



# Sustainability Update

## Does Going Green Take More Green?

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The primary barrier to using green building techniques is the added cost of green construction – or, in many cases, more accurately – the perceived added cost of green construction. However, with 39% of the Nation’s total energy consumption and 12% of its potable water consumption devoted to buildings, it is important to fully understand the long term costs and benefits of green construction before deciding whether to “go green”.<sup>1</sup>

The consideration of additional costs for green construction, compared to savings over the life of the building, is critical for those that own and operate buildings – such as municipalities. Increases in cost may occur due to the following:

- The extent of green construction techniques employed;
- When green construction goals and techniques are integrated in the building design; and
- The construction team’s experience with green construction.

Despite initial costs, buildings that integrate sustainable practices will result in long-term cost savings derived from reductions in energy and water consumption, as well as, waste generation. Municipalities that undertake an analysis that weigh the up-front costs of green construction against the operational cost savings over the life of a building

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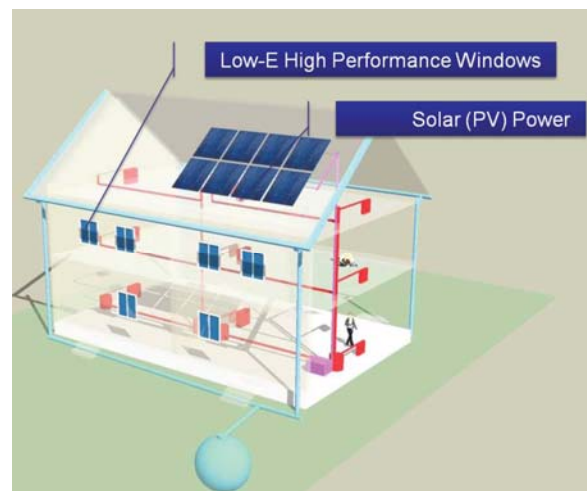
may realize overall building cost reductions over traditional construction techniques.

While the actual additional cost of green building construction is variable, indications are that savings in electricity consumption, waste output and potable water use from green construction results in financial savings in the form of reduced electricity

bills, waste collection bills and water / sewer bills.

A 2007 study prepared by Davis Langdon, “Cost of Green Revisited” found that there was no significant difference in the average cost of buildings which achieved LEED (Leadership in Energy and Environmental Design) Certification compared to

conventional buildings. For example, the study found no indication that LEED Certified libraries are more expensive than conventional libraries.



Low-emissivity (low-e), high performance windows reduce energy loss by as much as 50% and deflect radiant heat to reduce cooling needs. Prepared for the City of Millville by the 2008 University of Pennsylvania - Planning Problems Workshop.

<sup>1</sup> United State Green Building Council, Building Impacts presentation, accessed July 2, 2008

A comprehensive study prepared for California's Sustainable Building Task Force in 2003, "The Costs and Financial Benefits of Green Building", found that an up-front investment equal to approximately 2% of construction costs typically yields a life cycle savings of over ten times the initial investment. This would mean that an added investment of \$100,000 to incorporate green building construction into a \$5 million dollar project would result in a savings of at least \$1 million dollars over the life of the building (assumed to be 20 years).

Building rehabilitation that employs green building practices, rather than new construction yields similar outcomes. A 2008 study prepared by the Leonardo Academy compared the operating costs of buildings with a significant portion of the floor area devoted to office space. The buildings compared were those that have received LEED Existing Buildings Certification (LEED EB) or better in the BOMA (Building Owners and Managers Association) Experience Exchange Report in which average costs per region are provided. This study found that more than 50% of the LEED EB buildings had operating costs which were less than the BOMA average for the region.

The US EPA ENERGY STAR program states that ENERGY STAR buildings, on average, use 40% less energy than conventional buildings.<sup>2</sup> Note that ENERGY STAR rated buildings only address a building's energy efficiency.

If the research indicates that green construction does not have substantial additional cost, why is there a strong perception that it is cost prohibitive? This perception most commonly occurs when only the additional up-front costs for individual construction materials are considered. However, the added cost of these features is highly dependent on the extent of green building practices which are used and the process in which they are integrated in to the project design. Incorporation of green building standards

can actually reduce construction, operations and maintenance costs.

