

ECOWISE

January 2011 | Volume 9, Issue 1

www.hud.gov/offices/pih/programs/ph/phecc/newsletter/newsletter.cfm



Energy Modeling: a Possible Tool for Energy Renovations

For public housing agencies (PHAs) that want to do energy improvements but may not know which improvements offer the greatest bang for the buck, there are tools that can help. Energy modeling uses computer-based tools to simulate the energy use of a building throughout an entire year of operation. Energy modeling can be an effective tool for PHAs to quantify the savings attributable to specific renovations.

Energy modeling is required for LEED (Leadership in Energy and Environmental Design) certification during new construction. The certification is a national rating system for buildings designed, constructed, and operated for better environmental and human health performance. Few PHAs pursue LEED certification as it is a lengthy, and sometimes costly, process. However, many of the activities required for LEED certification can help PHAs increase the energy efficiency and sustainability of their developments. The information energy modeling provides can assist in determining whether to pursue capital improvements or to leverage funds for an energy performance contract.

How it works: Any modeling program will require a range of information about the building, such as property location, orientation, and types of energy systems used. It will then create a model of the building's energy use that you can test by watching whether the values rise and fall appropriately with the seasons. Alternatively, you can test the model by comparing those with benchmarks for typical buildings with the same usage rates in similar climates. For PHAs, these efforts can contribute to upcoming physical needs assessment and combined energy audits. To choose which renovation options you want to compare, change the data to show increased levels of insulation, new windows, or other alternatives and see how the energy use changes.

Many energy modeling software packages are available—some through private entities. Others can be obtained, free of charge, from the government or utility companies. The Department of Energy (DOE) maintains an extensive list which includes several free tools. Since each has its own strengths and limitations, you may want to test some free versions, to get familiar with the product type. Here are a few free programs identified by DOE:

- EnergyPlus is a whole building energy simulation program that engineers, architects, and researchers use to model heating, cooling, lighting, ventilation, other energy flows, and water use in residential and commercial buildings.
- Rehab Advisor quickly provides recommendations for specific actions to cost-effectively increase the energy efficiency of a typical single-family or multifamily housing renovation project. The results should be only used as a guideline, not take the place of an energy audit.
- The National Energy Audit Tool (NEAT) helps determine the most cost-effective retrofit measures for single-family homes. NEAT is also available with the Manufactured Home Energy Audit (MHEA) Tool for free download as The Weatherization Assistant.

For the DOE listing of whole building analysis tools: <http://bit.ly/hySK2D>

For the Weatherization Assistant: <http://bit.ly/gLHqDE>

For more on energy modeling: <http://bit.ly/gZugai>

IN THIS ISSUE

- » **Energy Modeling: a Possible Tool for Energy Renovations**
- » **Upcoming Events**
- » **A Holistic Approach to Green Renovations May Maximize Savings**
- » **Resident's Corner**

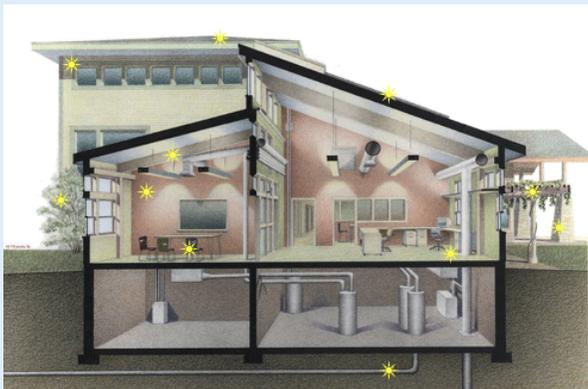
UPCOMING EVENTS

- » **National Radon Action Month**
January 2011
<http://bit.ly/eYUo29>
- » **2011 RESNET Building Performance Conference**
February 28-March 2, 2011
Lake Buena Vista, FL
<http://archive.resnet.us/conference/>
- » **Renewable Energy 101 for Housing and Community Development**
Presented with the Florida Housing Coalition
March 24-25, 2011
Tampa, FL
<http://bit.ly/gryTKr>

A Holistic Approach to Green Renovations May Maximize Savings

Many Web sites, books, and other resources provide information regarding ways to plan and execute green improvements. However, not all suggestions will help you get the most out of the renovations you make. Looking at your building as a complete system where the interaction of the parts affects overall performance and efficiency offers one integrated way of determining how to select the most cost-effective energy renovations.

