

PROJECT SUMMARY

Infrastructure Ontario made a strategic decision to pursue a LEED® EB: O&M (EBOM) Platinum designation for Robinson Place, a 21,368 m² government building in Peterborough, Ontario. Morrison Hershfield, as Prime Consultant, engineered many sustainability initiatives aimed at increasing energy efficiency, conserving water and contributing to a healthier work environment. Efforts resulted in an ENERGY STAR score of 89, and the landmark achievement of becoming the first government building to achieve LEED EBOM Platinum in Canada.

The building is fully metered, with new energy-efficient chillers for optimum performance. Automation and ventilation systems were upgraded with real time monitoring for energy efficiency and occupant comfort. Captured rainwater is used by the building, which also features a community garden and numerous sustainable building management policies were put in place.



INNOVATION

In 2010, Infrastructure Ontario (IO) made the strategic decision to pursue a LEED® EB: O&M (EBOM) Platinum designation for Robinson Place, a seven-storey, 21,368 m² commercial building in Peterborough, Ontario. As noted by the Canada Green Building Council (CaGBC), “... the LEED® Canada EBOM rating system helps building owners and operators measure operations, improvements and maintenance on a consistent scale, with the goal of maximizing operational efficiency while minimizing environmental impacts. LEED EBOM focuses on the operation and maintenance phase of the building lifecycle rather than the construction phase.”

IO engaged Morrison Hershfield to champion the LEED EBOM process and to engineer numerous sustainability initiatives aimed at increasing energy efficiency, conserving water and contributing to a healthier work environment at Robinson Place. In August 2014, the CaGBC awarded the building with the Platinum rating. It is the first government building and one of only 19 existing buildings to achieve LEED EBOM Platinum in Canada.

The certification has brought long term value to the building owner and occupants through the implementation of innovative solutions and strategies, including:

- A fully metered facility, with new energy-efficient chillers for optimum performance.
- Automation and ventilation systems upgraded with real time monitoring for energy efficiency and occupant comfort. Real-time notifications of any unusual spikes in consumption of gas, water or electricity are now provided to the facility management team.
- Building operates at optimal efficiency because the heating, ventilation and air conditioning systems are balanced throughout the entire building thereby maximizing tenant comfort.
- Rainwater harvesting, sub-metering, and cooling tower controls conserve water.
- Rooftop garden contributes to the community and supports the Province’s priorities of conservation and greening within the Ontario Public Service.
- Numerous sustainable building management policies put in place to reduce waste and promote greener purchasing strategies.



The new building automation system was modernized so that forward compatibility would be less of a risk and the revamped interface allows web access to operators and service contractors for ease of trouble-shooting. Energy sub-metering allows real time monitoring of consumption so that usage spikes are easily visualized and remedied by operators. The high efficiency chiller and motors have a "plateauing" effect which transforms usage profiles and lead to reduced energy costs. As part of Robinson Place's commitment to green power, all energy used by the building has been offset with Green-e certified renewable energy.

Ultimately, Robinson Place achieved an ENERGY STAR score of 89, meaning it performs better than 89% of its peer buildings nationwide. Significant water reductions were also achieved through the water conservation strategies, resulting in 37% less water use than the average public sector building.

The certification process has helped create an awareness to building management and users of what sustainability efforts are important in the LEED process and what strategies will have the biggest impact, in particular with respect to ongoing operations. This project demonstrates the potential benefits that can be achieved through the application of new technology and systems in existing buildings of this age, size and tenant density. Finally, the strategy employed at Robinson Place is now documented and easily duplicated across other facilities owned and operated by IO.



COMPLEXITY

A bold target of LEED EBOM Platinum certification brings many challenges. Morrison Hershfield identified and communicated winning strategies early on to establish buy-in from all stakeholders and mitigate any knowledge gaps or implementation risks.

The project involved aggressive and quantifiable impact reduction targets that necessitated a well-coordinated engineering and commissioning team that regularly interfaced with building tenants and service providers.

Robinson Place operates at optimal efficiency because the HVAC system is balanced throughout the entire building, maximizing tenant comfort. Real-time notifications of any unusual spikes in consumption of gas, water or electricity are provided to the facility management team as a result of the building being fully metered and connected to the upgraded Building Automation System.

The water conservation initiative is underpinned by rainwater harvesting, sub-metering, and cooling tower controls. The stormwater pond and rooftop rainwater collection systems are connected to a 35,000 L cistern that was rehabilitated by upgrading flow controls, filtration and pumping systems. Non-potable water from the cistern is supplied to water closets, urinals and outdoor hose bibs.

