greener it is. And certainly, that's the ideal. But the two don't necessarily go hand in hand. As we discussed earlier, one of the goals of a smart home is to provide convenience. Convenience doesn't necessarily equate – and often doesn't – to being green. Smart devices each utilize a small amount of energy, and a highly-automated smart home could have as many as 50 or more devices constantly plugged in and on standby, which adds significantly to vampire drain. Many smart home devices, in fact, provide no energy efficiency gains as part of their design or function. Therefore, it's up to the green-minded homeowner to make smart decisions that will both increase the performance of the home and also make it more energy and resource efficient.

Ways Smart Can Be Green

As smart home technologies come to market and mature, homeowners can gain more information about, and control of, their resource usage. Managing home energy usage is often the first smart home product that consumers adopt. Whether looking to improve energy efficiency and management or just own a cool device, a smart, connected thermostat is often the first smart home device that homeowners install. In fact, installation of smart thermostats is quickly approaching the "norm." Here are other ways smart can be green.

↘ Use Smart Technology to Control Power – and Lower Energy Costs

- Turning on/off lights throughout the home.
- Using smart plugs and occupancy sensors to shut down electronics and other devices when not in use.

Automate Events and Schedules

- Set schedules for HVAC, lighting scenes.
- Set to turn off lights, devices, and HVAC when leaving home.
- Automate opening/closing of blinds to minimize heat gain through windows in summer, maximize heat gain in winter.
- Turning off or reducing usage during peak energy rate times.

Monitoring Resource Usage and Indoor Air Quality

Smart monitoring of resources allows homeowners to keep sustainability issues top of mind, which will enable them to modify their lifestyle behaviors in ways that are more energy and resource efficient.

- Use an energy monitor to show energy usage patterns over time, send high usage alerts to homeowner, and identify energy usage of individual systems.
- Use water monitors that display water usage over time, can detect leaks for repair, and can shut off the main water supply if a catastrophic leak is detected. Saving water resources and minimizing property damage.
- Use air quality monitors measure air quality and can turn on/off bathroom fans, exhaust hoods, and ERVs based on indoor air quality.

Think Beyond Smart

The performance of smart home technologies, such as a smart thermostat, will only be as effective as the overall energy efficiency of the home. This is to say, truly thinking green is understanding that smart technologies have their limitations. Homeowners can't ignore the non-IoT aspects of the home.

Smart home devices can't overcome the challenges of ineffective insulation, for example, or drafty rooms, or energy-hogging appliances. Before investing in smart home devices, homeowners should consider the DIY or professional assessments and fixes described earlier in the course.

DIY or Professional Smart Home?

There are typically two ways of creating a smart home: DIY or professional. DIY is what most homeowners choose, but a growing trend is to hire a professional smart home service. Professional systems are more expensive, of course, but real estate professionals should familiarize themselves with the various companies that offer such services to provide clients with a more well-rounded understanding of their options in this space.

Market Impact of Smart Homes

Consumer awareness of smart home features is gaining momentum, while smart home technology adoption is exploding. Homes are more connected than ever. A recent survey found that 65% of homes now have a smart technology device, and those who are more concerned about climate change are more likely to have smart home devices that are energy and resource efficient.[6]

In NAR's 2021 REALTORS® and Sustainability Report, nearly 50% of clients said that a "smart/connected home" was either very or somewhat important. The same NAR report found that the majority of real estate professionals (65%) said that promoting energy efficiency attributes in a home is very or somewhat valuable, and 75% of clients said home utility bills and operation costs were either very or somewhat important.

Clearly the trend towards smart home technology will only continue to grow, as the two youngest homebuyer demographics – millennials and Gen Z – have the most favorable attitudes towards smart home technology, with 80% of each group feeling positively about it. Over 60% of consumers want more smart home technology, with efficiency being a focal point for these same consumers.[7] Some market forecasts estimate that the demand for smart home technology will increase by more than 50% by 2025.[8]

6 Zaman, Nafis. (2020). "65% of Americans Have a Smart Home Device, Especially Those Concerned About Climate Change." Value Penguin/Lending Tree. https://www.valuepenguin.com/two-thirds-americans-own-smart-home-device

7 Ratiu, George. (2020). "Smart Home Technologies Reshape Real Estate Preferences in 2020." Realtor.com. https://www.realtor.com/research/smart-home-tech-2020/

8 Kelly, Sean. (2021). "Study Examines the Rapid Rise of Smart Homes." Digital Information World. https://www.digitalinformationworld.com/2021/05/study-examines-rapid-rise-of-smart-homes.html

Getting Started With Smart Home Technology

The best way to learn about smart home devices and apps is to try them out on your own, and the best place to start is with the home solutions that are important to you and homeowners in your market area. For example, if saving on electric bills is important, start with apps that help you track usage day-to-day and by appliance. If home safety is important, try out some home security features, such as sensors that send an alert if a window or door is opened. If drought conditions are an issue, try out a water conservation system with sensors that measure soil moisture levels and timers that keep watering within allowable times and limits. If you start out with home solutions that are a priority, you will be more motivated to continue using the devices and apps as well as adopt other smart home technologies.

Again, it's important to note that it's not necessary to go "whole-house" with smart home technologies. Start with what is important to you and build as you go. It's also not necessary to match every adopted technology to a challenging need. You could start with technology that adds convenience, such as automating porch lights. Start with smaller, doable tasks, and expand from there. This is the advice real estate professionals should be passing on to customers and clients.

Five Easy Steps

Following are five easy steps to getting started with smart home technology.

1. **Start small.**
   Internet-connected LED bulbs make for a great entry-level product. They're easy to use (there's no wiring or special skills needed to get started), and they're affordable.

2. **Be fearless.**
   Don't be afraid to try something out. Some technologies aren't too expensive, so if a gadget isn't a good fit with your lifestyle, you haven't spent a lot on something you won't use.

3. **Keep up with neighbors.**
   Think of home monitoring devices as something of a Fitbit for the home. If you're competitive, and your utility company shows how your energy consumption compares to that of your neighbors, the data may spark your competitive spirit and motivate you to do better. And home monitoring reports may inspire you to create better habits.

4. **Use strong passwords.**
   Concerns about security concerns and data collection stop some people from trying new technology. As with any password-protected site, the first line of defense is a strong password.

5. **Learn more.**
   Smart home technology isn't something you can learn about once and then forget about. The technology is rapidly evolving, so you need to stay up to date on the technologies to ensure the most value, convenience, and efficiency.

Start a Simple Daily Efficiency Routine

As with anything new, the more you integrate it into your daily life, the more familiar and comfortable it becomes. You can do the same thing with smart home technology – and become more green in the process. Start with the most prevalent smart home energy efficiency device: smart thermostats. Your routine can be as simple as programming the thermostat to be at a certain temperature in the morning when you wake up, in the afternoon when you're at work, and at night while you sleep. When this becomes a normal part of your daily home living, add another device, such as smart lights. Add devices as you feel comfortable and watch your energy savings and resource-efficiency grow in the process.

Check Out These Sites

- **Green REsource Council**
  The REsource newsletter, statistics, webinars, consumer handouts
  www.green.realtor

- **NAR Smart Growth Program**
  Articles, research, action grants, *On Common Ground* magazine, tool kits, Land Use Initiative, Land Use Memo Database, Growth Management Fact Book, and more
  www.realtor.org/programs/smart-growth-program

- **SmartHomeDB**
  www.smarthomedb.com

- **SmartThings: Smart Home. Intelligent Living**
  www.smartthings.com

- **Smart Home**
  www.smarthome.com

- **NAR Library**
  Field Guides, eBooks, Information Services blog
  https://www.nar.realtor/library-archives

- **HouseLogic**
  Green living and house improvement information and tools for the homeowner
  www.houselogic.com

- **NAR Research**
  Research, blogs, news, "Real Estate in a Digital Age" report
  www.realtor.org/research-and-statistics

Building Blocks of a Smart Home

DEVICES

Most consumers initially become interested in one particular aspect of smart home technology. Their options fall into many different categories including:

- Door locks
- Security systems
- Climate control
- Entertainment
- Window shades
- Kitchen/laundry appliances
- Lighting
- Automated sprinklers

APPS

Often, your experience using a particular home technology product is heavily reliant upon the app supporting the product. In addition to its design features, pay attention to how you'll be able to interact with your device(s). Does the app only work when you're in close proximity, or can it also control devices while you're away (via the internet)? Does it offer voice-activated controls? (For example, can you tell Siri, Alexa, or other platforms to "close the garage door"?) When you're ready for a hub (see #3), it's also essential that your main control app is designed well. After all, if you're going use one program to control all your smart devices – such as a universal remote – make sure you're interacting with an app that's fully functional, attractive, and intuitive.

HUBS

Automation is great, but not if you have one system for security, another for lighting, another for temperature control, etc. Managing your home can become increasingly complicated. This problem can be fixed by adding another device – a hub. Selecting one, however, is not a simple decision. Different hubs support different connectivity protocols (such as Wi-Fi, Bluetooth, Z-Wave, Zigbee, etc.), so you'll want to choose one that includes all the standards used by the individual devices you currently own or plan to purchase.

Examples of leading smart home hubs include:

- Samsung SmartThings
- Amazon Echo
- Apple HomePod
- Wink Hub

OTHER INTEGRATED SYSTEMS

As consumers have adopted smart home technologies, suppliers have leapt at opportunities to offer their products under the umbrella of familiar brand names, potentially simplifying consumers' complex decisions regarding hubs and connection languages – or even, as in the case of Apple's HomeKit, eliminating the need for a hub at all. All of the smart home devices connected to Apple's HomeKit don't need to run through Apple HomePod; they can instead be controlled via other Apple devices, such as iPhones or iPads.[9]

This integration of systems is only going to escalate in the coming years as a new integrative connectivity standard, called Matter, is implemented beginning in 2022. Compatibility among different brands of smart tech devices has been a major obstacle in increasing demand in the market. An Apple product, for example, wouldn't be compatible with a Google product, which wouldn't be compatible with Amazon, etc. Matter will begin to change all of that, as it will set an industry-wide standard that all smart home devices from the major technology companies must be compatible with each other.[10] This will ultimately lead to more ease of use and, likely, more consumer demand.

9 Charlton, Alistair. (2020). "Why your Apple HomeKit Smart Home Doesn't Need a HomePod." Gear Brain. https://www.gearbrain.com/apple-homekit-and-homepod-integration-2647040071.html

10 McDonald, Jordan. (2021). "Matter Will Let Smart Home Tech Play Nice." Morning Brew. https://www.morningbrew.com/emerging-tech/stories/2021/08/09/matter-will-let-smart-home-tech-play-nice

Practitioner Perspective

Craig Foley
GREEN, e-PRO®
Founder, Sustainable Real Estate Consulting Services
Cambridge, Massachusetts

Describe your roles with RE/MAX Leading Edge and inCharge.

I've been a REALTOR® for over 15 years, and I've worked to build the green branding strategy for RE/MAX Leading Edge. I keep brokers up to date on green topics, and I'm a source when they're dealing with energy issues in a transaction.

I'm also a managing partner of inCharge, a boutique company that helps small- and medium-sized businesses get better utility rates. We also help them with energy-efficiency projects.

What challenges do agents face in explaining efficiency and smart technology to tech-savvy clients?

Explaining things like smart technology, heat pumps, power purchase agreements, and the changing grid can be tough because many of these products and their benefits are invisible.

Why is it important for agents to understand them?

Consumers want healthier homes and they're more aware of their environmental impact. For us to be competent practitioners, it's our job to understand the products and what they do.

Does understanding energy efficiency help agents' profitability?

Yes. The knowledge will be a necessity for the next generation of agents.

What are your suggestions to agents overwhelmed by rapid change and the volume of smart technology information?

This is a fast-evolving marketplace, and you really need to get deeper knowledge. Look to resources, such as this training course, Elevate Energy, or the Northeast Energy Efficiency Partnerships.

Reflection:
Smart Homes and Your Business

How do you plan to better integrate knowledge of smart home technology into your business? How have you been able to do so already?

MODULE 4:
Retrofitting and Replacing Systems

Learning Objectives

At the conclusion of this module, you will be able to:

- Describe choices for high-performance home systems – such as HVAC and water management – and the significance of ratings for home systems and materials.
- Suggest improvements to enhance the resource efficiency of a home as well as the quality of the indoor environment.
- Show the linkage between high-performance homes and value.

Why Upgrade an Existing Home?

As we have stressed throughout this course, creating a high-performance home isn't an all-or-nothing endeavor. The vast majority of homes on the market are pre-existing homes, not new constructions, and so creating more sustainable homes and systems won't happen overnight. It will happen over time, incrementally, one project at a time. That's why retrofitting and replacing existing systems is such an important aspect of sustainability.

For most homeowners, the motivation for upgrading an existing home boils down to cost and comfort. Improving the resource-efficiency of a home can not only reduce operating costs, it can also enhance the quality and comfort of the indoor environment.

Furthermore, upgrading the resource efficiency of a home can enhance its value – or at least maintain it – when compared with new and upgraded homes in a given market.

Although not as measurable, the intangible benefits matter too – creating a home consistent with the green-minded owners' values. And the intangibles are what prospective buyers usually respond to first.

Sell the Benefit, Know the Science

Real estate professionals know that a buyer's first response to a home is usually an emotional "gut feeling." As a professional, you can tell from prospective buyers' first reactions whether a house that you show is a yes, no, or maybe. After the emotional response, the rational mind takes over to find the justification for first reactions. In other words, buyers react to the benefits – the why – and follow up with the rationale – the science – to justify their reactions. That's why it's important that agents are knowledgeable about the science of sustainability.

Figure 4.1: Benefits & Rationales of Sustainability

Benefits	Rationale
The value of a home feature as a buyer understands it.	The value of a home feature as a building professional understands it.
↘ Control and safety ↘ Comfort ↘ Cost savings ↘ Health ↘ Environmentally friendly ↘ Trend setting	↘ Automated monitoring ↘ High R-value insulation ↘ Lower fuel usage ↘ No pollutants or toxic emissions ↘ Less environmental impact ↘ Up-to-date technology

Whether you are working with sellers preparing a home for market, buyers considering the worth of adding upgrades, or homeowners seeking your advice, you can open the discussion with an emphasis on benefits and follow up with the rationale. As a real estate professional, you can help buyers see the potential in an existing home to achieve the benefits they value. In fact, when housing inventory is low, retrofitting an existing home may be the best, or only, option.

It's important for real estate professionals to educate their clients on the impact of inefficient homes. A recent scientific study declared that existing homes are a major contributor to resource scarcity and global climate change, and that unless existing building stock is made more energy and resource efficient, energy consumption from this sector will rise threefold over the course of the century. Retrofitting is a pivotal strategy in helping to mitigate this crisis, and the decision to retrofit is primarily in the hands of homeowners (and home buyers who can choose what they value most in the market). Effective retrofitting of existing homes can, by some estimates, reduce energy consumption by as much as 70%.[11] This all sums to mean that the power to create a more sustainable world resides in the individual choices your clients make.

11 Liu, G., Tan, Y., & Huang, Z. (2021). "Knowledge Mapping of Homeowners' Retrofit Behaviors: An Integrative Exploration." Buildings, Volume 11, 273. https://www.mdpi.com

Retrofitting Challenges

Existing homes make up the vast majority of the U.S. housing stock, with a median age of nearly 40 years old, which is up from a median age of 31 years in 2005.[12] That means U.S. housing stock is going in the reverse of what it should be with regard to energy efficiency. An aging housing market requires more focus and emphasis on retrofitting and upgrading. This fact presents an opportunity for green real estate professionals to help educate clients and help them invest wisely, especially when the inevitability of retrofitting challenges are encountered. Let's look at a few of these here.

- **Starting in the middle**
  Construction of a new home affords the opportunity to build in resource-efficient systems, choose environmentally friendly materials, and employ low-impact building methods. Upgrading an older home, however, is like starting in the middle. Existing homes may have undergone phases of upgrades and reconstruction done at a time when there was less attention to green building features and fewer resource-efficient product choices. In some cases, it may be necessary to repair or remediate conditions before accomplishing upgrades.

- **Integrating systems**
  Integration of new systems with the old can impact performance in unexpected ways. Correcting or upgrading one component may adversely impact another. For example, sealing air leaks and super-insulating an older home may cut off the ventilation that kept interior moisture levels in balance.

- **Covenants and restrictions**
  Homes in historic preservation districts may face even higher hurdles in making green upgrades. Covenants and regulations intended to preserve the character and architectural style of a neighborhood may completely preclude some upgrades, such as awnings. Even in these cases, homeowners have retrofitting options that do not compromise historic charm.

12 Pudloski, Kelsey. (2021). "Aging US Housing Stock Desperately Needs More New Supply." Livabl. https://www.livabl.com/2021/06/aging-us-housing-stock-needs-new-supply.html

- **Once-in-an-ownership event**
  Considering the useful life of HVAC and other home systems can be 10–20 years, replacement may be a once-in-an-ownership event. If the chance for resource-efficient upgrades is missed, it may be a long time until equipment breakdown prompts the next replacement cycle. In the meantime, the home uses more energy and costs more to operate than it would with resource-efficient systems. Furthermore, its value is reduced in comparison to similar homes that do have resource-efficient home systems.

Upgrading Insulation

A smart first step in creating a high-performance home is upgrading the insulation, especially for older homes. Not only will upgrading insulation immediately reduce energy costs, it will also improve the efficiency and performance of the other home systems.

The initial phase of an insulation upgrade is to assess the current insulation of the home. This can be done as part of a whole house energy audit that we discussed earlier in the course. There are three primary factors to account for:

- Where the home is, and is not, properly insulated.
- What the insulation is made of.
- The insulations thermal resistance, or R-value, and thickness.

It's best to speak with a professional to determine what type of insulation is best for your needs. We will discuss insulation in additional detail in Module 5.

Right Sizing HVAC Systems

Matching the capacity of the heating and cooling unit to the size of the home, also known as right sizing, is a major issue in achieving both thermal comfort and energy efficiency. Bigger is definitely not always better. Oversized cooling systems, for example, can lead to uncomfortable room temperatures, mold, and generally poor indoor air quality. When contractors base system specifications on temperature extremes, the result is often a system that is too big for the many days of average temperatures.

System size and capacity usually determine price, but when it comes to cost benefit, a bigger system isn't always needed or better. In fact, when the capacity of an air conditioning or heating system exceeds the specification of a home, the result can be higher costs and less comfort.

Right sizing air conditioning and heating systems must take into consideration the climate zone, day and nighttime temperatures, and humidity levels, as well as the size and layout of the home. Green home design also considers the location's microclimate and site orientation. While an over-capacity system will heat or cool a home quickly, frequent on-off cycles create temperature swings and cause more wear and tear on the equipment. Over-capacity cooling systems cycle off before removing an adequate amount of humidity, resulting in clammy air.

Excess humidity swells wood paneling and doors and causes pianos to go out of tune.

HVAC contractors can take advantage of online tools and modeling programs to right size home systems. These tools produce more reliable results than estimates. Before investing in an expensive replacement system, a homeowner should look for a contractor who uses modeling apps to right size the system.

Heating and Cooling System Ratings

These terms are used in rating the capacity and efficiency of heating and systems.

Figure 4.2: Heating and Cooling System Rating Terms

	Stands for	Applies to	Calculation: Is higher or lower better?
AFUE	Annual Fuel Utilization Efficiency	Gas and oil furnaces	Heat output divided by total energy consumed. Higher is more energy efficient. AFUE 90 means 90% of energy is transformed into heat. Electric heating is AFUE 100%. (Pronounced "A-few.")
SEER	Seasonal Energy Efficiency Ratio	Central air conditioners and heat pumps	Amount of cooling (BTUs) divided by electricity (watts) consumed over a year's performance. The higher the SEER rating, the more energy efficient.
EER	Energy Efficiency Ratio	Air conditioners	Same as SEER but evaluates one point in time or a particular set of conditions (temperature and humidity). The higher the EER rating, the more energy efficient.
BTU	British Thermal Unit	Heating and cooling	BTUs are the amount of energy needed to cool or heat one pound of water by one degree Fahrenheit. BTUs are a measurement, not a rating.

Replacing a Furnace

When a furnace is reaching the 15- to 20-year mark, it's time to think about replacing it. Replacing a furnace is an opportunity to invest in a high-efficiency model as well as a smart, programmable thermostat. In addition to potential savings on energy bills, newer models are also more durable, with an expected lifespan of 20–30 years.

How much more efficient is a new model furnace? Older models, such as those with continuous pilot lights, have a 55% to 70% AFUE rating compared to new high-efficiency model with AFUE ratings of 90% to 98%. To receive the ENERGY STAR® rating, an oil furnace has to have an AFUE of 85% or higher; a gas furnace has to have an AFUE of 90% or higher.

TIME TO REPLACE?

Other than the age of the furnace, how can you tell if a furnace needs replacement? It's time to think about replacing the furnace if:

- The furnace is an old coal burner that was switched over to oil or gas.
- An exhaust fan or natural draft controls the flow of combustion gases.
- The pilot light is continuous instead of electronic ignition.
- Frequent repairs are needed.
- Heating bills are increasing but thermostat settings haven't changed.
- There are hot and cold spots in rooms.
- Frequency of on/off cycles is increasing.
- There are signs of excess moisture inside the home.
- The furnace is making loud noises, such as rattling, humming, or buzzing.
- The furnace starts putting out excessive dust, soot, dirt, or rust particles.
- Cracks, corrosion, or rust are visible around the furnace or any of its components.

Because a furnace is a major investment, it's a good idea to obtain at least three written estimates from contractors. The estimate should clearly state the type, size, warranty, and efficiency rating. Plus, estimates should include removal and disposal of the old furnace, any required building permits, and any modifications in duct work, fuel supply delivery, and electrical wiring.

DO THE MATH

The Federal Trade Commission requires new furnaces or boilers to display their AFUE so consumers can compare heating efficiencies of various models. Prices of high-efficiency models tend to increase as AFUE ratings go up and a furnace with a 90%+ AFUE rating could cost up to $1,000 more than a less efficient model.

The length of time a homeowner expects to own the home is a major determinant in calculating payback time. Considering, however, that home heating accounts for up to 45% of home-energy use, a high-efficiency furnace can pay back the additional investment quickly, especially in a cold climate with a long heating season. The contractor should be able to prepare cost savings projections – not estimates – based on local climate conditions, heating season, and fuel costs for high-efficiency models.

Replacing an Air Conditioning Unit

About two out of three U.S. homes have air conditioning units, which use about 5% of all the electricity produced in the United States. Although in year-round warm climates, such as Arizona, cooling uses about a quarter of a home's energy budget. Even in temperate climate zones, replacing an old air conditioning unit can have a big impact on energy costs. Also consider exploring super cooling to avoid PEAK energy loads. Check out costs in your area.

The average lifespan of an air conditioner is about 15–20 years. Residential central air conditioner standards that went into effect in the early 2000s require a minimum SEER of 13; ENERGY STAR®-rated central air conditioners must have a SEER of 14 or higher.

However, there are still plenty of older, less efficient air conditioners in use today. Today's high-efficiency air conditioners use up to half the energy to produce the same amount of cooling as older models. Even if an air conditioner is only 10 years old, a newer, high-efficiency model can save a lot – up to 40% – on cooling energy costs.

TIME TO REPLACE?

An air conditioner that is more than 10 years old is reaching the end of its useful life.

Some other signs that an air conditioning unit is due for replacement include:

- Leaking refrigerant
- Uncomfortably warm or humid inside
- Noisy when operating
- Increasing electricity costs for same usage

Features to look for when replacing an air conditioning unit include:

- Thermal expansion valve and a high-temperature rating greater than 11.6, for high-efficiency operation when the weather is at its hottest
- For room air conditioning units, look for an EER of 10 or higher
- ENERGY STAR® ratings
- Variable speed air handler for new ventilation systems
- Quiet operation
- Fan-only switch, to use the unit for nighttime ventilation without cooling
- Filter check light reminder to check the filter after a predetermined number of operating hours
- Automatic-delay fan switch to turn off the fan a few minutes after the compressor turns off

Ventilation

Energy-efficient homes rely on a tight building envelope to reduce air leakage; however, homes still need ventilation to mitigate moisture and combustion build-up and supply a stream of fresh air. Ventilation and indoor air quality (IAQ) are inseparable whether bringing in a stream of renewing fresh air or pulling stale air, odors, and fumes out of the home.

The best option is natural ventilation. Breezes combined with the chimney effect created by moving air keep the inside air freshened and cool. In moderate climates and breezy coastal areas, natural ventilation may provide adequate year-round comfort. Natural ventilation can be enhanced or deflected by site orientation and tree or hedge windbreaks.

Avoiding heat build-up is the main issue for natural ventilation. In a home, windows near the top of the house, such as clerestory windows or operable skylights, help prevent heat build-up as well as enhance the natural chimney effect. In hot, humid climates, attic louvers and vents can reduce heat build-up in that space by 30 degrees. Here are other items to consider.

- **Whole house fan**
  A whole house fan enhances natural ventilation and, in moderate climates, may provide an adequate substitute for energy-intensive air conditioning on many days. A whole house fan installed in the attic pulls air in through windows and vents and exhausts it through vents in the attic and roof. It can supply 30–40 air changes an hour. A whole house fan must, however, be operated with open windows in order to prevent a powerful, concentrated suction. If air intake is inadequate, dangerous back drafts from combustion sources like the furnace or water heater can be drawn into the house. A downside to whole-house-fan ventilation is potential noise from the unit. Proper installation, including rubber or felt gaskets, can minimize noise issues.

- **Heat recovery and energy recovery ventilation**
  If a whole house fan can help cool a home, is there a system that can help retain warmth? Two types of recovery systems transfer heat from warm, indoor exhaust air to fresh air drawn in.

  - Heat recovery ventilation (HRV) systems, which are ideal for moisture-prone homes, transfer warmth between intake and exhaust air. Installation costs run, on average, between $2,000 and $2,500. Check installation rates in your immediate area for more precise estimates.
  - Energy recovery ventilation (ERV) systems transfer warmth and maintain an even humidity level by transferring the humidity to the drier interior air that is vented to the outside.

Water Heaters

Water heaters offer a range of energy-efficient, water-thrifty options. For example, on-demand water-circulation pumps rapidly move water from water heaters to fixtures. The device saves water by reducing the wait time at the faucet. You can save more money and energy by water heating with a timer – especially on-demand systems.

Depending on climate and site orientation, there are a number of energy- and resource- efficient alternatives to conventional water heaters, such as solar water heaters, tankless water heaters, and heat pump water heaters.

Time to Replace?

The first indication that a water heater is due for replacement is the age of the appliance. The average lifespan of a water heater is about 10 years. Other telltale signs include:

- Rusty water
- Rumbling noises
- Water leakage around the heater
- No hot water

Replacing an old model with a new high-efficiency ENERGY STAR®-rated model can save up to 20% on energy costs for water heating.

Even with conventional water heaters, replacement might not be as simple as hauling out the old and hooking up the new. Many local building codes now require you to upgrade the following:

- Water heater mount
- Size or type of venting system
- Drain pan underneath the heater
- Supply pipes

Before starting work, ask the installer to outline all costs.

Types of Efficient Water Heaters

- **Tankless water heaters**
  The tankless water heater, or on-demand water heater, produces hot water on-demand instead of storing a tank of heated water for later use, such as conventional water heaters. When the hot water faucet is turned on, cold water flows through a heating device and directly to the faucet. Tankless water heaters save energy because no energy is used to maintain the temperature of water in a tank. Heating units close to the faucet shorten the wait time. Tankless water heaters are particularly useful for remote bathrooms or hot tubs, as a booster for appliances, or as a backup for a solar water heating system. A tankless water heater also typically has a substantially longer life than conventional water heaters, lasting for up to 20 years.

  - **Tankless coil indirect water heaters**
    Another form of tankless water heating, the coil heater uses the main furnace or boiler as a heat source. Because this system relies on the furnace, it is most efficient in climates with a high number of heating days. Indirect water heaters, such as coil heaters, use the furnace as an energy source, but the heated water is stored in a side tank, which alleviates the need to fire the furnace for each hot water demand.

Solar water heaters

Depending on climate and site orientation, a solar water heater may be dependent completely on solar energy or supplemented by a conventional heater. One drawback of total dependence on solar water heating is day-round supply. Hot water is available in the evening, after a full day of solar heating, but not in the morning when overnight temperatures allow water to cool. A supplement electric heater can remedy this drawback. Solar water heater systems include direct and indirect methods.

- **Direct-pumped system**
  Solar energy collectors on the roof connect to a storage tank installed somewhere below, usually in a garage or utility room. A pump circulates the water between the tank and collector. The sun's heat is transferred directly to the water circulating through the collector tubing and storage tank.

- **Indirect-pumped system**
  An antifreeze solution circulates through the collector, and a heat exchanger transfers the heat from the antifreeze solution in the collector tubes to the tank water. This system is used in northern climates.

Heat pump water heaters (HPWH)

Heat pump water heaters are also known as hybrid water heaters. Rather than generating heat itself, this water heater uses heat from the ground and the air. Because the only electricity needed is to transfer heat from one source to another (in this case from the outside to the inside of a home), less electricity is required. ENERGY STAR® estimates that an HPWH can save a family of four $350 a year on electricity, and nearly $4,000 over its lifetime. There are three types of HPWH:

- **Air source heat pumps (ducted or ductless)**
  These heat pumps collect heat from the air, water, or the ground outside to distribute.

- **Geothermal heat pumps**
  These collect heat from an outside ground or water source and typically cost more to install but have lower operating costs.

- **Absorption heat pumps**
  This is a newer type of heat pump for residential use. Rather than using electricity, these pumps use alternate heat sources, such as natural gas, solar, or geothermal-heated water.

- **Condensing water heaters**
  These are most similar to conventional water heaters. They work by redirecting hot exhaust gases to a heat exchanger inside the tank that allows for greater efficiency. ENERGY STAR® estimates that condensing water heaters can cut energy costs by 30% compared to conventional heaters.

Windows and Doors

Energy efficiency of doors, windows, and skylights are rated on the same factors: U-factor, solar heat gain co-efficient (SHGC), and air leakage. Models with several layers of glass, low-emissivity coatings, and/or low-conductivity gases between the glass panes are a good investment, especially in extreme climates. ENERGY STAR® rates windows and doors on U-factor and SHGC. The National Fenestration Rating Council (NFRC) labeling provides additional information.

Window and door replacements are also very popular in the market for homebuyers. The NAR 2021 REALTORS® and Sustainability Report shows that a whopping 87% clients consider windows, doors, and siding a very important or somewhat important feature of a home. When looking at retrofitting projects, smart homeowners – and smart real estate professionals – should be mindful of these market preferences.

Entry Door Replacement

The 2021 Cost vs. Value Report shows that replacing a steel entry door pays back 65% of value upon resale, and that's not including the energy savings over the course of its life, making for both an economically sound and energy-efficient investment.

When replacing an exterior door, there are three basic choices: steel, fiberglass, or wood. Steel and fiberglass doors typically have more insulating value than wood doors, but the most important component is the seal around the door. Added weather stripping can boost energy efficiency by stopping air leaks around the frame.

Most modern glass doors with metal frames have a thermal break, which is a plastic insulator between inner and outer parts of the frame. But glass or "patio" doors, especially sliding glass doors, lose much more heat than other types of doors because glass is a very poor insulator.

Window Replacement

Replacing windows in a home is definitely an expensive undertaking. Costs for a typical home with vinyl windows averages $22,500 with 71% ROI, and wood window replacement averages $35,000 with 57% ROI, according to the Remodeling Impact Report released by NAR in 2019. It makes sense to look at the possibilities of repairing existing windows – as well as sealing air leaks – before investing in replacements. Some of the signs that windows need replacement include:

- Single glazing
- Rotting sills and frames
- Jammed sashes and broken parts
- Water penetration around the frame
- Condensation between layers of insulated glass
- Gaps in sashes, frames, and dividers

Replacing windows can definitely have a positive impact on energy bills, but it would take several decades for the savings to offset the initial cost. The good news is that new windows recover nearly 70% of value on resale.

