Building a Green Home in New England

An Introductory Guide

BRIGHT® BUILT HOME

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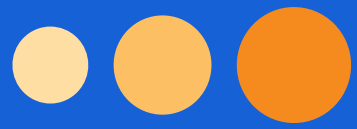
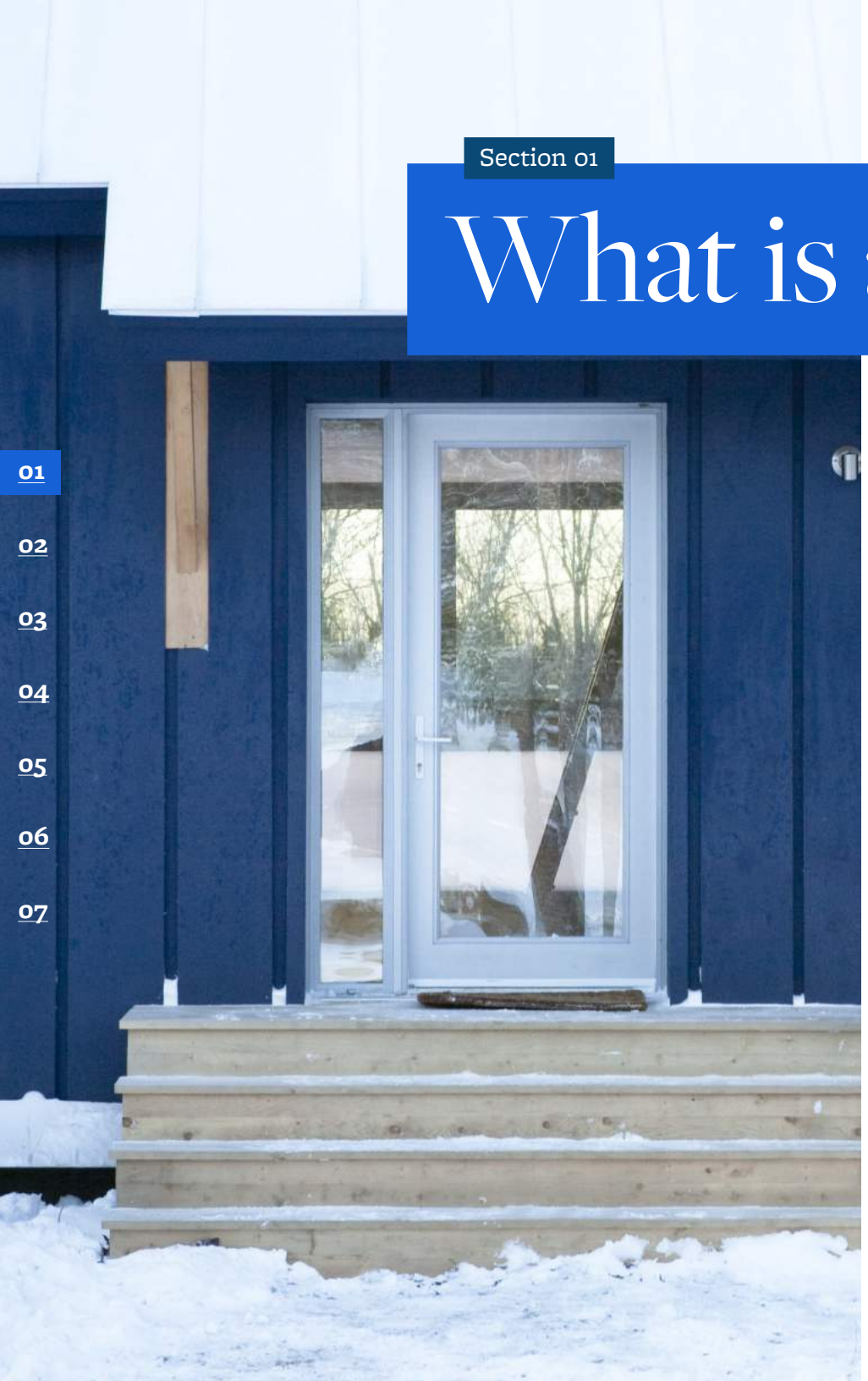




Section 01

What is a Green Home?

How do you minimally impact the environment while keeping your home warm and comfortable all winter long?

What makes a home green? Both the home itself and the process to build it must be environmentally responsible and use resources efficiently. Building a green home often means taking the entire life cycle into consideration, including selecting the site, designing the building, constructing it properly and with appropriate materials, and operating and maintaining it.

Countless descriptions can be used to define a green home, and the term has different meanings for different people, but there are some common characteristics among sustainable structures. Certification programs like Net Zero Energy Building, Passive House, LEED, Zero Energy Ready Home, and Energy Star have been developed to create quality and process guidelines and standardized measurement systems for building green homes. These programs offer many benefits, but a home doesn't have to be certified to be green.

One challenge unique to building a green home in New England is the cold winter climate. How do you minimally impact the environment while keeping your home warm and comfortable all winter long? The not-so-

simple answer is through smart design, sustainable construction practices, and environmentally friendly materials and systems.

This guide is designed to highlight the basic principles of building a green home in New England so that you know what questions to ask when talking to architects and contractors about designing and building your new home. This is not a technical manual, but a framework for understanding the most important elements of building a durable, comfortable home that has fewer negative impacts on the environment.

