BOMA BEST
BUILDING CERTIFICATION PROGRAM

Creating better spaces
to live, work and play

BOMA BEST 4.0
QUESTIONNAIRE FOR SUSTAINABLE BUILDINGS

LIGHT INDUSTRIAL
TECHNICAL FIELD GUIDE

June 2023

BOMA BEST
SUSTAINABLE

TABLE OF CONTENTS

ENERGY AND CARBON

TABLE HEADINGS EXPLAINED

Focus Area	The broad thematic group within the BOMA BEST assessment framework, e.g., Energy and Carbon
Topic	The subject being assessed within the specific Focus Area, e.g., Assessment
#	Unique question number, e.g., E3.1a – Benchmarking Energy Use
Question	Unique question asked about the building's management or operations practices, e.g., Is the whole building's energy use available and benchmarked?
Answer	Different answer options available based on what is in place at the building, e.g., Yes or No, Select all that apply, Select one of the following, or data entry
Points available	The number of points available for each answer option. Also see "Max. Points Available"
Max. Points Available	Maximum number of points available if the specific question requirements are met. Baseline means that a question is mandatory and requirements must be met to achieve BOMA BEST certification
Description	Brief background about the topic and question
Requirements	What is required to demonstrate compliance
Documentation	What documentation is needed as proof to demonstrate compliance
Adapted BB3 Question	The corresponding BOMA BEST 3.0 question that was adapted in the new BOMA BEST 4.0 questionnaire. Applicants need to fulfill the new BOMA BEST 4.0 requirements.
Applicability	Clarification about whether the question is applicable to a specific asset class or not, e.g., Not Applicable to Enclosed Shopping Centres, Multi-Unit Residential or Universal Buildings For all applicable asset classes, the requirements apply to the systems managed by the owner or landlord, owner or building manager.
Suggested Lead	In-house unless stated otherwise. "Third-party" means the work may be done by a third-party as the expertise is not typically found in-house. The work can be done in-house if someone from the building management, operations or sustainability team is able to fulfill the requirements

Focus Area	The broad thematic group within the BOMA BEST assessment framework, e.g., Energy and Carbon
Topic	The subject being assessed within the specific Focus Area, e.g., Assessment
#	Unique question number, e.g., E3.1a – Benchmarking Energy Use
References	Links to resources that may be consulted if further guidance is needed to fulfill requirements
Crosswalk	Reference to other certifications that have similar criteria as the specific BOMA BEST question. Applicants can use submittals from other certifications achieved if they can demonstrate that those materials also satisfy the BOMA BEST requirements
Other Notes	Any pertinent information not covered under other headings

ENERGY AND CARBON	E0. BASELINE PRACTICES
Focus Area:	**Energy & Carbon**
Topic:	**Baseline Practices**
Question:	**E1.0b — Energy and Carbon Assessment** **Has the energy efficiency and carbon emissions of systems managed by the owner or landlord been assessed in the last five years?**

Answer
Select one of the following:
- Yes - Complete BOMA BEST Form E1.0b
- Not applicable

Max. Points Available
Minimum requirement, this is a baseline practice

Description
The most effective energy reduction strategies will focus efforts on the end uses with the highest consumption. Building operations and management teams should determine the largest end uses and consider opportunities for sub-metering significant loads, such as tenant process loads or mechanical equipment.

Requirements
For all building components managed by the owner or landlord, provide:

A. Building and system description and review – clearly distinguish between systems that are owned vs managed vs maintained by the owner, landlord or tenant
B. Energy utility history (at least 12 months of continuous data, typically the previous 24-36 months of data) for each energy source
C. Greenhouse Gas inventory or Carbon emission history (at least 12 months of continuous data, typically the previous 24-36 months of data) for each carbon source
D. Low- and no-cost energy conservation and/or carbon reduction measures, with high level costing, simple payback and anticipated savings
   - If no savings measures are identified, state why.

Refer to Other Notes.

Documentation
- Limited Scope Energy and Carbon Assessment Report

Adapted BB3 Question
New in BOMA BEST 4.0

E1.0b — Energy and Carbon Assessment - cont'd

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail and Multi-Unit Residential buildings

Suggested Lead
In-house, with third party support if required

References
ASHRAE Level I Audit: https://www.techstreet.com/ashrae/standards/ashrae-211-2018?product_id=2016437
Benchmarking without an Energy Star score: https://natural-resources.canada.ca/energy-efficiency/energy-star-canada/benchmarking-frequently-asked-questions/3787#es8
Energy Star Greenhouse Gas Emissions: https://portfoliomanager.energystar.gov/pdf/reference/Emissions.pdf

Crosswalk
N/A

Other Notes
If the owner or landlord only manages for example the exterior parking lighting or common-area energy at the building, provide the energy and carbon data for these systems, as well as an assessment of the efficiency of the systems. If the systems were recently upgraded and no energy conservation or carbon reduction is currently feasible, state that too.

For all systems managed by the tenant, the applicant (representing the owner or landlord) is expected to outline those as well, though no energy or carbon assessment is required for these systems.

ENERGY AND CARBON	E0. BASELINE PRACTICES
Focus Area:	**Energy & Carbon**
Topic:	**Baseline Practices**
Question:	**E13.0 — Owner or landlord Shares Energy and Carbon Practices** **Has the owner or landlord shared an Energy and Carbon Management Communication Plan with the building tenants?**

Answer
Select one of the following:
- Yes
- Not applicable

Max. Points Available
Minimum requirement, this is a baseline practice.

Description
Increasing building tenant and occupant awareness and engagement in environmental and sustainable practices can have a significant positive or negative impact on the performance of the building.

Improving the environmental performance of the building can Suggested Lead to many positive outcomes for building management, staff and tenants, including but not limited to lower operational costs, lower utility bills, improved indoor air quality, improved management-tenant relationships, etc.

Requirements
A. Develop an Energy and Carbon Management Communication Plan that covers the following:
   - The building management team's efforts to manage energy and carbon
   - Energy and carbon assessment, tips for operations and maintenance optimisation, lighting and HVAC efficiency and the value of sub-metering

B. Copies of communication with the building's tenants where the content of the building Energy and Carbon communication plan was shared, dated within the past 12 months.

C. Demonstrate that communication was distributed to at least half of the number of tenant organizations occupying the building or to a group that leases at least half of the total building area

Documentation
- Building-specific Energy and Carbon Management Communication Plan
- Proof of communication with representative group of building tenants, covering energy and carbon assessment, tips for operations and maintenance optimisation, lighting and HVAC efficiency and the value of sub-metering

Adapted BB3 Question
Best Practice 2 – Has an ASHRAE Level 1 Energy Assessment been conducted in the last five (5) years? and Best Practice 16 – Is an Occupant Environmental Communication Program in place at the building?

E13.0 — Owner or landlord Shares Energy and Carbon Practices - cont'd

Applicability
Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

ENERGY AND CARBON	E1. ASSESSMENT
Focus Area:	**Energy & Carbon**
Topic:	**Assessment**
Question:	**E1.1 — Mechanical System Assessment** **Has a Condition Assessment of the mechanical systems and components been completed in the past five years?**

Answer

Select one of the following:	Points available:
- Yes	5
- No	0

Max. Points Available

5 - Pick one answer

Description

The condition assessment contains a list of tactical and strategic items that are used to gather a better understanding of how the building is operating in its present state and how funds need to be saved and/or allocated to repair or replace various items. Tactical items are those that will require attention within the first five years of the report's completion. Strategic items are those that are looked at after five years and are typically reviewed in the 10-year capital asset management plan.

Requirements

A. The Mechanical Systems Condition Assessment must:
B. List the mechanical equipment, installation date and anticipated remaining useful life
C. Indicate required replacement date, highlighting equipment that will require replacement in the next 10 years

Documentation

- Condition Assessment Report of Mechanical Systems (excerpt from Building or Property Condition Report containing relevant information is sufficient)

Adapted BB3 Question

Question 09.02.01 — Has a property condition assessment (PCA) report been completed for this building within the past five years?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

Third-party

E1.1 — Mechanical System Assessment - cont'd

References
Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process (ASTM E2018-08): https://webstore.ansi.org/standards/astm/astme201801?gclid=EAIaIQobChMI3oWi6KrF_AIVYsmUCR3YqQjpEAAYAiAAEgKUjvD_BwE

Crosswalk
N/A

Other Notes
None

ENERGY AND CARBON	E1. ASSESSMENT
Focus Area:	**Energy & Carbon**
Topic:	**Assessment**
Question:	**E1.2 – Envelope Assessment** **Has a Condition Assessment of the envelope and envelope components been completed in the past five years?**

Answer

Select all that apply:	Points available:
- Yes — Thermal Scan/Air Tightness Test	2
- Yes — Condition Assessment of Envelope	3
- No	0

Max. Points Available

5 - Pick all that apply

Description

The Condition Assessment contains a list of tactical and strategic items that are used to gather a better understanding of how the building is operating in its present state and how funds need to be saved and/or allocated to repair or replace various items. Tactical items are those that will require attention within the first five years of the report's completion. Strategic items are those that are looked at after five years and are typically reviewed in the 10-year capital asset management plan.

Requirements

A. The Thermal Imaging Scan/Air Tightness Test must:
   - Cover all roof and wall components
   - Identify areas where higher-than-normal thermal transfer occurs

B. The Envelope Assessment must:
   - List the envelope (roof, wall, skylight, etc.) components, installation date and anticipated remaining useful life
   - Provide a summary of the performance of the building envelope in terms of water infiltration and condensation, moist air transfer, air flow and heat transfer
   - Indicate required replacement date, highlighting components that will require replacement in the next 10 years

Documentation

- Thermal Imaging Scan/Air Tightness Test
- [For additional points] Condition Assessment Report of Envelope (excerpt from Building or Property Condition Report containing relevant information is sufficient)

E1.2 – Envelope Assessment - cont'd

Adapted BB3 Question
Question 01.02.04 — Has a thermal imaging scan of the roof or walls been performed within the past five years? Question 09.02.01 — Has a property condition assessment (PCA) report been completed for this building within the past five years?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
Third-party

References
ASHRAE Level II Audit: https://www.techstreet.com/ashrae/standards/ashrae-211-2018?product_id=2016437
Energy Star Carbon Emissions: https://portfoliomanager.energystar.gov/pdf/reference/Emissions.pdf
Carbon Risk Real Estate Monitor (CRREM) Global Pathways: https://www.crrem.org/

Crosswalk
N/A

Other Notes
- High-performance building envelope features include:
- Air sealing, interior/exterior shading, automated shading controls
- Double-paned glazing, including high-performance window assembly, double-paned glazing with low-emissivity coating, including high-performance window assembly
- Triple-paned glazing, including high-performance window assembly, triple-paned windows with low-emissivity coating, including high-performance window assembly
- Electrochromic glazing and built-in photovoltaics
- Foundation insulation that is at least 20% better than current code, roof insulation that is at least 20% better than current code, wall insulation that is at least 20% better than current code
- Natural ventilation when outdoor conditions are favourable

ENERGY AND CARBON	E1. ASSESSMENT
Focus Area:	**Energy & Carbon**
Topic:	**Energy and Carbon Assessment**
Question:	**E1.3b — Owner or landlord informs, tenant manages energy** **Does the owner or landlord conduct visual inspections of tenant-managed energy systems each year?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0
- Not applicable – lease prohibits landlord from inspecting any tenant-managed systems	-

Max. Points Available

3 - Pick one answer

Description

Assessments allow building management to identify opportunities for operational optimization and capital upgrades, focusing on the highest impact systems and areas.

The purpose of the visual inspection is to identify potential energy savings opportunities and provide general condition oversight.

Requirements

A. Conducting a visual inspection of tenant-managed energy systems that serve tenant leased spaces, covering the following as applicable:
   - Lighting (interior and exterior)
   - HVAC (cooling, heating, air distribution, ventilation and exhaust systems)
   - Heating, chilled, condenser and domestic water systems and associated pumps
   - Refrigeration
   - Onsite power generation equipment, including renewable energy systems
   - Uninterruptible power supplies, power distribution units and critical power systems
   - Data centres and information technology infrastructure
   - Plug loads (including Office equipment, personal computers and appliances)
   - This must cover a group of tenants that lease at least half of the total building area
   - Visual inspection forms must be shared with tenants

OR

B. Submit excerpt from lease which details restrictions to landlord access of tenant spaces

E1.3b — Owner or landlord informs, tenant manages energy - cont'd

Documentation

- The most recent visual inspection forms of tenant spaces
- Communication in which the results of this visual inspection was shared with tenants
- Evidence that the inspections cover at least half of the area of the building

OR Excerpt from lease

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead
In-house

References
ASHRAE Level I Audit: https://www.techstreet.com/ashrae/standards/ashrae-211-2018?product_id=2016437

Crosswalk
N/A

Other Notes
None

ENERGY AND CARBON	E2. PLANNING
Focus Area:	**Energy & Carbon**
Topic:	**Planning**
Question:	**E2.1b — Net Zero Transition Target** **Question** **Does your organisation have a net zero carbon reduction target?**

Answer

Select one of the following: Points available:

- Yes 4
- No 0

Max. Points Available

4 - Pick one answer

Description

Net Zero Transition Plans include prioritized energy and carbon reduction measures to be implemented in order to reach net zero carbon emissions by a date established by the organization, with periodic milestones included. Update previous energy management practices by including carbon-specific goals and strategies.

Plans may incorporate assessment of indirect emissions from tenant operations and investigate additional sources of carbon emissions, such as employee commuting, business travel, purchased materials and embodied carbon of materials included in retrofit projects.

Requirements

A. A net zero reduction target must be identified along with a timeframe for completion
B. Targets must be put into writing, signed by senior management and reviewed annually.

Documentation

- Any documentation that details your organisation's net zero reduction target (how much CO2e by what year)

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead

In-house

E2.1b — Net Zero Transition Target - cont'd

References
Carbon Risk Real Estate Monitor (CRREM): https://www.crrem.eu/
Task Force on Climate-Related Financial Disclosures (TCFD): https://www.fsb-tcfd.org/

Crosswalk
N/A

Other Notes
The net zero reduction target can be established to encompass either all utilities as a whole or divided into each type (electricity, gas etc.) of utility under the owner or landlord's control.

ENERGY AND CARBON	E2. PLANNING
Focus Area:	**Energy & Carbon**
Topic:	**Planning**
Question:	**E2.2 — Capital Plan** **Are high-cost energy conservation or carbon reduction measures from the assessment included in the capital plan?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available

3 - Pick one answer

Description

Energy conservation and carbon reduction measures require capital investment. The capital plan typically outlines building management and operational spending over a 10-year timeframe. Start planning for ECM or CRM implementation early, spread costs and efforts across multiple years to manage budget expenditures and scale of retrofit projects.

Requirements

The relevant section in the Capital Plan must include:

A. A list of capital projects identified through the energy, carbon and condition assessments
B. Evidence of allocation of budget
C. Implementation timelines
D. Evidence that improvement solutions will achieve energy conservation and carbon reduction

Documentation

- Relevant section of Capital Plan

Adapted BB3 Question

Question 01.01.03 — Does the Capital Plan include measures to ensure continuous improvement of the energy efficiency of the building envelope?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

E2.2 — Capital Plan - cont'd

References
None

Crosswalk
N/A

Other Notes
None

ENERGY AND CARBON	E3. BENCHMARKING
Focus Area:	**Energy & Carbon**
Topic:	**Benchmarking**
Question:	**E3.1b — Sub-Metered Data** **Is any sub-metered energy use available for the most recent 12 months?**

Answer

Select one of the following:

	Points available:
- Yes	2
- No	0

Max. Points Available

2 - Pick one answer

Description

Sub-meters measure the energy consumption of specific areas or equipment, providing property owners and managers with the ability to understand where and how building energy is being used

Requirements

For any sub-metered energy data available:

A. Provide monthly sub-metered energy data in table format
B. Provide energy sub-meter details, such as make, model, location, photo and year of installation
C. Indicate whether any energy is generated and used on-site and whether that use has been sub-metered

Documentation

- Most recent 12 months of sub-metered energy use
- Narrative of data collection methodology and sub-meter data, if available

Adapted BB3 Question

Question 01.03.02 — Does building management track and monitor building performance and consumption patterns?

Applicability

Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail or Multi-Unit Residential buildings

Suggested Lead

In-house

References

None

E3.1b — Sub-Metered Data - cont'd

Crosswalk
N/A

Other Notes
MURBs have the option of completing Question E3.1a if whole building data is available.

ENERGY AND CARBON	E3. BENCHMARKING
Focus Area:	**Energy & Carbon**
Topic:	**Benchmarking**
Question:	**E3.2b — Benchmarking Carbon Emissions** **Are the carbon emissions available for the systems and equipment managed by the owner or landlord?**

Answer

Select one of the following:	Points available:
- Enter most recent greenhouse gas (GHG) emissions intensity (kgCO2e/ft^2)	2
- No	0

Max. Points Available

2 - Pick one answer

Description

It is important to establish carbon baselines to enable measurement and tracking of progress toward net zero goals.

Portfolio owners may also benchmark their properties against other buildings within their portfolio to evaluate comparative progress and prioritize asset renewals.

Requirements

A. Determine the most recent whole building greenhouse gas (GHG) emissions intensity (kgCO2e/ft^2) as follows:
   - Enter whole building carbon emissions data under the benchmarking section of the BOMA BEST portal (bomabesthub.com), direct and indirect emissions
   - If whole building carbon emissions are calculated by adding data from different bills or sub-meters, provide a brief narrative describing the methodology applied. Show how the 12-month total use was calculated
   - If any spaces were excluded, provide a brief narrative describing the methodology applied
   - For any sub-meters referenced, provide details, such as make, model, location, photo and year of installation

Documentation

- Data Verification Checklist printed from Energy Star or a screenshot from BOMA BEST Benchmarking section showing the GHG emissions intensity
- Narrative of benchmarking methodology and sub-meter data, if available
- Emission factors per fuel type and reference source

Adapted BB3 Question

New in BOMA BEST 4.0

E3.2b — Benchmarking Carbon Emissions - cont'd

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail and Multi-Unit Residential buildings

Suggested Lead
In-house, with third-party support if needed

References
Energy Star - https://www.energystar.gov/buildings/benchmark/understand_metrics/how
Energy Star Portfolio Manager - https://portfoliomanager.energystar.gov/pm/login.html
Energy Star Building Emissions Calculator (US only) - https://portfoliomanager.energystar.gov/buildingEmissionsCalculator/
US EPA - https://www.epa.gov/climateSuggested Leadership/ghg-emission-factors-hub
Canadian Regional Median Greenhouse Gas Emissions Intensity - https://www.nrcan.gc.ca/sites/nrcan/files/energy/pdf/NewGHGI-EnglishClean.pdf
Building Benchmark BC - https://buildingbenchmarkbc.ca/
BC Government PSO - https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/methodology/2020-pso-methodology.pdf
Montreal's Bylaw – https://montreal.ca/en/articles/law-concerning-ghg-emission-disclosures-and-ratings-large-buildings-20548#:~:text=The%20By%2Dlaw%20concerning%20greenhouse,order%20to%20reduce%20-their%20consumption
Greenhouse Gas Protocol - https://ghgprotocol.org/corporate-standard
Institute for Global Environmental Strategies - https://www.iges.or.jp/en/pub/list-grid-emission-factor/en
European Environmental Agency - https://www.eea.europa.eu/ims/greenhouse-gas-emission-intensity-of-1

Crosswalk
N/A

Other Notes
Energy Star defines Greenhouse Gas (GHG) Emissions as follows - https://portfoliomanager.energystar.gov/pm/glossary#GHGemissions
Calculate GHG emissions for the building based on the utility data available, direct and indirect emission factors in the region and systems controlled by the owner or landlord.

