Climate-Friendly Remodeling

For a green and growing Capital Region

By John Imes

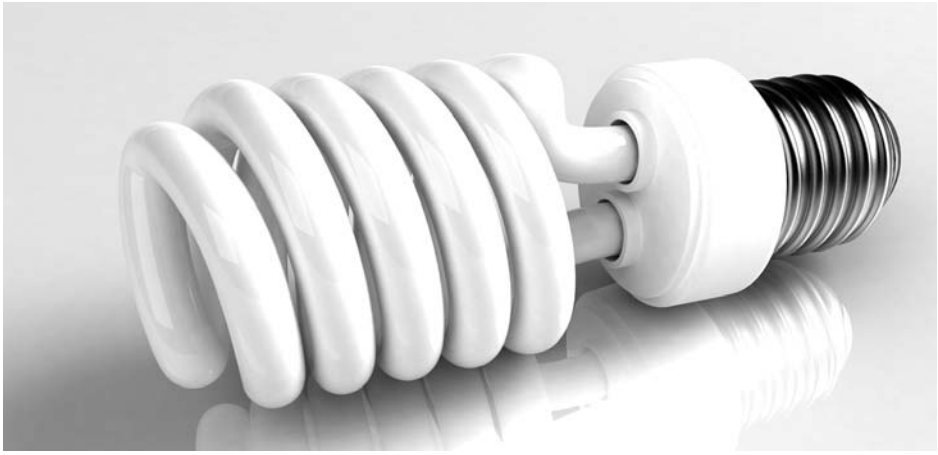
A key challenge for Dane County and the surrounding region is our growing dependence on fossil fuels to heat and power our homes — not to mention that carbon dioxide (CO_2) emissions from residential energy use are a significant and growing contributor to greenhouse gas emissions.

In fact, the energy used in Wisconsin homes is responsible for about 25 percent of all CO_2 emissions in the state, or about 18 tons per home per year — three times the amount produced by the average automobile. Moreover, every day we send millions of dollars out of the region to pay for fossil fuels and energy from other states and unstable regions. By reducing energy demand here through efficiency and conservation investments, increases in renewable energy, and green building, we can create good-paying jobs and keep more of that money available for investment.

In this installment of Making Green Sense, we highlight how transforming an existing home with improved energy efficiency is a quick cost-effective way to reduce energy use and greenhouse gas emissions from homes.

Green Built Home Makeover

Recently, Project Home and the Madison Area Builders Association coordinated a $100,000 Green Built Home Makeover project that will make a century-old home on Madison's East Side 50 to 75 percent more energy efficient. The improvements were donated by participating builders and building material suppliers with additional support by MGE.



Federal legislation proposed to phase out traditional inefficient light bulbs by 2014 is estimated to save American consumers over $6 billion per year on monthly electricity bills and save an estimated 88 billion kilowatt hours of electricity per year. By 2030, this change alone will result in greenhouse gas reductions of nearly 28 million tons of carbon.

Madison Area Builders Association MAKEOVER
In Cooperation With Project Home

Inspections and tests performed before improvements were made show that the home's annual energy costs exceeded $3,000 dollars per year, with carbon dioxide emissions estimated to be over 37,000 pounds per year.

Other findings included attic insulation with an R-value of approximately 3 — the recommended minimum level for new home construction is R38. The furnace was rated at 77- to 83-percent efficiency and wall insulation at an R value of 0-3. And the home's overall poor exhaust and ventilation strategies, combined with high air leakage rate, significantly impacted indoor air quality and energy efficiency.

The project team used the Green Built Home Remodeling Checklist and its more than 300 checklist items to choose features that conserve energy and natural resources and improve indoor air quality, water conservation, waste reduction, recycling and disposal and builder operations. To qualify as a certified Green Built Home Remodeling Project, 30 points are required. The score for the Green Makeover project was more than 90 points. Some highlights:

- Home Performance with ENERGY STAR® was selected to conduct in-home pre- and post-performance evaluations
  ENERGY STAR-qualified windows
- An outdoor heat pump combined with a backup 95-percent high-efficiency furnace equipped with an electronically commutated motor (ECMs)
- Attic insulated to minimum R-50

- ENERGY STAR-qualified light fixtures and compact fluorescent light bulbs
- Blown-in dense-packed insulation using recycled content cellulose.
- Quiet, energy-efficient bathroom and kitchen exhaust fans
- Active solar domestic hot water heating system
- Cabinet interiors and flooring from environmentally friendly materials
- New energy-efficient appliances

As a result of the Green Makeover, and despite adding high-efficiency air conditioning where none existed previously, it's estimated that the home will use 44.5 percent less natural gas and overall savings will exceed $900 dollars per year at current utility rates. Carbon dioxide emissions were also reduced by more than 20 percent or 7,750 pounds per year from current levels.

Imagine if we set a goal of making all new homes zero-energy or carbon neutral and then retrofitted existing homes to improve their efficiency at least 25 percent. The result might be more reliable and affordable energy supply and a more self-reliant, energy independent and economically viable Capital Region.

Green-it-yourself Resources

- Green Built Makeover: www.maba.org/home-makeover/
- "Carbon and Home Energy Use": To learn more about carbon emissions and compare your usage to the average Wisconsin home, go to this Web site created by the Energy Center of Wisconsin: www.ecw.org/carbhome.php
- Purchasing wind power directly from MGE is a simple and inexpensive way to offset your electric use with renewable energy. Visit www.mge.com/my_mge/ServiceForms/WindPowerRes.htm
- Green Built Home Remodeling Checklist and information available at www.greenbuilthome.org
- For potential Cash Back Rewards from Wisconsin's Focus on Energy Program, please visit www.focusonenergy.com