The lighting system design leveraged the building's original architecture and access to natural light and included new lighting and control systems, occupancy sensors and re-lamping with higher efficiency bulbs.



“Morrison Hershfield's extensive green building experience and guidance through the LEED certification process, technical innovation and excellence with regard to energy and water systems combined with expert commissioning services, were each instrumental in achieving the LEED EBOM Platinum certification for Robinson Place.”

- Howlan Mullally, Director, Central Operations, Infrastructure Ontario

SOCIAL & ECONOMIC BENEFITS



Attainment of LEED EBOM Platinum is a strong indicator of high performance engineering and triple-bottom line decision-making. Beyond near-term financial benefits realized from energy and water savings, energy systems renewal functions as future-proofing against escalating energy prices and fossil fuel shortage.

Morrison Hershfield developed a robust design basis that enabled Robinson Place to achieve the following quantitative results:

- Energy Intensity: 1,150 MJ/m²/year (base building plus process energy)
 - Base building: 847 MJ/m²/yr
 - Process energy: 303 MJ/m²/yr
 - Building transformation resulted in reduction in energy intensity of 26%, normalized for data centre use (based on the MNECB Reference Building)
 - Annual Energy Consumption Index: 0.85 GJ/m²
 - Reduction in water consumption: 15%
- 37% less water than in average public sector building (based on BOMA BEST 2013 data)
 - 44% reduced commuting trips for occupants

Ultimately, Robinson Place achieved an ENERGY STAR score of 89, meaning it performs better than 89% of its peer buildings nationwide.

A prominent social feature of Robinson Place is the rooftop garden which, serves the community, promotes the locavore movement, and educates participants and volunteers in learning about organic food, native plants, composting and rainwater conservation. The community garden encourages a low carbon diet that minimizes emissions released from the production, processing and transport of food and contributes to less food waste. It also offers opportunities for recreation, exercise and increased psychological well-being.

Additionally, indoor air quality improvements are shown to contribute to a healthier work environment resulting in less absenteeism, fatigue, stress, and distractions for building occupants.

ENVIRONMENTAL

Robinson Place contributes to a healthier future for generations to come through implementing strategies that reduce energy consumption, greenhouse gas emissions and water consumption, and by reintegrating natural habitat and ecosystems into the built environment. It boasts several key features that enhance the surrounding community, including a rooftop community garden, bicycle infrastructure, enhanced site ecology, and numerous policies offering a green approach to building management. There are strong recycling programs in place, and operational policies were developed to ensure an environmentally-sensitive approach to cleaning, landscaping and pest management. Old furniture is reused where possible and new purchases are limited to GREENGUARD certified furniture.

The rooftop garden is a key element of the site's stormwater management system along with a cistern, pond and on-site vegetation. The local ecosystems host a variety of plant and tree species that are native to Ontario. The planted areas are permeable and provide a conduit to recharge the groundwater as well as assist with stormwater retention. The stormwater pond provides habitat for fish, frogs and marine plants and is bordered by natural rock and herb plantings. The on-site ground and roof garden vegetation comprises 31% of the property's site area.

Robinson Place supports the Province's priorities of conservation and greening within the Ontario Public Services, engaging staff in behavioral change that contributes to a more sustainable workplace. In addition to promoting reduced impacts due to food transportation, occupants scored well on alternative transportation surveys, resulting in 44% reduced commuting trips (10 LEED EBOM points).




CLIENT NEEDS

Morrison Hershfield embraced the opportunity to help Infrastructure Ontario achieve its ambitious goal of LEED EBOM Platinum certification for Robinson Place, bringing significant improvements to the building's ongoing performance as well as the experience of its users.

This industry leading project demonstrates to business owners, occupants and society in general, the value of retrofitting existing buildings to be more sustainable. It represents the first government building in Canada to achieve LEED EBOM Platinum certification. As the first LEED EBOM project for IO, it will serve as an ongoing model to other similar buildings and will help the Agency chart a strong path for sustainability within its extensive portfolio.

Morrison Hershfield's valuable sustainability experience and guidance through the LEED certification process were used to augment the building upgrades and related engineering work in the building. Achievement of LEED EBOM Platinum certification was accomplished many months after the completion of the building upgrades, relying heavily on Morrison Hershfield's interpretation and application of LEED EBOM certification rules and precedents as well as diligent performance tracking to validate sustainability metrics.





“The LEED Platinum designation is rare, even in new construction, so this conversion is something Peterborough can be very proud of. IO began this process several years ago in cooperation with our ministry partners and service providers. We’re excited to see everyone’s hard work recognized for an initiative that will have benefits for many years to come.”

**- Bert Clark, President & CEO,
Infrastructure Ontario**