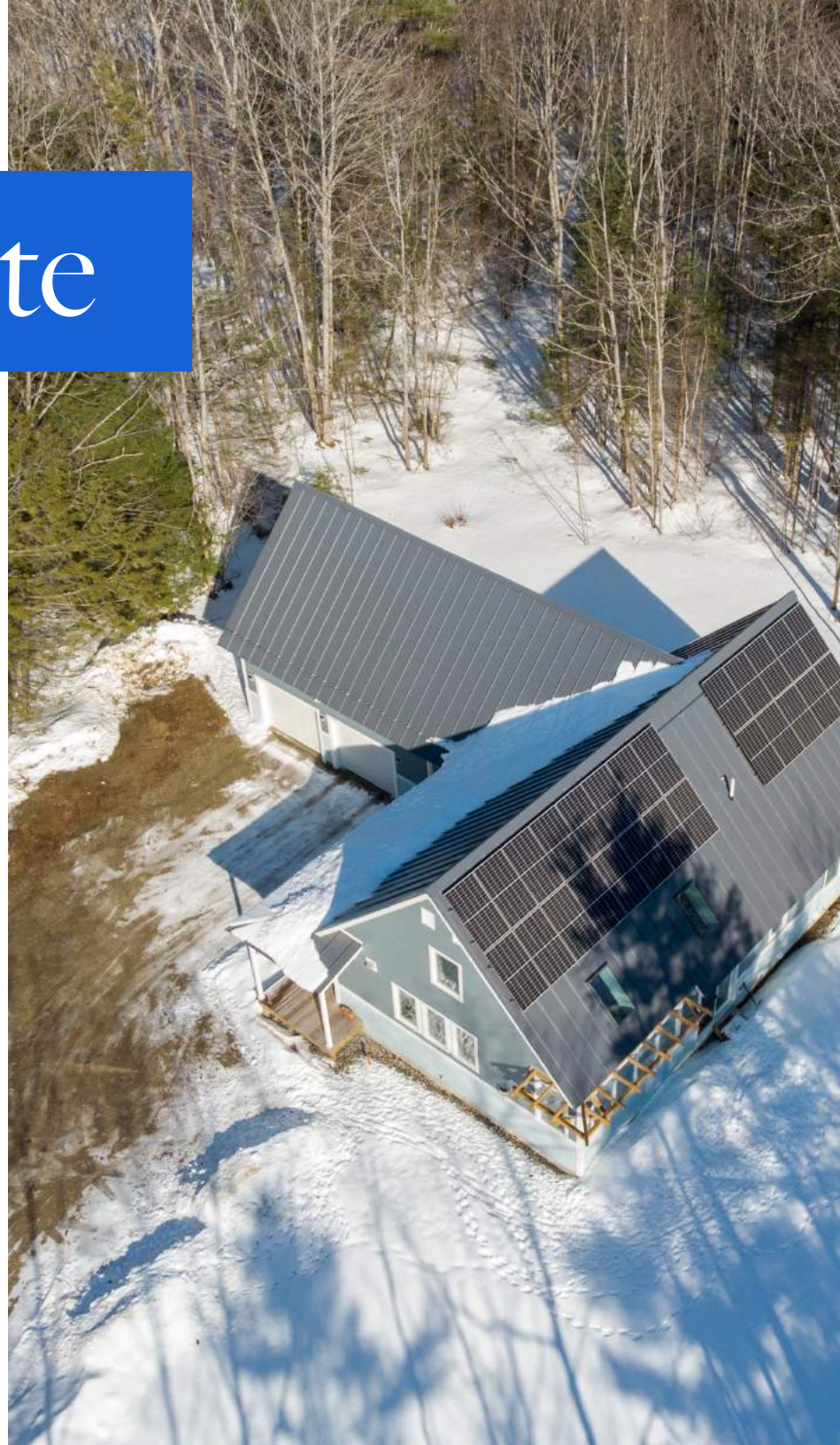
Start with the Site

The location of a home plays a major role in how sustainable the structure can be. Being smart about site optimization is the first step when building a green home.

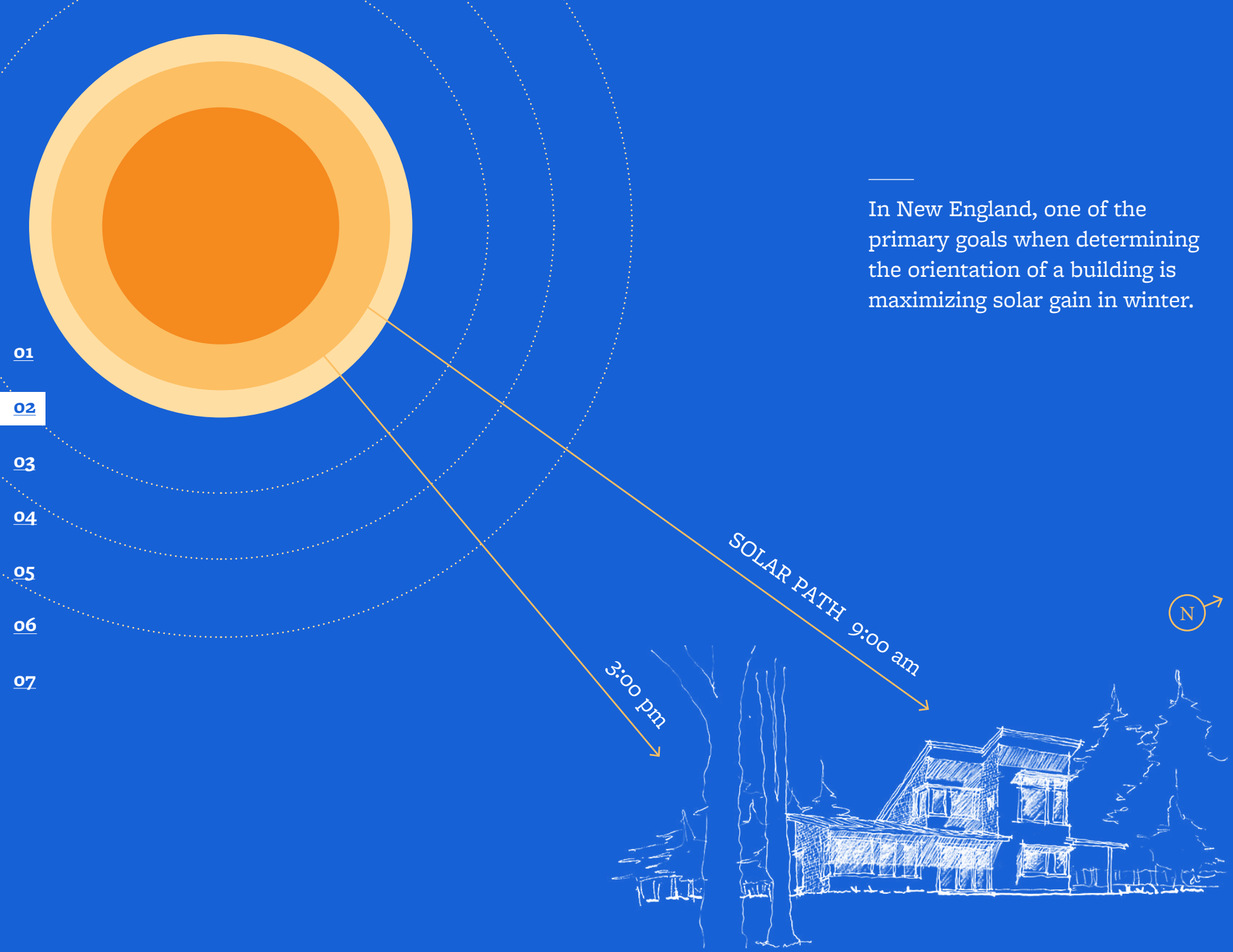
Orientation

You're building a new home. You don't want to just plop it down anywhere on your property. You want to put it in the place that provides the best scenic view, looks the most appealing as you approach, and hopefully has the smallest environmental impact. Deciding on the orientation of the building requires taking all of these factors, and more, into consideration.

The sun is a free source of heat and energy; the more you can do to harness its natural power, the greener your home will be. Allowing sunlight to enter the building and naturally warm up the space allows you to use less energy for heating during the colder months. Research has shown that orienting a home to maximize solar gain can save 10-40% on heating costs. This not only means that you are spending less money and living more comfortably, it also means you are consuming less energy, reducing your environmental footprint, and benefiting from natural light throughout the day. That's a pretty good return for a decision that typically costs zero dollars to implement.



In New England, one of the primary goals when determining the orientation of a building is maximizing solar gain in winter.



