



Building new homes that are renewable ready

FACT SHEET



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Rising energy costs and concern for energy security and the environment are driving forces in a growing trend to incorporate renewable energy technology into residential housing. Focus on Energy and the Wisconsin ENERGY STAR® Homes Program recognize this as an opportunity for builders. The following checklist of building details is a first step to promote and market the construction of new homes that are built "ready" for future renewable energy installations.

PLANNING AHEAD IS THE RIGHT THING TO DO

To maximize the potential benefit of any future solar renewable energy system, the following should be considered when planning and building a home.

1. Reduce loads

Reduce or minimize energy loads where possible through the home's heating, cooling, water heating and electrical systems. At a minimum the home should satisfy the Wisconsin ENERGY STAR Homes Program building performance standards and, where possible, incorporate ENERGY STAR qualified lighting, appliances and HVAC systems.

2. Maximize solar access

To maximize solar access, face the roof surface and pitch within 30 degrees of due south. The roof should be unobstructed from both the winter and summer sun and have a slope of between 30 degrees and 60 degrees. For more information on solar access, see the Passive Solar Design fact sheet or contact the Focus on Energy Renewable Energy Program at 800.762.7077 for solar site assessment information.

3. Follow zoning laws and applicable codes

Wisconsin State law does not allow zoning or covenants that restrict the use of a solar energy system except for reasons of health and safety. Also investigate applicable Uniform Dwelling Code and the National Electric Code as they pertain to any pre-installation requirements.



WILLIAM HURLE

Solar water heating panels attractively integrated into the roof of a house.

PLANNING AHEAD IS EASY TO DO

When building a new home, incorporating renewable ready details in planning and construction is relatively easy and inexpensive. Doing so will greatly simplify the future installation of a renewable energy system. The following steps explain the process and can be completed early during the construction of the home.

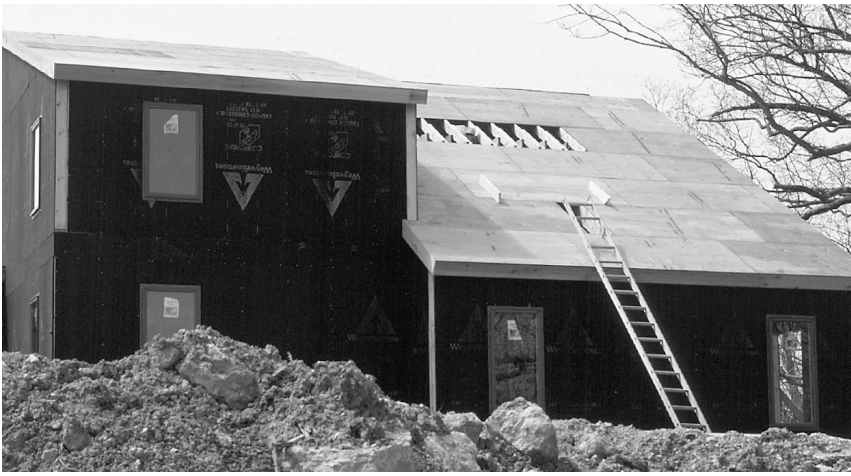
For either solar hot water or solar electric systems:

- Identify a path and install ½ inch conduit near the utility panel through a building cavity and extend it into the designated attic to a point above the finished insulation depth. Clearly label the conduit for easy identification at a later date and air seal the top and bottom of the building cavity.
- Install a small access catwalk in the attic extending from the attic hatch to the location of the conduit to the estimated future location of the solar panels on the roof surface. The catwalk or platform can be installed using excess building materials secured to the roof trusses and must accommodate the finished insulation depth.



focus on energy™

The power is within you.



PLANNING AHEAD PAYS OFF ...AND NOW MAY BE THE BEST TIME TO DO IT

Focus on Energy and the Wisconsin ENERGY STAR Homes Program encourage builders to plan ahead and incorporate these simple construction details in the homes they build. Builders will see many benefits:

- Capitalizing on concerns over rising and future energy costs by building and marketing their homes as ready for renewable energy systems.
- Potentially decreasing the length of time a home is on the market and/or increasing the sale price of the home.
- Providing potential new home buyers with the ability to further reduce home energy use in the future.
- Increasing potential new home buyer access to federal tax credits, Focus on Energy incentives (and in some cases utility rebates) for the installation of residential renewable energy systems.

The time has never been better to provide new home buyers with this affordable and increasingly valuable feature. For more information on how to get started and details on Focus on Energy and the Wisconsin ENERGY STAR Homes Program, call 800.762.7077.

- **Optional:** If the future location of the solar panels is known, install blocking between roof trusses or rafters. Blocking should be secure between the trusses or rafters and in contact with the underside of the roof decking to provide a mounting surface for the panels. Use of 2x8 inch or larger lumber spaced 24 inches on center is recommended for flexibility and ease in later locating and mounting panels on the roof. Solar hot water panels are typically 4x8 feet or 4x10 feet. Solar electric panels vary in size and shape, depending on wattage, but most are no larger in dimension than 3x4 feet.

To render the home ready for future solar hot water systems, the following two items must be completed:

- Identify a path and install two $\frac{3}{4}$ inch to 1 inch type L copper pipes from an accessible location in the mechanical room through a building cavity and extending into the designated attic to a point above the finished insulation depth. Pipes must be capped and insulated with $\frac{1}{2}$ inch insulation rated for 250 degrees Fahrenheit (products like HT Armaflex). All pipe joints should be carefully reamed to reduce flow noise and bubbling, and the cavity air sealed at the top and bottom. The path in the attic should be as short and straight as possible with space provided in the mechanical room for the addition of a possible storage tank and/or heat exchanger and controls.
- Install a four- or six-conductor stranded thermostat control wire along with the pipes. Tape the wire to the outside of the insulated copper pipe and leave a coil of extra wire at each end to simplify later completion/connections.

FOR MORE INFORMATION

focusonenergy.com

Contact Focus to learn more about smart energy choices for new homes and renewable energy.

seia.org

Visit the Solar Energy Industries Association for more information on solar energy.

