



2013

BOMA BEST
ENERGY AND
ENVIRONMENT
REPORT

SUMMARY REPORT

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As part of its ongoing commitment to improving existing building performance and reducing environmental impacts through the BOMA BEST Program – Canada’s leading assessment and certification program – BOMA Canada is proud to present the BOMA BEST Energy and Environment Report 2013.

The BOMA BEST mission is to create a sustainable environment, one building at a time. The Program supports this by facilitating the continuous improvement of building operation and maintenance through the use of an online assessment tool followed by on-site third party verification.

The BOMA BEST Energy and Environment Report 2013 presents a detailed analysis of 455 buildings certified to BOMA BEST Levels 2, 3, and 4 between January 1 and

December 31, 2012. This sample represents approximately 100 million square feet of Canadian commercial real estate. Building performance and management was analyzed in terms of the Program’s six key areas of assessment: energy, water, waste reduction and site enhancement, emissions and effluents, indoor environment, and environmental management systems. Results are presented for each asset class available in the BOMA BEST program: Office, Multi-Unit Residential Building, Enclosed Shopping Centre, Light Industrial, and Open Air Retail.

The BOMA BEST Energy and Environment Report 2013 reveals that a majority of certified buildings achieved higher scores upon recertification compared to initial certification. The BOMA BEST process has assisted building

owners and managers to identify equipment and initiatives that will improve operational efficiencies, reduce costs and increase a building’s score. Please see “Journey through BOMA BEST” in the full report for more details about the benefits of recertification.

BOMA Canada and the eleven Local BOMA Associations would like to congratulate all BOMA BEST Program users for their commitment to improving Canada’s existing building stock.

For more performance benchmarks and case studies on each assessment category in the BOMA BEST Program, please consult the full report¹ available at www.bomabest.com.

FIGURE 2: BOMA BEST SCORES – CERTIFICATION VS. RECERTIFICATION

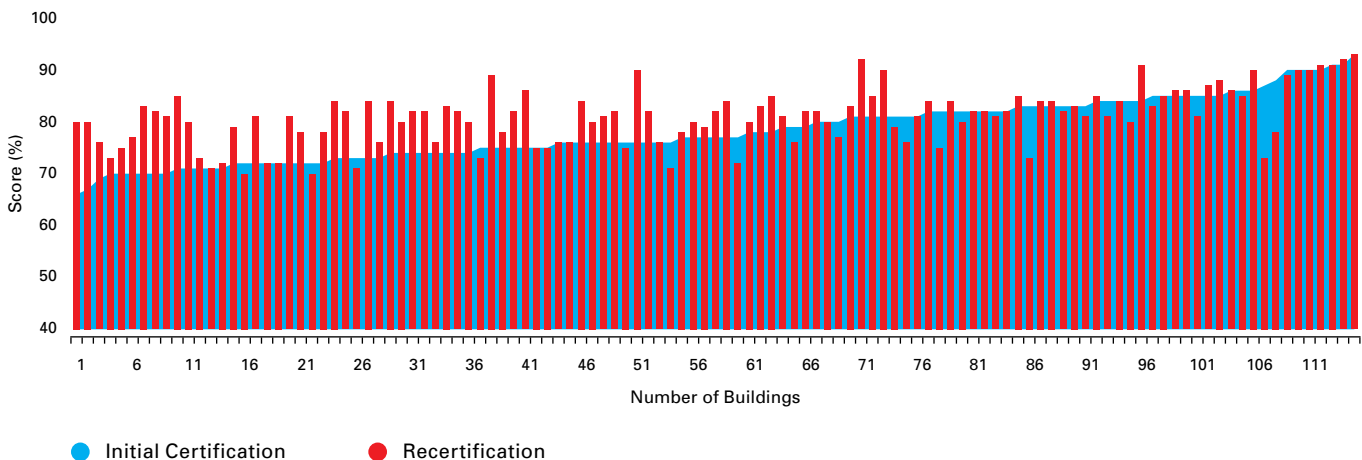
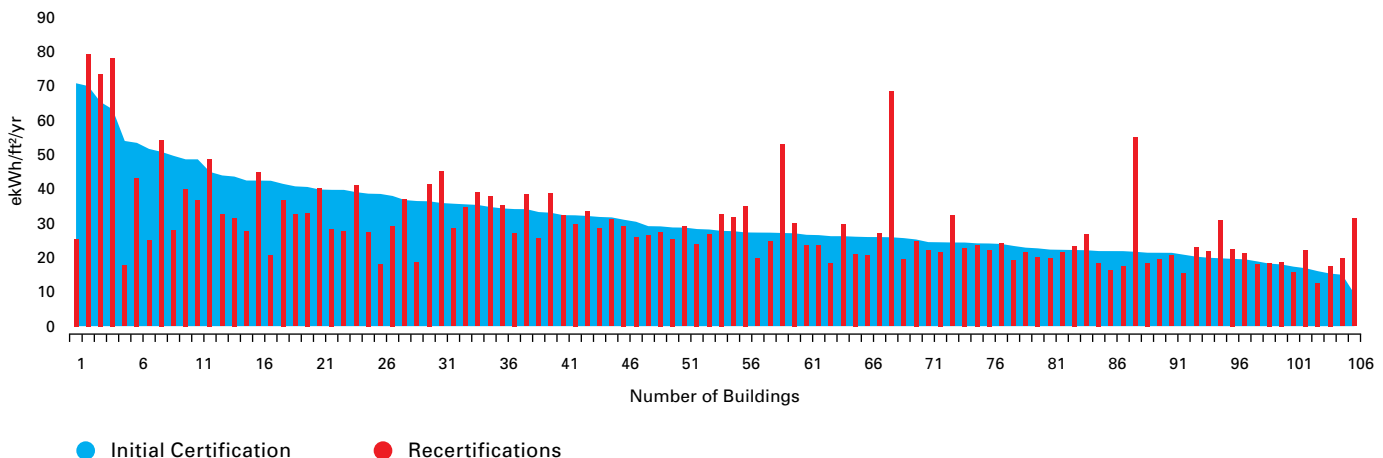


FIGURE 3: BOMA BEST EUI – CERTIFICATION VS. RECERTIFICATION



¹ Please note, all Figures are extracted from the Full Report and as such have retained their original numbering. This has been done with the aim to facilitate cross-referencing between reports.

