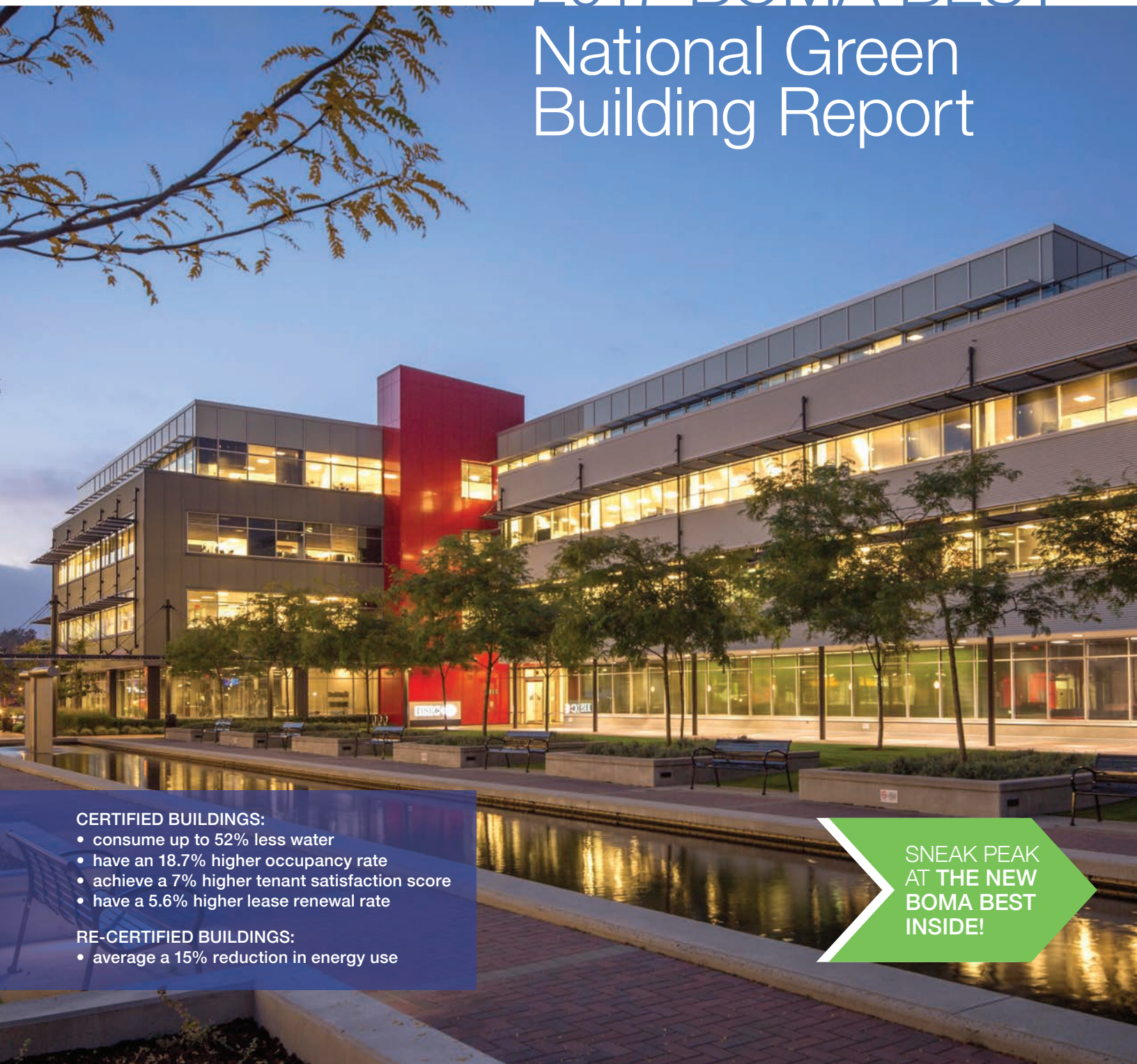
BOMA BEST® Building Environmental Standards

BOMA Canada

2017 BOMA BEST National Green Building Report

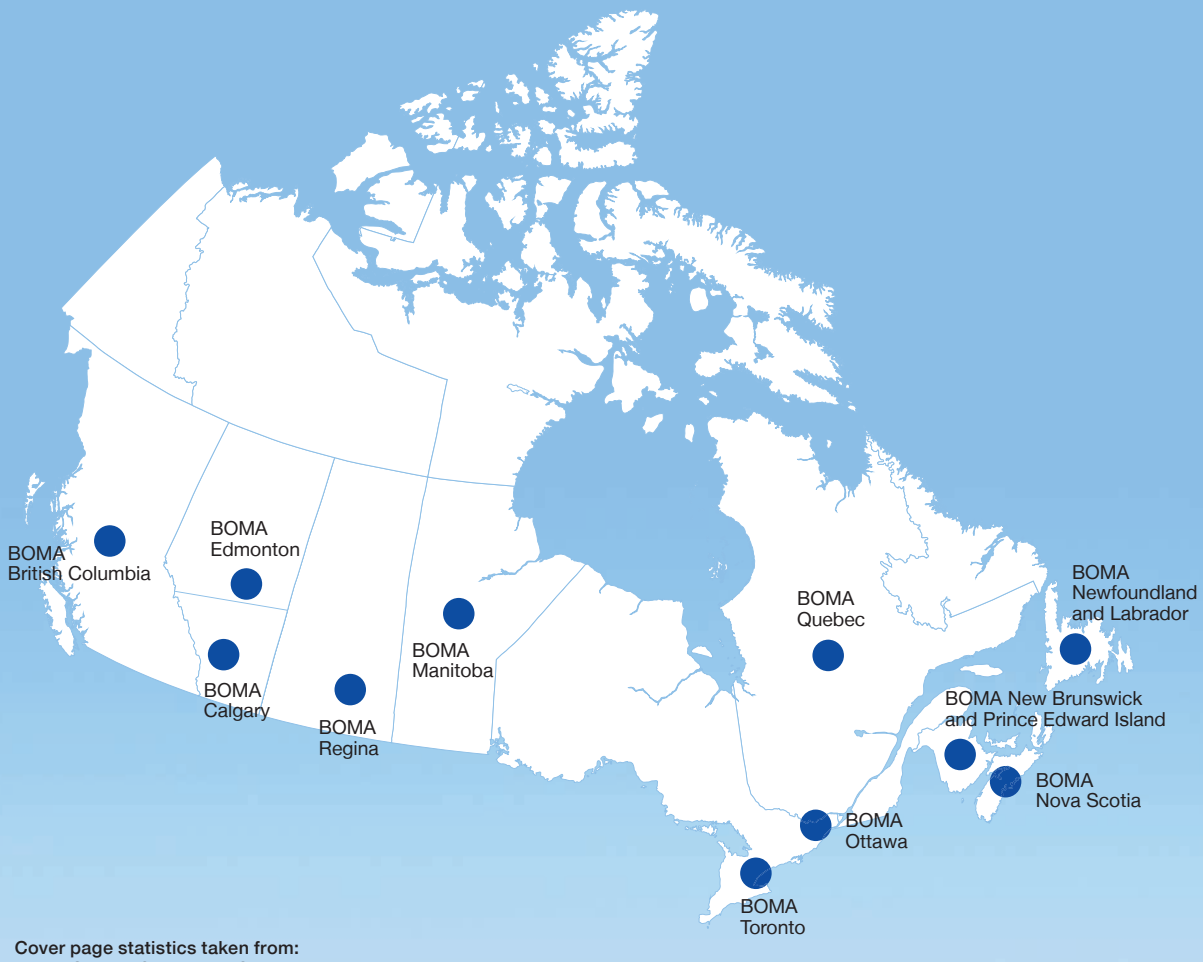


CERTIFIED BUILDINGS:
- consume up to 52% less water
- have an 18.7% higher occupancy rate
- achieve a 7% higher tenant satisfaction score
- have a 5.6% higher lease renewal rate

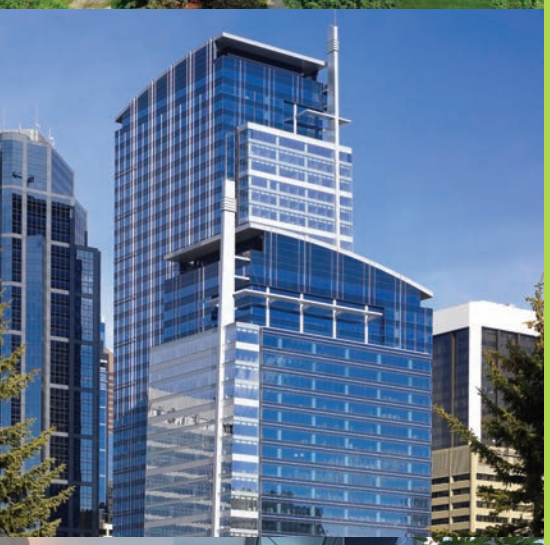
RE-CERTIFIED BUILDINGS:
- average a 15% reduction in energy use

SNEAK PEAK AT **THE NEW BOMA BEST INSIDE!**

BOMA Canada is the voice of the Canadian commercial real estate industry.



Cover page statistics taken from:
2014 BOMA BEST National Green Building Report
10-Year Study Shows Green Building Strategies Pay Off – In Real Dollars
by James Gray-Donald, Vice President of Sustainability, Bentall Kennedy



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NETWORK

BOMA Network in Canada
BOMA British Columbia
(includes Yukon Territory):
www.boma.bc.ca

BOMA Calgary
(includes Southern Alberta from
Red Deer to the Montana Border):
www.boma.ca

BOMA Edmonton
(includes the area north of Red Deer
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 and Ottawa regions):
www.bomatoronto.org

BOMA Ottawa (includes the regions
of Ottawa, Gatineau, and Kingston):
www.bomaottawa.org

BOMA Quebec (includes all of Quebec
except for the Gatineau region):
www.boma-quebec.org

BOMA New Brunswick
and Prince Edward Island:
www.bomanbpei.com

BOMA Nova Scotia:
www.bomanovascotia.com

BOMA Newfoundland and Labrador:
www.bomanl.com

THERE HAS NEVER BEEN A MORE EXCITING TIME

In September, at BOMEX® 2016, we launched BOMA BEST 3.0. Years in the making, with hundreds of volunteers feeding in from coast-to-coast, we are thrilled with the outcome and delighted that the commercial real estate industry now has a superb new tool to drive meaningful, continuous environmental improvement.

"BOMA BEST 3.0 is itself an evolutionary program, and we will be constantly updating and upgrading the program, offering our users more value, greater features and a stronger, more powerful online management tool."

– KIM SAUNDERS,
Chair, Board of Directors, BOMA Canada

Kim Saunders
Chair, Board of Directors
BOMA Canada

Benjamin L. Shinewald
President and CEO
BOMA Canada

BOMA BEST 3.0 represents a comprehensive overhaul and enhancement of BOMA BEST v2, which we had released in January 2012. With completely revamped questionnaires, a ground-breaking Universal building assessment module and a brand new state-of-the-art online portal fully integrated with Energy Star Portfolio Manager, BOMA BEST 3.0 is already emerging as the go-to sustainability management tool and certification standard for every commercial and institutional building on the planet.

We are also very proud to announce the recent release of BOMA BEST Sustainable Workplaces, a new tool that invites tenants to contribute to the greening of commercial real estate, encouraging them to build a culture of sustainability and responsibility within their organizations.

In this report, we'll provide insight into the performance data of the 740 buildings that certified between January and December 2015, showing how the industry is making great strides in overall sustainability. Of particular note, we've seen fantastic growth in light industrial certification. We'll also show that while overall building Energy Use Intensity has been slowly creeping upwards over the past few years, recertifying buildings show an average energy improvement of 15% or more than when they initially certified – proof that BOMA BEST leads to real cost savings for building owners and tenants, over and above our core environmental benefit.

And we aren't done yet! BOMA BEST 3.0 is itself an evolutionary program, and we will be constantly updating and upgrading the program, offering our users more value, greater features and a stronger, more powerful online management tool.

We'll keep you updated on these developments over the coming year.

To all of the members of Canada's real estate community, thank you for helping us achieve our mandate of creating a more sustainable environment, one building at a time. And congratulations on this extraordinary achievement!

Sincerely,

Kim Saunders
Chair, Board of Directors
BOMA Canada

Benjamin L. Shinewald
President and CEO
BOMA Canada

BOMA BEST:

THE INDUSTRY STANDARD

BOMA BEST: By the Industry. For the Industry.

BOMA BEST is an environmental certification process created by the Building Owners and Managers Association (BOMA) for existing buildings.

Developed by the industry, for the industry, BOMA BEST meets the market demand for an **accessible**, **affordable**, **easy-to-use green building rating system and building management tool** for all buildings, regardless of size or class.

BOMA BEST gives building owners and operators the tools to learn continually about best management practices and encourages them constantly to progress towards achieving higher performance buildings that contribute to healthy, sustainable communities throughout Canada.

BOMA CANADA: The Industry's Voice

BOMA Canada is a national not-for-profit association with thousands of members across Canada, including building owners, managers, developers, facilities managers, asset managers, leasing agents and brokers, investors and service providers. Together, our members own, manage, operate and supply critical services to billions of square feet of commercial and institutional space in the public and private sectors.

At the regional level, BOMA is represented by eleven Local BOMA Associations which provide direct services and support to the grassroots membership. BOMA Canada, with the support of the eleven regional BOMA Associations, administers BOMA BEST.

BOMA Canada is committed to sharing the data collected through BOMA BEST to improve the environmental performance of Canada's existing buildings.

Creating a sustainable environment, one building at a time

Rangewinds G&H, Calgary,
BOMA BEST Bronze

The National Green Building Report: What Gets Measured Gets Managed

The 2017 National Green Building Report (NGBR) celebrates – and details – the 740 buildings that achieved BOMA BEST certification between January 1st and December 31st, 2015. This year's report is structured around performance achievements and includes:

- Trends in the total number of buildings certified/recertified.
- Levels/scores achieved across different asset classes and regions.
- Performance result benchmarking compared to previous years and/or the broader industry.
- Special features on best-in-class property managers and successes.

Since being launched in 2005, BOMA BEST has seen tremendous uptake by the Canadian real estate industry. As of December 31st, 2015, over 5,116 buildings, representing billions and billions of square feet of Canadian commercial real estate, have achieved BOMA BEST certification/recertification.

How We Do It: Behind the Scenes

Because this report covers buildings certified in 2015, it focuses exclusively on BOMA BEST V2 data.

THE (V2) BOMA BEST PROGRAM'S SIX ENVIRONMENTAL IMPACT AREAS

1. Energy Performance and Management
2. Water Performance and Management
3. Waste Reduction and Site Enhancement
4. Management of Emissions and Effluents
5. Quality of the Indoor Environment
6. Presence of Environmental Management Systems

THE FIVE PILLARS OF BOMA BEST

1. Holistic Assessment

- The BOMA BEST building assessment consists of 175 online questions.
- Questions cover the program's six environmental impact areas.
- A completed survey triggers a building report with specific recommendations for improvement.

2. Education and Engagement

- The survey process guides managers and operators through a comprehensive building performance review.
- The program boosts awareness of environmental impacts and fosters a culture of improvement.

3. Verification

- Submitted information is verified by an independent third-party.
- An on-site assessment is used to confirm that policies and practices have been accurately portrayed.

4. Five Levels of Certification

CERTIFIED

- The building has met all 14 BEST Practices.
- BEST Practices include implementing an energy reduction program, a water conservation policy and a tenant communication work plan.

BRONZE

- The building has met all BEST Practices AND has achieved **a score of 60 to 69%** on the BOMA BEST assessment.

SILVER

- The building has met all BEST Practices AND has achieved **a score of 70 to 79%** on the BOMA BEST assessment.

GOLD

- The building has met all BEST Practices AND has achieved **a score of 80 to 89%**.
- The building is moving towards excellence in energy and environmental performance through excellent management practices.

PLATINUM

- The building has met all BEST Practices and has achieved **a score of over 90%**.
- These buildings are high performers with low energy consumption, best-in-class management, and often combining new technologies with industry leadership.

5. Improvement

- The BOMA BEST Report, a bespoke report provided to each building upon completion of the certification process, helps building teams identify a building's baseline performance and opportunities for improvement.
- BOMA BEST certification is valid for 3 years. If recommended measures are implemented, a building can achieve a higher score on recertification and be better positioned to improve their energy and water use intensities. Buildings in the Portfolio Program have continuous certification and will also improve over time, as buildings are verified on a regular, multi-year basis (see below for more detail on the Portfolio Stream.)

BOMA BEST: THE INDUSTRY STANDARD

18103 Autoroute Transcanadienne, Kirkland, BOMA BEST Silver

BOMA BEST Complete Renewal

The last few years have seen a flurry of activity at BOMA Canada. Following hundreds of consultations, we have completely overhauled BOMA BEST to meet your key needs. Because our stakeholders are the ones who shape the program, today BOMA BEST is a unique, sophisticated yet accessible and effective green building management tool and certification program for every single existing commercial and institutional building on the planet.

1. NEW BOMA BEST BRAND

At BOMEX 2015 in Quebec City, **BOMA BEST unveiled its new brand**, developed with significant industry input and which industry has embraced enthusiastically.

Components of this new brand include a new logo as well as new certificate aesthetic and associated promotional material. The program recognizes building achievement through five new certification levels: Platinum, Gold, Silver, Bronze and Certified.

Our new BOMA BEST brand:

- Communicates your environmental achievements unambiguously, thanks to focused and simplified visual language.
- Rewards your building's environmental performance via an intuitive, five-level recognition system.
- Reinforces the mandate of BOMA BEST: to create a sustainable environment one building at a time.

2. BOMA BEST 3.0

BOMA Canada officially launched BOMA BEST 3.0 at BOMEX 2016 in Regina.

Developed and revised by hundreds of volunteers across Canada, with oversight from some of our leading engineering consulting firms, BOMA BEST 3.0 represents a complete overhaul of the assessment – including all new categories, BEST Practices, questions and scoring. Extensive stakeholder engagement throughout the development and pilot process ensures that BOMA BEST 3.0 remains "by the industry, for the industry".

Our overhaul includes a new questionnaire for the Office, Light Industrial, Open Air Retail and Shopping Centre asset classes. In addition to this, a Universal module is available, further increasing the accessibility of BOMA BEST for all users.

Among many other improvements, the new assessments allow for energy consumption normalization and new benchmarking methodologies for energy and water.

3. NEW SOFTWARE PLATFORM

BOMA BEST 3.0 is available on a **new cutting edge software platform**. The new platform is flexible, user-friendly and highly customizable to meet your needs. Beyond BOMA BEST certifications, key components of the platform include:

- Ongoing Building Management Access so that users can continue updating all metrics once certification has been achieved;
- Continuous benchmarking and monitoring of utilities;
- Enhanced reporting capabilities;
- Portfolio view for multiple buildings;
- Visible scores and scenario generation to project a proposed initiative's impact on the total BOMA BEST score.

4. BOMA BEST PORTFOLIO STREAM

In response to extensive feedback from BOMA members, the BOMA BEST Portfolio Stream is now available. The Portfolio Stream offers large portfolios an easy-to-use protocol for certifying many buildings across the country in a quick and efficient manner. It has been designed to provide a cost-effective yet rigorous method for continuous BOMA BEST certifications of larger portfolios at all levels of certification. We are seeing both national and regional firms embrace the Portfolio Stream, as well as universities, municipalities, and other BOMA BEST users.

The benefits of the Portfolio Stream include:

- Faster and easier method to certify a large number of assets at once.
- Continuous certification, replacing recertification every three years.
- Cost effective annual program fee, allowing for better budgeting at the property level.
- Ability to easily add and remove buildings from the portfolio as needed.
- Annual sampling verification program based on the requirements of ISO 17021:2011 to provide a more frequent review of building performance.
- Properties can be included from different geographic regions of Canada.

The Portfolio Stream is available for all buildings in all asset classes.

5. BOMA BEST SUSTAINABLE WORKPLACES

BOMA BEST Sustainable Workplaces is now available! This new program within the BOMA BEST family focuses on certifying tenant activities rather than the building itself. This assessment provides commercial and institutional tenants with a very simple, easy-to-use program to manage their environmental activities and improve their own performance. It also provides buildings owners and managers with a great tool to further engage tenants in contributing to the building's environmental objectives.

6. INTERNATIONAL EXPANSION

BOMA BEST has caught the eye of many international partners, eager to benefit from an easy to use yet rigorous green building certification program. Following the success of the program in Canada, we are looking to expand in many countries, across several continents.

Subscribe to our newsletter to stay up to date with all our new developments!