ENERGY AND CARBON	E3. BENCHMARKING
Focus Area:	**Energy & Carbon**
Topic:	**Benchmarking**
Question:	**E3.3 – Third-Party Recognition** **Has the building's energy use or carbon emissions been certified by, reported to or recognized by a third party?**

Answer

Select all that apply:	Points available:
- Yes — Energy Star Certification or equivalent achieved	1
- Yes — GHGs reported to third party	1
- Yes — Organization has disclosed net zero targets publicly	1
- Yes — Organization's targets are science-based	1
- No	0

Max. Points Available

4 - Pick all that apply

Description

Select all that apply:

- Yes — Energy Star Certification or equivalent achieved
- Yes — GHGs reported to third party
- Yes — Organization has disclosed net zero targets publicly
- Yes — Organization's targets are science-based

Requirements

Third-party verification of data demonstrates accountability to following best practices for collecting and reporting energy and carbon data. Certifications from well-respected, high-performance building programs demonstrate commitment to operational excellence.

Documentation

Complete any of the following:

A. Obtain certification from the Environmental Protection Agency, NRCan (or equivalent) that the building's performance meets the required performance threshold
B. Report GHG emissions (at the organization, portfolio or building level) to a third-party verifier
C. Disclose commitment to achieving net zero emissions within the next 40 years publicly
D. Seek third-party recognition that the net zero targets are science-based

Adapted BB3 Question

- Energy Star Certificate
- [for additional points] Evidence of third-party GHG Disclosure
- [for additional points] Evidence of public disclosure of organization's net-zero targets
- [for additional points] Evidence that net-zero targets are science-based

E3.3 – Third-Party Recognition - cont'd

Applicability
New in BOMA BEST 4.0

Suggested Lead
In-house, with third-party support

References
The Climate Registry - https://theclimateregistry.org/registries-resources/carbon-footprint-registry/
Science Based Targets Initiative - https://sciencebasedtargets.org/

Crosswalk
N/A

Other Notes
Reporting to a third party does not satisfy requirements. The applicant needs to provide proof that the data has been validated by a third-party.

ENERGY AND CARBON	E4. TRACKING & MONITORING
Focus Area:	**Energy & Carbon**
Topic:	**Benchmarking**
Question:	**E4.1b — Tracking Sub-Metered Data before Covid** **Was any sub-metered energy use data tracked before Covid?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0

Max. Points Available
2 - Pick one answer

Description
Sub-meters measure the energy consumption of specific areas or equipment, providing property owners and managers with the ability to understand where and how building energy is being used

Requirements
For any sub-metered energy data available:

A. Provide monthly sub-metered energy data in table format
B. Provide energy sub-meter details, such as make, model, location, photo and year of installation
C. Indicate whether any energy is generated and used on-site and whether that use has been sub-metered

Documentation

- Most sub-metered energy use before Covid (2017, 2018 or 2019)
- Narrative of data collection methodology and sub-meter data, if available

Adapted BB3 Question
Question 01.03.02 — Does building management track and monitor building performance and consumption patterns?

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail or Multi-Unit Residential buildings

Suggested Lead
In-house

References
None

E4.1b — Tracking Sub-Metered Data before Covid - cont'd

Crosswalk
N/A

Other Notes
Applicants do not need to provide data for all previous years. Provide at a minimum, data from one year before Covid, i.e. any continuous 12 months between 2017 and 2019.

MURBs have the option of completing Question E4.1a if whole building data is available.

ENERGY AND CARBON	E5. CONSERVATION MEASURES
Focus Area:	**Energy & Carbon**
Topic:	**Energy & Carbon Conservation Measures**
Question:	**E5.1 — Energy and Carbon Conservation** **Which energy conservation or carbon reduction measures were implemented in the past five years?**

Answer

Select all that apply:	Points available:
- >50% of low-and no cost measures (scheduling, sensors, fans etc.) identified in the last energy assessment	1
- >50% of all the ECMs identified in the last or before-last energy assessments	1
- LED retrofit in common or back-of-house areas	1
- LED retrofit in tenant spaces / resident suites	1
- HVAC retrofit	1
- HVAC retrofit as part of tenant change-over	1
- None	0

Max. Points Available

5 - Max points cap

Description

Energy conservation and carbon reduction recommendations identified in assessments are typically identified as no-/low-cost, medium-cost or capital projects. They can also be prioritized by urgency, financial metrics, complexity, environmental impact or other relevant criteria.

Low hanging fruit are generally considered operational efficiency improvements or small upgrades that are simple to implement and easily budgeted but often have lower energy reduction potential than capital measures.

Larger, more complex projects require planning and budgeting, are generally medium- or long-term projects and will significantly reduce energy consumption and carbon emissions. Major capital projects are likely required in order to achieve net-zero carbon.

No-/low-cost measures to improve operational efficiency are important to implement short-term to reduce as much energy and carbon as possible before larger projects are budgeted and scheduled.

Requirements

A. Review and list energy conservation or carbon reduction measures identified in the past five years
B. Document what was implemented

E5.1 — Energy and Carbon Conservation - cont'd

Documentation

- Evidence of energy conservation or carbon reduction measures implemented

Adapted BB3 Question

Question 01.03.04 — Has a low-cost energy conservation measure been implemented in the past three years?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

References

Case Studies: https://www.saveonenergy.ca/For-Business-and-Industry/Business-Case-Studies
EPA Checklists of Energy-Saving Measures: https://www.energystar.gov/buildings/save_energy_commercial_buildings/ways_save/checklists

Crosswalk

N/A

Other Notes

None

ENERGY AND CARBON	E5. CONSERVATION MEASURES
Focus Area:	**Energy & Carbon**
Topic:	**Energy & Carbon Conservation Measures**
Question:	**E5.2 — Conservation Achieved** **Is there evidence that energy efficiency improved or carbon emissions reduced due to measures implemented in the past ten years?**

Answer

Select all that apply:	Points available:
- Yes – energy efficiency improved	1
- Yes – carbon emissions reduced	2
- No – energy improvements or carbon reductions were not achieved	0

Max. Points Available

3 - Pick all that apply

Description

The real impact of specific energy improvement or carbon reduction measures is often clouded by the impact of ancillary operational activities and equipment performance, as well as pre-and post retrofit measurement and verification (M&V) methods. Consider to what extent the weather and occupancy contribute to the before and after consumption or emission results, and normalise the data accordingly. Operations and maintenance (O&M) activities changed substantially during Covid, and O&M activities post-Covid may also differ from pre-Covid activities. There may be other factors that impact performance before and after implementation, whether it is the consultants providing support, the measurement devices used, the timing of measurement intervals etc. Establish measuring parameters before the implementation of the ECMs or CRMs to develop more reliable results.

Requirements

A. Identify the energy and or carbon reduction measures implemented in the past ten years that are known to have caused energy efficiency or carbon reductions
B. Reference measured data and prepare high-level M&V analysis to demonstrate efficiencies or reductions achieved
C. Describe performance before the measure(s) were implemented and how performance changed after the measure(s) were implemented
D. Describe how operational changes due to Covid etc. were considered and excluded from the high-level M&V analysis

Documentation

- High-level calculations and brief narrative describing reductions achieved

Adapted BB3 Question

New in BOMA BEST 4.0

E5.2 — Conservation Achieved - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
Measurement and Verification (M&V) Principles: https://evo-world.org/en/m-v/principles-of-m-v

Crosswalk
N/A

Other Notes
Savings achieved can be specific to a particular ECM or CRM, or may apply to the whole building, whatever data is available.

ENERGY AND CARBON	E5. CONSERVATION MEASURES
Focus Area:	**Energy & Carbon**
Topic:	**Energy & Carbon Conservation Measures**
Question:	**E5.3 – Energy and Carbon in New Tenancies** **Is there a procedure in place for reviewing the efficiency of tenant-controlled HVAC equipment at lease expiry?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available
3 - Pick one answer

Description
Where tenants manage HVAC equipment, owner or landlords should be aware of operations and maintenance practices within tenant spaces to check that tenant practices are not negatively impacting adjacent or base building components that are the owner or landlord's responsibility.

At lease expiry the owner or landlord has the opportunity to replace inefficient equipment and implement strategies that could advance the organisation's energy efficiency and net zero goals.

Requirements
A. Implement a process for reviewing the efficiency of tenant HVAC equipment at lease expiry, with recommendations to address any deficiencies related to:
   - Energy efficiency
   - Carbon reduction

B. Describe corrective actions planned and implemented, and person responsible

Documentation
- Narrative describing process to assess and improve HVAC equipment at lease expiry

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial and Open-Air Retail buildings

Suggested Lead
In-house

E5.3 – Energy and Carbon in New Tenancies - cont'd

References

ASHRAE 180 "Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems": https://www.ashrae.org/File%20Library/Technical%20Resources/Bookstore/previews_2016639_pre.pdf

Crosswalk

None

Other Notes

None

E6. OPERATIONS & MAINTENANCE OPTIMIZATION

There are no questions for this asset class under this section.

ENERGY AND CARBON	E7. CONTROLS
Focus Area:	**Energy & Carbon**
Topic:	**Controls**
Question:	**E7.1 — Building Automation** **Does the building have an operational building automation system (BAS)?**

Answer

Select one of the following:	Points available:
- Yes — Direct digital control	3
- Yes — Hybrid	2
- Yes — Pneumatic	0
- No	0

Max. Points Available
3 - Pick one answer

Description
Building automation systems (BAS) control equipment and systems, including HVAC and lighting. Building automation systems can take on different forms, including standalone onboard controllers for specific pieces of equipment, legacy pneumatic controls or direct digital control (DDC) systems.

Through automation, building systems can be monitored and adjusted to ensure that they are performing optimally and can facilitate the implementation energy and carbon reduction measures.

DDC systems are often preferred for controllability, accuracy, reliability, responsiveness, accessibility, connectivity and reduced maintenance.

For some types of buildings and systems, a fully integrated BAS is not practical. Other solutions for responsive controls may be more appropriate.

Requirements
A. Identify the type of building automation system (BAS) in use in the building
B. List types of equipment connected to the BAS
C. Describe the most recent upgrade

Documentation
- Narrative and photos of BAS installed

Adapted BB3 Question
Question 01.04.01 — What type of BAS is in place at the building?

E7.1 — Building Automation - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
If any major systems or equipment are not connected, provide a brief narrative outlining the rationale and briefly describe how the systems and equipment are controlled
Direct digital control (DDC): Uses electrical signals or wireless technologies to operate and communicate with parts of a system. Operators use an interface device, typically a computer, to monitor and communicate with devices. If the building operates on small-scale HVAC equipment (e.g., furnaces, rooftop units under 20 tonnes, etc.), then they typically utilize smart controllers, which fall under DDC
Pneumatic: Uses a compressor to keep systems at a constant pressure. Pressure increases or decreases as a valve or actuator moves. Desired operation on a device is based on the pressure set point of the valve or actuator connected to it.
Hybrid: A combination of both DDC and Pneumatic

ENERGY AND CARBON	E8. LIGHTING
Focus Area:	**Energy & Carbon**
Topic:	**Lighting**
Question:	**E8.1a — LEDs** **Are LED lighting installed in spaces controlled by the owner or landlord?**

Answer

Select all that apply:	Points available:
- Yes — More than 50% of exterior spaces have LEDs	1
- Yes — More than 50% of owner / landlord-managed interior spaces have LEDs	1
- Yes — More than 50% of tenant-managed interior spaces have LEDs	1
- No — less than 50% of building lighting is LEDs	0

Max. Points Available

3 - Pick all that apply

Description

Lighting represents a significant percentage of electricity end use and contributes to electrical demand (kW) in addition to consumption (kWh).

Reduction of lighting energy consumption can reduce electricity consumption and costs, lower impact on the electrical grid, assist with ensuring there is sufficient capacity for building electrification or EV charging and reduce carbon emissions associated with electricity, particularly where the electrical grid has a high emission factor.

Optimization can be achieved through efficient fixtures and enhanced controls while also maintaining occupant safety.

Requirements

A. Mark up a floor plan or take photos to indicate extent of interior and exterior LED installation
B. Keep a record of LED product specifications

Documentation

- Sample of floor plans, photos and product specifications of LED installation
- Plan to increase LED installation if less than 50% of building lighting is LED

Adapted BB3 Question

Question 01.04.04 — What percent of the building exterior and parking lot fixtures have LED lamps or automated controls?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

E8.1a — LEDs - cont'd

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

ENERGY AND CARBON	E8. LIGHTING
Focus Area:	**Energy & Carbon**
Topic:	**Lighting**
Question:	**E8.2a — Light Sensors** **Are occupancy or daylight sensors installed in owner or landlord-controlled spaces, where appropriate?**

Answer

Select all that apply:	Points available:
- Yes — More than 50% owner / landlord-managed interior lights have occupancy sensors	1
- Yes — More than 50% tenant-managed interior lights have occupancy sensors	1
- Yes — More than 50% tenant-managed interior lights have daylight/photocell sensors	1
- Yes – More that 50% of exterior lights have daylight/photocells	1
- No – less than 50% of building lights have sensors / controls	0

Max. Points Available

4 - Pick all that apply

Description

Reduction of lighting energy consumption can reduce electricity consumption and costs, lower impact on the electrical grid, assist with ensuring that there is sufficient capacity for building electrification or EV charging, and reduce carbon emissions associated with electricity, particularly where the electrical grid has a high emission factor.

Optimization can be achieved through efficient fixtures and enhanced controls while also maintaining occupant safety.

Requirements

Mark up a floor plan or take photos to indicate extent of occupancy and/or daylight sensors installed

Documentation

- Sample of floor plans or photos of light sensor or controls installation

Adapted BB3 Question

Question 01.04.05 — What percentage of lighting fixtures are controlled by sensors?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

E8.2a — Light Sensors

References
None

Crosswalk
N/A

Other Notes
None

E9. DEMAND MANAGEMENT

There are no questions for this asset class under this section.

ENERGY AND CARBON	E10. HVAC EFFICIENCY
Focus Area:	**Energy & Carbon**
Topic:	**HVAC Efficiency**
Question:	**E10.1 — HVAC Efficiency** **Is high efficiency, low carbon mechanical equipment installed in the building?**

Answer

Select all that apply:	Points available:
- Yes — Condensing boilers	3
- Yes — Electric Boilers	3
- Yes — Heat Recovery implemented	2
- Yes — Heat Pumps	2
- Yes — AHUs and FCUs with low temperature hydronic heating coils	1
- Yes — Hybrid AHUs and RTUs with air source heat pumps (ASHPs) and gas backup/peak heating	1
- Yes – Dual Fuel units	1
- Yes – Other (Describe)	1
- None of the above	0

Max. Points Available

6 - Max points cap

Description

Mechanical equipment and HVAC system efficiency offer the most impactful opportunity for active energy and carbon reduction across all fuel types. To achieve decarbonization goals, building management should plan to replace end-of-life, inefficient or high carbon equipment with high efficiency, low carbon options as part of asset renewals.

Heat recovery should be considered for all systems as a strategy for reducing consumption.

Electrification works toward elimination of carbon emissions related to onsite combustion and improves opportunities for reduced electricity-related emissions through energy supply from clean grids (either now or in the future) and the use of renewable energy.

Cooling systems that use high global warming potential (GWP) refrigerants can have a significant contribution to a building's carbon emissions, through fugitive emissions that occur during leaks or recharging. Low GWP systems are recommended.

Requirements

A. List building systems where heat recovery has been implemented, such as exhaust/ventilation, chilled water or domestic hot water. Describe the type and relative scale of heat recovery for each application
B. For owner or landlord-controlled primary equipment, provide an equipment list outlining attributes including size, systems served, type of fuel, efficiency and why it can be considered low carbon

E10.1 — HVAC Efficiency - cont'd

Documentation

- Equipment list with product details

Adapted BB3 Question

Question 01.05.02 – Is 75% or more of the central heating equipment efficient?
Question 01.05.03 – Are 75% of the rooftop package units efficient?
Question 01.05.05 – Is 75% of the domestic water heating equipment efficient?
Question 01.05.06 – Does 75% of the building's exhaust air pass through a Ventilation Heat/Energy Recovery system?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

References

City of Toronto – Low Carbon Thermal Energy Ready Buildings: https://www.toronto.ca/wp-content/uploads/2022/02/9441-2021-11-29Low-Carbon-Thermal-Energy-Ready-Buildings-AODA.pdf

Crosswalk

N/A

Other Notes

Heat pumps may include air-to-water, water-to-water, geothermal or CO2 domestic hot water (DHW) heat pumps

ENERGY AND CARBON	E10. HVAC EFFICIENCY
Focus Area:	**Energy & Carbon**
Topic:	**HVAC Efficiency**
Question:	**E10.2 — On-site Combustion** **Has the building transitioned off all forms of on-site combustion?**

Answer

Select applicable:	Points available:
- Yes — equipment has transitioned of on-site combustion	3
- Yes — equipment never used on-site combustion	0
- No	0

Max. Points Available
3 - Pick one answer

Description
Mechanical equipment and HVAC system efficiency offer the most impactful opportunity for active energy and carbon reduction across all fuel types. To achieve decarbonization goals, building management should plan to replace end-of-life, inefficient or high carbon equipment with high efficiency, low carbon options as part of asset renewals.

Heat recovery should be considered for all systems as a strategy for reducing consumption.

Electrification works toward elimination of carbon emissions related to onsite combustion, and improves opportunities for reduced electricity-related emissions through energy supply from clean grids (either now or in the future) and the use of renewable energy.

Requirements
A. Provide a brief summary attesting that there is no onsite combustion equipment used at the property as part of regular building operations

Also see Other Notes

Documentation
- Evidence that there is no equipment in use as part of regular building operations that relies on-site combustible energy sources

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

E10.2 — On-site Combustion - cont'd

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
Typical on-site combustion equipment deliver space and domestic water heating and includes gas-fired boilers, gas-fired rooftop units, makeup air units.

The following combustion equipment is excluded from this question:
- Tenant-specific equipment used in restaurants (cooking etc.)
- Emergency generators or back-up power equipment using diesel or other fuels
- District heating systems serving the building

Points will be awarded regardless of when the transition occurred. The building team only need to demonstrate that on-site combustion was part of the original building and has since transitioned.

ENERGY AND CARBON	E11. ENVELOPE
Focus Area:	**Energy & Carbon**
Topic:	**Envelope Performance**
Question:	**E11.1 — Envelope Improvement** **Have any of the low-cost envelope improvement measures identified in assessment, condition or deep retrofit studies been implemented?**

Answer

Select all that apply:	Points available:
- Air leakage	1
- Resealing	1
- Window replacement	2
- Adding shading to sunny areas	2
- None of the above	0

Max. Points Available

4 - Pick all that apply

Description

A building envelope includes exterior components, such as the roof, walls, foundation and windows. A high-performance envelope is the most effective opportunity for achieving decarbonization of a building through passive strategies.

Optimization of the envelope can significantly reduce heating and cooling requirements in the building, thus reducing energy consumption and electrical demand as well as decreasing the size and costs of mechanical equipment.

Lower cost measures might include resealing, replacing broken windows, adding shading to sunny areas or similar strategies. At a minimum, air leakage should be addressed.

If budgeting and renewal cycles permit, it is ideal to undertake a deep green envelope upgrade before HVAC systems are retrofitted to optimize mechanical system design.

Requirements

A. Identify the low-cost envelope improvement items from the assessment, condition or deep retrofit studies that have been implemented
B. Document extent of implementation

Documentation

- Describe measure(s) implemented, the benefit and potential savings impact
- Evidence of implementation through photos, as-built drawings or other proof

E11.1 — Envelope Improvement - cont'd

Adapted BB3 Question
New in BOMA BEST 4. 0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
N/A

Other Notes
None

ENERGY AND CARBON	E11. ENVELOPE
Focus Area:	**Energy & Carbon**
Topic:	**Envelope Performance**
Question:	**E11.2 — Envelope Upgrade** **Have major envelope upgrades been completed or initiated in the past ten years?**

Answer

Select all that apply:	Points available:
- Yes — More than 50% completed (by envelope area covered or project cost)	1
- Yes — some work is underway	2
- No	0
- Not applicable – high-performance features were installed during construction	-

Max. Points Available

3 - Pick all that apply

Description

A high-performance building envelope aims to enhance occupant comfort, improve controllability and minimize the transfer of thermal energy between the outdoors and indoors.