The best way to orient a house in New England is with one of the longer sides facing primarily south to allow the maximum amount of low winter sun to shine in. If you plan to install rooftop solar panels, either now or in the future, it is also important to make sure that one of the roof planes faces south. In a home that is basically rectangular, the combination of these two factors makes an orientation with the ridgeline going from east to west the most sensible solution.

Shading

Most homes do not sit on top of a barren hill without any surrounding landscape features. In reality, most sites are surrounded by buildings, mountains, trees, or other features that create shade. Where your home is positioned on the site and how it is oriented will impact how much sun reaches the house at different times throughout the year.

If you are trying to maximize solar gain in winter, you will want minimal shade on the south side so as much sunlight as possible can enter the space. This means avoiding situating the home where buildings or evergreen trees will block the light on the south side of the home. If you do want to take advantage of shade in summer, try to position the home so that mature, deciduous trees are on the south side to block the intense summer sun. When it comes time for their leaves to fall in the cooler months, they will not block sunlight when needed.

You can also build strategically sized roof overhangs to minimize solar heat gain in summer as the angle of the sun is much higher during these hotter months. A designer can determine the ideal length of your overhangs, or trellises, to block out just enough unwanted summer sun. Additionally, if too many windows are placed on the western face of the home, overheating in summer months will most certainly occur, even in New England, since the sun will be too low at that point to be blocked by a reasonably sized overhang.

If you plan to install rooftop solar panels, you also want to be sure that a sufficient roof area is not shaded so it can receive adequate sunlight all year long.

Drainage & Durability

Ensuring proper rainwater drainage on the site is critical for the long-term durability of your home. If water is allowed to flow into the house, you might face problems like damage to surfaces, hidden moisture in your walls, and eventually, mold growth. Of course, quality construction also plays a role in durability, but good drainage is the first step in avoiding these problems. Some of the factors that will play a role in drainage on a building site include:

- Soil type
- The presence of ledge
- The level of the water table
- Surface and subsurface water
- Slope shape and direction

In most cases you can overcome any drainage challenges the site presents with some combination of grading, sophisticated drainage techniques, and internal pumps. However, some of these solutions also come with a higher price tag for site work and require additional site disturbance.

Site disturbance

Building a green home requires considering more than just the structure itself. Even the greenest home couldn't be reasonably considered sustainable if you had to cut down an entire forest to build it and then covered half the site in an impervious parking area. This is an extreme example, but how much you need to disturb the site is a factor that must be weighed if your goal is to minimize your environmental impact.

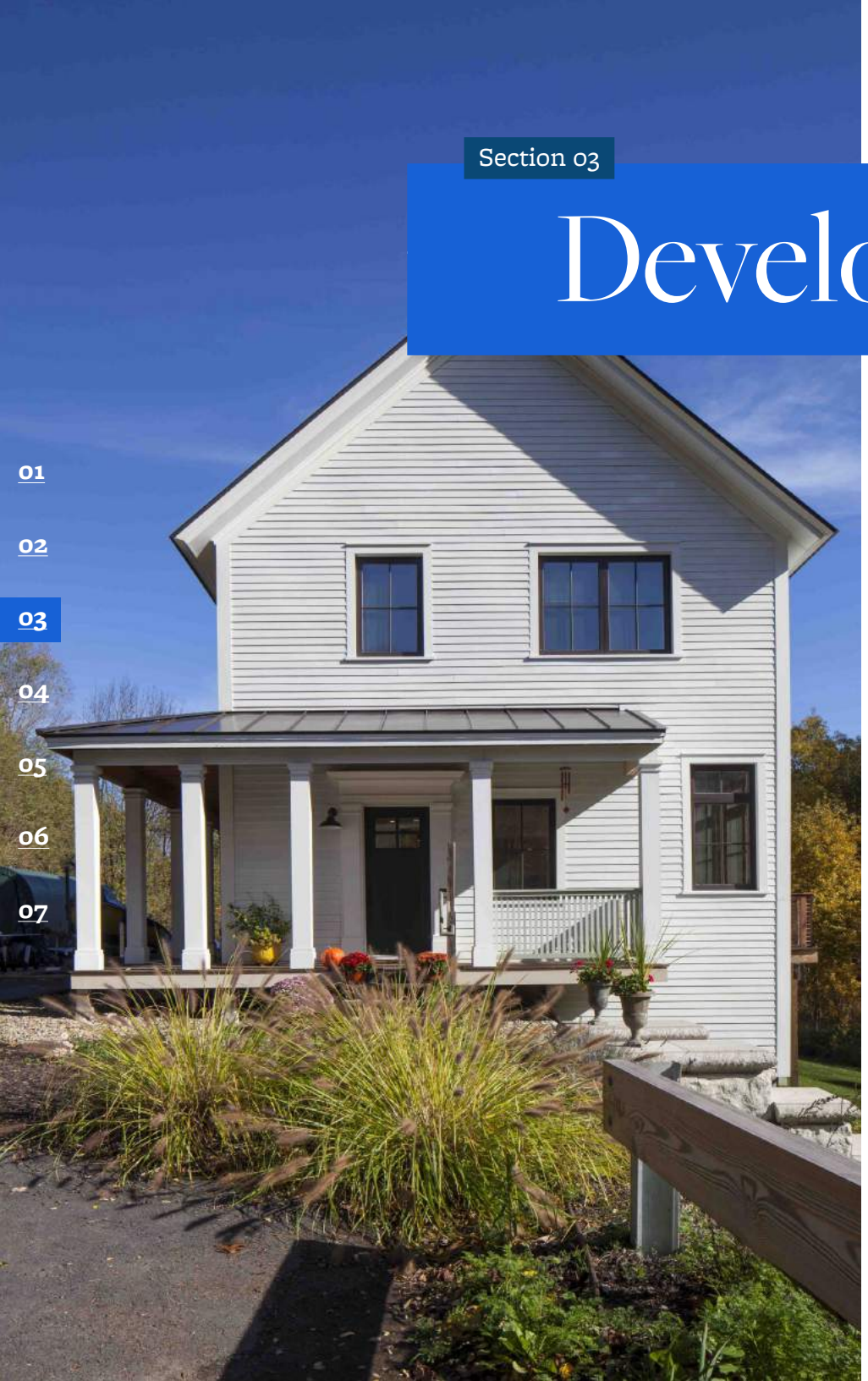
The greenest solution is to build on an area that has already been developed so that you don't have to remove any additional plant life. However, this isn't always possible. If your property has a lot of trees, think about ways you can position the house so that you have to cut down as few as possible. Can you use that wood in the construction of the home or for some other beneficial purpose?

Think about all of the possible options for the placement of your new home and choose the one that requires the least amount of tree removal and blasting, while still allowing you to optimize the orientation and shading.

Another factor to consider with respect to site disturbance is the amount of impervious surface you will create. Features like driveways and walkways are practically necessary, but you have the option to limit the space you will cover. You can also choose materials that allow water to penetrate into the ground, limiting runoff from your property.

Your home's distance from the road will also impact site disturbance, especially if you will require a long driveway or significant digging to install utilities and other services.

The greenest solution is to build on an area that has already been developed so that you don't have to remove any additional plant life.



