



# Green Offices & Cost Savings

---

## 1. Introduction: Green buildings add value

The state-of-the-art Exchange office tower is among the greenest office buildings in North America. Green offices are in increasingly high demand as companies recognize the business benefits of superior working conditions, and employees demand better quality offices. Health and comfort have become a priority in the modern work environment. Employees are happier in a bright and healthy work environment, and research shows that, as a result, they are more productive, take fewer sick days and are apt to stay longer with an organization. The following is a summary of the specific features of the Exchange office tower that contribute to a high quality work environment, and how those characteristics translate to better value and significant savings to the tenant.

## 2. LEED™ Platinum Design

LEED, or Leadership in Energy & Environmental Design, is a green building certification program that recognizes best-in-class building strategies and practices. The Exchange is on track to achieve LEED Platinum, the highest level of certification, making it one of the greenest office buildings in North America. Green buildings offer not only environmental benefits, such as energy and water conservation, but also offer multiple additional benefits to the people that live and work in them, by providing superior indoor environments.

## 3. The Exchange: Vancouver's Greenest Office Tower

The Exchange's leading edge approach to green building provides tenants a healthy environment, superior comfort, wellness and extraordinary design. In addition to being Vancouver's greenest and most sustainable office tower, the Exchange is the first LEED Platinum heritage restoration project, offering state of the art design including a complete rehabilitation of the original building and high quality new construction.

## 4. Key design features at The Exchange

### 4.1. Occupant comfort and health

- LED luminaires that are strategically integrated into the radiant ceiling system provide crisp white light and visual comfort for office occupants. Dimmable sensors that are integral to the linear LED luminaires adjust light levels according to daylight conditions. Efficient LED technology along with daylight response sensors significantly contribute to reduced electricity costs.
- Occupants will benefit from a "displacement ventilation" system providing 100% fresh, filtered outdoor air at 18 C. This constant supply of fresh air is delivered via a raised floor at gentle low velocity and sweeps the occupied space in one direction upwards toward the ceiling, effectively removing all air-borne pollutants and toxins in the space without stirring or recirculating them. Once passed through the space, the heat from the air carrying pollutants is recovered and the air is exhausted from the building.
- Radiant heating and cooling integrated into the architectural ceiling complements the displacement ventilation and provides superior and very "gentle" thermal comfort. The combined system eliminates noise, drafts and local areas of discomfort, and provides the highest possible level of indoor environment quality unmatched by other systems.
- The building's high performance envelope integrates a high degree of thermal insulation and effective passive solar design. Deep vertical mullions provide shading that protects the interior from excessive solar heat gains, and triple-glazed windows with low-E coating and graduated fritting significantly decrease heat losses.

### 4.2. Other environmental design features

- A rainwater harvesting system collects and stores rainwater to be used for irrigation and toilet flushing.
- Energy recovery within the building combined with two renewable energy systems provide zero-emission heating, cooling and hot water to the building. Solar thermal collectors use the sun's energy to heat water, and an underground geothermal loop underneath the tower extracts heat energy from the earth to use for space heating and cooling. The renewable systems are complemented with efficient air-source heat pumps to reduce CO2 emissions by a 85%.

- Based on renewable energy, efficient HVAC systems and passive design, the building uses 60% less energy and energy costs are 40% less than that of a conventional building.

## 5. Green offices, productivity and cost savings

- LEED-certified buildings are found to enhance worker productivity and reduce absenteeism<sup>i</sup>, and companies that occupy LEED-certified office spaces see increased recruitment and retention rates.<sup>ii</sup>
- In Canada, approximately 90% of time is spent indoors<sup>iii</sup>, and tenant surveys show that roughly 94% of office workers place high importance on indoor air quality and comfortable air temperature.<sup>iv</sup>
- Employee costs (salary, etc.) are on average 10 times more costly than the cost of space per employee.<sup>v</sup> This means that the biggest return on investment should arise when green buildings contribute to improving business productivity.<sup>vi</sup> As beneficial as energy savings can be, any green investment that increases employee wellness and productivity can have exponentially greater value.<sup>vii</sup>

### 5.1. Design elements at The Exchange that contribute to productivity

The Exchange tower achieves the highest LEED Platinum performance with features that provide the highest degree of indoor environment quality.