KEY RECOMMENDATIONS



The BOMA BEST Energy and Environment Report 2013 (BBEER) identifies the following areas of improvement for Canada's existing building stock:

- **Energy:** Despite growing evidence that submetering is extremely helpful for identifying energy saving opportunities as well as facilitating ongoing commissioning practices, this technology is still not commonly found in buildings. Sub-meters are especially critical for building managers seeking to understand the energy performance of individual buildings within an office complex or to investigate the differences in individual tenant consumption patterns.
- **Transportation:** Building owners and managers still have many opportunities available to them for reducing dependency on single-occupant vehicles and their associated carbon emissions. Practices that make alternative forms of transportation attractive and accessible to building occupants include installing shelter over bicycle racks, providing changing facilities for cyclists, and creating a strategy for car-pooling.
- **Water:** Since large buildings typically play host to a wide range of high-impact water features such as cooling towers and more extensive food services, there are great opportunities for water savings through targeted demand reduction management practices.
- **Waste:** Average diversion rates have dropped compared to the 2011 certified building sample despite high scores in waste management practices. Since waste management strategies are already in place, building managers have an opportunity to increase tenant engagement in waste diversion objectives by setting higher targets and increasing the availability of composting.
- **Site:** There is an opportunity for more buildings to engage in improving the ecological health of the building's site, such as site remediation with native species and removal of water-intensive landscape features.
- **Emissions and Effluents:** Many buildings still have equipment that contains ozone depleting substances and global warming refrigerants, although these are being phased out.
- **Indoor Environment:** Buildings within the sample did not have many of the following features, all linked with improved indoor environment for building occupants: personal controls over ventilation and lighting; scheduled lamp cleaning and group re-lamping.
- **Environmental Management System:** More buildings would benefit from undertaking tenant satisfaction surveys and developing site maps that identify the location of environmentally significant features (such as hazardous waste), enabling more effective response in the event of an emergency.



Over 3,800 buildings, representing hundreds of millions of square feet of Canadian commercial real estate, have applied for certification and/or recertification to date.



3,049 buildings have achieved BOMA BEST certification and/or recertification across Canada.


KEY FINDINGS



Blue Cross Centre, Moncton,
BOMA BEST Level 3 (Certified 2012)

- Buildings achieved an overall score in the mid- to high seventies range (Level 2), demonstrating that there is still room for performance improvement amongst Canadian existing buildings.
- Average energy use intensity for BOMA BEST certified office buildings is 30.76 ekWh/ft²/yr (or 1.19 f GJ/m²/yr) with a median of 27.84 ekWh/ft²/yr – a 16% improvement on the NRCan national average².
- Buildings that achieved energy reductions at recertification saw their energy use intensity drop from 34.92 ekWh/ft²/yr at initial certification to 31.68 ekWh/ft²/yr after recertification – a 9% reduction in energy consumption.
- Seventy-five percent (75%) of BOMA BEST certified office buildings have a better score than the BOMA BEST average of 30.76 ekWh/ft²/yr.
- Energy efficiency features are not the only indicators of good energy performance; effective management practices must also be present.
- Older, lower performing buildings are being brought up to similar performance levels as their more modern counterparts thanks to building operator and manager emphasis on building re-commissioning and major retrofits.
- BOMA BEST office buildings have avoided emitting 160,240 MT of CO₂. This represents the equivalent of removing 33,383 cars from the road for one year, or the capacity of 82,090 square city blocks of pine forest to store CO₂ for one year³.
- Average water consumption intensity for BOMA BEST certified office buildings is 0.6 m³/m² – a 70% improvement on the national average of 2.03 m³/m².
- Forty five percent (45%) of BOMA BEST certified office buildings divert between 30 – 59% of their waste from landfill while a smaller percentage diverts between 60 – 90%.
- Scores for reducing emissions and effluent remain high across the country which suggests that managers of BOMA BEST certified buildings have a strong commitment to implementing effective management practices for hazardous materials and products.
- BOMA BEST certified buildings achieved consistently high scores (high 90s) on the Environmental Management System section: most buildings have documented environmental policies and tenant communications strategies.
- BOMA BEST certified buildings across the country achieve consistently high scores (mid 80s) for indoor environment management and practices.

 **Good management**
practices and energy efficient technologies are necessary for achieving high performance in buildings.

 **BOMA BEST**
buildings have avoided emitting 160,240 MT of CO₂ – the equivalent of removing 33,383 cars from the road for one year.

 Buildings achieved a 9% **reduction of energy consumption** at recertification.

² NRCan. *Commercial and Institutional Consumption of Energy Survey, Summary Report*. 2005.

³ NRCan. *Comprehensive Energy Use Database Table: Offices Secondary Energy Use and GHG Emissions by Energy Source (1990 to 2010)*.

