Property Management REPORT

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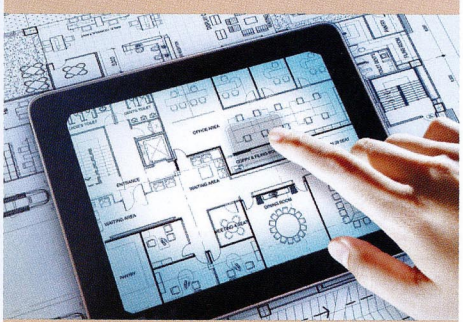
West Don Lands Take Shape



Applications for Energy Efficiency

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Photo courtesy of Earth Rangers

Ascending the Sustainability Scale

Earth Rangers Centre Exemplifies Continuous Improvement

By Andy Schonberger

The Earth Rangers conservation organization reaches out to Canadian youth, teaching them about the importance of biodiversity and habitat protection and enabling them to take real action to help endangered animals. Earth Rangers' Animal Ambassadors (see photo above) are a featured part of education programs in thousands of schools and community venues across Canada to demonstrate to children how incredible nature is and how they can be better stewards of the world around them.

With a mission as focused as this, it was important for the headquarters of the organization to reflect these values. Earth Rangers Centre (ERC) was designed to be one of the most energy-efficient buildings in the world. Some of the key features include: heavy thermal mass construction; radiant heating and cooling; earth tube fresh air tempering; extensive daylighting; a dedicated wastewater treatment system; vegetated green roof; a solar-ready roof; and a solar thermal hot water system.

It also became apparent that the building itself could be a demonstration tool. ERC achieved LEED Gold for New Construction in 2006, thus ensuring third party validation and market recognition to back up its role model status.

In each year since then, management and facility teams have monitored the actual performance data for electricity,

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water and gas consumption and looked for ways to continuously improve these numbers. The data was then used to inform improvements to mechanical and other building systems.

In a next step, ERC management decided to pursue certification under LEED for Existing Buildings: Operations and Maintenance (LEED EB). Since the certification relies on documented performance, the data that had been tracked previously helped enormously with this process.

FINDING & DOCUMENTING EFFICIENCIES

The process began with an energy audit, which pointed to energy metering and HVAC upgrades. These measures improved the building's operational efficiency and significantly reduced operating costs.

Energy consumption and cost for 2011 dropped 20% from 2008. Even more impressively, the building used 49% less energy in 2011 than originally modelled, which is 83% below the standard set in Canada's 1997 Model National Energy Code for Buildings.

Some of those savings come from mechanical system updates, such as a ground source heat pump system and demand control ventilation. Others were found through commissioning of existing systems and changes to how the building was being used. Notably, these savings were found even though the organization is growing and the building has been host to an increasing number of people every year.

Existing practices like ERC's green cleaning program needed only slight modification to meet LEED EB requirements. Rigorous green cleaning standards were already in place because the building's on-site wastewater treatment plant necessitates extra vigilance about anything that goes down a drain and would require treatment.

Documentation – of everything from energy consumption to office supply

Photos courtesy of Earth Rangers

purchasing – is a major component of LEED EB. Although the ERC already complied with many of the credits' requirements, that hadn't been formally documented. Now, lighting purchases, office supplies, food purchases (for humans in the building's café and the Animal Ambassadors), office equipment, waste diversion rates and cleaning supplies are tracked, with the goal of making more sustainable purchasing decisions, while keeping a careful eye on cost.

Some capital investments were involved, including solar photovoltaic arrays with the capacity to generate 85 kilowatts of electricity – equivalent to about one-third of the ERC's consumption. In this case, though, the power is contracted under the Ontario Power Authority's Feed-in-Tariff program, generating revenue that offsets almost 90% of the building's ongoing energy costs.

The new ground source heat pump system reduces natural gas consumption by 90%. Its 44, 120-meter-deep wells have also delivered additional savings in cooling mode. ERC is predominantly cooled via a couple of pumps, and refrigeration equipment kicks in only when humidity levels are high.

Meanwhile, the extensive energy metering system, integrated with building automation, now tracks more than 300

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Praise from the Canada Green Building Council:

"This is the first time ever that the CaGBC has certified a building initially as LEED Gold for New Construction and then seven years later as LEED Platinum for Existing Buildings: Operations and Maintenance. It is key for LEED certified buildings to not only achieve this high level of performance, but maintain it as well.

"Earth Rangers took this a step further by exceeding the performance target under their initial certification. This project sets a benchmark in Canada that building owners can follow to create lasting dividends for the environment and their pocketbook."

-- Thomas Mueller, President & CEO, Canada Green Building Council

Photos courtesy of Earth Rangers

points of data, automating data collection and making it easier to generate the reporting and tracking for LEED EB.

ONGOING REWARDS

Operational savings are offsetting the cost of these new investments, but not every upgrade was a physical change to a system. The alternative commuting program required the engagement of all the ERC's staff and tenants. Given the location, public transit is not a viable option so carpooling, bicycles and low-consumption vehicles were the only way to attain LEED points for alternative commuting – in the end, seven of the 15 available points were achieved.

Beyond its LEED Platinum certification – with the highest score yet achieved in Canada: 92 out of 110 possible points – LEED EB has ultimately made a building that was already efficient even more robust. Managers and operators continue to learn from the audit, ongoing commissioning, tracking of performance data and the formalized process that goes with that.

The returns from improving existing buildings are undeniable – and less risky than the stock market – with the added bonus of reducing their impact on the environment. Energy audits and retrofits may not be profiled in glamorous architectural magazines, but the business and environmental opportunity for greening existing buildings is an order of magnitude larger than with new buildings.

Management at Earth Rangers Centre continues to look for improvements and has set goals to be carbon neutral, and for net zero energy performance in the future. The building's record thus far serves as testament to the attainability of these goals, while inspiring everyone who visits. ❊

Andy Schonberger is Director of The Earth Rangers Centre. For more information, see the web sites at www.ercshowcase.com or www.earthrangers.org.