- **Temperature controls:** radiant ceiling heating and cooling providing comfortable temperature and humidity levels impact employee satisfaction and performance
- **Ventilation & air quality:** a continuously supplied 100% fresh filtered ventilation air without recirculation decreases spread of airborne illnesses
- **Monitoring:** continuous monitoring of all key system parameters to maintain a healthy indoor environment
- **Non-toxic materials & pollution control:** eliminating chemical contaminants that have adverse health impacts
- **Quality lighting, daylight & views:** improves focus, satisfaction, energy levels and happiness

### 5.2. Benefits to the tenants

- **Productivity improvements:** Daylight, temperature controls and fresh air improve morale, health and happiness in the workplace, thus boosting employee efficiency and rate of output.
- **Lower absenteeism:** Improved indoor air quality reduce workplace-related health issues (e.g. headaches and allergies), resulting in reduced employee sick days and related health insurance costs.
- **Lower churn rates:** Day lit and healthy work environments support employee retention and recruitment, thus reducing costs associated with hiring.

### 5.3. Potential cost savings<sup>viii</sup>

Industry	Improved productivity	Employees per square foot	Potential savings per square foot
Legal	8%	250	\$33
Finance	8%	200	\$38
Accounting	8%	250	\$27
Tech	8%	120	\$58
Engineering	8%	160	\$38
Resources/Mining	8%	200	\$35

## 6. Conclusion

Countless studies and tenant surveys correlate green design features to increased productivity, and research shows that the greatest savings for businesses can be derived from reducing employee costs. Savings from increased productivity are typically nearly equal to or exceed the total cost of rent. The Exchange, with the most advanced next generation technology will provide the highest quality indoor environment conducive to providing significant productivity increases and substantial reductions in employee costs. *A projected 8% improvement in productivity at The Exchange is equivalent to 67%-145% savings on lease costs.*

---

## Notes

<sup>i</sup> Singh, Syal, Grady, Korkmaz (July 15, 2010). Michigan State University. American Journal of Public Health.

<sup>ii</sup> Watson, Rob. Green Building and Market Impact Report – 2011. [http://www.greenbiz.com/sites/default/files/GBMIR\\_2011-web\\_0.pdf](http://www.greenbiz.com/sites/default/files/GBMIR_2011-web_0.pdf)

<sup>iii</sup> Environment Canada [http://www.ec.gc.ca/doc/media/m\\_124/p5\\_eng.htm](http://www.ec.gc.ca/doc/media/m_124/p5_eng.htm)

<sup>iv</sup> W . Building Owners and Managers Association (BOMA) International and Urban Land Institute. What Office Tenants Want: 1999 BOMA/ULI Office Tenant Survey Report. Washington, D.C., BOMA International and ULI, 1999.

<sup>v</sup> Kats, Greg et al. “The Costs and Financial Benefits of Green Buildings A Report to California’s Sustainable Building Task Force” October 2003. <http://www.usgbc.org/Docs/News/News477.pdf>

<sup>vi</sup> Green Value: Green Buildings, Growing Assets, London (2005)

[http://c.ymcdn.com/sites/www.realpac.ca/resource/resmgr/industry\\_sustainability\\_-\\_research\\_reports/rgreenvaluereport.pdf](http://c.ymcdn.com/sites/www.realpac.ca/resource/resmgr/industry_sustainability_-_research_reports/rgreenvaluereport.pdf)

<sup>vii</sup> Jones Lang LaSalle Green + Productive Workplace. [http://www.us.jll.com/united-states/en-us/Documents/green%20productive%20workplace%20overview\\_JLL\\_april2014.pdf](http://www.us.jll.com/united-states/en-us/Documents/green%20productive%20workplace%20overview_JLL_april2014.pdf)

<sup>viii</sup> Methodology: [average salary per employee] x [% productivity gain] ÷ [sq. ft. per employee] = [\$ savings per sq. ft.]. Productivity improvement is based on AAA “conventional” functional office space as compared to Exchange LEED Platinum office space.