Section 03

Develop the Design

A structure that is simpler will have fewer opportunities for failure than one that is more complex.

Green homes can be any style from traditional to contemporary, but the more rigid a style is, the less adaptable it might be to the site. For example, a Colonial style home has particular design characteristics—symmetry, an entry in the middle, a specific number and location of windows, and a medium pitched roof. Can a Colonial be green? Absolutely. However, it might not be the greenest possible option for your site because of the design limitations.

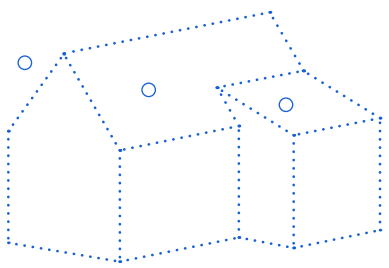
If you are building a custom home, you have the freedom to implement the features that optimize the natural characteristics of the site and to develop a structure that meets your needs while respecting the environment at the same time.

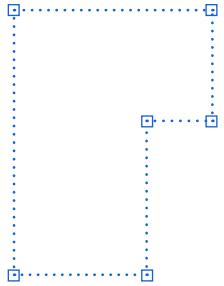
Complexity

A structure that is simpler will have fewer opportunities for failure than one that is more complex. In the context of a green home, failure primarily means air and/or water leaks. The more transitions a home has, such as corners and connections between the walls and roof, the more likely it is that unwanted water and air will be able to enter your home. Air leakage is a concern when building green homes because when warm air escapes to the colder outside air, mechanical systems have to work harder to maintain the desired temperature. The same is true when warm air comes into the house in summer and cooling systems have to run more frequently. This leads to more energy consumption, higher utility bills, and a bigger environmental footprint.

To reduce the chance for air leakage, the exterior of a green home should have no more than three to four roof planes and six to eight corners. To put it in visual terms, a cube or rectangle has four corners, an L-shaped building has six, and a U-shaped building has eight. Additional features like dormers and bay windows add more corners and roof planes, adding complexity and increasing the chance that warm air will leak out of your home.

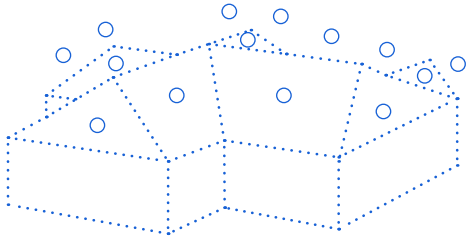
It's worth noting that simpler structures also cost less to build because fewer materials are required. So, you not only get the benefits of long-term savings from less energy consumption, but you also save on construction costs.

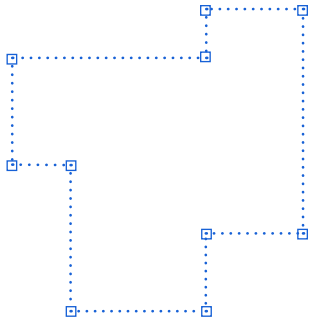




3 Roof Planes + 6 Corners = **GOOD**

14 Roof Planes + 10 Corners = **NOT GOOD**





Surface area-to-volume ratio

In addition to the number of surfaces, the surface area-to-volume ratio is also an important consideration when building a green home. The more surface area a home has (the total area of the exterior walls, roof, and floors), the more opportunity there is for heat to escape or enter. Likewise, the higher the ratio, the greater the risk of loss.

The geometric shape that has the minimum surface area to volume is a sphere, but that's hardly practical for a house. A cube is the most reasonable, compact shape for a home to minimize heat transfer. Of course, other factors come into play, such as optimizing glass area on the south-facing wall and ensuring that sufficient light can penetrate to the interior spaces, often making a rectangular shape more desirable than a cube. Plus, sloped roofs make more sense in regions that receive a lot of snow, such as New England.

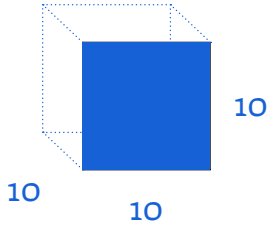
The key is to strike the right balance between all of these factors to produce a green home that's right for you and your building site. An architect with a background in green building can use sophisticated modeling tools to calculate how adjusting various factors, including surface area and volume, will impact the performance of the building.

To illustrate why this metric is so important, consider two shapes that have the same volume but a very different surface area:

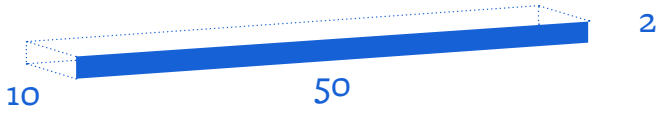
VOLUME IS THE SAME, BUT SURFACE AREA IS MORE THAN DOUBLE!

Both a 10’ x 10’ x 10’ cube and a 10’ x 50’ x 2’ rectangle have a volume of 1,000 cubic feet, but the surface area is quite different. The cube’s surface area is 600 square feet and the rectangle’s is 1,240 square feet. That’s more than twice the opportunity for heat loss on the rectangular building. The rectangle in this example also requires more building materials for the walls, roof, slab, and flooring, which means a higher cost for the building.

GOOD RATIO



BAD RATIO



Volume (CF)	10 x 10 x 10 = 1000	10 x 10 x 10 = 1000
Surface Area (SF)	10 x 10 x 6 = 600	10 x 10 x 2 = 1000 50 x 2 x 2 = 200 10 x 2 x 2 = 40 1240
Surface-to-Volume Ratio (SF/CF)	600 1000 = .6	1240 1000 = 1.24

Windows & Doors

The openings in a home are yet another chance for air to escape or enter. On a clear spring day you want your open windows to bring in fresh air, but on a cold winter day you want as little heat as possible to escape your cozy home. Even the best window is not as energy efficient as the minimum standard wall. Windows and doors are the primary source of both heat loss and gain in a home.

Consider these three factors when making design decisions about windows and doors for your new green home:

1. Quantity

You want to strike the right balance of natural light and ventilation without risking the chance of too much air leakage. Too many windows might allow too much solar gain, and too few will not allow enough natural light and ventilation.

2. Placement

To maximize solar gain in winter, more windows should be placed on the south side of the home, with fewer on the other sides. Consider where shade will fall on the south face during summer. Windows on the east and west offer less opportunity for shade control as the sun angle is so low in morning and late afternoon. Grouping windows together also helps reduce the opportunity for heat loss because it reduces the number of transitions between walls and windows.

Windows and doors are the primary source of heat loss and gain in a home.

What to Look for in a Window

1. **Energy Star Rating**

   Look for windows that are rated for the Northern zone.

2. **Environmentally Friendly Materials and Sourcing**

   This could include recycled or reclaimed components, FSC certified wood, or windows that are manufactured locally.

3. **Triple Glazing**

   Three panes of glass provide the best insulation during cold New England winters and improve durability by reducing potential for condensation.

4. **Low-E Coating on the Outer Surface of Windows**

   A microscopic metallic oxide coating allows heat in during winter but does not allow it to escape.