OFFICE BUILDING PERFORMANCE

No single variable can be isolated as being responsible for improving the energy performance of a building. Rather, a number of factors can influence energy consumption including age and size of the building, occupant engagement, efficiency features of the building and management practices (including operations, monitoring and ongoing commissioning). Case studies available in the full report explore the opportunities for savings that can be achieved by implementing new technologies such as Combined Heat and Power as well as existing building commissioning.

The majority of BOMA BEST buildings have clear water conservation management plans, targets and practices in place. The benefits of these policies, such as achieving large reductions in water consumption, are clearly highlighted in the feature “Leader in Water Conservation” in the full report.

The “Leader in Waste Reduction” feature, available in the full report, emphasizes that achieving ambitious waste diversion targets is absolutely possible with commitment from tenants and management.

FIGURE 21: AVERAGE ENERGY CONSUMPTION FOR OFFICE BUILDINGS, BY YEAR

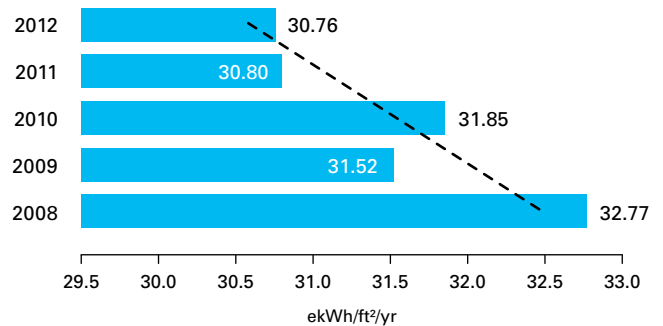


FIGURE 23: EUI DISTRIBUTION OF CERTIFIED OFFICE BUILDINGS

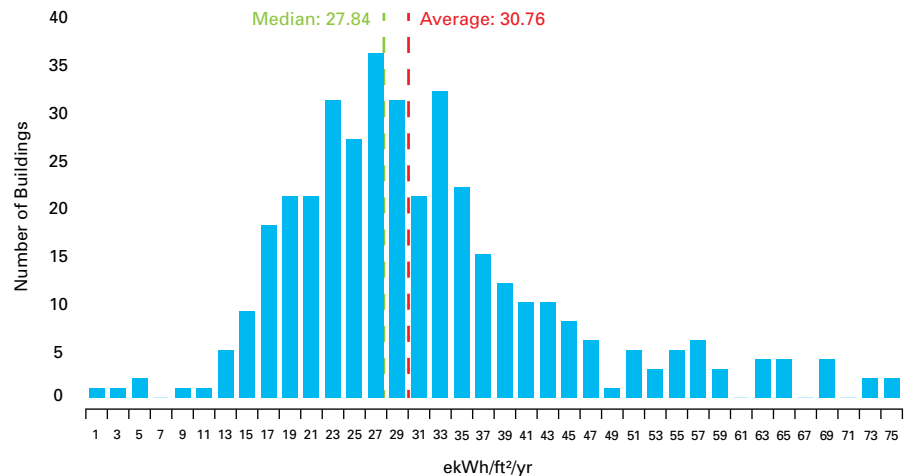
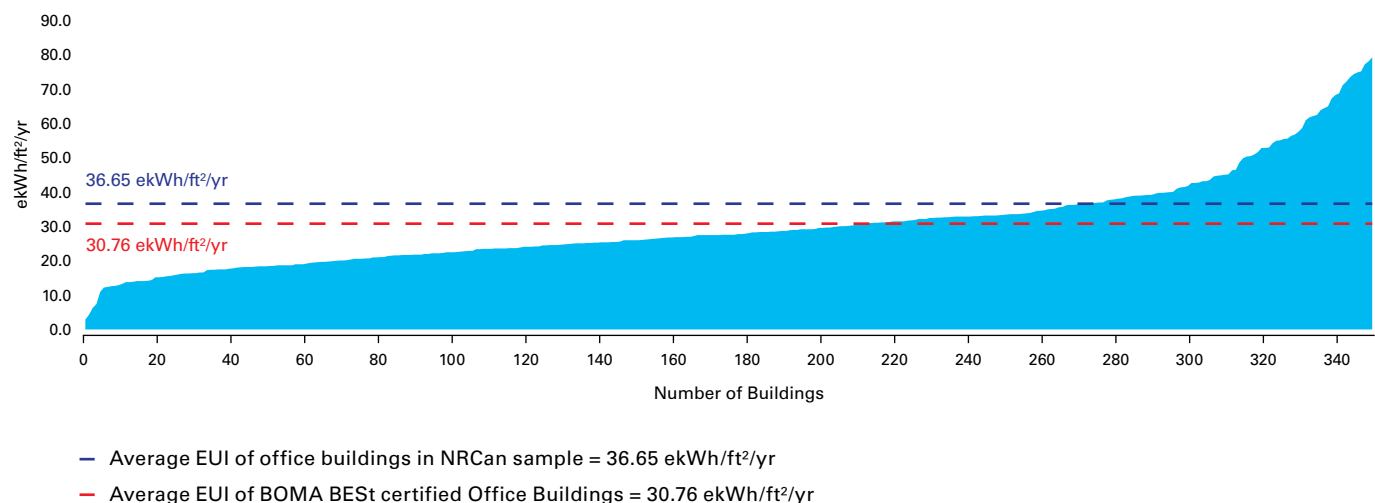


