

## The Green Retrofit: Contractors, Consultants Offer Advice

General contractors and consultants offer some simple suggestions to developers and owners thinking of retrofitting their existing affordable multifamily rental housing properties to increase energy and water efficiency and thereby reduce utility bills.

The first step, they note, is to get an assessment of the building and its current usage of utilities (e.g., electricity, natural gas, water, oil) and compare this to benchmarks for similar properties in the same climate zone. This will reveal areas of the greatest inefficiencies and where improvements can be made.

"It's very important to get a comprehensive energy analysis of the building," says engineer and consultant Matt Holden, President of Sparhawk Group. The company conducts energy assessments as part of an integrated approach to assisting owners in retrofitting multifamily properties (see sidebar article on p. 10).

Holden says the energy analysis can then be used to determine which specific improvements are needed, those that can be made, and what they would cost.

Contractors and consultants generally recommend an early meeting of all of the key participants that will be involved in the retrofit project and the subsequent operation of the property – the development team, architect, general contractor, subcontractors, energy consultant, property manager, maintenance staff, etc. – to discuss the project and help formulate the design. Some call this meeting a "charrette."

### Simple Improvements First

Larry Kraemer, Vice President of Preconstruction Services at Harkins Builders, Inc., Marriottsville, Md., advises developers and owners to first go after the "low-hanging fruit" in retrofitting existing affordable multifamily properties. The company serves as general contractor on numerous affordable housing projects in the Mid-Atlantic Region; one example is West Oaks Apartments in Northern Virginia (see p. 4 for case study article).

"On the renovation side," says Kraemer, "the biggest bang for the buck that we are seeing are low-flow toilets, water-reducing fixtures, and Energy Star water heaters and appliances – things that improve energy efficiency and reduce water usage."

"By and large water efficiency is the easiest to do and typically the fastest payback," says consultant Casius Pealer, Principal of New Orleans-based Oystertree Consulting. Sources say the cost savings generated by water efficiency improvements can help pay for and leverage other kinds of efficiency improvements, such as installing more efficient HVAC equipment and lighting and making the building envelope tighter. The last upgrade, by cutting energy usage for heating and cooling, can

reduce the size of replacement HVAC system needed.

Pealer noted that WaterSense, the label for more efficient, EPA-approved water-using devices such as low-flow toilets, faucets, showerheads, washing machines, and even irrigation systems, is the counterpart to EPA's Energy Star label for energy-efficient appliances, light fixtures, etc.

Kraemer indicated that typical in retrofits by Harkins' affordable housing clients is replacement of old toilets that might use 3 gallons of water per flush with new low-flow toilets using about 1.3 gallons.

Even in this area there are cutting-edge developments, as technology advances. For example, Niagara Conservation, a designer and manufacturer of water-efficient products, sells a

vacuum-assisted "stealth toilet" with a flush volume of 0.8 gallons, according to company executive Matt Voorhees. He estimated that the high-efficiency toilets, showerheads and faucet aerators that the company sells reduce water usage by 30% to 40% compared to standard fixtures.

### Envelope, HVAC Improvements

Another area where simple steps can reap big paybacks is making an existing building "envelope" more airtight – through such steps as "air sealing" to close up leaks around openings and in walls, and by adding insulation or replacing the existing insulation with more efficient insulation.

Replacing existing HVAC equipment with more energy-efficient systems is another step to cut energy usage and operating costs. Rick Cheverton, President of Empire Construction, a

Knoxville, Tenn. general contractor that works on affordable multifamily housing projects, says continuing technical advances have resulted in HVAC systems today that are much more efficient than just a few years ago for the same price or just a little more. "You've gone from where a 10 SEER piece of equipment used to be considered high efficiency, to now where the minimum requirement in a lot of states is a 14 SEER," says Cheverton.

He said additional energy savings are commonly achieved through the use of Energy Star light fixtures and lighting. According to Cheverton, a new development is the use of Energy Star light fixtures that accept screw-in compact fluorescent lights – more efficient and more consumer-friendly than the fluorescent bulbs with pins on them and the companion pin-type fixtures.

Kraemer and Cheverton are seeing more use of LED lighting in affordable multifamily properties. But they said this is generally limited to certain areas such as parking garages because LED lighting is still expensive. **TCA**

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