LOW-E WINDOWS

Low-emissivity (low-e) windows are a green choice for replacement windows. Low-e windows are coated with a microscopically thin layer of metal oxide that reduces infrared radiation transfer from a warm pane of glass to a cool plane, thus lowering the U-value of the window.

- In hot climates, the low-e coating should be applied on the outside surface of the window.
- For cold climates, the low-e coating should be applied to the inside surface of the window.

Indoor Air Quality (IAQ)

The interaction of the "indoor-climate" systems discussed in this module impact the quality of the indoor air, and solving IAQ issues can involve retrofit solutions. A prospective buyer may not notice that a home has good IAQ, but they will certainly notice if there is a problem with odors, fumes, or mustiness. Furthermore, some IAQ issues, such as radon, lead paint, and asbestos, are odorless and can be detected only by testing.

As a real estate professional, you need to be aware of potential IAQ issues – seen and unseen – and have the qualified testers and repair professionals on your team.

The Nose Knows

The simplest test for IAQ issues may be to step outside the home for a few minutes and breathe in fresh air. When you go back inside, what does your sense of smell detect? Can you smell damp mustiness, tobacco odor, dust, fumes, pet odors, chemicals, or pesticides? Any of these smells can indicate an IAQ issue.

IAQ Issues, Diagnosis, and Solutions

OFF-GASSING

Many materials used in traditional home construction (paint, carpet, cabinetry, adhesives, wall board, wall coverings, etc.) can emit, or off-gas, unpleasant and even toxic VOCs, such as formaldehyde.

- **Issue**
  Off-gassing can trigger asthma, respiratory conditions, and allergic reactions. It is also linked to multiple chemical sensitivity syndrome.

- **Diagnosis**
  Alleviation of symptoms when occupants are away from the home. Checking for materials that are known to emit fumes or VOCs.

- **Solutions**
  Replacing the material or appliance removes the source of the issue. When new carpet, paint, or cabinets are off-gassing, keep air flowing throughout the home until the odor dissipates.

LEAD PAINT

Sometimes found in older homes, lead paint has serious health consequences for both children and adults if ingested as chips, dust, or in drinking water.

- **Issue**
  Lead exposure can impair children's brain and nervous system development and slow growth. It can cause hypertension, reproductive problems, memory and cognitive impairment, and other conditions in adults.

- **Diagnosis**
  Lead test kits, available from home supply stores, use chemicals that change color to indicate the presence of lead. When lead is indicated, the EPA strongly recommends additional testing and risk assessment by a certified lead inspector or a certified lead risk assessor.

- **Solutions**
  Lead paint that is in good condition does not present a hazard unless it is disturbed during repairs or renovations. Other strategies include encapsulation, enclosing the current surface with a new one, removing the paint, or replacing the windows, doors, woodwork, and other surfaces. Consider hiring professional contractors who are experienced in removing lead paint safely.

IMPORTANT NOTE

Federal law requires that contractors performing renovation, repair, and painting projects that disturb more than six square feet of lead paint in homes must be trained and certified to follow specific work practices to prevent lead contamination.

ASBESTOS

Asbestos was once commonly used in building materials such as insulation, fireproofing, soundproofing, textured paint, and floor tiles.

- **Issue**
  When asbestos-containing materials are damaged or disturbed, airborne microscopic fibers can be inhaled. Inhalation of asbestos is linked to lung cancer and pulmonary disease.

- **Diagnosis**
  Asbestos-containing materials cannot be identified by sight. An inspection by a qualified asbestos professional is required.

- **Solutions**
  If the asbestos material is in good shape and will not be disturbed, the best course of action can be to do nothing. Repair options include sealing (encapsulation), covering (enclosure), or removal.

IMPORTANT NOTE

An asbestos professional should be hired if the material must be repaired or removed.

MOLD

Mold produces allergen irritants, and in some cases, potentially toxic substances (mycotoxins).

Issue

Inhaling or touching mold or mold spores may cause allergic reactions and trigger asthma attacks. Places that are often or always damp, such as shower stalls, can be hard to maintain completely free of mold.

Diagnosis

Indicators include visible mold and moldy odors as well as condensation or moisture on windows, walls, or pipes. If hidden mold is suspected, the homeowner should consider hiring an experienced professional. Removal of drywall or wallpaper can lead to a massive release of spores growing on the underside.

Solutions

Regular cleaning and moisture control is the key to mold control. When water leaks or spills occur indoors, act quickly to clean up the spill and dry the wet surface. Increase ventilation or air movement by opening doors and windows and using fans.

IMPORTANT NOTE

Avoid touching or inhaling mold or mold spores during cleanups. Wear an N-95 respirator (available at homes supply stores), long rubber gloves, and goggles without ventilation holes.

RADON

The naturally occurring breakdown of uranium in soil emits radon – an odorless radioactive gas. It is emitted into air, water, and soil and can seep into any type of building through cracks in basement and crawlspace walls or through well water.

- **Issue**
  Radon is associated with lung cancer.

- **Diagnosis**
  Inexpensive EPA-approved radon test kits are available at home supply stores as well as online. If a homeowner plans to finish a basement to convert it into living space, radon testing should be a first step.

- **Solutions**
  Soil suction, which pulls radon from beneath the house and vents it through a pipe to the air, is a strategy as is sealing cracks in the foundation. For older homes, lowering radon levels requires installation of measures such as barriers and venting.

COMBUSTION, PARTICULATES

Blocked, leaking, or damaged chimneys, flues, and ducts can release harmful combustion gases and particles and even fatal concentrations of carbon monoxide.

- **Issue**
  Particles released when fuels are incompletely burned can lodge in the lungs and irritate or damage lung tissue. A number of pollutants, including radon, attach to small particles that are inhaled and then carried deep into the lungs.

- **Diagnosis**
  Schedule annual HVAC inspections including flues, ducts, and chimneys.

- **Solutions**
  Repair cracks or damaged parts of HVAC systems promptly. Check door seals of woodstoves and vents to the outdoors. Use only aged or cured (dried) wood in stoves and fireplaces; never burn pressure-treated wood.

Better Indoor Air

Air in your house can teem with chemicals, gases, and biological pollutants and create health problems. But you don't need a chemistry degree to improve your home's indoor air quality (IAQ). Keeping pollutants out of your house is key.

Lead poisoning

Lead is toxic to people of all ages, but particularly to children, and lead poisoning isn't a problem of the past. The Centers for Disease Control and Prevention says houses built before 1978, the year lead-based paint for home use was banned, likely still contain risk.

Lead is also found in painted toys and furniture, pottery, and plumbing fixtures.

Learn more at cdc.gov and bit.ly/remove-lead.

Volatile organic compounds (VOCs)

Home products, such as paint, solvent, and varnish all contain harmful chemicals that can evaporate into your house and diminish IAQ. So can other household items, including carpet and adhesives, moth balls, composite wood products, and air cleaners.

Consider alternatives to chemical-laden products whenever possible. Also follow safety directions, ventilate your house when using products, and store and dispose of chemicals safely.

Learn more at bit.ly/epa-iaq

Radon

Breathing air containing radon, an odorless, invisible radioactive gas that occurs naturally, raises your risk of lung cancer. Find out if you live in a radon risk area: epa.gov/radon

Use a test kit to see if radon is present in your house. If it is, hire a qualified professional to eliminate radon.

Biological pollutants

Biological pollutants, such as dust mites, pet dander, pest droppings, and mold, all can exacerbate asthma, allergies, and other respiratory ailments.

Wash bedding in hot water, opt for bare floors, and dust surfaces with damp cloths. To combat mold, fix any leaks and prevent water seepage. You can also use exhaust fans to evacuate kitchen and bathroom moisture.

True clean

Household disinfectants, air fresheners, and furniture polish often contain VOCs. Soaps and laundry detergents can be loaded with chemical irritants. In addition, chemicals in household cleaning products have been linked with endocrine disruption and asthma.

Concoct your own non-toxic cleaning products with inexpensive baking soda, vinegar, and lemon, or visit bit.ly/baking-soda-uses

EQUAL HOUSING OPPORTUNITY

REALTORS® who have earned National Association of REALTORS'® Green Designation (www.greenresourcecouncil.org) can refer you to local experts who can assess your home's performance.

NATIONAL ASSOCIATION of REALTORS® *Official Designation* | green

This graphic is from the Green REsource Council's "Green Client Handouts" and is available as a customizable consumer handout for all GREEN designees. For more information visit green.realtor.

Maintaining the High-Performance Home

The crucial ingredients in maintaining and operating a high-performance home are homeowner knowledge and behavior. As mentioned earlier, the energy inefficiency of existing residential homes is a driver of climate change. Decreasing our environmental footprint and empowering a sustainable future is, in large part, in the hands of homeowners.

There can of course be a learning curve associated with operating and maintaining some of the systems. Upgrading systems without learning how to properly operate and maintain them or without changing habits can negate system savings. Simple actions, or inactions, such as leaving lights on, over-heating or over-cooling, or not using installed green features, can negate system savings. Real estate professionals should be mindful of educating clients of the challenges and strategies for overcoming these challenges.

When there is a significant gap between intentions and actual behavior, consumers won't see the payoff for energy-efficiency measures because they don't change their consumption habits. They may actually use the enhanced energy-efficiency measures as a rationale for increasing heating or air conditioning use; the thinking goes like this: "I can turn up the furnace and be more comfortable because the extra insulation I installed means less energy is wasted." Consequently, energy-efficient heating or air conditioning systems may enable the consumer to just "stay even" with energy costs but not see any savings. When energy costs climb, consumers' costs may actually increase despite installing energy-efficient systems.

The Department of Energy's recommended thermostat setting for heating during the winter months is 68 degrees during waking hours, and less when sleeping or the home is unoccupied. For cooling during summer months, 78 degrees is the recommended temperature setting. Ultimately, the lower the difference between the outside and inside temperatures, the lower the energy bill will be.

Practitioner Perspective

Melisa Camp, M.Ed.
LEED AP-Homes, REALTOR®, GREEN, and ABR®
Phoenix, Arizona

How did you get the "Green Queen" nickname?

When I started in real estate, I needed something to set me apart from the sea of other agents. Since green is a core belief of mine, I used the knowledge and passion to build my business.

How did you get into green rehabbing?

During the recession, lots of flippers were doing "lipstick remodels" that were focused on surface aesthetics. I knew I could do more thoughtful, healthy, and efficient remodels.

What property types do you usually upgrade?

Homes built before 1980 with brick or block construction in great locations for transit and walkability.

Where do you start when making homes more energy efficient?

I look at key systems – the HVAC, the water heater, windows and doors, and ducts and insulation. It's ridiculously hot in the summer here, making it expensive to run a house. We work to curb those high bills.

How does your rehabbing work benefit your real estate business?

Colleagues and past clients seek me out for advice and referrals. My knowledge is a way to create value for clients and build lifelong relationships. After moving in, they often call for help with efficiency upgrades.

Advice to others wanting to develop a green niche?

Believe in what you're doing and practice what you preach. Volunteer at industry business groups, schools, and green chambers of commerce to grow your network. Give back and do good for the planet.

Exercise: Building a Client Efficiency Aid

Write out the benefit of each feature along with the supporting scientific evidence. You can start completing this now and turn this into a one-sheet educational aid for clients and customers.

Feature	Benefit	Science
Example: Rightsized HVAC system	Comfort and control. Cool and dry in summer, warm in winter, even temperature throughout the home. The system performs as expected.	Right-sized HVAC systems are more efficient and create a comfortable environment without over- or under-performing.
No/low VOCs in wall covering, cabinetry, carpets, paints		
Low-e windows		
High-efficiency furnace		

Tight building envelope		
Tight air ducts		

Reflection:
Retrofitting and Your Business

Take a moment to consider the retrofitting and rehabbing projects that will be prevalent in your particular market. Make a list of frequent project types that can benefit clients – and your business. What methods can you use to educate clients?

MODULE 5:
Remodeling and Renewable Energy Systems

Learning Objectives

At the conclusion of this module, you will be able to:

- Advise clients and customers on the potential of various home renovations to increase the value of a home.
- Refer consumers to information sources for planning a remodeling or renovation project.
- Discuss the technologies and methods for renewable energy resources, including solar, wind, and geothermal power generation.

In this module, we'll look at deep-green home improvements that are big investments – both in time and dollars. The cost of the projects described in this module means that the clients who initiate these kinds of jobs, such as a deep-green energy retrofit, have the budget for the project and probably plan to live in the home for a long time. Using some of the resources already introduced in the course, you can help your clients prioritize remodeling projects by helping them compare the potential payoff and payback for the choices.

Sometimes, knowing where to start is the most daunting part of a big home improvement project. So, let's begin by checking out online resources that guide home improvers through remodeling projects.

Home Improvement Online Strategy Generators

Where does a homeowner – current or prospective – begin when a big home improvement project, such as the deep-green projects described in this module, are in the plans?

Following are some online strategy generators that can help the homeowner prioritize and plan projects:

- **Building America Solution Center**
  https://basc.pnnl.gov/resource-guides
- **Energy.Gov Home Design and Remodeling**
  http://energy.gov/public-services/homes/home-design-remodeling
- **House Logic, Remodel**
  https://www.houselogic.com/remodel/
- **ENERGY STAR® Home Improvement**
  www.energystar.gov/campaign/knowledgeCenter
- **U.S. Green Building Council's Green Home Guide**
  http://greenhomeguide.com
- **Home Innovation Labs**
  https://www.homeinnovation.com/
- **HGTV**
  https://www.hgtv.com/

GREEN HOME RATING SYSTEM CHECKLIST

Other sites you should use for brainstorming and ideas include:

- **LEED**
  https://new.usgbc.org/leed
- **NGBS**
  https://www.homeinnovation.com/green
- **Zero Energy Ready**
  https://www.energy.gov/eere/buildings/zero-energy-ready-home
- **PEARL**
  https://pearlcertification.com/

Eight Steps for a Perfect Home Improvement Project

Coming up with great ideas is easy, then comes actual planning, budgeting, and putting the project into action. The eight-step plan can guide clients who are wondering where and how to start.[13]

1. **Worth the Cost and Disruption?**
   - How long will you own the home?
   - How much disruption can you tolerate?
   - Will the remodel meet an immediate or temporary need?
   - How will this remodel ultimately affect your lifestyle?
   - What is your life stage?
2. **Plan Your Perfect Project**
   - Envision the finished project
   - Use online sources: Houzz, Pinterest, design software, magazines
   - Research products and design choices
3. **Set Your Budget**
   - Ballpark the costs and how much you can spend
   - Identify funding sources: cash, loan, HELOC
   - Get quotes from contractors
   - Plan for cost overruns: add 15%–20% to bid
   - Is it still affordable?
   - Prioritize and trim the project to fit the budget

13 Adapted from "House Remodeling in Just 8 Steps (Yes, It Can Be Done)." Realtor.com. https://www.realtor.com/advice/home-improvement/8-step-guide-remodeling-your-home/

4. Choose Your Team

- Meet the lead architect and contractor before you hire the firm
- Ask to see their recent work
- Check references
- Look online for peer reviews of contractors

5. Map Out Your Schedule

- Remodeling rules of thumb:
  - Kitchen: 3–6 months
  - Bathroom: 2–3 months
  - Room addition: 1–2 months
- Allow time for ordering materials and obtaining permits

6. Get Your Paperwork in Order

- Contractor's responsibilities: license, bond, liability insurance, work contract, permits
- Homeowner's responsibilities: homeowner's insurance, obtain everything in writing, don't start without a contract, confirm that the contractor has obtained permits, make sure subcontractors are paid

7. Plan for Problems

- Have a rock-solid contract
- Designate a project point person both from your side and the contractor's
- Make a list of what could go wrong and a come up with a plan B
- Schedule down time
- Establish rules for workers: parking, smoking, storing gear, designated bathroom

8. Keep Your Project On Track

- Avoid allowances – specify everything upfront
- Establish good communication
- Keep a project journal
- Track all changes in writing
- Check the work
- Pay only for completed work

Figure 5.1:
Top Five Projects Nationally in Terms of Cost Recouped, 2021[14]

Project	% of Cost Recouped
1. Garage door replacement	93.8%
2. Manufactured stone veneer	92.1%
3. Minor kitchen remodel	72.2%
4. Siding replacement, fiber-cement	69.4%
5. Window replacement, vinyl	68.6%

Figure 5.2:
Two Popular Remodeling Jobs: Cost vs. Value
(National Averages, 2021)[15]

KITCHEN			BATHROOM		
	Midrange	Upscale		Midrange	Upscale
Cost	$75,500	$149,000	**Cost**	$24,500	$75,700
% Recouped on resale	57%	54%	**% Recouped on resale**	60%	55%

14 Adapted from the 2021 Cost vs. Value Report, https://www.remodeling.hw.net/cost-vs-value/2021/

15 Ibid.

Kitchen Remodeling – A Green Makeover

If you're planning a kitchen remodel, why not go green? Going green with your kitchen remodeling project means making choices based on your lifestyle and your budget. The decisions aren't always simple. For example, a certain green product may outlast and use less energy but cost more than a similar product that performs equally well. Fortunately, an expanding marketplace for smart, stylish green products is helping to lower costs.

Key Products, Ideas, and Tips

Sustainable kitchen cabinets are made from wood and wood products certified by the Forest Stewardship Council to be produced using sustainable forest management practices. They feature formaldehyde-free glues and finishes with low VOCs that give off little or no toxic fumes. Check product literature closely to ensure the cabinets you choose meet these criteria.

Cabinets

When shopping for cabinets, ask if the cabinet boxes are built with wheat board or straw board. These products are made from agricultural waste, such as the chaff left over from farmers' wheat crops. As a rule, they feature formaldehyde-free binders. They're strong and rated to exceed the standards set by the American National Standards Institute for medium-density particleboard – the material commonly used to make cabinet boxes.

Countertops

Green countertops offer variety, but all share similar characteristics: recycled or sustainable content, low-toxicity binders, and eco-friendly manufacturing processes. In addition, they're highly durable. Eco-friendly countertops consist of renewable bamboo fiber, post-consumer recycled paper, and water-based resin glue. Squak Mountain Stone, for example, is made from mixed wastepaper, waste glass dust, waste fly ash, and Portland cement. The finished countertop slabs resemble limestone and soapstone. Vetrazzo makes countertops that are 85% recycled glass – almost all the glass comes from curbside recycling programs.

Flooring

Eco-friendly flooring includes linoleum and cork. Both are made with renewable resources that make them sustainable choices. They're good-looking and durable but require periodic maintenance.

Linoleum is made from renewable, biodegradable materials including linseed oil and cork. It produces no harmful vapors and comes in many patterns and colors. Linoleum stands up well to traffic and offers some cushioning underfoot. It's resistant to moisture but susceptible to staining, so some manufacturers add a coating to protect against spills and scratches. Without this protection, linoleum must be cleaned and polished every 2 years. Cost: $2–$4 per square foot, installation adds $5–$7 per square foot. Check the prices for both in your market.

Cork is a sustainable flooring product made from tree bark; the bark grows back and can be harvested repeatedly. Harvesting practices are carefully regulated to ensure future supplies, reducing environmental impact. Cork is waterproof and slightly soft underfoot, which makes it both moisture-resistant and comfortable. It's made in 12-by-12-inch tiles and 1-by-3-foot planks, each with a distinctive grain pattern. The surface is slightly textured and slip resistant.

Treat cork flooring with a sealant every 3 to 4 years to prevent scratches and stop moisture from penetrating seams between tiles. Natural wax and water-based polyurethane work well. Cost: $2–$6 per square foot; installation, $5–$10 per square foot.

Deep Energy Retrofit

Deep energy retrofits are on the extreme end of cost and effort when it comes to making homes more energy efficient but can achieve dramatic energy savings. The process typically involves resealing the building envelope, super-insulating, upgrading systems including HVAC, and installing energy generation capacity such as solar photovoltaic (PV) panels.

If a homeowner plans to do major renovations, such as replacing a roof or siding, it may be an opportunity for a whole-house deep energy retrofit. The first step is a thorough, professional energy assessment, as we discussed earlier in the course, to determine which actions will produce the most benefit.

In terms of time, cost, and complexity, a deep energy retrofit is a major undertaking with goals similar to new construction. It must involve every energy-related aspect of the home. But there is also a potentially big payoff in terms of energy efficiency and being proactive about promoting sustainability and helping the climate. The USGBC estimates energy usage reductions of 50% to 90%.

Adding Insulation – How Much and Where?

Insulation is perhaps the most important element in constructing an energy-efficient building envelope. It is rated by the R-value, which indicates how well the material resists (R) heat transference: the higher the R-value, the greater the insulating effectiveness. R-value depends on the type of insulation, thickness, density, and installation. For example, insulation that is compressed will not provide its full R-value.

Other factors that lower R-value include:

- **Gaps and shrinkage**
  Air infiltrating or escaping through gaps caused by insulation shrinkage effectively lowers R-value.

- **Moisture**
  R-value drops significantly when insulation is exposed to moisture from leaks or condensation. Spray foam insulation is affected little by moisture, but water under it provides an environment for growth of mold, mildew, and wood rot.

- **Thermal bridging**
  When materials with different heat conductivity span the space from unconditioned to conditioned space, such as metal framing studs surrounded by fiberglass insulation, more heat flows through the higher-conductivity material. In short, the metal studs act as chillers and the R-value of the insulation drops to almost zero.

The amount of insulation needed depends on climate, section of the house, and type of HVAC system.

An energy-efficient, tight envelope requires proper insulation of the following:

- Foundation: basement, crawl space, or slab
- Floors above unheated garages
- Exterior walls
- Ceilings
- Ducts in unconditioned spaces
- Attic hatch and knee walls in finished attics

Local building codes usually specify minimum insulation requirements but achieving an energy-efficient home may require exceeding the minimum code.

Recommended Insulation by Zip Code

The Department of Energy (DOE) provides an online ZIP-code insulation website that provides information on recommended R-values. Homeowners can learn where and how much to insulate based on climate and type of HVAC. The online database, developed in cooperation with the Oak Ridge National Laboratory, also provides cost estimates on rate of return. To access the database, go to http://web.ornl.gov/~roofs/Zip/ZipHome.html.

Home Insulation & Caulking

A drafty house and high utility bills are signs that your home could benefit from some insulation and caulking upgrades. According to the U.S. Department of Energy, heating and cooling account for more than half of the average home's utility costs.

Tighten up, save

Proper insulation creates a more comfortable home by not allowing air to seep in or out, and well-insulated houses stay warm during winter and cool during summer.

Here are several considerations:

1. Existing conditions. Determine the effectiveness of existing insulation and where insulation is missing. Professional home energy auditors can pinpoint spots where energy is being lost.

Locate auditors:

- energystar.gov
- resnet.us

2. Insulation types. Learn about insulation types, including fiberglass, cellulose, rigid foam board, and spray foam.

3. Performance measures. Understand R-value and what's appropriate for your location and climate. bit.ly/r-value-reno

Eliminate Drafts

Sealing and weatherstripping projects are perfect complements to insulation upgrades, and some projects can eliminate drafts.

Additional Strategies:

- Doors: Minimize door drafts with weatherstripping. bit.ly/door-drafts
- Windows: Use caulk or weatherstripping to seal window leaks.
- Drapes: Depending on the climate, close or open drapes on sunny sides of your house, either to block or welcome the sun's heat.
- Ducts: Repair visible and accessible ducts with duct sealant. bit.ly/sealducts

Other trouble spots can include mail chutes, electrical and gas service entrances, cable TV and phone lines, outdoor water faucets, space where dryer vents pass through walls, bricks, siding, stucco, and foundation, air conditioners, and vents and fans

Calculate cost savings

Project costs vary depending on climate, the scope of work, and whether you hire a professional. Also, look to Federal tax credits to offset project costs.

Find incentives and rebates at the Database for State Incentives on Renewables and Efficiency at dsireusa.org

EQUAL HOUSING OPPORTUNITY

REALTORS® who have earned National Association of REALTORS'® Green Designation (www.greenresourcecouncil.org) can refer you to local experts who can assess your home's performance.

REALTOR® NATIONAL ASSOCIATION of REALTORS® Official Designation | green

This graphic is from the Green REsource Council's "Green Client Handouts" and is available as a customizable consumer handout for all GREEN designees. For more information visit green.realtor.

Power off the Grid: Solar Photovoltaic (PV) Systems

Every home is, in fact, a solar home. All homes are bombarded by sunlight every day. The difference is that the solar PV system captures the sun's energy and turns it into electricity. Instead of creating a system to deflect the heat of the sun, solar roofs capture the thermal energy and convert it into electricity.

How Do Solar PV Systems Work?

A PV system typically consists of several PV panels containing solar cells installed on a south-facing roof or as a stand-alone on the ground. In brief:

- PV modules capture sunlight and convert it to direct electric current.
- An inverter converts the direct current to alternating current for household use and sale of current back to the grid.
- Batteries (optional) store and provide back-up energy. A back-up connection to the power grid or a generator supplements energy needs.

COMPONENTS

- Solar panels on the roof or ground
- Inverter to convert direct current to alternating current for household use
- Battery (optional) to store excess power
- Back-up connection (optional) to power grid or generator
- Lightning arrester (optional) protects against lightning strike

SOLAR PANEL PLACEMENT

- South- and/or west-facing sloped roof or on ground
- Full sun 9:00 a.m.–3:00 p.m.
- No shade or overshadowing from trees or other buildings

SOLAR IN YOUR AREA

The Office of Energy Efficiency and Renewable Energy has provided a list of sources to help assess solar accessibility and potential energy savings throughout the United States. You can explore at https://www.energy.gov/eere/solar/solar-rooftop-potential.

TAX INCENTIVES AND REBATES

- Federal tax credits for solar installations have been declining in recent years. Prior to January 1, 2020, the tax credit was 30%. For systems installed from 2020 through 2022, the credits will be 26%. For installations in 2023, the credit will decrease to 22%. The tax credit will expire completely in 2024, unless Congress renews it.
- States also offer a variety of incentives and rebates. For more information, go to the Database of State Incentives for Renewables and Efficiencies (DSIRE) at www.dsireusa.org. Typically, state incentives do not affect your federal tax credit, and vice versa.

MEASURING ELECTRICITY

- 1,000 watts = 1 kilowatt
- 1,000 kilowatts = 1 megawatt
- 1,000 megawatts =1 gigawatt

The average annual consumption per U.S. residential utility user is 10,715 kilowatt-hours (kWh). Residents of Louisiana have the highest consumption rate at 14,407 kWh, and Hawaii has the lowest at 6,446 kWh. The average home consumes approximately 30 kilowatts per day.

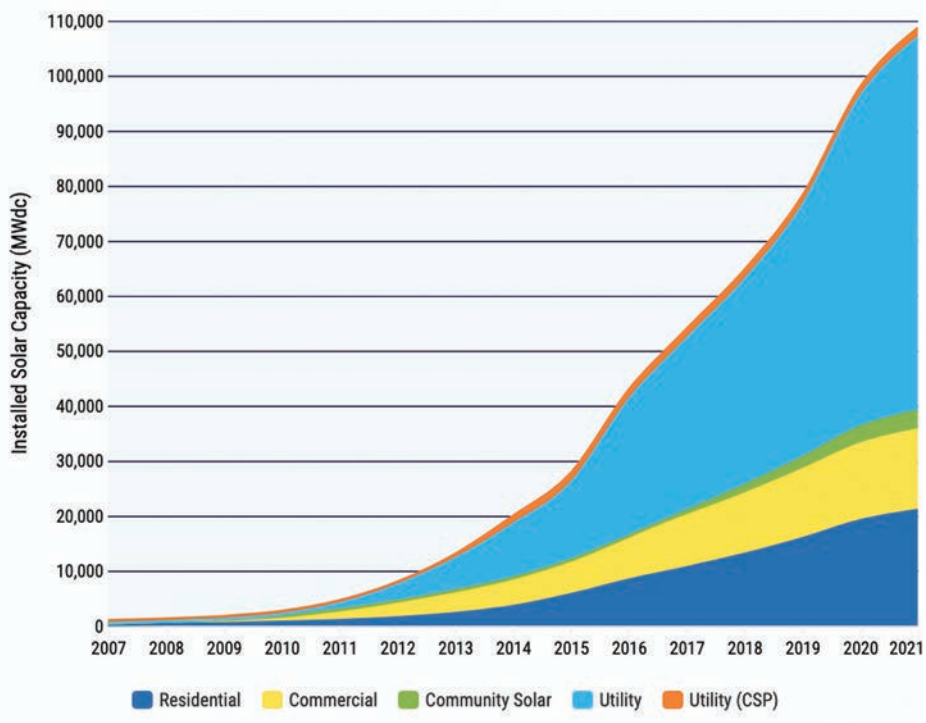
ROOF AREA CALCULATOR

	Roof Area Needed in Square Feet (in bold type)						
‡ PV Capacity (watts/hours)	100w	250w	500w	1kwh	2kwh	4kwh	10kwh
8% module efficiency	**15**	**38**	**75**	**150**	**300**	**600**	**1,500**
12% module efficiency	**10**	**25**	**50**	**100**	**200**	**400**	**1,000**
16% module efficiency	**8**	**20**	**40**	**80**	**160**	**320**	**800**

Growth of Solar PV

Rooftop solar PV is the fastest growing trend for residential renewable energy systems. The Solar Energy Industries Association reports that the first quarter of 2021 saw a 46% increase for the installation of solar capacity from the year prior, and over the past ten years solar has an average annual growth rate of 42%. The growth of rooftop home-based solar PV systems, which are noiseless and don't occupy any ground space, exceeds that of wind-based systems.

Figure 5.3: Cumulative U.S. Solar Installations[16]



16 Solar Energy Industries Association. https://www.seia.org/solar-industry-research-data

According to NAR's 2021 REALTORS® and Sustainability Report, 82% of agents report homes with solar panels available in their market, and 40% of agents believe that solar panels increase the value of the home. Growth in solar is not uniform across the country. And while initially solar was adopted most widely in parts of the country with the highest sun exposure, such as in the Southwest, growth in solar installations is catching on in many different parts of the country. See the rankings map for 2021. The growth of solar is influenced by geography, but clearly state policy and incentives also play a role.

Does Solar Increase the Value of a Home?

The short answer appears to be yes. It's important to point out that many factors influence how much solar panels increase value, and there are substantial differences depending on local markets. A recent study by Zillow, however, reported that homes with solar panels sold for an average of 4.1% more than similar homes without solar, but there was a wide range in the value-add in different markets.[17] Real estate professionals should be mindful of the factors that will contribute to valuation:

- **Geographic location:**
  As mentioned already, this is obviously a big one. Not only the amount of sun exposure, but also local incentives, policies, and cultural norms will play a part.

- **Installation prices:**
  If prices are expensive in a given market, and homebuyers know they have ready-made cost-savings built into their purchase, they are likely to pay more.

- **Lease, PPA, or owned:**
  It's important that real estate professionals are clear on the differences between the various ways of acquiring solar, as they will have different implications for resale valuation. Some appraisers, for example, consider leased solar panels personal property that will not increase the value of the home at all.

- **System output and age:**
  Larger output systems that are newer are likely to be valued higher than smaller, older systems.

17 Hurst, Josh. (2021). "Do Solar Panels Increase Home Value?" EcoWatch. https://www.ecowatch.com/solar-panels-increase-home-value-2654716878.html

Part of a broader issue that might be hindering the full value of solar being realized for homeowners is lack of education and documentation for appraisals. Many appraisers have little knowledge about solar panels and aren't receiving training on renewable energy systems. We discuss ways of remediating this issue later in the course. In addition, many mortgage lending systems do not yet have formal processes in place for recognizing and assigning value for solar systems.[18]

Green-minded real estate professionals need to foster education and communication among all stakeholders in their market, which will add value not only for their clients, but also ultimately for their business. Pearl Certification recently launched what it's calling The Pearl Equity Calculator to help quantify and capture, among other things, the value of solar production to be incorporated in appraisals and pricing. Here is a useful list of questions to consider when taking a solar listing.