Strategies, such as air tightness, shading, triple-paned glazing and increased insulation can be implemented to reduce energy consumption and GHG emissions while improving thermal comfort and reducing the mechanical system requirements.

Requirements

A. Identify the major envelope upgrades from the assessment, condition or deep retrofit studies that have been implemented
B. Document extent of implementation

Also see Other Notes

Documentation

- Describe measure(s) implemented, the benefit and potential savings impact
- Evidence of implementation through photos, as-built drawings or other proof

Adapted BB3 Question

Question 01.01.03 – Does the capital plan include measures to ensure continuous improvement of the energy efficiency of the building envelope?
Question 01.05.07 – Are 75% of the building's exterior windows considered efficient?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

E11.2 — Envelope Upgrade - cont'd

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
N/A

Other Notes
- High-performance envelope characteristics may include:
- Exterior shading
- Automated shading controls
- Double-paned glazing including high-performance window assembly
- Double-paned glazing with low-emissivity coating including high-performance window assembly
- Triple-paned glazing including high-performance window assembly
- Triple-paned windows with low-emissivity coating including high-performance window assembly
- Electrochromic glazing
- Built-in photovoltaics
- Foundation insulation that is 20% better than current code
- Roof insulation that is 20% better than current code
- Wall insulation that is 20% better than current code
- Natural ventilation when outdoor conditions are favourable

ENERGY AND CARBON	E12. TRAINING & INNOVATION
Focus Area:	**Energy & Carbon**
Topic:	**Envelope Performance**
Question:	**E12.1 – Training in Energy and Carbon** **Did the building operations and management team receive Energy and Carbon training in the previous three years?**

Answer

Indicate which topics are covered in the training:		Points available:
- Assessment, Planning, ECMs and CRMs, Operations & Maintenance Optimization	Yes or No	1
- Benchmarking, Tracking & Monitoring	Yes or No	1
- Controls, Lighting, Demand Management, HVAC Efficiency, Envelope	Yes or No	1
- No		0

Max. Points Available

3 - Pick all that apply

Description

In order for building maintenance staff to effectively manage the building's energy and carbon, training should be provided which addresses the topics of energy and carbon assessment, planning, benchmarking, O&M optimization, controls, lighting etc.

Over time, technologies and preferred practices in building operations and maintenance change. Providing regular professional development opportunities is a good way to help retain staff. Offering training and educational opportunities related to environmental/sustainable building performance not only benefit staff but improve the performance of the building when staff training is applied at the building level.

Requirements

A. List the names of staff members to whom the competencies covered under these topics would apply
B. Provide the applicable course outline or syllabus
C. Provide evidence of competency or training received such as credentials, completion certificate, record of attendance

Documentation

- Name of building O&M team member who received the training
- The course outline or syllabus
- Proof of training received

Adapted BB3 Question

Question 01.01.01 — Does building staff participate in a formalized training program focused on energy efficiency?

E12.1 – Training in Energy and Carbon - cont'd

Applicability
Applicable to Office, Healthcare, Enclosed Shopping Centre, Universal and Multi-Unit Residential buildings

Suggested Lead
In-house

References
SaveOnEnergy Training and Support (Ontario): https://www.saveonenergy.ca/en/For-Business-and-Industry/Training-and-support

Crosswalk
None

Other Notes
Training can be delivered in-house or by a third party

ENERGY AND CARBON	E12. TRAINING & INNOVATION
Focus Area:	**Energy & Carbon**
Topic:	**Innovation**
Question:	**E12.2 – Innovation in Energy & Carbon** **Is an innovative process or technology in place at the building that goes beyond the requirements outlined in this section?**

Answer

Select all that apply:	Points available:
- Renewable energy sources are installed on-site generating >1% of building energy	1
- Green or high-albedo roof covering is in place	1
- Funding / incentive received to advance net zero projects	1
- Building is connected to district or community energy system	1
- [ESC, Univ, LI, OAR, MURB] Energy Star scores available representing whole building consumption for each of the past five years	1
- [ESC, Univ, LI, OAR, MURB] Some tenants share their utility data with owner or landlord	1
- [ESC, Univ, LI, OAR, MURB] Updated tenant lease includes cost recovery of energy-efficient equipment	1
- [ESC, Univ, LI, OAR, MURB] Site staff received training in energy and carbon assessment, tips for operations and maintenance optimisation, lighting and HVAC efficiency or the value of sub-metering	1
- [ESC, Univ, LI, OAR, MURB] >50% (by building area or tenant count) of tenant energy data is sub-metered	1
- [ESC, Univ, LI, OAR, MURB] Joint landlord/tenant energy or carbon initiatives implemented	1
- [ESC, Univ, LI, OAR, MURB] Landlord conduct visual inspections of tenant-managed energy systems each year	1
- Other	1
- Not applicable	-

Max. Points Available

4 - Max points cap

Description

Many processes and technologies exist that go beyond the standards and requirements set out in the BOMA BEST Assessment. If building managers/owners have invested in innovative processes or technologies that go beyond these standards, innovation points can be earned under this question.

E12.2 – Innovation in Energy & Carbon - cont'd

Requirements

A. Provide details of the technology or process applied at the building
B. Indicate when the technology or process was implemented and the steps that are in place to ensure the technology or process' ongoing success
C. [If "Other" is selected] Explain how the technology or process has improved the building's energy or carbon efficiency for it to be considered innovative

Documentation

- Narrative of innovative technology or process and its impact

Adapted BB3 Question

Question 01.05.14 — Is an innovative process or technology (approved by BOMA Canada) in place at the building that goes beyond the requirements outlined in this section?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

None

Crosswalk

N/A

Other Notes

Innovative processes or technologies apply to what was installed post-construction.

Funding or incentives may include strategic energy management, retrofit, Canada Infrastructure Bank etc. or other equivalent.

Applicants are required to submit the innovative process or technology as part of the BOMA BEST application. It will be evaluated as part of the BOMA BEST verification process, in consultation with our technical experts, as required.

ENERGY AND CARBON	E13. ENGAGEMENT
Focus Area:	**Energy & Carbon**
Topic:	**Engagement**
Question:	**E13.1 – Align Engagement Initiatives with Tenants** **Do any of the tenants' energy and carbon management approaches align with the owner or landlord's?**

Answer

Indicate which topics are aligned:		Points available:
- Assessment, Planning, ECMs and CRMs	Yes or No	1
- Benchmarking, Tracking & Monitoring	Yes or No	1
- Operations & Maintenance Optimization, Controls	Yes or No	1
- Lighting, Demand Management	Yes or No	1
- HVAC Efficiency, Envelope	Yes or No	1
- No		0

Max. Points Available
5 - Pick all that apply

Description Passive engagement through communications is an important first step. Also, the ability to collect tenant utility data is becoming increasingly important as part of reporting and disclosure. Active engagement efforts include direct outreach activities, such as working with tenants to collect tenant-controlled utility data or requiring green leases for new tenants or renewals that address sustainability initiatives.

Requirements

A. Engage with tenants to understand their energy and carbon goals, on specific topics listed, and how their goals may align with the building management's energy and carbon goals
B. Provide a sample of feedback or communication received from tenants that demonstrate where alignment exists in specific topics covered in the Energy & Carbon Plan

Documentation

- Narrative that describes where owner or landlord and tenant's energy and carbon goals align
- Sample of relevant feedback or communication received from the tenants

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial and Open-Air Retail buildings

E13.1 – Align Engagement Initiatives with Tenants - cont'd

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
In buildings where tenants manage the majority of energy and carbon-using systems, the owner or landlord can engage with the tenant(s) to collaborate and share information and lessons learned to improve whole building performance in these areas.

WATER	W0. BASELINE PRACTICES
Focus Area:	**Water**
Topic:	**Baseline Practices**
Question:	**W1.0b — Water Assessment** **Have the water efficiency of systems managed by the owner or landlord been assessed in the last five years?**

Answer
Select one of the following:
- Yes – this is a baseline requirement. Complete BOMA BEST Form W1.0b
- Not applicable

Max. Points Available
Minimum requirement, this is a baseline practice

Description
The most effective water reduction strategies will focus efforts on the end uses with the highest consumption. Building operations and management teams should determine the largest end uses and consider opportunities for sub-metering significant loads, such as irrigation and cooling towers.

Requirements
For all building components managed by the owner or landlord, provide:
A. Building and system description and review – clearly distinguish between systems that are owned vs managed vs maintained by the owner, landlord or tenant
B. Water utility history (at least 12 months of continuous data, typically the previous 24-36 months of data)
C. Low- and no-cost water conservation measures, with high level costing, simple payback and anticipated savings
   - If no savings measures are identified, state why.

Refer to Other Notes.

Documentation
- Limited Scope Water Assessment Report

Adapted BB3 Question
Best Practice 5 — Has a water assessment been conducted in the past five years?

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail and Multi-Unit Residential buildings

W1.0b — Water Assessment - cont'd

Suggested Lead
In-house

References
Water Audit Guidance for Commercial Buildings: https://www.allianceforwaterefficiency.org/sites/www.allianceforwaterefficiency.org/files/assets/City_Energy_Project_Water_Audit_Guidance_For_Commercial_Buildings.pdf
Example Commercial and Institutional Water Efficiency Assessment Report: https://www.toronto.ca/wp-content/uploads/2018/07/9857-917c-sample-water-efficiency_report-revised-july-23-2018.pdf

Crosswalk
N/A

Other Notes
If the owner or landlord only manages for example the exterior irrigation at the building, provide the water data for these systems, as well as an assessment of the efficiency of the system. If the system was recently upgraded and no water conservation is currently feasible, state that too.

For all systems managed by the tenant, the applicant (representing the owner or landlord) is expected to outline those as well, though no water assessment is required for these systems.

WATER	W0. BASELINE PRACTICES
Focus Area:	**Water**
Topic:	**Baseline Practices**
Question:	**W5.0 — Mould and Water Damage Management** **Is a Mould and Water Damage Management Program in place at the building?**

Answer
Select one of the following:
- Yes – Program in place
- Yes – Program has been shared with Tenant Representative(s)
- No

Max. Points Available
Minimum requirement, this is a baseline practice

Description
Water-impacted building materials can begin to exhibit mould growth in as little as 48 hours. A water damage monitoring and management program will assist in rapidly addressing bulk water damage, including detailed procedures for drying, cleaning and remediating where necessary.

Health Canada's Fungal contamination in public buildings: A guide to recognition and management, 1995 recommends "the development of programs to avoid the development of fungal amplification-sites." Further, the American Industrial Hygiene Association's 2013 "Position Statement on Mould and Dampness in the Built Environment," recommends that a "formal mould/water prevention program with clear actions and responsibilities is required for an effective response to signs of moisture".

Requirements
A. Develop a building-specific Mould and Water Damage Management Program that covers the following:
   - Responsible parties, including the building team's training requirements
   - Requirements and frequency for building and HVAC inspections
   - Actions required to reduce the risk of indoor mould growth
   - Procedures for mould and water damage investigations
   - Procedures for management of mould cleanup activities

B. Demonstrate that the program was developed by a person competent in mould and water damage management practices

C. Program must be signed by the building manager, dated within the last 12 months

OR

D. The owner or landlord must provide information to the Tenant Representative(s) that manage(s) water use within the tenant space on how to implement a Mould and Water Damage Management Program

W5.0 — Mould and Water Damage Management - cont'd

Documentation

- Building-specific Mould and Water Damage Management Program OR evidence that Program was shared with Tenant Representative(s)

Adapted BB3 Question

Question 02.01.01 — Is a Water Damage Monitoring and Management Program in place in the building?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

Health Canada's Fungal contamination in public buildings: A guide to recognition and management, 1995 https://publications.gc.ca/collections/Collection/H46-2-04-358E.pdf

The American Industrial Hygiene Association "Position Statement on Mould and Dampness in the Built Environment" 2013 (reviewed 2018) https://www.med.navy.mil/Portals/62/Documents/NMFA/NMCPHC/root/Documents/industrial-hygiene/P-Mold-03-26-13_2018.pdf?ver=FoUGYT28BpdB52oR1rQTnQ%3D%3D

Institute for Inspection Cleaning and Restoration Certification, Standard S-520, Standard and Reference Guide for Professional Mould Remediation, 2015: https://iicrc.org/s520/

Canadian Construction Association Guide 82, Mould Guidelines for the Canadian Construction Industry, 2018 https://www.cca-acc.com/wp-content/uploads/2019/02/Mould-guidelines2018.pdf

Environmental Abatement Council of Canada (EACC), Mould Abatement Guidelines, Edition 3 (2015) https://www.eaccanada.ca/wp-content/uploads/2021/06/EACC-Mould-Guideline-April-2015.pdf

Crosswalk

N/A

Other Notes

Water treatment in HVAC equipment must, at all times, meet local provincial and/or federal guidelines and regulations.

WATER	W0. BASELINE PRACTICES
Focus Area:	**Water**
Topic:	**Baseline Practices**
Question:	**W7.0 — Owner or landlord shares Water Management practices** **Has the owner or landlord shared a Water Communication Plan with the building tenants?**

Answer
Select one of the following:
- Yes – the Plan covers the following topics: water assessment, tips for operations and maintenance optimisation, fixture efficiency, managing water hazards and the value of sub-metering
- No

Max. Points Available
Minimum requirement, this is a baseline practice

Description
Increasing building tenant and occupant awareness and engagement in environmental and sustainable practices can have a significant positive or negative impact on the performance of the building.

Requirements
A. Develop a building-specific Water Communication Plan that covers:
   - The building management team's efforts to assess water efficiency and hazards
   - Water assessment, tips for operations and maintenance optimisation, fixture efficiency, managing water hazards and the value of sub-metering
B. Copies of communication with the building's tenants where the content of the building's Water Communication Plan was shared, dated within the past 12 months
C. Demonstrate that communication was distributed to at least half of the number of tenant organizations occupying the building or to a group that leases at least half of the total building area

Documentation
- Building-specific Water Communication Plan
- Proof of communication with a representative group of building tenants, covering water assessment, tips for operations and maintenance optimisation, fixture efficiency, managing water hazards and the value of sub-metering

Adapted BB3 Question
Best Practice 5 – Has a Water Assessment been conducted in the last five (5) years? And Best Practice 16 – Is an Occupant Environmental Communication Program in place at the building?

Applicability
Applicable to Light Industrial and Open-Air Retail buildings

W7.0 — Owner or landlord shares Water Management practices - cont'd

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

WATER	W1. ASSESSMENT
Focus Area:	**Water**
Topic:	**Water Assessment**
Question:	**W1.1 – Water Efficient Features** **Does the building incorporate any high-efficiency water fixtures?**

Answer

Select all that apply:	Points available:
- >50% of toilets are 4.8L/6L dual-flush or less	4
- >50% of urinals are 1.9L per flush or less	3
- >50% of lavatory faucets are 5.7L per min or less	1
- None	0

Max. Points Available

7 - Pick all that apply

Description

A high-efficiency fixture uses less water while still performing its function.

Requirements

A. For each fixture type, survey how many are installed in the building and calculate the percentage that meet the specified performance criteria
B. Provide evidence such as fixture cut sheets, flow-test results or photos showing flow-rates

Documentation

- List of total fixture counts, and number that meet or exceed flowrate thresholds
- Evidence that fixtures deliver specified flowrates

Adapted BB3 Question

02.04.03 – What percentage of water fixtures are efficient, based on inventory amount?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

References

WaterSense Products: https://www.epa.gov/watersense/watersense-products

Crosswalk

N/A

W1.1 – Water Efficient Features - cont'd

Other Notes
None.

WATER	W1. ASSESSMENT
Focus Area:	**Water**
Topic:	**Benchmarking**
Question:	**W2.1b — Sub-Metered Data** **Is any sub-metered water use available for the most recent 12 months?**

Answer

Select one of the following:

	Points available:
- Yes	3
- No	0

Max. Points Available

3 - Pick one answer

Description

Sub-meters measure the water consumption of specific areas or equipment, providing property owners and managers with the ability to understand where and how the building water is used.

Requirements

For any sub-metered water data available:

A. Provide monthly sub-metered water data in table format
B. Provide water sub-meter details, such as make, model, location, photo and year of installation
C. Indicate whether any water is collected and used on-site and whether that use has been sub-metered
D. If data is not logged automatically, manual readings need to be taken at least monthly

Documentation

- Most recent 12 months of sub-metered water use (total m^3)
- Narrative of data collection methodology and sub-meter data, if available

Adapted BB3 Question

Question 02.04.02 — What percentage of the building's water consumption is sub-metered?

Applicability

Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail and Multi-Unit Residential buildings

Suggested Lead

In-house

References

None

W2.1b — Sub-Metered Data - cont'd

Crosswalk
None

Other Notes
See Question W1.0 for details of water end-use types

WATER	W3. TRACKING & MONITORING
Focus Area:	**Water**
Topic:	**Tracking**
Question:	**W3.1b — Tracking Sub-Metered Data before Covid** **Was any sub-metered water use data tracked before Covid?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available
3 - Pick one answer

Description
Sub-meters measure the water consumption of specific areas or equipment, providing property owners and managers with the ability to understand where and how building water is being used

Requirements
For any sub-metered water data available:

A. Provide monthly sub-metered water data in table format
B. Provide water sub-meter details, such as make, model, location, photo and year of installation
C. Indicate whether any water is collected and used on-site and whether that use has been sub-metered

Documentation

- Most sub-metered water use before Covid (2017, 2018 or 2019)
- Narrative of data collection methodology and sub-meter data, if available

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail or Multi-Unit Residential buildings

Suggested Lead
In-house

References
See Question W2.1

W3.1b — Tracking Sub-Metered Data before Covid - cont'd

Crosswalk
N/A

Other Notes
Water consumption data derived from landlord-installed meters, read manually each month is acceptable.

Applicants do not need to provide data for all previous years. Provide at a minimum, data from one year before Covid, i.e. any continuous 12 months between 2017 and 2019.

WATER	W4. CONSERVATION MEASURES
Focus Area:	**Water**
Topic:	**Water Conservation**
Question:	**W4.1 — Water Conservation** **Which water conservation measures were implemented in the past five years?**

Answer

Select all that apply: Points available:

- >50% of low-and no cost measures identified in the most recent water assessment 3
- >50% of all the WCMs identified in the last or before-last water assessments 5
- None 0

Max. Points Available

8 - Pick all that apply

Description

Water conservation measures (WCMs) are often categorized as no-/low-cost, medium-cost or capital projects. They can also be prioritized by urgency, complexity, environmental or financial benefits or other relevant criteria.

Requirements

A. Review water reduction measures identified in past assessments or optimization studies
B. Calculate the percentage implemented, either by count of measures, or by water reduction impact, whichever is greater
C. Document the implementation of these measures

Documentation

- Evidence of water conservation measures implemented

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

References

None

W4.1 — Water Conservation - cont'd

Crosswalk
None

Other Notes
Recognition is given for reduction in municipal water use. Water collected and used on-site can be excluded from the total water use calculations

WATER	W5. WATER HAZARDS
Focus Area:	**Water**
Topic:	**Water Hazards**
Question:	**W5.1 – Water Damage Response** **Is a process in place to respond to leaks or water infiltration issues?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available

3 Pick one answer

Description

Reduce the response time for water damage events in a building. There is a short 48-to-72-hour window following a water loss where building finishes can be dried without significant risk of indoor mould growth. Having a service contract in place with a trusted provider helps ensure cleanup work can start as quickly as possible, minimizing the risk of mould growth.