FIGURE 22: EUI OF CERTIFIED OFFICE BUILDINGS VS. NATIONAL AVERAGE



OFFICE BUILDING PERFORMANCE



Jamieson Place, Calgary, BOMA BEST Level 4 (Certified 2011)

FIGURE 61: WASTE DIVERSION RATES OF CERTIFIED OFFICE BUILDINGS

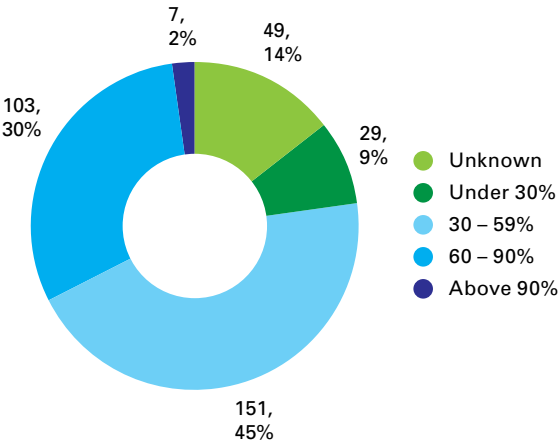


FIGURE 55: WATER USE DISTRIBUTION OF CERTIFIED OFFICE BUILDINGS

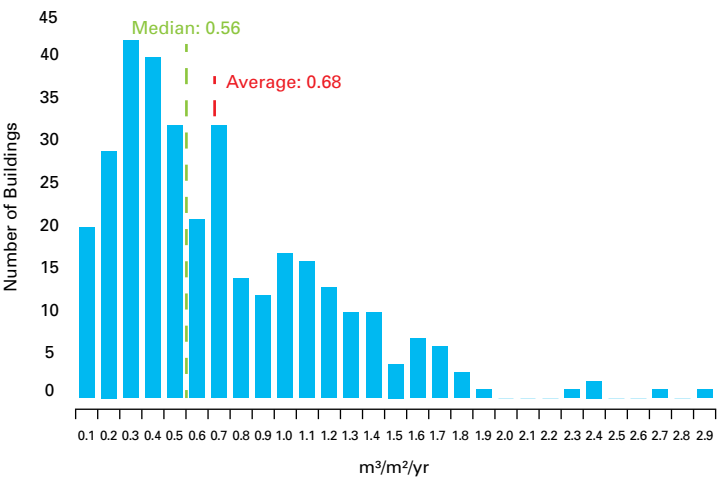


FIGURE 56: AVERAGE WATER USE OF CERTIFIED OFFICE BUILDINGS, BY REGION AND SECTOR

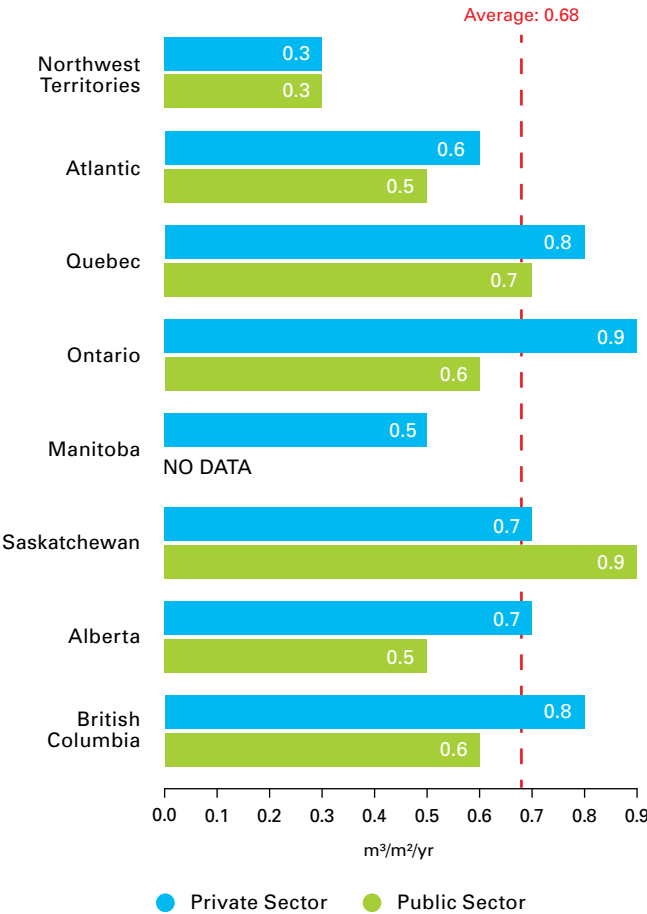
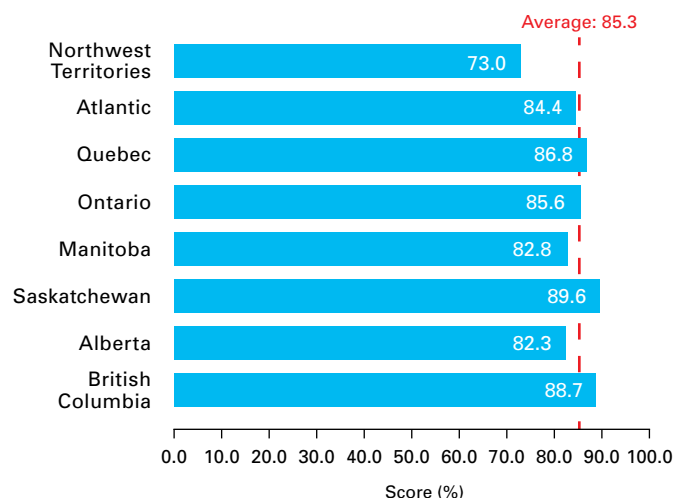