NAR's Guide to Taking a Solar Listing

Be sure to spend the time needed to collect answers to these important questions so that you can properly list and price the home. It's recommended that this information be featured prominently in the home and sent to the buyer's agent prior to contract signing.

Questions to ask seller to disclose (before putting on MLS):

1. Do you lease or own?*
2. What is the size of the array?
3. Do you have a permit for the panels?
4. What is the age of the system and inverter?
5. Have you ever replaced the inverter?
6. Who manufactured the panels and inverter?
7. Who installed the panels and inverter?
8. What is your average yearly or monthly savings?
9. How much is your average energy bill?
10. Is your system monitored?

18 LeBaron, Robin. (2021). "How to Achieve the Highest Appraisal Value for Home Solar Projects." Solar Power World. https://www.solarpowerworldonline.com/2021/07/how-to-achieve-highest-appraisal-value-home-solar-projects/

11. If so, can you provide at least 1 year of historical data and what is the cost of the monitoring?
12. Can you provide commissioning documents?
13. Are all of the system components operating properly?
14. If owned, what kind of incentives or rebates were used?
15. Are there any warranties for equipment or production and do they convey?
16. When was the last time the system was inspected?
17. Can you provide billing history from the utility company?
18. Is your net metering plan grandfathered?
19. Do you have a loan on the system? Does the loan identify the property as personal property? If so, there will be a Uniform Commercial Code or UCC filing showing it as personal property. Will the loan be paid off at the closing? If so, we can include it in the real estate value; if not, it cannot be included in real estate value.

***If the system is leased, these are additional questions to ask:**

1. What are your monthly lease payments?
2. How much did you put down?
3. Can you provide a copy of the lease?
4. What is the contact information for the lessor?
5. What are the buy-out options?
6. What are the assumption options?

Do the Cost Comparison

Before making the commitment with a solar leasing company, homeowners should take time to do cost comparisons on their own. Websites such as Solar Estimator (www.solar-estimate.org) are a good place to start. For information on systems and installation costs, go to http://energy.gov/energysaver/planning-home-solar-electric-system.

Buying a Solar PV System

Purchase and installation of a PV system requires a substantial capital outlay. There are many cost variables – size of installation, power generating capacity, types of panels, region, labor, components, and roof design – making an outlay on average of about $20,000.

In order to calculate the potential payback period, homeowners should compare the initial outlay costs less any financial incentives or credits against the potential savings on the cost of electricity from the power grid based on average consumption. In areas where the cost of electricity is very low, the payback period may exceed the life expectancy of the solar components as well as the length of time the owners expect to own their home. Where energy costs are high, the initial outlay may be paid back within a few years.

Leasing and Power Purchase Agreements (PPAs)

Solar leasing arrangements offer a solution to the main obstacle for home solar PV systems – the cost. Solar leasing companies offer low- or no-money-down home solar PV installations by leveraging investors' equity with available tax credits and incentives plus depreciation allowances.

Although solar leasing terms are sometimes used interchangeably, there are significant differences:

- **Solar lease**
  The homeowner pays a monthly rent or lease payment in exchange for the right to use all the power produced by the system.
- **Solar power purchase agreement (PPA)**
  The homeowner buys the power generated by the system at a set price per kWh.
- **Prepaid**
  Entire lease or PPA payments are paid up front. No further payments are required for the duration of the lease or contract.

Three Issues to Watch

- **Expiration of federal tax credit**
  Solar leasing companies have traditionally based their business models on a 30% federal tax credit. This credit decreased to 26% in 2020 and will decrease again in 2023 to 22%. The credit is expected to expire completely in 2024, which could have a chilling impact on the affordability of leased systems.

- **Utility fees, surcharges, and access fees**
  Solar PV system users must maintain access to the power grid for backup needs as well as for net metering. Utility companies want to charge solar PV users a fee for grid access. The utility companies argue that solar PV users are not paying a fair share of the upkeep cost of the power grid, and that this cost falls unfairly on the companies' customers. This is an ongoing debate and different states are taking different stances, so it's important to check your local market regarding this issue.

- **Net metering dollar-for-dollar or reduced rate**
  Utility companies want to pay less for a unit sold to the grid than the cost of a unit drawn from the grid. Installation of an additional electric meter, at the customer's expense, would be required: one for buying power from the grid and an additional one for selling it back to the grid. Understandably, solar PV users as well as leasing companies and their customers are opposed to any reduction in solar renewal energy credits (SRECs).

Comparing Solar PV Leasing, PPAs, and Prepaid

$0 Down Lease/PPA	Down Payment Lease/PPA	Prepaid Lease or PPA
How does it work?		
↘ Fixed monthly rental payment for the system. ↘ Annual escalation: lease payment may increase every year. ↘ Fixed cost per kWh with annual escalation.	↘ Small down payment in exchange for lower monthly payment (lease) or a lower rate per kWh (PPA). ↘ Costs may be fixed for the term of the contract.	↘ The entire lease or PPA payments are paid upfront. ↘ No further payments for the duration of the lease or contract. ↘ Similar cost as purchase, but company owns and maintains the system.
Pros		
↘ $0 upfront cost. ↘ 10% to 50% savings compared to utility rates. ↘ Reduction in carbon footprint. ↘ Company maintains the system. ↘ Homeowners can track system performance with mobile app.	↘ Get a solar PV system with small down payment. ↘ 10% to 50% savings compared to utility rates. ↘ Lower kWh rate than $0 down lease/PPA. ↘ Company may offer fixed rate for duration. ↘ Reduction in carbon footprint. ↘ Company maintains the system. ↘ Homeowners can track system performance with mobile app.	↘ 30% to 50% less than purchase. ↘ Price is net of applicable rebates, incentives, and credits. ↘ 50% to 80% savings compared to utility rates. ↘ Reduction in carbon footprint. ↘ Company maintains the system. ↘ Homeowners can track system performance with mobile app. ↘ May allow benefit from the sale of SRECs directly or through a reduction of upfront cost.
Cons		
↘ Leasing company gets most of the financial benefits – rebates, federal and state tax credits, incentives, and SRECs belong to the leasing company. ↘ Prices may increase yearly, but usually less than utility. ↘ If the homeowner sells the home before the end of the lease/PPA term and opts not to purchase the system, the seller must make sure the buyer is credit-worthy and willing to assume the solar lease/PPA.		↘ Large initial outlay similar to purchasing the system.

Source: Adapted from "Types of Solar Leases and PPAs: $0-Down, Prepaid, and Custom Down Payment." www.energysage.com/solar/financing/types-of-solar-leases-and-ppas.

Living Sustainability as a Real Estate Professional

Ultimately, solar and residential solar systems are going to become increasingly prevalent in the coming years, which presents a value opportunity for real estate professionals. According to the NAR's 2021 REALTORS® and Sustainability Report, the top three items listed for market issues and considerations had to do with energy and solar upgrades. Now is the time to explore this sector more deeply, stay current with your market's pricing and incentives, and help guide your clients through this evolving energy landscape.

A critical aspect of being a green-minded agent is to also live green. Modeling sustainability in the office is a great way to educate clients by example. Installing solar panels on the roof of the office is a high-profile, cost-effective, and environmentally-friendly way to do just that.

Other client-facing ways to model sustainability are to replace all incandescent bulbs in the office with LEDs and to invest in an electric car.[19] See some of the initiatives one brokerage implemented to become more green.

19 Christoffer, Erica. (2020). "Lower Your Energy Bill." *REALTOR® Magazine.* https://magazine.realtor/for-brokers/feature/article/2020/08/lower-your-energy-bills

High Performance Equals Cost Savings

From Bob Hart, Association Executive, Santa Barbara Association of REALTORS®

The year that I was hired as the Association Executive of the Santa Barbara Association of REALTORS®, I was reviewing the water bill for our brokerage and looking out of my window at the lush, green, lawn in front of our building. A few realizations hit me:

1. We had a grass in front of our building that was being watered three times a week and was never used as a play area or for any use other than aesthetics.
2. We were paying a lot of money for water.
3. We were incurring significant costs to maintain the grass which included running a gasoline lawn mower weekly.
4. Our area was suffering from a significant lack of rainfall for the last few years, and our reservoirs were getting dangerously low (6 months later a drought was declared by state officials).

I decided we should design our front area as a community demonstration garden to help encourage homeowners from throughout our community to take similar action. I devised a plan to remove the existing lawn and replace it with native, drought-tolerant plantings.

I found a local environmental contractor who designed a beautiful replacement for our existing landscape that met all of our criteria. We were even able to incorporate an orange tree that provides fruit for our staff.

While we were designing the project, we discovered that the basement flooding problem that we had been having for years could be solved by repositioning the downspouts and diverting the water away from the building. We, therefore, incorporated a retention basin/bioswale into the front landscape plan. The retention basin allows water to be absorbed back into the ground, thus recharging ground water rather than running down the street as urban runoff and going to the ocean.

The project was very well received by the community and generated very good press for the Association, especially when the City of Santa Barbara awarded the Santa Barbara Association of REALTORS® their Water Hero Award for that year.

Our brokerage found ways to be green in other ways too:

- Although we had to water our landscape in the initial year to get it established, we are now able to turn the drip system off all year and maintain a well landscaped front area. Our water usage dropped from 15 to 20 hundred cubic feet (HCF) per month to 4 HCF, resulting in a significant savings of our members' dues dollars.
- The lighting in our building was a combination of incandescent can lights and fluorescent tube fixtures. We eventually were able to replace all of these with LED lights.
- By recycling more, we were able to replace our dumpster with one trash can, two recycling cans, and one green waste can. Our trash bill dropped significantly while we diverted about 75% of our waste to recycling rather than landfill.
- The next big resource efficiency matter was adding solar power to the building. Our investment in a solar PV system could be fully paid for in about 12 years from the savings on our electric bill. We made the required roof replacement and installed the solar panels. Our payback period is 6 2/3 years. Prior to solar, our electric bill was $10,000 per year. It now averages only $1,500/yr. During the 2020 COVID year, the utility had to write us a check! Soon, after our system is fully paid, our solar panels will be making us money every month. How can any business not make this investment?

Transforming into a green brokerage didn't happen overnight; however, every project not only helped the environment but also bolstered our credibility on sustainable living in the community and also saved our members money.

Power off the Grid: Wind Power

Today's new generation of small wind turbines adapt an old technology for a new use – generating electricity. Although more prevalent on a utility-wide scale, residential systems are a viable choice for generation of electricity off the grid, especially for rural and remote locations.

How Wind Turbines Work

When the wind makes the turbine blades turn, the rotor captures the resulting kinetic energy. The rotary motion drives the generator, which uses electromagnetism to produce electricity. An internal gearbox increases the rotational speed between the rotor and the generator. A yaw controller moves the rotor to align with wind direction. The current travels through electrical wires, which run from the turbine to the inverter, which converts the direct current into alternating current allowing for household use, battery storage, or selling back to the grid.

Local Regulations

Many communities have restrictive codes or regulations concerning structures that might mar the aesthetic appeal of the community, cause a noise nuisance, or exceed a height limit. As concern for energy efficiency grows, communities may be more willing to make provisions in the regulations for renewable energy systems. A homeowner should research local regulations before launching an installation. Discussing installation plans with neighbors may be the most diplomatic way to avoid their future objections.

Certified Products and Installers

- **The Small Wind Certification Council**
  Certifies small wind turbine products that meet or exceed the requirements of the American Wind Energy Association (AWEA) Small Wind Turbine Performance and Safety Standard. Find certified products information at www.smallwindcertification.org.

- **The North American Board of Certified Energy Professionals**
  Certifies small wind turbine installers and salespeople. A searchable directory of certified professionals is available at https://directories.nabcep.org/?_certtypes=associate.

Information Sources

- **NREL Wind Resource Assessment**
  https://www.nrel.gov/docs/legosti/fy97/22223.pdf
- **Small Wind Certification Council**
  www.smallwindcertification.org
- **WINDExchange**
  https://www.energy.gov/eere/wind/windexchange
- **American Wind Energy Association**
  www.awea.org

Geothermal Heating and Cooling

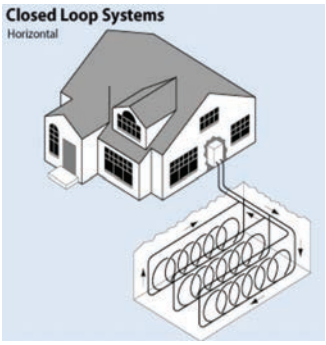
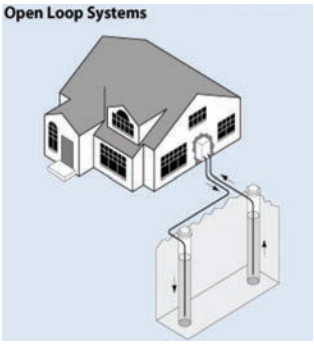
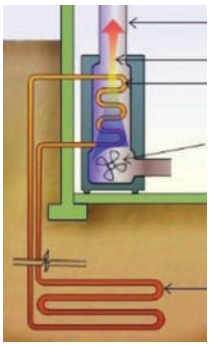
We briefly discussed geothermal energy in Module 4 when discussing water heaters, but it's a renewable energy that's becoming increasingly popular more broadly. Geothermal heating and cooling using ground-source heat pumps offers one of the greatest savings in energy efficiency.

While many parts of the country experience seasonal temperature extremes, a few feet below the earth's surface the ground maintains a constant temperature between 45 and 72 degrees. Geothermal heating and cooling take advantage of this by exchanging heat with the earth through a ground-source heat exchanger or pump. A ground-source heat pump is a two-way air conditioner that heats or cools by exchanging heat with the ground through buried loops. If so equipped, it also can supply the house with hot water.

The largest systems component consists of a series of heat-conducting pipes, called loops, buried in the ground below the frost line (see the following figure). The loops circulate water or antifreeze that absorbs or relinquishes heat, depending on whether heating or cooling is needed. Geothermal systems cost more upfront, but the potential energy savings far exceed any other type of system. The most efficient fuel-burning heater can reach efficiencies around 95%, but a geothermal heat pump can move up to four units of heat for every unit of electricity needed to power the system, resulting in a practical equivalence of more than 400% efficiency.

Geothermal is a deep-green option for home heating and cooling. Once installed, it represents large savings over even the most efficient HVAC systems. There are no dangers from carbon monoxide or other fumes because there are no combustibles. Because the system lies underground, it is very durable and low maintenance. It uses the existing ductwork while eliminating the noise and bulk of an outside central air conditioner unit.

Figure 5.4: Geothermal Heating and Cooling Visual

Closed Loop System	Open Loop System
	
Ground Source Heat Pump	**Ground Source Heat Pump**
	
Geothermal System Underground Pipes	**Excavation for Underground Loops**
	

Source: Reprinted with permission of the California Energy Commission Consumer Energy Commission, www.consumerenergycenter.org.

Practitioner Perspective

Annette Bubak
Tesla (formerly SolarCity), Las Vegas, Nevada
abubak@aol.com

How did you develop your interest in green homes and solar power?

After decades of focusing on energy-efficient real estate, I got interested in renewables. Tesla then offered me a position, and it was a natural next step for me.

Describe the lease arrangement for installing solar power capacity for a home and how the system pays for itself?

Homeowners lease the system and use the money they'd allocate for utility bills to pay for clean energy at a lower rate.

And this removes upfront costs that had been a barrier for homeowners?

Yes, solar leases have been a breakthrough and have made solar power obtainable for more homeowners. There are zero out-of-pocket costs.

Is the interest in solar-powered homes growing?

It's booming. People want clean energy and a way to manage their utility costs. It's a great item to highlight in the MLS.

What happens if a home is sold, and new owners aren't interested in solar power?

The system can be removed. But solar actually attracts buyers and many are actively seeking it. It's also easy to transfer lease agreements to new homeowners.

What motivates homeowners to adopt solar?

You're locking in rates for 20 years, and you know what your bill will be every month, making budgeting easier. There are economic and environmental benefits, along with the freedom of making your own choices.

Reflection:
Deep-Green Projects and Your Business

How would you go about prioritizing a big budget project with your client? Would you look at the time it would take for them to recoup the cost of the project? Would you emphasize the ROI in your market for large scale projects? Would your client's lifestyle and ability to maintain a larger, resource-efficient system play a role in their decision?

Provide a brief overview of how you would discuss big budget projects with your future clients.

MODULE 6:
New Custom Green Construction

Learning Objectives

At the conclusion of this module, you will be able to:

- Help clients evaluate the pros and cons of purchasing a new home with green features versus purchasing and upgrading an existing home.
- Describe the design and construction phases as well as components of new and custom high-performance homes.
- Observe the market impact of new, high-performance production homes.

Throughout the preceding modules, we've looked at the features and options for high-performance homes. Let's take a moment to revisit the benefits that resonate with green-minded clients:

- Control and safety
- Comfort
- Cost savings
- Health
- Efficiency and sustainability
- Trend setting

A new home, especially a custom home, provides the opportunity to make a myriad of choices to achieve all the benefits of a high-performance home – from high-efficiency systems to innovative materials and more. The real estate professional can play a valuable role in guiding a client to authoritative sources of information and helping put together the design-and-build team who will transform the client's vision of a new, high-performance home into a reality.

The People and Roles

The Builders

All of the New York Stock Exchange-listed production and custom home builders are ENERGY STAR® partners. In addition, some of the major builders brand their high-performance home designs and construction methods. For example:

- NV Homes BuiltSmart
- K. Hovnanian® High Performance Homes
- D.R. Horton Smart Home®
- Lennar® Everything's Included® Home
- Pulte Energy Advantage® Home

Energy efficiency is a main selling point for production home builders. Do a search of any of the brand-name production builders and "energy efficiency" to see how these companies compete to offer high-performance homes.

The Green Design Team

A successful design-and-build process includes everyone involved in the planning, design, financing, and construction of the home, including the homeowner. Who should be part of the team?

- Architect
- Developer
- Contactor and subcontractors
- Builders
- Lender
- Inspectors
- Appraiser
- Interior designer and decorator
- Lighting designer
- Landscaper
- Real estate professionals
- Certification rater (if qualifying for a certification)

It works best when all team members understand the goals, issues, and concerns of all the other stakeholders, as well as the interrelationships of systems, and they collaborate throughout all phases of the project.

The Real Estate Professional's Role

The process and transaction of new-home construction starts and ends with the builder. So, if your client will be working closely with a builder for a spec or custom home, is there a role for you, the real estate professional, and are there opportunities for you to add value as a buyer's representative? The answer is yes.

Whether the buyer is interested in a resource-efficient, high-performance spec home or a custom-designed home, the purchase is basically a new-home transaction. In addition to helping the buyer learn about and evaluate aspects of the high-performance home, the real estate professional can play a valuable role in guiding a buyer through the new-home transaction process.

THE REAL ESTATE PROFESSIONAL CAN:

- Educate the buyer on developments, builders, subdivisions, construction, and the new-home construction or purchase processes
- Shape realistic expectations of markets and properties
- Help the buyer define needs and preferences
- Schedule visits to model homes and appointments with sales representatives
- Accompany buyers on initial visits to model homes and register them as clients
- Observe registration and showing policies
- Help buyer evaluate houses, lots, subdivisions, and locations
- Show enthusiasm for the builder's product
- Prompt buyers to ask important questions
- Focus on advising the buyer as opposed to "getting the best deal"
- Advise on the cost-benefit and resale value of resource-efficient upgrades and options
- Help the buyer negotiate various terms
- Review and explain transaction documents
- Monitor construction progress

- Create and maintain a paper trail
- Remind the buyer to schedule inspections and certification reviews at critical construction phases and provide a list of inspectors and raters
- Accompany the buyer on the final walk-through and call attention to items for the builder's punch list of tasks for completion or correction
- Accompany the buyer to the closing
- Remind the buyer to do a follow-up walk-through before the warranty expires and inform the builder of needed patch ups

Four Phases of New Home Design

The best opportunities for incorporating energy-efficient strategies and systems into home construction happen in the design phases. Best-practice home design happens in four phases:

1. Site selection
2. Design
3. Materials choice
4. Interior systems

Site Selection

What distinguishes green home design? While traditional home construction starts by designing the house and dropping it into the site, construction of a resource-efficient home starts with a thoughtful all-season assessment of the site. The goal is to create a structure that integrates into the environment and takes advantage of aspects such as sunlight and breezes.

Considerations include:

- Location convenience and proximity to work, shopping, services, schools, public transportation, and walkability
- Previous use of the site; brownfield sites may require environmental cleanups such as soil remediation
- Wind patterns for natural ventilation and extra insulation placement

- Natural drainage
- Orientation of the home to the natural terrain and scenic views
- Protection of plant and wildlife habitats and ecosystems

Home Design

After working through the choices and issues involved in site selection, the next step in the design process is developing the plans for the home. Buyers should certainly have the option to build as large of or small of a home as the site, zoning, and building codes allow. But the watchwords for green building are functional and compact.

Functional and compact homes cost less to build and maintain, use less material to construct, and feel cozy and sheltering. Overly large homes contribute to sprawl, require more materials, and consume more energy – even if they are energy efficient.

What is the right size? Some designers recommend making a detailed list of all the activities the family will do inside, from everyday activities to hobbies. Is there a need for an artist's studio, home office, pantry space, exercise room, children's play area, guest accommodations, entertainment space, storage for bikes, and/or electric vehicle charging? Comparing the list with the home design will show if the planned spaces can accommodate every need and activity.

Building Materials

It seems like a green choice exists for every type of building material. Recycled, reclaimed, and repurposed materials turn up in some unexpected ways:

- Reclaimed sawdust in composite floorings
- Rapid-growth bamboo in decorative veneers
- Shredded paper and cardboard in waterproof building sheathing
- Recycled glass in countertops and flooring
- Crushed seashells in decorative tiles

Another issue in relation to building materials is the total energy expended – the embodied energy – in production, transportation, maintenance, and disposal. The lower the total embodied energy, the "greener" the product. Embodied energy works in conjunction with operational energy, or the energy required to keep a home running once constructed, such as lighting, heating, and cooling. Your role as a green-minded real estate professional is to educate your clients to consider both energy components during this phase to make the most environmentally friendly and sustainable decision.

The Specs

The outcome of the design process is a set of specifications (the specs) – from quality of cabinets, to flooring and carpets, to the type of wiring and plumbing – for constructing the home. This is the stage at which green-minded buyers should make the choices for resource-efficient homes.

The specs are the detailed instructions that the builder and subcontractors use for bidding out work, ordering materials, establishing pricing, and constructing the home. Obviously, developing specs for full-custom homes can take much longer than for a spec home. The buyer must sign off on the specs and pricing before the builder can start construction.

It is a common practice, even with production builders, to give buyers an opportunity to make choices such as floor and wall finishes, countertops, appliances, and similar details. In fact, purchase of a new-production home often includes a free design consultation to help the buyer make choices. Although the consultation may be free, the design center staff usually works on commission and may try to upsell features.

By providing information on the resale value of property features, the real estate agent can help a buyer-client make value-adding choices and accept that what's of value to the buyer may not be reflected in the appraisal.

When the design choices and specifications have the sign-off from the client, the builder's team is ready to swing into action, and the first step is preparing the ground to erect the building envelope – the bones and skin of the home.

The Building Envelope

The building envelope separates the indoor and outdoor environments and divides conditioned – heated and cooled – from unconditioned space. The components are the below-grade systems (foundation walls, floor slab, and basement or crawlspace), exterior walls, windows and doors, and the roof. The building envelope is important because:

- Construction of the building envelope requires a large quantity of materials – more than any other part of the building.
- A tightly-sealed building envelope is crucial to energy efficiency.

A critical factor throughout construction of the envelope is the home's insulation and ventilation. Craig Foley, a high-performance home expert, recommends insulation with R-values that are optimal for each construction level. He recommends, "using R10 under the slat, R20 in below-grade walls, R40 in above-grade walls, and R60 in top of the building envelope." [20]

Below Grade

Building foundations and the basement, crawlspace, or floor slab comprise the below-grade portion of a home's building envelope. The below-grade envelope provides structural support for the framing and exterior walls. Construction challenges include:

- Waterproofing, moisture control, and drainage
- Controlling air infiltration at connection points between the foundation and exterior walls and façade
- Insulation for the main floor above

20 Rautenberg, Gina. (2021). "Building a Green Home? Focus on Reducing Energy First." *REALTOR® Magazine*.

Framing and Walls

Moving up from the below-grade portion of the building envelope, the next element involves construction of the frame and exterior walls. Let's look at some innovations in framing and exterior walls that employ sustainable methods and materials.

- **Insulated concrete forms (ICFs)**
  Insulated concrete forms (ICFs) look like concrete blocks, but the composition and thermal properties are quite green. ICFs combine cement with polystyrene foam and sometimes bonded wood fiber. The forms can be used in both structural and below-grade construction. ICF construction yields a low-waste building shell with high insulation and superior wind, seismic, and exterior noise resistance.

- **Structural insulated panels (SIPs)**
  Structural insulated panels (SIPs) consist of a thick layer of foam sandwiched between two layers of oriented strand board (OSB). Pressure laminating the components produces an extremely strong material for structural framing, insulation, and exterior sheathing. Integrating SIPs into framing reduces the sawn lumber requirements. Because SIP construction has fewer seams for air infiltration, it creates a very air-tight, energy-efficient building envelope.

- **Prefab modular construction**
  Modular construction offers high levels of quality assurance and systemization, reduces the amount of material required, and produces a durable, energy-efficient building envelope. The entire house shell is built with automated precision in a weather-protected factory environment instead of outside where it would be exposed to the elements. Delivery of complete wall panels to the job site reduces both construction time and cost.

ADVANCED FRAMING

Advanced framing, sometimes called optimum value engineering (OVE), reduces the amount of materials and increases space for insulation, thus boosting the overall R-value of the structure. Advanced framing uses techniques such as wider spacing between studs, single top plates, and precise cuts to reduce materials and waste. These methods must, of course, comply with local building codes.

Windows and Doors

The selection of windows and doors is an integral part of the building envelope. Construction of a new home provides the opportunity to specify energy-efficient windows and doors, as discussed in the preceding module, as well as to plan daylighting strategies that maximize natural illumination.

Roofs

Insulation in attics and under roofs presents the best opportunity for preventing heat loss. But there are other options that can be incorporated into the exterior structure of the roof. Cool roofs and green roofs provide a multitude of sustainable benefits, from reducing storm water runoff to lowering the impact of solar heat gain and reducing the urban heat island effect.

GREEN ROOFS

A rooftop expanse of soil and vegetation reduces both heating and cooling loads and absorbs carbon dioxide, air pollution, and rainfall runoff.

Green roofs come in two types – intensive and extensive:

- **Intensive green roofs**
  Similar to traditional roof gardens, involve deep soil to grow large plants and require irrigation and regular maintenance.
- **Extensive green roofs**
  With a thin layer of soil for shallow-root plantings, are self-sustaining and require minimum maintenance.

Before you build:

1. Check building codes
2. Test the structural capacity for extra weight
3. Plan access to the roof
4. Design irrigation and drainage systems
5. Select plants and growing media

Learn more about green roof technology at www.greenroofs.org.

Figure 6.1: Example of a Green Roof

Moving From the Building Envelope to Interior Construction

After the exterior walls are insulated, the builder installs the exterior siding or masonry as well as exterior doors. Then the focus moves to the interior of the home with installation of drywall, wiring, plumbing, mechanicals, cabinetry, floor and wall coverings, counters, and interior trim.

One important aspect of new green home construction is to check the insulation BEFORE the drywall goes up. Why? Because once the dry wall goes up, there's really no way of knowing how well the building envelope is actually insulated. Inspecting the insulation before drywall construction preempts insulation problems – and subsequent energy inefficiencies – before they arise. Not only is this smart in terms of ensuring the energy and resource efficiency of the green home, it is also often required as part of the green home certification process.

Finally, after the interior construction is complete, landscaping concludes the process. As we've learned throughout the course, every construction phase offers opportunities for resource-efficient, green choices.

Working on Green Projects

It's not enough to be the agent on a new green construction. You need to proactively collaborate and foster relationships with all stakeholders in the process. Make sure your clients are working through green lenders who are more educated in the value-adds of green, high-performance design elements. Ensure those lenders are using green appraisers who also understand how to evaluate and assess sustainable efficiencies. Green builders have a stake in this as well, so if you're lacking contacts for green lenders, appraisers, etc., they could be a good resource for you. You also want to highlight green features in the MLS, which we will discuss later in the course. The bottom line is that not only is the project green – the entire process must be as well. For more on this, check out the following link to getting green appraisals right by the Green REsource council at https://green.realtor/green-resources/guide-appraisals.

You can also continue to pursue your knowledge of building science at the Building Performance Institute, which offers a certification in building science principles. See information at http://www.bpi.org/building-science-principles.

Top Green Construction Trends

- **Use of bamboo material**
  Bamboo is strong, resilient, sustainable, and cost-effective, which is why so many green builders are increasingly turning to it.

- **Smaller home**
  As we mentioned earlier, compact and functional have been watchwords for a long time in sustainable circles. Looks like they're starting to catch on.

- **Greywater use**
  Greywater recycling systems have been increasingly used in retrofitting projects for years. But it seems that new construction builds are turning to this trend as well. With water conservation an ever-important part of a sustainable future, multi-use water systems will be essential in that effort.

- **Recycled material**
  As we discussed earlier, eco-friendly homes increasingly incorporate cabinets, counters, floors, and many other elements of the home comprised of post-consumer recycled content.

- **Solar and ENERGY STAR® appliances**
  The use of solar energy continues to become more prevalent in green construction, as are the use of ENERGY STAR®-rated appliances.

Building the Certified Home

Building a new home is the best opportunity for qualifying a home for a certification such as LEED or ENERGY STAR®. The resource-efficient and green choices that qualify a home for a certification should be specified on the architect's drawing table instead of undertaking expensive and disruptive retrofits to an existing home.

The big question for the future homeowner is whether the extra effort and expense of qualifying the home for a certification is worth it. Qualifying for a certification will add to the expense and scheduling of certification raters and documentation during construction. It's important to remember that a new home can include the features that make it as resource efficient, durable, and "green" as a certified home without tackling the certification process.

Working with clients who are interested in building a certified home, particularly a custom home, provides real estate professionals with opportunities to demonstrate the value they can add. You can start by helping clients evaluate the advantages of a home certification, identify priorities, and discuss what they hope to accomplish by building a certified home. For example, certified homes hold their value even in a down market. Furthermore, a certification provides objective third-party verification of the home's resource efficiency. If your clients decide that building a certified home is the right choice, you can help them connect with the professionals they will need on the design, build, and certification team.

State and Regional Certifications

Across the country, state or regional certifications may be as meaningful and significant in the marketplace as national programs. In some cases, such as with some local home builder associations, the certification goes by a local name but uses evaluation standards and technical guidance of a national association. For example:

- **The EarthCraft House Certification**
  A widely recognized certification throughout southeastern states. It was developed by the Greater Atlanta Home Builders Association and Southface, a green building institute, with support from government and industry leaders.

- **The California Green Building Standards Code (CALGreen)**
  A code with mandatory requirements for new residential and nonresidential buildings throughout the state. The CALGreen code seeks to reduce construction waste, make buildings more efficient in the use of materials and energy, and reduce environmental impact during and after construction.

National Home Certifications

Here we outline three national home certification programs. We also discuss a new home certification program, Pearl, in the Hot Topics module.

