Denver Housing Sets A Good Example with Big Energy Savings in Multifamily Sector

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On July 24, 2015, the Southwest Energy Efficiency Project (SWEEP) sponsored the Energy Efficiency for Multifamily conference, a one-day conference discussing energy efficiency opportunities in the multifamily housing sector, focusing on market-rate and affordable apartments, condominiums and townhomes. One of the important conclusions of the conference is that substantial energy—and financial savings—are available when multifamily housing is built and maintained to maximize its energy efficiency.

The multifamily housing sector is complex, with buildings ranging from a few units to several hundred. Energy savings have a direct impact on the economics of all types of multifamily housing, lowering the operating costs for both building owners and tenants. This makes building and maintaining multi-family housing less expensive for investors, tenants, and taxpayers, benefitting everyone.

Current programs and savings opportunities

Most utility multifamily energy efficiency programs focus on the direct installation of low cost equipment in tenant units and common areas (e.g., CFLs, LEDs, faucet aerators, low-flow showerheads, and common area lighting), which means that a utility contractor installs efficient lighting and water saving measures in a building at little or no cost to the building owner or the tenant. But there is much more that can be done to make multifamily buildings even more efficient and cost effective to operate, as the experience of the Housing Authority of the City and County of Denver (DHA) shows.

DHA has been able to leverage more than $31 million of utility bill savings through energy performance contracting, to fund a combination of energy and water conservation measures, capital improvements, major rehabs, and other energy related programs. In addition, aggressive savings are achieved in DHA’s new construction projects through energy efficient building design, often to LEED Platinum standards, and through improvements in building operations. DHA monitors the way that tenants use energy in its existing housing portfolio and provides tenants with feedback. Finally, DHA’s attention to efficient construction contributes to its goal of expanding and diversifying the stock of affordable housing to create vibrant multi-use neighborhoods in Denver.

DHA, being a public housing authority, operates under a unique set of circumstances, especially compared to smaller landlords, but its experience and success in saving energy shows what a comprehensive energy savings program in the multifamily sector can accomplish.
Comprehensive savings in multifamily buildings

A comprehensive energy savings program would focus on two general areas of improvement: 1) installation of energy efficient measures, which offers a minimum amount of the total potential energy savings; and 2) improvements in building operations, which offer high levels of sustained energy savings. These areas of improvement apply to both the operation of the building and the way that tenants use energy. The dimensions of such a plan are shown in the table below.

<table>
<thead>
<tr>
<th>Area of Improvement</th>
<th>Building</th>
<th>Tenant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>Common area improvements; e.g. interior lighting, exit signs, water heating; heating and air conditioning, etc.</td>
<td>Direct Install of low-cost measures; e.g. CFL and LED lightbulbs, faucet aerators, low-flow shower heads, etc.</td>
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<tr>
<td>Operations</td>
<td>Energy Management Systems that provide building owners with information about the operation of common area operations</td>
<td>Tenant Behavioral Change Programs that provide tenants with information about their energy use and information about how to save energy</td>
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</tbody>
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Opportunities for increased savings

Opportunities for generating savings from the operation of multifamily buildings include:
- General improvements to building operations, monitoring the physical systems (e.g., lighting, water heating, space heating and cooling) of a building
- A behavioral program directed to tenants. Such a program could communicate building energy use relative to a goal through regular reports and tenant newsletters. Alternately, a more conventional behavioral reporting program, such as those developed by OPower or Tendril, could be employed.

Utilities have supported both these opportunities. For example energy management systems are becoming common parts of utility energy efficiency programs for commercial and industrial customers. Also, residential behavioral programs, such as the home energy reports based on the OPower model, are common to utility residential portfolios. These types of programs could, and should, be applied to multifamily buildings.
Conclusion

The multifamily housing sector is a growing part of communities in the Southwest. These buildings represent a complex mix of low-income, subsidized and market rate units in a wide variety of building sizes. As we can see in the DHA example, the benefits of saving substantial amounts of energy through both direct install and building operation upgrades can be substantial. Energy efficiency can be used to significantly reduce the cost of building ownership, increase tenant satisfaction and improve the quality of life in the cities and towns of the Southwest.

For more information:

- SWEEP Energy Efficiency for Multifamily Conference: [http://swenergy.org/events/energy-efficiency-for-multifamily](http://swenergy.org/events/energy-efficiency-for-multifamily)

- Denver Housing Authority: [www.denverhousing.org](http://www.denverhousing.org)