



Multi-Housing News

Shooting for the Energy Star Label

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Case Study: Intervale Green

Intervale Green, developed by WHEDCo (Women’s Housing and Economic Development Corporation) with Steven Winter Associates as consultant, is a seven-story, 128-unit affordable housing community located in the Bronx, N.Y. that earned the Energy Star label under the multifamily pilot program.

In order for the property to qualify, the building’s design needed to result in at least a 20 percent reduction in energy cost, compared to the baseline building. The building is actually 33 percent more energy-efficient than a typical new-construction project.

“We only picked measures that had good payback, that would make financial sense in operations,” says WHEDCo’s Sustainability Manager Valerie Neng. “Typically, we would look at things that would take a maximum of eight years to pay back.” Solar panels, for example, showed a 40-year ROI during a feasibility study, which WHEDCo deemed too long for this type of building.

“Intervale Green is home to low-income and formerly homeless families. To best serve this population, we invested in energy conservation measures whose savings would accrue both to the tenant and to us as the owner/operator,” says Nancy Biberman, WHEDCo president. “In multifamily rental buildings in New York City, the landlord typically pays for heat, hot water and cooking gas. But the tenant pays for electricity, so Energy Star appliances and lighting fixtures installed in every apartment save tenants money each month.”

Other simple initiatives included a tight building envelope, proper insulation and correctly sized boilers. “The insulation was done so well that a smaller boiler was all that was necessary,” notes Biberman.

And, while installing CFLs as opposed to incandescent lighting should have been one of the easiest and most cost-effective strategies, finding attractive, affordable and energy-efficient fixtures was another story. “We had a really tough time with product sourcing,” recalls Biberman. “I’m assuming the market is better today. ... Energy Star appliances [for example] have come a long way,” and, she points out, as more consumers demand these types of products, more options will be available on the market.

One of the greatest challenges to meeting the energy requirements, according to Neng, was receiving a ventilation waiver. To achieve the required energy savings, it was both cost- and energy-efficient to have a waiver that allowed for lower ventilation. “What was happening was that the building code was being updated from the standard New York City code to a more green code, closer to the international code,” Neng recalls. “This project was at the precipice of going from high ventilation to lower ventilation. We had to do a lot of work to get our project grandfathered in for the new code to be effective in our building—that helped to meet the savings.”

Another huge saving came from eliminating the use of air conditioner sleeves, which would have leaked hot air during the winter, says Biberman. As an alternative, the building’s on-site maintenance installs window air conditioners during the summer and removes them during the winter.

“Since this building’s been up and we’ve been tracking its bills for almost a year now, one thing I think the Energy Star program could improve upon is what happens to the building data once it’s completed,” says Neng. “How do you transform it to useful data that the owner or manager can use? We have been proactive about trying to figure that out.”

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With the predominance of Energy Star appliances in the marketplace, everyone seems to finally be used to the label and what it represents: a reduction in energy consumption. But it’s not just appliances that are now Energy Star-rated. In fact, buildings can earn Energy Star labels, too.

This is not to be confused with the LEED (Leadership in Energy and Environmental Design) program, the National Green Building Standard or other more local green rating systems. While LEED takes into account numerous aspects of the building and its site, Energy Star measures only energy consumption. But a building can hardly be considered green if it hasn’t achieved a certain level of energy efficiency.

Buildings with the Energy Star label measure their performance through Portfolio Manager, an online tool that allows building managers to measure energy and water consumption and verify improvements. With this tool, building managers can track

weather-normalized energy use intensity (EUI), energy costs, greenhouse gas emissions and water consumption on a monthly basis.

Typically, in order to qualify for the Energy Star, a building must score in the top 25 percent based on the EPA's National Energy Performance Rating System. The EPA compares energy use among similar types of facilities on a scale of 1-100, and buildings that achieve a score of 75 or higher may be eligible for the label.

While existing multifamily communities can measure their performance and receive an EUI, the equivalent of kBtu/square foot, new multifamily communities cannot currently receive an Energy Star rating. But while the rating helps building owners and managers make more informed decisions about operating their buildings, measuring EUI can, too.