Richmond Adelaide Centre, Toronto, BOMA BEST Gold

KEY FINDINGS

Highest Number of Certifications Yet, with a Jump in Light Industrial Certifications

- The overall number of buildings certified continued to grow steadily. In 2015, 32% more buildings achieved certification than in 2014. With 740 in 2015, this is the highest number of certifications achieved in any one year since the program started in 2005 – beating the 2013 record of 711 certifications.
- The increase in the overall number of certifications coincides with the introduction of the BOMA BEST Portfolio Stream.
- More than half of all 2015 certified buildings are in Ontario and Quebec, notably in the Toronto, Ottawa and Montreal areas. This is consistent with the 2014 trend. Alberta shows the largest growth (almost double) and Ontario, again, has the most certifications overall.
- At the Local BOMA Association level, BOMA Toronto continued to have the largest number of certified buildings. BOMA Quebec had the second most (up from the previous year).
- Across all certification levels, Offices continue to comprise the asset class with the highest number of certifications in the BOMA BEST program.
- There was a significant increase in Light Industrial certifications – representing up to 32% of all buildings certified in 2015, more than double the previous year's numbers. The number of Light Industrial certifications has more than doubled since the previous years.
- There was a small increase in Health Care certifications in 2015 and Multi-Unit Residential Buildings (MURBs) showed the biggest declining trend.

New certification level introduced

- As part of the BOMA BEST 2015 rebranding initiative, certification nomenclature changed from numbered levels to precious metals.
- A new certification level, **Bronze**, was added to reward buildings scoring between 60 and 69%.The BOMA BEST program now recognises those buildings that perform better than the minimum standards set out in the Certified level.
- 36 Offices, 26 Light Industrial buildings, 4 Open Air Retail buildings and 2 Enclosed Shopping Centres achieved the inaugural Bronze certification level – in previous years these buildings would have been grouped amongst buildings achieving the entry-level "Certified" certification.

Almost two thirds of buildings achieved Silver or higher

- In 2015, the average BOMA BEST score achieved was 78.1% (high Silver). BOMA BEST users have maintained a score in this percentile range since 2011.
- An overall increase in building certifications was seen across all certification levels with almost two thirds of buildings achieving Silver or higher.
- The majority of buildings achieved Silver certification whereas the number of certifications in the Gold category remained constant.
- The Office asset class again led the way with almost 80% achieving Silver+ certification. Light Industrial and Open Air Retail had an almost equal split in certification level achieved: a little over half achieved Certified/Bronze and the remaining half achieved Silver or higher.

Buildings perform better at recertification

- Generally the proportion of recertifications vs initial certifications remained the same in 2015 as it was in 2014.
- Generally recertified buildings managed to improve their score by about 34% in recertification.
- Of the recertified buildings that increased their certification level, 37% went from Silver to Gold and 28% increased their score from Certified to Silver. Of the recertified buildings that saw their score decrease, 60% (the largest proportion) saw a drop from Gold and Silver.
- Buildings that recertified and remained at the same certification level saw an average EUI improvement of 5ekWh/ft^2/yr. Buildings that increased their level of certification saw an EUI improvement of 7.1ekWh/ft^2/yr. Buildings that decreased a level (typically from Gold to Silver) saw an average EUI drop of only 0.6ekWh/ft^2/yr. These results reflect the improvement in performance over time.
- The energy use intensity of recertified buildings is lower than the overall BOMA BEST average (by almost 2ekWh/ft^2/yr), showing how BOMA BEST fosters continuous improvement.

Energy score down, consumption up

- The average Energy category score for Silver+ certifications is 67.2%, similar to the score obtained by buildings in previous certification years.
- Despite having a similar overall energy category score, the 2015 sample have higher energy consumption. Although the average EUI for Office buildings rose by 5% in 2015, compared to Offices certified in 2014, the EUI of Office buildings has been improving by an average of almost 2% per year since 2008.
- As in 2014, Offices earning a Platinum certification in 2015 consume about 45% less energy than Offices earning a Silver certification.

Water use intensity for Office buildings remains constant

- The average Water score for Silver+ certifications was 65.4%, compared to 66.9% in 2014.
- Office buildings performed the best at 71.9%. This is a steady increase from the previous year's average of 69.9% and 68% the year before.
- BOMA BEST certifications showed a decline in consumption between 2008 and 2012 when the lowest WUI was calculated at 0.65m^3/m^2/yr. Since then, consumption has remained more or less constant, reported at 0.70m^3/m^2/yr in 2015.

Enclosed Shopping Centres lead the way in Waste Reduction and Site Enhancement Category

- The average Waste Reduction and Site Enhancement category score is 75.3%. On average, the dataset of 7 Enclosed Shopping Centres scored the highest in this category (78.9%).
- In the Office asset class, the Waste Reduction score of Ontario buildings is 9.3% higher than Alberta's. Conversely, Alberta Office buildings score 9.5% better than Ontario buildings in the Site Enhancement sub-category.
- There was a significant increase in the number of buildings achieving a waste diversion rate in the 30-59% range, up 24%.
- Generally buildings score lowest (67%) for their site enhancement efforts compared to (83% for waste reduction.

Emissions and Effluents scores hold steady in 88th percentile.

- With an average Emissions and Effluents score of 88.8%, there is virtually no change in this score compared to the previous year.
- Nova Scotia, New Brunswick and P.E.I.'s ten Office buildings lead in this asset class with a score that is 2.4% better than the national average.
- British Columbia's 7 Light Industrial buildings lead the other provinces by 7.7 percentage points in this asset class.
- In the Emissions and Effluents category, points seem to be lost in the sub-categories of Boiler Emissions and Water Effluents, identifying an area where buildings have an opportunity for improvement.

Slight declining trend in Indoor Environment scores

- The average Indoor Environment score (83.5% in 2015) appears to be declining by about 1% per year since 2013.
- Light Industrial showed the biggest increase in performance (3 percentage points) and performance in the Office asset class held steady.

Environment Management Systems continue to score above 95%

- The average score in the Environment Management Systems (EMS) category for 2015 is 96.3%, a little less than 1% below performance from previous years.
- The Environment Management Systems sub-categories are weighted almost equally and performance is very similar across the board.

CREATING A SUSTAINABLE ENVIRONMENT,

ONE BUILDING AT A TIME

Yonge Corporate Centre, Toronto, BOMA BEST Gold

Thousands of members across Canada

Regionally represented by

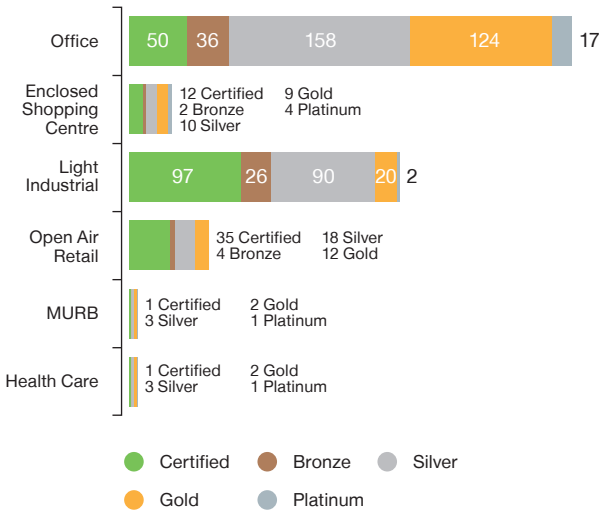
11 Local BOMA Associations

Offices continue to have the highest number of certifications, representing

52%

of all BOMA BEST certifications, down from 65% the previous year.

NUMBER OF BOMA BEST CERTIFICATIONS BY ASSET CLASS AND LEVEL ACHIEVED



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The average Energy category score for Silver+ certifications is

67.2%,

similar to the score obtained by buildings in previous certification years.

Generally recertified buildings managed to improve their score by about

34%

in recertification.

IMPROVING BUILDING PERFORMANCE

Mic Mac Mall, Dartmouth, BOMA BEST Platinum

Rewarding action

BOMA BEST Version 2 assesses performance across the following six categories: Energy, Water, Waste & Site, Emissions & Effluents, Indoor Environment and Environmental Management Systems. BOMA BEST 3.0, in turn contains ten categories: Energy, Water, Air Quality, Comfort, Health & Wellness, Custodial, Purchasing, Waste, Site, and Stakeholder Engagement. Future reports, on buildings certified in 2016 and beyond, will report performance based on these new categories. This report will focus exclusively on results obtained from the Version 2 assessments.

A third of the total points available in the BOMA BEST tool are found in the Energy category. The other five categories represent between 10-15% of the points each. In this report we'll explore how buildings that obtain a BOMA BEST certification are performing in each category. Are they reaching the full potential of the program? We have found, based on the performance of buildings in 2015, that there is still a lot of opportunity for improvement, especially in Energy and Water.

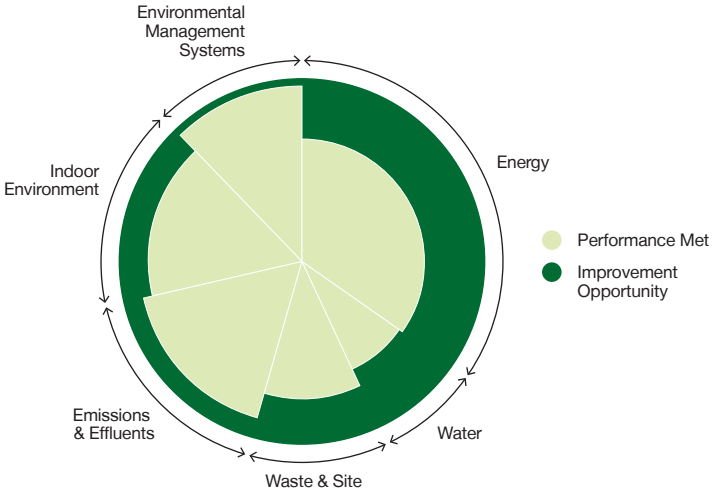
The radial pie chart below (Figure 1) shows BOMA BEST buildings' performance in two ways:

1. Category weighting, on the circular axis (i.e. how big is the opportunity?)

2. Average score achieved, on the radial axis (i.e. how much of the opportunity was realised/achieved?)

In figure 1 below, the light green area shows to what extent the BOMA BEST criteria was met (on average). The dark green area shows improvement opportunity. In the categories of energy and water (where consumption performance is measured), BOMA BEST buildings scored around 65%, demonstrating that, on average, there are 35 percentage points still available to the average user where further improvements to the building can be made.

FIGURE 1: AVERAGE BOMA BEST SCORE PER ASSESSMENT CATEGORY – ALL ASSET CLASSES



Strategies for improvement

The following highlights building improvement strategies that are present more frequently in high-performing buildings than in mid-performing buildings:

ENERGY EFFICIENCY

- Condensing Boilers
- Exhaust Air Heat Recovery
- High-Efficiency Water Heating Equipment
- Daylight Sensors
- Demand Response Capabilities
- Variable Speed Drives on Pump Systems
- Sub-Meters on Major Systems and High Consumption Areas
- Periodic Re-Commissioning or Continuous Commissioning

WATER EFFICIENCY

- Low-Flow Toilets (<4.8 LPF)
- Low-Flow Urinals (<1.9 LPF)
- Sub-Metered Evaporative Cooling Towers
- Automated Irrigation Systems

WASTE REDUCTION & SITE ENHANCEMENT

- Annual Waste Audit
- Regular Waste Volume Monitoring
- Organic Waste Composting
- Stormwater Management Plan
- Bird-Friendly Program
- Green Roof

EMISSIONS & EFFLUENTS

- Boilers with Low NO_x Emission Rates
- Refrigerant Leak Detectors
- Refrigerant Recovery System
- Stormwater Management Practices
- Floor Drains Protected from Chemical Spills

INDOOR ENVIRONMENT

- Occupant Views to the Outside from Workstations
- Permanent Carbon Dioxide Monitoring
- Lighting Levels conform to IESNA Standards

ENVIRONMENTAL MANAGEMENT SYSTEMS

- Tenant Satisfaction Survey
- Green Lease with Clause on Tenant Energy and Environmental Responsibilities
- Documented Power Failure Response Procedures

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CONTENTS

OVERALL CERTIFICATIONS

HIGHEST NUMBER YET!

South Foothills – Building B, Calgary, BOMA BEST Certified

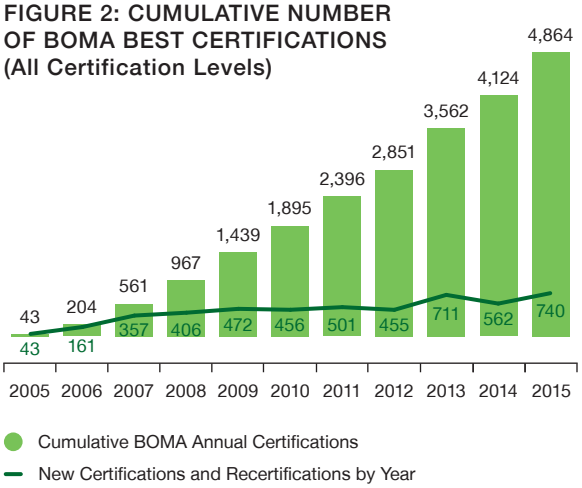
Highest Number of Certifications Yet

In this section of the Report we will explore the performance of all buildings that obtained a certification or recertification in 2015 (referred to simply as *certifications*) – regardless of level achieved, from Certified to Platinum.

Since the BOMA BEST program launched in 2005, the overall number of buildings certified has continued to grow steadily. In 2015, 32% more buildings achieved certification than in 2014. With 740 in 2015, this is the highest number of certifications achieved in any one year since the program started – beating the 2013 record of 711 certifications. This increase coincides with the introduction of the Portfolio Stream.

2015 saw 32% more certifications than in 2014.

FIGURE 2: CUMULATIVE NUMBER OF BOMA BEST CERTIFICATIONS (All Certification Levels)

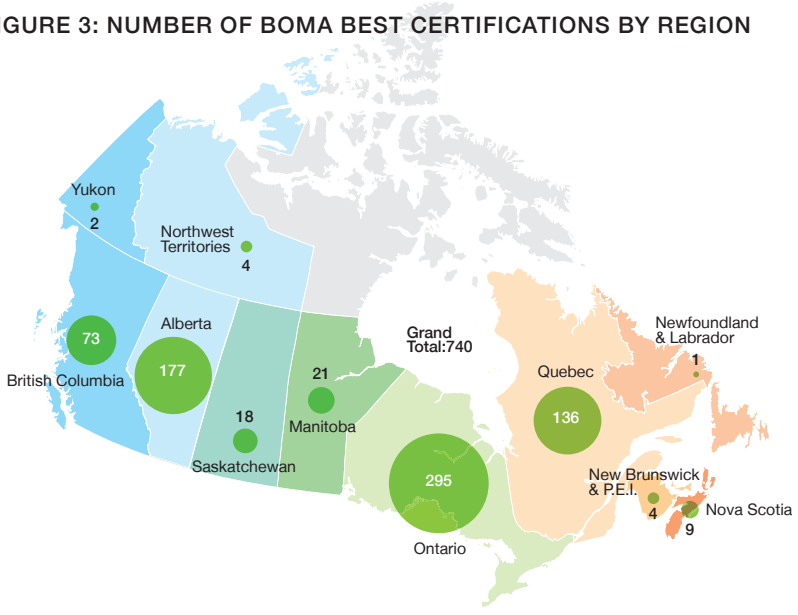


6775 Financial Drive, Mississauga, BOMA BEST Gold

Bowker Building, Edmonton, BOMA BEST Silver

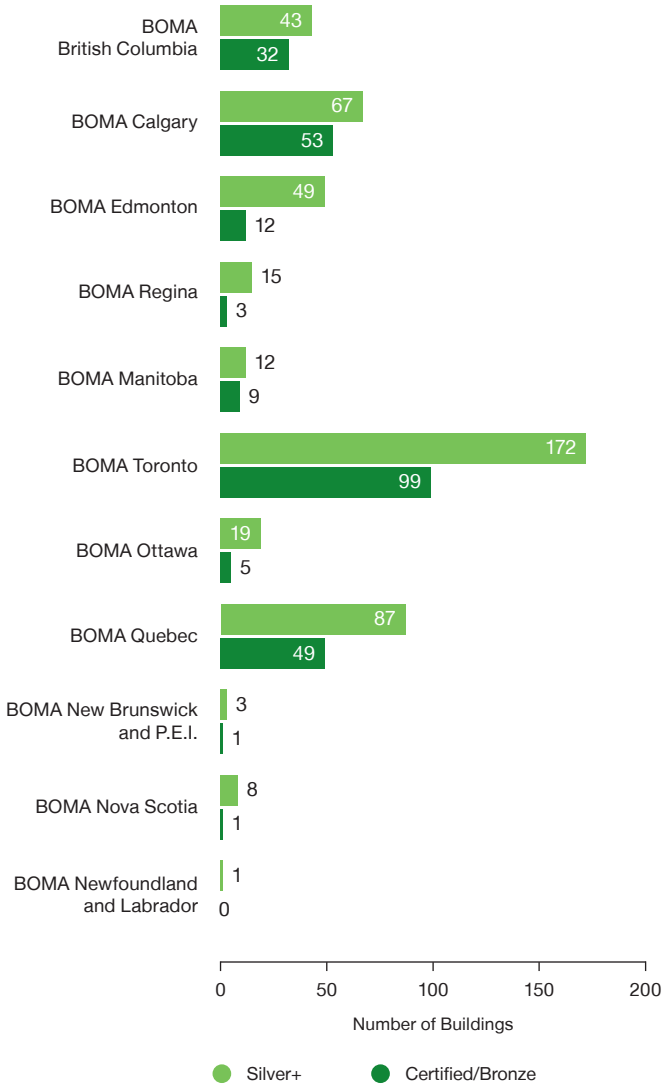
More than half of all 2015 certified buildings are in Ontario and Quebec, notably in the Toronto, Ottawa and Montreal areas. This is consistent with the 2014 trend. Alberta shows the largest growth (almost double) with 177 certifications in 2015, up from 94 in 2014. Ontario, again, has the most certifications overall (295, up from 163 in 2014) and most certifications at the Silver and above level, referred to as Silver+ in the rest of the report, with 191 certifications, up from 163 in 2014.

FIGURE 3: NUMBER OF BOMA BEST CERTIFICATIONS BY REGION



1 OVERALL CERTIFICATIONS

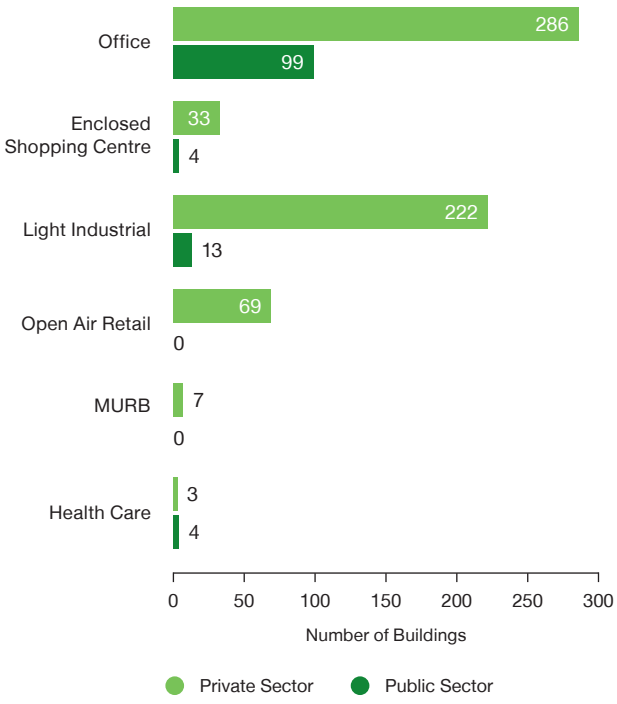
FIGURE 4: NUMBER OF BOMA BEST CERTIFICATIONS BY LOCAL BOMA ASSOCIATION AND LEVEL ACHIEVED



At the Local BOMA Association level, BOMA Toronto continued to have the largest number of certified buildings totalling 271, of which 172 (64%) achieved Silver+. BOMA Quebec had the second most at 136 overall and 87 Silver+ (also up from the previous year). In addition, BOMA Edmonton and BOMA Nova Scotia showed the most significant increase in certified buildings.

The majority of buildings continue to be from the Private Sector. The percentage of public sector buildings dropped by half to 16% this year, in line with annual variation seen in previous years.

FIGURE 5: NUMBER OF BOMA BEST CERTIFICATIONS BY SECTOR AND ASSET CLASS



Jump in Light Industrial Certifications

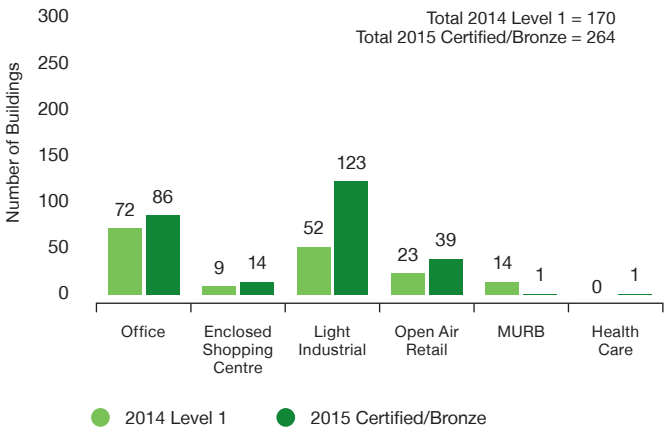
Across all certification levels, Offices continue to comprise the asset class with the highest number of certifications in the BOMA BEST program: they represent 52% of all BOMA BEST certifications, down from 65% the previous year. There was a significant increase in Light Industrial certifications – representing up to 32% of all buildings certified in 2015, more than double the previous year's numbers. This can be in part explained by the launch of the BOMA BEST Portfolio stream in January 2015, which provides a low cost, high volume certification track for Open Air Retail and Light Industrial buildings.