John Boecker* is an architect and green building consultant whose work has included projects with the U.S. Green Building Council which oversees LEED. Boecker advises PHAs to view the building as a single entity. This whole building approach is one way to incorporate all of your systems and to set priorities. "There are expert contractors for each type of system (heating, windows, electric, etc.). As a result, each is usually addressed individually. Instead, it is important to create an integrated team which can explore how systems impact one another and address the organism as a whole."



A representation of the whole-house approach.

Graphic: <http://www.sunsationalgreen.com/index.php?s=whole+house>

Boecker indicated that the success of a systems approach depends on changing how maintenance and renovations are implemented. For example, rather than installing new systems to counteract a problem, he proposed first reducing current energy loss loads. "Experts often recommend installing perimeter heating systems near windows to address radiant heat escaping." He stated, "However, if the thermal properties of the windows are increased instead, the new heating system would be redundant. A systems process neutralizes heat loss while costing less to operate."

When asked what top three energy strategies PHAs can implement, Boecker responded, "Reduce loads, reduce loads, and reduce loads." Yet he maintained that there is not a "silver bullet" for implementing green renovations. This is largely due to climate related differences among geographical regions. A PHA may want to focus on capturing radiant solar energy to create warmth in one area, the focus in another region may be on how to shade windows to keep the temperature cool.

Finally, Boecker suggested that it is critical to conduct energy analyses, through energy modeling or computer software, to assess performance. This step is often neglected but is key to ensuring that you make the most of your green improvements.

To learn more about this approach to green renovations, visit: <http://sevengroup.com>

This DOE Energy Savers Web site also discusses the whole-house systems approach: <http://bit.ly/gr24lt>

*See HUD Disclaimer.

Resident's Corner | Lead Safety

Lead poisoning often has no symptoms. But it can cause serious health problems, especially in children. Long-term exposure to even low levels of lead can cause irreversible learning difficulties, mental retardation, and delayed neurological and physical development.

Lead can be found in lead-based paint, tap water, toys, jewelry, some candies imported from Mexico, and even in some traditional folk medicines.

Here is information about lead and ways to stay healthy around it:

- Lead-based paint was banned in 1978. If your housing is older than 1978, it may have lead-based paint in it. People are exposed to lead through lead-based paint or dust with lead in it when the paint is removed or as it ages.
- PHAs must follow HUD rules about lead paint (Lead Safe Housing Rule at 24 CFR Part 35, and the Environmental Protection Agency's Remodeling, Repair and Painting Rule). For more information on the lead-based paint regulations: <http://bit.ly/fRKjel>
- Pregnant women and children should not be present in housing built before 1978 that is undergoing renovation.
- Make sure your child does not have access to peeling paint or chewable surfaces painted with lead-based paint. Close and lock doors to rooms with chipping or peeling paint. Cover holes in walls. Regularly wash children's hands and toys.
- Household dust is a major source of lead. You should wetmop floors and wet-wipe horizontal surfaces every 2-3 weeks. Windowsills should be kept clean. If possible, windows should be shut to prevent abrasion of painted surfaces or opened from the top sash.
- Lead in toys may be in the paint or in the plastic (lead helps soften plastic). The only way to tell if your child has been exposed to lead in toys is through a lead test at your doctor's.
- Jewelry with lead is harmful to children if swallowed or put in their mouths. If your child has swallowed or put jewelry in the mouth, see your doctor.
- Use only cold water from the tap for drinking, cooking, and for making baby formula. (Hot water is more likely to contain higher levels of lead. Most of the lead in household water usually comes from the plumbing in your house, not from the local water supply.)

To learn more: <http://www.cdc.gov/nceh/lead/tips.htm>

To check for toy recalls, <http://www.cpsc.gov> or call 1-800-638-2772

To download the PIH lead toolkit and guidance: <http://bit.ly/fGanaO>

Contact Us:

Public and Indian Housing Information Resource Center (PIH IRC)

2614 Chapel Lake Drive

Gambrills, MD 21054

Toll free number: 1-800-955-2232

Fax number: 1-443-302-2084

E-mail: pihirc@firstpic.org (Put "EcoWise" in subject line)

Follow us on:

<http://facebook.com/HUD>

<http://twitter.com/HUDnews>