5. **U-Value of at Most 0.27 (compared to often 0.35 and up for a conventional home)**

   The lower the U-value, the better the window acts as an insulator.

6. **Solar Heat Gain Coefficient (SHGC)**

   A higher number indicates more energy from the sun penetrates the window to warm the house.

7. **Visible Transmittance (VT)**

   A higher VT allows more ligt to enter the space.

8. **Air Leakage**

   The lower the number, the less air will leak through to your home.

ENERGY STAR Certified in Highlighted Regions

National Fenestration Rating Council CERTIFIED

World's Best Window Co.

Millenium 2000+
Metal Clad Wood Frame
Triple-glazed • Argon Fill • LowE
Product Type: Casement
(per NFRC 100-97)

ENERGY PERFORMANCE RATINGS

U-Factor (U.S./I-P)	Solar Heat Gain Coefficient
0.18	0.40

ADDITIONAL PERFORMANCE RATINGS

Visible Transmittance	Air Leakage (U.S./I-P)
0.51	≤0.3

Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information. www.nfrc.org

3. Size

It may seem counterintuitive because the glass in a window is thinner than the surrounding frame, but in most windows the glass is actually thermally better than the frame, as the air between panes has an insulating effect. Also, the edge of the frame is a transition spot where air leakage and heat loss can occur. This means that having a few larger windows is better than having a lot of small windows if reducing heat loss is one of your goals.

A lot of factors come into play when deciding how many windows your new home should have, where they should be placed, and how large or small they should be. This is yet another case when an experienced architect can provide guidance for optimizing natural light and ventilation while balancing with energy efficiency.

Section 04

Build Tight, Ventilate Right

There are several ways to calculate how well a home is sealed, but the two most common are ACH50 and effective leakage area.

You could have the greenest possible design for your new home in terms of materials, but it won't help your energy efficiency unless the right construction techniques are used to prevent air leakage and heat transfer through the roof and walls.

Air leakage

You already know that one of the major challenges when building a green home in New England is heat loss in winter, but there is less concern about heat gain in summer. One of the reasons for this is the difference between standard comfort levels and the outside air temperature. When

you consider that 65° to 72° is comfortable for most people, a hot summer day is only a 20° to 25° difference. On the other hand, a cold winter day might range from a 35° to 80°+ difference in temperature. That's quite a leap to get from the outside air temperature to your indoor comfort level, and any lost heat will require more energy to maintain the desired temperature.

One of the primary ways to combat heat loss in a home is with good air sealing, particularly at the corners and transitions, such as where the walls meet the roof, windows, doors, and foundation. During construction, you can test for air leakage with a blower door test to ensure all the gaps are sealed before the home is finished. A blower door test works by creating a pressure differential between the inside and outside of the building. This difference in pressure forces air through of all the holes in the structure, and a tighter building requires less air to achieve the desired pressure differential. A blower door test also allows you to find out where the holes are so they can be sealed properly, for both air and water.

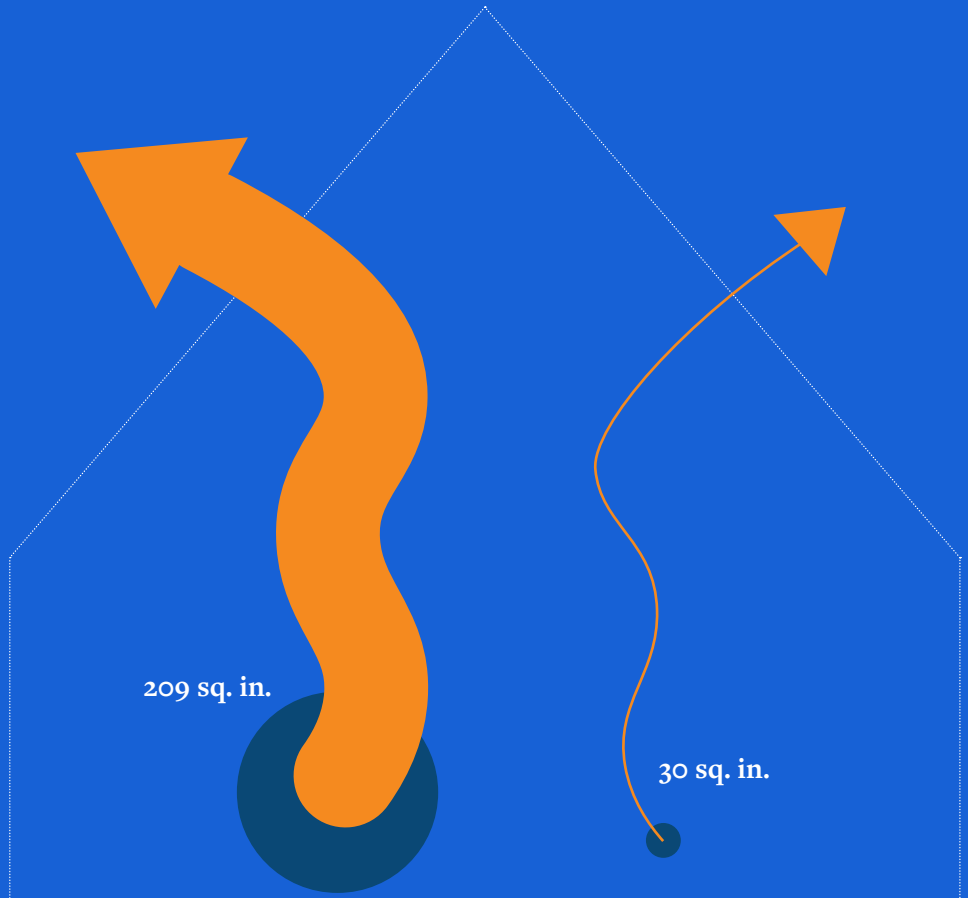
A tighter home with good air sealing means you will have lower energy bills, better comfort levels throughout the year, and a draft-free home.

There are several ways to calculate how well a home is sealed, but the two most common are ACH50 and effective leakage area. ACH50 stands for air changes per hour at 50 Pascals. For comparison, common ACH50 numbers include:

- An older inefficient home might have 8-15 ACH50
- The current building code requires 7 ACH50
- A green home might have 3 ACH50 (likely the threshold of the forthcoming new code)
- Net-zero and Passive House homes have less than 1 to 1.5 ACH50

Another way to evaluate the air leakage

in a home is with the effective leakage area (ELA) metric. This number tells you the area of a hole that the building would leak if all of the small holes and gaps were combined. For example, a higher ELA might be like having a hole the size of a manhole cover constantly open in your home. On the other hand, a lower ELA might be like having a hole the size of a small jar lid. Obviously it is more desirable to have a smaller hole constantly allowing air to pass in and out of your home, which is why it is so important to ensure that proper air sealing is done while the house is being constructed. A tighter home with good air sealing means you will have lower energy bills, better comfort levels throughout the year, and a draft-free home.



