



Building **BLOCKS**

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GREATER TORONTO APARTMENT ASSOCIATION

■ **INSIDE**

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BUILDING INFORMATION MODELING: FUTURISTIC SOLUTIONS FOR THE GREENING OF APARTMENT BUILDINGS

Studies show that commercial and residential buildings consume about 40 percent of our total energy and 70 percent of our electricity, while accounting for approximately 30 percent of greenhouse gas emissions and millions of tons of construction and demolition waste. But as the green revolution makes major inroads in the apartment industry, new building modeling technology ensures energy savings that are easier, less expensive, and measurably more effective. That benefits everyone in ways that promise to be financially rewarding and environmentally sustainable over time.

Building Information Modeling (BIM) technology gives apartment building owners, architects, engineers, contractors, and fabricators affordable access to a full range of interactive tools for refitting of buildings for enhanced energy conservation. Utilizing sophisticated parametric change technology, BIM software enables energy savings assessments for every conceivable aspect of a project – from floor plan designs to high-tech thermal imaging analysis.

Explore multiple design alternatives – both green and conventional – before committing to bricks and mortar. Look at an entire spectrum of sustainable design options with varying levels of LEED certification. Toggle various options on and off in the model for visualization, quantification, and analysis. Figure out how much of the building's materials can be recycled or reused. Monitor the impact of lighting on energy consumption as well as the comfort of residents. Factor in natural as well as artificial light, for instance, and the impact of shade trees or reflections of sunlight bouncing off of a glass building next door.

Set a benchmark with the model and then configure changes; run a case study to see how those changes influence performance, and get the results of the test without paying for outside services or experiencing costly delays. Edit the HVAC system or alter the building's R-values using BIM, for example, or look at “*what-if*” comparisons between new construction and renovations. Choose those that deliver the least environmental impact at the most competitive price point.

Plus with BIM every drawing, view, enhancement, and modification is preserved within one single digital file that can be emailed or wirelessly accessed for accurate tracking, scheduling, and communication. The person making window blinds can, for instance, look at the BIM data and know to use denser material for windows that get more sunlight – but use less expensive blinds on windows that are always shaded by trees.

Conventional modeling systems scatter building information across multiple files and require tedious, error-prone user interventions to update information. Resources that are not accurately matched to the “*as-built*” final product are wasted, and so is the cost of buying them, transporting them to the site, and then removing them when they are not used. Whether the impact is computed as lost revenues or in terms of energy consumption and a larger carbon footprint, precious energy is squandered – and that defeats the purpose of green planning. But BIM solves this problem at its root to help the industry comply with energy standards while capturing more apartment building value. ♦

FOR FURTHER INFORMATION ON BUILDING MEASURING TECHNOLOGIES, INCLUDING BIM MODELING, PLEASE CONTACT:
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