Requirements

A. Provide the contact details of at least 3 pre-qualified service providers, with active accounts set up, who can be contacted in case of water damage emergency
B. Description of their proficiency in dealing with water damage events, credentials, response time and approach to address water losses

Documentation

- Contact details of 3 pre-qualified service providers, their proficiency, approach and response times

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

Institute for Inspection Cleaning and Restoration Certification, Standard S-500, Standard and Reference Guide for Professional Water Damage Restoration, 2021: https://iicrc.org/s500/

W5.1 – Water Damage Response - cont'd

Crosswalk
N/A

Other Notes
If this service is delivered by an in-house party, describe their expertise and approach.

Water treatment in HVAC equipment must, at all times, meet local provincial and/or federal guidelines and regulations.

WATER	W5. WATER HAZARDS
Focus Area:	**Water**
Topic:	**Water Hazards**
Question:	**W5.2 — Legionella Bacteria Control Management** **Is a Legionella Bacteria Control Management Program in place at the building?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available

3 Pick one answer

Description

Legionella risk management is important to provide a safe environment for employees and visitors to your facility and in preventing the bacteria that causes Legionnaires' disease.

Requirements

A. Develop a building-specific Legionella Bacteria Control Management compliant with ASHRAE 188 "Legionellosis: Risk Management for Building Water Systems" and Public Works and Government Services Canada's "Control of Legionella in Mechanical Systems"

B. The program must cover the following:
   - Responsible parties, including the building team's training requirements
   - Analysis of building water systems and water system flow diagrams. The following systems must be considered for Legionella susceptibility, at a minimum:
     - Cooling towers and evaporative condensers
     - Aerosol-generating misters, atomizers, humidifiers
     - Hot and cold water systems
     - Domestic hot water storage tanks
     - Open-air systems (such as decorative fountains)
     - Whirlpool Spas
     - Building-specific water sampling protocol
     - Control measures, monitoring and corrective actions

C. Demonstrate that the program was developed by a person competent in Legionella mitigation measures

D. Program must be signed by building manager, dated within the past 12 months.

OR

E. The owner or landlord must provide information to the Tenant Representative(s) that manage(s) water use within the tenant space on how to implement a Legionella Bacteria Control Management Program

W5.2 — Legionella Bacteria Control Management - cont'd

Documentation

- Building-Specific Legionella Bacteria Control Management Program OR evidence that Program was shared with Tenant Representative(s)

Adapted BB3 Question

Question 05.01.01 — Is a Legionella Bacteria Control Management Program in place at the building?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

ANSI ASHRAE Standard 188 (2018): Legionellosis Risk Management for Building Water Systems: https://www.ashrae.org/technical-resources/bookstore/ansi-ashrae-standard-188-2018-legionellosis-risk-management-for-building-water-systems

ASHRAE Guidance on Reducing the Risk of Legionella: https://www.ashrae.org/technical-resources/standards-and-guidelines/guidance-on-reducing-the-risk-of-legionella

Public Works and Government Services Canada's "Control of Legionella in Mechanical Systems", MD 15161 – 2013: Control of Legionella in Mechanical Systems: https://www.tpsgc-pwgsc.gc.ca/biens-property/documents/legionella-eng.pdf

Crosswalk

N/A

Other Notes

Only having a legionella management plan for a specific system (e.g. cooling towers) is not sufficient to meet requirements. The plan should cover all applicable water-using systems in the building.

The building's water systems should be described in the form of a flow diagram to assist in analyzing the areas of risk and determining sampling locations. Where necessary, control measures, such as preventative maintenance, inspections and water treatment should be implemented. These control measures must be monitored to ensure they are effective (for example, through routine sampling activities and checking temperatures of hot water once a month)

Risk analysis and monitoring of control measures must be documented and kept current. At a minimum, the program must be reviewed every 12 months to ensure risks associated with legionella susceptible systems are mitigated

Water treatment in HVAC equipment must, at all times, meet local provincial and/or federal guidelines and regulations.

WATER	W6. TRAINING & INNOVATION
Focus Area:	**Water**
Topic:	**Training**
Question:	**W6.1 – Training in Water Management** **Did the building operations and management team receive water efficiency training in the previous three years?**

Answer

Indicate which topics are covered in the training:		Points available:
- Assessment, WCMs	Yes or No	1
- Benchmarking, tracking & monitoring	Yes or No	1
- Water hazards	Yes or No	1
- No		0

Max. Points Available

3 - Pick all that apply

Description

In order for building maintenance staff to effectively manage the building's water use, training should be provided which addresses the topics of water assessment, benchmarking, tracking and monitoring, WCMs and hazards, such as mould, leaks and Legionella.

Over time, technologies and preferred practices in building operations and maintenance change. Providing regular professional development opportunities is a good way to help retain staff. Offering training and educational opportunities related to environmental/sustainable building performance not only benefit staff but improve the performance of the building when staff training is applied at the building level.

Requirements

A. List the names of staff members to whom the competencies covered under these topics would apply
B. Provide the applicable course outline or syllabus
C. Provide evidence of competency or training received such as credentials, completion certificate, record of attendance

Documentation

- Name of building O&M team member who received the training
- Course outline or syllabus
- Training Certificate or Record of Attendance

Adapted BB3 Question

New in BOMA BEST 4.0

W6.1 – Training in Water Management - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
N/A

Crosswalk
None

Other Notes
Though owner or landlord management scope is limited in Light Industrial or Open-Air Retail buildings, the operations staff's competencies need to be maintained nonetheless. In these instances applicants are expected to provide

WATER	W6. TRAINING & INNOVATION
Focus Area:	**Water**
Topic:	**Innovation**
Question:	**W6.2 – Innovation in Water Management** **Is an innovative process or technology in place at the building that goes beyond the requirements outlined in this section?**

Answer

Select all that apply:	Points available:
- Whole-building water use is benchmarked in RealPac's NWUI Tool	1
- >50% of toilets installed in tenant-managed spaces are 4.8L/6L dual-flush or less	1
- Sub-metering installed on 2 or more of the largest water end-uses	1
- Strict "no water bottle" policy applies to entire building management team	1
- Potable water testing program is in place	1
- Alternatively sourced water makes up at least 5% of the building's total water consumption	1
- [ESC, Univ, LI, OAR, MURB] Sub-metered water use data is available, anytime between 2017 - 2021	1
- [ESC, Univ, LI, OAR, MURB] Joint landlord/tenant water initiatives implemented	1
- Other	1
- Not applicable	-

Max. Points Available

4 - Max points cap

Description

Many processes and technologies exist that go beyond the standards and requirements set out in the BOMA BEST Assessment. If building managers/owners have invested in innovative processes or technologies that go beyond these standards, innovation points can be earned under this question.

Requirements

A. Provide details of the technology or process applied at the building
B. Indicate when the technology or process was implemented and the steps that are in place to ensure the technology or process' ongoing success
C. [If "Other" is selected] Explain how the technology or process has improved the building's water efficiency for it to be considered innovative

Documentation

- Narrative of innovative technology or process and its impact

W6.2 – Innovation in Water Management - cont'd

Adapted BB3 Question
Question 02.05.04 — Is an innovative process or technology (approved by BOMA Canada) in place at the building that goes beyond the requirements outlined in this section?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
N/A

Other Notes
None

WATER	W7. ENGAGEMENT
Focus Area:	**Water**
Topic:	**Engagement**
Question:	**W7.1 — Align Engagement Initiatives with Tenants** **Do any of the tenants' water management approaches align with the owner or landlord's?**

Answer

Indicate which topics are aligned:		Points available:
- Assessment, WCMs	Yes or No	1
- Benchmarking, tracking & monitoring	Yes or No	1
- Water hazards	Yes or No	1
- No		0

Max. Points Available

3 - Pick all that apply

Description

Passive engagement through communications is an important first step. Also, the ability to collect tenant utility data is becoming increasingly important as part of reporting and disclosure. Active engagement efforts include direct outreach activities, such as working with tenants to collect tenant-controlled utility data, or requiring green leases for new tenants or renewals that address sustainability initiatives.

Requirements

A. Engage with the tenants to understand their water efficiency goals in specific topics listed and how their goals may align with the building management's water efficiency goals
B. Provide a sample of feedback or communication received from the tenants that demonstrate where alignment exists in specific topics covered in the Water Management Plan

Documentation

- Narrative that describes where owner or landlord and tenant's water efficiency goals align
- Sample of relevant feedback or communication received from tenants

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to Enclosed Shopping Centre, Universal, Light Industrial and Open-Air Retail buildings

Suggested Lead

In-house

W7.1 — Align Engagement Initiatives with Tenants - cont'd

References
None

Crosswalk
N/A

Other Notes
In buildings where tenants manage the majority of water-using systems, the owner or landlord can engage with the tenant(s) to collaborate and share information and lessons learned to improve whole building performance in these areas.

INDOOR AIR QUALITY & HAZARDS	I0. BASELINE PRACTICES
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Baseline Practices**
Question:	**I1.0b – Owner or landlord informs, tenant manages IAQ** **Does the owner or landlord conduct visual IAQ inspections of tenant-managed spaces each year?**

Answer
Select one of the following:
- Yes
- No
- Not applicable – lease prohibits landlord from inspecting any tenant-managed systems

Max. Points Available
Minimum requirement, this is a baseline practice

Description
Indoor air quality (IAQ) is achieved through the selection of appropriate and achievable air quality goals, regular surveillance and testing to verify HVAC performance and hygiene, efficient and effective procedures for addressing occupant IAQ concerns and adequate training for the building management team.

The owner or landlord can play an important role in supporting tenants in determining appropriate and achievable air quality goals, conducting regular surveillance and testing to verify HVAC performance and hygiene, advise on efficient and effective procedures for addressing occupant IAQ concerns and encourage adequate training for the tenant space management team.

Requirements
A. Conduct a visual inspection of the tenant-managed HVAC systems that serve tenant leased spaces, covering the following as applicable:
   - Air handling units (dampers, plenum, filters, coils, humidifiers, fans, motors)
   - Air distribution and terminal systems (ductwork, plenum, diffusers, grilles, CAV/VAV boxes, fan-coils, heat pumps, exhaust)
   - Central systems (boiler, chiller, cooling tower, air compressor, pneumatics, pumps) and pipes, generators, controls)
   - Potential mould growth or water damage to base building components
   - Tenant operations that may negatively impact other tenants' air quality (for example, proper exhaust if paint booth is used)
   - No damage to asbestos-containing or other hazardous base building materials

B. Cover a group of tenants who lease at least half of the total building area
C. Share visual inspection forms with tenants

OR

I1.0b – Owner or landlord informs, tenant manages IAQ - cont'd

D. Submit excerpt from lease which details restrictions to landlord access of tenant spaces

Documentation
- Most recent visual inspection forms of tenant spaces
- Communication where the results of the visual inspection were shared with tenants
- Demonstrate that the inspections cover at least half of the area of the building

OR Excerpt from lease

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail and Multi-Unit Residential Buildings

Suggested Lead
In-house

References
Indoor Air Quality Guideline for Non-Industrial Workplaces, EACC, 2020: https://www.eaccanada.ca/guidelines/guideline-eacc-indoor-air-quality-form/
IAQ Checklist (US EPA): https://www.epa.gov/sites/production/files/2014-08/documents/mgmtlist.pdf
Example of IAQ Housekeeping Activities (US EPA): https://www.epa.gov/sites/production/files/2014-08/documents/housekeeping_tasks.pdf
IAQ Maintenance Inspection Form (US EPA): https://www.epa.gov/sites/production/files/2014-08/documents/om_periodic_inspections.pdf
Indoor Air Quality Guide (US EPA): https://www.ashrae.org/technical-resources/bookstore/indoor-air-quality-guide

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I0. BASELINE PRACTICES
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Baseline Practices**
Question:	**I4.0 – IAQ Management in Construction** **Is a plan in place to minimize indoor air quality impacts during renovation and construction?**

Answer
Select one of the following:
- Yes
- Not applicable

Max. Points Available
Minimum requirement, this is a baseline practice

Description
During renovation or construction activities, elevated airborne particulate can be generated through the disturbance of various building materials (e.g., concrete, plaster, drywall, ductwork, flooring and insulation), dusts originating from products used in the construction and by equipment that may emit combustion products. Additionally, building furnishings and finishes typically emit volatile organic compounds. Strategies to mitigate the impact of construction-generated contaminants in adjacent spaces should be developed and implemented.

Specific guidelines must be in place for base-building or tenant renovations and construction projects to ensure that contaminants are not released into the surrounding interior environment and building indoor air quality (IAQ) is maintained.

Requirements
A. Reference SMACNA IAQ Guidelines
B. Develop the building-specific Construction IAQ Control Plan, covering the following:
   - Hazardous materials management
   - Dust control
   - Isolation of HVAC zones and/or enhanced ventilation
   - HVAC filter replacement
   - VOC emission/absorption and odour management
   - Noise, vibration control monitoring
   - De-pressurization of construction zones as needed (e.g., in medical Offices, hospitals and long-term care facilities)

Documentation
- Building-Specific Construction IAQ Control Plan

I4.0 – IAQ Management in Construction - cont'd

Adapted BB3 Question
Question 03.01.03 — Is a plan in place to control construction-generated contaminants prior to base-building or tenant renovations?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008, 2008: https://store.smacna.org/iaq-guidelines-for-occupied-buildings-under-construction

Crosswalk
N/A

Other Notes
SMACNA guidelines cover the following:
- HVAC Protection: Protect HVAC equipment from construction debris that may enter ductwork or spaces, such as isolating the return air side of the system and installing temporary filters
- Source Control: Use low-emission alternatives when selecting paints, sealants, adhesives, carpeting, cleaning products etc.
- Pathway Interruption: Prevent airborne contaminants from construction to circulate through the rest of the building. Strategies include the installation of physical barriers between construction and occupied spaces and ventilating with 100% outside air
- Housekeeping: Keep the construction-sites clean and promptly clean spills to prevent the potential for growth of microbial contaminants
- Scheduling: Consider the sequence in which materials are installed. Some materials absorb volatile organic compounds (VOCs) emitted by other materials, so those should ideally be installed after

INDOOR AIR QUALITY & HAZARDS	I0. BASELINE PRACTICES
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Baseline Practices**
Question:	**I8.0 – Owner or landlord shares IAQ & Hazards Practices** **Has the owner or landlord's Indoor Air Quality & Hazards Communication Plan been shared with the building tenants?**

Answer
Select one of the following:
- Yes – the Plan covers the following topics: IAQ assessment, tips for managing ventilation, exhaust, filtration, renovation projects, refrigeration and IAQ hazards
- Not applicable

Max. Points Available
Minimum requirement, this is a baseline practice

Description
Increasing building tenant and occupant awareness and engagement in environmental and sustainable practices can have a significant positive or negative impact on the performance of the building.

Improving the environmental performance of the building can Suggested Lead to many positive outcomes for building management, staff and tenants, including but not limited to lower operational costs, lower utility bills, improved indoor air quality, improved management-tenant relationships, etc.

Requirements
A. Develop a building-specific Indoor Air Quality & Hazards Communication Plan that covers the following:
   - Outline the building management team's efforts to assess IAQ and hazards
   - IAQ assessment, tips for managing ventilation, exhaust, filtration, renovation projects, refrigeration and IAQ hazards

B. Copies of communication with the building's tenants where the content of the building Indoor Air Quality & Hazards Communication Plan was shared, dated within the last 12 months

C. Demonstrate that communication was distributed to at least half of the number of tenant organisations occupying the building or a group who lease at least half of the total building area

Documentation
- Building-specific Indoor Air Quality & Hazards Communication Plan
- Proof of communication with representative group of building tenants, covering IAQ assessment, tips for managing ventilation, exhaust, filtration, renovation projects, refrigeration and IAQ hazards

Adapted BB3 Question
Best Practice 16 – Is an Occupant Environmental Communication Program in place at the building?

I8.0 – Owner or landlord shares IAQ & Hazards Practices - cont'd

Applicability
Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I1. ASSESSMENT
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Assessment**
Question:	**I1.1b – Tenant IAQ Corrective Actions** **Has owner or landlord followed-up on Indoor Air Quality (IAQ) corrective actions identified in the tenant spaces?**

Answer

Select one of the following:	Points available:
- Yes	4
- No	0
- Not applicable – lease prohibits landlord from inspecting any tenant-managed systems	-

Max. Points Available

4 - Pick one answer

Description

Indoor Air Quality (IAQ) is achieved through the selection of appropriate and achievable air quality goals, regular surveillance and testing to verify HVAC performance and hygiene, efficient and effective procedures for addressing occupant IAQ concerns, and adequate training for the building management team.

The owner or landlord can play an important role in supporting tenants in determining appropriate and achievable air quality goals, conducting regular surveillance and testing to verify HVAC performance and hygiene, advise on efficient and effective procedures for addressing occupant IAQ concerns, and encourage adequate training for the tenant space management team.

Requirements

A. Demonstrate owner or landlord has followed-up with tenants regarding visual inspection findings (at least once in the last year)
B. Reference the IAQ visual inspection forms from Question I1.0b and demonstrate any corrective actions taken

OR

C. Submit excerpt from lease which details restrictions to landlord access of tenant spaces

Documentation

- Copies of follow-up communication with tenants regarding the visual inspection findings
- Narrative with photos showing corrective actions taken

OR Excerpt from lease

I1.1b – Tenant IAQ Corrective Actions - cont'd

Adapted BB3 Question
Question 03.03.02 – Has the building manager acted on recommended corrective actions identified in the IAQ audit?

Applicability
Applicable to Enclosed Shopping Centre, Universal, Light Industrial, Open-Air Retail and Multi-Unit Residential buildings

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I2. VENTILATION & EXHAUST
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Ventilation & Exhaust**
Question:	**I2.1b – Owner or landlord informs, Tenant maintains Outdoor Air** **Do measured Outdoor Air (OA) ventilation rates in tenant-controlled areas meet minimum carbon dioxide (CO2) thresholds?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0
- Not applicable – the tenant-controlled areas are not considered occupied spaces	-

Max. Points Available

3 - Pick one answer

Description

Where tenants manage IAQ, owner or landlords should be aware of operations and maintenance practices withing tenant spaces to check that tenant practices are not negatively impacting adjacent or base building components that are the owner or landlord's responsibility.

Inadequate ventilation is one of the major sources of IAQ complaints and also an indicator that the HVAC system may not be functioning optimally. Odorous or dusty operations in tenant spaces have the potential to impact adjacent tenants if the contaminants are not properly controlled. The owner or landlord should ensure any high-risk tenants are diligent with their processes so adjacent tenants are not adversely impacted.

Requirements

A. Demonstrate CO2 concentrations below 800 ppm:
B. Refer to most recent IAQ Assessment Report and highlight section showing CO2 concentrations measured below 800 ppm in tenant-controlled spaces
C. The assessment must have been completed within the last year

Documentation

- Table showing CO2 concentrations measured below 800 ppm

Adapted BB3 Question

New in BOMA BEST 4.0.

Applicability

Applicable to Light Industrial and Open-Air Retail buildings

I2.1b – Owner or landlord informs, Tenant maintains Outdoor Air - cont'd

Suggested Lead
In-house, with third-party support

References
ASHRAE 62.1 Standard: https://bomacanada.sharepoint.com/sites/BOMA_Mainshare/Mainshare_data/BOMA%20BEST/BOMA%20BEST%204.0/Ph2%20Development/Working/!BB4%20Sustainable%20Questionnaires/!FINAL/,%20https:/www.ashrae.org/technical-resources/bookstore/standards-62-1-62-2

Crosswalk
N/A

Other Notes
Measurements taken with CO2 handheld devices are admissible if devices meet the following criteria: Handheld non-dispersive infrared devices with a range of 0 to 5,000 ppm and resolution of 1 ppm

INDOOR AIR QUALITY & HAZARDS	I2. VENTILATION & EXHAUST
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Ventilation & Exhaust**
Question:	**I2.2 – IAQ in New Tenancies** **Is there a procedure in place for reviewing the IAQ condition of tenant-controlled HVAC equipment at lease expiry?**

Answer

Select one of the following:	Points available:
- Yes	4
- No	0

Max. Points Available

4 - Pick one answer

Description

Where tenants manage IAQ, owner or landlords should be aware of operations and maintenance practices within tenant spaces to check that tenant practices are not negatively impacting adjacent or base building components that are the owner or landlord's responsibility.