FIGURE 62: EMISSIONS & EFFLUENTS SCORE OF CERTIFIED OFFICE BUILDINGS, BY REGION



Scotia Plaza, Toronto, BOMA BEST Level 3 (Certified 2012)

FIGURE 63: INDOOR ENVIRONMENT SCORES OF CERTIFIED OFFICE BUILDINGS, BY REGION

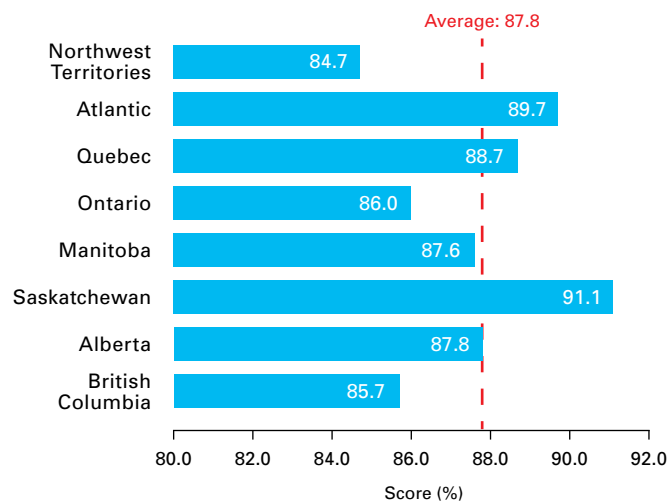
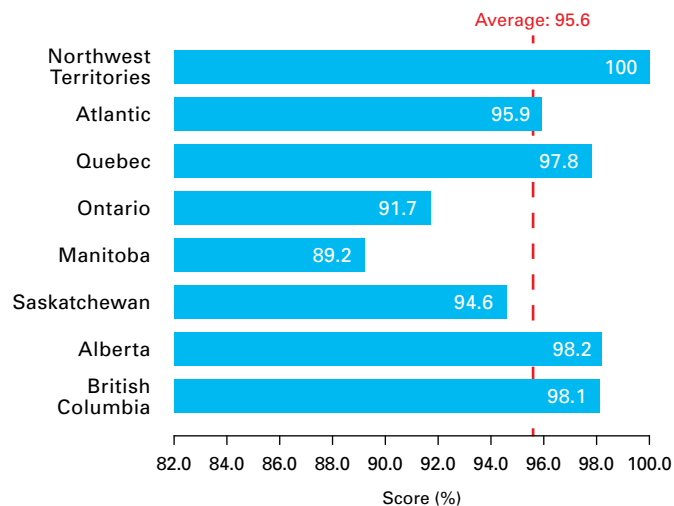


FIGURE 64: EMS SCORES OF CERTIFIED OFFICE BUILDINGS, BY REGION



MURB PERFORMANCE



Metropolitan Towers,
Vancouver, BOMA BEST
Level 3 (Certified 2011)

Parkview Towers, Burnaby,
BOMA BEST Level 2
(Certified 2011)

With the release of the Multi-Unit Residential Building module in January 2012, this is the first year such buildings have been included in the BOMA BEST Energy and Environment Report.

BOMA BEST certified MURBs consume on average 19 ekWh/ft²/yr (or 0.73 GJ/m²/yr) slightly better than the national average on energy use intensity⁴. Factors that influence energy consumption include building window characteristics, heating system types, and number of occupants.

FIGURE 68: EUI DISTRIBUTION OF CERTIFIED MURBS

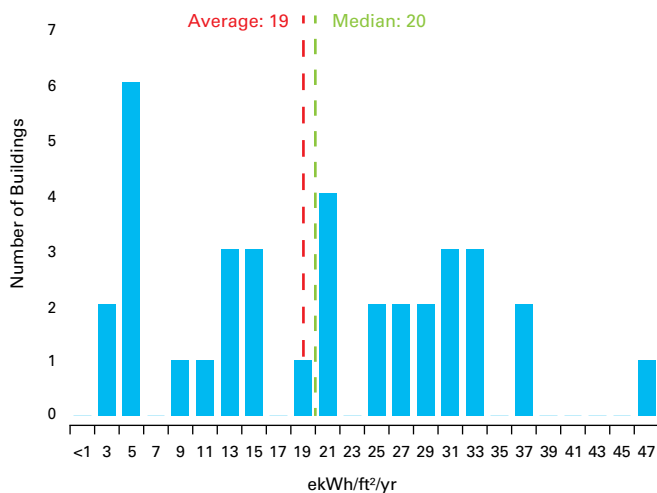
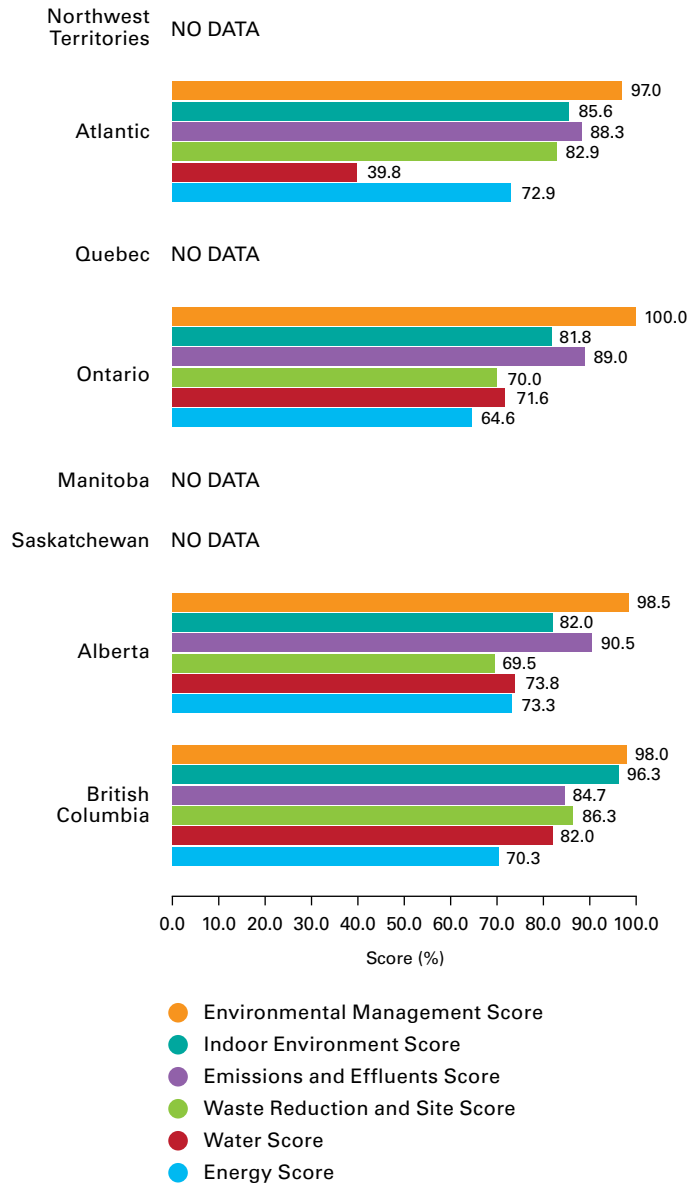


