



# Building your energy-efficient, renewable-ready new home

## FACT SHEET



APARTMENT & CONDO EFFICIENCY SERVICES



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HOME PERFORMANCE WITH ENERGY STAR



WISCONSIN ENERGY STAR HOMES



EFFICIENT HEATING & COOLING



For more information, call 800.762.7077 or visit [focusonenergy.com](http://focusonenergy.com).

**E**nergy-efficient homes are high-performance homes, built from the ground up to be more comfortable, safe, durable, and affordable. Now that you're about to build your own new home, it's important to start smart with plans and designs that will lower your cost of living, improve your quality of life, and help protect the environment for years to come.

Here, you'll discover some of the most important traits of energy-efficient homes, the benefits of building renewable-ready, and how the professional builders who partner with Focus on Energy can help you make your dream home a reality.

### Building for energy efficiency

The following are important characteristics of well-built, energy-efficient homes:

1. **Controlled airflow.** Building an air-tight house in combination with installing controlled ventilation is key to creating a durable, energy-efficient home. Leaky homes are drafty and uncomfortable. Cracks and unintentional openings are a recipe for high heating and cooling bills, comfort problems, and potential indoor air-quality and moisture problems.

Don't assume your home is tight unless your builder has a procedure for measuring how much air moves through it. An effective test of air tightness is conducted using a special fan called a blower door. Make sure your builder has a process for testing the air tightness of your home before it's too late or too costly to address any problems.

2. **Indoor air quality.** Controlled ventilation is crucial to maintaining indoor air quality. Don't rely on natural air leakage to ventilate your home—you can't control the quantity or quality of the air. You want to control how much air moves through the house and where it comes from so you get adequate ventilation without airborne pollution.

3. **Combustion safety.** Combustion appliances such as furnaces, water heaters, and fireplaces can contribute to poor indoor air quality and pose a safety risk. Some fans draw out so much air that the home becomes depressurized (the air pressure inside the home becomes lower than the air pressure outside the home). This depressurized condition can cause combustion gases from the furnace, water heater, and fireplace to spill back into the home and endanger the home's occupants. Choose closed-combustion and/or power-vented furnaces, water heaters, and fireplaces for safety and peace of mind.

4. **Proper insulation.** Ensure your home is properly insulated to minimize the transfer of heat year round.

Heat flows naturally from warmer spaces to cooler ones. In winter, heat from inside your home moves toward adjacent unheated spaces such as attics, garages, and the outdoors. In summer, heat tries to move into the home from outside.

Insulation is the home's defense against heat loss. The ability of insulation to resist heat flow is expressed in terms of R-value. The higher the R-value, the greater the resistance. Wisconsin's



**focus on energy**  
The power is within you.



**Damp-proofing the foundation walls helps keep moisture out of your home.**

Uniform Dwelling Code stipulates minimum R-values for foundation walls, exterior walls, and ceilings/attic floors. Yet effective insulation depends not only on adequate R-value, but also on full coverage, proper installation, and a continuous and durable air barrier.

- 5. Moisture resistance.** Moisture can enter a home through the foundation as ground water or be forced into building cavities from wind-driven rain. Moisture that gets into building cavities may not dry quickly and can cause peeling or blistering paint, rotting wood, and other structural damage. It's much easier to prevent moisture problems during construction than to correct them later.
- 6. Energy-efficient equipment and appliances.** The U.S. Department of Energy has established minimum standards for heating and cooling equipment and most major appliances. The ENERGY STAR® label is awarded to products that meet or exceed established standards for energy efficiency. These products range from 10 to 50 percent more efficient than standard models. Look for the ENERGY STAR when choosing your new heating and cooling equipment and appliances.

Builders who participate in the Wisconsin ENERGY STAR Homes Program combine custom design with materials and building techniques that address all of these areas and are proven to ensure a high level of performance. Throughout construction, a third-party professional consultant tests and documents the home's performance to ensure it complies with program standards.

The result is a home that's safe, durable, comfortable, and energy efficient. In fact, Wisconsin ENERGY STAR Homes are estimated to be 25 percent more efficient than the Wisconsin Uniform Dwelling Code requires. Certification can also increase your home's value at the time of resale.