Inadequate ventilation is one of the major sources of IAQ complaints and also an indicator that the HVAC system may not be functioning optimally. Odourous or dusty operations in tenant spaces have the potential to impact adjacent tenants if the contaminants are not properly controlled. The owner or landlord should ensure any high-risk tenants are diligent with their processes so adjacent tenants are not adversely impacted.

Requirements

A. Implement a process for reviewing the condition and efficiency of tenant HVAC equipment at lease expiry, with recommendations to address any deficiencies related to:
   - Mould or water damage
   - Air quality and ventilation effectiveness
   - Filtration media

B. Describe corrective actions planned and implemented, and person responsible

Documentation

- Narrative describing process to maintain HVAC equipment at lease expiry

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to Enclosed Shopping Centre, Universal, Light Industrial and Open-Air Retail buildings

I2.2 – IAQ in New Tenancies - cont'd

Suggested Lead
In-house

References
ASHRAE 180 "Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems":
https://www.ashrae.org/File%20Library/Technical%20Resources/Bookstore/previews_2016639_pre.pdf

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I2. VENTILATION & EXHAUST
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Ventilation & Exhaust**
Question:	**I2.4 – CO Monitoring in Parking Areas** **Do carbon monoxide (CO) concentrations in enclosed parking garages and loading docks meet minimum thresholds?**

Answer

Select one of the following:	Points available:
- Yes – CO is tested	1
- Yes – CO sensors installed	2
- No	0
- Not Applicable – there are no enclosed parking garages of loading docks at the building	-

Max. Points Available

2 - Pick one answer

Description

Carbon monoxide emissions from internal combustion vehicles can present a serious health and safety risk. Monitoring carbon monoxide within enclosed parking areas and loading docks can help identify exposures before they exceed current occupational exposure limits.

The current ACGIH Threshold Limit Values for carbon monoxide exposure is 25 ppm.

Requirements

A. If IAQ testing data is available, provide representative sampling that:
   - Demonstrates that CO levels are below 25 ppm
   - Is conducted at least annually and captures high traffic periods

B. If sensors are installed:
   - Demonstrate that concentrations of carbon monoxide are monitored continuously
   - Provide sensor details (electrochemical or metal oxide semi-conductor with a resolution of 0.1 ppm)
   - Show that sensors are calibrated in accordance with manufacturer's specifications
   - Confirm that CO levels are below 25 ppm. Provide sensor logs and/or IAQ testing data for these locations

Documentation

- IAQ testing results or
- IAQ sensor data

Adapted BB3 Question

Question 03.04.06 – Is the enclosed parking garage and/or gas/fuel-fired equipment room ventilated?

I2.4 – CO Monitoring in Parking Areas - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
ACGIH Threshold Limit Values (TLV) – Chemical Substances: https://www.acgih.org/science/tlv-bei-guidelines/tlv-chemical-substances-introduction/

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I2. VENTILATION & EXHAUST
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Ventilation & Exhaust**
Question:	**I2.5 – CO Monitoring in Occupied Spaces** **Do carbon monoxide (CO) concentrations in occupied spaces adjacent to parking garages, loading docks, and mechanical rooms meet minimum thresholds?**

Answer

Select one of the following:	Points available:
- Yes – CO is tested	1
- Yes – CO sensors installed	3
- No	0
- Not Applicable – there are no enclosed parking garages of loading docks at the building	-

Max. Points Available

3 - Pick one answer

Description

Carbon monoxide emissions from vehicles and improperly vented combustion equipment like boilers and hot water tanks can present a serious health and safety risk. Monitoring carbon monoxide concentrations in occupied spaces adjacent to indoor parking areas and mechanical rooms can help identify exposures before they become a health hazard.

Health Canada has indicated that carbon monoxide concentrations above 5 ppm are indication pf possible emissions and warrant further investigation.

Requirements

A. Identify occupied spaces that are located adjacent to parking garages, loading docks and mechanical rooms
B. If IAQ testing data is available, provide representative sampling that:
   - Demonstrates that CO levels are below 5 ppm
   - Is conducted at least annually and captures high traffic periods
C. If sensors are installed:
   - Demonstrate that concentrations of carbon monoxide is monitored continuously
   - Provide sensor details (electrochemical or metal oxide semi-conductor with a resolution of 0.1 ppm)
   - Show that sensors are calibrated in accordance with manufacturer's specifications
   - Confirm that CO levels are below 5 ppm

Documentation

- Identify occupied spaces potentially exposed to CO
- IAQ testing results OR
- IAQ sensor data

I2.5 – CO Monitoring in Occupied Spaces - cont'd

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
Health Canada: Indoor Air Quality in Office Buildings, A Technical Guide, 1995: https://publications.gc.ca/collections/Collection/H46-2-93-166Erev.pdf

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I3. FILTRATION
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Filtration**
Question:	**I3.1 – Filter Inspection** **Are filters in air handling systems inspected/replaced at regular intervals and corrective actions taken when required?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available

3 - Pick one answer

Description

Use of ASHRAE Minimum Efficiency Reporting Value MERV 8/8-A or greater filtration shall be utilized in intermittently occupied areas and used primarily in the protection of HVAC equipment and components only. In regularly occupied areas, a minimum MERV 13/13-A filter shall be utilized. Pressure gauges shall be used wherever possible to determine the correct change-out interval of the filters. Filtration of return-air (from systems, such as compartment units, fan-coil units, heat pumps) prevents recirculation of occupant-generated contaminants.

Filtration systems need to be properly maintained in accordance with manufacturers recommendations. Filters should be inspected at least quarterly.

Requirements

A. All filters to be rated as per ASHRAE 52.2 (latest version)
B. Confirmation of MERV-A ratings or equivalent must be in writing
C. Filters in Constant Velocity systems can be replaced at the manufacturers maximum rated pressure drop providing there is no detrimental effect on air flow. Air filters in VFD systems to be replaced at approximately twice the initial pressure drop to achieve maximum energy savings
D. Provide filter inspection records and maintenance log showing frequency of inspection and replacements
E. Outline corrective actions taken or plan to address issues identified

Documentation

- Filter rating (ASHRAE test reports including Appendix “J” testing or written confirmation from supplier that filters do not decrease in efficiency through their life)
- Filter replacement schedule
- Filter inspection records and maintenance log
- Corrective actions

I3.1 – Filter Inspection - cont'd

Adapted BB3 Question
Question 03.04.01 – What MERV filters are in use for all outdoor air and return air (i.e. circulating air) systems? And Question 03.04.03 – Are measures in place to alert building operators that HVAC filtration systems need replacement?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
ASHRAE 52.2-2017 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size: https://www.ashrae.org/File%20Library/Technical%20Resources/COVID-19/52_2_2017_COVID-19_20200401.pdf

Crosswalk
N/A

Other Notes
None

Verification
Where owner or landlord is in charge of HVAC maintenance, look for filter requirements : types and preventative maintenance / replacement cycle. Discuss the use of pressure differential sensor where available. Upon visit, it is often possible to see boxes of replacement filters, sometimes indicating the rating. When unclear, request spec sheets or ordering details clearly showing rating.

For tenant-managed ventilation, the demonstration can be achieved by accessing relevant excerpts of the HVAC maintenance contract signed by tenants, or discussing with the personal in charge if present during verification. Unless specific lease clauses request disclosure to the owner or landlord, this might however be a challenge.

INDOOR AIR QUALITY & HAZARDS	I4. RENOVATION & CONSTRUCTION
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Renovations & Maintenance**
Question:	**I4.1 – IAQ Control in Construction Specifications** **Are the construction IAQ controls included in specifications for owner or landlord renovation or construction projects?**

Answer

Select one of the following:	Points available:
- Yes – included in specifications	1
- Yes – evidence of implementation exists	3
- No	0

Max. Points Available

3 - Pick one answer

Description

Specific guidelines must be in place for base-building or tenant renovations and construction projects to ensure that contaminants are not released into the surrounding interior environment and building indoor air quality (IAQ) is maintained.

Contractors or sub-contractors performing renovation or construction work in a building may be required to follow SMACNA IAQ guidelines as directed by the owner or landlord.

Requirements

Before construction:

A. Incorporate the Construction IAQ Control Plan into design and construction specifications for all owner or landlord-led renovation or construction projects being planned in the building
B. Identify construction projects where the implementation of the Construction IAQ Control Plan would apply
C. Prepare the specifications for those projects and highlight the sections detailing the construction IAQ control measures to follow

During and after construction:

D. Conduct regular inspections and document where and how the construction IAQ control measures are followed
E. Keep a record of the inspections and track implementation of controls for the duration of the construction project

Documentation

- Section of construction specifications detailing IAQ control measures
- Photos, air monitoring or inspection reports demonstrating implementation of the Construction IAQ Plan

I4.1 – IAQ Control in Construction Specifications - cont'd

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008, 2008
https://store.smacna.org/iaq-guidelines-for-occupied-buildings-under-construction

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I4. RENOVATION & CONSTRUCTION
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Renovations & Maintenance**
Question:	**I4.2 – IAQ Management in Tenant Construction** **Are the construction IAQ controls included in specifications for tenant renovation or construction projects?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0

Max. Points Available

2 - Pick one answer

Description

Specific guidelines must be in place for base-building or tenant renovations and construction projects to ensure that contaminants are not released into the surrounding interior environment and building indoor air quality (IAQ) is maintained.

Tenants, their contractors or sub-contractors performing renovation or construction work in a building may be required to follow SMACNA IAQ guidelines as directed by the owner or landlord.

Requirements

A. Develop tenant construction manuals for all tenant-led renovation or construction projects being planned in the building
B. Share the building-specific Construction IAQ Control Plan with tenants to include in their design and construction specifications

Documentation

- Section of tenant construction manual detailing IAQ control measures

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

I4.2 – IAQ Management in Tenant Construction - cont'd

References
SMACNA IAQ Guidelines for Occupied Buildings Under Construction, 2nd edition ANSI/SMACNA 008, 2008: https://store.smacna.org/iaq-guidelines-for-occupied-buildings-under-construction

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I5. REFRIGERANTS
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Refrigerants**
Question:	**I5.1 – Refrigerant Safety Program** **Is a Refrigerant Safety Program in place?**

Answer

Select one of the following: Points available:

- Yes 2
- No 0

If yes, select all that apply, whether owner or landlord- or tenant-managed:

- R12
- R22
- R410a
- R407c
- R134a
- R32
- R513a
- R1234ze
- R1234yf
- R514a
- R1233zd
- Ammonia (R717)
- Propane (R290)
- CO2 (R744)
- Water (R718)
- Halon or Halocarbon Fire Suppressants greater than 10 kg
- Other (include refrigerant name and GWP)
- None

Max. Points Available

2 - Pick one answer

Description

Refrigerants are fluids used by heating and cooling equipment (e.g., air conditioners, heat pumps, commercial chillers, and variable-refrigerant-flow (VRF) systems, vending machines, cooled water-fountains, kitchen/catering/freezers etc.) to transfer heat. Some refrigerants present both a health and environmental hazard. Safety measures should be employed to reduce the potential for releases.

Halon is an ozone depleting substance as well as an indoor atmospheric hazard (oxygen displacing). Use of halon in fire-suppression systems has been banned in many jurisdictions.

A Refrigerant Safety Program can help prevent leaks or occupant exposure to refrigerants and halocarbons.

I5.1 – Refrigerant Safety Program - cont'd

Requirements

A. Develop a building-specific Refrigerant Safety Program, compliant with ASHRAE Standard 15 "Safety Standard for Refrigeration Systems," CSA Mechanical Refrigeration Code B52-13 and the Federal Halocarbon Regulation
B. The program must:
   - Cover responsible parties, including the building team's training requirements
   - List refrigerants in use at the building
   - List actions required to reduce and managed refrigerant leaks
   - Describe procedures for refrigerant investigations and corrective action
C. Demonstrate that the program was developed by a person competent in refrigerant safety practices
D. Be signed by the building manager, dated within the past 12 months.

OR

E. Where refrigeration systems are owned and managed by the tenants, the owner or landlord must provide information to tenants on how to implement a Refrigerant Safety Program. Tenants must be encouraged to disclose any halocarbon fire suppressant systems within their space

Documentation

- Building-specific Refrigerant Safety Program
- Proof that program was shared with tenants

Adapted BB3 Question

Question 05.01.02 – Is a Refrigerant Safety Program in place at the building?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

ASHRAE Standard 15, 2022 – "Safety Standard for Refrigeration Systems":
https://www.techstreet.com/ashrae/standards/ashrae-15-2022-packaged-w-standard-34-2022?product_id=2504061
CSA Mechanical Refrigeration Code B52-13
http://www.csagroup.org/documents/codes-and-standards/CSA-SafetyBulletin-B52-Dec12-2013-en.pdf
Federal Halocarbon Regulation
https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-110/index.html

I5.1 – Refrigerant Safety Program - cont'd

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I5. REFRIGERANTS
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Refrigerants**
Question:	**I5.2 – Refrigerant Inspections** **Have leak checks and inspections been conducted on refrigerant systems?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0
- Not applicable – there are no refrigerants managed by the owner or landlord	-

Max. Points Available

2 - Pick one answer

Description

Refrigerants are fluids used by heating and cooling equipment (e.g., air conditioners, heat pumps, commercial chillers, and variable-refrigerant-flow (VRF) systems) to transfer heat. Some refrigerants present both a health and environmental hazard. Safety measures should be employed to reduce the potential for releases.

A Refrigerant Safety Program can help prevent leaks or occupant exposure to refrigerants and halocarbons. Regular leak check and inspections safeguard occupants from potential risks.

Requirements

A. Identify the third-party consultant or service contractor responsible for conducting the required refrigeration leak tests. The service contractor should have an ozone depleting substance (ODS) certification card or equivalent
B. Conduct inspections and tests at regular intervals as outlined in the respective refrigeration standards and detail:
   - The date of service and time since previous service
   - The nature of the service
   - Whether a leak was discovered
   - Corrective action taken, such as the amount of refrigerant lost or added to the system

Documentation

- Credentials of third-party delivering the refrigerant management service
- Record of most recent refrigeration inspections and leak tests conducted

Adapted BB3 Question

New in BOMA BEST 4.0

I5.2 – Refrigerant Inspections - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
Third-party

References
ASHRAE Standard 15, 2022 – "Safety Standard for Refrigeration Systems":
https://www.techstreet.com/ashrae/standards/ashrae-15-2022-packaged-w-standard-34-2022?product_id=2504061
CSA Mechanical Refrigeration Code B52-13
http://www.csagroup.org/documents/codes-and-standards/CSA-SafetyBulletin-B52-Dec12-2013-en.pdf
Federal Halocarbon Regulation
https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-110/index.html

Crosswalk
N/A

Other Notes
Inspections are required annually in Federal sites in Canada. For provincially regulated sites the leak check inspection is required when equipment needs to be charged or topped up

INDOOR AIR QUALITY & HAZARDS	I5. REFRIGERANTS
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Refrigerants**
Question:	**I5.3 – Phase-out High GWP Refrigerants** **Is there a plan to phase out any of the high global warming potential (GWP) refrigerants in use at the building or have any already been phased out?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

If yes, select which of the following high GWP refrigerants are planned for phase-out:

- R12
- R22
- R410a
- R407c
- R134a
- Halon or Halocarbon Fire Suppressants greater than 10 kg
- Other (include refrigerant name and GWP)
- None

Max. Points Available

3 - Pick one answer

Description

Refrigerants contribute to climate change by trapping heat in the atmosphere similar to CO2. The global warming impact of a refrigerant is referred to as Global Warming Potential (GWP), a metric that measures a substances impact relative to CO2. When a refrigerant is released to the atmosphere it contributes to a building emissions. This often occurs when leaks develop, equipment is damaged, and during decommissioning. As refrigerants are phased out equipment will require decommissioning and replacement with new equipment.

For comparison, the common refrigerant R410A has a GWP 2,088, meaning the warming effect it has when released to the atmosphere is 2,088x more than that of CO2.

Requirements

A. Indicate which type of refrigerants have already been phased out
B. Indicate which type of refrigerants are currently being used in the building
C. Where high GWP refrigerants are being used please describe the transition plan

Documentation

- Evidence of refrigerants already phased out
- Refrigerant Phase-out Plan

I5.3 – Phase-out High GWP Refrigerants - cont'd

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
Regulations Amending the Ozone-depleting Substances and Halocarbon Alternatives: SOR/2020-177
https://gazette.gc.ca/rp-pr/p2/2020/2020-09-02/html/sor-dors177-eng.html
Greenhouse Gas Protocol – Global Warming Potential Values:
https://www.ghgprotocol.org/sites/default/files/ghgp/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_1.pdf

Crosswalk
N/A

Other Notes
The following refrigerants are considered to have medium to low GWP compared to those with high GWP listed above:
- R32 (medium GWP)
- R513a (medium GWP)
- R1234ze (low GWP)
- R1234yf (low GWP)
- R514a (low GWP)
- R1233zd (low GWP)
- Ammonia (R717) (low GWP)
- Propane (R290) (low GWP)
- CO2 (R744) (low GWP)
- Water (R718) (low GWP)
- Low emissions refrigerants have a GWP under 600 kgCO2e/m2

INDOOR AIR QUALITY & HAZARDS	I6. IAQ HAZARDS
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Refrigerants**
Question:	**I6.1 – Hazardous Materials Management** **Is a Hazardous Materials Management Program implemented at the building?**

Answer

Select one of the following: Points available:

- Yes 3
- No 0

If yes, select all hazardous materials known or suspected to be present, handled or stored at the building, managed by the owner or landlord and tenants:

- Asbestos
- PCBs
- Silica
- Suggested Lead
- Mercury
- Urea Formaldehyde Foam Insulation
- Chrysotile
- Other
- If none - provide letter of attestation that no hazardous materials are in the building

Max. Points Available

3 - Pick one answer

Description

To mitigate the risk of exposure to hazardous materials associated with building materials, equipment and finishes, the building owner/manager must develop a program to periodically inspect the condition of these materials, conduct safe repair, assess disturbance or complete removal of these materials, and to adequately train personnel in contact with hazardous materials.

The presence and condition of hazardous materials must be identified and managed for the safety of building occupants.

Requirements

A. Develop and implement a Hazardous Materials Management Program
   - Responsible parties, including the building team's training requirements
   - Inventory of all building materials known or presumed to contain asbestos, Suggested Lead, PCBs, silica, and mercury etc.
   - Outline requirements and frequency for hazardous materials surveys and/or inspections
   - Describe how to safely store chemical products in accordance with product Safety Data Sheets and remove asbestos or PCB-containing materials from the building

I6.1 – Hazardous Materials Management

B. Engage a third-party expert to survey and inspect hazardous materials present, handled and stored at the building
C. Conduct a hazardous materials survey, that covers the following:
   - Type, location, approximate quantity in each area and overall extent of hazardous materials present or stored in the building
   - Description of sampling methodology applied and locations where samples were taken
   - Findings and recommendations that provide site specific handling, abatement and disposal guidelines
   - Appendices that include relevant laboratory testing results of samples taken
D. Inspect hazardous materials to ensure these are managed in accordance with the building's Hazardous Materials Management Program

Documentation

- Hazardous Materials Management Program
- Credentials of third-party delivering the hazardous materials assessment service
- Outline of construction, renovation or operations activities that may have come in contact with these hazardous materials in the last three years
- Inspection records demonstrating that materials are safely handled
- Corrective actions identified and completed

Adapted BB3 Question

Best Practice 9: Is a Hazardous Building Materials Management Program in place at the building?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house with Third- Party support

References

ASTM E2356 – 14 "Standard Practice for Comprehensive Building Asbestos Surveys": https://www.astm.org/e2356-18.html
The laboratory performing the sample testing should be accredited by one of the following organizations:
- National Voluntary Laboratory Accreditation Program (NVLAP)
- American Industrial Hygiene Association (AIHA)
- The Canadian Association for Laboratory Accreditation (CALA)
- The Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST), or equivalent

Crosswalk

None

I6.1 – Hazardous Materials Management

Other Notes
Consult with the building's third-party hazardous materials expert to determine how frequently surveys need to be conducted. If operations or renovation and construction activities are not affecting the location of these materials then consider whether survey frequency can be adjusted

Inspections of known or presumed asbestos-containing materials, where present, are required every year. The condition or state of the asbestos-containing materials (e.g., poor, fair, good) must be reviewed. Inspection of materials known or presumed to contain Suggested Lead, mercury, PCBs or other hazardous building materials or equipment, where present, are required every three years.