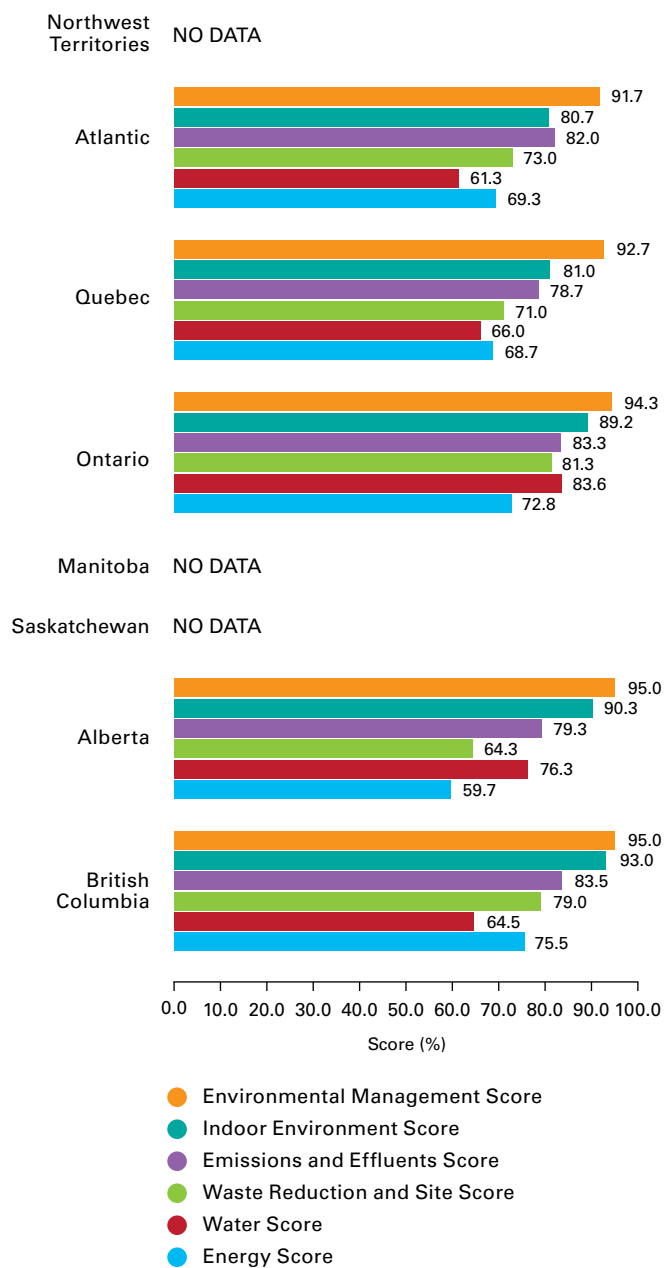
FIGURE 66: AVERAGE BOMA BEST SCORES OF CERTIFIED MURBS, BY SECTION AND REGION



⁴ Canadian Building Energy End-Use Data and Analysis Centre. *Energy Consumption and Energy Intensity in Multi-Unit Residential Buildings (MURBs) in Canada* (Table 3.1.2). 2007.
Minto Developments Inc. & CMHC. *Top 10 Energy & Water Saving Tips in Multi-Unit Residential Buildings* (Slide 4). 2001.
RDH Building Engineering Ltd. *Energy Consumption and Conservation in Mid- and High-Rise Residential Buildings in British Columbia* (p.47). 2012.