	ENERGY STAR®	Leadership in Energy & Environmental Design (LEED)	National Green Building Standard Green Certification
Awarded by	U.S. Environment Protection Agency (EPA) and Department of Energy (DOE)	U.S. Green Building Council (USGBC)	Home Innovation Research Labs, a subsidiary of the National Association of Home Builders (NAHB)
# of Homes	2.2 million homes	500,000 homes (including multifamily)	315,000 homes
Year introduced	1995	2007 for homes	2005
Award levels	N/A	Four levels: Certified, Silver, Gold, and Platinum	Four levels: Bronze, Silver, Gold, and Emerald
Required inspections and tests, key areas of inspection	↘ Thermal enclosure ↘ HVAC System ↘ Energy-efficient lighting & appliances ↘ Water management	↘ Envelope leakage ↘ Duct leakage ↘ HVAC refrigerant charge ↘ Outdoor air flow ↘ Local exhaust ↘ Supply air flow	↘ Site design ↘ Resource efficiency ↘ Water efficiency ↘ Energy efficiency ↘ Indoor environmental quality ↘ Building operation & maintenance
Raters	Certification requires Professional Engineer (PE) or Registered Architect (RA)	Certification requires USGBC-qualified Green Raters	Certification requires Accredited Reviewers
Cost to apply	No application fee for EPA or DOE, but separate fees for raters and inspectors	$375 registration and certification for single-family homes, plus additional fees for raters	$100–$200 certification fee for single-family homes, plus additional fees for reviewers
More info	www.energystar.gov	www.USGBC.org/homes	www.homeinnovation.com/green

Practitioner Perspective

Christopher A. Tenggren
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Describe your work with homebuilders.

I've worked with several homebuilders in marketing green homes, including an Elgin, Illinois, home that received LEED Platinum certification.

What's the role of real estate professionals in green home development and construction?

We can work with builders before projects start to identify viable lots and locations, talk to them about absorption rates, and whether their product would be a good fit in a particular market area.

How have you become your market's green "go-to" real estate professional?

I've incorporated my green knowledge into my business and have built a reputation among consumers and green-focused builders as a green expert.

What advice would you give others wanting to develop a green niche?

You don't need to revamp your entire business model to incorporate green. It's more of a layering process. Like any good salesperson, you assess clients' needs. Green is just part of that process.

How can they develop contacts with local builders and other green-minded professionals?

Get the NAR Green Designation and use its benefits. USGBC local chapters are an amazing place to meet, mix, and learn.

What has earning NAR's Green Designation meant to your business?

The knowledge has helped me establish credentials and earn business with local builders, who struggle to find practitioners who understand green design concepts and can market their homes effectively.

Reflection:
New Green Construction and Your Business

Which of the four phases of home design are you most concerned about for new construction homes in your market area?

1. Site selection
2. Design
3. Materials choice
4. Interior systems

What steps will you take to build confidence and knowledge about the four phases listed above? How will these steps positively affect your relationship with future clients?

MODULE 7:
Hot Topics: High-Performance Trends

Learning Objectives

At the conclusion of this module, you will be able to

- Summarize the latest trends in high-performance homes.
- Discuss the benefits of innovative high-performance features.
- Apply your knowledge about the latest trends into your green business.

Getting to Zero

As green technologies continue to evolve – becoming less expensive, more efficient, and more accessible – the possibility of vastly reducing our carbon footprint at scale, or even becoming carbon positive, becomes more of a reality. As we have emphasized throughout this course, green isn't an all-or-nothing condition; it's a journey. There are different levels of performance in our journey to zero. As real estate agents, we need to be mindful of this, both in our personal and professional lives.

High-performance homes exceed the baseline standards but continue to increase in performance, as they initially reduce reliance on fossil fuels and eventually are powered entirely by renewable energy.

Defining the Net Zero Home

The concept of a net zero energy home is simply one that produces – by renewable energy – as much electricity as it uses. Unless disconnected completely from the power grid, net zero energy homes still have utility bills. For example, if a home also uses natural gas, a true net zero energy home would have to produce enough electricity to offset the cost of gas in order to achieve a complete bottom-line "wash." Plus, the utility company must offer dollar-for-dollar net metering.

Smart home technologies, such as those discussed in this course, help the homeowner track and manage the power generation and consumption.

Components to Achieve Net Zero Energy

Although the popular idea of a net zero energy home envisions a pile of solar panels on the rooftop, the concept is much broader. It involves a balance of conservation, energy efficiency, and power generation along with the habits and usage patterns of the home's occupants, which can offset savings from efficiencies and home-generated power.

↘ Conservation

- Optimal insulation
- Good usage habits: turning off lights, electronics, and appliances when not in use
- Adjusting climate controls when away from home

↘ Energy Efficiency

- Right-sized high-efficiency heating, cooling, and water heating
- Taking advantage of natural ventilation, lighting, and solar heat gain

↘ Power Generation

- Solar PV
- Wind power
- Geothermal
- Back-up connection to power grid, storage batteries, or generator

Net Metering

Net metering is the basic foundation for all residential solar. It's the method of accounting for when a home system generates more electricity than it can use or store. In simplest terms, the meter spins backward, subtracting costs from the utility bill as the excess electricity feeds back to the power grid. Simple net metering provides a dollar-for-dollar credit for excess electricity sent to the grid. Energy Sage provides a simple tutorial for how this process works, which will be helpful when discussing solar on both the buyer and seller side: www.energysage.com/solar/solar-101/net-metering.

Zero Energy Ready Homes

In simplest terms, a Zero Energy Ready Home is constructed to the same standards as a net zero home, but without the solar panels – the home is equipped for solar or other renewable energy sources to be added in the future. DOE Zero Energy Ready Homes (ZERH) must be verified by a qualified third party and must rate at least 40%–50% more efficient than a typical new home. This type of efficiency typically scores in the low- to mid-50s on the HERS®. To qualify as a DOE Zero Energy Ready Home, all homes permitted as of June 2019 must meet all DOE ZERH National Requirements. All Zero Energy Ready Homes must first meet EPA's ENERGY STAR® & Indoor airPLUS® certification before they can qualify for the label.

Zeroing in on the Future

The market for Zero Energy Ready Homes and net zero energy homes is growing, fast, with whole communities being developed at this high level of performance. Walnut Farm in Virginia is the first zero energy ready new home community in the state.[21] A developer in the greater Denver, Colorado, area is going a step further, with its Z.E.N. home design – or Zero Energy Now. Adhering to the DOE ZERH standards, the ZEN home strives to achieve an even higher level of performance with a HERS® score of 15 and superior indoor air quality – at an affordable price point.[22]

21 Swenson, Ben. (2021). "This Is How Homes Should Be Built": Norge-Area's Walnut Farm Is State's First Zero Energy Ready New Home Community." *Virginia Gazette*. https://www.dailypress.com/virginiagazette/va-vg-walnut-farms-0605-20210607-u76i63hvejc2hfumeeod43ctfi-story.html

22 Binsacca, Ben. (2020). "Housing's Now: The Ultimate Z.E.N. Home." *ProBuilder*. https://www.probuilder.com/housing-now-ultimate-zen-home

Construction of over 20,000 new homes currently underway in Valencia, California, by a number of different contractors will, when completed, be the largest net-zero community in the nation.[23]

Clearly momentum for net zero homes is building across the United States. Programs nationwide to promote Zero Energy Ready and zero energy homes are also increasing in number, which will accelerate the expansion of this trend.[24] Smart real estate professionals will be at the forefront of this shift in homebuilding. Check for programs that might serve as incentives in your area.

Passive House

Another green, high-performance home design that is starting to become more popular is the passive house. The design is currently popular in Europe and still fairly rare in the United States, but the green principles behind the passive house are likely to catch on in the years to come.

The main distinction of this design is its overall energy efficiency. The precise reduction in energy is difficult to measure due to individual designs, construction materials, geography, etc. But estimates generally range from 50% to some claiming as much as 90%; it's also important to note that the energy savings are typically more for heating than for cooling.

The principles are as follows:[25]

- Continuous insulation throughout entire building envelope resulting in an airtight seal
- Implementation of high-performance windows and doors
- An energy recovery ventilation system is employed for heating and cooling

As we move forward towards a more sustainable future, the passive house design presents yet another way to get us closer to zero.

23 Olick, Diana. (2021). "This New Community Will Have 21,000 Homes – and Net Zero Carbon Emissions, Developer Says." CNBC. https://www.cnbc.com/2021/06/09/massive-new-housing-community-will-have-no-carbon-footprint-developer-says.html

24 Nadal, Steven. (2020). "Programs to Promote Zero-Energy New Homes and Buildings." American Council for an Energy-Efficient Economy. https://www.aceee.org/sites/default/files/pdfs/zeb_topic_brief_final_9-29-20.pdf

25 "Passive House Principles." (2021). PHIUS. https://www.phius.org/what-is-passive-building/passive-house-principles

Electrification – Of Everything

One of the biggest movements to reduce greenhouse gas emissions and reach a sustainable, net zero existence is the shift toward home electrification – essentially creating "all-electric homes." In simplest terms, electrification is the replacement of fossil-fuel powered appliances with electric appliances. This all-electric home means electricity is used for heating, cooling, and cooking. Some states are implementing electrification as part of their decarbonization plans, and nearly 60% of all new home constructions are being built all electric.[26] Here are a few key facts that are behind this movement:

- **Creates healthier indoor environments:**
  Most people understand that burning fossil fuels harms outdoor environments, but not many understand the way it pollutes indoor environments. Gas appliances, such as gas ovens and stove tops, emit many air pollutants. Concentrations of nitrogen dioxide, for example, are 50% to 400% higher in homes with gas stoves than electric stoves.

- **Cheaper than using fossil fuel:**
  New construction of all-electric, single-family homes is cheaper than comparable homes that rely on fossil-fuel apparatus as well. The difference comes in the streamlining of all-electric power sourcing, which is typically derived from a single heat pump system for heating and cooling and a heat pump water heater. The savings also come in the form of usage as well, in that heat pumps are more efficient than gas appliances.[27]

- **Greater Social Equity:**
  It's largely understood today that environmental issues disproportionately affect historically underserved communities and communities of color.[28] Electrification of these communities, as well as electrification of homes more broadly, will reduce this inequity and the harmful health consequences that come with it.

26 Lee, Mina and Billimoria, Sherri. (2021). "Eight Benefits of Building Electrification for Households, Communities, and Climate." RMI. https://rmi.org/eight-benefits-of-building-electrification-for-households-communities-and-climate/

27 McKenna, Claire; Shah, Amar; Louis-Prescott, Leah. (2020). "The New Economics of Electrifying Buildings." RMI. https://rmi.org/insight/the-new-economics-of-electrifying-buildings

28 Dao, Emily. (2020). "Fighting Climate Change Isn't Just an Environmental Issue – It's a Social Justice Issue Too." EcoWatch. https://www.ecowatch.com/environment-social-justice-2646167147.html

Electric Heat Pumps

We discussed the benefits of electric heat pumps earlier in this course, but it's important to mention how vital these are to the electrification movement in terms of retrofitting existing homes. Gas furnaces have a relatively long lifespan, typically 10 to 20 years, which means that every time a gas furnace is replaced with another gas furnace, we're losing ground on achieving decarbonization goals.[29]

Upfront costs of replacing an existing gas furnace with a heat pump system, however, could be thousands of dollars more. The high efficiency of heat pumps will offset some of these costs over time, but to date the sticker price for installation has been an inhibiting factor for widespread retrofitting. Part of consumer hesitancy is lack of clarity on the overall costs through the life of a unit in comparison to fossil-fuel furnaces. Oil furnaces cost more to operate than gas furnaces, for example, and so the breakeven point for replacing an oil furnace with a heat pump replacement could by some estimates be as quick as 5 years.[30] Geothermal heat pumps use even less electricity than air-sourced pumps, generating savings even more quickly.

The green real estate professional can provide a great service to clients and customers by pricing out these cost comparisons at install and throughout the life of the appliance using local utility rates, which can differ significantly depending on what part of the country you are in. Included in this report should also be the benefits that a replacement would have for the environment.

29 Higgins, Trevor et al. (2021). "To Decarbonize Households, America Needs Incentives for Electric Appliances." Center for American Progress. https://www.americanprogress.org/issues/green/reports/2021/06/03/500084/decarbonize-households-america-needs-incentives-electric-appliances/

30 Blunt, Katherine. (2021). "Should You Replace Your Gas Furnace With a Heat Pump?" *The Wall Street Journal*. https://www.wsj.com/articles/gas-furnace-heat-pump-11620846653

Induction Cooking Systems

Induction stovetops are the latest trend in smart home kitchen design. They are powered by electricity, not gas. When turned on, an alternating current on the stovetop creates an electromagnetic field that then interacts with and heats up the molecules in the pot or pan. Induction cooking is an energy efficient method because, unlike cooking with conventional electric stovetops, it heats rapidly and cools just as rapidly when the current is turned off.

Induction cooking tops won the ENERGY STAR® Emerging Technology Award for 2021–2022. An induction system operates at 85% efficiency, which is nearly triple that of gas. ENERGY STAR® estimates that if all cooking tops sold in the United States in 2021 were replaced with induction technology, it would result in $125 million in cost savings and over 1,000 GWh in energy savings.

Some notable differences with induction cooking are that the stovetop won't glow red as normal electric stovetops do, and the glass surface doesn't get hot because the electromagnetic field heats cookware internally, not externally as most of us are accustomed to. This results in not only greater energy efficiency for the overall home, but also greater safety, especially for home buyers with young children. When discussing with clients and customers, be sure to inform them that aluminum cookware won't work with induction cooking; they will need to use stainless steel or iron cookware.

Electric Cars

Not only is electrification taking hold inside the home, it's also transforming how we get to and from home as well. Electric vehicles (EVs) continue to grow in popularity. As of 2020, nearly 2 million EVs were registered in the United States – that's a three-fold increase from 2016.[31] Nearly 40% of Americans say they are likely to consider purchasing an EV the next time they are shopping for a new car.[32] A sustainable future will most certainly be seeing a shift to electric cars.

But there has been some confusion and controversy surrounding just how green EVs are. So are electric cars greener? The short answer is yes – EVs are cleaner, greener alternatives to conventional combustion engine cars running on fossil fuels. And the difference between the two will only increase as the technology continues to advance.

The confusion surrounding the greenness of EVs compared to gasoline-powered cars is primarily due to two factors: how the overall electric grid in the U.S. operates, and the energy needed to manufacture the battery that supplies power for the EV. Let's take a quick look at both, so you can help clarify this issue for clients and customers.

EVs are, obviously, powered by electricity, and currently the electric grids in the United States are powered mostly by fossil fuels. This mitigates some of the benefits of EVs right now, but as the grid is powered more and more by renewable energy, or decarbonized, EVs will become even more eco-friendly than they already are. Similarly, the energy needed to create the battery for the EV has some studies showing that manufacturing an EV generates more emissions than a conventional car. But those higher emissions are offset by the superior efficiency of an EV over time.[33]

31 DeSilver, Drew. (2021). "Today's Electric Vehicle Market: Slow Growth in U.S., Faster in China, Europe." Pew Research Center. https://www.pewresearch.org/fact-tank/2021/06/07/todays-electric-vehicle-market-slow-growth-in-u-s-faster-in-china-europe/

32 Spencer, Alison; Funk, Cary. (2021). "Electric Vehicles Get Mixed Reception From American Consumers." Pew Research Center. https://www.pewresearch.org/fact-tank/2021/06/03/electric-vehicles-get-mixed-reception-from-american-consumers/

33 Choudhury, Saheli Roy. (2021). "Are Electric Cars 'Green'? The Answer Is Yes, but It's Complicated." CNBC. https://www.cnbc.com/2021/07/26/lifetime-emissions-of-evs-are-lower-than-gasoline-cars-experts-say.html

Generally speaking, most studies show that for the typical EV, the breakeven point with gasoline-powered cars is approximately 1 year.[34] The DOE has created a calculator where an EV owner can check their emissions breakeven point based on their local utilities: afdc.energy.gov/vehicles/electric_emissions.html.

EV-READY HOMES

As the energy and resource efficiency of EVs continues to grow and more consumers shift to EVs, what does this mean for the high-performance home? For EV owners today, 80% of charging occurs at their residence. A recent study by Edison Electric Institute estimates that EV ownership will increase 10-fold over this decade. This means that homes will need to be equipped with charging capacity.

Some parts of the country are already requiring that charging infrastructure be included in all new single-family homes. Many other contractors are pre-wiring new homes to make them EV ready. This pre-wiring can save consumers hundreds of dollars down the line. There are two ways to create an EV-ready home, according to ENERGY STAR®:

- Create enough space on the electrical panel for at least a 40 amp, 240V dedicated branch circuit and have a conduit in place that links the panel to where a future charging station would go.
- A step further would be to install a 240V grounded alternating current receptacle, allowing homeowners to skip the wiring step and just purchase the charger.

For the charging unit itself, it's important to point out that ENERGY STAR®-certified chargers use 40% less energy in standby mode than non-certified chargers.[35]

34 Lienert, Paul. (2021). "Analysis: When Do Electric Vehicles Become Cleaner Than Gasoline Cars?" Reuters. https://www.reuters.com/business/autos-transportation/when-do-electric-vehicles-become-cleaner-than-gasoline-cars-2021-06-29/

35 "Building Electric-Vehicle-Ready Homes." ENERGYSTAR®. https://www.energystar.gov/sites/default/files/asset/document/ENERGY_STAR_Building%20Electric%20Vehicle-Ready%20Homes_OnePager.pdf

Electromagnetic Fields (EMF)

Electromagnetic fields consist of electric and magnetic waves of energy moving together. This is also known as radiation. Such waves are all around us all the time. They are generated from the massive cell phone towers and power lines that you see outside to the electricity generated from the sockets in the walls of your home. As we've become more industrialized and as technology continues to advance – such as with 5G cell phone technology – concern about the health effects of these fields has increased.

There are two classifications for EMFs:

- **Non-ionizing:**
  Which is low-level radiation and considered harmless to humans and public health. Examples of non-ionizing radiation include microwaves, computers, cell phones, Wi-Fi networks, and power lines.

- **Ionizing**
  Which is high-level radiation that has the potential to damage cells and DNA. Examples would be sunlight, ultraviolent (UV) rays, and x-rays.

According to the World Health Organization (WHO) and the Environmental Protection Agency (EPA), there is no conclusive evidence that non-ionizing EMFs pose a health risk for the general public. Research on EMFs already has been quite extensive to date, with more than 25,000 articles on the topic published in the past 3 decades. Research for newer technologies, such as 5G, are obviously the next frontier and is ongoing.

That said, clients and customers might have concerns about homes and communities that are near power lines, for example. Do not claim expertise or any definitive conclusions. Simply share what you've learned and point them to sites such as this one from the National Institute of Environmental Health Sciences, where they can learn more about this and other environmental agents: www.niehs.nih.gov/health/topics/agents/emf/.

Sustainability = Equity and Resilience

As our understanding of a sustainable future continues to evolve, we are also learning that social equity and resilient communities must be a part of it. Lower-income communities and communities of color suffer disproportionately from the effects of climate change. Lower-income communities of color are more likely to live in areas of heavy pollution, be victimized by environmental hazards, and die from environmental causes. Consider the following:[36]

- Black people are more than 75% more likely to live in "fence-line" communities, which are communities near commercial facilities where noise, odor, traffic, and emissions directly impact the residents.
- Approximately 13.4% of Black children suffer from asthma compared to 7.3% of White children.
- Following natural disasters, White communities tend to see an increase in overall wealth due to generous reinvestment plans, whereas communities of color typically see a decrease in wealth. The same inequitable disparity applies at the family-unit level.
- Historically underserved and low-income populations are also more likely to live near industrial facilities and are therefore at greater risk of the effects from chemical and toxic leaks and spills. In the Baltimore, Maryland, area for example, 60% of Black residents live within one mile of a toxic-release industry.

As the effects of climate change are being felt more broadly and severely across the country, demand for funds from the Federal Emergency Management Agency, or FEMA, have outstripped available money. Communities are trying to mitigate and protect against the effects of drought, rising sea levels, wildfires, and flooding, to name a few. But many communities will not receive any funding, and they lack the resources to prepare for extreme climate events on their own.[37] The most vulnerable communities, then, will become even more so.

36 Hassanein, Nada. (2021). "People of Color Face Disproportionate Harm from Climate Change, EPA says." *USA Today*. https://www.usatoday.com/story/news/2021/09/02/epa-people-color-face-disproportionate-harm-climate-change/5700723001/

37 Harris, Bracey. (2021). "Climate Change Hits Poorer Communities Harder. For Some, FEMA's Grants Are Out of Reach." NBC News. https://www.nbcnews.com/news/us-news/climate-change-hits-poorer-communities-harder-some-fema-s-grants-n1274421

What's evolved from these harmful disparities is the need for environmental justice, which entails a reevaluation of planning, funding, and development of all communities so that they are equitable, sustainable, and resilient. This means, in part, that residents of each community need to be active stakeholders with a voice in the process moving forward. Ultimately, we need to understand that environmental needs are social needs, as our triple bottom line approach illustrates. Sustainable communities must also be equitable – for everyone.

BUILDING RESILIENT COMMUNITIES

A resilient community today means one that can withstand environmental disturbances and move forward with its structure and function largely intact. Such a community must be resilient for all of its residents, not just some – that is, resilient communities must also be equitable. While each community will face its own unique set of environmental challenges depending on its geographic location and access to resources, Resilience.org outlines six foundational components to promote resiliency:

- **People:**
  A diverse team of all stakeholders in the community who collaborate to come up with a shared vision.
- **Systems thinking:**
  A deep understanding of how all the various systems and components of a community interact and affect each other.
- **Adaptability:**
  The ability to evolve and change as needed.
- **Transformability:**
  Acknowledgment that some challenges require more than adaptation; they require a complete rethinking and possible transformation of the existing apparatus.
- **Sustainability:**
  Resilient communities are future oriented, thinking not just of now, but of tomorrow as well.
- **Courage:**
  Resilient communities need to have the courage to take bold action when needed, rather than doing what perhaps is easier in the present but unsustainable over the long term.

Communities throughout North Carolina, for example, have brought together developers, environmentalists, state and local agency officials, and community representatives to help mitigate the effects of heavy rainfall events by implementing sustainable, nature-based solutions. Severe rain has prompted flooding that damaged infrastructure and disrupted business throughout the state.[38] These nature-based solutions might include using permeable pavements, rooftop rainwater collection systems, planting of native species, and an overall greening of the infrastructure. Green real estate professionals should get involved in local environmental, real estate, and building associations to both stay informed of plans within your market as well as to see if there might be opportunities to be a leader in your community.

New Resources and Certifications

Green Building Registry (GBR)

The Green Building Registry (GBR) is a new software platform started in 2017 that aggregates green and energy efficiency data that can be accessed by real estate agents, appraisers, lenders, and homeowners. In just a few years, GBR has become the largest single source of green, home-performance information in the United States. It provides an assortment of tools to help real estate professionals and lenders make more informed and consistent valuations for high-performance features.

The database can story third party-verified certifications and energy scores, such as LEED, ENERGY STAR®, and HERS® in real time. Once stored in the system, it can be accessed and flowed into an MLS, county records, as well as for use in online listing services such as Realtor.com.

Ultimately, as data from more high-performance homes gets entered into the database, the process for accurately capturing the valuation of energy and resource-efficient features will be faster and easier.

Visit www.earthadvantage.org/initiatives/green-building-registry.html for more information.

38 Miller, Yaron; Huber, Kristiane. (2021). "New Plan Recommends Nature-Based Solutions to Manage Stormwater Flooding in North Carolina." Pew Research Center. https://www.pewtrusts.org/en/research-and-analysis/articles/2021/03/03/new-plan-recommends-nature-based-solutions-to-manage-stormwater-flooding-in-north-carolina

Pearl Certification

Pearl Certification is another new way of capturing the value of high-performance homes. The premise of Pearl's rating system is simple and straightforward: it assigns points to each feature of a home in relation to how it contributes to a home's overall performance. The more points a home earns overall, the higher performing it is. The system not only functions as an objective tool for valuation in the marketplace, it also allows homeowners to better understand areas of a home that can be upgraded for increased efficiency, sustainability, and cost savings.

The features of a home are divided into five different categories:

- **Building shell:**
  Roof, walls, siding, etc.
- **Heating and cooling:**
  Furnaces, air conditioning, etc.
- **Baseload:**
  Equipment such as water heaters and household appliances that use energy year round
- **Home management:**
  Thermostats and methods for managing and maintaining home performance
- **Renewable energy and storage:**
  Solar panels, EV-chargers, etc.

The amount of points a feature earns is dependent on a number of factors. Obviously, the more efficient a feature is, the more points it will earn. Similarly, the quality of the installation also earns a feature more or fewer points. Features with greater impact on overall performance earn more points, as do those that interact with the local climate. For example, a high-performing air conditioner in a hotter, southern climate is worth more than a high-performing furnace, because the air conditioner will be used more frequently in such a climate than the furnace will be. The exact opposite scoring would prevail in a colder northern climate.

The total points earned equate to four different levels of Pearl Certification: Asset, Silver, Gold, and Platinum. The Pearl Certification provides another tool for homeowners and real estate professionals to try to accurately capture the value of high-performance homes.

Reflection:
Hot Topics and Your Business

Which of these latest high-performance trends do you feel will most impact your business? How do you plan to leverage what you've learned about this trend to improve your green business status in your market?

MODULE 8:
Understanding Consumer Motivations and Priorities

Learning Objectives

At the conclusion of this module, you will be able to:

- Respond to consumer perceptions of what green means in relation to home features.
- Understand consumer preferences for green home features and how these preferences are changing as younger generations enter the market.
- Match home features to specific benefits that consumers want.

As we've touched upon in this course, it's important not just to preach green to clients, but to live green yourself. Clients and customers are savvy to authenticity, so let's start by assessing how much you're living a "green lifestyle."

Living Green Survey

Place a check mark in "Do" column if you currently...	Do
Take your own reusable bags to the grocery store.	
Buy locally grown and organic food.	
Use LED bulbs in lamps and light fixtures.	
Drive an electric or hybrid car.	

Place a check mark in "Do" column if you currently...	Do
Typically purchase recycled paper products.	
See electricity-generating turbines dotting the countryside.	
Discard paper, plastic, and glass items in recycling bins.	
Receive ATM and store receipts by email rather than printed.	
Use paperless forms in your business.	
Receive paperless bills, bank statements, and credit card statements.	
E-file income tax returns online.	
Use chemical-free cleaning products.	
Collect rainwater for watering your garden.	
Walk or ride a bicycle to work or to do errands.	
Choose environmentally friendly products when presented with an option among products of equal value.	
Add up the number of checked boxes:	

RESULTS

15–11:
Your habits are very green. Keep up the good work!

10–6:
Your habits are green, but there is room for improvement.

5–0:
Your habits could be a lot greener. What changes could you make?

Review your results and commit to making changes in your lifestyle that will get you to the next green level in the next 6 months. If you're already at the top, challenge yourself to complete all the items as a "Do," and once that's achieved, try to find one aspect of your life per month that you can make green. Not only will your efforts help the climate and environment, they will also help you develop green habits and continuously learn about sustainability – knowledge that you can naturally, organically, and authentically pass on to your clients.

The Green Curve

Where are we as a whole – that is, as homeowners and communities – in making green part of our way of life? When we look at how quickly or slowly homeowners and communities are changing attitudes, it helps to look at the classic research of noted sociologist Everett Rogers, who developed the Diffusion of Innovations (DOI) theory. According to Rogers, reaction to innovation tends to fall into one of five phases:

1. Innovators
2. Early adopters
3. Early majority
4. Late majority
5. Laggards

An innovation becomes mainstream – the new normal – when it crosses the separation between innovators and early adopters and the majority groups.[39]

It's easy to see that homeowners and communities in the United States fall all along the green curve. We all probably know of a homeowner or a community that is "ahead of the curve" or lagging behind. Adoption concentrates in regions and communities where the people, government, and building industry come together in the same phase on the curve. For example, new, high-performance homes cluster in the sunbelt Southwest as well as early-adopter cities such as Austin, Phoenix, Albuquerque, Atlanta, Seattle, Portland, Denver, Boulder, and Boston.

39 Rogers, Everett. *Diffusion of Innovation* (4th ed.). The Free Press, Simon and Schuster (1995).

The Sustainability Survey

Where would you place yourself, and your market area, on the sustainability green curve? In 2021, a random sample of over 5,000 REALTORS® responded to an NAR survey on residential sustainability. Try answering some of the survey questions here and then compare your responses with the results that follow.

1. **How valuable is energy efficiency promotion in listings?**
   - ❒ Very valuable
   - ❒ Somewhat valuable
   - ❒ Neutral
   - ❒ Not very valuable
   - ❒ Not at all valuable
   - ❒ Depends on the listing

2. **How interested are consumers in sustainability?**
   - ❒ Very interested
   - ❒ Somewhat interested
   - ❒ Neither interested nor uninterested
   - ❒ Somewhat uninterested
   - ❒ Very uninterested

3. **Does your brokerage have experience with residential building repurposing?**
   - ❒ Brokerage has experience
   - ❒ Brokerage does not have experience
   - ❒ Don't know

4. **How confident are you in connecting with green lenders who can provide lending products that encourage energy-efficient improvements to existing homes?**
   - ❒ Extremely confident
   - ❒ Very confident
   - ❒ Not sure
   - ❒ Not so confident
   - ❒ Not at all confident

5. **How comfortable are you answering clients' questions about home performance?**

   - ❒ Extremely comfortable
   - ❒ Comfortable
   - ❒ Uncomfortable
   - ❒ Extremely uncomfortable
   - ❒ Not sure
   - ❒ None of the above

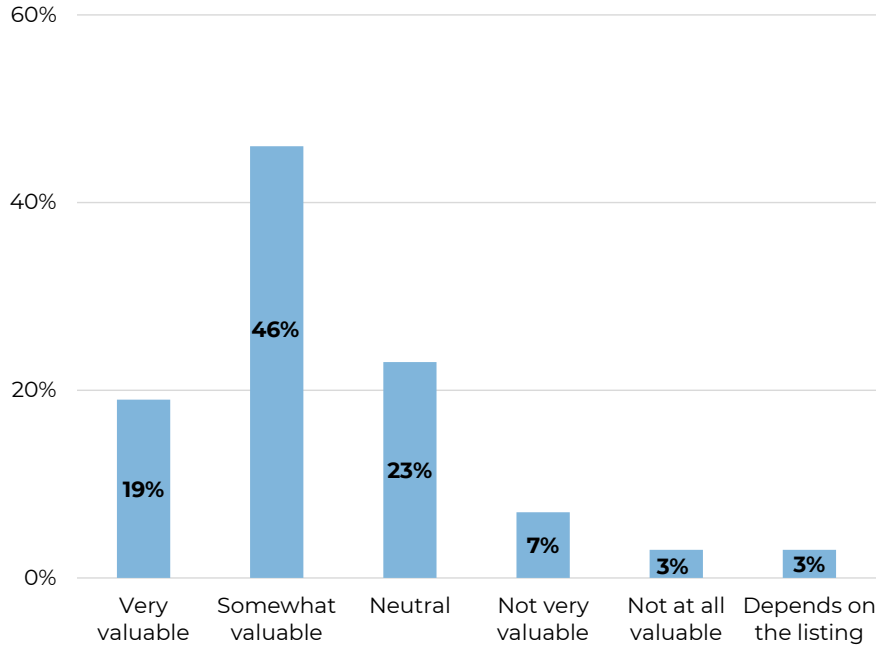
6. **In what ways do you make use of the MLS green data fields?**

   - ❒ Don't use
   - ❒ Promote green features
   - ❒ Promote energy information
   - ❒ Promote green certifications
   - ❒ Other

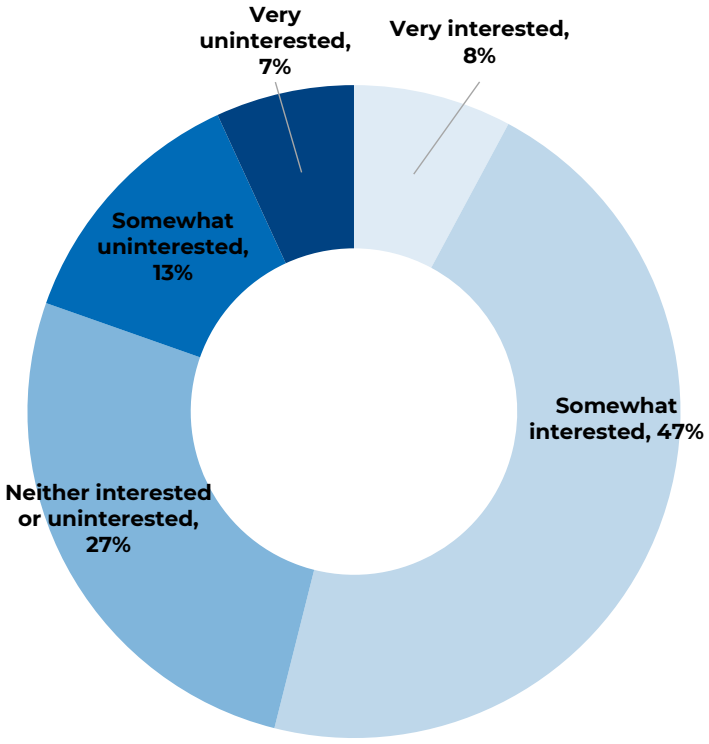
See the next page for response answers.

