Benchmarking, BOMA BEST and BBEER

John Smiciklas
Director, Energy and Sustainability
BENCHMARKING – What and Why?

Ongoing review of energy consumption to answer the question:

“Is my building’s energy performance better or worse than ...?”

Energy Use Intensity (EUI) =

\[
\text{total energy consumed in one year (ekWh)} / \text{total floor space of the building (ft}^2)\]
BENCHMARKING – Benefits

- reliable **information** on energy use and benefits of improvements;
- **prioritize** poorly performing facilities for immediate improvement;
- identify best practices that can be **replicated**;
- comprehensive **energy management action plan**;
- build the **business case** for capital investments (retrofits);
- **reference points** for measuring and rewarding good performance;
- increase **awareness** of energy efficiency among building occupants.

Source: NRCan
Building Environmental Standards (BES) 

- Environmental performance and management practices of existing buildings 
- Five modules for existing buildings 
- Healthcare Module to be launched in spring/summer 2014
ABOUT BOMA BEST – Program Description

- Six areas of management and performance:
  - Offered in both Official Languages
  - Accessible: user friendly, affordable and inclusive
  - BOMA BEST: ENERGY
  - BOMA BEST: WATER
  - BOMA BEST: WASTE REDUCTION & SITE ENHANCEMENT
  - BOMA BEST: EMISSIONS & EFFLUENTS
  - BOMA BEST: INDOOR ENVIRONMENT
  - BOMA BEST: ENVIRONMENTAL MANAGEMENT SYSTEM
BOMA BES$t Energy and Environmental Report (BBEER)

- **Average energy intensity by:**
  - Region
  - Certification level
  - Sector (private / public) and age
  - Building size

- **Average natural gas use by region**

- **Average electricity use by region**

- **Carbon dioxide emissions by:**
  - Sector and region
  - Sector and age

- **Water consumption by:**
  - Sector and region
  - Building size
  - Sector and age

Download your free copy from [www.bomabest.com](http://www.bomabest.com)
BEEER 2013 – Rich in Case Studies

LEADER IN REDUCING SITE IMPACT:

HEAD-SMASHED-IN BUFFALO JUMP INTERPRETIVE CENTRE, FORT MACLEOD

LEADER IN INNOVATION ENVIRONMENT:

BAYVIEW @ COAL HARBOUR, VANCOUVER

LEADER IN ONGOING COMMISSIONING:

LE WINDSOR, MONTREAL

COLLABORATION FOR ENERGY CONSERVATION AT BELL TRINITY SQUARE, TORONTO

YALETOWN 939 VANCOUVER

25 YORK STREET, TORONTO

EASTING BUILDING COMMISSIONING AT COMMERCE COURT

LEADER IN WATER CONSERVATION:

ESL-IC-13-10-36

Proceedings of the 13th International Conference for Enhanced Building Operations, Montreal, Quebec, October 8-11, 2013
Buildings are improving their score at recertification from Level 2 (78.3%) to Level 3 (81%).

**Figure 2: BOMA BEST Scores – Certification vs. Recertification**
Forty-six percent (46%) of BOMA BESt certified office buildings in the sample have energy use intensities between 23 and 33 ekWh/ft²/yr.

Energy efficiency features are not the only indicators of good energy performance; effective management practices must also be present.

BOMA BESt buildings have avoided emitting 160,240 Mt of CO₂. This represents the equivalent of removing 33,383 cars from the road for one year, or the capacity of 82,090 square city blocks of pine forest to store CO₂ for one year.
BOMA BESst buildings are reducing their EUI at recertification

**FIGURE 3: BOMA BEST EUI – CERTIFICATION VS. RECERTIFICATION**

- Initial Certification
- Recertifications
**BBEER 2013 RESULTS: ENERGY (Office)**

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

<table>
<thead>
<tr>
<th>Year</th>
<th>kWh/ft²/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>30.76</td>
</tr>
<tr>
<td>2011</td>
<td>30.80</td>
</tr>
<tr>
<td>2010</td>
<td>31.52</td>
</tr>
<tr>
<td>2009</td>
<td>31.85</td>
</tr>
<tr>
<td>2008</td>
<td>32.77</td>
</tr>
</tbody>
</table>

**FIGURE 19: AVERAGE ENERGY SCORE FOR OFFICE BUILDINGS, BY REGION**

- Northwest Territories: 60.0%
- Atlantic: 64.8%
- Quebec: 68.6%
- Ontario: 63.4%
- Manitoba: 63.6%
- Saskatchewan: 66.7%
- Alberta: 64.8%
- British Columbia: 64.2%

Average: 65.7%
FIGURE 23: EUI DISTRIBUTION OF CERTIFIED OFFICE BUILDINGS

- Median: 27.84
- Average: 30.76
EUI vary significantly across each region.
Energy efficiency features are not the only variable critical to good building performance
Total carbon dioxide from all buildings in the 2013 BBEER is 597,025 Mt

**Figure 49: CO₂ Emissions of Certified Office Buildings, by Region and Sector**

**Figure 51: CO₂ Emissions of Certified Office Buildings, by Age and Sector**
• Overall average water consumption intensity for BOMA BESst certified office buildings is 0.6 m³/m² – a 70% improvement on the national average of 2.03 m³/m²

• The majority of BOMA BESst buildings have implemented management practices and technologies which achieve water use reduction.
BBEER 2013 RESULTS: Waste Reduction (Office)

- Average section score for this section is 80.7%.
- Forty five percent (45%) of buildings divert between 30 – 59% of their waste from landfill while a smaller percentage diverts between 60 – 90%.

**Figure 60: Waste Reduction & Site Score of Certified Office Buildings, by Region**

- Northwest Territories: 78.3%
- Atlantic: 80.4%
- Quebec: 80.5%
- Ontario: 85.1%
- Manitoba: 67.8%
- Saskatchewan: 77.8%
- Alberta: 77.3%
- British Columbia: 78.0%

**Figure 61: Waste Diversion Rates of Certified Office Buildings**

- Unknown: 29 (9%)
- Under 30%: 103 (30%)
- 30 – 59%: 49 (14%)
- 60 – 90%: 151 (45%)
- Above 90%: 7 (2%)
Scores for reducing emissions and effluent remain high across the country, which suggests that managers of BOMA BEST certified buildings have a strong commitment to implementing effective management practices for hazardous materials and products.
• BOMA BEEst certified buildings across the country achieve consistently high scores (mid 80s) for indoor environment management and practices.
BBEER 2013 RESULTS: EMS (Office)

- BOMA BES\textsuperscript{t} certified buildings achieved consistently high scores (high 90s) on the Environmental Management System section: most buildings have documented environmental policies and tenant communications strategies.

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

- Northwest Territories: 100
- Atlantic: 95.9
- Quebec: 97.8
- Ontario: 91.7
- Manitoba: 89.2
- Saskatchewan: 94.6
- Alberta: 98.2
- British Columbia: 98.1

Average: 95.6
Questions?

Thank you.

John Smiciklas, Director, Energy and Sustainability
jsmiciklas@bomacanada.ca
(416) 214-1912 ext. 102