



Benchmarking to Identify Potential Energy and Water Savings

By **Brian Byrnes**



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It is 7 p.m. on Tuesday evening, and I am joining the monthly meeting of our condominium directors. One thing is certain; the agenda will include discussion on addressing increasing costs, particularly for utilities and services, maintenance, and necessary building upgrades. As our building ages, managing these costs and maintenance fee increases have become more and more challenging.

One of my responsibilities on our board is to complete the mandated annual Energy and Water Reporting and Benchmarking (EWRB) reporting. Ontario's EWRB program requires owners of large commercial, indus-

trial, residential and other prescribed building types that are 100,000 sq. ft. or larger to report their energy and water use to the Ministry of Energy, Northern Development and Mines by July 1 of each year.

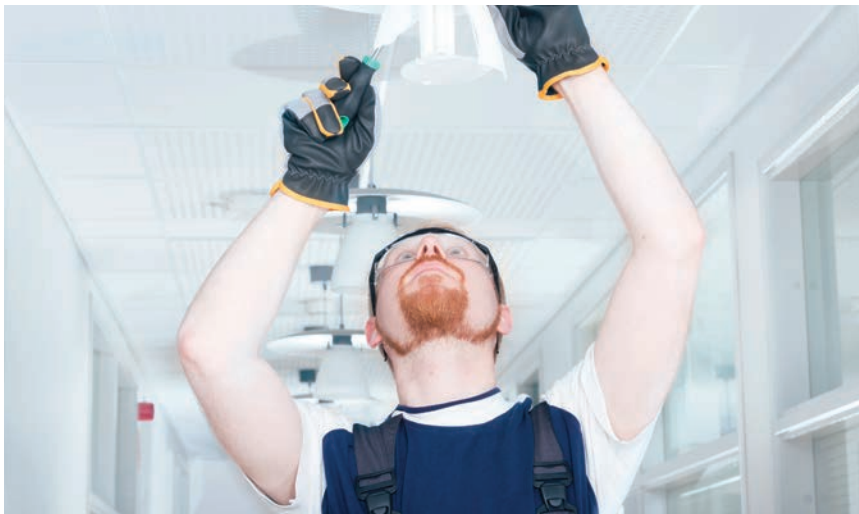
Energy and water can represent some of the largest operating costs for buildings. The EPA in the U.S. estimates that buildings can reduce these costs by up to 30 percent, and often with low-cost investments with short payback periods. If you own or manage a large building, energy and water inefficiency may be costing you thousands of dollars each year. Energy benchmarking is one of the easiest ways to begin to manage your building's operating costs. Having a sound understanding of how much your building consumes energy and

water is an excellent way to identify opportunities for efficiency and recommissioning, as well as adopting a more strategic approach to managing your building's costs.

Prior to the EWRB regulation, our condominium board recognized the benefits of energy benchmarking and looked for opportunities for cost-saving efficiency improvements. Below are a few examples of energy savings we are achieving in our condominium corporation.

LED Lights

In 2017, our condominium board replaced all our building lighting with LEDs (excluding suites). By retrofitting, we were able to reduce our electricity consumption in these areas by over 60 percent. Net savings were



estimated at over \$40K per year, and payback without any incentives was approximately three years. An additional benefit has been that we have not had to replace any of the lights due to them burning out. While our focus was on reducing energy costs, we definitely have noticed the savings on bulb replacement. After the three years, it is the gift that keeps on giving.

Pumps, Motors and VFDs

Upgrading motors and pumps offer another excellent opportunity for energy and water savings. Large

buildings have many electric motors and pumps to move air and water through the building. Our condominium recently replaced two of our main booster pumps with more efficient pumps and motors with Variable Frequency Drives (VFDs). A VFD is a type of motor controller that drives an electric motor by varying the frequency and voltage supplied to the electric motor. The retrofit cost was approximately \$35K, and the annual saving is estimated at \$10K to \$15K, so the payback is three to four years. This retrofit ensures maximum effi-

ciency, continuous yearly savings and a reduction in maintenance costs. Most electric motors in a building are candidates for adding a VFD for greater efficiency.

We have also begun exploring opportunities for water saving, the second-highest utility cost, which continues to increase. Our first step was an audit of all building fixtures to identify leaks. Studies have shown that one badly leaking toilet can result in costs of hundred of dollars a year. A low-cost and easy initiative is to replace all the flappers on toilets every three to five years to reduce leakage. The reduction of water consumption by eliminating water leakage from existing fixtures has the additional benefit of decreasing the likelihood of multi-suite flooding, a major benefit with the recent significant increases in condominium insurance rates.

According to the York Region Water Efficiency Guide, approximately 60 percent of the total water consumption in your building comes from bathrooms. If you have not done so, consider replacing high volume toilets with High-Efficiency Toilets (HET). High volume toilets use about 13 litres of water per flush, whereas a 4.8 litre



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HET can save you 41 litres of water per person, per day. This saving can translate to more than 30 percent less water use in your building and significant annual cost-savings. Two other important areas to investigate are your cooling tower performance and your irrigation system. If the water chemical treatment for your cooling tower is done improperly, it can negatively affect cooling tower performance resulting in greater water consumption.

Condominiums are constantly seeking opportunities to cut operating costs. Benchmarking is the first step in identifying opportunities – both technical and organizational – to help manage building maintenance fee increases, achieve positive public perception and recognition, and enhance residents' comfort and quality of living. Efficiency retrofits have proven to be successful in helping reduce avoidable costs and leaving dollars available for other board priorities. Common energy and water retrofits for condominiums include:

- LED lights
- Smart thermostats
- VFDs
- Efficient pumps and motors
- High-efficiency boilers and chillers

- Heat reflectors
- Identifying energy and water leaks: leaking pipes and toilets, unsealed spots around windows and doors
- Low-flow toilets and efficient showerheads
- Cooling tower maintenance
- Irrigation systems

Check with your local utilities to see what incentives are available to your condominium for energy and water efficiency improvements. On our condominium lighting and pump retrofits we received almost \$15K in incentives.

One of the other beneficial aspects of energy benchmarking in the residential sector is improving property values. By tracking energy consumption and trends within your building, strategic investments and building upgrades can communicate the high operational capabilities of your building to the market. Additionally, your building may earn notable recognition from industry and real estate players when buying, selling and renting your property.

Ontario's EWRB program provides condominium corporations with the opportunity to track energy and water consumption patterns using Energy-

Star Portfolio Manager. Using this free web-based application, building owners can input monthly energy and water consumption data and gain access to key metrics and modelling tools, which can be used to compare their buildings' performance against other buildings in the same sector, nationwide. On-going benchmarking supports continuous efforts to identify efficiency opportunities and invest in cost-effective retrofits.

Reporting and benchmarking is ultimately the first step in identifying trends in consumption and opportunities for energy and water efficiency. After all, if you can measure it, you can control it. If you can control it, you can manage it. ■

Brian Byrnes is a Senior Advisor and EWRB Business Lead with the Ministry of Energy, Northern Development and Mines (ENDM) and has been a Condominium Director for over 12 years. He also spent over 10 years in the development sector, retrofitting large buildings. The views and opinions expressed in this article are the personal views of the author and do not reflect the position and/or views of the Government of Ontario. ontario.ca

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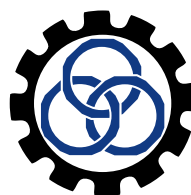
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