REALTORS® Responses

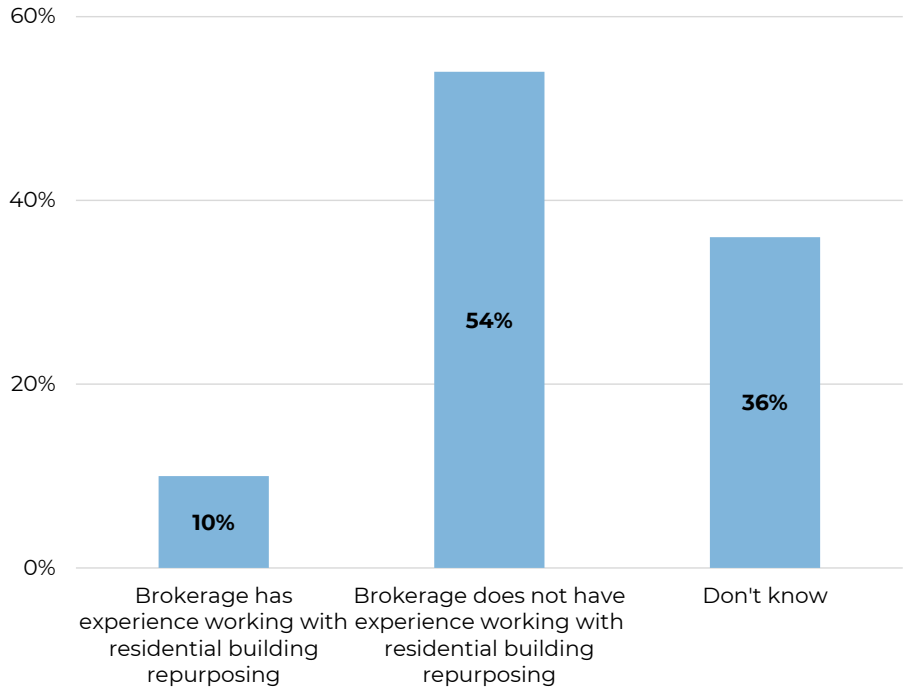
1. How valuable is energy efficiency promotion in listings?



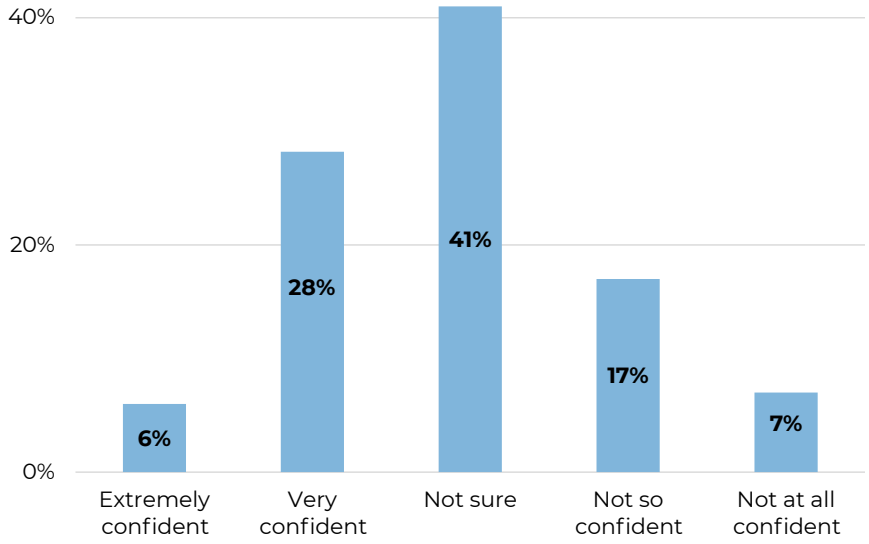
2. How interested are consumers in sustainability?



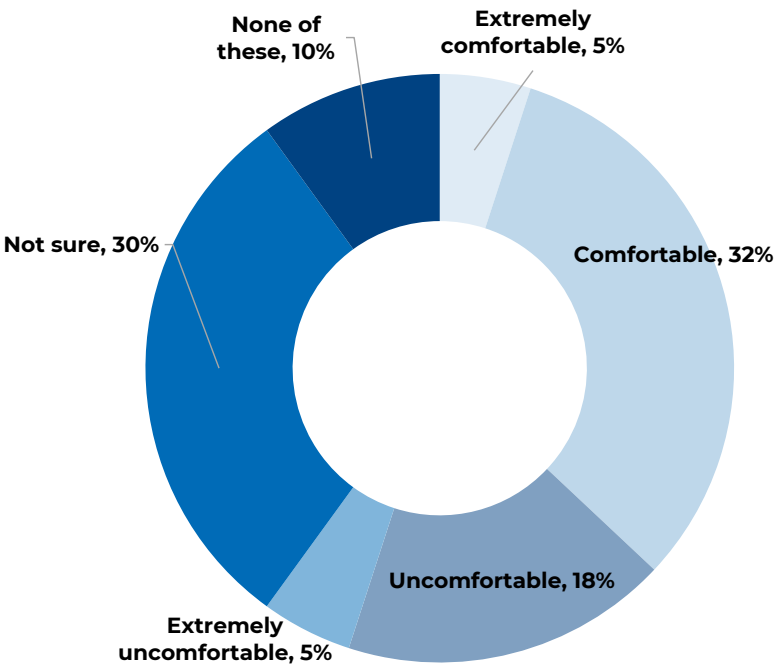
3. Does your brokerage have experience with residential building repurposing?



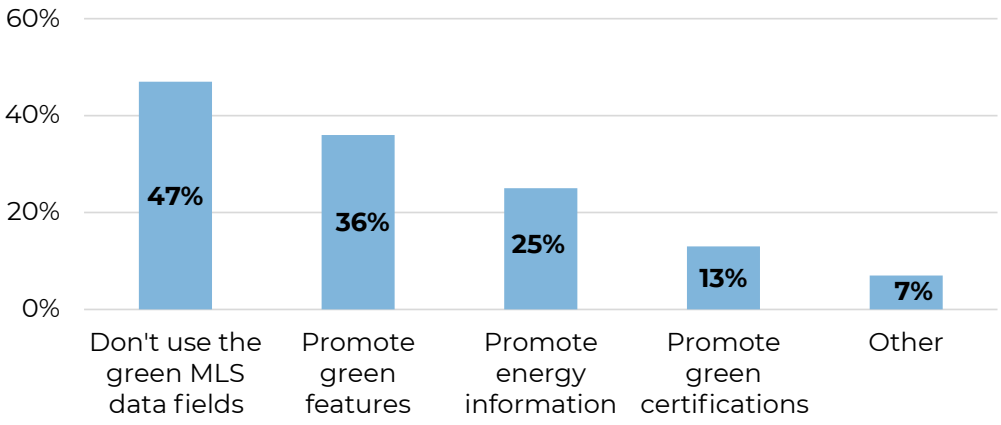
4. How confident are you in connecting with green lenders who can provide lending products that encourage energy efficient improvements to existing homes?



5. How comfortable are you answering clients' questions about home performance?



6. In what ways do you make use of the MLS green data fields?



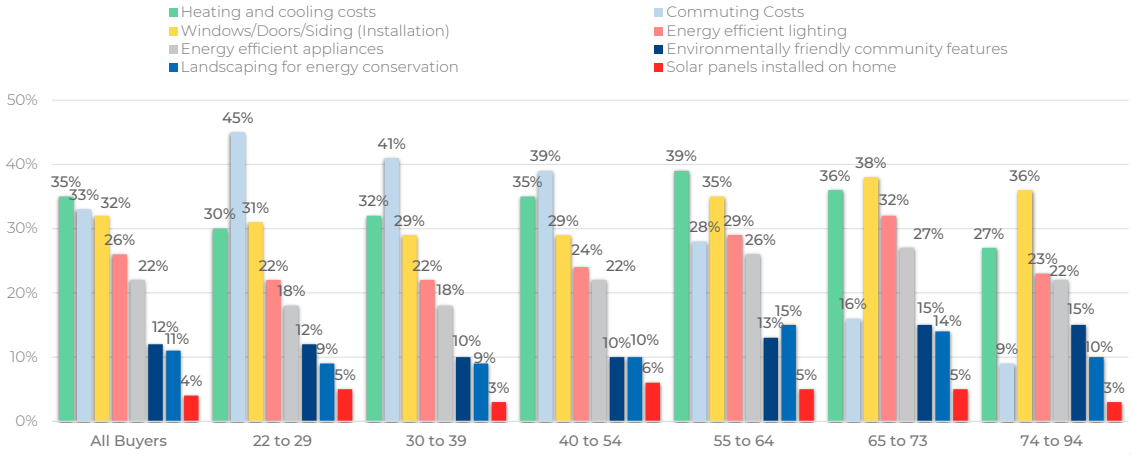
Source Data: NAR 2021 REALTORS® and Sustainability Report

Consumer Interest in Environmentally Friendly Features, by Age

NAR's Home Buyer and Seller Generational Trends report for 2021 also revealed what consumers of different age groups deem "very important." Notably, across generations, the most consistent features deemed very important by consumers is heating/cooling costs and window/doors/siding, which also contribute to energy costs and efficiency.

Clearly energy efficiency upgrades (for older homes especially) will make them far more attractive to a wide swath of the home buying market. This is valuable information for both real estate professionals representing sellers as well as buyers.

Figure 8.1:
Environmentally Friendly Features Considered "Very Important"



Climate-Conscious Younger Generations

Another important trend to note is the increasing dominance of the millennial and Gen Z generations in the real estate market.

If the baby-boomer tree-huggers of the 1960s were the first to go green, the millennials and Gen Z are redefining what it means to live an environmentally conscious life. Since grammar school, they have been taught about environmental stewardship and their personal responsibility for protecting the planet's resources. The traditional definitions of environmentalism are proving too narrow for these transformative generations, as they integrate green into every aspect of their lives. It's not what they do – it's who they are. Take a look at the recent generational profile on climate activism conducted by Pew Research Center. For millennials, 71% believe action on the climate should be a top priority; similarly, 67% (or over two-thirds) of Gen Z feels the same.[40] Notably, this increased focus on climate change for younger generations is being seen across the political spectrum.[41]

Visit www.pewresearch.org/science/2021/05/26/gen-z-millennials-stand-out-for-climate-change-activism-social-media-engagement-with-issue for a further breakdown of these numbers.

The leading edge of the millennial generation – people born after 1980 through the mid-2000s – has moved into the prime years for establishing careers, households, and families. Millennials comprise about one-third of the U.S. population, making them the largest generational group, even outnumbering the baby boomers. Gen Z is now entering the real estate market in great numbers. Together they comprise approximately 50% of the home buying market.

Real estate professionals ignore the green preferences of the younger generations at their own peril. To stay relevant, real estate professionals may need to broaden their understanding of the green lifestyle beyond energy-efficient appliances and solar panels. Younger homebuyers will likely see environmentally friendly homes and lifestyle choices in a broad context.

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40 Tyson, Alec, Kennedy, Brian, and Funk, Cary. (2021). "Gen Z, Millennials Stand Out for Climate Change Activism, Social Media Engagement With Issue." Pew Research Center. https://www.pewresearch.org/science/2021/05/26/gen-z-millennials-stand-out-for-climate-change-activism-social-media-engagement-with-issue/

41 Funk, Cary and Tyson, Alec. (2020). "Millennial and Gen Z Republicans Stand Out From Their Elders on Climate and Energy Issues." Pew Research Center. https://www.pewresearch.org/fact-tank/2020/06/24/millennial-and-gen-z-republicans-stand-out-from-their-elders-on-climate-and-energy-issues/

What Do Trends Mean for Real Estate Professionals?

All data and research paint a picture of consumers and real estate professionals shifting to the center – or the mainstream – of the green curve. The pandemic seems to have accelerated that trend. Referring to the sustained demand for green features in the real estate market, Jessica Lautz, NAR's Vice President of Demographics and Behavioral Insights, said, "The pandemic has led to an increased focus on wellness, and sustainability is an important variable in that overall equation for some people."[42] Research by Freddie Mac shows that green homes not only sell faster, but also for more money. The study showed that homes with high energy-efficiency rates sold for nearly 3% more on average than homes that did not have high-efficiency ratings.[43]

Smart real estate professionals will understand these trends as an opportunity to increase their bottom line while also helping people and the planet. Your role as an agent and advisor should include educating clients on the facts about the attributes, valuation, and cost-benefit balance of resource-efficient homes. Recalling what we have learned in this course, achieving resource efficiencies in a home can be the sum of a variety of fixes and retrofits, including low-budget DIY projects. Construction and material standards have evolved so that resource-efficient products are the norm, such as minimum SEER standards for air conditioning units and ENERGY STAR® appliances as standard options for new homes. Furthermore, all national production builders are ENERGY STAR® partners and offer certified homes as standard designs. Even skeptics make green choices because that is the market standard.

However, we also learned that high-performance homes could fetch premium prices. The good news is that prospective buyers who understand the benefits of high-performance homes are willing to pay a premium to purchase them.

42 Bond, Michaelle. (2021). "Demand for Green Home Features Continues Even in Today's Competitive Market." *The Philadelphia Inquirer*. https://www.inquirer.com/real-estate/housing/eco-friendly-home-energy-efficient-solar-green-buy-sell-20210605.html

43 "Do Green Improvements Increase Resale Value?" (2020). FreddieMac MyHome. https://myhome.freddiemac.com/blog/homeownership/20200825_selling_green_home.page

Benefits, Not Buzz Words

Not all customers and clients will be as knowledgeable about sustainability and its benefits as you are, and sometimes the multitude of green products and features – as well as the jargon of sustainability – can scare people off. It's important to be mindful of this and gauge the knowledge level of each client on a case-by-case basis.[44]

Most consumers, for example, are unfamiliar with green certification programs such as LEED or HERS®, so selling these terms might not only be unproductive, it might turn people off. Instead, start with green items that almost everyone can relate to. The National Association of Home Builders recently released a survey that found 89% of respondents wanted ENERGY STAR®-rated windows and 86% wanted ENERGY STAR®-rated appliances.[45] They desire these green features because they know without any additional research or knowledge that these features will save them money – and so they are willing to pay more upfront to have them.

Similarly, many consumers might not know what low-VOC materials or net-zero homes are and may react negatively even though the terms describe desirable product attributes.

44 Office of Energy Efficiency & Renewable Energy. Building Science-to-Sales Translator. https://basc.pnnl.gov/sales-tool

45 Tracey, Melissa Dittmann. (2019). "How Much Do Buyers Want Green vs. Non-Green Features?" *REALTOR® Magazine Live*. https://magazine.realtor/daily-news/2019/02/25/how-much-do-buyers-want-green-vs-non-green-features

The National Association of Home Builders, for example, reports frequent installation of these energy-saving features:

- **Low-e windows:**
  Reduce hotspots and fading of carpets and furniture due to sun exposure
- **Upgraded insulation:**
  Keeps the home warmer or cooler, provides interior comfort, reduces energy costs
- **Insulated exterior doors:**
  Reduce drafts and air leakage around the door frame
- **Argon gas windows:**
  Prevent frost and condensation, enhance insulation and sound proofing
- **High-efficiency HVAC systems:**
  Reduce energy costs for heating and cooling, enhance comfort

Consumers may not be familiar with the names of these features, but they would certainly understand the benefits. Furthermore, current buzzwords such as *smart home, high performance, durable, renewable, environmentally friendly community, sustainable,* and *energy smart* describe complex concepts. In short, what does "green" mean? The message for real estate professionals is clear: Focus on benefits, not industry buzzwords or jargon.

Additional Assets

The Department of Energy provides an online tool to help real estate professionals translate and convey sustainability concepts and benefits in ways that will reach the largest number of consumers and ultimately help maximize sales. Check it out at https://basc.pnnl.gov/sales-tool.

Practitioner Perspective

Joe Schutt
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↘ Are buyers becoming more knowledgeable about resource-efficient homes?

Ours is a competitive market, and although buyers have an idea of green technologies, they're more concerned with, "How can I get this apartment and how much will I need to bid over asking price?"

↘ Do they connect resource-efficient homes with sustainability?

They're more focused on reducing energy bills after they move in.

↘ How do you help with that?

When they complain about old systems and high utility bills, I talk about programmable thermostats and explain how other technologies and systems can help. I also talk about energy audits, incentives, and rebates.

↘ How will younger generations change the green home market?

They're more conscious about these things, and many go for new construction and rehabs with energy-efficiency features that are already in place. They're also living differently than past generations. They are more focused on life experiences and live their lives more outside their homes than earlier generations did.

↘ What's your advice to others building their green market share?

They need to understand the technologies and systems so they can explain their benefits and communicate why a property with the newest systems is more expensive than the condominium next door. Green is a part of my freeform conversation with clients, and I'm less calculating about "marketing" green.

Green Your Lifestyle

Attaining a greener lifestyle doesn't have to be expensive or time-consuming. In fact, some minor changes actually cut expenses and have a positive impact on your health and quality of life. Making your daily routine more sustainable can be as simple as learning some green basics, modifying your habits, and making informed choices.

Here are five easy changes to make.

1. Recycle

Recycling waste, such as plastics, paper, and glass, costs almost nothing and it preserves natural resources and keeps trash out of landfills.

When shopping for new products, look for items made from recycled content.

Also safely dispose of electronics and household goods, such as paint, chemicals, and unused prescriptions. Learn more at earth911.com.

2. Zero-waste kitchen

Instead of using the disposal or tossing food scraps, compost them. Composting keeps trash out of landfills and provides a natural way to enrich garden soil.

Even unexpected things, like wooden spoons, dryer lint, and cardboard Q-tips, are compostable. Learn more at mastercomposter.com and epa.gov.

3. Eliminate Toxins

Chemicals in common household products, including shower curtains, cookware, and furniture, can seep into your living space. That compromises indoor air quality, which can cause health problems and exacerbate respiratory ailments. So carefully consider what you bring home.

Start reading product labels and seek non-toxic alternatives for paint, pesticides, cleaners, furniture, and building materials.

Also consider products' packaging. Even a seemingly innocuous house plant sitting in synthetic soil and a plastic container, could cause harm.

4. Clean naturally

Though we associate that stout lemon scent with cleanliness, such odors usually stem from cleaning products loaded with harsh chemicals that can be toxic to people, pets and the planet.

Opt for green-labeled cleaning products or mix up your own using non-toxic baking soda (an abrasive), vinegar (a disinfectant), and lemon (a deodorizer). These alternatives are accessible, inexpensive, and better for your health. Learn more at earth911.com.

5. Reconsider your transportation

Re-examine your public transit options and consider biking or walking, both of which are essentially free and benefit your wallet and your waistline.

If you can't abandon your car entirely, explore rideshares and find ways to reduce auto trips. Learn more at mapmyride.com.

EQUAL HOUSING OPPORTUNITY

REALTORS® who have earned National Association of REALTORS'® Green Designation (www.greenresourcecouncil.org) can refer you to local experts who can assess your home's performance.

NATIONAL ASSOCIATION of REALTORS® *Official Designation* | green

This graphic is from the Green REsource Council's "Green Client Handouts" and is available as a customizable consumer handout for all GREEN designees. For more information visit green.realtor.

Reflection:
Consumer Trends and Your Business

How do you plan to build your green market share? How are millennials changing your green home market?

MODULE 9:
Smart Growth: The New Market Driver

Learning Objectives

At the conclusion of this module, you will be able to:

- Recognize the interrelationships between green lifestyles and home values – particularly affordability – in urban, suburban, and rural settings.
- Describe the correlation between home values and public transportation that offers access to services and employment.
- Match homebuyers' priorities for walkability with communities and homes.

As society continues to move along the green curve (discussed in the last module) communities will continue to evolve to be more healthful and sustainable. Smart growth is the movement towards this end that attempts to reduce urban sprawl and make residential areas more accessible and multifunctional for work, leisure, and living one's values. Here we cover three key aspects of the smart growth movement: walkability, transit-oriented development, and placemaking.

Walkability

The qualities that make a community desirable start with walkability. A walkable neighborhood has safe, pedestrian-friendly walkways that connect to the places where people want or need to go – shopping, services, public transportation, schools, and jobs. When people who live in walkable communities want to run errands, go to work or school, dine out, or visit friends, they can leave their car in the garage.

Streetscaping and Complete Streets

Transforming streets to make them safer and more inviting for pedestrians is referred to as streetscaping or complete streets design.

Figure 9.1:
Streetscaping: Redesigned for walkability.
Which street looks more walkable?

Before	After
	

Image Source: Commonwealth of Massachusetts, Smart Growth/Smart Energy Toolkit, www.mass.gov

Similar to streetscaping, complete street design is based on the principle that everyone has the right to travel safely. Streets and roads should meet the needs of all – walkers, bicyclists, public transportation users, and motorists.

Complete streets research conducted by the American Association of Retired Persons (AARP) shows the benefits for all age groups of low-speed routes, simplified intersections, reduced visual clutter, and clear separation between traffic lanes and walkways and bike paths. Complete streets reduce accidents, promote physical activity and walkability, and enhance property values.

Figure 9.2:
Incomplete vs. Complete Street Design

Incomplete	Complete
	

Photos reprinted with permission from City of Ontario, CA, www.ontarioplan.org and Charlotte, NC, Department of Transportation, www.ncdot.gov

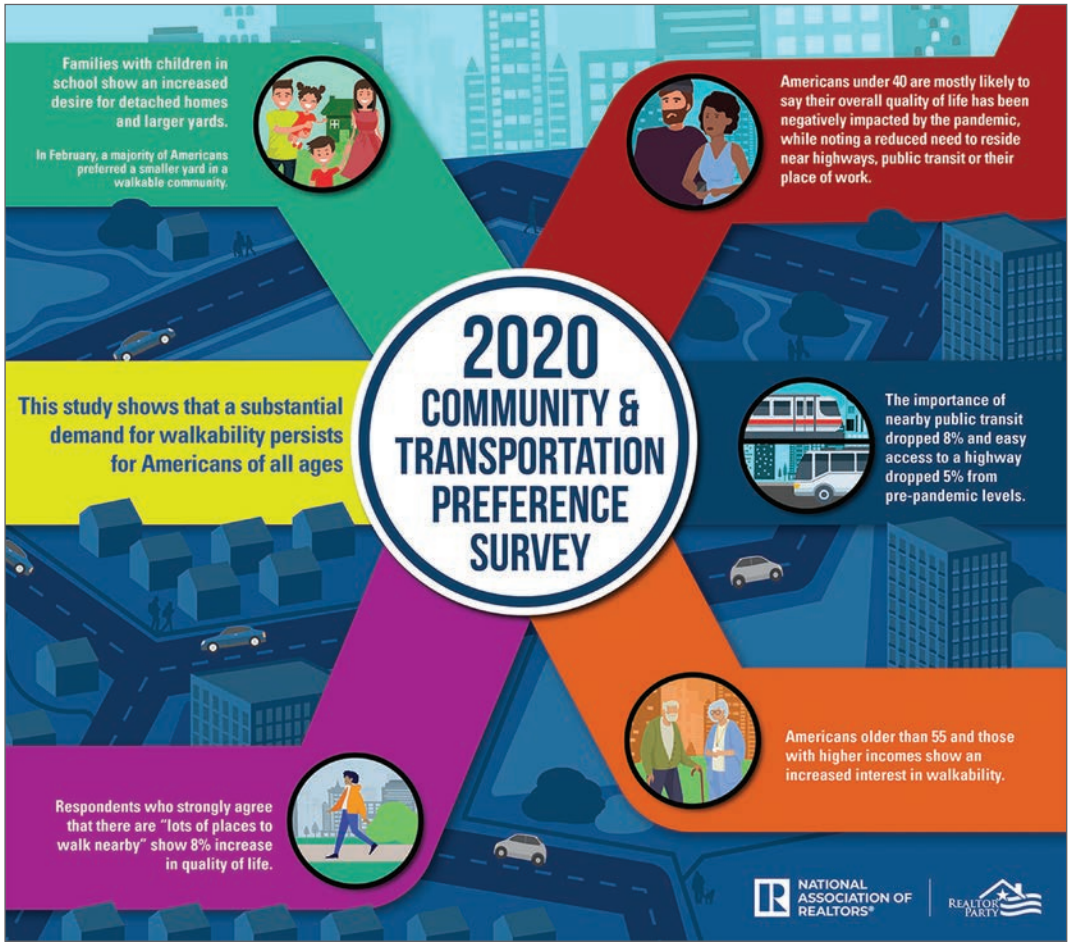
The desire for walkable neighborhoods with transportation options cuts across all generations and all types of communities. Among the generational groups, millennials show the strongest preference for mixed-use, walkable, transit-oriented communities. Walkability is not just an urban or city concern. Enhancing small towns and redeveloping suburban communities to improve walkability makes them more desirable places to live. It is a top consideration for choosing where to live.

Benefits of Walkable Neighborhoods

The 2020 Community and Transportation Preference Survey conducted by NAR reported that respondents who live in highly-walkable areas show an 8% increase in overall quality of life compared to those who do not live in highly-walkable areas. Let's take a brief look at factors that might contribute to this increase.

- **Health:**
  The health benefits of exercise are well documented.
- **Social interaction:**
  Walking offers the opportunity to engage others, which fosters the feeling of neighborhood cohesion.
- **Cost savings:**
  Leaving the car parked at home saves on gas and parking.
- **Community businesses:**
  Community businesses benefit from neighborhood foot traffic.
- **Independence:**
  Family members, especially kids, don't have to rely on the "family chauffeur" to go to school or participate in other activities.
- **Pedestrian safety:**
  Streets designed for walkability reduce the risk of car-pedestrian collisions.
- **Community safety:**
  Lively public places with many people present are a natural deterrent to crime.
- **Environmental:**
  A walkable community is the ultimate zero-emissions community, cutting down on greenhouse gas emissions that contribute to climate change.
- **Quality of life:**
  All of the benefits of a walkable neighborhood – social, economic, and physical (plus less stress) – combine to enhance the quality of life.

Figure 9.3:
2020 Community and Transportation Preference Survey



Walkability and Home Values

As the walkability of a community improves, values of both residential and commercial properties increase. WalkScore.com has the data to prove it. WalkScore.com uses Google Maps to rate neighborhood walkability on a scale of 1 to 100. The site also provides information about distances to stores, restaurants, post offices, libraries, and other community services. According to WalkScore®, every point on the scale corresponds to an increase in home value up to $3,000.[46] A 10-point improvement in walkability increases commercial property values by 5–8%.

Similarly, Redfin put out a report recently that showed that homes built in highly-walkable areas – that is, in close proximity to shopping, schools, parks, etc. – sell nearly 25% higher than comparable properties that are not walkable.[47] The correlation between walkability and home values can be as simple as supply and demand. More people want to live in communities with good walkability and transportation choices than there are homes available. The result is higher values for these homes.

The COVID-19 pandemic disrupted every aspect of our lives, from where we work to where we live. During the height of the pandemic, there was a shift from large, densely-populated urban centers to suburban spaces that offered more ample living space in less-populated neighborhoods. But even this shift came with a preference for walkable, planned communities that offered easy accessibility to fitness, shopping, and dining.[48] Bottom line: walkability does and will continue to add value to homes. Check out the walkability rating in your market using the WalkScore® app.

WALKSCORE®: IS YOUR COMMUNITY WALKABLE?

Judging the walkability of your community starts with looking around from the viewpoint of a pedestrian. Are the elements that make a neighborhood walkable present? For objective, numerical ratings that you can feature in property listings and marketing materials, go to WalkScore® at www.walkscore.com.

46 Wright, Steve. "Know Your Neighborhood: Identifying and Buying Homes in Walkable Communities." National Association of REALTORS®. www.realtor.org/articles/know-your-neighborhood

47 Falcon, Julia. (2020). "How Much Does Walkability Increase the Value of a Home?" Redfin. https://www.redfin.com/news/how-much-does-walkability-increase-home-values/

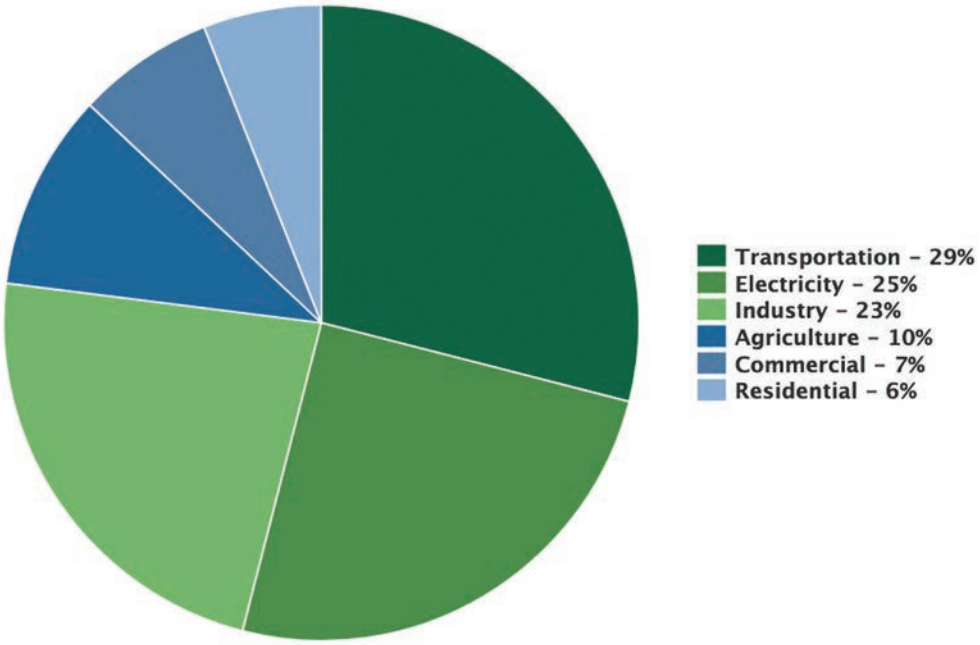
48 Campo-Flores, Arian, Overberg, Paul, De Avila, Joseph, and Findell, Elizabeth. (2021). "The Pandemic Changed Where Americans Live." *The Wall Street Journal.* https://www.wsj.com/articles/pandemic-supercharged-changes-in-where-americans-live-11619536399

Transportation

Availability of public transportation options puts a new spin on the familiar mantra of "location, location, location." With transit-oriented development, the mantra is "access, access, access."

