

Simple Tests Lead to Substantial Reductions in Home Energy Costs



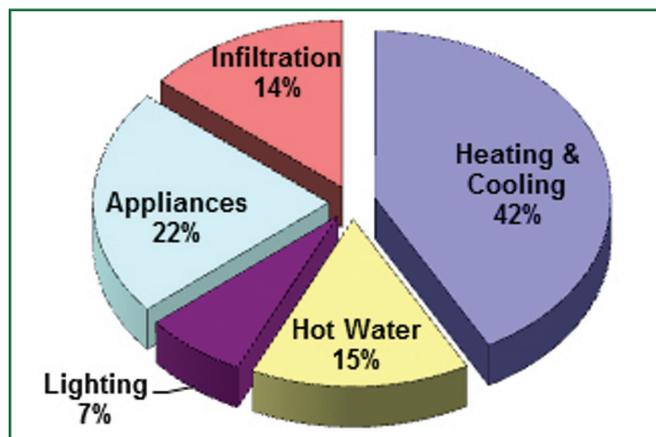
by Gladys Schneider

Whether housing is owned or rented, the costs of energy are part of the cost of that housing. For low income households, the utility bills can be a significant part of the family budget, even more so during this tough economy. Yet there are resources available to reduce individual unit energy consumption that are underutilized. They are

explored in this article.

The major energy expenditures in the home are from heating and cooling, use of appliances, hot water, infiltration (heat and humidity in the summer and cold air in the winter creep into the home through cracks and gaps), and lighting, as shown in the accompanying pie chart.

The average electric rate in Florida is 12.39 cents per kilowatt hour (kWh). On track to consume approximately 13,600 kWh each year, the average Florida household spends upwards of \$1,650 annually on electricity alone. However, with conservation and efficiency efforts, the typical residential electric bill can easily be reduced by 30%, saving a household hundreds of dollars each year.



Breakdown of home energy uses and expenses.

The Neighborhood Stabilization Program (NSP), particularly NSP2 and NSP3, strategically require “greenbuilding and energy-efficient improvements” in all activities including new construction and rehab. HUD recognizes that energy efficiency provides long-term affordability and improved sustainability of affordable housing. Hundreds of homes in Florida are being rehabilitated using the standards prescribed by the NSP rules and guidelines, which is a great start to incorporating energy efficiency into all housing programs.

Florida’s Weatherization Assistance Programs (WAP) have advanced energy efficiency with the recent round of the Department of Energy funding, which distributed \$176 million throughout Florida to boost energy efficiency in single family

homes and multifamily housing. This funding was part of the American Recovery and Reinvestment Act (commonly known as the Stimulus) administered by the Florida Department of Community Affairs, the state’s land planning agency that was recently folded into the Florida Department of Economic Opportunity. The WAP agencies are geographically distributed enabling nearby partners to assist housing providers in analyzing energy performance and prescribing appropriate treatment for a specific home. (See Resources)

Florida’s unique climate, high temperatures with high humidity, and size, encompassing three different climate zones, require regionally specific approaches to energy efficient retrofits and new construction. Most think that heat is the primary cause of high energy consumption, but the truth lies in the phrase “it’s not the heat, it’s the humidity.” Humidity, in common terms, measures the water content of

the surrounding air; and it is the moisture that is most important to combat. Bill Lazar, Executive Director of the St. Johns Housing Partnership, recognized as a leader in energy conservation in affordable housing, says, “The absolute most important lesson we have learned in retrofitting and building new homes is the proper sizing of air conditioning and duct systems. When properly sized, these systems operate more efficiently and remove moisture making the

homes healthier.”