To learn more about building an energy-efficient Wisconsin ENERGY STAR Home, call Focus on Energy at **800.762.7077**.

### **Efficiency First**

Before you purchase any renewable energy system, it is important to maximize the energy efficiency of your home or business. The smaller your energy needs, the lower your monthly energy bills—and the less you'll need to spend on a renewable energy system that's capable of meeting your needs.

And now, home and business owners who invest in energy-efficiency upgrades prior to installing a solar electric, solar hot-water, or wind energy system may be eligible to receive enhanced financial incentives ranging from 10 to 25 percent higher than the standard Focus incentives. Call 800.762.7077 to learn more.

### **Building renewable ready**

The future holds increasing energy prices for all of us. You can help insulate yourself from these increases and take your savings potential to the next level by installing a renewable energy system. For example:

- An average eight-panel solar electric system can meet 30 percent of the electrical needs of an average family of four in an energy-efficient home.
- A two-panel solar hot-water system can meet 50 to 75 percent of the water-heating needs of a similar household.

Building a renewable-ready home is an easy and inexpensive way to maximize the benefit of any future renewable energy system you install. Planning is essential. Building a renewable-ready home includes making siting and orientation decisions that will maximize the home's access to solar energy (see sidebar: "What is passive solar design?") as well as installing electrical conduit and/or insulated copper piping during construction to avoid significant retrofitting costs.

Incorporating renewable-ready features in your home's planning and construction is relatively easy and inexpensive, and brings several benefits:

- **Simplifies** the addition of future solar energy systems such as solar electric and solar water heating.
- **Includes site verification** to determine pre-qualification of your lot and give you a head start on your solar plans and system requirements.
- **Increases attractiveness for future buyers** and increases the resale value of your home.
- **Improves the marketability of your home** as energy prices rise.
- **Includes a certification packet** with more information to help you take the next step by adding a renewable energy system to your home.

See the Focus on Energy fact sheet, "Building new homes that are renewable ready," for tips and recommendations to consider when planning and building your renewable-ready home. Call 800.762.7077 to request a copy or visit [focusonenergy.com](http://focusonenergy.com).

#### FOR MORE INFORMATION

##### Focus on Energy

Learn more about energy-efficiency and renewable energy solutions that can save you energy and money. [focusonenergy.com](http://focusonenergy.com)

##### Minnesota Department of Commerce

Discover information about a wide range of energy-efficiency and renewable energy topics, including heating, cooling, appliances, lighting, home moisture, indoor ventilation, and more.

[www.energy.mn.gov](http://www.energy.mn.gov)

##### ENERGY STAR

The ENERGY STAR program offers information about high-performance appliances that will make your energy-efficient, renewable-ready home a reality.

[energystar.gov](http://energystar.gov)

##### Building Science

Click "Homeowner Resources" to explore a range of articles, white papers, and more created to help homeowners build smarter.

[buildingscience.com](http://buildingscience.com)

#### WHAT IS PASSIVE SOLAR DESIGN?

Passive solar design uses a building's orientation, structure, and materials to capture the sun's energy and heat, cool, and light your home without additional mechanical or electrical devices. Even in Wisconsin's cold winters, passive solar design can help cut heating costs and increase comfort.

The benefits of passive solar design include:

- **Comfort.** Extra sunlight from south-facing windows makes passive solar homes more cheerful and pleasant in winter.
- **Economy.** If addressed at the design stage, passive solar construction doesn't have to cost more than conventional construction.
- **Aesthetics.** The passive solar features, such as an open floor plan, make passive solar homes bright and cheerful inside.
- **Energy efficiency.** Passive solar homes can significantly cut use of heating fuel and electricity used for lighting. If passive cooling strategies are used in the design, summer air-conditioning costs can be lower as well.

When considering passive solar design, it's worthwhile to work with a qualified designer or architect. To learn more about passive solar design for your new home, call 800.762.7077 and ask for the fact sheet, "Passive solar design in Wisconsin" or visit [focusonenergy.com](http://focusonenergy.com).

Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and businesses manage rising energy costs, promote in-state economic development, protect our environment and control the state's growing demand for electricity and natural gas. For more information, call **800.762.7077** or visit **[focusonenergy.com](http://focusonenergy.com)**.