ENCLOSED SHOPPING CENTRE PERFORMANCE

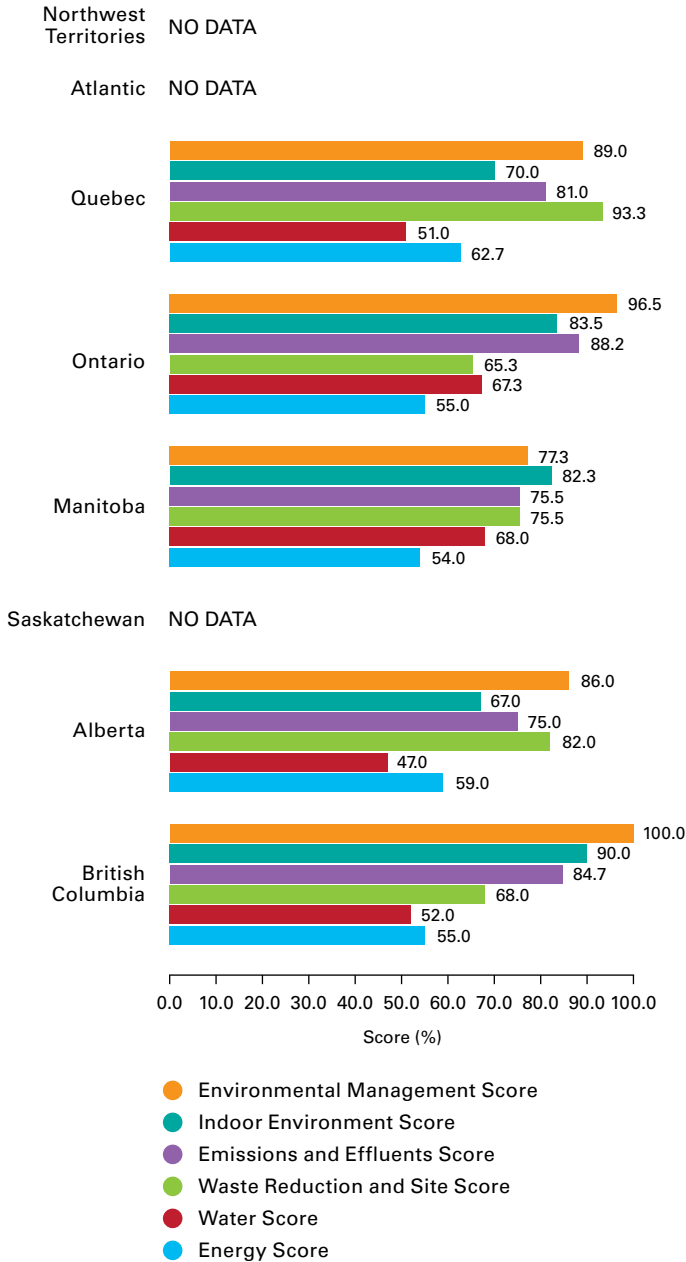
FIGURE 76: AVERAGE BOMA BEST SCORES OF CERTIFIED ENCLOSED SHOPPING CENTRES, BY SECTION AND REGION



Lougheed Town Centre, Burnaby, BOMA BEST Level 2 (Certified 2013)