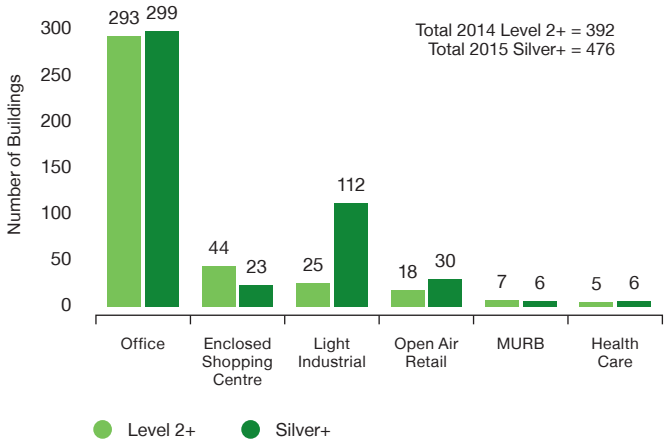
There was a slight increase in Health Care certifications in 2015 in comparison to 2014 when the program was launched. Multi-Unit Residential Buildings (MURBs) show the biggest declining trend with only 7 buildings achieving certification in 2015, down from 21 certifications in 2014, and 30 in 2013.

The number of Light Industrial certifications has more than doubled since the previous years.

6950 Creditview Road, Mississauga, BOMA BEST Silver

FIGURE 6: NUMBER OF BOMA BEST CERTIFICATIONS BY ASSET CLASS AND YEAR





1 OVERALL CERTIFICATIONS

New certification level introduced

As part of the BOMA BEST 2015 rebranding initiative, certification nomenclature changed from numbered levels to precious metals:

CERTIFIED	BRONZE	SILVER	GOLD	PLATINUM
				
Formerly Level 1 (<60%)	Formerly Level 1 (60-69%)	Formerly Level 2 (70-79%)	Formerly Level 3 (80-89%)	Formerly Level 4 (90-100%)
Level 1 (score up to 69%) changed to **Certified** (score up to 59%).	A new level, **Bronze**, was added to reward buildings scoring between 60 and 69%.	Level 2 changed to **Silver** (score 70-79%).	Level 3 changed to **Gold** (score 80-89%).	Level 4 changed to **Platinum** (score 90% and above).

BOMA BEST 3.0 uses different certification level thresholds, not referred to here. These will be discussed in future National Green Building Reports.

To maintain consistency with past annual BOMA BEST National Green Building Reports, only buildings that have achieved an overall BOMA BEST score of 70% or higher (a Silver+ certification, or Level 2+ as it was called in previous reports) are included in the performance analysis that follows in Section 2 (Scoring) and onwards.

Refer to the following page, “Performance at Bronze Level”, for more information related to the performance of buildings that achieved Bronze certification.

The first buildings to achieve the inaugural Bronze certification level included 36 Offices, 26 Light Industrial buildings, 4 Open Air Retail buildings and 2 Enclosed Shopping Centres. The energy use intensity of Office buildings awarded a Bronze certification is almost 10ekWh/ft²/yr higher than Offices that achieved a Silver+ certification.

Moving forward in this report, from Section 2 onwards, Bronze certified buildings will not be included in the analysis. In previous reports, only buildings that have achieved an overall score of 70% or higher (Silver+) have been included in the analysis. As such, this report will do the same to maintain consistency.

Including Bronze level buildings in the analysis would have resulted in the following:

- Increased sample size (up by 68 buildings);
- Lower overall score (1.7% lower) – as expected, considering Bronze rewards performance in the 60-69% range;
- Similar overall energy use intensity – this is somewhat surprising, but understandable considering the average EUI calculated for Light Industrial Bronze+ certified buildings (those that reported EUI) is similar to the Offices average; and
- Increased number of recertifications (up by 38 buildings) – just over half of the buildings that achieved Bronze certification were recertifications (38 out of 68).

FIGURE 7: AVERAGE BOMA BEST SCORE BY ASSET CLASS – BRONZE ONLY CERTIFICATIONS

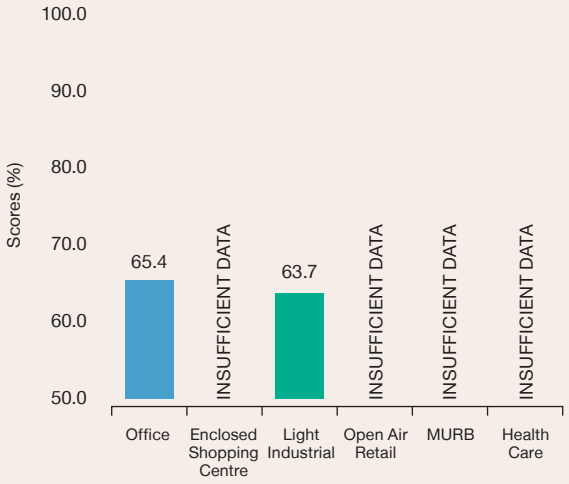


FIGURE 8: ENERGY USE INTENSITY BY LEVEL ACHIEVED – OFFICE

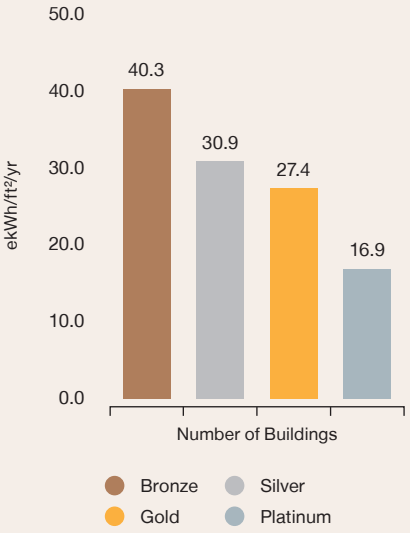
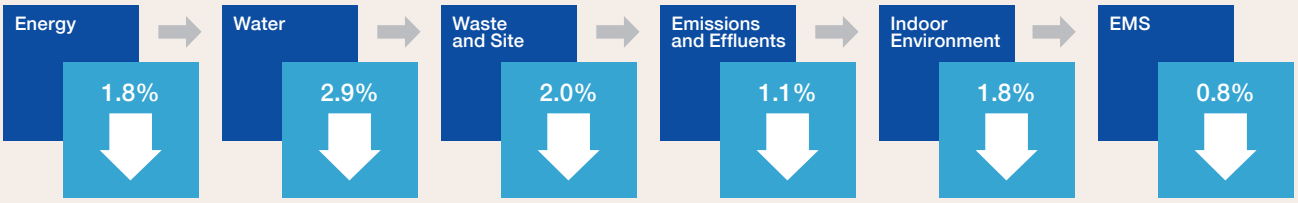


FIGURE 9: SCORE CHANGE ACROSS PERFORMANCE CATEGORIES IF BRONZE+ CERTIFICATIONS WERE INCLUDED IN DATA SET (% drop)



1 OVERALL CERTIFICATIONS

Almost two thirds of buildings achieved Silver or higher

An overall increase in building certifications was seen across all certification levels, except Gold which remained constant. Almost two thirds of buildings achieved Silver or higher – consistent with the 2014 numbers. This means that the majority of entrants attempted the entire questionnaire survey instead of pursuing only the minimum BEST Practices required to achieve the Certified level.

- 27% of buildings achieved Certified
- 9% achieved Bronze
- 38% achieved Silver
- 23% achieved Gold
- 3% achieved Platinum

Buildings that scored in the 60-69% range are now awarded a certification level (Bronze) that distinguishes them from all the other buildings that would previously have achieved Level 1 or BEST Practices certification. The introduction of a Bronze level recognizes that there are many buildings that perform closer to a Silver level of certification than Certified. This opportunity was not available to buildings before 2015.

In terms of certification level achieved by the respective asset classes, Office again led the way with almost 80% achieving Silver or higher certification. Light Industrial and Open Air Retail had an almost equal split in certification level achieved: a little over half achieved Certified/Bronze and the remaining half achieved Silver or higher.

38% of buildings achieved a Silver certification, the largest certification group in 2015.

FIGURE 10: NUMBER OF BOMA BEST CERTIFICATIONS BY LEVEL ACHIEVED AND YEAR

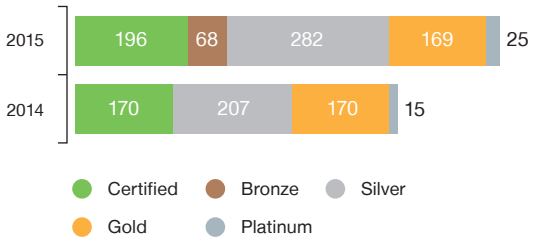


FIGURE 11: NUMBER OF BOMA BEST CERTIFICATIONS BY ASSET CLASS AND LEVEL ACHIEVED

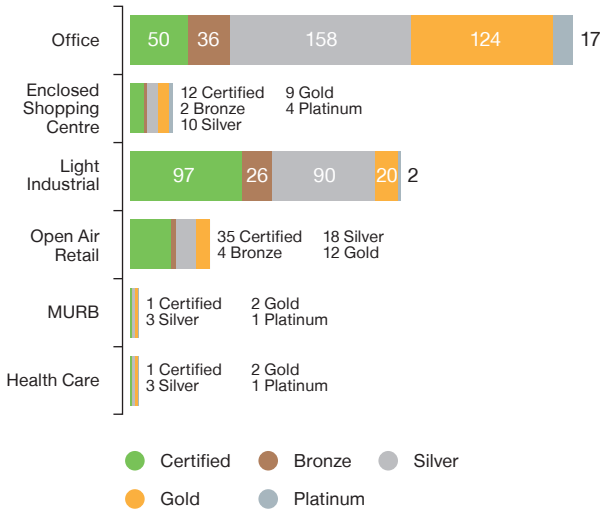


TABLE 12: NUMBER OF BOMA BEST CERTIFICATIONS BY ASSET CLASS AND LEVEL ACHIEVED

	CERTIFIED	BRONZE	SILVER	GOLD	PLATINUM	TOTAL
Office	50	36	158	124	17	**385**
Enclosed Shopping Centre	12	2	10	9	4	**37**
Light Industrial	97	26	90	20	2	**235**
Open Air Retail	35	4	18	12	0	**69**
MURB	1	0	3	2	1	**7**
Health Care	1	0	3	2	1	**7**
Grand Total	**196**	**68**	**282**	**169**	**25**	**740**

Buildings perform better at recertification[1]

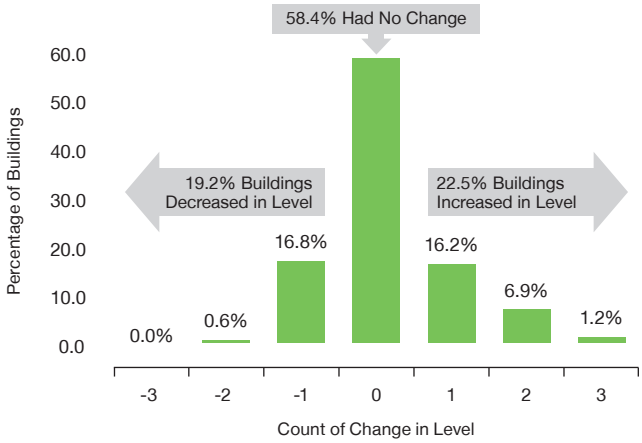
Generally the proportion of recertifications vs initial certifications remained the same in 2015 as it was in 2014:

- 56% of all buildings certified were recertifications (411 of 740),
- 63% of recertified buildings maintained their certification level,
- 20% of recertified buildings obtained a higher certification level, and
- 17% of recertified buildings obtained a lower certification level.

Certification Levels: Of the 23% of recertified buildings that increased their certification level, 37% went from Silver to Gold and 28% increased their score from Certified to Silver. Of the 19% of buildings that saw their score decrease, the largest proportion (60%) saw a drop from Gold and Silver.

South Glenmore Distribution Centre, Calgary, BOMA BEST Certified

FIGURE 13: CHANGE IN LEVEL OF CERTIFICATION ACHIEVED – CERTIFICATION VS RECERTIFICATION



Scores: On average, buildings with the same level of certification maintained their score (change of only 1%) suggesting limited improvements were made over the three-year recertification period. Buildings that improved performance and managed to "step up" their certification level saw on average an increase in their score of about 34% (from 58% to 78%).

- Average performance change for buildings that maintained the same certification level: from 70% to 71%
- Average performance change for buildings that dropped their certification level: from 79% to 70%
- Average performance change for buildings that increased their certification level: from 58% to 78%
- Average performance change for all buildings: from 69% to 72%

Recertified buildings that improved their score from the original certification saw an increase of about 34% in their overall score.

[1] The numbers and percentages referenced in this section are based on the 334 buildings that could be successfully analyzed out of the 411 recertifications. As such, these numbers are different from those that could be pulled from other tables and figures.

1 OVERALL CERTIFICATIONS

6696 Financial Drive, Mississauga, BOMA BEST Gold

Energy Use Intensity (EUI): Buildings that recertified and remained at the same certification level saw an average EUI improvement of 5ekWh/ft²/yr. Buildings that increased their level of certification saw an EUI improvement of 7.1ekWh/ft²/yr. Buildings that decreased a level (typically from Gold to Silver) saw an average EUI decrease of only 0.6ekWh/ft²/yr. These results show a reduction in energy use and costs for recertifying buildings (i.e. there is improvement over time).

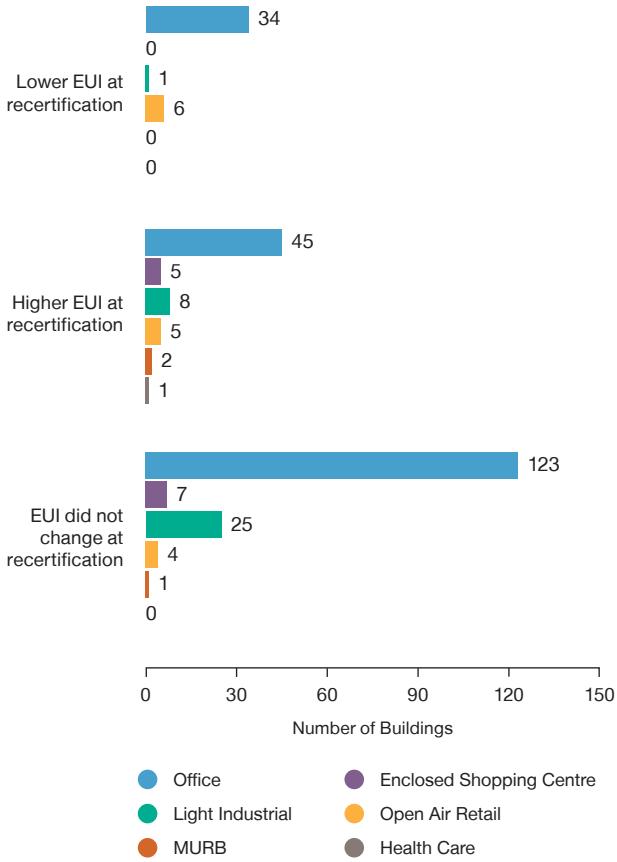
Pursuing certification creates increased awareness of energy use. The Energy Audit (a BEST Practice) identifies opportunities for energy savings. Building managers that complete a BOMA BEST certification are provided with guidance on how to improve performance. Implementing these changes leads to reduction in energy consumption which is then reflected in the data reported in the next cycle of BOMA BEST certification, 3 years later.

Buildings that recertified in 2015 consumed 5.6ekWh/ft²/yr less energy than buildings that pursued only a single certification. In addition to this, the energy use intensity of recertified buildings is lower than the overall BOMA BEST average by almost 2ekWh/ft²/yr, showing how BOMA BEST really does foster continuous improvement.

Additional figures and tables are available in the 2017 National Green Building Report – Appendix which can be downloaded from the BOMA BEST website.

The energy use intensity of recertified buildings is lower than the overall BOMA BEST average by almost 2ekWh/ft²/yr.

FIGURE 14: CHANGE IN BOMA BEST ENERGY USE INTENSITY – CERTIFICATION VS RECERTIFICATION



483 BAY STREET IN TORONTO:

An exemplary case for energy conservation and achieving cost savings

483 Bay Street, Toronto, BOMA BEST Platinum

483 Bay Street, managed by **Northam Realty Advisors Limited**, has set the bar high in terms of how to optimize and manage building energy performance, earning a **BOMA BEST Platinum** level upon recertification. This 30+ year old building has a REALPAC Normalized Energy Use Intensity of 15.3 ekWh/ft²/yr, which easily exceeds the 20x15 target, and is better than most of the new office buildings built in recent years. The building has won the CivicAction Race to Reduce award for the Lowest Energy Use in the GTA for three separate years, with a current ENERGY STAR score of 94.

How did we do it?

- The Property Management and Operations teams have a **culture of proactive managing** their energy performance.
- This includes **tracking energy performance in real time** using a web-based Utility Tracking platform, and addressing any performance anomalies before they become systemic.
- **A tenant engagement program** that includes quarterly meetings to discuss and review improvement opportunities. Recent examples include:
  - A tenant pilot program which resulted in a 9.6% energy savings on the trial floors;
  - Another tenant undertook a floor-by-floor renovation, with a focus on reducing their energy use. Renovated floors have shown electricity savings of 25%.
  - Supporting these tenant engagement efforts, Northam **meters and measures individual tenant in-suite plug load**. This data is used to directly engage tenants to use less energy in their space on a regular basis, and tenants directly pay for the electricity that they use in their space (so they see the direct savings of any initiatives they undertake).
- Building upgrades have included:
  - **Lighting retrofits.**
  - **Installation of variable speed drives.**
  - **Elevator modernization** (reducing elevator energy use by 40%).
  - **Chiller replacements**, reducing energy use by 1,394,500 kWh or $170,000 annually.
  - Boiler replacements with **condensing boilers** (annual savings of natural gas costs were calculated to be $69,309, equivalent to 2.5 ekWh/ft²/yr).
- **Greenhouse gas emissions reduced** 1,166,106 kg CO_2e annually.
- Conscious of their contribution to provincial peak demand, Northam also **voluntarily curtails electrical load** during the hottest days of the year by shutting of non-essential lighting and reducing space cooling.

SCORING

1075 North Service Road West, Oakville, BOMA BEST Platinum

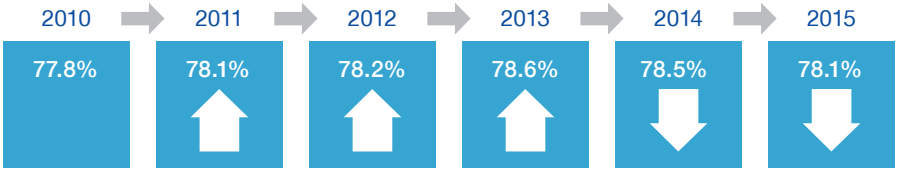
From this section onwards, only buildings earning Silver, Gold or Platinum certification levels (representing 476 buildings) are included in the analysis. Buildings that earned a Certified or Bronze level certification were excluded. This cutoff was chosen to allow comparisons with past performance, since previous reports excluded Level 1 (now Certified and Bronze) performance from the analysis.

The Methodology section, at the end of the report, contains more information regarding analysis methodology.

Overall BOMA BEST score remains constant at 78%

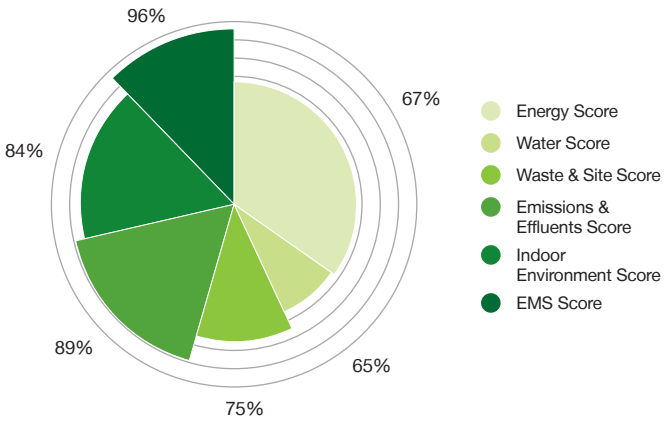
In 2015, the average BOMA BEST score achieved was 78.1% (high Silver). BOMA BEST users have maintained a score in this percentile range since 2011.

FIGURE 15: AVERAGE BOMA BEST OVERALL SCORE 2010-2015



The average BOMA BEST score is 78.1%.

FIGURE 16: AVERAGE BOMA BEST SCORE BY ASSESSMENT CATEGORY – ALL BUILDINGS



Office buildings represent about 63% (299 of the total 476) of the buildings that achieved Silver or higher certification in 2015. Where it made statistical sense, performance of buildings in the Enclosed Shopping Centre class (23 in total), Light Industrial (112) and Open Air Retail (30) was also included. There were too few buildings in the MURB (6) and Health Care (6) asset classes with Silver or higher certifications to draw meaningful conclusions.