INDOOR AIR QUALITY & HAZARDS	I6. IAQ HAZARDS
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**IAQ Hazards**
Question:	**I6.2 – Hazardous Chemicals Management** **Is a Hazardous Chemical Product Management Program implemented at the building?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0

Max. Points Available

2 - Pick one answer

Description

Identification and management of chemical products in use or storage at the building is essential to manage health hazards and safety risks, as well as potential environmental impacts.

Internationally, a Globally Harmonized System (GHS) for safety related to the use of hazardous chemical products has been developed by the United Nations. Similar systems such as the Workplace Hazardous Materials Information System (WHMIS) in Canada and HAZCOM in the US are regulated approaches to the management of hazardous chemical or use-related products.

A use-related product is defined as anything that is brought into the building and can include a hazardous chemical. A hazardous chemical is defined as a dangerous good which could be a solid, liquid, or gas that can harm people, other living organisms, property, or the environment.

Requirements

The Hazardous Chemical Products Management Program must include all following components:

A. Periodic inventory of in-use, base-building hazardous chemical products (at least annually, or as procurement is revised)
B. Storage of chemical products in accordance with product Safety Data Sheets
C. Continuous and proactive review process to ensure up-to-date Safety Data Sheets for all hazardous chemical products are always available to employees, performed within the last three (3) years
D. Chemical products labeled in accordance with WHMIS/GHS/HAZCOM.
E. Training of building maintenance staff (including safe handling and use of chemicals pertaining to their work, symbol recognition, safety data sheets, first aid and spill response, storage, and disposal)
F. Review and updating of the Program as products are changed and at least annually

Documentation

- Hazardous Chemical Management Program

I6.2 – Hazardous Chemicals Management - cont'd

Adapted BB3 Question
Best Practice 10 – Is a Hazardous Chemical Products Management Program in place at the building?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I6. IAQ HAZARDS
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**IAQ Hazards**
Question:	**I6.3 – Radon Risk Assessment** **Has a Radon Risk Assessment been performed?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0
- No – properties located in Canada, complete the follow-up question:	1
- Go to link (https://health-infobase.canada.ca/datalab/radon-blog.html), find the region where this building is located in Canada and enter the % of homes in that region with high radon levels:	___ %

Max. Points Available

3 - Pick one answer

Description

Radon is a colourless, odourless, naturally occurring radioactive gas present in soil, rock and water.

In outdoor environments the concentration of radon is low, and the associated health risk is negligible. However, radon can enter buildings through any openings that are in contact with the sub-surface soil and rock, and can accumulate to higher concentrations which results in a higher health risk for the occupants within.

Health Canada has identified elevated radon concentrations in every public health unit across Canada and as such, it is recommended that every building be tested in order to confirm if radon levels within are acceptable. The only way to know the radon concentrations that are present within a building is to test for it.

Requirements

A. Conduct testing in the following locations:
   - Radon testing must occur in all occupied areas where the floors or walls are in direct contact with the ground or is over crawlspaces, utility tunnels or parking garages. Health Canada defines an occupied area as one that is occupied by an individual for four hours per day
   - Unoccupied rooms should also be tested at the same time as occupied rooms if there are plans for them to become occupied in the near future
   - If none of the ground contact floors are occupied, test all occupied rooms on the first occupied floor level above

B. Measurement of occupied areas within a building is required for a minimum duration of 91 days. The testing period will occur entirely during the heating season.

C. Use only measurement devices approved by C-NRPP

I6.3 – Radon Risk Assessment

D. Final analysis must be completed by a laboratory certified by the C-NRPP or similar. Not all measurement protocols require laboratory analyses (e.g., E-PERM Electrets) so long as the analyst is accredited to conduct that analysis through C-NRPP
E. The radon risk assessment report must be signed by an individual certified by the C-NRPP or similar certification body

Documentation

- Radon Risk Assessment Report

Adapted BB3 Question

Question 05.02.01 – Has a radon risk assessment been completed for the building?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

What is radon and where can I find it? https://health-infobase.canada.ca/datalab/radon-blog.html
Canadian National Radon Proficiency Program: www.C-NRPP.ca
Guide for Radon Measurements in Public Buildings: https://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/radiation/radon_building-edifices/27-15-1468-RadonMeasurements_PublicBuildings-EN13.pdf
General Information about Radon in Canada: https://www150.statcan.gc.ca/n1/pub/16-508-x/16-508-x2016002-eng.htm
About Radon Testing: https://takeactiononradon.ca
Find a certified radon measurement professional: https://c-nrpp.ca

Crosswalk

Third-party

Other Notes

High radon levels can potentially exist on upper floors due to the upward movement of air from stack effect or if radon is suspected to be emanating from building materials. However, Health Canada has conducted large-scale testing of federal buildings and these factors are not considered to be significant. If elevated radon levels are identified on the lower floors, the C-NRPP mitigation professional could potentially conduct diagnostic testing on the upper floors while the mitigation strategy is being developed, to confirm the full scope of mitigation required

INDOOR AIR QUALITY & HAZARDS	I7. TRAINING & INNOVATION
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Training**
Question:	**I7.1 – Training in IAQ & Hazards** **Did the building operations and management team receive Indoor Air Quality & Hazards training in the previous three years?**

Answer

Indicate which topics are covered in the training:		Points available:
- IAQ Assessment, Ventilation, Exhaust & Filtration	Yes or No	1
- Renovation & Maintenance	Yes or No	1
- Refrigeration & IAQ Hazards	Yes or No	1
- None		0

Max. Points Available

3 - Pick all that apply

Description

In order for building maintenance staff to effectively manage the building's Indoor Air Quality & Hazards, training should be provided which addresses the topics of IAQ assessment, ventilation and exhaust, filtration, renovation & maintenance, refrigeration or IAQ hazards.

Over time, technologies and preferred practices in building operations and maintenance change. Providing regular professional development opportunities is a good way to help retain staff. Offering training and educational opportunities related to environmental/sustainable building performance not only benefit staff but improve the performance of the building when staff training is applied at the building level.

Requirements

A. List the names of staff members to whom the competencies covered under these topics would apply
   - Training must be provided on the equipment and systems for which the owner or landlord is responsible, covering content such as:
   - A review of maintenance practices, such as filter changes, coil cleaning, drain pans, humidifiers, fan operation, cooling tower maintenance, etc.
   - A review of applicable IAQ standards and guidelines as well as building performance goals
   - Typical causes of IAQ complaints and suggested remedies
   - What is radon, health effects of radon exposure, how does radon enter buildings? Applicable guidance and legislation, testing for radon, mitigation of radon, radon and new construction

B. Provide the applicable course outline or syllabus

C. Provide evidence of competency or training received such as credentials, completion certificate, record of attendance

I7.1 – Training in IAQ & Hazards - cont'd

Documentation

- Name of building O&M team member who received the training
- Course outline or syllabus
- Training Certificate or Record of Attendance

Adapted BB3 Question

Question 03.01.01 – Is a training program on indoor air quality (IAQ) in place for Property Managers and Building Maintenance staff?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

ASHRAE 180 "Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems": https://www.ashrae.org/File%20Library/Technical%20Resources/Bookstore/previews_2016639_pre.pdf
ASHRAE Indoor Air Quality Guide: https://www.ashrae.org/technical-resources/bookstore/indoor-air-quality-guide.pdf

Crosswalk

None

Other Notes

None

INDOOR AIR QUALITY & HAZARDS	I7. TRAINING & INNOVATION
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Innovation**
Question:	**I7.2 – Innovation in IAQ & Hazards** **Is an innovative process or technology in place at the building that goes beyond the requirements outlined in this section?**

Answer

Select all that apply:	Points available:
- Permanent IAQ sensors installed	1
- Corrective actions taken to address any of the hazardous materials risks identified (including, but not limited to radon)	1
- [ESC, Univ, LI, OAR, MURB] Joint landlord/tenant IAQ initiatives implemented	1
- [ESC, Univ] Measured Outdoor Air (OA) ventilation rates in tenant-controlled areas meet minimum carbon dioxide (CO_2) thresholds	1
- Other	1
- No	0

Max. Points Available

3 - Max points cap

Description

Many processes and technologies exist that go beyond the standards and requirements set out in the BOMA BEST Assessment. If building managers/owners have invested in innovative processes or technologies that go beyond these standards, innovation points can be earned under this question.

Requirements

A. Provide details of the technology or process applied at the building
B. Indicate when the technology or process was implemented and the steps that are in place to ensure the technology or process' ongoing success
C. [If "Other" is selected] Explain how the technology or process has improved the building's IAQ or hazards management practices for it to be considered innovative

Documentation

- Narrative of innovative technology or process and its impact

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

I7.2 – Innovation in IAQ & Hazards - cont'd

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
N/A

Other Notes
None

INDOOR AIR QUALITY & HAZARDS	I8. ENGAGEMENT
Focus Area:	**Indoor Air Quality & Hazards**
Topic:	**Engagement**
Question:	**I8.1 – Align engagement initiatives with Tenants** **Do any of the tenants' indoor air quality & hazards management approaches align with the owner or landlord's?**

Answer

Indicate which topics are aligned:		Points available:
- IAQ Assessment	Yes or No	1
- Ventilation, Exhaust & Filtration	Yes or No	1
- Renovation & Maintenance	Yes or No	1
- Refrigeration & IAQ Hazards	Yes or No	1
- No		0

Max. Points Available

4 - Pick all that apply

Description

Passive engagement through communications is an important first step. Also, the ability to collect tenant utility data is becoming increasingly important as part of reporting and disclosure. Active engagement efforts include direct outreach activities, such as working with tenants to collect tenant-controlled utility data, or requiring green leases for new tenants or renewals that address sustainability initiatives.

Requirements

A. Engage with tenants to understand their Indoor Air Quality & Hazards goals, in specific topics listed, and how their goals may align with the building management's Indoor Air Quality & Hazards goals
B. Provide a sample of feedback or communication received from the tenants that demonstrate where alignment exists in specific topics covered in the Indoor Air Quality & Hazards Plan

Documentation

- Narrative that describes where owner or landlord and tenant's Indoor Air Quality & Hazards goals align
- Sample of relevant feedback or communication received from the tenants

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to Enclosed Shopping Centre, Universal, Light Industrial and Open-Air Retail buildings

Suggested Lead

In-house

I8.1 – Align engagement initiatives with Tenants - cont'd

References
None

Crosswalk
N/A

Other Notes
In buildings where tenants manage the majority of IAQ-delivering systems, the owner or landlord can engage with the tenant(s) to collaborate and share information and lessons learned to improve whole building performance in these areas.

ACCESSIBILITY & WELLNESS	A0. BASELINE PRACTICES
Focus Area:	**Accessibility & Wellness**
Topic:	**Baseline Practices**
Question:	**A1.0 – Accessibility Awareness** **Has the property management team considered the following accessibility questions in relation to this building?**

Answer
Select one of the following:
- Yes – Complete BOMA BEST Form A1.0
- No

Max. Points Available
Minimum requirement, this is a baseline practice

Description
The intent behind this question is to raise awareness about the different building elements that impact accessibility.

The BOMA Accessibility Guide is a resource to help building owners and managers understand how to be more inclusive of people with varying temporary and permanent disabilities. It was developed in partnership with the Rick Hansen Foundation.

The Rick Hansen Foundation Accessibility Certification™ (RHFAC) provides a holistic and consistent approach to measuring access through a rating survey.

Requirements
A. Review the BOMA Accessibility Guide and Rick Hansen Foundation materials linked under references
B. Review the features on-site and check off which accessibility features are installed on-site

Documentation
- Photos of each question marked “Yes”

Adapted BB3 Question
Question 04.02.02 – Is the building designed such that potential accessibility barriers are addressed?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord’s control)

Suggested Lead
In-house

A1.0 – Accessibility Awareness - cont'd

References

BOMA Accessibility Guide: https://bomacanada.ca/2022-accessibility-guide/
RHFAC Program: http://www.rickhansen.com/RHFAC
RHFAC Rating Survey: https://www.rickhansen.com/sites/default/files/2020-05/acp-845-finalrhfac-rating-survey-BOMA BEST 3.00-pre-release-may-2020.pdf

Crosswalk

RHFAC

Other Notes

Applicants will not be penalised if the building lacks accessibility features. By completing the form to the best of the building management team's abilities will achieve this baseline requirement.

ACCESSIBILITY & WELLNESS	A1. ACCESSIBILITY
Focus Area:	**Accessibility & Wellness**
Topic:	**Accessibility**
Question:	**A1.1 – RHFAC Survey or equivalent** **Has a Rick Hansen Foundation Accessibility Certification™ (RHFAC) Professional or equivalent conducted an on-site visit of the building to identify barriers faced by people with disabilities?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0

Max. Points Available
2 - Pick one answer

Description
RHFAC Professionals are designated individuals who can conduct RHFAC ratings. They are trained with specific knowledge and skills to conduct a systematic review of the building's elements and features using the RHFAC methodology, based on the holistic user experience of people with varying disabilities affecting their mobility, vision, and hearing.

Requirements
Engage a RHRAC Professional to conduct an on-site visit as part of the systematic review of the building's elements and features using the RHFAC methodology

Documentation
- Proof that on-site visit was conducted by RHFAC Professional

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house or third-party

References
RHFAC Rating Survey: https://www.rickhansen.com/sites/default/files/2020-05/acp-845-finalrhfac-rating-survey-BOMA BEST 3.00-pre-release-may-2020.pdf

A1.1 – RHFAC Survey or equivalent - cont'd

Crosswalk
RHFAC

Other Notes
None

ACCESSIBILITY & WELLNESS	A1. ACCESSIBILITY
Focus Area:	**Accessibility & Wellness**
Topic:	**Accessibility**
Question:	**A1.2 – RHFAC Plan or Action** **Have steps been taken to address any shortcomings identified in the Rick Hansen Foundation Accessibility Certification™ (RHFAC) Professional's on-site visit?**

Answer

Select one of the following:	Points available:
- Plan	1
- Action	2
- No	0

Max. Points Available
3 - Pick one answer

Description
The Rick Hansen Foundation Accessibility Certification™ (RHFAC) provides a holistic and consistent approach to measuring access through a rating survey.

Requirements
Provide proof of steps taken following on-site visit to show how accessibility shortcomings are being addressed. This may be in the form of a plan or actual progress made in addressing shortcomings identified

Documentation
- Plan of actions and timeline
- Photos of corrective actions taken (if any)

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to Office, Healthcare, Enclosed Shopping Centre and Universal buildings

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
RHFAC

Other Notes
None

ACCESSIBILITY & WELLNESS	A2. COMFORT, VIEWS & ACOUSTICS
Focus Area:	**Accessibility & Wellness**
Topic:	**Thermal Comfort**
Question:	**A2.1 – Humidification** **Are humidification systems present and properly maintained?**

Answer

Select one of the following:	Points available:
- Yes – humidification systems are present and properly maintained	2
- Not applicable – humidification systems were considered but deemed not necessary	-
- No	0

Max. Points Available

2 - Pick one answer

Description

Low indoor relative humidity is a common problem in cold climate buildings during winter months and a common source of indoor air quality complaints. The addition of a carefully maintained whole building humidification system, that is focused on human comfort, can help maintain a more comfortable work environment.

Humidification systems should be cleaned and inspected annually. ASHRAE 180-2018 recommends annual inspection and cleaning of strainers, drain pans, distributors and semi-annual cleaning of steam traps, pumps and controls

Requirements

C. Describe the type of humidification system present at the building
A. Maintain the humidification system in accordance with manufacturer's recommendations

OR

B. Describe the steps taken to understand the building's humidification needs (e.g. not needed in humid climate)
C. Explain why humifidication systems are not used at the building

Documentation

- Humidification System Maintenance Program and Maintenance records
- Annual cleaning and inspection logs

Adapted BB3 Question

New in BOMA BEST 4.0

A2.1 – Humidification - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
ASHRAE 180-2018 Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems, Table 5-11, https://www.ashrae.org/File%20Library/Technical%20Resources/Bookstore/previews_2016639_pre.pdf
For more guidance on creating this risk management plan, please review the Hazard Analysis and Critical Control Point (HACCP) risk management plan in ASHRAE Standard 188, Prevention of Legionellosis Associated with Building Water Systems.

Crosswalk
N/A

Other Notes
Requirements apply to humidification delivered to occupied spaces.

FOR HEALTHCARE BUILDINGS
If steam humidification is used, confirm whether clean steam rather than treated boiler water utilized. The steam must not be provided from a source using chemical water treatment, such as the central heating plant, because of potential air contamination from boiler additives used to control scale and corrosion. Independent steam generation, using potable water in equipment such as re-boilers, instantaneous electric, or gas fired steam generators is required. Water treatment in HVAC equipment must, at all times, meet local provincial and/or federal guidelines and regulations.

If spray humidification is used, confirm whether the system is rigorously maintained and free of rust, algae, or loose contaminants of any kind. Poor maintenance of spray humidification systems may increase the likelihood of microbial growth and legionella. A Risk Management Plan must include documented records of inspection with respect to: preventing standing water in drain pans; limiting water droplet carry-over; minimizing stagnant water in humidifier and water spray sumps.

Water treatment in HVAC equipment must, at all times, meet local provincial and/or federal guidelines and regulations.

ACCESSIBILITY & WELLNESS	A2. COMFORT, VIEWS & ACOUSTICS
Focus Area:	**Accessibility & Wellness**
Topic:	**Thermal Comfort**
Question:	**A2.2 – Relative Humidity** **Is Relative Humidity (RH) maintained according to ASHRAE 55?**

Answer

Select one of the following:	Points available:
- Yes	2
- Not Applicable – Question A2.1 answered Not Applicable or No	-
- No	0

Max. Points Available
2 - Pick one answer

Description
Maintaining relative humidity in the proper range can prevent occupant complaints and condensation issues on building finishes. High relative humidity can cause discomfort and can also Suggested Lead to condensation and mould growth within buildings. Low relative humidity causes dryness and is a common indoor air quality complaint during winter months.

As per ASHRAE's Epidemic Task Force, Building Readiness Guide, maintaining the space relative humidity between 40% and 60% decreases the bio-burden of infectious particles in the space and decreases the infectivity of many viruses in the air. Some regions recommend humidity levels are maintained between 30% to 50%.

Requirements
Demonstrate ASHRAE 55 is maintained at the building

Documentation
- BAS logs or equivalent documentation showing humidity set point

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

A2.2 – Relative Humidity - cont'd

References

ASHRAE 55-2020 Thermal Environmental Conditions for Human Occupancy, https://www.ashrae.org/technical-resources/bookstore/standard-55-thermal-environmental-conditions-for-human-occupancy

ASHRAE Building Readiness Guide, 2022: https://www.ashrae.org/file%20library/technical%20resources/covid-19/ashrae-building-readiness.pdf

Crosswalk

N/A

Other Notes

None

ACCESSIBILITY & WELLNESS	A3. EQUITY & INCLUSIVITY
Focus Area:	**Accessibility & Wellness**
Topic:	**Equity & Inclusivity**
Question:	**A3.1 – DEI Assessment** **Have the building features been evaluated against diversity, equity and inclusion (DEI) aspects to inform an implementation plan?**

Answer

Select one of the following:	Points available:
- Yes – in-house assessment conducted	1
- Yes – third party DEI expert engaged	2
- Yes – implementation plan developed	3
- None of the above	0

Max. Points Available

3 - Pick one answer

Description

Inclusivity addresses equity of building use by different groups of occupants, providing a spectrum of amenities to support varying needs. This can include welcoming other users through building elements, such as Universal washrooms and family washrooms, or providing signage in different languages.