Integrating green building practices early in the process allows for such system adjustments quickly and without added cost. Too often the added cost of green building comes when the owner or developer decides to "go green" after much of the building's architectural and site design has been completed. This not only requires a redesign but prevents the architect from working together with all other design professionals involved to fully take advantage of the green building practices designed by others. Consider the example of a building which uses a vegetated roof or a roof system with high solar reflectance, such as a white coating or light colored shingles. The high solar reflectance of these materials will reduce temperatures of the roof, which reduces ambient air temperatures and therefore the cooling needs of the building. However, this connection between the roof system and the cooling system can not be made without an integrated design process in which all design professionals are sharing ideas and working together.



Green roofs reduce demand on stormwater management system and decrease heating and cooling costs by serving as additional insulation in the winter and deflecting radiant heat in the summer. Prepared for the City of Millville by the 2008 University of Pennsylvania – Planning Problems Workshop.

As with all disciplines, there is a learning curve for any member of a construction team when first working with something new. Those that have designed and built green buildings will integrate green construction methods easily and efficiently with the other building elements. For this reason, it is very important that a municipality building or conducting building rehabilitation using green

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[www.energystar.gov/ia/partners/downloads/energy\\_star\\_report\\_aug\\_2003.pdf](http://www.energystar.gov/ia/partners/downloads/energy_star_report_aug_2003.pdf) Accessed August 3, 2008.

construction methods seek a construction team with sufficient experience. This can be done through a municipality's RFP or RFQ process in which competing construction and/or design teams' experience with green construction can be evaluated and questioned.

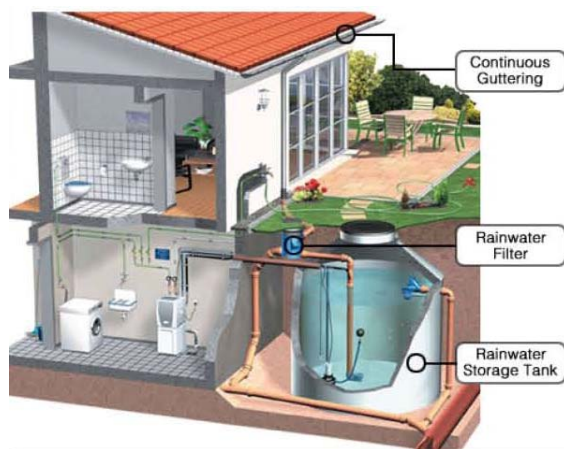
Large-scale green building construction and green building rehabilitation are not the only ways for a municipality to reduce its environmental impact. There are many low and modest cost items that will increase a building's sustainability while also reducing operation and/or maintenance costs. Municipalities can utilize alternative energy sources – either by installation of sources or by purchasing alternative energy from their energy provider. Additionally, municipalities should consider modest building retrofits which will improve energy and water efficiency and/or improve air quality. Energy audits of municipally-owned buildings are a great opportunity to analyze how energy efficiency can be improved. Some modest building retrofits that can be undertaken to make a building more green include, but are not limited to, low-flow faucets and toilets, motion sensor and timed lighting, compact fluorescent light bulbs, light colored roofing system, purchase of only ENERGY STAR equipment (where applicable) and rainwater collection.

Municipalities that think creatively about how the goals of sustainability intersect with cost savings may realize long-term benefits that far outweigh initial costs.

For more information on this topic, sustainable resources, and actions that your town can take to be more sustainable, please utilize the websites cited, look for future columns on sustainability or contact us at [kgrady@cchnj.com](mailto:kgrady@cchnj.com) or [bmcmanus@cchnj.com](mailto:bmcmanus@cchnj.com). We invite readers to submit questions and ideas for future column topics.

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Integration of a storm water collection system reduces water expenditures by collecting rainwater and using it to supply water for flushing toilets or landscaping. Prepared by Rainwater Solutions.