

# Energy Independence Strategies

*For a “green and growing” Capital Region*

BY JOHN IMES



The need for reliable and affordable energy is vital to maintaining economic vitality and growth in the Capital Region.

We can also reduce the need for traditional energy infrastructure while making sound investments that positively impact the region's environment and quality of life.

By creating a more balanced energy plan that features energy-efficient and conservation investments, increases in renewable energy technologies and zero-energy green-built housing, and promotes the use of homegrown biofuels, we can help make Wisconsin a leader in energy independence while creating high-paying jobs right here in the Capital Region.

## Zero-energy home trend

Imagine a home that is not only green-built and energy-efficient, but also produces its own power.

Defined as a home able to offset the amount of energy purchased from a utility, a zero-energy home combines state-of-the-art energy-efficient construction techniques with renewable energy systems to produce as much energy as the home uses over a year.

Typical zero-energy strategies for homes built in the Midwest include:

- Orientations with the home's long dimension facing within 15 degrees of south
- Advanced air-sealing measures
- Design for passive solar heating and cooling
- Windows throughout are ENERGY STAR-qualified or have a U-value of less than .35
- Energy-efficient appliances
- High efficiency heating ventilation and air conditioning systems (HVAC)
- ENERGY STAR-qualified light fixtures and the use of compact fluorescent light bulbs

## Big home or zero-energy home?

The size of the average home has grown significantly over the years from about 1,500 square feet in 1970 to more than 2,400 square feet today. By reducing the size of new homes by about 400 square feet, the home's construction costs can be reduced by about \$36,000, which could be used toward making the home a zero-energy home.

- On-site renewable energy (or purchase renewable power or credits); or the home designed and constructed so that it can meet all of its energy needs with on-site renewable energy in the future.

Throughout the life of a zero-energy home, the homeowner has the most significant impact on overall performance. Home occupants must be conscious of daily habits and patterns that affect energy use and properly maintain equipment and appliances.

Understanding the way certain energy-efficiency features work, such as programmable thermostats or photosensitive outdoor light fixtures, is essential. And simple things such as turning off lights when leaving a room or closing doors when performing even quick tasks outdoors also can eliminate “wasted” energy. Changing furnace filters, cleaning heating and cooling systems regularly, periodically checking the operation of solar systems, and maintaining exterior caulking and painting are also examples of ways in which a homeowner can assure a long-lived, high-performance zero-energy home.



### Another bright idea

During the holidays, use long-lasting Light Emitting Diode (LED) holiday lights to reduce electricity use by 90 percent versus traditional holiday lights. An added bonus: While LED lights last up to 100,000 hours, they also operate at cooler temperatures to reduce fire hazards and have an epoxy plastic coating rather than glass, which makes them virtually indestructible.

**SPOTLIGHT:** Harmony Heights, a Habitat for Humanity project in Lenoir City, Tenn., features four homes of 1,000 to 1,200 square feet. The homes have numerous green features that bring each home’s average energy bill to under \$25 a month. These features include:

- photovoltaic solar energy systems for electricity
- geothermal heating/cooling systems
- air-tight structural wall construction
- simple ventilation systems for air quality
- “cool roofs” (made of reflective material) and wall panel coatings to reflect heat
- ENERGY STAR appliances
- compact fluorescent light bulbs
- high-performance windows
- passive solar design (Most windows are located on the south of each house and overhangs shield the summer sun.)

The homes cost about \$100,000 each, including the photovoltaic solar system and factoring in volunteer labor. Geothermal heating/cooling systems are often considered to be too expensive for low- to moderate-priced homes. For a four-person home, the typical system runs about \$8,000, but the cost can be recouped in less than 10 years through energy savings, and costs can be further reduced if a community can organize a bulk purchase.

### Zero-energy remodeling

Well-sited, moderately sized existing homes can also be Green Built remodeled to high energy-efficiency levels and retrofitted with renewable energy systems to become zero energy. After upgrading existing homes with airtight wall construction, high R-value insulation, and high performance windows and doors, homeowners can use renewable technologies such as biomass space heating stoves, ground-sourced heat pumps, solar water heating and solar electric systems to offset their utility energy use. ■



A zero-energy home.