Performance above 80% in almost half of the categories

A few observations when comparing the scores and achievements of all buildings in the respective performance categories:

- Across the **Energy** category, scores for Offices, Light Industrial buildings and Enclosed Shopping Centres were consistent with the previous year's performance, averaging around 67.5%. The biggest decline is in Open Air Retail where the average energy category score dropped by 7% to 65%. This number may be more representative of this asset class' performance, considering that the data pool was almost double in 2015 (30) compared to the previous year (18);
- In the **Water** category, Light Industrial buildings tended to score lowest (49.7% compared to 65.4% for all buildings). Water performance is also weighted slightly heavier in the Light Industrial asset class (10% compared to 8% average), meaning there are more points available in the water category for Light Industrial buildings compared to the other asset classes;
- Performance in the **Waste Reduction & Site Enhancement** and **Emissions & Effluents** categories remain fairly consistent across all asset classes (75% and 89% respectively);
- The **Indoor Environment** scores for Open Air Retail buildings are lowest (79.8% compared to 83.5% for all buildings). Conversely, Indoor Environment is weighted lightest in the Light Industrial asset class (11% compared to 17% average);
- As in previous years, almost all asset classes scored around 95% or better in the **Environmental Management Systems** category.

Additional figures and tables are available in the 2017 National Green Building Report – Appendix which can be downloaded from the BOMA BEST website.

AWARDS 2016 BOMA Canada

The Building Owners and Managers Association (BOMA) of Canada salutes the winners of its prestigious 2016 National Awards presented September 22, 2016 in Regina, Saskatchewan. The Awards Gala was celebrated in conjunction with the association's national conference and exhibition BOMEX® 2016 hosted by BOMA Regina.

2016 BOMA Canada TOBY Award Winners

The Outstanding Building of the Year (TOBY) Awards recognizes the stars of the commercial real estate industry, recognizing quality in commercial real estate buildings and excellence in building management. Judging is based on building standards, community impact, tenant relations, energy conservation, environmental, regulatory and sustainability practices, emergency preparedness and security standards, and the training of building personnel. All entrants must be BOMA BEST certified.

Under 100,000 Sq. Ft.

3115 Harvester Road
Burlington, ON,

Owned by Sun Life Canadian Real Estate Fund

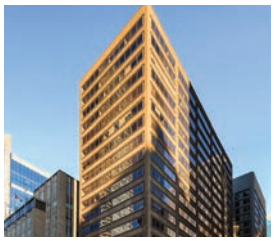
Managed by Bentall Kennedy (Canada) LP

500,000-1 Million Sq. Ft

London City Centre
275 Dundas Street &
380 Wellington Street
London, ON

Owned by Dream Office REIT

Managed by Dream Office Management Corporation



100,000-249,999 Sq. Ft.

155 University Avenue
Toronto, ON

Owned by Great-West Life Assurance Company & London Life Insurance Company

Managed by GWL Realty Advisors Inc.

Over 1 Million Sq. Ft.

Toronto-Dominion Centre
TD Bank Tower –
66 Wellington Street West
TD North Tower – 77 King Street West
TD West Tower – 100 Wellington Street West
TD South Tower – 79 Wellington Street West
Ernst & Young Tower – 222 Bay Street
95 Wellington Street West

Owned by Cadillac Fairview Corporation Ltd. & OPB (TDC) Inc.

Managed by The Cadillac Fairview Corporation Limited

250,000-499,999 Sq. Ft.

Intact Place
311 6th Avenue SW &
321 6th Avenue SW
Calgary, AB

Owned by bcIMC Realty Corporation

Managed by Bentall Kennedy (Canada) LP

2016 BOMA Canada Earth Awards Winners

The Earth Awards are BOMA Canada's recognition of excellence in resource preservation and environmentally sound commercial building management and are presented to buildings that have made significant efforts to address environmental issues faced by both older and newer buildings. All entrants must be BOMA BEST certified.

Corporate Facility
Air Terminal Building
1000 Airport Road
Edmonton, AB

Owned and Managed by Edmonton Airports

Historical Building
Triffo Hall
11316-89 Avenue
Edmonton, AB

Owned and Managed by University of Alberta

Industrial Office Building
Kennedy Matheson Industrial Complex
550/570 Matheson Boulevard East

5655 Kennedy Road Missisauga, ON

Owned by 3883281 Canada Inc.

Managed by Menkes Property Management Services Ltd.

Medical Office Building
East Calgary Health Centre
4715 8 Ave SE
Calgary, AB

Owned by Beacon Hill Apartments Ltd.

Managed by Bentall Kennedy (Canada) LP

Retail Building
CF Toronto Eaton Centre
220 Yonge Street
Toronto, ON

Owned and Managed by The Cadillac Fairview Corporation Ltd.

Light Industrial
London Life RAM Centre
670 Sovereign Road
London, ON N5V 4K7

Owned by London Life Insurance Company

Managed by GWL Realty Advisors Inc./London Life Insurance Company

Multi-Unit Residential Building
Carré Queen Mary
5150-5165, chemin Queen Mary
Montreal, QC

Owned by FCHT Holdings (Quebec) Corporation Inc.

Managed by First Capital Realty Management Services LP

Office Building
25 York Street
Toronto, ON
M5J 2V5

Owned by Menkes Union Tower Inc.

Managed by Menkes Property Management Services Ltd.

Retail Building
Rockland Centre
2305, chemin Rockland
Ville Mont-Royal, QC,

Owned and Managed by FPI Cominar Retail Building

ENERGY

ENERGY SCORE DOWN, CONSUMPTION UP

Sportsworld Crossing Complex, Kitchener, BOMA BEST Certified

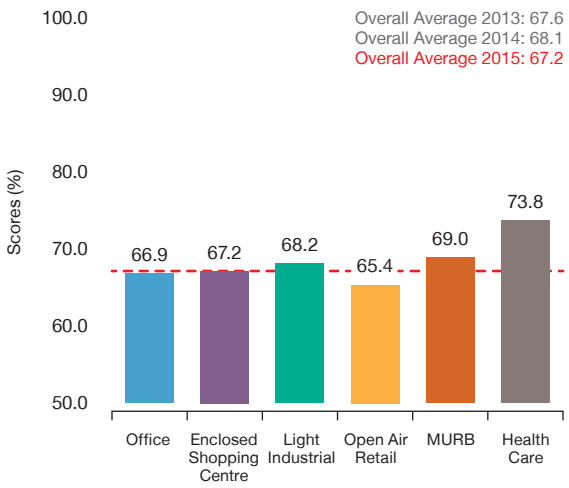
Energy score down, consumption up

The average energy category score obtained by buildings certified in 2015 is similar to the score obtained by buildings in previous certification years (67.2%). Despite having a similar overall energy category score, the 2015 sample have higher energy consumption. Buildings certified in 2015 had a higher overall Energy Use Intensity (EUI) than buildings certified in 2013, by almost 6%. This supports the 2015 NGBR's findings that, while important, energy consumption is not the only factor that impacts performance in BOMA BEST.

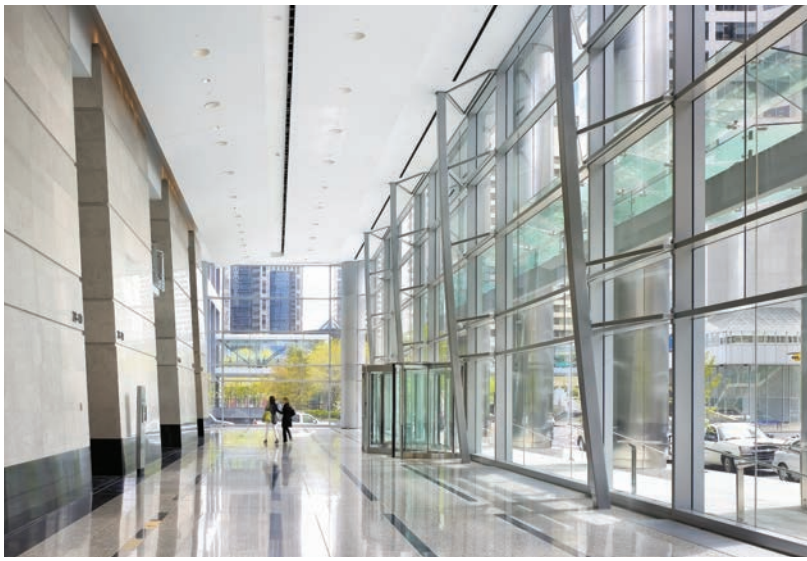
Figure 17 shows the average energy scores across all asset classes and Figure 18 compares performance at a regional level. Enclosed Shopping Centres, Open Air Retail, MURBs and Health Care did not have a large enough representative sample at a regional level to compare averages or energy use intensities.

The average Energy section score is 67.2%, one percentage point below the 2014 performance.

FIGURE 17: AVERAGE ENERGY SCORE – ALL ASSET CLASSES

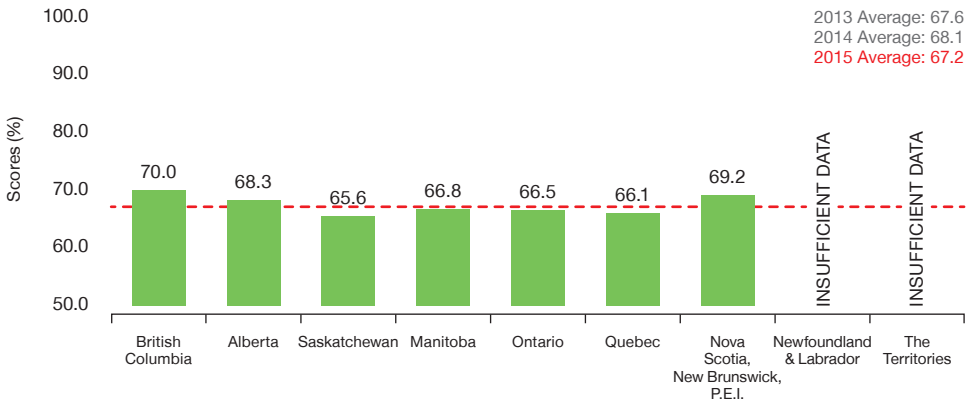


121 Research Drive, Saskatoon, BOMA BEST Platinum



Centennial Place, Calgary, BOMA BEST Platinum

FIGURE 18: AVERAGE ENERGY SCORE BY REGION – ALL ASSET CLASSES



3 ENERGY

Figures 19 and 20 show the average energy scores at a regional level for Office and Light Industrial buildings.

The average energy score for certified Office buildings increased from 65% in 2008 to 67.7% in 2014, but decreased slightly to 66.9% in 2015. Manitoba's six Silver+ Office certifications scored the highest average energy score and Ontario's 106 Silver+ Office certifications scored the lowest.

Ontario's 68 Silver+ Light Industrial certifications represent the biggest regional dataset in this asset class, achieving an average energy score of 69.7%, 2.2% better than the BOMA BEST national average.

In the Open Air Retail asset class, Alberta's 11 Silver+ certifications achieved an average energy score of 69%, 5.5% higher than the BOMA BEST national average. Many regions lacked sufficient data for analysis.

In the Enclosed Shopping Center asset class (Figure A19 in the Appendix), Ontario and Quebec each had 7 Silver+ certifications with regional energy score averages of 64.6% and 62.9% respectively.

FIGURE 19: AVERAGE ENERGY SCORE BY REGION – OFFICE

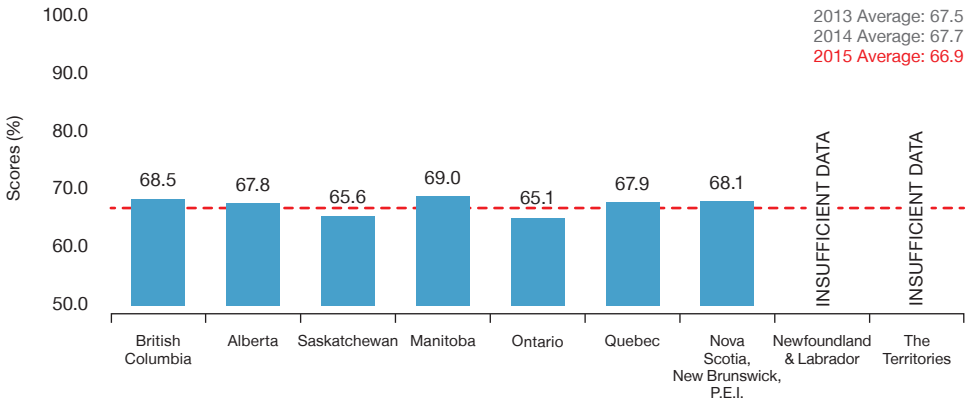


FIGURE 20: AVERAGE ENERGY SCORE BY REGION – LIGHT INDUSTRIAL

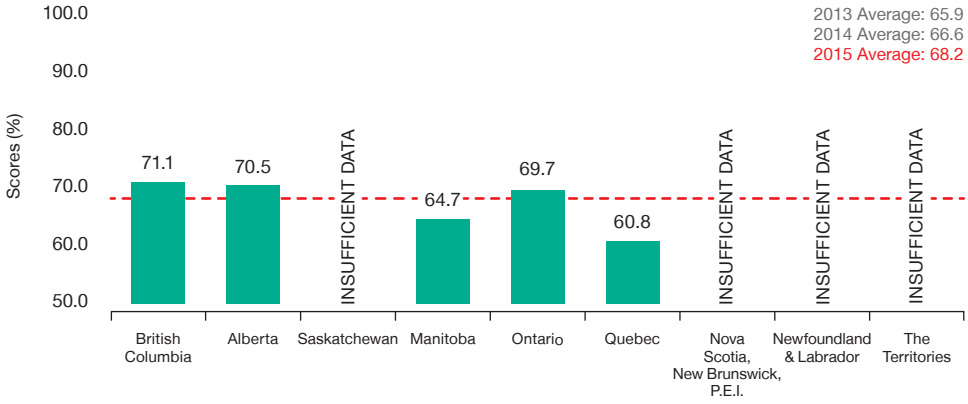


FIGURE 21: AVERAGE ENERGY SCORE BY REGION – OPEN AIR RETAIL

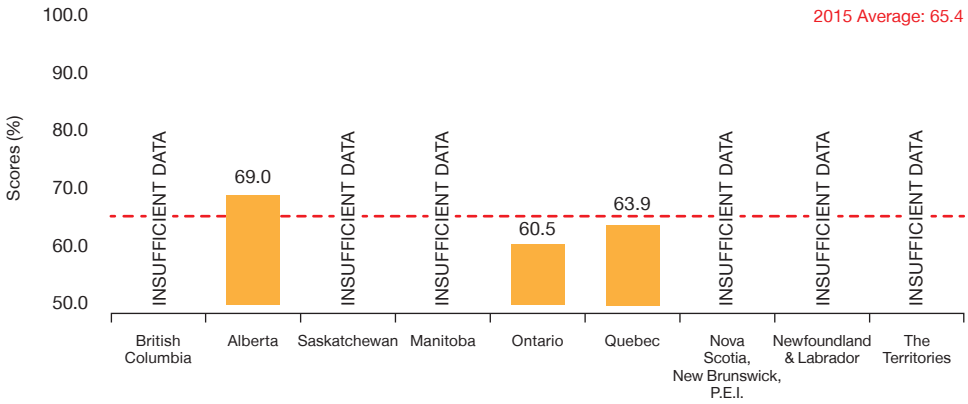


FIGURE 22: AVERAGE EUI (ekWh/ft²/yr) BY CLIMATE ZONE – OFFICE

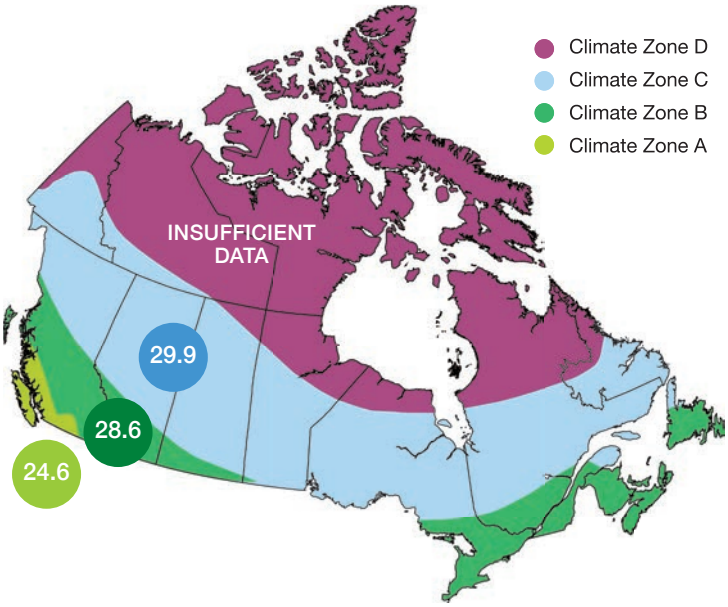


FIGURE 23: AVERAGE ENERGY USE INTENSITY BY YEAR CERTIFIED – OFFICE

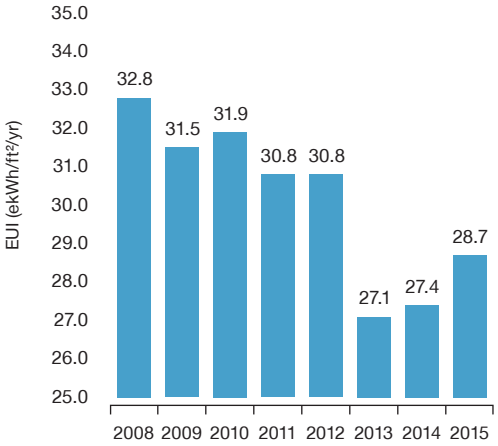


Figure 22 shows the average EUI of Office buildings by climate zone. As expected, energy use in the colder climate zones (B and C) is higher than in the milder zone A.

The national average EUI in Office buildings declined by 2ekWh/ft²/yr between 2008 and 2012. A further drop of 3.7ekWh/ft²/yr was noted the following year. Since then, the EUI of Silver+ Office certifications rose slighlty by 1.6ekWh/ft²/yr to reach an average of 28.7ekWh/ft²/yr in 2015. Although the average EUI for Office buildings rose by 5% in 2015, compared to Offices certified in 2014, the EUI of Office buildings has been improving by an average of almost 2% per year since 2008.

As in 2014, Offices earning a Platinum certification in 2015 consume about 45% less energy than Offices earning a Silver certification. Energy category scores also reflect this performance: Platinum Offices achieved an energy score that is nearly 25 percentage points higher than Silver certified Offices. The EUI of Gold certified Offices is 11% better than their Silver counterparts.

Platinum certified Office buildings have an EUI that is 45% better than the EUI of Silver buildings.

FIGURE 24: AVERAGE ENERGY USE INTENSITY BY LEVEL CERTIFIED – OFFICE AND LIGHT INDUSTRIAL

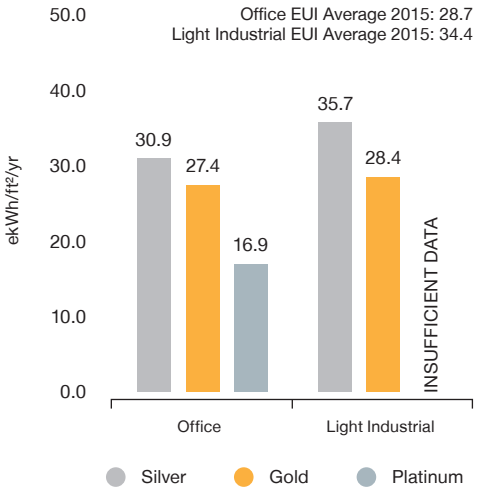


FIGURE 25: CORRELATION BETWEEN ENERGY USE INTENSITY AND ENERGY SCORE BY LEVEL CERTIFIED – OFFICE AND LIGHT INDUSTRIAL

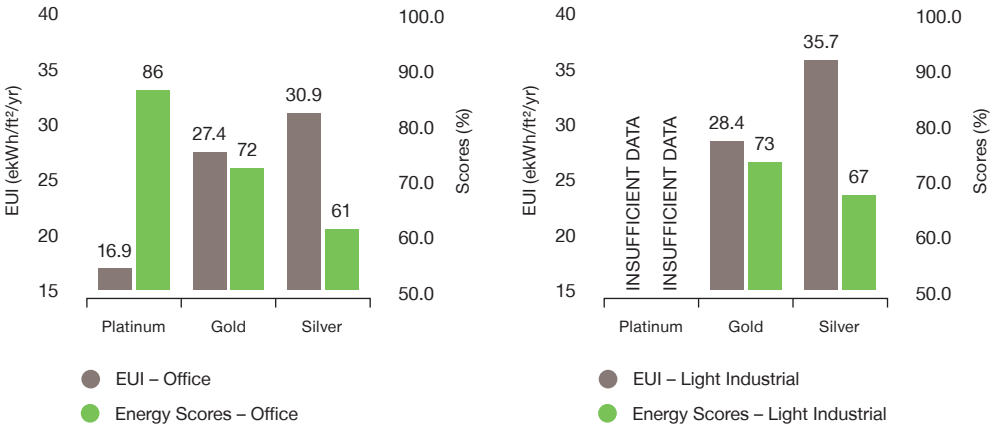
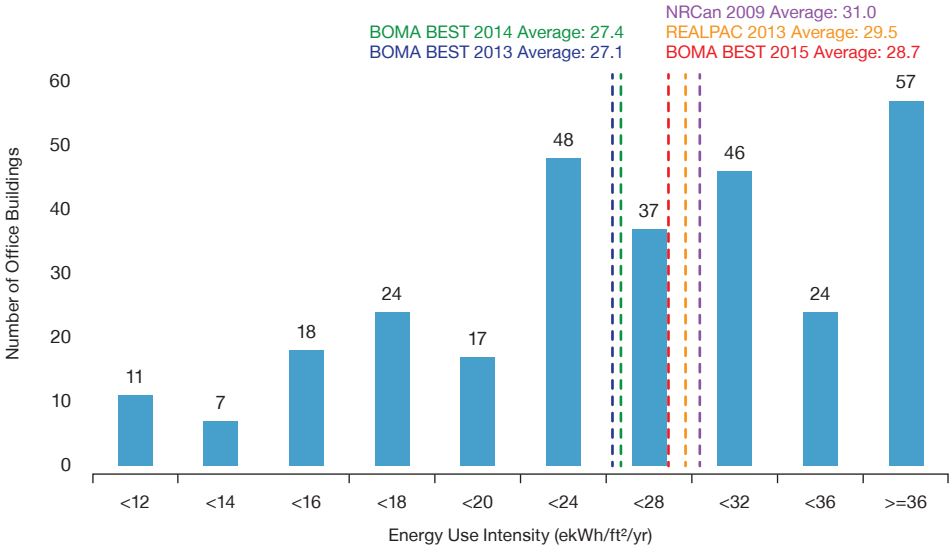


Figure 25 compares EUI and average energy scores by certification level for both Office and Light Industrial buildings. It shows the correlation between these two performance metrics: if EUI is low, it follows that the energy score should be high. Platinum certified Office Buildings have a low EUI (16.9ekWh/ft²/yr) and a correspondingly high average Energy Score (86%).