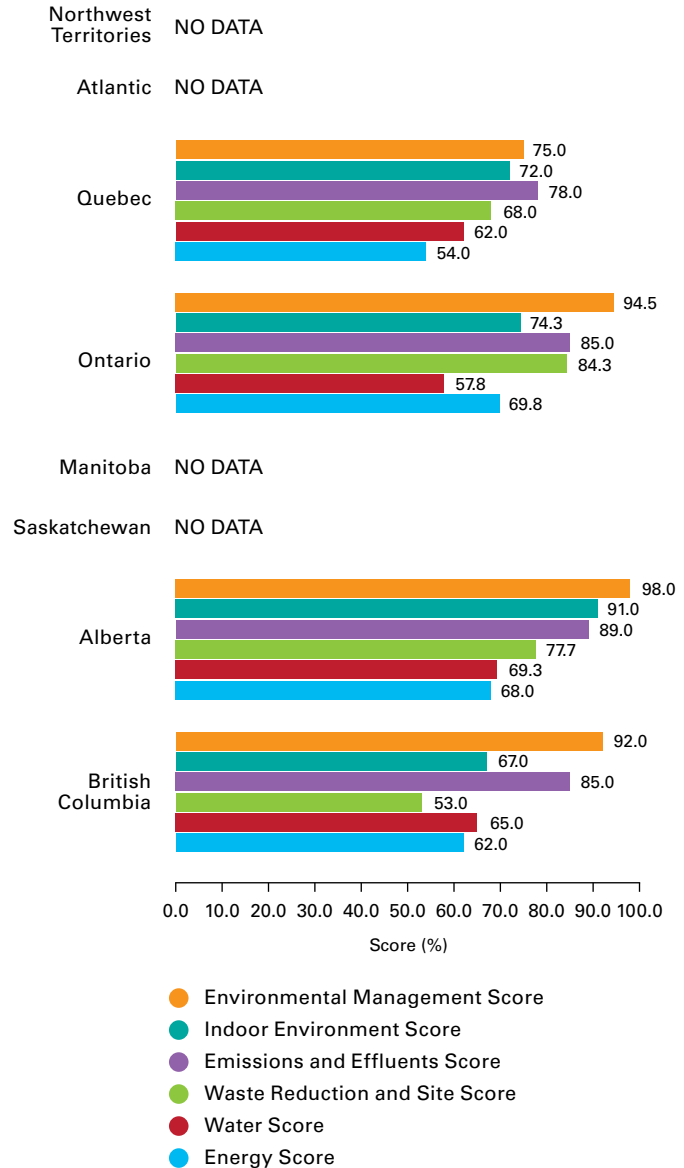
LIGHT INDUSTRIAL PERFORMANCE

FIGURE 82: AVERAGE BOMA BEST SCORES OF CERTIFIED LIGHT INDUSTRIAL BUILDINGS, BY SECTION AND REGION



OPEN AIR RETAIL PERFORMANCE

FIGURE 84: AVERAGE BOMA BEST SCORES OF CERTIFIED OPEN AIR RETAIL, BY SECTION AND REGION

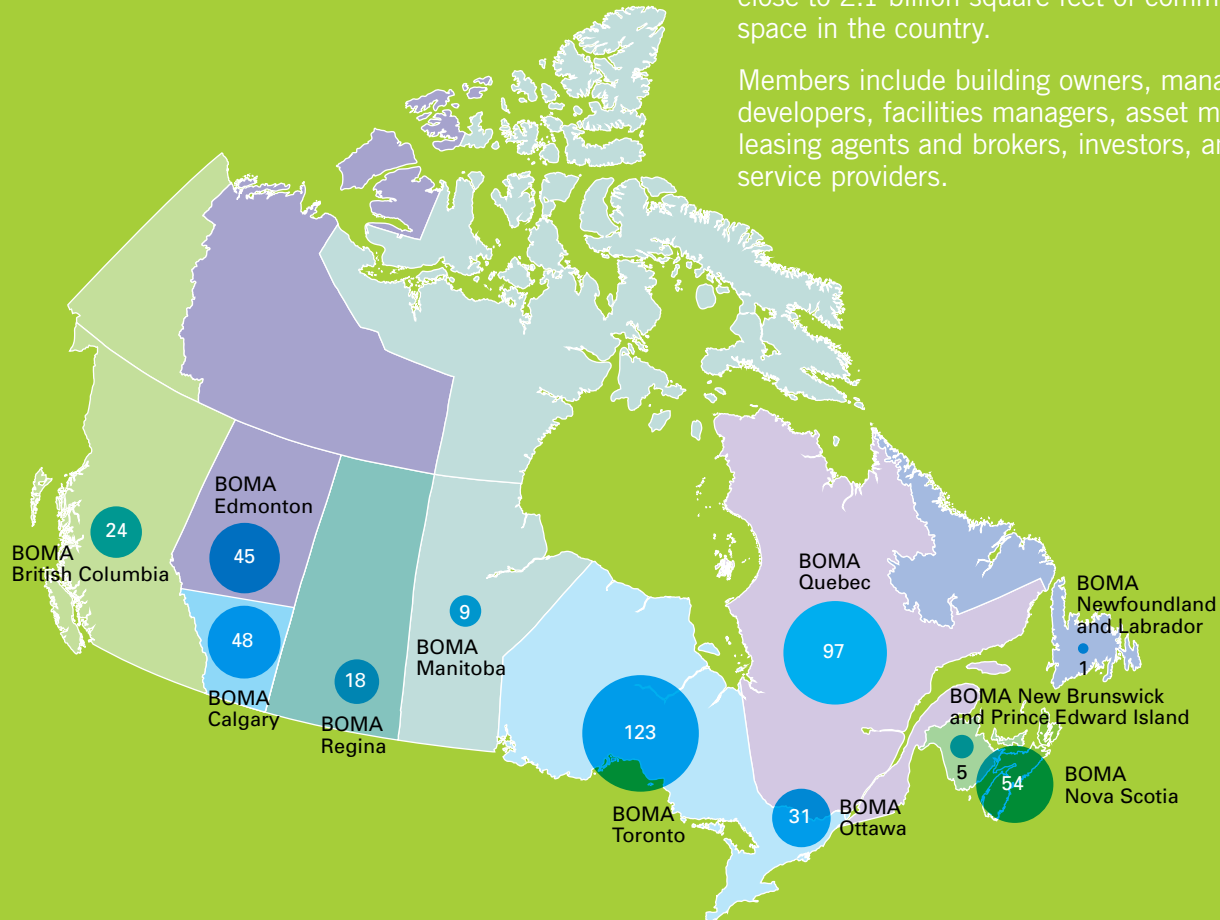


Over 3,200 members

BOMA Canada is the voice of the Canadian commercial real estate industry. A national not-for-profit organisation, with Local Associations in each major region in Canada, BOMA Canada is comprised of over 3,200 members, representing close to 2.1 billion square feet of commercial space in the country.

Members include building owners, managers, developers, facilities managers, asset managers, leasing agents and brokers, investors, and service providers.

BBEER 2013 DATA SET



BOMA BEST

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BOMA NETWORK IN CANADA

BOMA BC (includes the Yukon Territory):

www.boma.bc.ca

BOMA Calgary (includes Southern Alberta from Red Deer to the Montana Border):

www.boma.ca

BOMA Edmonton (includes Edmonton, the area to its north, and the Northwest Territories):

www.bomaedmonton.org

BOMA Regina (includes all of Saskatchewan):

www.bomaregina.ca

BOMA Manitoba (includes Nunavut):

www.bomamanitoba.ca

BOMA Toronto (includes all of Ontario except for the Kingston, Ottawa, and Gatineau areas):

www.bomatoronto.org

BOMA Ottawa (includes Ottawa, Gatineau, and Kingston):

www.bomaottawa.org

BOMA Quebec: www.boma-quebec.org

BOMA New Brunswick and Prince Edward Island:

www.bomanewbrunswick.com

BOMA Nova Scotia:

www.bomanovascotia.com

BOMA Newfoundland and Labrador:

www.bomanl.com



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Ce rapport est disponible en français.

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