Promoting inclusivity within buildings can ensure that efforts to improve building wellness impact all building users equally. It is an opportunity to consider diversity and equity in planning and programming, to include components that support underrepresented, minority, and less visible user groups.

Requirements

A. Conduct an assessment that considers a variety of DEI strategies, and the feasibility of implementing them
B. Engage a third-party DEI expert to consider in-house assessment and help in the development of a building-specific DEI strategy
C. Develop a long-term DEI implementation plan based on the building-specific DEI strategies identified in the in-house assessment and through consultation with DEI expert

Refer to Other Notes below.

Documentation

- In-house assessment of DEI strategies
- Letter confirming engagement of third-party DEI expert, with their credentials
- Long-term DEI implementation plan

A3.1 – DEI Assessment - cont'd

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
None

Crosswalk
WELL Equity Rating

Other Notes Strategies to consider include:

Amenities:
- Universal washrooms
- baby feeding room
- infant change tables in washrooms for all genders
- family washrooms
- gender neutral washrooms
- provision of free female hygiene products
- on-site childcare
- prayer/meditation/restorative room
- spaces provided for community events/meetings
- outdoor place of respite
- safety and security measures (e.g., lighting, areas of refuge, safe walk programs, visible entries and exits)
- training for tenants or employees (e.g., anti-racism, LGBTQIA+)
- other

Sense of Place:
- Ancestral land acknowledgement
- Historical community acknowledgement (e.g. slavery, ethno-cultural)
- Hosting events to celebrate location and connection to the community
- Public art or interior/exterior design elements, such as murals to reflect and celebrate ancestral land use and community
- Art by local Indigenous artists
- Conservation of heritage features
- Outdoor publicly-accessible and safe amenities
- Installations or permanent displays recognizing the local geography or environment
- Other structural or social strategies to enhance sense of place

ACCESSIBILITY & WELLNESS	A3. EQUITY & INCLUSIVITY
Focus Area:	**Accessibility & Wellness**
Topic:	**Equity & Inclusivity**
Question:	**A3.2 – Inclusive Amenities** **Have steps been taken to enhance inclusive amenities at the building?**

Answer

Select all that apply:	Points available:
- Universal washrooms	1
- baby feeding room	1
- infant change tables in washrooms for all genders	1
- family washrooms	1
- gender neutral washrooms	1
- provision of free female hygiene products	1
- on-site childcare	1
- prayer/meditation/restorative room	1
- spaces provided for community events/meetings	1
- outdoor place of respite	1
- safety and security measures (e.g., lighting, areas of refuge, safe walk programs, visible entries and exits)	1
- training for tenants or employees (e.g., anti-racism, LGBTQIA+)	1
- other	1
- none of the above	0

Max. Points Available

5 - Max points cap

Description

Inclusivity addresses equity of building use by different groups of occupants, providing a spectrum of amenities to support varying needs. This can include welcoming other users through building elements, such as Universal washrooms and family washrooms, or providing signage in different languages.

Promoting inclusivity within buildings can ensure that efforts to improve building wellness impact all building users equally. It is an opportunity to consider diversity and equity in planning and programming, to include components that support underrepresented, minority, and less visible user groups.

Requirements

For owner or landlord-controlled areas, indicate the inclusive amenity features that are implemented to make building users feel welcome

Documentation

- Description of strategies implemented with accompanying photos

A3.2 – Inclusive Amenities - cont'd

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
None

Crosswalk
WELL Equity Rating

Other Notes
The strategies covered under this question is meant to go above and beyond common tenant / occupant engagement initiatives. Applicants are required to demonstrate the effort taken to understand building-specific DEI challenges and opportunities.

By implementing strategies to create a sense of place that celebrates both relevant historic and contemporary cultures, Owner or landlords can foster community-building opportunities beyond the site boundaries.

Inclusivity efforts will enhance safety, security and comfort while promoting a sense of belonging for all building users and the broader community.

ACCESSIBILITY & WELLNESS	A3. EQUITY & INCLUSIVITY
Focus Area:	**Accessibility & Wellness**
Topic:	**Equity & Inclusivity**
Question:	**A3.3 – Sense of Place** **Have measures been implemented to enhance occupant and visitor inclusivity through creating a sense of place in the broader community?**

Answer

Select all that apply:	Points available:
- Ancestral land acknowledgement	1
- Historical community acknowledgement (e.g. slavery, ethno-cultural)	1
- Hosting events to celebrate location and connection to the community	1
- Public art or interior/exterior design elements, such as murals to reflect and celebrate ancestral land use and community	1
- Art by local Indigenous artists	1
- Conservation of heritage features	1
- Outdoor publicly-accessible and safe amenities	1
- Installations or permanent displays recognizing the local geography or environment	1
- Other structural or social strategies to enhance sense of place	1
- None	0

Max. Points Available

4 - Max points cap

Description

For owner or landlord-controlled areas, indicate the inclusive amenity features that are either planned or already implemented to make building users feel welcome

Requirements

Describe the measures implemented to enhance the property's sense of place

Documentation

- Description of strategies implemented with accompanying photos

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

A3.3 – Sense of Place - cont'd

References
None

Crosswalk
N/A

Other Notes
The strategies covered under this question is meant to go above and beyond common tenant / occupant engagement initiatives. Applicants are required to demonstrate the effort taken to understand building-specific DEI challenges and opportunities.

ACCESSIBILITY & WELLNESS	A4. OCCUPANT EXPERIENCE
Focus Area:	**Accessibility & Wellness**
Topic:	**Occupant Experience**
Question:	**A4.1 – Occupant Service Requests** **Is an Occupant Service Request Program in place?**

Answer

Select all that apply:	Points available:
- Yes – Occupant Service Request Program in place	1
- Yes – Evidence of requests resolved within 1 – 2 weeks	2
- No	0

Max. Points Available

3 - Pick all that apply

Description

Service requests for maintenance are used to identify issues pertaining to the building. Having a formal process in place allows tracking of various Key Performance Indicators (KPIs) such as critical equipment maintenance and critical building maintenance.

Building occupants (tenants and building staff) are important stakeholders in IAQ management. Promoting a better understanding of IAQ in the building will encourage feedback and demonstrate active management of IAQ concerns.

Building management must have in place a documented means for addressing occupant (tenant and building staff) concerns regarding maintenance service requests. Visitors to the building may also log service requests. Such service request logs can provide evidence of occupant dissatisfaction and its causes. Trends in complaint rates over time may indicate occupant reactions to changes in building operation.

Requirements

A. Describe the process used in the building to receive, document and respond to complaints (such as IAQ, temperature, smell, dust, dryness etc.)
B. The Occupant Service Request Program must include the following components:
   - A mechanism to ensure that all service requests are reviewed and acted upon within 1-2 weeks, unless otherwise specified (e.g., critical area or critical equipment) – see Other Notes
   - Information on the origins of the service request
   - Information on the status of the service request (e.g., in progress, resolved, etc.)
   - Information on the corrective action taken.

A4.1 – Occupant Service Requests - cont'd

C. Service requests must be reviewed and acted upon within 1-2 weeks, unless otherwise specified (e.g., critical area or critical equipment).
D. Ensure there are considerations and direction provided for when a complaint can be handled by on-site maintenance staff and where the complaint requires escalation to bring in a third party
E. Describe procedures to follow if issues require more time to resolve

Documentation

- Occupant Service Request Program
- Sample service requests received and resolved, such as closed work orders
- Demonstrate service requests are addressed within 1-2 weeks
- Provide communication with occupant as proof that matters were resolved

Adapted BB3 Question

Best Practice 8 – Is an Occupant Service Request Program in place?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house

References

None

Crosswalk

N/A

Other Notes

The Occupant Service Request Program must have a mechanism in place for recording the following information:

- Incident log number
- Occupant name, company and department, location in building.
- Date complaint was received;
- Description of complaint;
- Suggested cause;
- Summary of problem;
- Actions completed;
- Date of occupant interview (if applicable);
- Remedial action report;
- Date of when occupant was advised about actions taken;
- Additional details (as required)

ACCESSIBILITY & WELLNESS	A4. OCCUPANT EXPERIENCE
Focus Area:	**Accessibility & Wellness**
Topic:	**Occupant Experience**
Question:	**A4.2 – Occupant Satisfaction Survey** **Was an occupant satisfaction survey conducted in the last three years?**

Answer

Select all components covered in the survey:	Points available:
- Quality and effectiveness of building management and services	1
- Air quality	1
- Thermal comfort	1
- Lighting	1
- Acoustics, and/or noise	1
- Frequency and timeliness of communication and response times	1
- Inclusivity	1
- [Healthcare] Ease of interaction	1
- [Healthcare] Privacy	1
- Other	1
- No	0

Max. Points Available

4 - Max points cap

Description

Conducting regular occupant satisfaction surveys can help management better understand the issues/ priorities that matter most to occupants. Surveys can also help improve management-tenant relationships, and inform management priorities.

Requirements

A. Conduct an occupant satisfaction survey every two years, at a minimum
B. The survey must be provided to at least 50% of building occupants
C. Record the date the survey was distributed and survey recipients
D. Advertise the survey in different media channels, as appropriate, to encourage occupant participation
E. Compile survey results, detail corrective actions planned and implemented

Also see Other Notes

Documentation

- Survey questions
- Sample of occupant responses received
- Summary report, corrective actions planned and implemented

A4.2 – Occupant Satisfaction Survey - cont'd

Adapted BB3 Question
Question 10.02.01 - Does building management regularly conduct an occupant satisfaction survey that includes the following components?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
Although there is no minimum rate of response required, a rate of 30% is encouraged for results to be considered informative

ACCESSIBILITY & WELLNESS	A5. TRAINING & INNOVATION
Focus Area:	**Accessibility & Wellness**
Topic:	**Training**
Question:	**A5.1 – Training in Accessibility & Wellness** **Did the building operations and management team receive Accessibility & Wellness training in the previous three years?**

Answer

Indicate which topics are covered in the training:		Points available:
- Accessibility, Equity	Yes or No	1
- Comfort, Views & Acoustics	Yes or No	1
- Occupant Experience	Yes or No	1

Max. Points Available

3 - Pick all that apply

Description

In order for building maintenance staff to effectively manage the building's Accessibility & Wellness, training should be provided which addresses the topics of accessibility, comfort, views, acoustics, occupant experience and equity.

Over time, technologies and preferred practices in building operations and maintenance change. Providing regular professional development opportunities is a good way to help retain staff. Offering training and educational opportunities related to environmental/sustainable building performance not only benefit staff but improve the performance of the building when staff training is applied at the building level.

Requirements

A. List the names of staff members to whom the competencies covered under these topics would apply
B. Provide the applicable course outline or syllabus
C. Provide evidence of competency or training received such as credentials, completion certificate, record of attendance

Documentation

- Name of building O&M team member who received the training
- Course outline or syllabus
- Training Certificate or Record of Attendance

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

A5.1 – Training in Accessibility & Wellness - cont'd

Suggested Lead
In-house, with third-party support

References
N/A

Crosswalk
None

Other Notes
None

ACCESSIBILITY & WELLNESS	A5. TRAINING & INNOVATION
Focus Area:	**Accessibility & Wellness**
Topic:	**Innovation**
Question:	**A5.2 – Innovation in Accessibility & Wellness** **Is an innovative process or technology in place at the building that goes beyond the requirements outlined in this section?**

Answer

Select all that apply:	Points available:
- [ESC, Univ, LI, OAR, MURB] Visual / Acoustic elements reviewed	1
- [LI/OAR] Evidence of Accessibility & Wellness communication share with tenants	1
- Other	1
- Not applicable	-

Max. Points Available

1 - Max points cap

Description

Many processes and technologies exist that go beyond the standards and requirements set out in the BOMA BEST Assessment. If building managers/owners have invested in innovative processes or technologies that go beyond these standards, innovation points can be earned under this question.

Requirements

A. Provide details of the technology or process applied at the building
B. Indicate when the technology or process was implemented and the steps that are in place to ensure the technology or process' ongoing success
C. [If "Other" is selected] Explain how the technology or process has improved the building's accessibility and wellness practices for it to be considered innovative

Documentation

- Narrative of innovative technology or process and its impact

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

A5.2 – Innovation in Accessibility & Wellness - cont'd

References
None

Crosswalk
N/A

Other Notes
Visual / Acoustic elements reviewed may include: access to views and natural light, quality of electric light, glare control devices, corrective actions addressed, plan to address higher cost corrective actions.

CUSTODIAL & WASTE	P0. BASELINE PRACTICES
Focus Area:	**Custodial & Waste**
Topic:	**Baseline Practices**
Question:	**P4.0b – Waste Reduction and Diversion Policy** **Is a Waste Reduction and Diversion Policy in place at the building?**

Answer
Select one of the following:
- Yes
- Not applicable if no regional collection service for specific material category -

Max. Points Available
Minimum requirement, this is a baseline practice

Description
The Waste Reduction and Diversion Policy represents a commitment from the organization or building management to continuously improve performance regarding the reduction and diversion of solid waste.

Requirements
A. The Policy must include a statement committing the organization or building to continuous improvement in the reduction and diversion of waste. Address the prevention, diversion, and management of solid waste generated as a result of the following:
   - Day to day activities from all waste producing areas, including food service and retail; and
   - Periodic events such as conferences, catered meetings and functions, training, tenant relocation activities, construction, renovation and demolition projects, fit-ups, etc.

B. Policy must be signed by the building manager, dated within the last 12 months..

Documentation
- Waste Reduction and Diversion Policy

Adapted BB3 Question
Question BEST Practice 12(B) – Is a Waste Reduction and Diversion Policy in place at the building?

Applicability
Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead
In-house

References
None

P4.0b – Waste Reduction and Diversion Policy - cont'd

Crosswalk
N/A

Other Notes
Demonstration of implementation is not required, nor is building-specific information.

The contamination of recyclable material does not disqualify this requirement, though continued contamination should be addressed in the Waste Reduction Work Plan.

Off-site sorting such as at a transfer station from a single common receptacle does not qualify as source-separation in the context of the BOMA BEST application.

CUSTODIAL & WASTE	P0. BASELINE PRACTICES
Focus Area:	**Custodial & Waste**
Topic:	**Baseline Practices**
Question:	**P8.0 – Owner or landlord shares Custodial & Waste Management practices** **Has the owner or landlord's Custodial & Waste Communication Plan been shared with the tenants?**

Answer
Select one of the following:
- Yes – the Plan covers the following topics: custodial and waste assessments as well as tips for managing waste, in day-to-day operations and during renovations
- Not applicable

Max. Points Available
Minimum Requirement, this is a baseline practice

Description
Increasing building tenant and occupant awareness and engagement in environmental and sustainable practices can have a significant positive or negative impact on the performance of the building.

Improving the environmental performance of the building can Suggested Lead to many positive outcomes for building management, staff and tenants, including but not limited to lower operational costs, lower utility bills, improved indoor air quality, improved management-tenant relationships, etc.

Requirements
A. Develop a building-specific Custodial & Waste Communication Plan that covers:
   - The building management team's efforts to manage custodial and waste
   - Custodial and waste assessments as well as tips for managing waste, in day-to-day operations and during renovations

B. Copies of communication with the building's tenants where the content of the building Custodial & Waste Communication Plan was shared, dated within the past 12 months

C. Demonstrate that communication was distributed to at least half of the number of tenant organizations occupying the building or a group who lease at least half of the total building area

Documentation
- Building-specific Custodial & Waste Communication Plan
- Proof of communication with representative group of building tenants, covering custodial and waste assessments as well as tips for managing waste, in day-to-day operations and during renovations

Adapted BB3 Question
Best Practice 7 – Is an Indoor Air Quality Monitoring Plan in place at the building? And
Best Practice 16 – Is an Occupant Environmental Communication Program in place at the building?

P8.0 – Owner or landlord shares Custodial & Waste Management practices - cont'd

Applicability
Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

CUSTODIAL & WASTE	P1. PROCUREMENT
Focus Area:	**Custodial & Waste**
Topic:	**Procurement**
Question:	**P1.1 – Circular Economy Procurement Strategy** **Are circular economy procurement strategies implemented and maintained in building management activities**

Answer

Select one of the following:	Points available:
- Yes – circular economy strategies are implemented	2
- No	0

Max. Points Available

2 - Pick one answer

Description

Green or sustainable procurement typically concentrates on how to improve sustainable practices within a linear economic model and as a result, focus can be narrowly applied to individual components, such as what materials are used in the product.

On the other hand, circular procurement focuses on the value of a product, considers needs, best use, and end of life management. Within this system, it is possible to leverage the full value of a product or material while minimizing environmental and social impacts.

While waste diversion may be a critical piece of the company's sustainability objectives, its interrelationship with procurement is rarely recognized. When end-of-life considerations are included in procurement decisions less waste is generated, and diversion and capture rates increase.

Requirements

A. How equipment is selected to reduce the environmental impact over its life cycle
B. How resources use is optimized to reduce consumption, or generate energy/collect water on-site
C. Source food products from local suppliers, select durable or refurbished products
D. Inform procurement decisions by considering waste creation and vendor take-back programs

Documentation

- Procurement policy highlighting any of the aspects listed above
- Documentation showing an example of each strategy implemented

Adapted BB3 Question

Question 06.01.01 – Is an environmental procurement program in place at the building that includes the following components?

P1.1 – Circular Economy Procurement Strategy - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
BOMA Canada – Circular Economy in Commercial Real Estate Focus: Circular Procurement: https://bomacanada.ca/wp-content/uploads/2022/09/BOMACANADA_CircularEconomyBrief_2022_EN.pdf
Circular Innovation Council - https://circularinnovation.ca/circular-economy/

Crosswalk
N/A

Other Notes
None

CUSTODIAL & WASTE	P1. PROCUREMENT
Focus Area:	**Custodial & Waste**
Topic:	**Procurement**
Question:	**P1.2 – Social Procurement Strategy** **Are social procurement strategies implemented and maintained in building management activities?**

Answer

Select one of the following:	Points available:
- Yes – social procurement strategies are implemented	2
- No	0

Max. Points Available

2 - Pick one answer

Description

Green or sustainable procurement typically concentrates on how to improve sustainable practices within a linear economic model and as a result, focus can be narrowly applied to individual components, such as what materials are used in the product.

On the other hand, circular procurement focuses on the value of a product, considers needs, best use, and end of life management. Within this system, it is possible to leverage the full value of a product or material while minimizing environmental and social impacts.

While waste diversion may be a critical piece of the company's sustainability objectives, its interrelationship with procurement is rarely recognized. When end-of-life considerations are included in procurement decisions less waste is generated, and diversion and capture rates increase.

Requirements

A. Award contracts to local, independent and/or socially responsible businesses
B. Partner with equity-seeking groups to fill staffing positions and apprentice opportunities

Documentation

- Procurement policy highlighting any of the aspects listed above
- Documentation showing an example of each strategy implemented

Adapted BB3 Question

Question 06.01.01 – Is an environmental procurement program in place at the building that includes the following components?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

P1.2 – Social Procurement Strategy - cont'd

Suggested Lead
In-house

References
City of Toronto's Social Procurement Program: https://www.toronto.ca/business-economy/doing-business-with-the-city/social-procurement-program/

Crosswalk
N/A

Other Notes
None

CUSTODIAL & WASTE	P2. CUSTODIAL MAINTENANCE & OPERATIONS
Focus Area:	**Custodial & Waste**
Topic:	**Custodial Maintenance & Operations**
Question:	**P2.1 – Pest Management** **Is an Integrated Pest Management Program in place?**

Answer

Select one of the following: Points available:

- Yes 2
- No 0

Max. Points Available

2 - Pick one answer

Description

Unhygienic conditions can result in the presence and proliferation of organisms that produce harmful or irritating by-products.