Figure 26 groups the number of certified Office buildings according to their EUI. The two largest groups of buildings (48 and 46) perform in the 20-24ekWh/ft²/yr and 28-32ekWh/ft²/yr range respectively.

FIGURE 26: AVERAGE ENERGY USE INTENSITY BY NUMBER OF BUILDINGS – OFFICE



EPCOR TOWER IN EDMONTON:

Using innovative and efficient technologies for energy and water conservation

EPCOR Tower, Edmonton, BOMA BEST Gold

EPCOR Tower was constructed in 2011 with sustainability in mind, earning a LEED Gold certification for Core and Shell in August 2013. Committed to their vision, **Qualico** has implemented a comprehensive environmental performance management system for EPCOR Tower. This system includes many policies, procedures and programs (e.g. waste diversion, green cleaning program and environmental procurement) aimed at reducing the carbon footprint of EPCOR Tower and improving the quality of life for those who work in and visit EPCOR Tower. In early 2015 EPCOR Tower achieved **BOMA BEST Gold certification** and won the **2015 Regional TOBY award**, demonstrating the success of Qualico's sustainability initiatives.

An operational focus for EPCOR Tower is reducing energy consumption. Energy savings are being realized in part through consistent and efficient use of the Honeywell **building management system (BMS)**. The BMS allows Qualico to meet the comfort and safety needs of their occupants while ensuring the operational and energy efficiency of the building. The extensive system manages the HVAC, energy, lighting, air quality, gas detection, and smoke management of EPCOR Tower; the BMS goes into un-occupied mode after-hours, which further reduces energy usage.

EPCOR Tower yields 23% energy reduction when compared to ASHRAE 90.1-04. This is in part due to the use of the impressive **earth tube** system located under EPCOR Tower and below the frost line where the temperature is a consistent 6°C. The principle of earth tubes is a geothermal exchange between the air and the surrounding earth through a conductive material, concrete in EPCOR Tower's case. EPCOR Tower takes advantage of the earth tube to pre-heat and pre-cool the building's outdoor air. The earth tube saves approximately 1,473,994 kW/year in heating mode and 84,874 kW/year in cooling mode.

Other systems that help to reduce mechanical operating costs are:

- **High performance building envelope** – the triple glazed exterior curtain wall system eliminates the need for perimeter radiant heating;
- **Heat recovery ventilation** – exhaust air contains waste heat, which is used to preheat the fresh air supply, without air mixing;
- **Free-cooling** – lowering the chilled water temperature for the building by using naturally cool air (cooling towers). Winter free-cooling can be used for 39% of the year in Edmonton;
- **Stack condenser** – waste heat from the boilers is used to pre-heat return boiler water and heat glycol for in-slab heating; the stack condensing system contributes significantly to the 95.5% boiler plant efficiency.

The reduction of water consumption is another focus area for EPCOR Tower and is realized in part through the use of a large, 725 m^3, stormwater storage tank located under the parkade. This tank significantly reduces the need for potable water for irrigation and toilet flushing by an estimated 63%. Low-flow urinals, lavatories, and showers and dual-flush toilets combined with the lack of permanent irrigation also aid in reducing water consumption.

The myriad of the sustainability efforts from Qualico ensures that EPCOR Tower is one of the most attractive, healthy and efficient buildings in Edmonton, Alberta.

3 ENERGY

20375 Clark-Graham, Baie D'Urfe, BOMA BEST Silver

Figure 27 groups Office buildings' EUI across the performance percentile range. It shows that the BOMA BEST average EUI for Office falls between the median and bottom 40th percentile. Office buildings with EUIs lower than 23.6ekWh/ft²/yr perform in the top 40th percentile.

Office buildings in British Columbia have the lowest EUI (24.7ekWh/ft²/yr) of all provinces. Alberta has the highest (32.1ekWh/ft²/yr). These findings are consistent with Canadian climate zones. Manitoba's Light Industrial buildings have the lowest EUI (25.9ekWh/ft²/yr) and Alberta the highest (54.0ekWh/ft²/yr).

FIGURE 27: AVERAGE ENERGY USE INTENSITY BY PERCENTILE – OFFICE

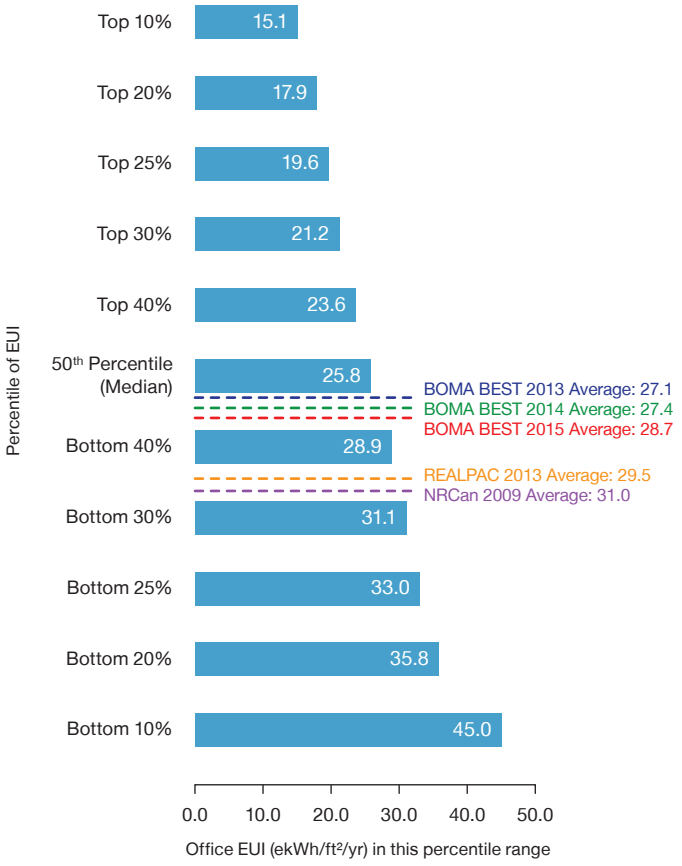
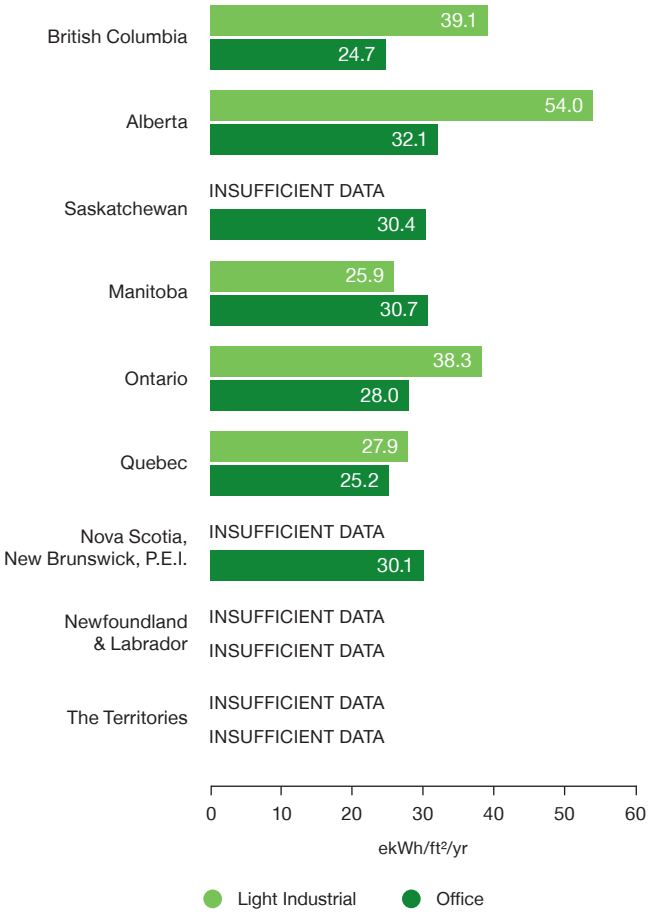


FIGURE 28: AVERAGE ENERGY USE INTENSITY BY REGION – OFFICE AND LIGHT INDUSTRIAL



Where are buildings scoring energy points?

Under BOMA BEST V2, the Energy category represents about 34% of the total achievable points. They are distributed among the following four sub-categories:

- **Energy Consumption (7%):** a building's measured energy use (EUI)
- **Energy Efficiency Features (14%):** such as high efficiency lighting, equipment, envelope, and renewables
- **Energy Management (8%):** policies, energy assessment, operator training, sub-metering, and preventative maintenance
- **Transportation (5%):** cycling, walkability, and access to public transit

Note that this point allocation changed in BOMA BEST 3.0, which was launched in 2016 and will be analysed in future reports.

The radial pie chart (Figure 29) shows how the Silver+ certified buildings scored in each of the energy sub-categories.

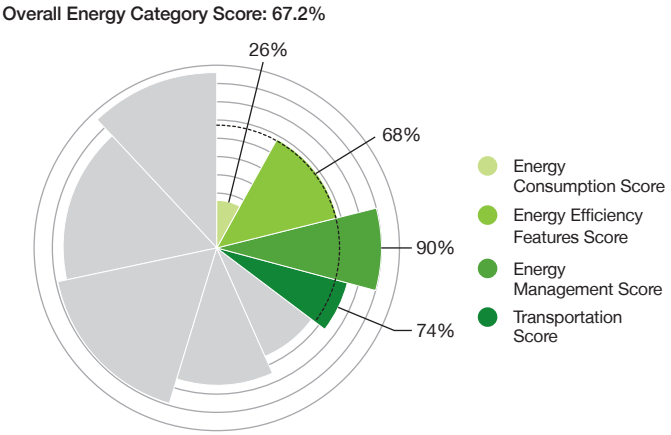
The number of points achievable in the Energy Consumption and Energy Management sub-categories are the same. Though equally weighted, buildings that scored the lowest (26%) in the consumption sub-category, scored the highest (90%) in their management practices.

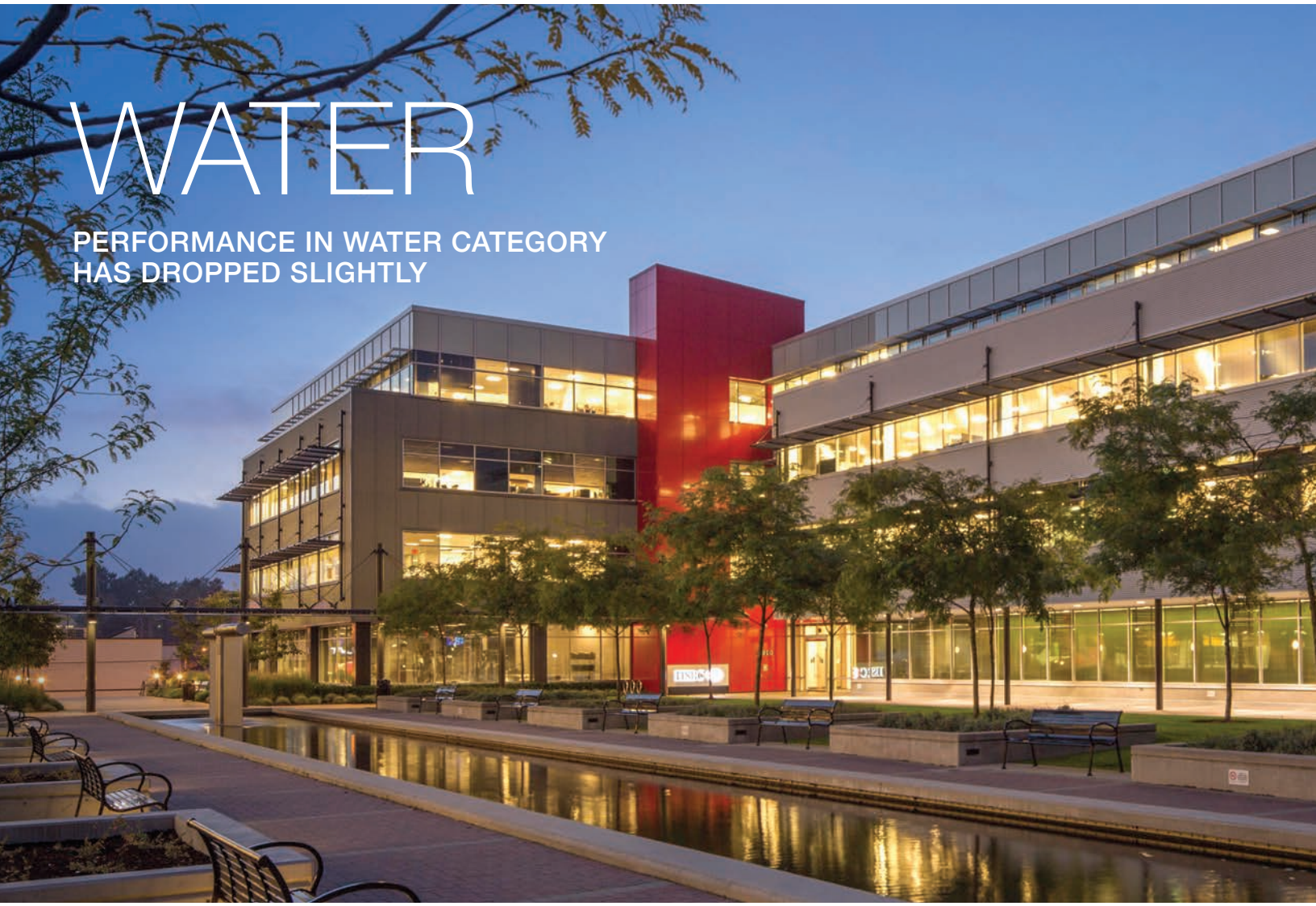
The lower score in the consumption section can be attributed, to some extent, to the stringent point allocation scale for energy consumption in BOMA BEST V2. According to this scale, half the points for this sub-category (40 out of 80) can only be earned if a building has an EUI below 20ekWh/ft^2/yr. In 2015, the average BOMA BEST Silver+ certified office building (with an EUI of 28.7ekWh/ft^2/yr) received only 16 of the total 80 points. The score in this sub-category dropped by 6% compared to the previous year.

Additional figures and tables are available in the 2017 National Green Building Report – Appendix which can be downloaded from the BOMA BEST website.

Centennial Place, Calgary, BOMA BEST Platinum

FIGURE 29: AVERAGE ENERGY SUB-CATEGORY SCORES – ALL ASSET CLASSES





WATER

PERFORMANCE IN WATER CATEGORY HAS DROPPED SLIGHTLY

Broadway Tech Centre – Building 4, Vancouver, BOMA BEST Gold

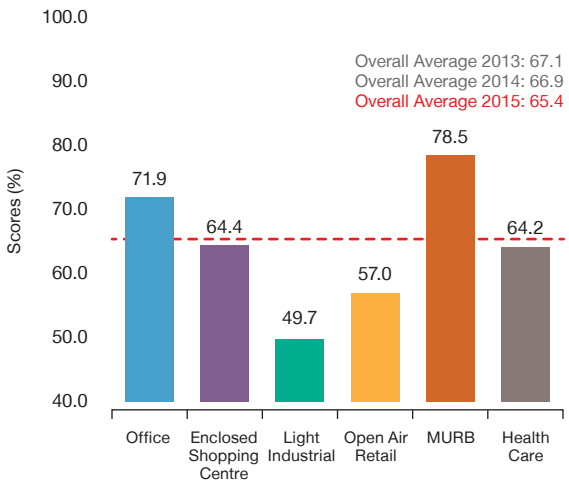
Performance in water category has dropped slightly

The Water category represents about 8% of the total achievable points, the smallest amount of all categories in the program. The average water score for Silver+ certifications was 65.4%, compared to 66.9% in 2014.

Figure 30 shows the average water scores across all asset classes and Figure 31 compares performance at a regional level. Enclosed Shopping Centres, Open Air Retail, MURBs and Health Care did not have a large enough representative sample at a regional level to compare averages or energy use intensities.

Office buildings performed the best at 71.9%. This is a steady increase from the previous year's average of 69.9% and 68% the year before.

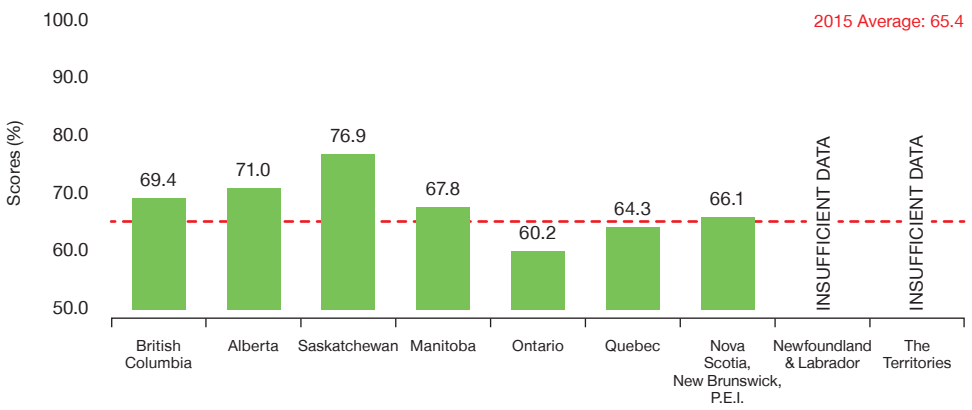
FIGURE 30: AVERAGE WATER SCORE – ALL ASSET CLASSES



Résidence Riviera, Laval, BOMA BEST Gold

Ukrainian Cultural Heritage Village, Mundare, BOMA BEST Silver

FIGURE 31: AVERAGE WATER SCORE BY REGION – ALL ASSET CLASSES



The average Water category score is 65.4%.

4 WATER

Milliken Crossing, Toronto, BOMA BEST Certified

Water scores in the Light Industrial Silver+ certifications fluctuated across a wide range: from about 47% in Ontario to almost 70% in British Columbia (Figure 33).

In the Open Air Retail asset class, Alberta and Quebec buildings achieved an average water score of approximately 60%, 5% higher than the national average.

In the Enclosed Shopping Center asset class (Figure A27 in Appendix), Ontario and Quebec each had 6 Silver+ certifications with regional water averages of 72% and 64% respectively. Both provinces increased performance by 6 percentage points compared to the previous year.