"Updating energy data monthly ensures that the EUI is current and therefore provides timely information for making effective operational decisions," explains Dr. Sharon L. Levin, CPA, founder of ManageEnergy.com and certified distance educator specializing in Energy Star training for commercial real estate.

Multifamily challenges

While labeling buildings with the Energy Star has become more common, the Energy Star Multifamily High-Rise (MFHR) effort, which is applicable to either new construction or substantially rehabilitated multifamily projects of four or more stories, is still in its pilot phase. Under this pilot, 14 buildings have earned the Energy Star, with additional projects currently in the development phase.

The EPA (U.S. Environmental Protection Agency), thus far, has been unable to create an energy performance rating for multifamily buildings because a nationally representative data set is needed, and there is currently no known data source for multifamily buildings, as there is for other so-called "space types." Office buildings, for example, utilize CBECS (Commercial Building Energy Consumption Survey) to create a benchmarking model, and statisticians can examine the data to determine what drives energy consumption.

The Agency, which is currently evaluating information obtained from the pilot to understand whether the requirements are cost-effective and represent true energy savings, expects to launch a national program for multifamily buildings in 2011.

"One goal is to determine, through statistical testing, what the dependent and independent variables are; in other words, what drives energy consumption," says Levin. "My hope is that the multifamily housing industry will benchmark enough square footage that an energy performance score can be developed for multifamily housing."

Although the Energy Star MFHR effort follows the same basic structure as the Energy Star program for New Homes, the performance target is a building that uses at least 15 percent less energy (based on cost) than a building built to ASHRAE 90.1–2007 standards. Additionally, notes the EPA, the MFHR pilot has program-specific testing and verification protocols that are mandatory requirements for the inspection, testing and verification of components related to the building’s energy performance.

According to the Architecture 2030 Challenge, which asks the global building community to achieve certain consumption targets by the year 2030, an average site EUI for multifamily housing with five or more units is 49.5 kBtu/Sq. Ft./Year. The challenge targets are 24.8 (50 percent), 19.8 (60 percent), 14.9 (70 percent), 9.9 (80 percent) and 5.0 (90 percent).

MFHR buildings present a set of challenges that have made it difficult to adapt existing program approaches to the multifamily sector. One of the greatest challenges, according to the EPA, is the split incentive, where owners are responsible for energy efficiency improvements but residents reap the rewards. The limited access to whole-building energy consumption data also presents a challenge.

Also, because turnover is high relative to other sector types, it is often more difficult for owners and managers to educate residents on best practices to reduce energy consumption.

Compounding these issues, there is little publicly available energy consumption data to develop a benchmark for multifamily projects, as is done in the Energy Star Commercial and Industrial Program. (See next month’s story on benchmarking for multifamily housing.) And, says the EPA, there is a lack of a verification infrastructure to ensure proper energy-efficient design and improvements in multifamily high-rise buildings akin to the Home Energy Rating System infrastructure for low-rise housing.

“When the Department of Energy releases new CBECS data, Energy Star updates the relevant benchmarking models. In theory, if buildings are becoming more energy efficient, then the CBECS data will reflect this greater efficiency,” says Levin.

Local standards

A number of state and local green building rating systems exist nationwide, and at press time, additional programs were in development. The following is a small sampling of current systems:

- EarthCraft House Multifamily Program, a program of the Greater Atlanta Home Builders Association and Southface. The program includes new construction and renovation, as well as affordable and market-rate projects. Qualifying projects must meet a minimum of 200 points.

- GreenPoint rating through the non-profit Build It Green, based in Oakland, Calif. Projects must achieve a minimum of 50 points and meet the category-specific point thresholds. It currently rates all new and existing single-family homes, as well as new multifamily projects, and it is developing a program to address green retrofits of existing multifamily buildings.
- Built Green is a residential building program of the Master Builders Association of King and Snohomish Counties, developed in partnership with King County, Snohomish County and other agencies in Washington State. Projects can receive a rating between one and five stars.
- Green Built Home, founded by the Wisconsin Environmental Institute and the Madison Area Builders Association. A multifamily project must earn a minimum of 60 points.