For many suburban communities and small towns, car dependence is a fact of life. Every trip to a store, friend's house, school, kid's playdate, athletic event, doctor's appointment, and so on, requires a trip by car. The negatives comprise a familiar list: long commutes, traffic congestion, capricious gas prices, parking availability, and the risk of traffic accidents. Transportation accounts for more than a quarter (29%) of greenhouse gas emissions, and within that percentage, household car usage accounts for the largest share (58%).[49]

Figure 9.4:
Green House Gas Emissions by Sector



Source: EPA, https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions

49 "Fast Facts: U.S. Transportation Sector Greenhouse Gas Emissions." United States Environmental Protection Agency. https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100USI5.pdf.

Some subdivisions were designed with the assumption that homeowners would drive to access the necessities of daily life – and were car dependent from the start. For other communities, the fast-food franchises, shopping malls, and big box retailers at the edge of town that were accessible only by multilane streets drew stores and businesses from the central core and eclipsed the traditional downtown. Car dependence also takes a toll on the environment.

Transit-Oriented, Car-Optional Development

Along with walkability, an effective public transportation system takes people where they want to go and offers alternatives to driving. Transit-oriented development centers around transit nodes – bus stops and rail stations – with a goal of fostering compact, mixed-use, pedestrian-oriented neighborhoods. A growing number of Americans would like the option to leave the car in the garage.

The COVID-19 pandemic disrupted this trend when people were working from home more often and many businesses and offices were shut down or limited, prompting people to seek larger residential spaces with bigger yards. The full scope of the pandemic's impact is not understood yet, but it's likely that transit-oriented developments will retain their value and demand will once again increase as offices and workplaces return to something that more closely resembles pre-pandemic times – even if circumstances are never quite the same. For example, the American Public Transportation Association (APTA) reports that in 2021, home values in areas near public transportation are as much as 24% higher than in areas that do not have such access.[50]

The NAR 2021 REALTORS® and Sustainability Report also indicates a continued emphasis on modes of daily transportation in relation to community preferences. More than three-quarters of the respondents (78%) reported that commute times and distances were very important or somewhat important. This is even more of a concern for the younger generations, as 44% of respondents aged 22–30 and 38% of respondents aged 31–40 listed commuting costs as "very important" when considering a place to live, according to the 2021 NAR Home Buyers and Sellers Generational Report.

50 Public Transportation Facts. (2021). APTA, https://www.apta.com/news-publications/public-transportation-facts/

WALKABILITY AND TRANSIT: A CORPORATE COMPETITIVE EDGE

Although the majority of large companies and corporate headquarters are located in suburban locations, there is a trend in recent years to relocate to downtown locations. What features are high on the list when choosing a downtown location? Companies are looking for vibrant, transit-oriented, walkable neighborhoods where people want to both live and work. As companies compete for new hires and the best talent, location and access are crucial selling points. Both current and potential employees want neighborhoods with restaurants, cafés, cultural institutions, entertainment, and nightlife, as well as easy access by public transportation.

An urban design receiving a lot of buzz recently is the so-called "15-Minute City," an area in which everything a typical resident would want to do is accessible in 15 minutes. Shopping, work, entertainment, healthcare, etc., would all be conveniently accessible either by walking or public transit.[51] In part due to the impact of the pandemic, cities and businesses alike will strive to become more flexible and walkable, making for a more organic mix of one's work life, personal life, and values.

A newly-developed district in Houston, Texas, called The Ion illustrates what this type of 15-minute city might look like. It's attempting to integrate start-ups, corporations, community partners, and residential space to create an inclusive community that embraces walkable living and sustainability.[52]

Transportation Choices = Affordability

It's easy to track how big of a bite a mortgage or rent payment takes out of a family's monthly budget. Transportation costs, on the other hand, are paid out a little at a time – a tank of gas, a monthly train ticket, a car insurance premium – and take more effort to track. To get a complete picture of affordability, homebuyers should look beyond their mortgage payments and consider the cost in both dollars and time for travel to jobs, schools, and other necessary destinations. When these costs are considered, housing located close to public transit isn't only more convenient, it's more affordable.

51 Hackl, Cathy. (2021). "The City of the Future: Walkable, Mid-Sized and Built for Flexible Work." *Forbes*. https://www.forbes.com/sites/cathyhackl/2021/04/28/the-city-of-the-future-walkable-mid-sized-and-built-for-flexible-work/?sh=86ae54629e68

52 Malcolm, Timothy. (2021). "Get to Know The Ion, Midtown's Emerging Innovation Hub." Houstonia. https://www.houstoniamag.com/news-and-city-life/2021/05/the-ion-first-look-innovation-technology-entrepreneurship

Homebuyers who move to far-flung suburbs in search of affordable homes might be giving up what they save on mortgage payments to fill up their cars' gas tanks. In fact, a study by the Center for Housing Policy estimated that for every dollar saved on housing, the homeowner spent $.77 on transportation. That calculation doesn't count the time spent commuting or the environmental impact of carbon emissions from auto exhaust. For buyers in their prime career and home buying years, commuting costs trump heating and cooling costs. In effect, housing and transportation can't really be understood apart from each other. Rather than thinking about "affordable housing," home buyers should be thinking more holistically about "affordable living."[53]

Transportation is the second largest expense for the average American household. According to the U.S. Bureau of Labor Statistics, the average American household spends more than half of its income on a combination of housing and transportation. That percentage increases sharply when gasoline prices escalate.

Housing located close to public transit isn't only more convenient, it holds its value. During the housing crash of 2008, for example, the steepest declines in value and the highest rates of foreclosure happened in auto-dependent areas. Areas with transportation choices, including walkability, held their value.

HOW DOES YOUR COMMUNITY RATE?

How does your market rank in terms of housing and transportation affordability? The Center for Neighborhood Technology offers an online, interactive mapping tool that shows average percentage of income spent on housing plus transportation for cities, towns, and neighborhoods across the country. What is an affordable amount for these two expenditures? The index sets a benchmark of 47% as the amount a household should spend on housing plus transportation. See how your community rates at http://htaindex.cnt.org.

53 Cortright, Joe. (2019). "You Can't Judge Housing Affordability Without Knowing Transportation Costs." *City Observatory*. https://cityobservatory.org/transportation_housing_affordability/

Placemaking

Placemaking is the design process of developing community gathering places – community "living rooms" – and it starts with reimagining how spaces can be repurposed. Instead of draining the vitality of a community, reinventing empty spaces (e.g., defunct shopping malls, vacant office buildings, and unused parking lots) offers an opportunity to create – to "placemaker" – the assets that make a community a desirable place to live. The redesign process not only creates new gathering places but also spurs new commercial development nearby.

For housing subdivisions that were constructed without a central core, placemaking offers the opportunity to create the downtown that was missing when the houses were built. Another benefit is the creation of a distinction between neighborhoods, especially in subdivisions where one cul-de-sac looks the same as the next. When a neighborhood focal point is missing, placemaking can create the assets that make it a desirable place to live.

REALTORS® Can Foster Placemaking

Anyone in a community can start the placemaking process, but someone must take the lead. Who better to do this than REALTORS® who are already engaged in their communities, know the neighborhoods and properties, and are experts at reimagining property and land use? NAR's Placemaking Initiative provides technical and financial assistance to help REALTOR® associations and their members transform public spaces into vibrant community places. Resources include a comprehensive guide on placemaking, webinars and presentations, and a Placemaking Micro-Grant for small projects.

For information about NAR placemaking resources and grants, go to https://www.nar.realtor/grants/placemaking-micro-grant.

Why Does Placemaking Matter?

Do you expect to be in the real estate business in 5 or 10 years? Climate-conscious millennials and Gen Zs will shape the housing market over the coming decade, and they want to live in interesting, walkable, car-optional communities. They will choose to live in communities that can offer employment, amenities, social and professional networks, services, resources, and opportunities.

The impact of these demographic realities is a "when" issue, not an "if" issue. Urban planners across the country are applying data analysis and adaptive reuse to transform communities in the mode of 15-minute livability (discussed earlier). Parking lots and malls, for example, are prime locations for mixed use community initiatives.[54] As a real estate professional, your business success will depend on your ability to understand and adapt to these trends. Communities that already have good walkability and public transit can build on these assets to attract high-income, well-educated residents and the businesses that serve them. Where these community features are lacking, REALTORS® can play a vital role in advocating for value-adding development and raising community leaders' awareness of the link to property values and the tax base.

54 Clark, Brian. (2021). "The Best Recipe for 15-Minute Livability." *NAR: On Common Ground*. https://www.nar.realtor/on-common-ground/the-best-recipe-for-15-minute-livability

10 Principles of Smart Growth

1. **Mix Land Uses.**
   Smart growth supports the integration of mixed land uses into communities as a critical component of achieving better places to live.

2. **Take Advantage of Compact Building Design.**
   Smart growth provides a means for communities to incorporate more compact building design as an alternative to conventional, land-consumptive development.

3. **Create a Range of Housing Opportunities and Choices.**
   Providing quality housing for people of all income levels is an integral component in any smart growth strategy.

4. **Create Walkable Neighborhoods.**
   Walkable communities are desirable places to live, work, learn, worship, and play, and therefore a key component of smart growth.

5. **Foster Distinctive, Attractive Communities With a Strong Sense of Place.**
   Smart growth encourages communities to craft a vision and set standards for development and construction that respond to community values of architectural beauty and distinctiveness, as well as expanded choices in housing and transportation.

6. **Preserve Open Space, Farmland, Natural Beauty, and Critical Environmental Areas.**
   Open space preservation supports smart growth goals by bolstering local economies, preserving critical environmental areas, improving our communities' quality of life, and guiding new growth into existing communities.

7. **Strengthen and Direct Development Towards Existing Communities.**
   Smart growth directs development towards existing communities already served by infrastructure, seeking to utilize the resources that existing neighborhoods offer and conserve open space and irreplaceable natural resources on the urban fringe.

8. **Provide a Variety of Transportation Choices.**
   Providing people with more choices in housing, shopping, communities, and transportation is a key aim of smart growth.

9. **Make Development Decisions Predictable, Fair, and Cost Effective.**
   For a community to be successful in implementing smart growth, it must be embraced by the private sector.

10. **Encourage Community and Stakeholder Collaboration.**
    Growth can create great places to live, work, and play – if it responds to a community's own sense of how and where it wants to grow.

Smart Growth Resources From NAR

Smart Growth encompasses all the concepts we looked at in this module – walkability, transit-oriented development, and placemaking. Whether your community is grappling with transportation and land-use issues, crowded schools, loss of open space, or revitalizing vacant properties, NAR's Smart Growth Program has resources to help REALTOR® associations plant seeds that will pay dividends for years to come.

- ***On Common Ground* Magazine**
  Keep up to date with NAR's free, semi-annual online magazine, which presents a wealth of information on smart growth planning and development.

- **Tool Kits**
  Learn about important community issues with downloadable toolkits on water infrastructure, transportation, public schools, and placemaking.

- **Land Use Initiative, Memo Database, and Growth Management Fact Book**
  Research land use management proposals and their impact on the real estate industry. Get analyses of local land use regulations and ordinances to help craft the association response.

- **Smart Growth Polling Program**
  Survey local or state residents' opinions on growth to inform decision making by local and state government officials.

- **Placemaking Initiative**
  Tap into technical and financial assistance to initiate placemaking. Take advantage of the resources offered by NAR and the Smart Growth Network at nar.realtor/smart-growth and nar.realtor/programs/smart-growth-program.

Practitioner Perspective

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How important are walkability and transportation choices to homeowners and buyers in your market?

A growing percentage of Americans want to live in walkable areas and have access to transportation.

Are buyers willing to pay a premium for homes with these attributes?

Yes. Areas with access to transit and that are walkable are so popular that these attributes raise prices.

What benefits do buyers see in homes with good walkability and transportation options?

It's a solution to congestion, and it improves a community's vitality. These communities are better for health, safety, and well-being, and homeowners save money by not having to pay for and insure multiple cars.

Who are typical buyers?

Millennials and seniors are competing for the same condominiums. Seniors want sidewalks and areas where they can walk and exercise, and millennials like having access to places – work, entertainment, and restaurants.

What's the positive impact of walkability on a community?

A more vital community attracts new businesses, increases available services, and yields greater appreciation for homeowners. Buyers interested in green houses also are interested in walkable communities.

Is there a role for real estate professionals in advocating for walkability and transit-oriented development?

Yes, they can promote zoning laws that allow for denser development and advocate for neighborhood schools and for better transit, including trains, buses, and biking.

What is a Green Home?

Energy efficiency, health, and comfort all are hallmarks of a green house. Such properties often are called high performance, eco-friendly or energy efficient homes.

Common elements

While some homes are certified as green by housing or environmental industry groups, properties don't necessarily have to carry a label to be considered green.

What all such homes have in common is a desire by its owners to live in a property that incorporates systems and features that lower utility bills, improve health and comfort, and minimize the impact on the planet.

Green upgrades

For existing homes, there's a vast array of strategies for achieving greater efficiency.

They include small, inexpensive upgrades, like installing low-flow water faucets, energy efficient light bulbs, and programmable thermostats.

In addition, less visible elements, such as efficient insulation and air sealing, create a more comfortable, less drafty interior environment.

And bigger, more costly projects--high-efficiency furnaces, solar panels, and triple-pane windows, for example--often provide larger financial and environmental gains.

New homes

Newly constructed homes are being built to high standards that embrace green principles. Many builders now take a scientific, whole-building approach to ensure that a property's design, layout and systems work in concert to create a functional, comfortable setting that addresses environmental concerns.

Seeking green

When you're looking at a home with green features, here's a short checklist of considerations:

- Energy efficiency in home features like appliances, water faucets, lighting, heating, cooling and water-heating systems.
- Efficient building envelopes with high performance windows and well-insulated walls, floors, and attics.
- Non-toxic building materials and finishes, such as recycled or renewable woods and low- and zero-VOC (volatile organic compound) paints and sealants.
- A landscape featuring native plants that thrive without chemical fertilizers or excessive watering.
- Location efficiency, meaning a community where public transportation and the needs of daily life are accessible without a car.

Learn more

Contact a REALTOR® with NAR's Green Designation at GreenREsourceCouncil.org.
Read about green home labels at ENERGY STAR®, energystar.gov.
National Association of Homebuilders, nahb.org.
US Green Building Council, usgbc.org.

EQUAL HOUSING OPPORTUNITY

REALTORS® who have earned National Association of REALTORS'® Green Designation (www.greenresourcecouncil.org) can refer you to local experts who can assess your home's performance.

NATIONAL ASSOCIATION of REALTORS® Official Designation | green

This graphic is from the Green REsource Council's "Green Client Handouts" and is available as a customizable consumer handout for all GREEN designees. For more information visit green.realtor.

Application:
Smart Growth and Your Business

Explore some of the websites and resources mentioned in this module. Take notes on how you will use these resources in your business.

WalkScore at www.walkscore.com

Transportation + Affordability Index at www.htaindex.cnt.org

Smart Growth at www.nar.realtor/smart-growth

MODULE 10:
Appraising and Valuing Green(er) Homes

Learning Objectives

At the conclusion of this module, you will be able to

- Describe the benefits for consumers and appraisers of searchable green fields in the MLS.
- Help clients and customers understand the appraisal and pricing of high-performance homes with green features.
- Provide appraisers with documentation of a home's green features to assist in the valuation process.

One of the most difficult and frustrating aspects of being a green real estate professional at this time is trying to capture the full value of high-performance homes with sustainable and energy-efficient features. In this module, we will look at what challenges are involved in achieving an accurate valuation, how tools are evolving to meet the challenges, and how the real estate professional can be part of the solution.

Valuing Green Homes: Challenges and Solutions

For the purpose of this course, we'll group the challenges and solutions of valuing high-performance homes into three categories:

- **Comparables:**
  Finding similar properties as reference points for calculating a value.
- **Competency:**
  Ensuring that the appraiser has the required knowledge of the attributes of resource-efficient homes and how they contribute value.
- **Communication:**
  Informing the lender and appraiser of the home's attributes and providing the backup documentation.

High-Performance Homes Price Premium

As we've discussed in this course, high-performance homes do sell for more. As noted earlier, Freddie Mac recently reported that energy-efficiency rated homes sell an average of nearly 3% more than nonrated homes – and among rated homes, those with higher rating sold 3–5% more than lower rated homes.[55] Note these recent findings at the state level as well.

CALIFORNIA

A study of 1.6 million homes sold in California found that a green certification label added an average of 9% to its selling value.

Homes with solar PV systems in California sell for a premium: new homes for an average premium of $2.30 to $2.60 per watt, existing homes with PV more than $6.00 per watt.[56]

55 "Do Green Improvements Increase Resale Value?" (2020). My Home: Freddie Mac. https://myhome.freddiemac.com/blog/homeownership/20200825-selling-green-home

56 Kok, N. (2012). "The Value of Green Labels in the California Housing Market, an Economic Analysis of the Impact of Green Labeling on the Sales Price of a Home." University of California, Berkeley, CA.

WASHINGTON, OREGON, IDAHO[57]

- **King County, Washington:**
  2.7% ENERGY STAR®
- **Seattle:**
  8% Built Green®
- **Portland:**
  6.4% ENERGY STAR®, 15% Earth Advantage®
- **Ada County, Idaho:**
  4.8% ENERGY STAR®
- **All of western Washington State**
  4.8% ENERGY STAR®

WASHINGTON, D.C.

High-performance homes in Washington, D.C., sell for an average premium of 3.46% compared to homes without green features.[58]

NORTH CAROLINA

ENERGY STAR® homes sold for an average sale price premium of $5,566 and $2.99 more per square foot over comparable code-built homes, as well as an average of 89 days faster.[59]

There's no question, then, that green increases value. The challenge is to accurately convey this value so that it's realized in the marketplace.

57 Northwest Energy Efficiency Alliance (NEEA). (October 2015). "The Market Valuation of Energy-Efficient and Green Certified Northwest Homes." https://d1o0i0v5q5lp8h.cloudfront.net/earadv/live/assets/documents/NEEA_Home_Valuation_Report-FINAL.pdf

58 Adomatis, Sandra, SRA, LEED Green Associate. (2015). "What Is Green Worth? Unveiling High-Performance Home Premiums in Washington, D.C."Adomatis Appraisal Service. https://www.imt.org/resources/what-is-green-worth-unveiling-high-performance-home-premiums-in-washington/

59 Pfleger, William, Perry, Chuck, Hurst, Nicholas, and Tiller, Jeff. (2011). "Market Impacts of ENERGY STAR® Qualifications for New Homes." North Carolina Energy Efficiency Alliance. http://ncenergystar.org/sites/ncenergystar.org/files/NCEEA_ENERGY_STAR_Market_Impact_Study.pdf

Comparables

Challenge:
The first valuation hurdle is finding and using valid comparable properties. When calculating the list price or appraised value of a home, real estate professionals and appraisers turn first to MLS data. If, however, the MLS does not provide data fields for green features or track the sales of resource-efficient, high-performance homes, comparable sales data can be elusive.

Solution:
Check your MLS to see if it offers data fields for green attributes. If your MLS does not, it will be a challenge to find comparable properties. However, consider getting involved in your MLS to incorporate data fields for green attributes for future transactions involving resource-efficient homes or green features. The benefits are many:

- Data fields for certifications and green attributes enable real estate professionals to list and find homes with high-performance features.
- The richer the stream of data, the larger the pool of comparable properties for real estate professionals and appraisers to use in calculating property value.
- When high-performance features are reflected in the MLS listing and value, homeowners can see the payoff for their choices and efforts.
- Data can be aggregated to show market trends, such as time on the market and sale-to-list price ratios for resource-efficient homes
- When their listings appear on the MLS, real estate professionals who specialize in high-performance homes can enhance brand marketing and reputation as go-to green practitioners.

LINKING MLS FIELDS TO ENERGY-USAGE DATA

Listings on the Chicago MLS take data on energy usage to the next level. Through a partnership between Elevate Energy and Midwest Real Estate Data LLC (MRED), Chicago MLS listings display information on gas and electricity costs to help homebuyers make more informed purchasing decisions. An auto-populate feature automatically adds the data when the agent fills in the seller's utility account number. The utility costs associated with a listing are automatically included in the MLS property listing.

Linking the energy-usage information to the listing helps both the buyer and seller. Buyers benefit from information on the ongoing performance of the home. Sellers who have made energy-efficiency upgrades can show the proof of their efforts. Energy-usage data reported from an independent source – the utility company – shortcuts collecting documentation on resource efficiency and provides standardized, apples-to-apples comparison between homes.

As discussed earlier, the Green Building Registry (GBR) is also helping to link high-performance data to MLS and other listing services.

Competence

Valuing a high-performance home, particularly in an area where it may be one of a kind (or few of a kind), presents challenges for everyone involved in the transaction. Almost everyone agrees that green features add value to a home, but they don't agree on how much or how to measure and value it.

LENDER COMPETENCE

- **Challenge:**
  The issue of competence starts with the lender and the loan officer, who may not understand that it takes a professional with knowledge of home performance and green homes to do the appraisal.

- **Solution:**
  Real estate professionals can encourage their clients to pick lenders who understand these types of homes. For example, lenders who offer energy-efficient mortgages (EEMs) are already clued into the impact of energy efficiency on the valuation of homes.

APPRAISER COMPETENCE

- **Challenge:**
  Uniform Standard of Professional Appraisal Practice (USPAP) standards require that "an appraiser must be competent to perform the assignment, acquire the necessary competency to perform the assignment, or decline or withdraw from the assignment."[60]

  The ability to appraise green, high-performance homes lags behind the demand for them. Many in the appraisal community are acutely aware of this gap, and the Appraisal Institute is working to bridge the gap through its Valuation of Sustainable Buildings Professional Designation Program.

- **Solution:**
  To help ensure that an appraisal of a high-performance home is performed by an appraiser with competence, the real estate professional or seller should communicate with the lender to confirm that the appraiser is trained in the

60 Uniform Standards of Professional Appraisal, Competency Rule. Appraisal Standards Board, The Appraisal Foundation. www.uspap.org

assessment of green home features. If the appraiser lacks the necessary knowledge and experience, assignment of a different appraiser can be requested. Note that the Appraisal Institute provides a registry of "green appraisers" who have completed rigorous training and earned the designation. Find appraisers who have earned the *Valuation of Sustainable Buildings Professional Development Program* designation and other appraisal resources at: www.appraisalinstitute.org/education/education-resources/green-building-resources.

REAL ESTATE PROFESSIONAL COMPETENCE

Whether you represent the buyer or the seller, the agent on the other side of the transaction may not share your knowledge of high-performance homes. Particularly, if you represent the seller, you may need to put some extra effort into helping the buyer's representative understand how the features and performance of the home affect its value.

Communication

Imagine the valuation process as a road trip. Everyone in the car – appraiser, lender, real estate professional, buyer, and seller – wants to reach the same destination of a fair valuation of a high-performance home. Every person in the car knows something about the right way to go, but no individual knows all of the details about the route.

With effective communication, the real estate professional can minimize the valuation bumps in the road. What does effective communication look like? It involves:

- Providing documentation and information
- Asking the right questions
- Digging for satisfactory answers

COMMUNICATING WITH THE LENDER

Communicating with the lender about the home's high-performance attributes should happen in the loan shopping and application stage and certainly well before an appraisal is ordered. Advance knowledge gives the lender time to better understand the property and to find a qualified appraiser.

COMMUNICATING WITH THE APPRAISER

Real estate professionals sometimes believe, mistakenly, that they are not allowed to communicate with an appraiser. But underwriting guidelines do not bar real estate professionals or their clients from providing information to help the appraiser do the job. What can you do to move the appraisal in the right direction?

- Do some research to find out whether there are similar homes in the vicinity and communicate these to the appraiser.
- Provide all the documentation on the attributes of the home.
- Be available to answer specific questions promptly.

DOCUMENTATION – THE VALUATION KEY

Many of the features that contribute to the resource efficiency of a home are not easily visible or distinguishable, such as high R-value insulation installed between walls or low-e windows. Providing documentation on both the attributes and the performance of a home helps the appraiser calculate a valid valuation. And the time to provide the information is before the appraisal process begins.

Real estate professionals can help their seller clients anticipate the appraisal process and not wait until the closing clock is ticking down to pull the documentation together. If your MLS has green data fields that require documentation uploads, you and your client are a step ahead.

What kinds of documentation will help the appraiser?

- Third-party certifications
- Specs and invoices for installed green features
- Documented utility bill savings

You could use the Appraisal Addendum developed by the Appraisal Institute as a guide to assembling documentation. The Appraisal Institute's Green Residential and Energy Efficient Addendum can be found at: www.appraisalinstitute.org/assets/1/7/ResidentialGreenandEnergyEfficientAddendum.pdf.

AFTER THE APPRAISAL

What if, despite your best efforts to communicate with the lender and appraiser, the valuation report seems to miss the target? An appraisal can be appealed if it appears that mistakes have been made or important attributes of the home have been overlooked.

Keep in mind that the appraiser works for the lender, not the seller or buyer-borrower. Therefore, communication must be with the lender, not the appraiser.

The first step in appealing an appraisal is to obtain a copy of the report. Then do a careful review of the report. Look for possible mistakes as well as overlooked features or facts. Prepare a written summary of any errors and oversights and present it to the lender with a request that the appraiser take a second look at the appraisal report.

Greening the MLS

The MLS is an essential part of the real estate business. Both real estate professionals and appraisers (and other professionals) rely on its data to price properties and identify the value of the features within. They know that the sale price of a home today will influence the price range for similar homes tomorrow. In the future, as more high-performance homes are retrofitted, sold, resold, and built, their valuation may become part of the new normal.

So in addition to the challenges and solutions we've already discussed, another big factor to capturing accurately the value of high-performance features is the ability to present a complete description of these features. We've discussed earlier the recent launch of the Green Building Registry that is attempting to bring all high-performance features into a single source platform, but another vital tool to accurately capture green, high-performance features is the MLS. The effort to do so is what's called the greening of the MLS.

According to NAR's 2021 REALTORS® and Sustainability Report, there is still work to be done on this front, as only 36% of agents can confirm their MLS has green data fields; most (54%) are simply unsure. This knowledge gap presents an opportunity for savvy, green-minded real estate professionals to take the lead in their market as the country continues to move towards more high-performance homes and sustainable lifestyles.

Standardizing MLS Terminology

A key component of greening the MLS data fields is standardized terminology. Everyone involved in the MLS has the same goal: accurate data leading to a fair value for a home at closing. However, both a lack of data and misrepresentation of properties' attributes can result in sellers underpricing or buyers overpaying for a house. Exaggerations of green features and certifications – greenwashing – harms the credibility of data and creates a legal risk for agents and brokers. As we have seen throughout this course, precise meanings of terminology, such as "green" and "energy efficient," can be difficult to pin down. As a result, confusion may arise simply from lack of a shared understanding of terminology – among real estate professionals and appraisers as well as buyers and sellers. Standardizing MLS terminology and fields offers a solution.

REAL ESTATE TRANSACTION STANDARD DATA DICTIONARY

The RETS Data Dictionary provides common definitions for real estate data based on the RETS protocol used by many MLS data exchange service providers. The Data Dictionary standardizes more than 500 data terms and values that define the most common descriptions of property attributes in the United States, as used by real estate brokers, MLSs, and software developers.

A COMMON VOCABULARY

When MLSs adopt the RETS Data Dictionary, terms such as "moisture control" and "home energy management system" mean the same in Washington State as in Washington, D.C. The RETS Data Dictionary is a big step toward reaching consensus on what "green" means in the context of real estate and how to value it. Because of recent integration of RETS fields into several MLSs around the country, green fields and terminology have already been clearly defined in other MLS markets.

Moving forward, expect to see increased integration of RETS fields, some of which will affect listings with green features, into MLSs data.

BE PART OF THE SOLUTION

As a green real estate professional, you can be part of the RETS fields solution by taking time to learn the terminology for describing high-performance features and using it correctly in listings, marketing materials, and sales pitches. The long-term result is a powerful business tool that responds to consumer expectations and supports business building for green real estate professionals.

MLS RULES

Along with instituting standardized green data fields, MLSs should examine their procedures and policies to ensure the integrity of the information. For example, the MLS can require uploading of documentation of specific attributes. If the listing agent fails to upload the required documentation within a specified period – usually a few days – the data, or the entire listing, is deleted.

The Green Implementation Guide

How does the MLS greening process work? When the MLS wants to add green fields, there's no need to reinvent the wheel. MLS committees and administrators can draw on a deep well of experience. REALTORS®, appraisers, builders, and other professionals collaborated to develop the Green MLS Implementation Guide. This step-by-step guide leads MLS administrators and committees though a planning and implementation process that includes all of the stakeholders.

SIX STEPS FOR GREENING THE MLS

1. Establish a business case
2. Manage risks
3. Implement Real Estate Transaction Standards (RETS)-compliant green MLS fields
4. Design for continuous improvement
5. Educate and communicate
6. Track and publish market trends

IMPLEMENTATION

The Green MLS Implementation Guide focuses on the technical details that MLS staff or their software system vendors need to implement the green data entry fields already defined by the RETS Data Dictionary. Download the Implementation Guide at https://green.realtor/sites/files/2019-02/2014%20NAR%20Green%20MLS%20Implementation%20Guide.pdf.

THREE CATEGORIES OF GREEN MLS FIELDS

- **Third-Party Verified (certifications and labels):** Quantifiable and documentable
- **Green Search/Marketing Fields (unverified):** Qualitative aspects
- **Specific/Technical Fields:** NAR requires all REALTOR®-affiliated MLSs to adopt the RETS Data Dictionary. Adoption of the Data Dictionary is mandatory but offering the defined green MLS fields is up to the MLS. The good news is that if your MLS opts to "go green," the work of defining the data fields is already done.

MLS Green Fields Every Agent Should Know

Recognizing that MLSs throughout the country have differing availability of green fields to market your listings, the below fields are a good starting point to help you market your high-performing home. Most agents will know many of these features when they see them, but they may not realize they are "high performing."

It's also important to know that some MLSs may have the ability to auto-populate your listing with relevant green fields information–notably those with a HELIX data feed. Inquire if your MLS has access to third-party data on high-performing homes.

Fields in blue are also in the Appraisal Institute's Green and Energy Efficient Appraisal addendum but may require the efficiency ratings associated with these features.

Appliances

- ENERGY STAR® rated – washer/dryer, refrigerator, freezer, stove/range/oven, water heater
- Heat pump water heater, solar water heater, sealed water heater, tankless water heater

Building Certification

- ENERGY STAR® certified, HERS® rating, Home Energy Score, Indoor airPLUS, LEED, NBGS, passive/net zero home, Pearl certified, SEER rating, WaterSense certified, Earthcraft, or other documented building certification

Construction

- Advanced framing, blown insulation, ICAT recessed lighting, insulated attic or crawl space, insulated concrete, insulated exterior duct work, lead-free paint, low VOC insulation, paints/finishes, wood products, non-toxic materials, pest-resistant materials, spray foam

Cooling

- Air purification system, air source heat pump, attic fan, ducted or ductless mini split, ENERGY STAR® equipment, insulation, ground source heat pump

Exterior

- Awnings/overhangs, cement siding, chimney caps, ENERGY STAR®-qualified roof shingles, skylights, solar light tubes, doors, exterior blinds, shutters, green roof, rain barrel/cistern, storm windows

Equipment

- Carbon monoxide detector, recovery vent, programmable or smart thermostat, whole house air cleaning system, exhaust vent

Heating

- Air source heat pump, air purification system, ducted or ductless mini splits, ground source heat pump, hydronic radiant flooring

Interior

- Dual flush toilet(s), ENERGY STAR® ceiling fan(s), exhaust fan(s), light fixture(s), WaterSense labeled faucets, shower heads, toilets, urinals

Power Production

- Solar panels (photovoltaics) or wind turbines

Public Remarks

- This may be one of your most valuable fields when marketing a high-performing home. This is a great place to tell the story of the home – share not only the features of the home, but how they make the home more comfortable, improve air quality, lower operating costs, etc. This is a great place to appeal emotionally to a potential buyer about the benefits of a high-performing home.