FIGURE 32: AVERAGE WATER SCORE BY REGION – OFFICE

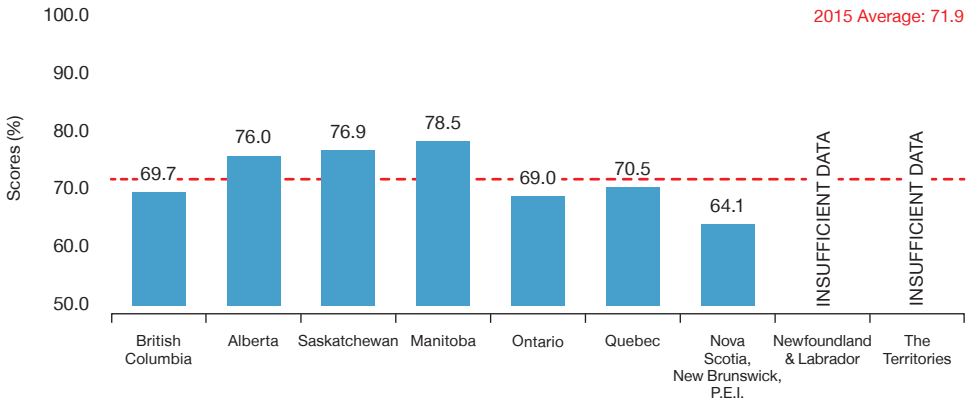


FIGURE 33: AVERAGE WATER SCORE BY REGION – LIGHT INDUSTRIAL

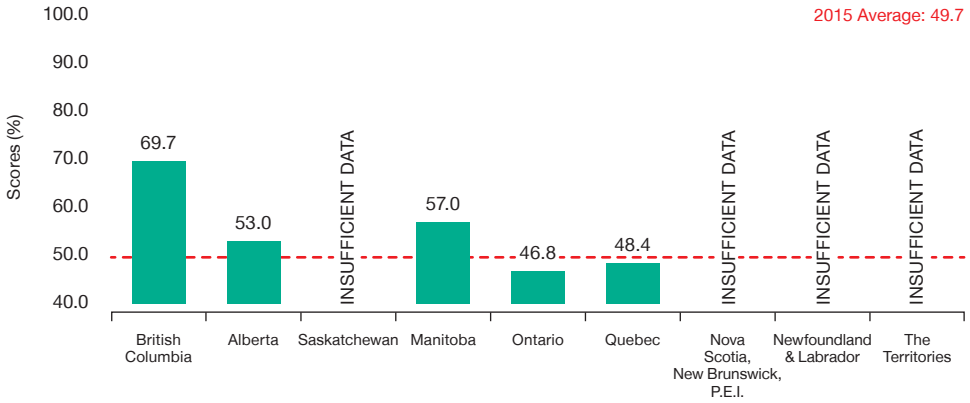
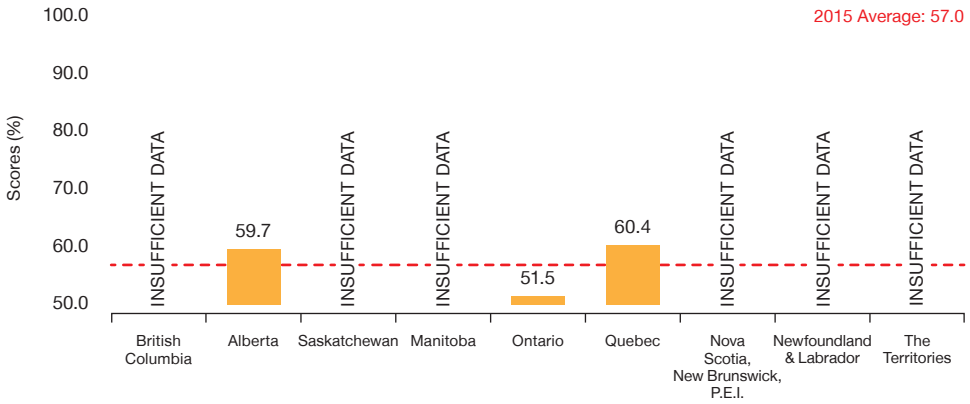


FIGURE 34: AVERAGE WATER SCORE BY REGION – OPEN AIR RETAIL



7125 Mississauga Road, Mississauga, BOMA BEST Gold

6901-6911 Creditview Road, Mississauga, BOMA BEST Silver

Water use intensity for Office buildings continues to decrease

Water use intensity (WUI) refers to how much water is used per square foot. BOMA BEST certifications show a decline in consumption between 2008 and 2012 when the lowest WUI was calculated at 0.65m³/m²/yr. Since then, consumption has increased slightly, to 0.70m³/m²/yr in 2015.

Figure 36 groups the number of certified office buildings according to their water use intensity. The largest group of buildings (64) performed in the 0.4-0.6m³/m²/yr range.

The average WUI for Office buildings in 2015 is 0.70m³/m²/yr.

FIGURE 35: AVERAGE WATER USE INTENSITY BY YEAR CERTIFIED – OFFICE

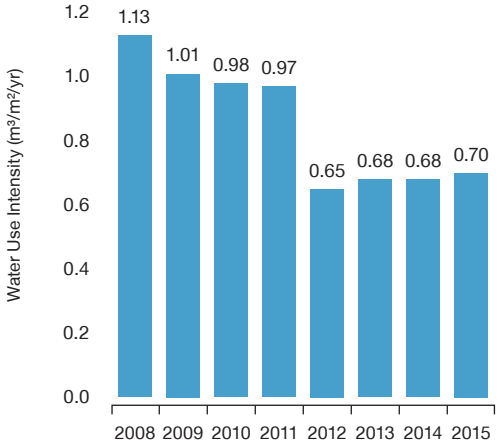
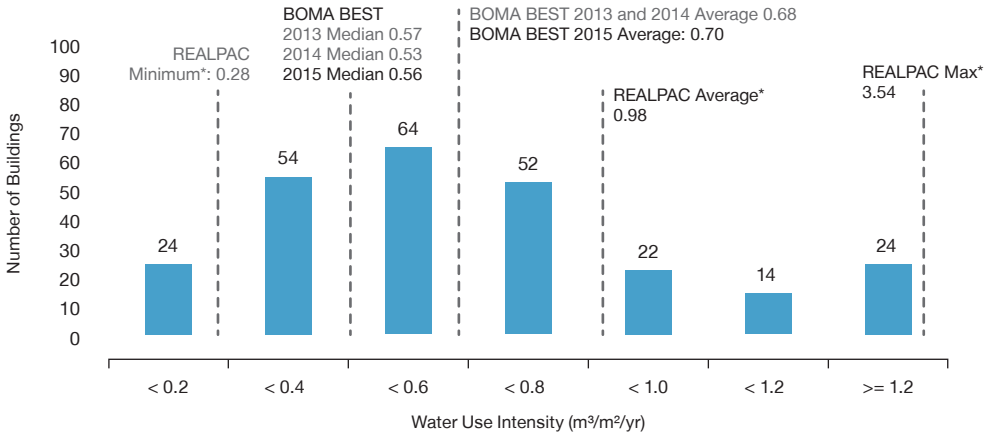


FIGURE 36: AVERAGE WATER USE INTENSITY BY NUMBER OF BUILDINGS – OFFICE



REALpac 2012 Water Benchmarking Pilot Report: http://www.realpac.ca/?page=RPEBP52Reports

4 WATER

Figure 37 groups Office buildings' WUI across the performance percentile range. It shows that the BOMA BEST average WUI for Office is higher than the median and falls between the bottom 25th and 40th percentile. Office buildings with WUIs lower than 0.47m³/m²/yr perform in the top 40th percentile.

In the Office building asset class, consumption correlates with the average water scores achieved. For the most part, and as expected, low WUI results in higher scores (and vice versa).

WUI for Silver+ Office certifications in climate zones A and B is 0.71m³/m²/yr and 0.74m³/m²/yr respectively. This is in line with the national average of 0.70m³/m²/yr. Buildings in climate zone C showed a slight increase in consumption with an average of 0.53m³/m²/yr compared to 0.46m³/m²/yr the previous year. Ontario office buildings show the highest WUI – 0.82m³/m²/yr compared with the 2013 and 2014 BOMA BEST national averages of 0.68m³/m²/yr.

FIGURE 37: AVERAGE WATER USE INTENSITY BY PERCENTILE – OFFICE

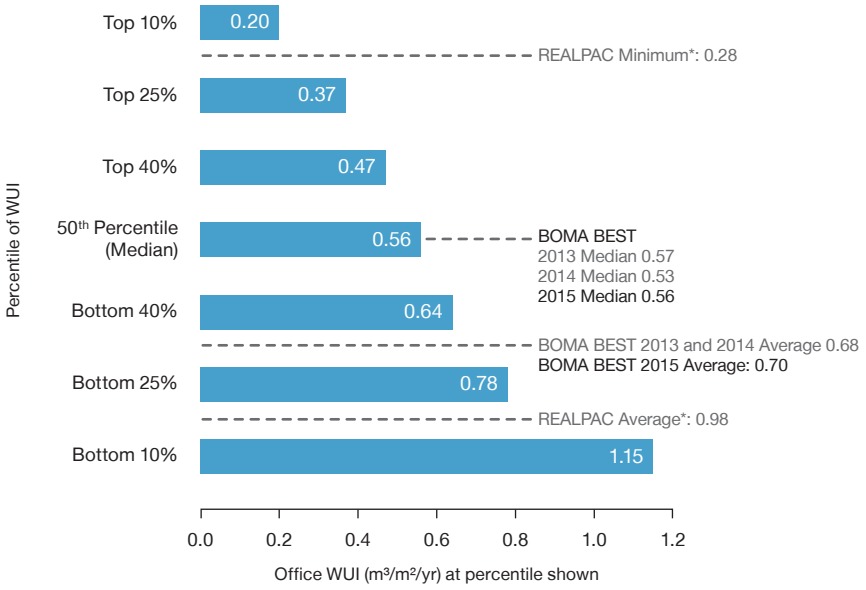


FIGURE 38: CORRELATION BETWEEN WATER USE INTENSITY AND WATER SCORE BY LEVEL CERTIFIED – OFFICE

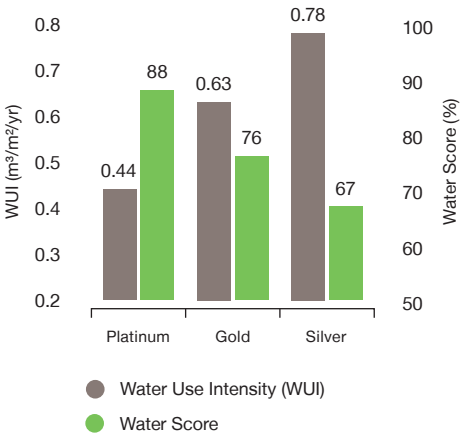
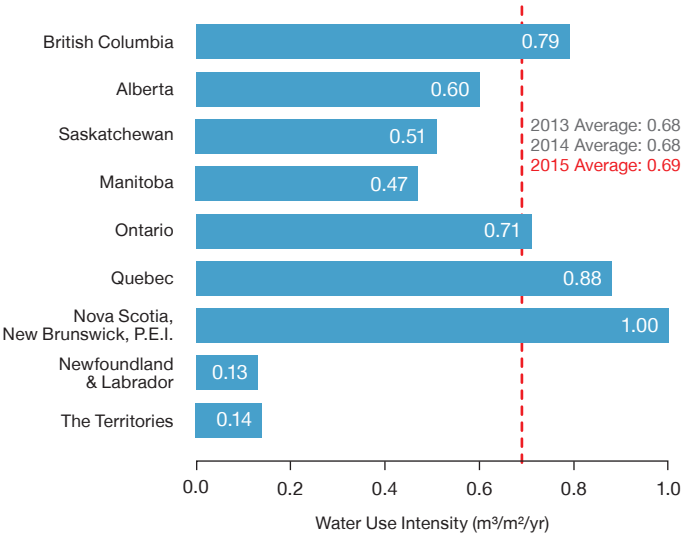


FIGURE 39: AVERAGE WATER USE INTENSITY BY REGION – OFFICE



121 Research Drive, Saskatoon, BOMA BEST Platinum

Where are buildings scoring water points?

The Water category represents about 9% of the total achievable points and assesses a building's water performance in the following four sub-categories:

- **Water Consumption (3%):** a building's water use
- **Water Conservation (3%):** the type of fixtures and fittings installed and irrigation practices
- **Water Management (2%):** policies, such as management and targets; sub-metering, maintenance practices, such as leak detection, retrofits
- **Innovation (<1%)**

BOMA BEST V2 does not provide a breakdown of scoring by sub-category as it does in the other performance categories. Therefore, no radial pie chart can be generated to show how buildings score in these sub-categories.

Note that this point allocation changed in BOMA BEST 3.0, which was launched in 2016 and will be analysed in future reports.

Additional figures and tables are available in the 2017 National Green Building Report – Appendix which can be downloaded from the BOMA BEST website.

WASTE REDUCTION AND SITE ENHANCEMENT

ENCLOSED SHOPPING CENTRES LEAD THE WAY

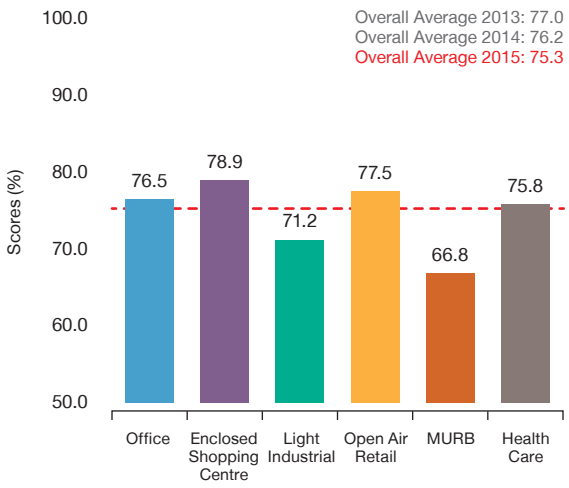
WestHills Towne Centre, Calgary, BOMA BEST Silver

Enclosed Shopping Centres lead the way

The average Waste Reduction and Site Enhancement category score is 75.3%, is slightly lower than the previous year, by just under 1 percentage point. Scores increased in the Offices, Enclosed Shopping Centres and Health Care asset classes, whereas scores dropped in the Light Industrial, Open Air Retail and MURB asset classes.

Figure 40 shows the average waste and site scores across all asset classes and Figure 41 compares performance at a regional level. The averages shown under MURBs and Health Care are not considered representative due to the small number of Silver+ certifications (6 each) in these two asset classes.

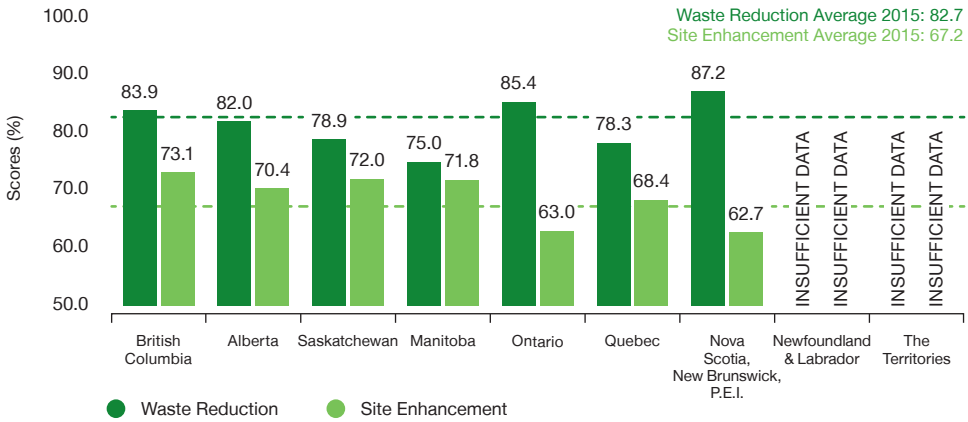
FIGURE 40: AVERAGE WASTE AND SITE SCORE – ALL ASSET CLASSES



1100 Rene-Levesque, Montreal, BOMA BEST Gold

1235 North Service Road West, Oakville, BOMA BEST Gold

FIGURE 41: AVERAGE WASTE AND SITE SCORE BY REGION – ALL ASSET CLASSES



The average Waste and Site section score is 75.3%.

5 WASTE REDUCTION AND SITE ENHANCEMENT

FIGURE 42: AVERAGE WASTE REDUCTION SCORE BY REGION – OFFICE AND LIGHT INDUSTRIAL

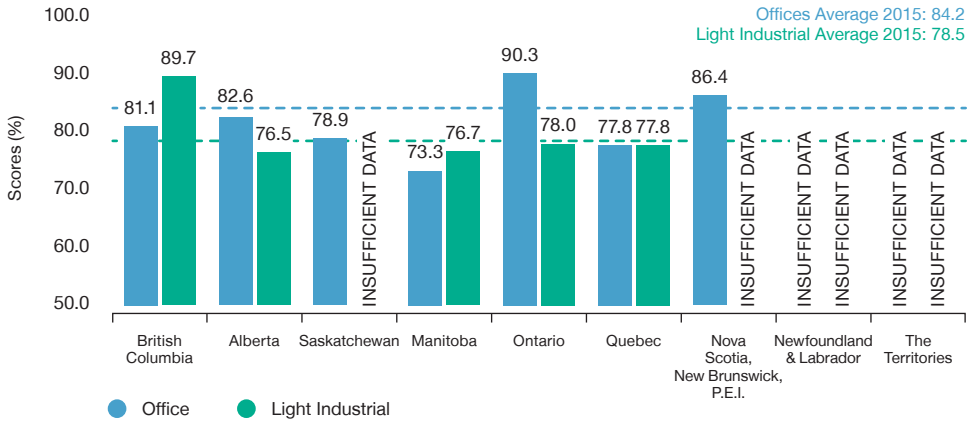
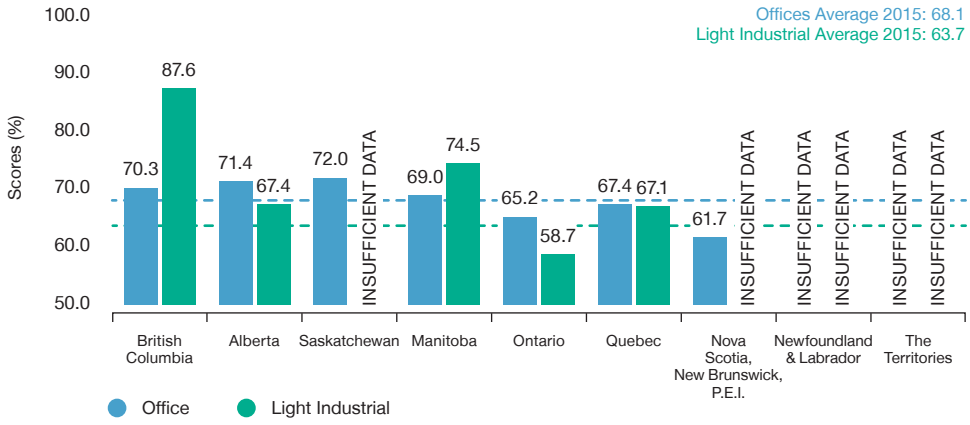


FIGURE 43: AVERAGE SITE ENHANCEMENT SCORE BY REGION – OFFICE AND LIGHT INDUSTRIAL



Figures 42 and 43 show the average waste and site scores at a regional level for Office and Light Industrial buildings respectively.

In the Office asset class, the two provinces with the highest number of certifications, Alberta and Ontario (85 and 106, respectively) scored quite differently in the sub-categories. The Waste Reduction score of Ontario buildings is 9.3% higher than Alberta's. Conversely, Alberta Office buildings score 9.5% better than Ontario buildings in the Site Enhancement sub-category. Quebec (with the third largest dataset at 48 buildings) scored second lowest in the Waste Reduction sub-category but 3.4% better than Ontario in the Site Enhancement sub-category.

In the Open Air Retail asset class (Figure A33 in Appendix), regional performance in the combined Waste Reduction and Site Enhancement category is quite different. Here, Quebec's 9 buildings scored highest at 80.4% and Alberta's 11 buildings scored lowest with 74.8%. With a dataset of 7 Enclosed Shopping Centres in each region (Figure A34 in Appendix), scores achieved in Ontario are almost 6 percentage points higher than in Quebec (82.4% and 76.6% respectively).

FIGURE 44: DISTRIBUTION OF WASTE DIVERSION RATES – OFFICE

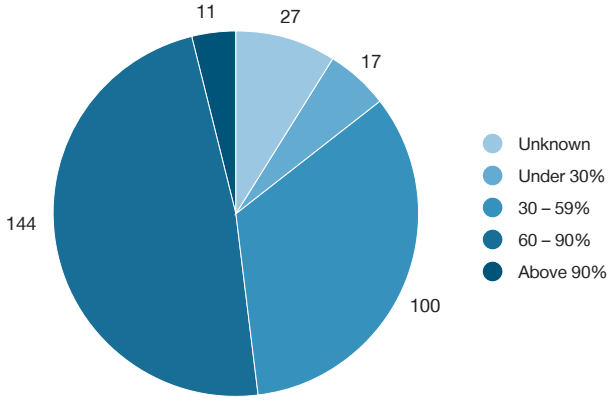
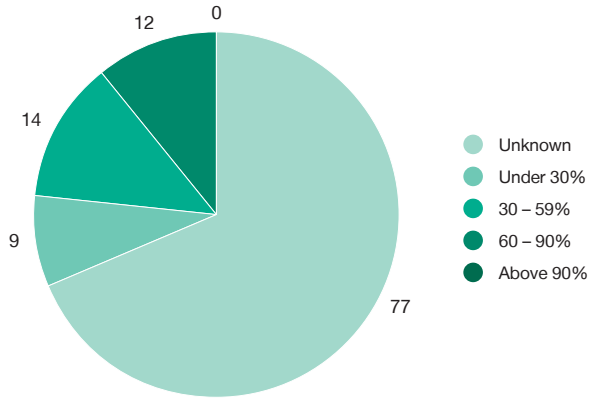


FIGURE 45: DISTRIBUTION OF WASTE DIVERSION RATES – LIGHT INDUSTRIAL



There is a sharp increase in the number of Light Industrial buildings with “Unknown” diversion rates.