TRADITIONAL HOMEOWNER

BIG HOLE =
209 SQ. INCHES (ELA)

(TRADITIONAL HOME:
7 ACH50)

TRADITIONAL HOMEOWNER

SMALL HOLE =
30 SQ. INCHES (ELA)

(GREEN HOME: **1ACH50**)

Walls, roof, & insulation

Increasingly, wall and roof thickness to accommodate additional insulation plays a major role in limiting heat transfer. A green home with a roof and walls that are thicker than a conventional home has better thermal comfort because less heat is allowed to escape in winter. You also get the bonus of having a much quieter home since thick, insulation-filled walls and roof filter out more sound from the outside.

01

Insulation also helps reduce unwanted heat loss and heat gain in a home. The more insulation there is, the less heat can transfer through the walls and roof. A green home has more insulation than a conventional home, sometimes up to twice as much, which makes it warmer in winter and cooler in summer.

02

03

04

Environmentally friendly insulation materials like natural cellulose are proven to safely insulate homes without risk of fire or unwanted toxins. Spray foam is also an effective insulating material, but because it has potential toxins, particularly during and immediately after the application process, it is less desirable. Many homeowners who want a sustainable, healthy home choose to limit its use to only the areas that are the most difficult to access. Although sometimes effective, some batt (or blanket) insulations like fiberglass have greater potential health impacts and can leave gaps within the wall cavity even in the best installations.

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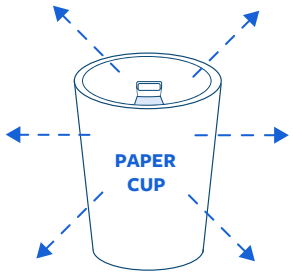
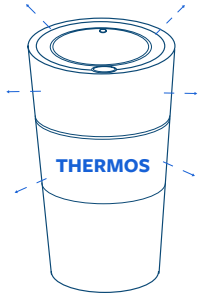
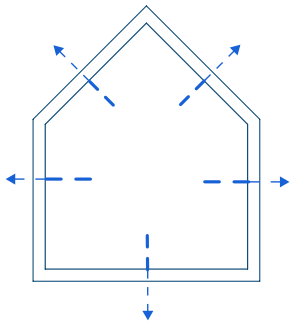
Regardless of the type of insulation you choose, it is important to properly insulate the entire exterior shell, roof, and slab to limit thermal transfer, ultimately limiting the potential for condensation and mold growth inside the walls. Ice dams, a common roof problem for New Englanders in wintertime, can be prevented by specifying sufficient insulation and applying it properly.

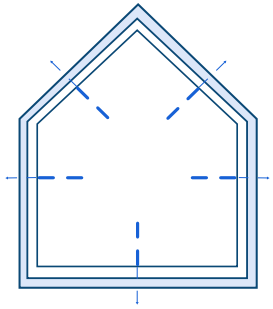
07

Think about your morning cup of coffee. If the paper cup is too hot, you put a sleeve on it so you don't burn your hand.









Framing & Insluation

Framing & Insluation

More Insulation

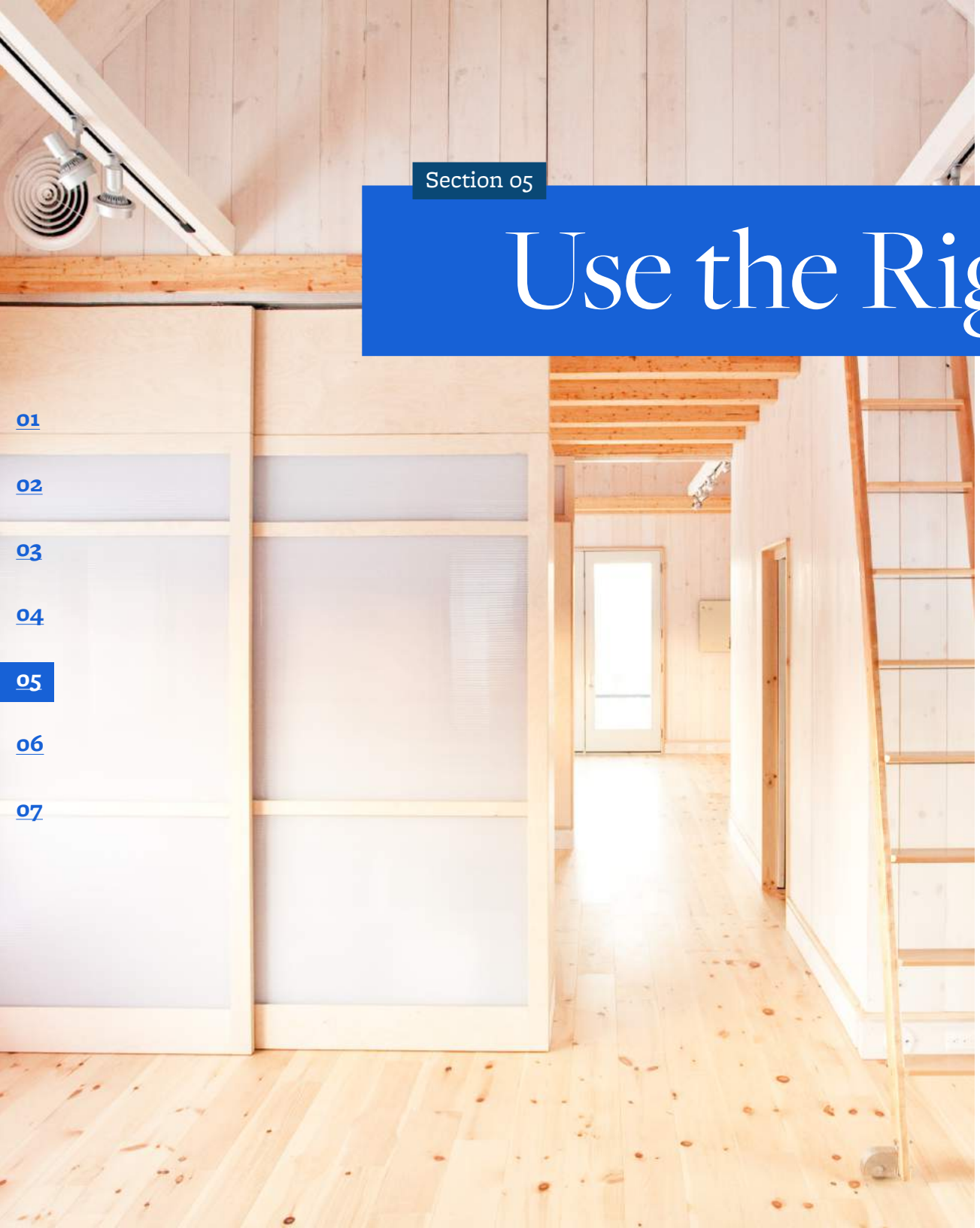
Thermal breaks

A thermal break is a building element that limits the flow of heat between materials. Think about your morning cup of coffee. If the paper cup is too hot, you put a sleeve on it so you don't burn your hand. That sleeve is a thermal break. However, the base of the cup and the open top are still allowing heat to escape.

Of course, if you're being sustainable, you use an insulated travel mug that has a thermal break all around it. When the lid is off, heat flows out, but when you put the lid on, you have just maximized the thermal breaks on your coffee cup.