The Florida Building Code mandates consideration of the whole house in measuring performance of the AC system to ensure that the ductwork leaks no more than 6%. If this provision were enforced by local code personnel, there would be a dramatic increase in the performance of the home energy systems. The new Florida Energy Code, effective May 15, 2012, includes standards that are more rigorous than national standards in direct response to Florida’s hot and humid climate. Systems that are designed for the size and configuration of the home, along with proper installation of components and insulation areas, require smaller and less expensive systems. This results in less expensive equipment

investments and the resultant conservation of energy leads to better air quality and lower utility bills.

Measuring the efficiency or inefficiency of a house once it is deemed suitable for acquisition and rehabilitation, is simple. An Energy Audit, conducted by a professional energy rater, using simple equipment, can determine the total house leakage and the total duct system leakage which provides a baseline of the home's energy performance.

The overall energy performance of the house is measured using a Home Energy Rating System (HERS) Index. The lower the HERS rating, the more efficient the home. The most common finding, according to Lazar, is that the building envelope has significant leakage. "Using diagnostic testing like the blower door test, we have found that the total of all the little leaks often adds up to the equivalent of a three foot door being left open in the house. That is a lot of energy being wasted air conditioning the outside. In existing homes, it is common to find significant leaks in ducts that are sending air conditioned air into the attic and right out the soffits." In addition to wasting energy, it puts undue stress on the air conditioning systems, does not allow the systems to properly remove moisture, and can cause the systems to prematurely fail. Understanding the performance of the house is critical

to proper AC system specifications. This, when coupled with other energy conservation measures, such as installation and use of Energy Star appliances, makes a great start to significant efficiency improvements in retrofits.

HUD and NSP direct that energy conservation be integrated into housing programs. For all housing providers:

- The first step is the requirement for an initial energy audit to create a benchmark measuring the energy use of the home.
- Second, providers use the information from these diagnostic tests to appropriately address the inefficiencies found in that home. This ensures that the repairs and equipment specifications will result in a healthier and efficient home.
- Finally, affordable housing providers should continue to learn more about energy performance testing and teach contractors and subcontractors the importance and value of following energy code requirements and program specifications.

Professional energy raters apply a combination of instruments in their assessments. The blower door test uses a variable speed fan inserted in a door opening to measure the extent of leaks in the home. Infrared cameras can reveal missing insulation behind walls with nondestructive testing allowing us to literally see into the walls, identify inefficiencies, and verify that they have been corrected. Visit <http://bit.ly/Ac9OHT> for an informative article on blower door testing.

There are several resources proven most beneficial to Florida's affordable housing providers in energy conservation. The Florida Weatherization Network was recently formed to focus on solutions to energy conservation by encouraging partnerships that leverage knowledge and support to strengthen and continue the efforts begun with the injection of stimulus dollars from the American Recovery and Reinvestment Act. The Florida Green Building Coalition and the Florida Solar Energy Center are Florida's go-to source for training, technical assistance, standards, checklists, and certification. These groups will send professionals to visit organizations and local governments to present information and guidance on establishing energy conservation measures and provide contact information for testers, raters, and trainers. (See Resources)

The Florida Housing Coalition is pleased to assist housing providers make these contacts and find the information needed to incorporate energy conservation into programs and standards. Plan to attend a workshop on energy conservation in our NSP track at this year's Annual Conference. Call us at 850-878-4219 for more information or email info@flhousing.org. HNN

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Resources

Weatherization Agencies:

<http://www.floridajobs.org/job-seekers-community-services/community-services/weatherization-assistance-program>

Florida Energy Rater:

https://securedb.fsec.ucf.edu/engage/search_rater?state=FL&county=&class=R1&lname=&zip=&rater_type=all

Contacts:

Florida Weatherization Network - www.flwap.org
Florida Solar Energy Center - www.fsec.ucf.edu
Florida Green Building Coalition - www.floridagreenbuilding.org

NSP Guidance for Green Building and Energy Efficiency:

<http://hudnsphelp.info/media/resources/GreenHousingDevelopmentGuide.pdf>

http://www.energystar.gov/index.cfm?c=bldrs_lenders_raters.nh_v2_v3_training_resources