Dynamic Funds Tower, Toronto, BOMA BEST Gold

Waste diversion rates in Offices holding steady

The total number of buildings achieving waste diversion rates in the 60-90% range dropped slightly compared to the previous year, down 5% from 173 to 165. There was a more significant increase in the number of buildings achieving a waste diversion rate in the 30-59% range, up 24% from 123 to 152. The number of buildings with diversion rates in the “above 90%” range declined slightly compared to the previous year, from 15 to 14. There is a sharp increase in the number of buildings with “Unknown” waste diversion rates, up 183% from 40 to 113. This is largely attributed to the dramatic increase in Light Industrial asset class certifications compared to the previous year.

5 WASTE REDUCTION AND SITE ENHANCEMENT

6901-6911 Creditview Road, Mississauga, BOMA BEST Silver

Where are buildings scoring waste and site points?

For almost all asset classes, the Waste and Site category represents about 13% of the total points achievable. It is only in the Light Industrial (LI) asset class where this module is weighted slightly heavier at 15%. This weighting differential was introduced to account for differences in waste management practices between asset classes and may explain the lower overall score in this category for the Light Industrial asset class. In this category, a building's performance is assessed across the following four sub-categories:

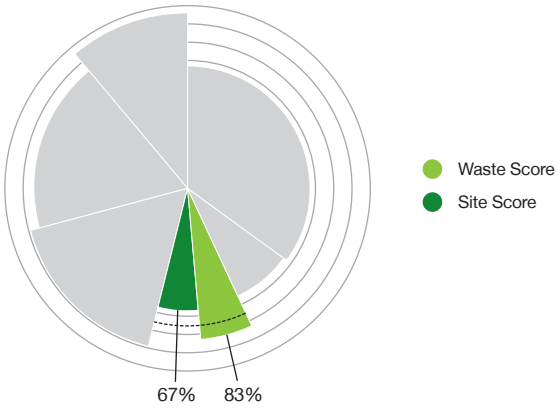
- **Recycling (3%):** waste diversion, handling and storing recyclable materials
- **Waste Reduction Program (4%, 5% for LI):** policies to manage waste and guide waste collection
- **Site Pollution (2%, 3% for LI):** site free of contaminants, appropriate environmental assessments
- **Site Enhancement (4%):** exterior site management (cleaning, stormwater), lighting, heat island effect reduction

Note that this point allocation changed in BOMA BEST 3.0, which was launched in 2016 and will be analysed in future reports.

Figure 46 shows how the Silver+ certified buildings scored in the waste/site sub-categories. The Waste Reduction sub-category is almost weighted equally as Site, but buildings score lowest (67%) for their site enhancements compared to highest (83%) for waste reduction. Performance in the site sub-category held steady compared to previous years, though there was a 2% reduction in the waste sub-category score.

FIGURE 46: AVERAGE WASTE REDUCTION AND SITE ENHANCEMENT SUB-CATEGORY SCORES – ALL ASSET CLASSES

Overall Waste & Site Category Score: 75.3%



RANGEWINDS BUSINESS PARK:

WINNER of the 2015 BOMA International TOBY Award

Rangewinds Business Park, Calgary, BOMA BEST Certified

Rangewinds Business Park is a premier six-building industrial complex in Calgary, Alberta, managed by **Bentall Kennedy (Canada) LP** and owned by Sun Assurance Company of Canada. The 344,645 square foot complex is situated on 23 acres with prime access to major arterial roads and is in close proximity to downtown Calgary, as well as only 15 minutes to the Calgary International Airport. As a highly sought-after location, the complex is 95% leased by 26 tenants who operate distribution, light manufacturing, and sales and service outlets.

In addition to achieving BOMA BEST recertification, Rangewinds Business Park's environmental and management excellence was affirmed with its win of the **BOMA International TOBY Award** in 2015. The complex's industry-leading performance spans management, environmental, and tenant relations. On an annual basis, Bentall Kennedy completes **a comprehensive Environmental Checklist** for the complex along with an audit of each tenant space for environmental compliance. Property management also conducts an annual fire evacuation drill with muster stations in collaboration with the Calgary Fire Department, which greatly appeals to the tenants as it supplements their emergency response planning.

The extensive landscaping surrounding the park beautifies the site and creates a welcoming, natural environment for tenants and their visitors. The landscaping positively impacts air quality, aids water runoff, and minimizes water use with the **RainBird ESP-LX weather-controlled irrigation system**. Enhancements in water efficiency and savings of 50% were achieved within the first year of installation, in 2011.

Solar-powered tenant identification signage across all six buildings enhances wayfinding and navigation.

The Bentall Kennedy branded **ForeverGreen program** is utilized to raise awareness of green practices in place and encourage tenants' involvement. Since January 2014, tenants receive: monthly environmentally-focused posters; an annual tenant newsletter, the South Side News, which features news, events, and education about property services and procedures, as well as environmental tips; and Bentall's corporate sustainability newsletter three times per year.

Every year since 2008, the complex has participated in the worldwide **Earth Hour celebration** by shutting off all non-emergency lighting and encouraging tenants to participate. And, since 2013, the complex has held the South Industrial **tenant appreciation BBQ**, **a 100% green and zero-waste event**, coinciding with the Calgary Stampede every July.

EMISSIONS AND EFFLUENTS

EMISSIONS AND EFFLUENTS SCORES HOLD STEADY IN 88TH PERCENTILE.

18101 Autoroute Transcanadienne, Kirkland, BOMA BEST Silver

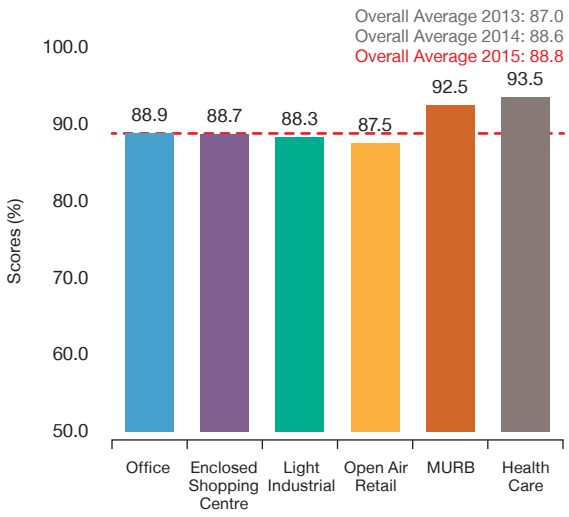
Emissions and Effluents scores hold steady in 88th percentile.

There is virtually no change in the average Emissions and Effluents score compared to the previous year. The score increase in the Office, Light Industrial and Health Care asset classes is balanced out by a drop in scores in the other three asset classes. The biggest reduction in performance was seen in the Open Air Retail asset class with a drop of 4%.

Figure 47 shows the average Emissions and Effluents scores across all asset classes and Figure 48 compares regional performance. The averages shown under MURBs and Health Care are not considered representative due to the small number of Silver+ certifications (6 each) in these two asset classes.

The average Emissions and Effluents score is 88.8%.

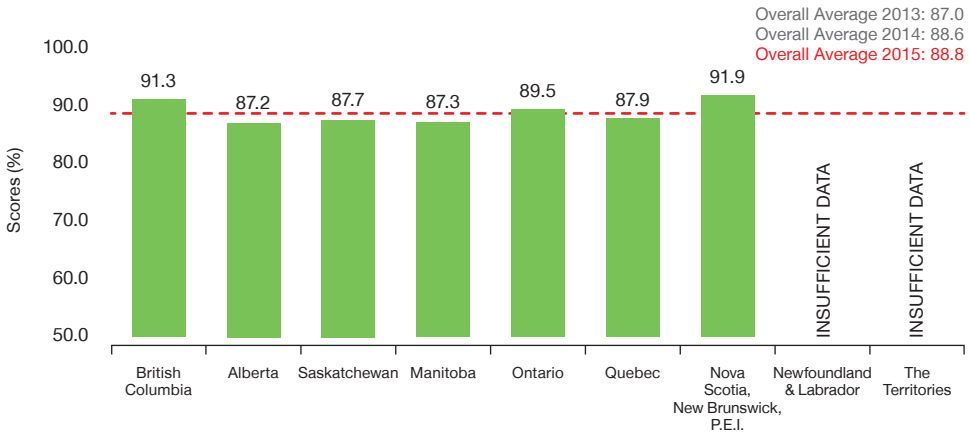
FIGURE 47: AVERAGE EMISSIONS AND EFFLUENTS SCORE – ALL ASSET CLASSES



Centre on Barton, Hamilton, BOMA BEST Certified

Devon Research Centre, Devon, BOMA BEST Silver

FIGURE 48: AVERAGE EMISSIONS AND EFFLUENTS SCORE BY REGION – ALL ASSET CLASSES



6 EMISSIONS AND EFFLUENTS

19600 Clark-Graham, Baie D'Urfe, BOMA BEST Silver

Figures 49 and 50 show the average Emissions and Effluents scores at a regional level for Offices and Light Industrial buildings respectively. Nova Scotia, New Brunswick and P.E.I.'s ten Office buildings lead in this asset class with a score that is 2.4% better than the national average. British Columbia's 7 Light Industrial buildings lead the next highest scoring province (Ontario) by 7.7 percentage points in this asset class.

In the Open Air Retail asset class (Figure A35 in Appendix), Alberta and Ontario performed similarly with a score of 87.3% compared to Quebec's 86.6%. Performance in the Enclosed Shopping Centre asset class (Figure A36 in Appendix) is highest in Quebec at 90.4% compared to Ontario's 88.3%.

FIGURE 49: AVERAGE EMISSIONS AND EFFLUENTS SCORE BY REGION – OFFICE

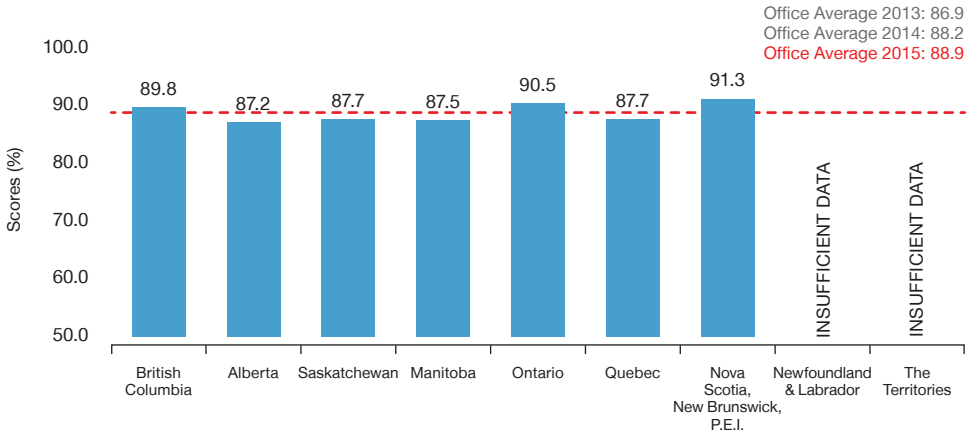
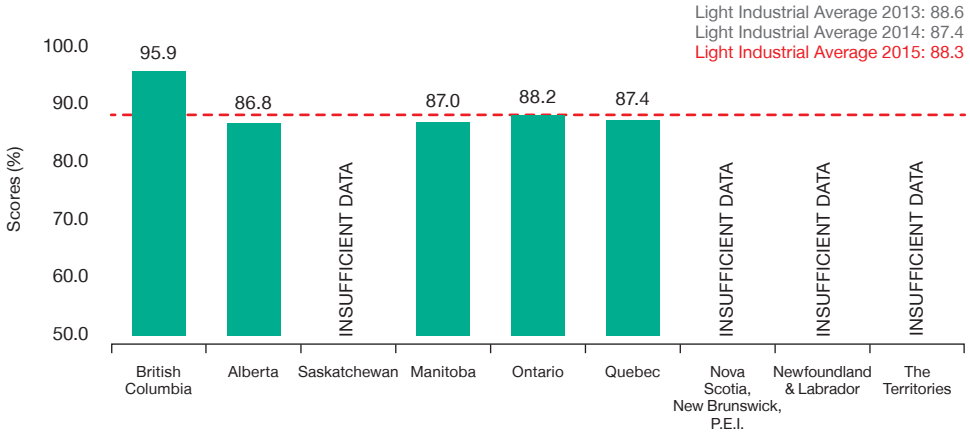


FIGURE 50: AVERAGE EMISSIONS AND EFFLUENTS SCORE BY REGION – LIGHT INDUSTRIAL



Where are buildings scoring emissions and effluents points?

The Emissions and Effluents section is weighted more or less the same for all asset classes – at about 17% of the total achievable points. The Emissions and Effluents category assesses a building's performance according to the following five emissions sub-categories:

- **Air (Boiler Emissions) (2%):** NO_x emission rates, fuel oil and flue gas
- **Refrigerants and Ozone Depleting Substances (4%):** management, leakage rates, halon, training
- **Water Effluents (3%):** drains (chemical, stormwater run-off), glycol discharge, de-icing materials
- **Hazardous Materials (5%):** surveys, management of asbestos, radon, PCBs, storage tanks
- **Hazardous Products Management (3%):** WHMIS, health and safety, pesticides

Note that this point allocation changed in BOMA BEST 3.0, which was launched in 2016 and will be analysed in future reports.

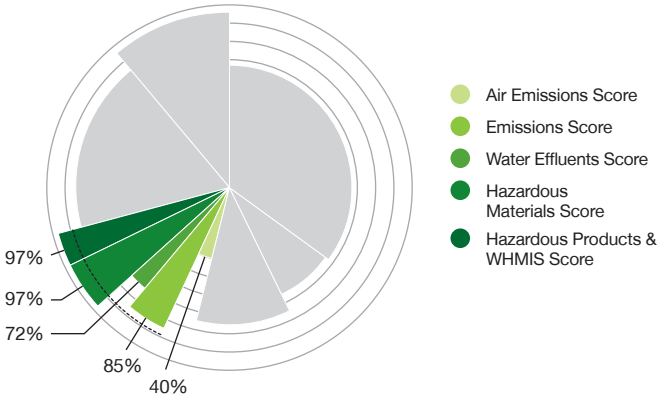
Figure 51 shows that points seem to be lost in the sub-categories of Boiler Emissions and Water Effluents, identifying an area where buildings have an opportunity for improvement.

Buildings have an opportunity to improve in the sub-categories of Boiler Emissions and Water Effluents.

Yonge Corporate Centre, Toronto, BOMA BEST Gold

FIGURE 51: AVERAGE EMISSIONS AND EFFLUENTS SUB-CATEGORY SCORES – ALL ASSET CLASSES

Overall Emissions & Effluents Category Score: 88.8%



INDOOR ENVIRONMENT

SLIGHT DECLINING TREND IN INDOOR ENVIRONMENT SCORES

Winfield Distribution Centre, Edmonton, BOMA BEST Bronze

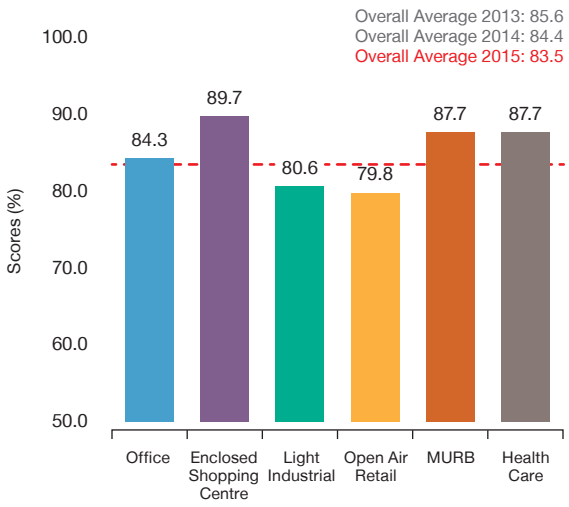
Slight declining trend in Indoor Environment scores

Since 2013, the average Indoor Environment scores appear to be declining by about 1 percentage point per year. Light Industrial showed the biggest increase in performance (3 percentage points) and performance in the Office asset class held steady. The biggest decline in performance is in the Open Air Retail asset class with a drop of almost 7 percentage points.

Figure 52 shows the average Indoor Environment scores across all asset classes and Figure 53 compares performance at a regional level. The averages shown under MURBs and Health Care are not considered representative due to the small number of Silver+ certifications (6 each) in these two asset classes.

The average Indoor Environment category score is 83.5%.

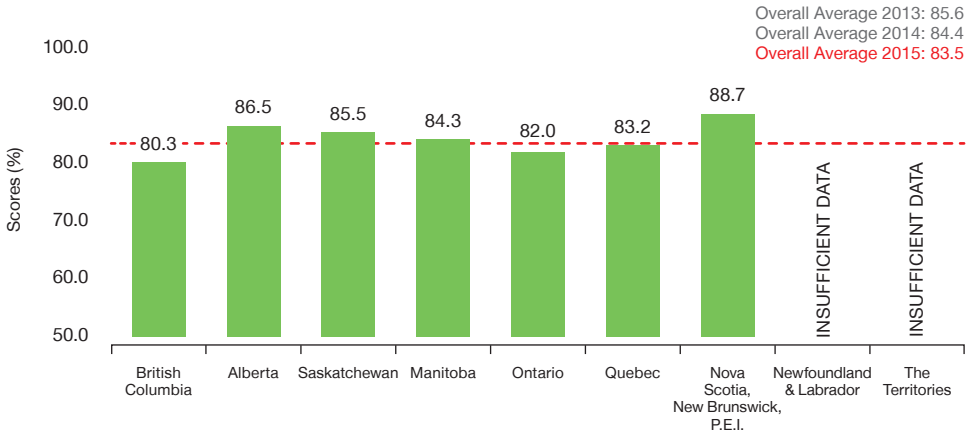
FIGURE 52: AVERAGE INDOOR ENVIRONMENT SCORE – ALL ASSET CLASSES



Reynolds Museum, Wetaskiwin, BOMA BEST Silver

Edmonton City Centre, Edmonton, BOMA BEST Silver

FIGURE 53: AVERAGE INDOOR ENVIRONMENT SCORE BY REGION – ALL ASSET CLASSES



7 INDOOR ENVIRONMENT

Le 1500, Montreal,
BOMA BEST Platinum

1075 North Service Road West,
Oakville, BOMA BEST Platinum

FIGURE 54: AVERAGE INDOOR ENVIRONMENT SCORE BY REGION – OFFICE

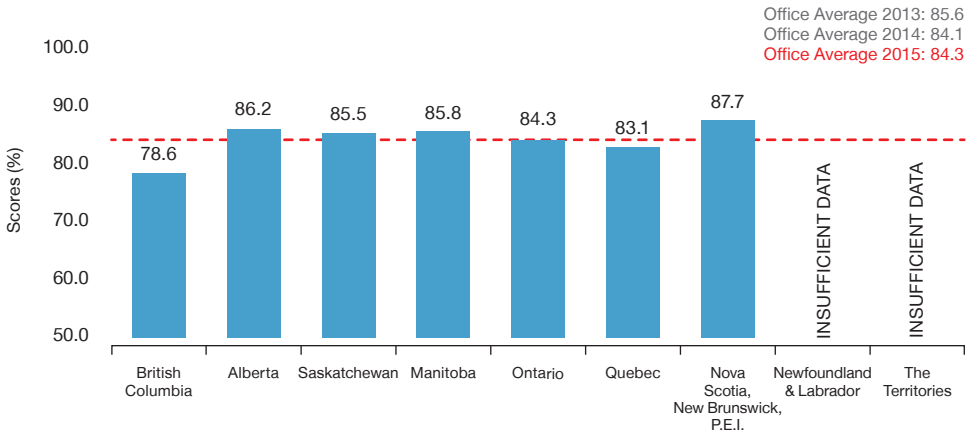
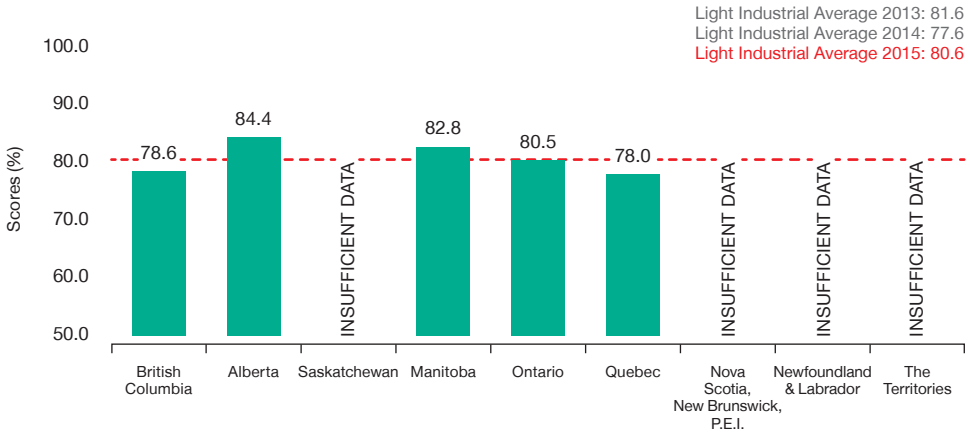


FIGURE 55: AVERAGE INDOOR ENVIRONMENT SCORE BY REGION – LIGHT INDUSTRIAL



Figures 54 and 55 show the average scores by region for the Office and Light Industrial asset classes. The ten Office buildings in Nova Scotia, New Brunswick and P.E.I. lead in this asset class with a 1.6 percentage point score increase in their overall score compared to the previous year. British Columbia's 27 Office buildings show the biggest drop in score – from 83.4% to 78.6% in 2015. In the Light Industrial asset class, Alberta leads with a score 3.8 percentage points better than average.