Practitioner Perspective

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↘ Tell us about the green appraisal process.

Appraisers should be an unbiased arm of the real estate transaction, and they should be knowledgeable of the property type and valuation tools. However, in the area of energy-efficient and green residential properties, we have challenges that can result in inaccurate appraised values. Just as a poorly marketed high-performance property can leave money on the table, a flawed valuation and lending process costs time, money, and stress for everyone involved in the transaction.

The borrower has a "bill of rights" to expect competency from all parties involved in the real estate transaction. Fannie Mae, Freddie Mac, and the Federal Housing Administration (FHA) all require lenders to hire appraisers who are competent in the property type and geographical area. An appraiser who lacks the required competency must decline the assignment.

Comparing apples to apples is crucial, but in many markets, comparables are in short supply. Plus, appraisers are under time pressure to complete the appraisal within a few days. I find it takes almost three times longer to complete the appraisal of a green house. (The appraisal fee is not commensurate with the time involved, either.) Energy-efficient homes not only present challenges in finding similar sales but can also require numerous calls to obtain documentation of the green features.

The availability of documentation is improving, with more databases going public and allowing access for appraisers and agents. For example, RESNET® has opened its database of HERS® ratings to the public. If you are listing or appraising a property with a HERS® rating (assigned after July 2012), you can search the database to verify the rating. Attaching the complete HERS® report to the MLS data field provides transparency for prospective buyers and appraisers.

Missing and incorrect listing information can complicate the appraisal process. For instance, if you don't know the HERS® rating, don't input zero. A zero HERS® rating indicates a net-zero-energy home. Listings often use the term solar without identifying the type of solar – thermal, water heating, or PV. Plus, the appraiser needs to know if a system is owned or leased; the secondary mortgage market classifies leased equipment as personal property, not real estate, and does not allow appraisers to include it in the value appraisal. Missing or incomplete information can result in an inaccurate appraised value if the appraiser uses the listing information without further verification.

Everyone involved in the transaction – appraisers, real estate professionals, lenders, underwriters, and builders – must stay abreast of developments in building science and valuation techniques. The insurance industry needs to catch up, too. For instance, appraisal guidelines don't address passive or net-zero-energy homes, yet underwriters often require appraisers to secure a sale within the last year that has the same features, or no value can be attributed to energy efficiency.

When real estate agents and builders understand the appraisers' guidelines, data required, and challenges, the transaction goes much smoother. There is nothing in the underwriting guidelines that prohibits real estate agents, sellers, and builders from providing pertinent data to the appraiser. But communication with the appraiser should occur before the appraisal is completed. Afterward, communication should be with the lender, especially if there are concerns regarding the appraisal.

Reflection:
Valuing High-Performance Homes and Your Business

> What challenges do you foresee in valuing high-performance homes in your market? Think through potential challenges and solutions.

MODULE 11:
Being the Green Listing and Buyer's Agent

Learning Objectives

At the conclusion of this module, you will be able to

- Ethically present the green features of sellers' homes to best advantage in marketing efforts.
- Match properties to buyers' needs, wants, and priorities in a home with green features.
- Understand the importance of educating buyers and sellers about high-performance features and their benefits.

As we've discussed throughout this course, the green real estate professional plays a vital role in helping create more healthful, sustainable communities. They do so by educating clients and customers about the benefits of high-performance homes and by working with all stakeholders to capture the value of green, sustainable features. This module looks more closely at how this comes into practice first on the listing side and then on the buyer side.

Distinguishing Yourself in the High-Performance Market

As an experienced agent, you already know the ropes of listing presentations and marketing properties. Selling high-performance homes, however, is different from selling "traditional homes," and people who own them know it. They expect a different approach. Sellers need to find out if you know how to market high-performance homes. At your first contact with a prospective client, you need to distinguish yourself from competitors and show that you have the expertise and experience to sell green homes.

Develop a Script

You might be well-versed in how to handle a first contact with sellers of traditional homes, but you might not be as familiar and comfortable with sellers of high-performance homes. Start applying what you've learned in this course by developing a script.

Scripting Exercise:
What Do You Need to Know?

> How would you respond to a caller who asks if you know how to sell green homes? The goal of your first contact with prospective sellers should be to gather enough information to prepare for the listing presentation. Brainstorm five questions to ask:

Prelisting Information Packet

The prelisting interview initiates the discussion of the home's green attributes and enables you to prepare a prelisting information packet. Customizing the packet based on the information you gathered from the seller can set you apart from competitors who don't take the time to tailor the content. Some veteran practitioners recommend hand delivering the prelisting information packet. But if you are greening your real estate practice, why not go paperless? Deliver a virtual information packet online.

COMPONENTS

The packet can include the usual components but should be "greened." For example:

- **Cover letter:**
  Confirm the listing appointment and compliment the owners on the home's high-performance features and, if appropriate, their sustainable lifestyle.
- **Personal marketing brochure:**
  Feature your experience with listing and marketing high-performance homes. Be sure to feature your Green Designation and other credentials.
- **Profiles of your team and information about the company:**
  Showcase your team members and describe your company's community involvement, values, and actions.
- **Testimonials:**
  Always a powerful marketing tool, testimonials reinforce your expertise and your ability to produce satisfactory, green-related transactions.
- **Documentation checklist:**
  Give the sellers a head start in compiling the documentation. As we will see later in this module, documenting green features such as third-party certifications, savings on utility bills, and receipts for upgrades is crucial to presenting a complete picture of the home's value and performance.
- **Green REsource Council marketing materials and content:**
  Take advantage of downloadable marketing materials such as postcards, brochures, client handouts, and press release templates, as well as downloadable social media engagement content.

Your Listing Presentation

Start With a Tour

Touring the home is a good way to build rapport with the sellers while you learn about the home and its sales potential. Not only will you get an idea of the general condition of the home, you can also spot possible fixes and upgrades to improve sales appeal.

As homeowners point out the obvious resource efficiency of the home, think about how the "unseen" items can be marketed. As a green real estate professional, you should be on the lookout for the features that fetch a premium on the market.

The Sit Down

The sit-down portion of the listing appointment is your opportunity to distinguish yourself as a green real estate professional. In addition to what you would normally do for a traditional home, you can:

- Highlight your training and experience in high-performance homes, including NAR's Green Designation.
- Provide an overview of the market for high-performance homes, particularly if demand exceeds supply.
- Describe how you reach buyers seeking these types of homes.
- Describe the sites where the home will be listed – MLSs, Realtor.com, and green-home sites.
- Inform the sellers if the MLS offers green data fields.
- Provide a list of vendors and service providers who can do suggested repairs and upgrades.

A Customized Listing Kit

As an experienced real estate professional, you probably already have a standard template for your listing kit. Let's look at how you can adapt it to high performance homes.

- **Market overview:**
  In addition to an overall market analysis, try to present information on the sales of high- performance homes.

Figure 11.1:
Sample Market Overview
(Green Homes Sold in King County, WA)

	Certified	Non-Certified	Difference
Homes Sold	3,941	10,362	27%
Square Feet	1,968	2,340	-16.5%
Sold Price	$437,479	$470,634	6.5%
Days on Market	65	64	

- **Comparable market analysis:**
  We've looked at the challenges of finding comparable properties earlier. Unlike the lender-appointed appraiser who is constrained to a narrow geographic area, you can look farther afield to find comparable properties. Identification of these comps can help the appraiser, too. In an area with a concentration of high-performance homes, obviously it will be easier to find comparable properties.

- **Documentation checklist:**
  Documentation to back up resource efficiency claims is crucial to marketing and appraising the home. Providing a checklist gives the seller a head start on locating and compiling the documentation.

- **Marketing plan:**
  The struggle that sellers of high-performance homes face is communicating their value to the market. This is the challenge the real estate professional must find ways to overcome. The sample marketing plan should describe what you will do to get the home sold.

- **Services you provide:**
  Some real estate professionals include a pledge of performance. Your performance pledge could include a commitment to marketing the green features of the home. Real estate professionals who aren't tuned in to the market for high-performance homes sometimes overlook or downplay these features because they don't realize the potential value.

Prepare the Documentation

A high-performance home usually looks like any other home because the features that improve performance are often hidden or not easily discernable. That's what makes these homes both unique and challenging. The best way to make the invisible advantages visible is to compile a kit of documentation. The deeper green the home, the more there may be to document.

The following checklist is based on the Appraisal Institute's addendum designed specifically for appraising green-home features. These features add value because they can be documented. Assembling the documentation for these aspects of the property provides the basis for marketing the property, listing it on an MLS that requires documentation of green data fields, and communicating with the appraiser.

You can perform a valuable service for sellers by identifying the aspects that add value and helping to assemble the documentation.

Figure 11.2: Checklist of High-Performance Features

❑	**Certifications**: LEED, ENERGY STAR®, NGBS
❑	**Insulation**: Type and R-values
❑	**Building envelope**: tightness, blower-door testing results
❑	**Water efficiency**: recycling system, rain barrels for irrigation
❑	**Windows**: ENERGY STAR®, low-e, solar shades
❑	**Day lighting**: skylights
❑	**Appliances**: ENERGY STAR® kitchen appliances, tankless water heater
❑	**Solar panels**: PV or thermal, leased or owned, age, capacity
❑	**HVAC**: SEER/AFUE ratings, heat pump efficiency rating, programmable thermostat, radiant floor heat, geothermal, passive solar
❑	**Energy ratings**: Home Energy Score, HERS® rating, including energy savings and date rated
❑	**Utility costs**: utility company reports
❑	**Energy audits**: date performed
❑	**Indoor air quality**: Indoor AIR Plus
❑	**WalkScore®**
❑	**Public transportation**
❑	**Site orientation**
❑	**Incentives** (federal, state, local) that add value

Adapted from the Residential Green and Energy Efficient Addendum, Appraisal Institute, www.appraisalinstitute.org/assets/1/7/Interactive 820.04-ResidentialGreenandEnergyEffecientAddendum.pdf

What Qualifies as Documentation?

- Home certifications
- Ratings – HERS®
- Photographs, before and after
- Specs and invoices
- Utility company reports
- Energy audits and tests (blower door, duct blaster, infrared imaging)
- Before and after results for fixes and upgrades recommended by an energy audit
- Energy bills before and after installation of systems such as solar PV or geothermal
- Solar leasing documents
- ENERGY STAR® ratings for appliances
- Labels – windows, appliances, certified materials

Showing the home's operating costs – utility bills – is a powerful marketing tool, but it's important to focus on objective documentation, such as an energy audit. If the new owner's consumption patterns differ from the sellers', potential disclosure issues could arise.

If the seller can't find or doesn't have documentation, consider engaging a BPI Building Analyst, HERS® rater, or other third party, such as Pearl Certification, to document the home's high-performing features for a future buyer and appraiser. Include the Appraisal Institute's Green and Energy Efficiency Appraisal Addendum with documentation on the home and upload it into the MLS.

Marketing a High-Performance Home

The documentation provides a good knowledge base of the technical aspects of the home. But energy audits and comp sales data don't create a picture of living in the home and the neighborhood. For example, which of these homes would appeal to you?

- R-38 insulation, low carbon footprint, high SEER value HVAC, xeriscaped, 90+ WalkScore®

OR

- Cozy, quiet, environmentally friendly, energy efficient, drought-resistant landscaping, walkable neighborhood

Both of these descriptions could apply to the same home. The difference is that the first describes the building science, and the second describes the benefits. For most homebuyers, the building science is too technical, and the terminology is rather intimidating. As we have learned, buyers tend to respond emotionally to a property and then rationalize their reactions with objective information. Effective marketing of high-performance homes focuses on the benefits – the lifestyle the new owners can enjoy.

Don't forget to mention features of the property and yard, such as drought-resistant landscaping or rain gardens. Likewise, emphasize aspects of the neighborhood and community. Is public transportation accessible? Can they walk to parks, restaurants, and shopping? Will they be able to live the lifestyle they want? These all add benefits for the homebuyer.

Let's go back to the checklist of documentable green features and brainstorm how to describe them as benefits in the following exercise.

Exercise:
Marketing the Benefits

How would you describe these documentable green features in terms of benefits? The benefits could include health and safety, cost savings, durability, comfort, control, environmental friendliness, status, or a combination of these or other factors. Describe the benefits of each of the features in this checklist.

Feature	Benefits
Certifications: LEED, ENERGY STAR®, NGBS	
Insulation: type and R-values	
Building envelope: tightness, blower-door testing results	
Water efficiency: recycling system, rain barrels for irrigation	
Windows: ENERGY STAR®, low-e, solar shades	
Day lighting: skylights	
Appliances: ENERGY STAR® kitchen appliances, tankless water heater	
Solar panels: PV or thermal, leased or owned	

HVAC: SEER/AFUE ratings, heat pump efficiency rating, geothermal	
Programmable thermostat	
Radiant floor heat	
Energy ratings: Home Energy Score, HERS®	
Utility costs: utility company reports	
Energy audit	
Indoor air quality: Indoor AIR Plus	
Walkability: WalkScore®	
Public transportation	
Site orientation	
Incentives (federal, state, local) that add value	

Greenwashing, No! Green Staging, Yes!

As we've discussed throughout this course, the terminology and language surrounding sustainability and green homes can overlap sometimes, and at other times can be confusing. When marketing a high-performance home, however, you want to be crystal clear on the distinction between two terms: greenwashing vs. green staging. Greenwashing is an unethical practice and actually diminishes progress for a sustainable future. Green staging, on the other hand, is not only perfectly legal, but also desirable, as it highlights the value of high-performance features, and thus sustainable living. Let's take a closer look at each.

Greenwashing

In the enthusiasm to present the benefits of a high-performance home, it's important to avoid fuzzy language and terms that stretch meaning. For example, descriptions such as an "ENERGY STAR®-style" or "LEED-type" home (referring to homes that do not actually have this certification) stretch the truth and potentially devalue the certification for homes that do have it.

Don't stretch the truth about your qualifications either. As an NAR Green designee, it's wrong to present yourself as an expert on all green-related issues. Clients and customers should not misconstrue your knowledge of the market as scientific insight. You can use the following Federal Trade Commission (FTC) guidelines on greenwashing to check your marketing materials and sales pitches for claims that fuzz or stretch meaning.

- Overstatement of environmental attributes
- Emphasis on a single environmental attribute with others ignored
- Irrelevant claims: No lead paint (lead paint was banned in 1978)
- Inflated or unsubstantiated claims: specific health claims
- Vague claims: all natural, environmentally friendly
- False eco-labels: self-certification

NAR Code of Ethics

The Code of Ethics commits REALTORS® to presenting accurate descriptions of properties as well as their qualifications.

ARTICLE 2

REALTORS® shall avoid exaggeration, misrepresentation, or concealment of pertinent facts relating to the property or the transaction. REALTORS® shall not, however, be obligated to discover latent defects in the property, to advise on matters outside the scope of their real estate license, or to disclose facts which are confidential under the scope of agency or non-agency relationships as defined by state law. (Amended 1/00)

ARTICLE 12

REALTORS® shall be honest and truthful in their real estate communications and shall present a true picture in their advertising, marketing, and other representations.

REALTORS® shall ensure that their status as real estate professionals is readily apparent in their advertising, marketing, and other representations, and that the recipients of all real estate communications are, or have been, notified that those communications are from a real estate professional. (Amended 1/08)

Green Staging

All real estate professionals know the importance of staging when selling a home. Green staging is intended to highlight the high-performing features of a home. According to NAR's 2021 REALTORS® and Sustainability Report, 65% of real estate professionals feel that energy efficiency promotion is very or somewhat valuable. What could you do to adapt your home staging skills?

VERIFY ENVIRONMENTAL FRIENDLINESS

Conduct an energy audit of a home and outline the green changes and upgrades that have been made as a result of the audit's findings. This can include basic changes, such as new caulking, insulation, and lighting packages.

It also can entail more substantial upgrades, such as new appliances with the ENERGY STAR® label and the installation of a tankless water heater or an efficient HVAC system.

Show prospects the potential savings and long-term benefits of all the green modifications that have been made.

EDUCATE BUYERS BY HIGHLIGHTING GREEN FEATURES

Offer buyers a checklist of a property's green features. Provide a folder that contains brief but vital information about all of the home's high-performance features – and their benefits. This should include everything from energy efficiencies of appliances to the VOC levels of the paint. Post signs around the home pointing out particular energy- and resource-efficient features.

IMMERSE BUYERS IN SUSTAINABLE LIVING

Immerse the buyers in a green world. Everything in the home should read green, healthful living. Cleaning supplies used to clean the house should be green; any cleaning supplied in cabinets should be green; food on display should be labeled organic. Only decorate with fresh flowers and healthy, sustainable plants.

If you are serving light refreshments during an open house, make sure to highlight sustainable ingredients, sourcing, etc. Any documentation or educational material should be supplied in a green, sustainable way. In effect, try to show buyers how green living looks.

ENHANCE GREEN CURB APPEAL

Don't neglect the outdoor space. If homeowners are revamping the exterior, suggest swapping a lush lawn – that demands huge resources – for something more eco-friendly, such as vegetable gardens or native grasses.

Plants, shrubs, and vines that are native to a given area can thrive well without excessive watering or additives, and they require less maintenance. Play up other green outdoor features, such as composting bins and rainwater barrels. Be aware that any chemical additives, say Miracle-Gro, sitting in the garden shed are a no-no.

Now let's apply that marketing strategies we just discussed in the following exercise.

Adapting Your Core Skills:
Market This Home

Going Green at the Beach
Renovation of Dave and Anna Porter's beach home near Seattle achieved the following certifications: Built Green™ 5 Star, ENERGY STAR® Home, American Lung Association Health House®, Environments for Living®, and LEED® for Homes Gold.

Review the features, then answer the following questions.

- Job-site recycling and deconstruction of original structure, 80% diverted from landfill
- Salvage and reuse of doors, cabinets, and other materials from original structure
- Wine racks made from salvaged decking
- Vegetated green roof
- "Insectary" attracts beneficial insects
- Edible landscaping
- Drought-tolerant plant selections
- Pervious paving material
- 1.2 KW photovoltaic solar system
- Geothermal heat pump
- High-efficiency windows
- Awning to reduce sun exposure

- Natural light
- Advanced framing
- ENERGY STAR® appliances and ventilation fans
- Compact fluorescent lights
- Radiant floor heating system
- Passive solar heating and daylighting
- Spray-foam insulation and air barrier
- Heat recovery ventilator
- Dual-flush toilets
- Low-flow showerheads and faucets
- Rainwater collection system
- Tankless hot water with recirculation system
- Drip irrigation
- Water-saving front-loading clothes washer
- Water-saving drawer dishwasher
- FSC-certified wood products
- Recycled glass tile
- Cork flooring produced from leftover material from wine cork production
- 50-year siding, 40-year metal roof
- Sustainably produced materials
- Fireplace façade made from local stone
- Low-VOC paint
- Non-toxic finishes on flooring and cabinetry
- Formaldehyde-free insulation
- Minimal use of adhesives
- Formaldehyde-free cabinets
- Operable windows
- No carpet

How would you describe the home's features in terms of benefits?

How could you document and substantiate the home's resource efficiencies and sustainable construction?

What are your ideas for staging this home to showcase its features – seen and unseen?

Practitioner Perspective

Craig Foley
GREEN, e-PRO®
Founder, Sustainable Real Estate Consulting Services
Cambridge, Massachusetts

↘ Do sellers seek you out to list their energy-efficient, green homes?

Yes. We are fortunate in Boston to have developers, architects and builders that are very engaged in the high-performance home (HPH) spec market. I also have established myself as someone with expertise of solar PV valuation; it's surprising how many calls I get from frustrated sellers about real estate agents who have no idea about the process for PV valuation.

↘ During listing presentations, do homeowners tell you about their homes' energy-efficient features?

For builders and developers that specialize in passive house, LEED, or net zero development their projects, EE features are obviously the main topic of conversation. For homeowners who have invested in solar PV, they obviously want to discuss their system and how I can convey the value to buyers, their agents, appraisers, and lenders. For a homeowner who doesn't fit in any of these categories, one of the things the NAR Green Designation training does is make you much more aware of the signs of a homeowner who has made investments in EE improvements. If you see the clues, it's very easy to engage them on the topic.

↘ How do you shape sellers' expectations about the value of their high-performance home?

It all depends on the documentation that they can provide, or that I can track down for them. Invoices for EE improvements and before-and-after utility bills that show cost savings can be helpful. Third-party certifications of home performance are important in establishing contributory value to buyers, appraisers, and lenders. If documentation is available, it is possible to be very specific about increased equity and value.

↘ Do you market a resource-efficient home differently than homes without these features?

Yes. Our firm has developed a very attractive template brochure we use for marketing HPHs. There are many buyers who have an interest in sustainable features, but there is no need to overwhelm buyers if they do not have a lot of questions at the time of the open house or showing. Having a marketing brochure that highlights the benefits of the project that can be reviewed at their leisure has proved to be effective.

↘ How can you develop a market distinction as a "green, go-to real estate professional"?

For me it started with becoming engaged with organizations like MA Chapter of the USGBC, Northeast Sustainable Energy Association (NESEA) and our Passive House chapter here in MA. This led to public speaking opportunities that put me in front of audiences that included builders, developers, energy modelers, and LEED raters. Probably not for everyone, but the work I did several years ago has definitely paid off.

What Does Green Mean to the Buyer?

Now let's look at how you can adapt your core real estate skills and apply the knowledge you've gained to the flipside of the transaction – working with buyers. The first step is to determine what green mean to the buyer. Green can mean different things to different people, so it's important that you have a clear understanding of what green means to each individual buyer so you can better understand and address their wants and needs.

Educate Buyers About Green Features and Their Benefits

As we've discussed throughout this course, green is not a zero-sum condition; there are degrees of green. Let's recap distinguishing features and benefits that you can highlight for buyers:

- Energy efficiency in heating, cooling, water-heating systems, lighting, and appliances (cost savings)
- Efficient building envelope with high-performance windows and well-insulated walls, floors, and attic (cost savings and comfort)
- Big enough to meet all occupants' needs but not too large (comfort)
- Non-toxic building materials and finishes, low- and zero-VOC paints and sealants (health)
- Good indoor air quality that reduces and removes allergens and harmful fumes (health)
- Use of recycled materials and renewable woods (sustainability)
- Landscaping features with native plants that thrive without chemical fertilizers or excessive watering (cost savings)
- Walkability with pedestrian-friendly walkways connecting places that people want to go to (cost savings, health, ease of daily routine)
- Location efficiency with employment and daily needs accessible without a car (cost savings, health, ease of daily routine)

When one or two of these features are high on a buyer's list of needs and wants, consider it a signal that other green features are likely important too.

Price, Cost, and Value

As with any home purchase, price, cost, and value are going to be a top consideration for the green buyer. You can discuss pricing of high-performance homes and how quickly they sell. Help buyers evaluate the price premium that a high-performance home may command:

- **Price:**
  Lenders focus on down payment, Loan-to-Value (LTV), debt to income, and Principal, Interest, Taxes, Insurance (PITI). Can the buyer afford the property? Is the appraised value in line with the offer price?

- **Cost:**
  How much will it cost to heat and cool the home and commute by car?

- **Value:**
  Considering price and costs, will living in the home provide the benefits the buyer wants for the family? Will long commutes rob homeowners of family time? Is the location car dependent? Are there any interesting places to walk to? How does the home align with lifestyle and personal values?

Exercise:
What Does Green Mean?

What would you say or ask to clarify the meaning behind these statements? What does the statement tell you about the buyer's concerns? Record your comments below.

- I'm not a tree hugger, but I don't like expensive utility bills.
- We're interested in a zero-energy home.
- We're really green, and our home should be consistent with our values.
- How's the public transportation?
- I have a lot of allergies, and so do my kids.
- We don't need a McMansion – just enough space for our needs and hobbies.
- Green homes look weird.
- Is this a sustainable community?
- We're really nature people.
- Only LEED homes are green, right?
- What's radon? We heard it makes houses radioactive.
- Is this a walkable area?
- A green home is a nice dream, but we can't afford it.
- We'll need room for organic gardening.
- We don't want to be downwind from any large farming operations.

Helping Buyers Find High-Performance Homes

There are several things you can do to help educate, and also protect, your client in the home-search process.

Ask Questions

Help educate your client in the home search by asking questions about the home's efficiency. This will elicit information from the seller while still allowing the buyer to make up their own minds.

- How old is the HVAC system? If it's older than 15 years, it may need to be replaced soon.
- What is the quality of the windows and doors? Are the windows single- or double-paned? Better yet, are they energy-efficient windows? (You can dampen your hand and feel for drafts.)
- How old are the appliances? Are the appliances ENERGY STAR® rated? If the refrigerator, dishwasher, and washer and dryer are more than 10 years old, they're close to the end of their useful lives.
- Has the home's certification been verified by an independent third party? What year was it certified? Is a copy of the certification available?

Ask for Documentation

Knowing about building science really pays off when you are helping buyers find a resource-efficient home. From the previous module, you know what it takes to document attributes of the resource-efficient home. If any of these features are present, ask to see the documentation.

Be Aware of Potential for Greenwashing

As discussed earlier, greenwashing violates the NAR Code of Ethics. Real estate professionals who don't share your knowledge base of high-performance homes may inadvertently "over-green" the sales pitch for a home. Unless it's clearly misrepresentation, it would be inappropriate to accuse fellow real estate professionals of greenwashing. They may not realize that their sales language is stretching the facts about the home's attributes.

Green designees need to be careful not to overstate their level of expertise on the buyer side as well. Take a few minutes to read the article by the NAR legal team regarding disclosures and representation associated with high-performance features and homes in the Resources section.

Inspections

Aside from the typical inspection protocols, inspections for purchase of a high-performance home requires specialized knowledge and tests, particularly if the buyer is planning energy improvements. Investing in an energy audit before buying the home can help the buyer avoid a costly misstep.

The report should provide recommendations for upgrades, ballpark cost figures, and estimates of potential energy savings for the improvements. If the audit turns up major upgrade recommendations, the buyers should have a clear picture of how great an energy improvement they can achieve at what levels of cost and work.

Be sure that the sales contract includes a contingency for an energy audit inspection, as well as inspections for any other factors that are important to the buyers. If the buyer plans to apply for an EEM, the lender will require an energy audit and HERS® rating.

Find the Right Inspector

When scheduling presale inspections, the buyers should look for inspectors who have the expertise to evaluate the conditions that are important to the buyers. For example, if allergens or off-gassing of formaldehyde are a concern, ask if the inspector has the expertise and equipment to run the needed test and evaluate the results. If there are possible issues with radon, asbestos, or old lead paint, the buyer will need a specialist to conduct the inspection and recommend abatement methods.

Financing the High-Performance Home

Many buyers (and lenders too) are surprised to learn that special financing available through FHA and VA lenders can make energy-efficient homes and upgrades more affordable. The term energy-efficient mortgage (EEM) is often used as an umbrella term for any loan that pays for energy improvements. There are, however, some differences between types of loans, the amount of funds available, and terms.

- **Energy-Efficient Mortgage (EEM):**
  This type extends the buying power of the purchaser by taking savings on energy costs into consideration when gauging how much house the buyer can afford. Its purpose is to facilitate the purchase of energy-efficient new homes.

- **Energy-Improvement Mortgage (EIM):**
  This type provides funds for making energy-efficiency improvements to an existing home.

The advantage of these loans is that they can be rolled into the mortgage, which makes the interest tax-deductible, unlike a home equity line of credit or personal loan. See the Resources section for more details on loan types for high-performance homes and upgrades.

The sales contract should include contingences for testing as well as EEM approval. Qualifying for the loans usually requires a HERS® rating as part of the underwriting process. If the buyer's ability or desire to purchase the home depends on approval of EEM or home-improvement financing, the sales contract should contain a contingency clause to that effect.

Find the Right Lender

Although any FHA or VA lender may make an EEM loan, finding a lender who can is a challenge. Many lenders lack the capacity, or know-how, to handle the extra paperwork and inspections the loans require.

You can offer a valuable service for buyers by providing information on EEM lenders in your area. Finding a lender may take some legwork. You could start by calling the lenders who are already in your network of service providers to find out if they have the capacity to make EEM loans, or check out the DSIRE database at www.dsireusa.org for lenders and financing incentives in your market area.

Practitioner Perspective

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What are clues that buyers are green-minded?

I listen for people who talk about health issues. If there are concerns about IAQ and the HVAC system, or the client asks about carpet or pets, those are clues that they may be looking for some green features.

During your initial consultation, how do you uncover buyers' desires for a high-performance home?

I don't take clients out to look at houses until we've had an interview. I incorporate questions that uncover hidden issues that may not be on their bucket lists. I bring up issues like air quality, mold, and lead paint. That opens their eyes.

Do buyers sometimes opt for fixer-uppers when their "dream home" isn't available?

Yes. I offer free energy audits, and the results often determine some of those upgrades.

How do you help buyers see a home's potential?

We review all features as we walk through homes for efficiency and comfort, including orientation for sun exposure and how that might impact their electric bills.

Do buyers know about green financing and incentives?

We discuss all available financing methods and weigh the pros and cons of each option.

How can real estate professionals find high-performance homes?

Green features may not be listed in MLS listings, so seek out agents with an NAR Green Designation to inquire about energy-efficient homes. Agents may know of these homes that are not listed yet.

Reflection:
Listing, Buying, and Your Business

Try to list three ways you can effectively market a high-performing home and three ways you can help buyers find a high-performing home.

MODULE 12:
Going Green: It's a Journey, Not a Destination

Learning Objectives

At the conclusion of this module, you will be able to

- Find community involvement opportunities to raise awareness of sustainability and set an example through business practices.
- Identify a team of professionals who can build, rate, and maintain high-performance homes to connect green-minded home sellers and buyers with the service resources they need.
- Identify business-planning action steps to establish a market position as a Green designee.

Becoming a green real estate professional is a journey, not a destination. It is an ongoing process of learning and adapting your business approach. Although others – your competitors – may be ahead of you in building a real estate business focused on high-performance homes, there is plenty of market space for you to re-engineer your business strategy.

In this module, we'll look at actions you can take immediately in six areas of your business and community to build your market presence and reputation as the "go-to" real estate professional for high-performance homes.

1. Set an example
2. Share your knowledge
3. Build a network
4. Support REALTOR® associations and green MLS development
5. Get involved in the community
6. Believe in what you do and say

Set an Example

Remember the green-curve discussion? Innovators and early adopters help others understand how innovations can integrate into their lives and provide benefits. How do they do this? By expressing approval of these choices and setting an example.

In Your Office Environment

What better place to start setting an example than the office environment? Your office environment can speak volumes about your commitment to an environmentally conscious way of life, as we discussed earlier.

- Use recycled paper and plastic products in the office. Look for Green Seal–certified office products.
- Use low-toxicity office products and environmentally friendly green cleaning products for janitorial use.
- Switch from disposal Styrofoam cups and plates to glass and ceramic dishware and stainless-steel flatware.
- Participate in recycling programs – recycle paper, plastic, and printer cartridges.
- Unplug office equipment when not in use – plugged-in appliances continue to draw electricity in hibernation or standby modes.

- Furnish the office with certified Forest Stewardship Council (FSC) furniture or low-VOC wood alternatives.
- Maintain an online green library of information resources with links to sources such as ENERGY STAR®, Energy Savers, Earth 911, and other sources dedicated to sustainability.
- Replace printed advertising and other marketing materials with paperless media. Go paperless with transaction forms.

