

WINTERGREEN

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A monthly update on Steven Winter Associates, Inc.'s work in the realm of Energy Efficient, Sustainable, and High-Performance Buildings

'Zero Energy' Homes Become Cost-Effective



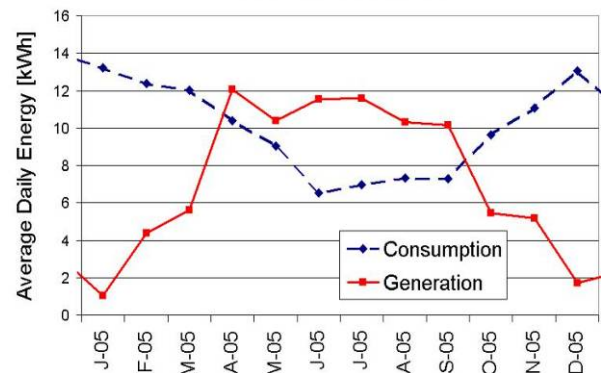
How are increasing energy costs affecting the feasibility of solar home energy solutions? Six months of rising energy rates have made the difference in cost-effectiveness for a prototype "Zero Energy" home in Hadley, Massachusetts. The **U.S. Department of Energy's Building America Program** sponsored a project in which Steven Winter Associates, Inc. (SWA) teamed up with the **Western Massachusetts Electric Company (WMECO)** to complete a pilot home featuring active solar hot water and electric systems as well as boosted insulation, low-e windows, and energy-efficient appliances and equipment. Auxiliary hot water and space heating needs are met by an ENERGY STAR boiler fueled by an oil-bio-diesel blend. Combining efficiency with solar electricity means that the home is a net generator of electricity during the utility's peak periods—a big perk for the utility. The following graphics illustrate home energy performance throughout 2005:

2005 Home Performance

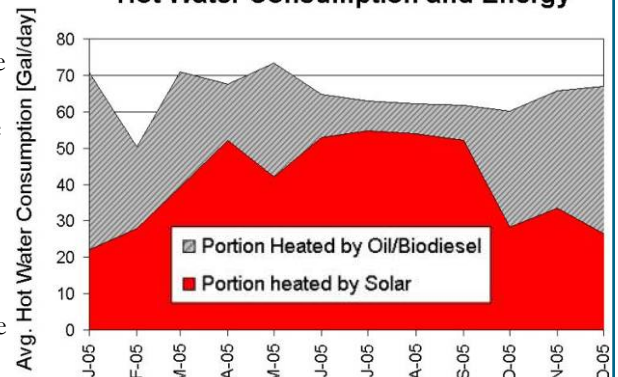
- ☀ Solar thermal covered 62% of water heating
- ☀ 2.6-kW PV array met 76% of daily electric demand
- ☀ Home was consistently a net generator during peak times

How cost effective is this approach in northern climates? In the July 2005 issue of *CARBNEWS*, SWA reported that the benefit-to-cost ratio during the first year of monitoring was 0.75, which meant that the expected lifetime energy savings were less than the cost of the improvements. When the same analysis was performed in January 2006 using updated avoided costs, the difference in energy prices sent the ratio to 1.32, forecasting a sunny future for residential solar systems.

Average Daily Electricity



Hot Water Consumption and Energy



What a difference six months make...

July 2005 Costs

Home Improvements = \$40,101
 Expected Lifetime Benefit = \$30,206
Benefit-to-Cost Ratio = 0.76

January 2006 Costs

Home Improvements = \$40,101
 Expected Lifetime Benefit = \$52,932
Benefit-to-Cost Ratio = 1.32

Green Dorms Cropping Up in Connecticut

Wesleyan University, a liberal arts college in Middletown, Connecticut, is about to apply for LEED® Certification for its first green building project. The Fauver Field dormitories project marked the second collegiate collaboration of **Konover Construction Corporation**, designer **Herbert S. Newman and Partners, PC**, and SWA. The same project team worked on a green dorm at **Western Connecticut State University**; which received



LEED certification in September. SWA performed a full spectrum of services on the Wesleyan dorms, including LEED consulting, energy modeling, and building systems commissioning. Energy efficiency features including low-e glass, energy-efficient lighting and controls, premium efficiency motors, and total energy recovery systems for outside ventilation air should save \$22,000 per year in energy costs compared to a comparable code-compliant building. Low-flow plumbing fixtures, low-VOC-emitting finishes, local materials, and water-efficient landscaping were also included in the design. The project features Forest Stewardship Council (FSC) certified wood in doors and millwork. Many LEED projects avoid this credit because certified wood is typically more costly, but the Wesleyan project team was able to procure the materials within budget. In addition to the point awarded for incorporating FSC-certified wood products for 50% of the total wood budget, an innovation credit is being pursued for selecting up to 75% of the wood from this category.

IRS Incentives for Going Green

On February 21, 2006 the IRS announced the details of its new Federal energy tax credits to reward builders and homeowners for energy efficiency. Homebuilders are eligible for credits of up to \$2,000 for each dwelling unit, if the heating and cooling energy is 50% less than that of a home built to meet the 2004 Supplement to the 2003 International Energy Conservation Code. Homeowners are eligible for up to \$500 for energy improvements made to their homes. Energy efficiency for commercial buildings will also be rewarded. Tax credits are available in all sectors for the installation of photovoltaics and other renewable energy systems. SWA will provide builders and developers with planning, design, and testing services to meet IRS criteria.



BUILDING ENERGY in Boston

There's still time to register for the **North-east Sustainable Energy Association's** annual meeting in Boston March 7-9. A number of SWA staff will be making presentations. F.L. Andrew Padian will help present a full-day session on "Greening an Existing Facility" and will chair sessions and present on green affordable housing, guaranteed energy performance, and the orientation, configuration, and structure of high performance buildings. Andrew Zumwalt-Hathaway's session will focus on "Principles of High Performance Buildings and Construction;" Courtney Moriata will present on green thermal comfort and indoor air quality; and Robb Aldrich will talk about how small home residential design can be green and Net Zero Energy buildings. For more info [click here](#).



For more information
visit the SWA Website:
swinter.com

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