In the Open Air Retail asset class (Figure A37 in Appendix), Alberta and Quebec scored 30 percentage points higher than Ontario's score of 57.9%. Performance in Enclosed Shopping Centres (Figure A38 in Appendix) was highest in Quebec at 90% compared to Ontario's 88.3%.

Where are buildings scoring indoor environment points?

The Indoor Environment category represents about 15% of the total points achievable; however, it does vary between the asset classes: for Light Industrial, it is weighted at 11% and for Office buildings at 18%. To determine how well a particular building is performing in providing comfort to its occupants, the Indoor Environment category looks at a range of air quality and comfort issues. In this category, a building's performance is assessed across the following four sub-categories:

- **Indoor Air Quality (11%):** ventilation, filtration systems, humidification, cooling towers, parking and receiving, pollutant control, management
- **Thermal Comfort (<1%):** controllability, temperature, occupant survey
- **Lighting (3%):** blinds, light levels, controls, scheduling
- **Noise (<1%):** acceptable levels, acoustics

Note that this point allocation changed in BOMA BEST 3.0, which was launched in 2016 and will be analysed in future reports.

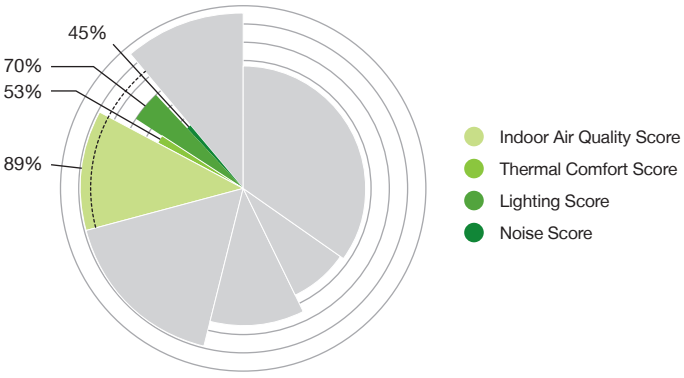
Figure 56 shows how the Silver+ certified buildings scored in each of the Indoor Environment sub-categories. The Indoor Air Quality sub-category represents about two thirds of the total Indoor Environment score.

The Thermal Comfort and Noise sub-categories are both weighted lower than the Indoor Air Quality category. Performance in this sub-category is driven by tasks such as conducting and acting on occupant comfort satisfaction surveys. These provide useful insight about how the building is performing from an occupant's perspective and can be done inexpensively via the internet.

Richmond Adelaide Centre, Toronto, BOMA BEST Gold

FIGURE 56: AVERAGE INDOOR ENVIRONMENT SUB-CATEGORY SCORE – ALL ASSET CLASSES

Overall Indoor Environment Score: 83.5%



ENVIRONMENTAL MANAGEMENT SYSTEMS

ENVIRONMENT MANAGEMENT SYSTEMS CONTINUE TO SCORE ABOVE 95%

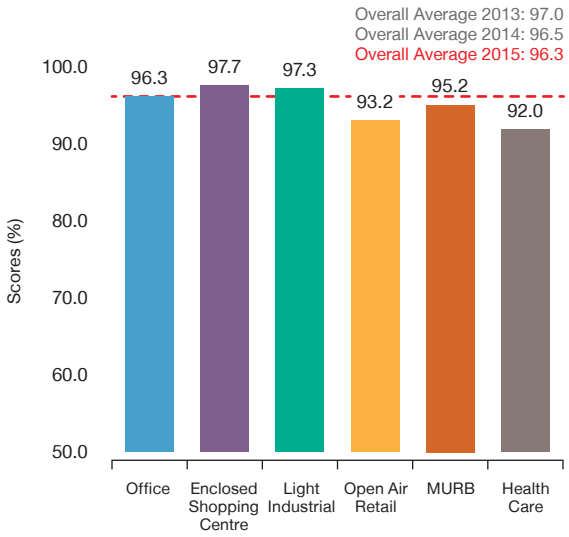
2 Research, Regina, BOMA BEST Gold

Environment Management Systems continue to score above 95%

The average score in the Environmental Management Systems (EMS) category for 2015 is 96.3%, a little less than 1% below performance from previous years. There was a 2.7% increase in Light Industrial scores and a 2.1% decrease in Open Air Retail compared to 2014. Across the regions, Nova Scotia, New Brunswick and P.E.I. lead in this category with the only score above 97% (the same as in 2014).

Figure 57 shows the average Environmental Management Systems (EMS) scores across all asset classes and Figure 58 compares performance at a regional level. The averages shown under MURBs and Health Care are not considered representative due to the small number of Silver+ certifications (6 each) in these two asset classes.

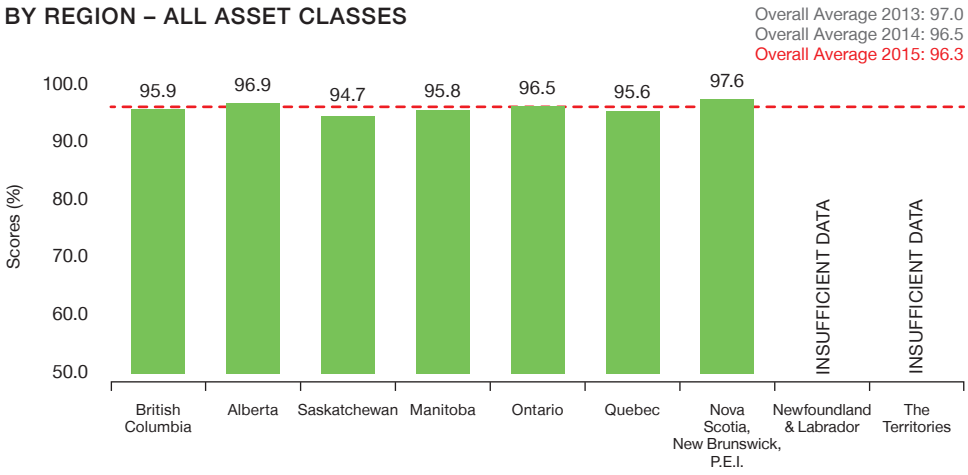
FIGURE 57: AVERAGE EMS SCORE – ALL ASSET CLASSES



McDougall Centre, Calgary, BOMA BEST Silver

Centennial Place, Calgary, BOMA BEST Platinum

FIGURE 58: AVERAGE EMS SCORE BY REGION – ALL ASSET CLASSES



The average Environmental Management Systems section score is 96.3%.

8 ENVIRONMENTAL MANAGEMENT SYSTEMS

FIGURE 59: AVERAGE EMS SCORE BY REGION – OFFICE

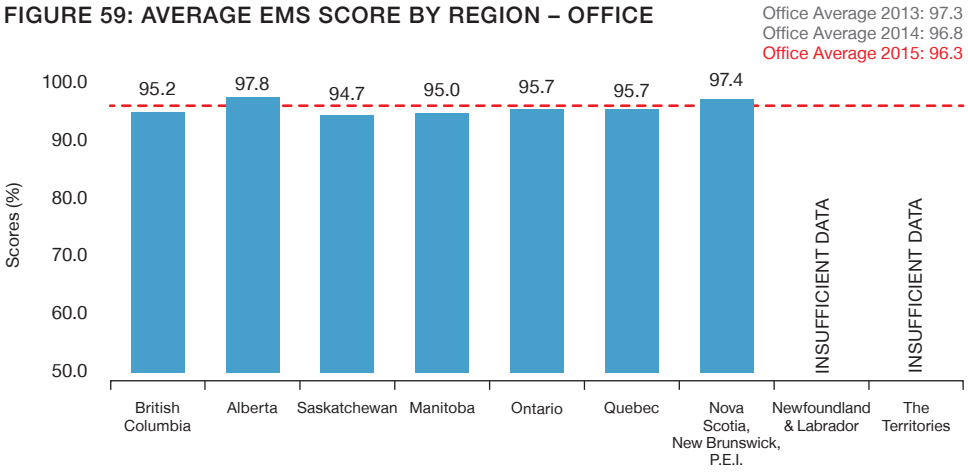
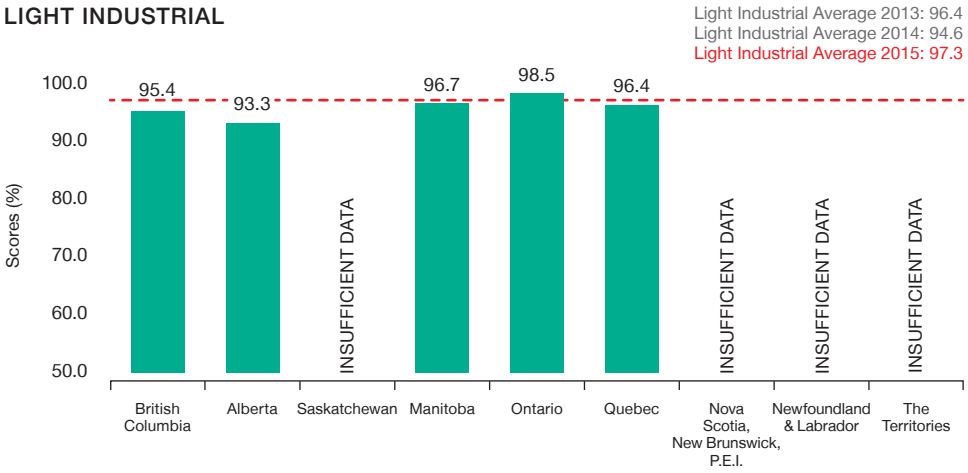


FIGURE 60: AVERAGE EMS SCORE BY REGION – LIGHT INDUSTRIAL



Figures 59 and 60 show the average scores by region for Office and Light Industrial. In the Office asset class, the average scores for British Columbia buildings dropped by 3.4 percentage points compared to 2014. In this same time span, Offices in Alberta increased their score by 1.6 percentage points. In the Light Industrial asset class, Ontario leads by 1.2 percentage points.

Quebec leads in the Open Air Retail asset class (Figure A39 in Appendix), with 94.6%, compared to 93.1% in Alberta and 90.8% in Ontario. In the Enclosed Shopping Centres asset class (Figure A40 in Appendix), Ontario and Quebec scored similarly – 96.1% and 97% respectively.

18107 Autoroute Transcanadienne, Kirkland, BOMA BEST Silver

Where are buildings scoring environmental management points?

The EMS category represents on average about 14% of the total achievable points. Again, there is some variation between asset classes – it is only 11% for Office Buildings and as much as 17% for Light Industrial Buildings. The EMS category assesses a building's performance in the following five sub-categories:

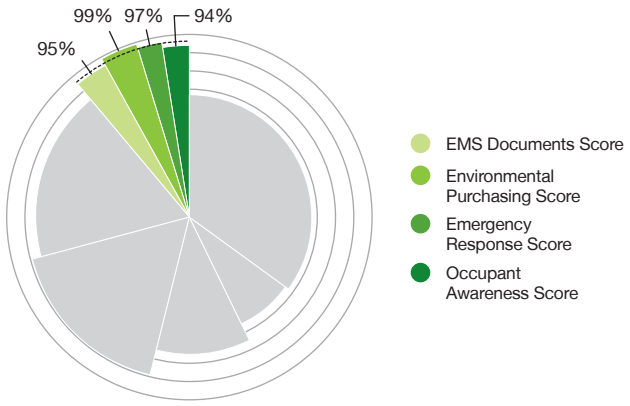
- **EMS Documents (4%):** policies, performance targets
- **Environmental Purchasing (3%):** preferred products for equipment, construction, cleaning
- **Emergency Response (2%):** plan, drawings, equipment
- **Tenant/Occupant Awareness (3%):** communications, initiatives (covering energy, water, waste etc.)
- **Community Environmental Contributions (2%)** (Enclosed Shopping Centres only)

Note that this point allocation changed in BOMA BEST 3.0, which was launched in 2016 and will be analysed in future reports.

Figure 61 shows how the Silver+ certified buildings scored in each of the Environmental Management Systems sub-categories. These different sub-categories are weighted almost equally and performance is very similar across the board.

FIGURE 61: AVERAGE ENVIRONMENTAL MANAGEMENT SYSTEMS SUB-CATEGORY SCORES – ALL ASSET CLASSES

Overall Energy Management Systems Category Score: 96.3%



SETON GATEWAY IN CALGARY:

A comprehensive approach to improving tenant experience and environmental performance in a shopping centre.

Seton Gateway, Calgary, BOMA BEST Gold

Seton Gateway, a community shopping centre development located in Calgary, Alberta and owned by **First Capital Realty**, achieved a **BOMA BEST Gold certification** with an overall score of 86 % in December 2015. Built in 2013, the property, comprising 128,000 square feet, is anchored by a Save on Foods grocery store, Shoppers Drug Mart as well as prominent national tenants including the Bank of Montreal and TD Canada Trust.

This diverse development has incorporated several programs across many environmental categories such as transportation, water, energy, waste, and indoor air quality.

Seton Gateway promotes alternatives for individual auto commuting to its tenants and their customers. Efforts to increase bicycle traffic include the introduction of designated **bike lanes** as part of the roadways within the site parking lot and common areas, a bicycle **repair station** equipped with tools and a vending machine for bicycle parts. Public transit is also available and is located within 50 meters of the shopping centre.

Sustainable design features include a number of measures to conserve water and improve storm water quality. **Low-flow fixtures** were installed in each individual tenant premises. To enhance the overall appearance of the property as well as minimize the need for irrigation, drought-resistant shrubs, plants and grasses were planted. A **bio-swale** was designed and implemented in the centre of the property which collects storm water from the parking lot and removes silt before discharging it into the storm sewer. This landscape feature was designed to reduce the potential for flooding and improve the quality of storm water leaving the site.

A comprehensive energy management program was implemented. Energy performance is not only measured by the property manager but also through a third-party service provider who is responsible for paying the energy bills, **tracking energy usage** and issuing **monthly energy reports**. Tenants are separately metered for their energy consumption. All exterior building and parking lot lighting utilizes energy saving LED light fixtures. Over 10 percent of the building's total energy use was supplied by renewable power, through solar panels situated on the rooftops of the multi-tenanted buildings within the shopping centre. The energy produced from the **60 kW solar installation**, one of the largest in the province, offsets the cost of illuminating all parking lot lighting and exterior decorative accent lighting throughout the property.

A comprehensive **tenant waste diversion program** was implemented to include recycling of plastic, glass and aluminum containers, fine paper, cardboard and newsprint. Typically, the waste diversion rate ranges from 50 to 59%.

9 METHODOLOGY

- Though this National Green Building Report is dated 2017, it follows the 2015 NGBR in regards to the data that is analysed. No year has been missed. The 2018 NGBR will analyse data from January 2016 to June 2017. Moving forward, analysed data will include the dates between July and June of the following year. The NGBR will be released in December.
- In previous reports, buildings certifying to Level 1 were excluded when reporting Energy Use Intensity (EUI), building scores, and other performance metrics since these properties may not have reported actual energy consumption data. For consistency with previous reports, buildings must have achieved a score of 70% or higher (Silver+) to be included in the analysis of EUI, scores, and other metrics (all tables starting in Section 2: Scoring). Except where explicitly stated, Certified/Bronze buildings are excluded from the report beyond Section 2.
- The new Bronze level is reported separately in order to reveal how the introduction of the 60-69% performance range impacts the overall dataset.
- The word "certified" is used interchangeably in the report. Depending on the context it may refer to the minimum BOMA BEST certification level achieved, i.e. a score of 0-59%. In other cases it refers to the group of buildings that achieved BOMA BEST certification (irrespective of their certification level achieved). The use of the word in context will infer its meaning.
- This year's report contains only BOMA BEST Version 2 buildings. The reports of previous years combined metrics data from both BOMA BEST Versions 1 and 2. Future reports will also introduce data from BOMA BEST 3.0.
- In the BOMA BEST assessment platform, there is no field to enter the sector of the property. Public/Private sectors were determined by the name of the owner. This question has been added to BOMA BEST 3.0.
- In some cases, totals may not be equal to 100% due to rounding (e.g. Figure 10).
- When calculating the performance of recertified buildings, data from only 334 buildings (out of 441) could be used for this purpose due to incomplete data.
- Climate zones were determined by cross-referencing the city name with a table created from Natural Resources Canada's Energy Star climate zones[2]. Where the city/town was not explicitly listed, the climate zone of the closest listed city/ town was applied.

Ukrainian Cultural Heritage Village, Mundare, BOMA BEST Silver

- Entries with no Energy or Water Use Intensity data (EUI or WUI), or no entered value, were excluded from the analysis.
- Statistical outliers in the dataset were excluded. These rules are the same as those applied in previous years and include the following:
  - Overall EUI values were considered to be outliers if greater than 200 ekWh/ft^2/yr or less than 10 ekWh/ft^2/yr.
  - Natural Gas EUI values were considered to be outliers if greater than 30 ekWh/ft^2/yr of natural gas use.
  - Water Use Intensity (WUI) values were considered to be outliers if greater than 20 m^3/m^2/yr or less than 0.1 m^3/m^2/yr.
- In calculating the Waste Diversion Rate, the values of N/A and 0 for "no data" are treated as "unknown".
- In all tables, values of N/A were excluded from the dataset. This may lead to some variability in the reported sample size.
- For the All Buildings Radial Pie chart analysis (such as Figure 9), a weighted average was used to determine the relative weighting of each of the six BOMA BEST categories. Each BOMA BEST Asset Class has a slightly different weighting for each category.

[2] Natural Resources Canada. Climate Zones for ENERGY STAR qualified Windows, Doors and Skylights. 2011. Retrieved from http://www.nrcan.gc.ca/energy/products/categories/fenestration/13954

9 METHODOLOGY

- Changes to scores relative to a baseline are reported in two ways:
  - As a relative percentage change, for example a change in score from 78% to 80% represents a 2.6% change in score.
  - As an absolute percentage change: for example a change in score from 78% to 80% represents a 2 percentage point change in score.
- At a national level, if fewer than 15 buildings achieved Silver+ certification in a particular asset class, comparisons were not performed as the data set were deemed too small to be representative. Therefore, MURBs and Health Care were excluded from the analysis.
- At a regional level, if fewer than 5 buildings achieved Silver+ certification in a particular asset class, performance results were not reported and instead listed as "Insufficient Data". In the table below, the cells shaded in grey indicate the provinces/asset classes where this occurred.

ROW LABELS	OFFICE	ESC	LI	OAR	MURB	HC	TOTAL (per province)
British Columbia	**27**	4	**7**	2	3	no data	**43**
Alberta	**85**	4	**13**	**11**	no data	2	**115**
Saskatchewan	**15**	no data	no data	no data	no data	no data	**15**
Manitoba	**6**	no data	**6**	no data	no data	no data	**12**
Ontario	**106**	**7**	**68**	**8**	2	no data	**191**
Quebec	**48**	**7**	**18**	**9**	1	4	**87**
Nova Scotia & New Brunswick/P.E.I.	**10**	1	no data	no data	no data	no data	**11**
Newfoundland & Labrador	1	no data	no data	no data	no data	no data	**1**
Northwest & Yukon Territories	1	no data	no data	no data	no data	no data	**1**
Total (per Asset Class)	**299**	**23**	**112**	**30**	**6**	**6**	**476**

10 LIST OF ACRONYMS

BOMA: Building Owners and Managers Association

BOMA BEST: BOMA Building Environmental Standard

ekWh/ft²/yr: Equivalent kilowatt hour per square foot per year

EMS: Energy Management System

EUI: Energy Use Intensity

GJ/m²/yr: Gigajoules per square metre per year

LPF: Litres per Flush

m³/m²/yr: Cubic meter per square metre per year

MURB: Multi-Unit Residential Building

NGBR: National Green Building Report

NO_x: Nitrogen Oxide

NRCan: Natural Resources Canada

P.E.I: Prince Edward Island

WHMIS: Workplace Hazardous Materials Information System

WUI: Water Use Intensity

11 LIST OF FIGURES

APPENDIX

Additional figures and tables are available in the Appendix which can be downloaded from the BOMA BEST website.

BOMA BEST® Building Environmental Standards

BOMA Canada

bomacanada.ca/bomabest/

Ce rapport est aussi disponible en français.

This report was prepared with assistance from WSP Canada Inc.

WSP

Cover Image: Broadway Tech Centre – Building 4, Vancouver, BOMA BEST Gold