In Your Lifestyle

Setting an example in your office environment says a lot about your values, but you need to be personally knowledgeable and set an example in your lifestyle, too. For example, you cannot claim expertise on walkability if you don't set an example and walk the neighborhoods yourself.

Share Your Knowledge

Some real estate professionals who specialize in high-performance homes find that clients and customers turn to them as a source of information. When asked for guidance in finding the right vendors and service providers, you want to be prepared with lists of information sources and suggested professionals – your green team.

Your Green Team

When it comes to assembling a team of experts who know how to install and maintain the inner workings of a resource-efficient home, you will likely find many self-identified green professionals in your area. As a result, it can be difficult to determine if a service provider or vendor is truly "green." Of course, you should always be cautious about recommending specific services and vendors, but there are information sources you can use to start building a team of professionals you feel comfortable including on a "suggested" list. Look over your current list of go-to experts and add specialized vendors and services providers. Look for the following:

Experience

- Communication of knowledge and experience
- Experience with projects similar in size and scope
- Availability of references from clients and colleagues
- Verification of work by a third party

Actions

- Use of materials and products certified green by a reliable certifier (Green Seal, FSC®)
- Recycling or reuse of demolition or construction waste
- Transparency in business practices
- Community involvement in programs related to sustainable practices

Certifications and affiliations with professional organizations

- American Society of Interior Designers
- Appraisal Institute green appraisers
- Building Performance Institute (BPI) certified professionals
- DOE Home Energy Score raters
- ENERGY STAR® partners
- NAHB Certified Green Professional™
- RESNET certified raters
- USGBC LEED approved providers

SPONSOR A HOME SEMINAR

Presenting a home seminar focused on high-performance homes is a great way to showcase your expertise and build your visibility as a real estate professional and an NAR Green designee. Attendees can get acquainted with you without making a commitment. You can demonstrate your knowledge and professionalism and begin the process of building a relationship with potential prospects.

Service organizations, associations, civic groups, and community colleges – to name a few – are always looking for programming ideas and interesting speakers. Creating a program opportunity could be as simple as contacting the organization's leadership or administration and offering to make a presentation on a real estate topic.

Involving sponsors and other presenters is a great way to build your network as well as bolster your credibility. They help by sharing costs, providing expertise as presenters, bolstering expertise, and offering promotion assistance. Both sponsors and other presenters want to reach the same audience that you do, and usually for the same reasons – to gain customers.

Although the seminar environment should not be sales-focused, following up with contacts made at seminars provides an opportunity for you to further demonstrate your expertise and offer helpful services.

CREATE A BLOG

What makes blogs such a powerful communication method for real estate marketing is this: As your readership and reputation as a reliable information source grows, you gain recognition as an authoritative, trusted real estate professional. Although there are numerous writers blogging about green topics, you have the advantage of combining your local real estate market experience with knowledge of high-performance homes. Blogs allow you to answer questions in a thoughtful and informative format. As you develop blog entries about various topics, you will be building an online library of frequently asked questions (FAQs) with answers and solutions.

You don't have to be an English major, journalist, or expert on everything green to be a successful blogger, but you do want to be perceived as a reliable source of authoritative, original, and interesting information. As with any marketing technique, the decision to blog should be integrated into an overall marketing plan. Veteran real estate bloggers allocate time for blogging, just as they do for other prospecting activities. Keep in mind, however, that in the real estate business, success of blogging is measured in contacts that produce transactions, not reader comments and likes.

Build a Network

Networking is what real estate professionals do naturally. You could start expanding your network by participating in groups such as:

- Local chapters of associations such as USGBC or NAHB
- Chambers of Commerce
- Government planning committees and commissions
- Local conservation organizations
- Neighborhood organizations

Build Your Business Network With Builders

If you've not connected with local builders doing green development or retrofits, you may be missing out on a promising source of business. Builders need real estate professionals to sell their product. As resource-efficient homes become the new normal, your NAR Green Designation puts you in an excellent position to team up with builders who renovate or construct these homes.

To work effectively with these builders, you need to take the time to learn about their products, including the building science, and their perspective on the market. Builders are interested in your market perspective, too. As you share information and learn, mutually beneficial business relationships evolve.

Attendance at trade shows and home expos is a great way to meet builders and vet them as possible members of your green team as well as keep up to date on products. Look around your area for local, regional, and national building shows, such as GreenBuild and the National Association of Homebuilders.

HANG OUT

Sometimes the best way to make productive contacts is to just hang out where other green-minded professionals are likely to be. Find out where they are likely to hang out informally or at organized events. And don't forget about hanging out online on social media.

GREEN RESOURCE COUNCIL ON FACEBOOK AND LINKEDIN

Hang out at the members-only NAR Green Designee Networking Community page on Facebook. You'll find informative discussions on local programs, events, awards, articles, and industry news. Go to www.facebook.com/groups/GRCNetwork. (Membership ID required.)

START A GREEN BUSINESS ROUNDTABLE

If professional and community organizations are lacking in your market area, you can form your own business roundtable. Business owners want to know about real estate market trends because they affect their businesses as well. Additionally, business owners who serve the same market are a source of referrals.

Start by inviting a few key business owners to a breakfast or lunch. Keep the group small enough to be manageable. Be up front about your aim to exchange client leads and build each other's businesses. Include local developers and builders – they need the real estate professional to sell their product. Tap into their knowledge and expertise; invite them to be guest bloggers or co-presenters at a seminar – they want to reach the same clients and customers that you do.

Support Your Association and Green MLS

If your REALTOR® association has an environmental or smart growth committee, volunteer to serve on it. Not only will you share the benefits of your knowledge, you will also connect with other REALTORS® who have the same interests. Earning NAR's Green Designation also earns you the credibility to speak in support of greening your association's MLS.

Get Involved in the Community

For many real estate professionals, community involvement and volunteering are things they do anyway. They invest the time and effort because they want to better their communities and make them places where people want to work and live. Of course, community involvement has the side benefit of meeting and getting acquainted with potential prospects on a personal level. Sincere, altruistic community service is one of the best ways to raise your profile and expand your spheres. You can use the community involvement skills you already have and focus them on green opportunities.

The real estate professional who gets involved with community planning has an opportunity to be the voice of sustainable real estate. Your involvement may reveal opportunities to influence community development toward sustainability. Remember, local government representatives may not be aware of the factors that enhance property values – such as walkability and public transportation – and support community vitality. You may be able to make a valuable contribution by sharing your front-line knowledge of the real estate market.

Community events that offer opportunities to set up an exhibit booth or information table are a great way to meet prospects. There may be opportunities to sponsor portions of events, too. But you don't have to wait for another group to schedule an event; you can sponsor your own event. Invite past clients and customers and encourage them to bring friends.

Believe in What You Say and Do

At the beginning of this module, we discussed setting an example in your business environment and personal life. Whatever your high-performance real estate focus is – healthy homes, energy-efficient homes, smart homes, sustainable homes, etc. – you can't fake it. Your business approach must be consistent with your values, and your commitment must be honest.

Practitioner Perspective

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➘ Who are essential members of your "green team"?

Appraisers and loan originators who understand green and energy auditors who can provide independent verification are key.

➘ How do you find green-minded professionals who can provide products and services for your clients?

I'm plugged in with local green advocacy groups. That's vital.

➘ What are your criteria for including professionals who are the "real deal" on your team?

Greenwashing is a big problem. I look at certifications and how they operate their businesses, such as whether they use green practices in the office and in their business process. I also talk with them to see if they're aware of and really understand green.

➘ Do you participate in green organizations for networking and referrals?

Yes. You make relationships and hope that they'll turn into opportunities. It makes sense to be a part of green committees at your real estate board and to participate in the local homebuilder's association. Those provide a tremendous advantage in terms of education and learning about what's trending.

↘ What advice would you offer to real estate professionals who want to put together a "green team"?

Education is key. You don't need to be the expert in everything, but you do need some understanding. It's fine to say, "I don't know," and then call an expert and get back to the client with the right answer.

Reflection:
The Green Journey and Your Business

Take these final moments to list three immediate steps you are going to take to build your green real estate business. Reflect on why you listed the three items that you did.

Resources

ENERGY STAR® Product Categories (Residential)

The ENERGY STAR® website (www.energystar.gov) lists approved products for both home and commercial use. The site provides buying guides as well as lists of retailers.

Appliances	Building Products
↘ Clothes washers/dryers ↘ Dehumidifiers ↘ Dishwashers ↘ Refrigerators and freezers ↘ Room air cleaners and purifiers ↘ Water coolers	↘ Seal and insulation ↘ Roof products ↘ Windows, doors, and skylights
Lighting and Fans	**Water Heaters**
↘ Decorative light strings ↘ Ceiling fans ↘ LED and CFL lightbulbs ↘ Light fixtures ↘ Residential LED lighting	↘ Gas condensing ↘ Heat pump ↘ High-efficiency gas storage ↘ Solar ↘ Whole home, gas, and tankless

Heating and Cooling	Computers and Electronics
↘ Air conditioning, central and room ↘ Furnaces and boilers ↘ Dehumidifiers ↘ Fans, ventilating ↘ Heat pumps, air source, and geothermal ↘ Home sealing, insulation, and air sealing ↘ Mini-split heating and cooling ↘ Room air cleaners and purifiers	↘ Audio/video ↘ Battery chargers ↘ Computers ↘ Cordless phones and VoIP phones ↘ Displays ↘ Imaging equipment ↘ Set-top boxes and cable boxes ↘ Televisions

Building Material and Certification Ratings

	Wood	Flooring	Cleaning Products	Appliances	Windows	Other
EPA Design for the Environment			✓			
ENERGY STAR®				✓	✓	
GREENGUARD®	✓	✓	✓			Indoor Air Quality
GreenSeal™	✓	✓				Food Packaging, Paint, Paper
FSC™ Certified	✓	✓				Chain of Custody, Paper, Printing

	Wood	Flooring	Cleaning Products	Appliances	Windows	Other
FloorScore	✓	✓	✓			
Carpet and Rug Institute		✓				
NFSC Certified						
WaterSense						Bathroom Fixtures, Irrigation Professionals
AirPLUS				✓		Indoor Air Quality
Green Globes						Commercial and Industrial Buildings

Checklists for Greening a Home

$ = low cost, low effort, DIY

$$ = medium cost, professional installation recommended

$$$ = high cost, professional installation required

Building Envelope					
❑	Weather stripping	$	❑	Attic floor and hatch insulation	$$
❑	Caulk window trim	$	❑	Insulate floors above crawlspace	$$
❑	Repair glazing	$	❑	Install acoustic insulation	$$
❑	Putty around window panels	$	❑	Draft stopper in fireplace chimney	$$
❑	Remove shrubbery at foundation	$	❑	Blow-in insulation in walls	$$$
❑	Seal foundation cracks	$$	❑	Install double-pane windows	$$$
❑	Replace outer doors	$$	❑	ENERGY STAR® windows	$$$
❑	Reflective exterior paint	$$	❑	Install a cool or green roof	$$$

Water Conservation					
❑	Laminar faucets	$	❑	High-efficiency (low-flow) toilet	$$
❑	Aerators on faucets	$	❑	ENERGY STAR® water heater	$$
❑	Wrap hot water heater, pipes	$	❑	Tankless water heater	$$–$$$
❑	Dual flush toilet controls	$	❑	Install heat recovery system	$$–$$$
❑	Fix leaky faucets	$	❑	WaterSense appliances	$$–$$$
❑	Low-flow showerhead	$	❑	Solar water heater	$$$
❑	Circulating hot water pump	$$	❑	Dual plumbing system	$$$

Energy Efficiency and Lighting					
❑	Switch to CFL or LED lightbulbs	$	❑	ENERGY STAR® appliances	$$–$$$
❑	Solar garden lights	$	❑	Solar water heater	$$
❑	Install dimmers	$	❑	Electric car recharging hookup	$$
❑	Timers	$	❑	Increase glazing for more daylight	$$$
❑	Sensors, motion and occupancy	$	❑	Install insulated airtight skylights	$$$
❑	Install a clothesline	$	❑	Solar PV generating system	$$$
❑	Power strips (avoid phantom load)	$	❑	Solar passive heating	$$$
❑	Energy-monitoring application	$	❑	Small wind turbine generator	$$$
❑	Clean refrigerator coils	$	❑	Net metering	$$$
❑	Install LED down lights	$$	❑	Deep energy retrofit	$$$
❑	Tubular skylights	$$–$$$			

HVAC					
❑	Programmable thermostat	$	❑	Exhaust fans	$$
❑	Thermal drapes	$	❑	Zone control heat and cooling	$$
❑	Air filters	$	❑	Heat pump	$$$
❑	Duct sealing	$	❑	Air source pump	$$$
❑	Cross ventilation upgrade	$$	❑	ENERGY STAR® furnace, boiler	$$$
❑	Dehumidifier	$$	❑	Radiant heat	$$$
❑	Awnings	$$	❑	Radiant floor heat	$$$
❑	Whole house fan	$$	❑	Ground-source heat pump	$$$
❑	Condensing furnace	$$$	❑	Trombe wall or window	$$$
❑	Ceiling fans (dual direction)	$$	❑	Geothermal	$$$

Indoor Air Quality					
❑	HEPA air filters	$	❑	Replace off-gassing materials	$$$
❑	Low-VOC paint and finishes	$$	❑	Remediate mold	$$$
❑	Remediate lead-based paint	$$	❑	Remediate asbestos	$$$
❑	Radon sealing and venting	$$$	❑		

Materials					
❑	Low-VOC paint, wall coverings	$–$$	❑	FSC©- and SFI®-certified wood	$$–$$$
❑	Recycle old material	$–$$	❑	Formaldehyde-free cabinetry	$$–$$$
❑	CFI Green Label carpet	$$	❑	Reclaimed or recycled materials	$$$

Lawn and Garden					
❑	Drip irrigation	$	❑	Pest-resistant plants, natural repellants	$
❑	Irrigation timer, rain shutoff device	$	❑	Evergreen trees for wind block	$
❑	Rain barrel or cistern	$	❑	Leafy trees for shade	$
❑	Organic, slow-release fertilizer	$	❑	Set mower height at 3 inches	$
❑	Compost bin	$	❑	Electric or push mower	$$
❑	Mulch	$	❑	Bio swale and rain garden	$$
❑	Native plants, xeriscaping	$	❑	Permeable pavement materials	$$
❑	Group plants by water needs	$	❑	Solar pool heater	$$
❑	Deep-rooted plants	$	❑	Outdoor living space upgrade	$$$
❑	Reduce grassed lawn size	$	❑	Greywater usage, dual plumbing	$$$

NAR's Green Designation: A Marketing Advantage

What does NAR's Green Designation say about you as a real estate professional? Displaying the Green Designation shows that you have dedicated your professional skills to supporting and encouraging sustainable real estate practices. It demonstrates your achievement in learning about the principles of sustainability and green building.

Who Can Display the Green Designation?

Members of NAR who have successfully completed all course requirements and who are members of the Green REsource Council.

How to Use the REALTOR® Trademark and Green Designation Correctly

Descriptive words or phrases, such as green, eco-friendly, or sustainable should never be used with the terms REALTOR® or REALTORS®, even if they are separated by a comma or hyphen

	Do	Don't
With your name	↘ REALTOR® Jane Doe, GREEN ↘ Jane Doe, REALTOR®, GREEN	↘ Jane Doe, GREEN REALTOR®
	Do	**Don't**
With other designations	↘ John Smith, REALTOR®, GRI, ABR®, GREEN ↘ John Smith, ABR®, GREEN, GRI, REALTOR®	↘ John Smith, ABR®, GRI, GREEN, REALTOR®
	Do	**Don't**
In email and Web addresses	↘ realtorjanedoe_green.com ↘ johnsmithrealtorgreen@aol.com ↘ greenjanedoerealtor.com ↘ johnsmithgreen@realtor.com	↘ greenrealtor.com ↘ greenrealtorjohnsmith.com ↘ johnsmithgreenrealtor@aol.com ↘ greenrealtor@johnsmith.com

Designees must maintain both NAR and Green REsource Council membership to display the designation.

Misuse or unauthorized use may violate your local REALTOR® association's bylaws and/or the NAR Code of Ethics, which can subject you to sanctions. To avoid blurring or diminishing the distinctive features of the logo for NAR's Green Designation, the logo should not be combined with any other graphic or typographic features. The designation should always be used with the name of the member who has obtained the designation, not the name of a real estate business or an individual other than the designee.

Green Designee Obligations: Do's And Don'ts

By Legal Affairs, National Association of REALTORS®

Whether you're representing a seller who wishes to market her home as "green" or assisting a buyer in finding a property that is environmentally friendly and energy efficient, you are assuming legal obligations. These obligations are similar to the obligations you have to clients and customers with respect to other types of properties, whether such obligations arise from your state's common law, statutes or license law, or from NAR's Code of Ethics. You must represent yourself, your knowledge, and the subject properties accurately. You must dedicate your efforts and competence to the best interests of your clients, while dealing fairly and honestly with customers.

Your legal obligations when dealing with green issues, however, can pose some special challenges. First, as with environmental hazards, green features often involve technical information that requires specialized training and study. Second, many green and green-adverse property features are not easily observable. Third, the scope of what "green real estate" means and the number of new green building products and concepts being constantly introduced into the market is very large. For these reasons, it can be difficult and risky – even for a licensee who holds NAR's Green Designation – to guide a seller or purchaser interested in residential or commercial properties that are green through the various stages of a transaction. Here are a few Do's and Don'ts that will help you meet your obligations – and limit your legal liability – in such transactions:

Don't market or describe a property simply as a "green building" or "green home." There are many degrees of "greenness," and it is therefore better to talk about specific green features. You, the seller, and the buyer may all have different ideas as to what makes a property "green."

Do find out what green features are most important to your buyer. Does she care more about keeping the utility bills manageable or more about using recycled building products or having compost facilities? You must know what your buyer means by "green" in order to match her with a property that has the features she cares about and that will result in a successful purchase.

Do keep current on green issues. The amount of information is – and will continue to be – overwhelming, but to the extent you represent yourself as a "Green Broker" by putting NAR's Green Designation by your name or otherwise, you create a reasonable expectation that you are more knowledgeable than the average licensee – or buyer or seller – when it comes to sustainable and energy-efficient properties. You should be sure you can and do live up to that obligation. Pass on accurate and helpful articles on green issues to your clients.

Don't overstate your knowledge. After completing this course, you will have significant knowledge about features, products, and services that can make a property eco-friendly or energy efficient. But that does not mean that you have sufficient expertise to advise a purchaser on every green or green-adverse aspect of the property – whether there are any latent noxious materials that could affect air quality or health; whether the current plumbing and water sources are water-saving or water-wasting; what kinds of retrofitting needs to be done to the property to make it more energy efficient; and what such retrofitting might cost for a particular property. If you overstate your knowledge, you may find that a court will hold you to a higher standard. Moreover, be sure you convey to your client the limits of your knowledge, so that they do not rely on you for information or advice that you are not capable of providing.

Do encourage purchasers to engage experts before they make a commitment to purchase a property. With respect to green features, this will probably mean that the purchaser must find inspectors, testers, and other experts who have very specific knowledge – knowledge about the green features the purchaser is most interested in. Make it your business to know who some of these experts are in your area and share a list of them with your clients.

Do review the seller's property condition disclosure form and provide it to the purchaser. Compare the representations on the form, as well as any other oral or written representations the seller may make, to what you observe through the level of examination required of licensees in your state and point out any discrepancies to your buyer. In most cases, the law does not require you to confirm the seller's representations unless your reasonable examination of the property gives you a basis to suspect those representations are not accurate. Also consider whether any of the conditions disclosed via your state's seller disclosure form could be relevant to the green issues your buyer cares about.

Don't just look for eco-friendly and energy-efficient building features. Also keep your eyes open for features that could be green adverse, such as poor insulation, leaky window frames, and older energy-hog appliances.

Do remind your sellers of their obligations to comply with any duties imposed by local, state, and federal laws that are related to environmental issues. Rules and regulations related to sustainable building and energy savings are sure to be enacted in the future, so stay on top of these, too. Just as in the case of any other property features, don't guess, make predictions, or state opinions about green issues as if they are fact. While most states do not hold agents responsible for discovering latent defects or for knowing about matters beyond the scope required of real estate licensees in that state, when a consumer reasonably relies upon your statements about green features and suffers a loss as a result, you may find yourself held liable by a court for such losses.

Disclosures and Representations With High-Performance Homes

By Legal Affairs, National Association of REALTORS®

The disclosure duties of real estate licensees and sellers with respect to green property features will vary somewhat from state to state, just as they do with respect to more mundane property features or defects. However, in general, licensees will have the same disclosure duties they have when assisting clients and customers with transactions where green features are not the focus. Similarly, disclosure obligations under the Code of Ethics will remain the same when green issues enter the picture.

The place to start is your state's agency disclosure requirements. Most states specify when and how the agency relationship should be disclosed to clients, and what kinds of agency relationships are permitted. The point at which you disclose the agency relationship is also a good time to explain your expertise in green matters to your client.

While you can proudly point to the educational requirements you have met to list NAR's Green Designation after your name, you should also be careful not to overstate your level of expertise. Explain that you are conscious of, and sensitive to, green building issues, but that there will be some matters that will require the buyer to seek assistance from experts that have a higher degree of technical expertise. Tell the buyers that you will let them know when you feel a situation requires the use of experts, inspectors, testers, and/or environmental or energy auditors. Tell them that when you don't have expertise in a particular matter of concern to them, you will say, "I don't know."

If you follow this advice, your conduct will also be consistent with Article 12 of the NAR Code of Ethics, which says that:

"REALTORS® shall be honest and truthful in their real estate communications and shall present a true picture in their advertising, marketing, and other representations."

In addition, you will be managing your client's expectations and preventing a situation where you could legally be held to an unrealistically high standard of care. It is important that you always balance promoting yourself as someone whom eco- and energy-conscious clients can trust with conveying a realistic understanding of how far your green expertise goes.

Your disclosure responsibilities also extend to green and non-green property conditions, whether they must be disclosed by sellers via a state-mandated property condition disclosure form or under common law, which generally requires sellers and their representatives to affirmatively disclose any material defects of which they are aware, especially if the defect is something that would be difficult for a buyer to observe on their own. Article 2 of the NAR Code of Ethics also mandates (and limits) your disclosure responsibilities as follows:

"REALTORS® shall avoid exaggeration, misrepresentation, or concealment of pertinent facts relating to the property or the transaction. REALTORS® shall not, however, be obligated to discover latent defects in the property, to advise on matters outside the scope of their real estate license, or to disclose facts which are confidential under the scope of agency or non-agency relationships as defined by state law. (Amended 1/00)"

If you are representing the seller, encourage them to disclose all material defects completely, including any that might be averse to a buyer's desire to purchase a property with green features. For instance, the disclosure of problems with a sewage system or septic system or the existence of underground storage tanks could suggest negative impacts to the environment. Similarly, problems with the roof or windows could impact the energy consumption of the property.

A defect or condition is material if a reasonable buyer would consider it important in their decision to purchase the property at a certain price and on other desired terms and conditions. Because eco-conscious buyers are often willing to pay more for properties that have green features, the absence of a particular green feature or a circumstance adverse to the environment or energy efficiency is likely to be material.

If you are representing the buyer, you must not only disclose material defects of which you are aware but must also investigate any aspect of a property that your buyer-client specifically identifies as important in making the decision to purchase. Don't just rely on the seller's claims; compare their claims to what you observe and advise the buyer to seek the help of experts when a matter is beyond your scope of expertise. For example, with buyers who are energy-conscious, confirm the seller's claim that the appliances have certain ENERGY STAR® ratings, but suggest that an expert be consulted if the question is whether existing solar panels are adequate.

Helping clients to market and purchase properties with green features can be rewarding; however, make sure that you always present an honest and truthful picture of such properties and their green and non-green features, as well as your own skills and knowledge.

High-Performance Loan Types

Loan Type		Description
FHA	**EEM** New homes, extends purchasing power	The mortgage loan amount can be increased by the cost of energy improvements. The maximum amount of the portion of the EEM for energy-efficient improvements is the lesser of 5% of the value of the property, or 115% of the median area price of a single-family dwelling, or 150% of the conforming Freddie Mac limit. Requires a home energy rating to provide the lender with the estimated monthly energy savings and the value of the energy-efficiency measures.
	EIM Existing homes, energy improvements	Adds the cost of energy-efficiency improvements to an existing home to the mortgage without increasing the down payment. Requires a home energy rating to provide the lender with the estimated monthly energy savings and the value of the energy-efficiency measures.
FHA	**203(k)** Existing homes, home improvement	Combines purchase (or refinance) and rehab into one mortgage. Cost of the rehabilitation must be at least $5,000, but the total value of the property must still fall within FHA limits. The value of the property is determined by the lesser of (1) the value of the property before rehabilitation plus the cost of rehabilitation, or (2) 110% of the appraised value of the property after rehabilitation. Requires work write-up by an FHA-approved 203(k) consultant. The consultant facilitates inspections and draws from funds in escrow. Work must be finished within 180 days.

FHA	**203(k) Streamline** Existing homes, home improvement	Not intended for major structural repairs. Combines purchase (or refinance) and rehab into one mortgage. No minimum, maximum of $35,000. Requires submission of a contractor bid with loan application. The lender orders an appraisal to determine what the value of the house will be once all of this work is completed. Work must be completed within 90 days.
VA	**Energy Mortgage** Extends purchasing power, home improvement	Up to $3,000 based solely on documented costs. Up to $6,000 if a home energy rating projects that the reduction in monthly energy savings will exceed the increase in the monthly mortgage payment. The total loan amount after adding the costs of the energy improvements cannot exceed VA loan limit. Final LTV may exceed 100% of the appraised value if energy-improvement measures have positive cash flow. Work must be completed within 180 days.

Appraisal Institutes Green Residential and Energy Efficient Addendum

Below is the link for the updated guide to use the Appraisal Institutes Green Residential and Energy Efficient Addendum.

https://www.appraisalinstitute.org/assets/1/7/ResidentialGreenandEnergyEfficientAddendum.pdf

Websites for Green Resources

- **Air Conditioning, Heating, and Refrigeration Institute**
  www.ahrinet.org
- **American Wind Energy Association**
  www.awea.org
- **Building Performance Institute**
  www.bpi.org/individual_locator.aspx
- **Consortium for Energy Efficiency**
  www.cee1.org
- **Cool Roofs**
  www.coolroofs.org
- **Database of State Incentives for Renewables and Efficiency**
  www.dsireusa.org
- **DOE Home Energy Score**
  https://betterbuildingssolutioncenter.energy.gov/home-energy-score/maps
- **EnergySage**
  www.energysage.com
- **ENERGY STAR®**
  www.energystar.gov
- **ENERGY STAR® Home Improvement**
  www.energystar.gov/campaign/knowledgeCenter
- **Energy.Gov Home Design and Remodeling**
  https://www.energy.gov/energysaver/design
- **Green REsource Council**
  https://green.realtor
- **HERS®**
  https://www.resnet.us/raters
- **Home Energy Saver**
  http://hes.lbl.gov/consumer
- **LEED Professional Directory USGBC**
  www.usgbc.org/people

- **NAR Library Archives**
  https://www.nar.realtor/library-archives
- **National Fenestration Rating Council**
  www.nfrc.org
- **National Green Building Standard Green Certification**
  www.homeinnovation.com/green
- **National Renewable Energy Lab**
  www.nrel.gov
- **North American Board of Certified Energy Professionals**
  https://directories.nabcep.org/
- **Radon Maps**
  https://www.epa.gov/radon/epa-map-radon-zones
- **Small Wind Certification Council**
  www.smallwindcertification.org
- **smarthome**
  www.smarthome.com
- **SmartThings**
  www.smartthings.com
- **Solar Estimator**
  www.solar-estimate.org
- **StopWaste**
  www.stopwaste.org
- **USGBC Green Home Guide**
  http://greenhomeguide.com
- **Wind Estimator by ZIP Code**
  www.solar-estimate.org/?page=wind-calculator

Glossary

ANSI
American National Standards Institute, www.ansi.org. One of three organizations involved in developing the combined energy code.

ASHRAE
American Society of Heating, Refrigerating and Air-Conditioning Engineers, www.ashrae.org. One of three organizations involved in developing the combined energy code.

Brownfields
Properties, such as former gas stations and dry-cleaning plants, rendered hazardous by contaminants.

Building envelope
Building components that separate the indoor and outdoor environments including below-grade systems, exterior walls, windows and doors, and roofs.

Carbon footprint
The total amount of greenhouse gas emissions (carbon dioxide) caused by an organization, event, product, or individual.

Cool roof
A roof with radiant barriers, also known as reflective insulation, that block the transfer of heat.

Cradle to Cradle®
A recycling strategy that views all materials as continuously valuable and circulating in closed loops of production, use, and recycling.

Daylighting
Taking advantage of sunlight for home illumination and energy while avoiding the negative aspects of overheating and glare.

Embodied energy
The sum of all the energy inputs over the lifetime of a material. The lower the total embodied energy, the "greener" the product.

Energy assessment/audit
Inspection of the components of HVAC systems for purposes of finding and diagnosing problem areas.

Energy modeling
Use of software tools to simulate energy performance of a home or building throughout a typical year of use and predict how systems will function and interact.

Energy performance testing
Diagnostic of HVAC systems; usually includes a blower-door test, a duct-blaster test, and infrared imaging.

ENERGY STAR®
A certification awarded by the U.S. Department of Energy to homes and appliance that meet specified energy-efficiency standards.

Environmental values
A personal philosophy regarding personal responsibility for environmental protection and preservation.

Fenestration
Windows and doors.

Greywater
Recycled water from low-intensity uses such as handwashing; can be recycled for toilet flushing and some irrigation.

Greyfields
Abandoned and underperforming retail and commercial sites, such as closed shopping and strip malls and abandoned airports.

Green roof
A rooftop expanse of soil and vegetation that reduces heating and cooling loads and absorbs carbon dioxide, air pollution, and rainfall runoff.

High-performance home
A home constructed and equipped with systems that provide a high degree of energy and resource efficiency.

IAQ
Indoor air quality.

IES
Illuminating Engineering Society of North America, www.iesna.org. One of three organizations involved in developing the combined energy code.

IEQ
Indoor environment quality (includes IAQ).

Infill development
Redevelopment and adaptive reuse of buildings in the urban core.

LEED
Leadership in Energy and Environmental Design, a certification awarded by the U.S. Green Building Council to qualified homes and buildings.

Mixed use
Building that blends a combination of residential, commercial, and cultural uses under one roof. Often combined with infill development.

Net metering
Sale back to the power grid of excess electricity generated by an off-grid system.

Net zero home:
A home that produces as much electricity as it uses.

NGBS
National Green Building Standard, a certification awarded by the National Association of Home Builders to qualifying homes.

Off-gas
Release of unpleasant and sometimes toxic volatile organic compounds (VOCs), such as formaldehyde, from building materials.

Passive House certification
A rigorous standard for energy efficiency in a building, resulting in ultra-low energy buildings that require little energy for space heating or cooling.

Resource efficient
Thrifty use of energy and water resources.

RETS Data Dictionary
Real Estate Transaction Standards data dictionary that standardizes terminology for use by MLSs.

Smart grid
An electricity supply network that uses digital communications technology to detect and react to local changes in usage.

Smart home
A residence that has appliances, lighting, heating, air conditioning, entertainment, security, and other systems that can communicate with each other and the resident and be controlled remotely by phone or internet.

Sustainability
Meeting present needs without compromising the ability of future generations to meet their needs.

Thermal comfort
Perception of the comfort level of a space caused by heating or cooling.

Transit-oriented development
Residential and commercial development designed to maximize access to, and use of, public transportation.

Volatile organic compound (VOC)
Toxic fumes or emissions, such as formaldehyde, off-gassed by building materials.

Xeriscaping
Landscaping with naturally drought-resistant plant