You have to do the same thing when building a green home – maximize the thermal breaks. This means ensuring that there are thermal breaks around the entire exterior, including under the slab so heat can't escape into the ground.
There are many types of thermal breaks employed throughout a green home. Every single wood stud or rafter that makes contact with the inside drywall and the outside sheathing of the home is a potential location for transfer of cold air and needs an additional continuous blanket of insulation outside of it (or in between members) to ensure substantial heat loss doesn't occur. Triple-pane windows use the inert gas between the panes as a thermal break. Energy efficient windows and doors are constructed from less conductive materials on the inside and outside to ensure that heat does not flow through the frames. Areas without thermal breaks are weak spots that counteract all of the other measures you have taken to minimize heat transfer.

It might not be the most glamorous part of the project, but it is critical to consider this important concept when building a new green home.



Section 05

Use the Right Stuff

Eco-friendly options are almost always available and have become equal or nearly equal in cost...

Good design and construction will help you improve efficiency by limiting the amount of heat that can transfer through the exterior, but a good green home also takes usage into consideration. Your home has a long life span. Start it off right with sustainable systems and materials that enable you to keep your environmental footprint small while still living comfortably in the modern world.

Materials

Building elements are made up of all sorts of materials, and some are more eco-friendly than others. In addition to having a negative environmental impact, poor quality building materials can also affect your indoor air quality and the healthiness of your home.

Make sure your builder uses materials that are labeled no- or low-VOC and do not have added formaldehyde. Some of the materials that might have unwanted toxins include:

- Insulation
- Adhesives
- Sealants
- Caulk
- Flooring
- Tile
- Carpet
- Countertops
- Plywood
- Sheathing
- Paint and polyurethane

Eco-friendly options are almost always available and have become equal or nearly equal in cost, but if your builder doesn't know that it is important to you, they might use whatever they have on hand or the cheapest option.

Plumbing

Water consumption is an important part of living a sustainable lifestyle. Low-flow fixtures and toilets help reduce water use during daily activities like washing dishes and showering. Virtually all major manufacturers offer low-flow solutions so you can choose from a broad range of fixtures to match your style. The technology has improved over the years so most of the time you aren't even aware that you are conserving water.

Water reclamation systems that reclaim greywater from sinks, dishwashers, tubs, and showers are a great way to conserve water, especially in areas that are subject to drought. However, these systems tend not to be cost-effective in New England because water shortages are rarely a problem. Of course, water conservation is always a good practice, so if you want to invest in these systems it is always an option.

Lighting

The humble light bulb has come a long way since its invention. Modern bulbs are designed to consume considerably less energy while producing the same amount of light and lasting substantially longer. Recent improvements in light quality and the ability to dim have made non-incandescent bulbs a viable option in virtually any setting. Energy efficient alternatives to traditional incandescent bulbs include compact fluorescent (CFL) and light-emitting diode (LED) light bulbs. They might come with a slightly higher price tag in the immediate future, but they can last for years and will help you save significantly on utility costs.

Mechanical systems

After you have created a super tight home with air sealing, thick walls, and added insulation, it's important to ventilate it properly. Natural ventilation, which is achieved by simply opening the windows, is best because it allows stale air to flow out and fresh air to regularly flow in without requiring any energy. However, if you live in New England you know that natural ventilation is not possible in the wintertime and can bring in unwanted humidity in the summer months. The solution is mechanical ventilation. Traditionally, home ventilation has been managed with familiar systems like exhaust fans in the kitchens and baths. Today, improved ventilation technology is also available, such as heat recovery ventilators (HRV) or energy recovery ventilators (ERV).

Exhaust fans remove stale, moist air from the bathroom after showering and from the kitchen while cooking, but as you do this, air is pulled in from the outside through all the remaining holes in your house, wherever they may be. HRVs and ERVs bring in fresh air from the outside in a very controlled way and pass it through a heat exchanger that transfers heat from the conditioned indoor air that is being expelled. This allows you to get fresh air in your home from a safe source without using a lot of energy to bring it to the desired temperature.

Heating and cooling mechanical systems are also important for any home. In a green home, you want these systems to consume as little energy as possible without sacrificing comfort. A tightly sealed home that is properly insulated requires much less heat input to keep it comfortable because all of the warm air stays in the home and does not escape through cracks and gaps. A lower heat load means that you can use smaller, more efficient systems (such as a triple-efficient electric heat pump) instead of an oversized fossil fuel burning furnace.

Heat pumps work in the winter by transferring heat from the outside air to the air inside your home. In summer the process reverses and heat is transferred out of your home to the air outside. You get the benefits of heating and cooling with one system, which means you don't have to purchase an air conditioner to feel comfortable on the occasional hot summer day in New England. Heat pumps also cost less to run than standard electric heating systems or furnaces.

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Section 06

Finish with an Energy Analysis

One of the keys to effectively using an energy analysis is to start it early in the design process.

All of the above elements combine to create a green home, but how do you know how to balance it all? Architects use energy analysis software throughout the design process to make adjustments and optimize the home's design. Energy analysis software compiles all the inputs to simulate how much energy a building uses throughout the course of a year. This information will help you predict how the house will perform and allows you to determine what size your mechanical systems should be, how many solar panels you would need to achieve net zero energy use, and more.

Some of the factors that go into an energy analysis include:

- Site location
- Building orientation
- Volume
- Surface area
- Shading
- Window surface area
- Window glazing type
- Type and amount of insulation
- Heating and cooling systems
- Lighting strategies
- Appliances and other mechanical equipment

Energy Analysis

SMITH

Gross SF: 3196

Peak Load: **23,137** (**BTU/Hour**)
Primary Energy: **44.16** (**BTU/SF/Year**)

Annual Heating: **11.11** (**BTU/Hour**)
Annual Cooling: **N/A** (**BTU/SF/Year**)

Ventilation

72 % Efficient

Air Tightness

1.50 ACH50

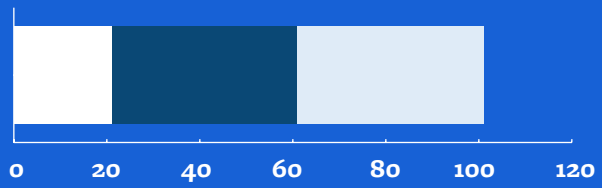
R-Values

35.9	Walls
61.4	Roof
0.0	Suspended Floors
20.2	Basement Walls
17.8	Slabs

Windows & Doors

0.56	SHGC
0.13	Glass U-Value
0.25	Frame U-Value
0.20	Total U-Value

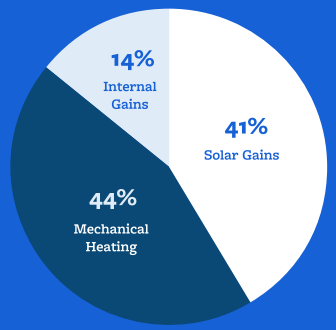
Glazing % of TFA



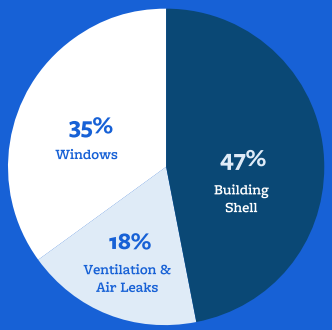
Window Energy: 181 KBTU/Year

Net-Zero Ready YES

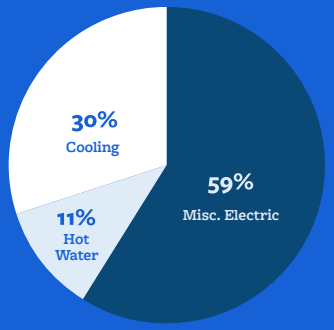
Heat Gains



Heat Loss



Energy Use



Using an Energy Analysis

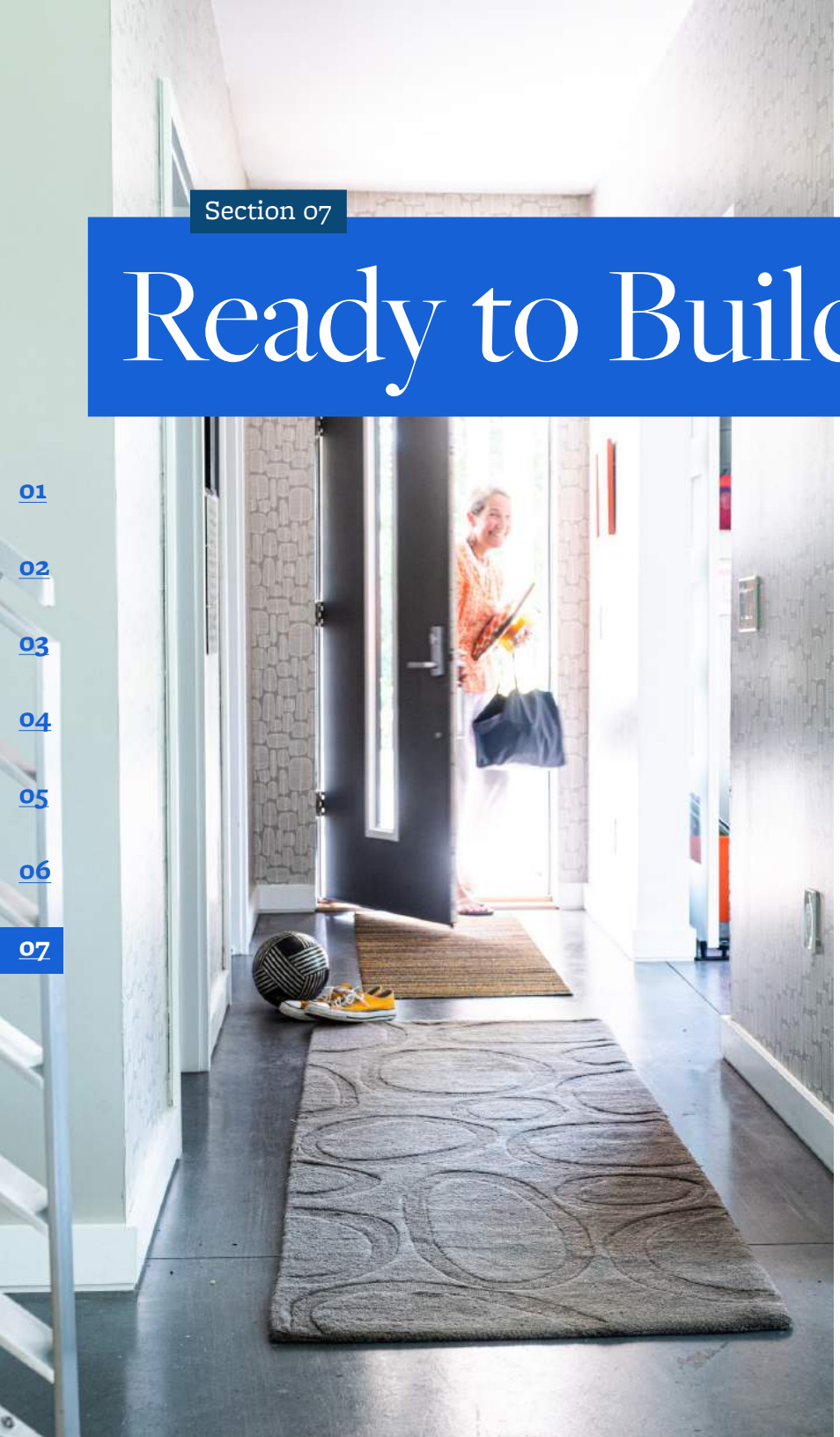
One of the keys to effectively using an energy analysis is to start it early in the design process. This gives you an opportunity to make changes before major design decisions have been firmly made.

Using an energy analysis throughout the design process enables you to make informed decisions about how to invest your resources. For example, an energy analysis might show you that adding more insulation would make a nominal change in the amount of energy the house will consume, but reducing the window surface area by a certain number of square feet will result in a measurable reduction in energy use.

Another reason for using an energy analysis is to predict how many solar panels your house would need in order to achieve Net Zero energy use. Achieving Net Zero means your house produces as much energy as you consume annually, for the combined household electric, heating and cooling, and hot water needs.

Is running an energy analysis a complicated process? Absolutely, but this is why there are experts to help you through the exercise and simplify the results. One of the many benefits of building a new green home is that you have the power to make the decisions that will reduce your environmental footprint. An energy analysis can help you do this before you even break ground.

Ready to Build a Green Home?



You can create a durable, comfortable, energy-smart home that will have a smaller environmental footprint.

There is no universal answer to the question, “What is a green home?” However, if you are smart about the site, design, construction techniques, materials, and systems, you can create a durable, comfortable, energy-smart home that will have a smaller environmental footprint.

Of course, there are a lot of factors to consider and optimizing them all requires expertise that many homeowners do not possess. This is why it is so important to work with a qualified team that includes an architect, builder, and consultants who have experience with designing and building green homes. If just one individual on the team isn’t committed to making your home sustainable, you risk missed opportunities and a house that doesn’t perform as expected. Shortcuts in the wrong places can put the proper performance of the home, and your investment, at risk.

Consider the process as a whole. If you don't get the building orientation right the first time, there is no going back after the foundation is in. If your builder doesn't seal every hole while the walls are still open, valuable heat will be lost and more energy will be required to heat your home. If your mechanical engineering consultant specifies a heat pump that is too small or large, it won't operate efficiently and you won't be comfortable. A lot of pieces have to be arranged to solve the green home puzzle.

These days there are many available options for building a green home in New England, including selecting a team of qualified architects and builders. BrightBuilt Home has developed an innovative process that uses an integrated team to design and construct your home from start to finish. We deliver the whole package, including all of the important green home features discussed in this guide, so you can focus on creating the home you want without worrying about the technical details. You can start with a pre-designed model that has already been optimized for sustainability, or we can work with you to customize one of our designs.


Ready to learn more?
Contact us at
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