Requirements

A. Develop a building-specific Integrated Pest Management Program that covers:
   - Responsible parties, including the building team's training requirements
   - Standard operating procedures (SOP) for pest management
   - Interior and exterior pest management products and supplies to be used
   - Guidance about the use of environmentally preferable or low-risk pesticides and circumstances when the use of conventional products are appropriate
   - Strategies about storing food in sealed containers with daily disposal
   - Proactive inspection for evidence of pests, at least monthly
   - How to manage communications with tenants when pesticide applications are needed

B. Program must be signed by the building manager, dated within the past 12 months

C. Where pest management services are managed and delivered by the tenants and their service providers, the owner or landlord must provide information to the tenants on how to implement a Pest Management Program

Documentation

- Building-specific Integrated Pest Management Program
- Proof that Program was shared with Tenants

Adapted BB3 Question

Question 07.03.02 – Are pest reduction strategies in place at the building?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

P2.1 – Pest Management - cont'd

Suggested Lead
In-house

References
Integrated Pest Management – https://ipminstitute.org/what-is-integrated-pest-management/

Crosswalk
N/A

Other Notes
None

P3. CUSTODIAL ASSESSMENT

There are no questions for this asset class under this section.

P4. WASTE AUDIT & MEASUREMENT

There are no questions for this asset class under this section.

CUSTODIAL & WASTE	P5. WASTE MANAGEMENT
Focus Area:	**Custodial & Waste**
Topic:	**Waste Management**
Question:	**P5.1b – Waste Management Strategies** **Are any of the following waste diversion initiatives in place at the building?**

Answer

Select all that apply:	Points available:
- Electronic communication	1
- Food waste diversion	1
- Other	1
- None	0

Max. Points Available
3 - Pick all that apply

Description
Reduction initiatives encourage staff/tenant participation in waste diversion activities.

Requirements
A. Demonstrate that waste diversion initiatives have been implemented in the building. Reduction initiatives can include but are not limited to:
   - Electronic communication initiatives that result in a reduction of paper use.
   - Food waste reduction or diversion programs with on-site cafeterias, restaurants or coffee shops.

Documentation
- Phots or evidence of program implementation

Adapted BB3 Question
Question 08.03.01 – Are any of the following waste diversion initiatives in place at the building?

Applicability
Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
None

CUSTODIAL & WASTE	P5. WASTE MANAGEMENT
Focus Area:	**Custodial & Waste**
Topic:	**Waste Management**
Question:	**P5.2b – Waste Management Strategies** **Is a program in place at the building for recycling, waste avoidance, reuse or donation of the following waste streams?**

Answer

Select all that apply:	Points available:
- Ballasts, fluorescent tubes, CFL and lamps containing mercury	1
- Organic food material for composting	1
- Grease/cooking oil	1
- Other waste material	1
- None	0

Max. Points Available

4 - Pick all that apply

Description

In addition to the typical list of designated materials for source separation that most regions accept to be recycled (paper, containers, cardboard) or composting (food waste), many organizations expand their collection programs to include other reusable/recyclable materials (where a demonstrated end-market exists).

"Programs that reduce waste and recycling generation and reuse products instead of putting them into the waste stream is an important piece of a waste reduction strategy. A transition to a circular economy must go beyond recycling, and also promote the reuse of existing materials, or the elimination of their production in the first place. Making a new product emits greenhouse gases that contribute to climate change and requires a lot of materials and energy – raw materials must be extracted from the earth, and the product must be fabricated then transported to wherever it will be sold. As a result, reduction and reuse are the most effective ways you can save natural resources, protect the environment and save money." (Source: https://www.epa.gov/recycle/reducing-and-reusing-basics)

Requirements

A. Indicate all reduction, reuse and donation programs implemented at the building
B. Collect documentation to demonstrate these initiatives are in place, such as
   - Donation program partnerships
   - Confirmed pick-ups from charities or organizations
   - Launch of reduction/avoidance campaigns

P5.2b – Waste Management Strategies - cont'd

Documentation

- Emails, memo, service agreements, photos or any other evidence which demonstrate requirements are met

Adapted BB3 Question

Question 08.03.02 – Has the recycling program been expanded to include any of the following waste materials?

Applicability

Applicable to Light Industrial and Open-Air Retail buildings

Suggested Lead

In-house

References

None

Crosswalk

N/A

Other Notes

None

CUSTODIAL & WASTE	P6. RENOVATIONS & CONSTRUCTION
Focus Area:	**Custodial & Waste**
Topic:	**Renovations & Construction**
Question:	**P6.1 – Waste Management in Construction** **Is a Construction Waste Management Program in place to minimize waste impacts during renovation and construction?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0

Max. Points Available

2 - Pick one answer

Description

Renovation, construction, and demolition projects create a lot of waste materials (about 30% of Canada's disposal) and need to be effectively managed to minimize the adverse impact on the environment.

These materials are largely inert, very heavy and can pose unique challenges in source separation because most materials are combined and difficult to recycle. This is further complicated because the Project Managers for C&D projects work in a separate department and interdepartmental collaboration is minimal .

Without effective communication and planning from the initial project design stages, waste minimization and diversion is nearly impossible.

Requirements

A. Develop and implement a Construction Waste Management Program that covers:
   - Responsible parties, including the building team's training requirements
   - Plan to sort discarded materials into corresponding waste bins for separation, reuse/recycling and haul off-site by a verified hauler
   - Details on how construction waste materials are handled, how waste is tracked, and diverted/garbage volumes reported

B. Program must be signed by the building manager, dated within the past 12 months

C. Where construction services are managed and delivered by the tenants and their service providers, the owner or landlord must provide information to the tenants on how to implement a Construction Waste Management Program

Documentation

- Building-specific Construction Waste Management Program

P6.1 – Waste Management in Construction - cont'd

Adapted BB3 Question
Question 08.01.02 – Is a program in place at the building to minimize construction, renovation and/or demolition waste being sent to landfill?

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
3R Certified

Other Notes
None

CUSTODIAL & WASTE	P6. RENOVATIONS & CONSTRUCTION
Focus Area:	**Custodial & Waste**
Topic:	**Renovations & Construction**
Question:	**P6.2 – Waste Control in Construction Specifications** **Are the construction waste controls included in specifications for owner or landlord renovation or construction projects?**

Answer

Select all that apply:	Points available:
- Yes – included in specifications	1
- Yes – evidence of implementation exists	1
- No	0

Max. Points Available

2

Description

Renovation, construction, and demolition projects create a lot of waste materials (about 30% of Canada's disposal) and need to be effectively managed to minimize the adverse impact on the environment.

These materials are largely inert, very heavy and can pose unique challenges in source separation because most materials are combined and difficult to recycle. This is further complicated because the Project Managers for C&D projects work in a separate department and interdepartmental collaboration is minimal.

Without effective communication and planning from the initial project design stages, waste minimization and diversion is nearly impossible.

Requirements

Before construction:

A. Develop design and construction specifications for all owner or landlord-led renovation or construction projects being planned in the building
B. Ensure all items covered in the building-specific Construction Waste Management Program are covered in the design and construction specifications
C. Include directive in the specifications that binds the contractor to follow the Construction Waste Management Program during construction

During and after construction:

D. Identify construction projects to implement the Construction Waste Management Program
E. Gather the specifications for those projects and highlight the sections detailing the construction waste control measures to follow
F. Conduct regular inspections and document where and how the construction waste management are followed

P6.2 – Waste Control in Construction Specifications - cont'd

G. Keep a record of the inspections and track implementation of waste sorting activities for the duration of the construction project

Documentation
- Section of construction specifications detailing waste control measures
- Section of construction specifications detailing contractor commitment
- Photos, way bills or inspection reports demonstrating implementation of the program

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
3R Certified

Other Notes
None

CUSTODIAL & WASTE	P6. RENOVATIONS & CONSTRUCTION
Focus Area:	**Custodial & Waste**
Topic:	**Renovations & Construction**
Question:	**P6.3 – Waste Management in Tenant Construction** **Are the construction waste controls included in specifications for tenant renovation or construction projects?**

Answer

Select one of the following:	Points available:
- Yes	1
- No	0

Max. Points Available

1 - Pick one answer

Description

Renovation, construction, and demolition projects create a lot of waste materials (about 30% of Canada's disposal) and need to be effectively managed to minimize the adverse impact on the environment.

These materials are largely inert, very heavy and can pose unique challenges in source separation because most materials are combined and difficult to recycle. This is further complicated because the Project Managers for C&D projects work in a separate department and interdepartmental collaboration is minimal.

Without effective communication and planning from the initial project design stages, waste minimization and diversion is nearly impossible.

Requirements

A. Develop tenant construction manuals for all tenant-led renovation or construction projects being planned in the building
B. Share the building-specific Construction Waste Management Program with tenants to include in their design and construction specifications

Documentation

- Section of tenant construction manual detailing construction waste management measures

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

P6.3 – Waste Management in Tenant Construction - cont'd

Suggested Lead
In-house

References
None

Crosswalk
3R Certified

Other Notes
None

CUSTODIAL & WASTE	P7. TRAINING & INNOVATION
Focus Area:	**Custodial & Waste**
Topic:	**Training**
Question:	**P7.1 – Training in Custodial & Waste** **Did the building operations and management team receive Custodial & Waste training in the previous three years?**

Answer

Indicate which topics are covered in the training:		Points available:
- Procurement	Yes or No	1
- Custodial O&M and Assessment	Yes or No	1
- Waste Management, Audit and Measurement	Yes or No	1
- Waste in Renovations & Construction	Yes or No	1
- No		0

Max. Points Available

4 - Pick all that apply

Description

In order for building maintenance staff to effectively manage the building's Custodial & Waste, training should be provided which addresses the topics of custodial maintenance & operations, custodial assessment, waste management, waste audit and measurement and renovations and construction.

Over time, technologies and preferred practices in building operations and maintenance change. Providing regular professional development opportunities is a good way to help retain staff. Offering training and educational opportunities related to environmental/sustainable building performance not only benefit staff but improve the performance of the building when staff training is applied at the building level.

Requirements

A. List the names of staff members to whom the competencies covered under these topics would apply
B. Provide the applicable course outline or syllabus
C. Provide evidence of competency or training received such as credentials, completion certificate, record of attendance

Documentation

- Name of building O&M team member who received the training
- Course outline or syllabus
- Training Certificate or Record of Attendance

Adapted BB3 Question

New in BOMA BEST 4.0

P7.1 – Training in Custodial & Waste - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
N/A

Crosswalk
None

Other Notes
None

CUSTODIAL & WASTE	P7. TRAINING & INNOVATION
Focus Area:	**Custodial & Waste**
Topic:	**Innovation**
Question:	**P7.2 – Innovation in Custodial & Waste** **Is an innovative process or technology in place at the building that goes beyond the requirements outlined in this section?**

Answer

Select all that apply:	Points available:
- Evidence of procurement practices implemented (e.g. fair-trade, social or circular economy principles applied)	1
- Evidence of waste reduction (not due to Covid-related reduced occupancy)	1
- Evidence of waste avoidance (e.g. single-use plastics, zero-waste event hosted, embodied energy considerations applied)	1
- Food procurement initiative in place that specifies the purchase of sustainable foods for food prepared on-site (e.g. cafeteria, patient meal catering etc.)	1
- [ESC, Univ, LI, OAR, MURB] Joint landlord/tenant custodial or waste initiatives implemented	1
- Other (e.g. TRUE or equivalent certification achieved)	1
- Not applicable	-

Max. Points Available

5 - Max points cap

Description

Many processes and technologies exist that go beyond the standards and requirements set out in the BOMA BEST Assessment. If building managers/owners have invested in innovative processes or technologies that go beyond these standards, innovation points can be earned under this question.

Requirements

A. Provide details of the technology or process applied at the building
B. Indicate when the technology or process was implemented and the steps that are in place to ensure the technology or process' ongoing success
C. [If "Other" is selected] Explain how the technology or process has improved the building's procurement, custodial and waste management practices for it to be considered innovative

Documentation

- Narrative of innovative technology or process and its impact

Adapted BB3 Question

New in BOMA BEST 4.0

P7.2 – Innovation in Custodial & Waste - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
N/A

Other Notes
None

CUSTODIAL & WASTE	P8. ENGAGEMENT
Focus Area:	**Custodial & Waste**
Topic:	**Engagement**
Question:	**P8.1 – Align engagement initiatives with Tenants** **Do any of the tenants' Custodial & Waste management approaches align with the owner or landlord's?**

Answer

Indicate which topics are aligned:		Points available:
- Custodial Maintenance & Operations	Yes or No	1
- Custodial Assessment	Yes or No	1
- Waste Management	Yes or No	1
- Waste Audit & Measurement	Yes or No	1
- Waste in Renovations & Construction	Yes or No	1
- No		0

Max. Points Available

5 - Pick all that apply

Description

Passive engagement through communications is an important first step. Also, the ability to collect tenant utility data is becoming increasingly important as part of reporting and disclosure. Active engagement efforts include direct outreach activities, such as working with tenants to collect tenant-controlled utility data, or requiring green leases for new tenants or renewals that address sustainability initiatives.

Requirements

A. Engage with the tenants to understand their custodial & waste goals, in specific topics listed, and how their goals may align with the building management's custodial & waste goals
B. Provide a sample of feedback or communication received from the tenants that demonstrate where alignment exists in specific topics covered in the Custodial & Waste Plan

Documentation

- Narrative that describes where owner or landlord and tenant's custodial & waste goals align
- Sample of relevant feedback or communication received from the tenants

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to Enclosed Shopping Centre, Universal, Light Industrial and Open-Air Retail buildings

P8.1 – Align engagement initiatives with Tenants - cont'd

Suggested Lead
In-house
References
None

Crosswalk
N/A

Other Notes
In buildings where tenants manage the majority of custodial and waste services, the owner or landlord can engage with the tenant(s) to collaborate and share information and lessons learned to improve whole building performance in these areas.

RESILIENCE & SITE	R0. BASELINE PRACTICES
Focus Area:	**Resilience & Site**
Topic:	**Baseline Practices**
Question:	**R2.0 – Past Climate Hazards** **What climate hazards and extreme weather events has the site experienced in the past ten years?**

Answer
Select one of the following:
- Complete BOMA BEST Form R2.0
- Building-specific Climate Change Risk or Resilience Assessment (CCRA) or equivalent
- No

Max. Points Available
Minimum Requirement, this is a baseline practice

Description
To enable preparation and planning, relevant climate-related hazards specific to a property's location should be identified. This requires consideration of past events that have caused damage and/or disruption and projected future events including their likelihood of occurring and potential consequences at the property level if they do.

Consider both climate hazards that are experienced as trends, such as rising annual temperatures, and climate hazards that are experienced as events, such as severe storms.

Climate risk analysis is complex, and this question is intended to be an initial step rather than a comprehensive assessment.

Requirements
A. Complete the BOMA BEST Question R2.0 Form that covers:
B. High-impact climate hazards and events that have been experienced or considered as posing a risk at the property and/or within the region in the past ten years by completing the provided template
   - Provide detail on how relevant hazards affected occupants, key building systems and components
   - If information is not available for ten (10) years or for the hazard, explain why
C. [Alternative] Conduct a building-specific Climate Change Risk or Resilience Report

Documentation
- Completed Form R2.0
- [Optional] Building-specific Climate Change Risk or Resilience Report

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

R2.0 – Past Climate Hazards - cont'd

Suggested Lead
In-house, with third-party support

References
Resilience in the CRE Industry: https://bomacanada.ca/wp-content/uploads/2022/07/ResilienceInTheCommercialRealEstateIndustry_EN_220713_small.pdf
Ahead of the Storm: https://bomacanada.ca/wp-content/uploads/2020/07/Ahead-of-the-Storm-1.pdf and https://bomacanada.ca/wp-content/uploads/2020/07/BOMA-Resillience-Single-Pager-v2.pdf
BOMA Canada – Resilience Brief: https://bomacanada.ca/wp-content/uploads/2019/11/BOMA_Resilience_Brief_Eng_v5.pdf
Intergovernmental Panel on Climate Change (IPCC): https://www.ipcc.ch/

Crosswalk
N/A

Other Notes
According to the Intergovernmental Panel on Climate Change (IPCC), climate risk results from the interaction of hazard, exposure and vulnerability. Hazard refers to the potential occurrence of climate-related physical events or trends that may cause damage and loss. Exposure indicates the presence of assets, services, resources and infrastructure that could be adversely affected. Vulnerability is the propensity or predisposition to be adversely affected

RESILIENCE & SITE	R1. SITE
Focus Area:	**Resilience & Site**
Topic:	**Site**
Question:	**R1.1 – Site Irrigation** **Which type of water efficient controls are used to irrigate the site's landscaped areas?**

R1. Site

Focus Area **Resilience & Site**
Topic **Site**
R1.1 – Site Irrigation
Question Which type of water efficient controls are used to irrigate the site's landscaped areas?

Answer

Select all that apply:	Points available:
- Drip or root-fed irrigation	1
- Rain and/or soil moisture sensors	1
- Weather-based controllers	1
- Pressure regulated head	1
- Smart scheduling	1
- Stormwater capture	1
- Landscaping does not require irrigation	1
- None of the above	0

Max. Points Available
5 - Max points cap

Description
Water-efficient irrigation controls reduce water consumption.

Requirements
Indicate which type of irrigation control is in place at the building and used to irrigate 80% or more of the landscape

Documentation
- Photos, specifications, excerpts from landscaping contract etc. showing example of specific strategy implemented

Adapted BB3 Question
Question 02.04.01: Which type of water efficient controls are used for irrigation?

R1.1 – Site Irrigation - cont'd

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house

References
None

Crosswalk
N/A

Other Notes
Drip irrigation: Water lines with low flow, dripping applicators spread throughout the irrigated area to more conservatively distribute water.
Root-fed irrigation: Applicators are below ground and close to the roots zone of plants.
Soil moisture sensors: Moisture sensors are placed in the soil of the irrigated area and communicate with an automatic scheduling system to adjust scheduling based on the real-time moisture levels of the irrigated area.
Rain sensors: Precipitation sensors placed in the irrigated area communicate with an automatic scheduling system to adjust scheduling based on previous rainfall on the irrigated area.
Weather-based controllers: Can be either a Smart or Central Controller. Must be WaterSense approved
Smart scheduling: Manual scheduling based on an interaction of factors to maximize the efficiency of water use in irrigating plants. Considers the following: timing (to reduce evapotranspiration, best at night or away from peak sun and heat loads); flow rate and distribution of irrigation system; slope; soil type and infiltration rate of area being irrigated; plant type (watering needs and root depth); seasonal changes in watering needs; and predicted and actual rainfall.

RESILIENCE & SITE	R1. SITE
Focus Area:	**Resilience & Site**
Topic:	**Site**
Question:	**R1.2 – Sensitive Site Management** **Are environmentally sensitive site management strategies implemented and maintained on the site?**

Answer

Select all that apply:	Points available:
- Native plant species	1
- Native pollinator-friendly flowering plants	1
- Edible garden	1
- Bee hives or hotels	1
- Bird-safe	1
- None of the above	0

Max. Points Available

5 - Pick all that apply

Description

How a building manages its landscaped areas through mowing and fertilization practices can have an impact on the surrounding environment (e.g., the persistence of invasive species; the release of harmful chemicals and toxins into the environment such as pesticides, fertilizers and herbicides; and on resource use like water).

Broad-spectrum application of pesticides, fertilizers, and herbicides has significant impacts on the health of the landscape and the runoff of harmful chemicals into the environment. Building managers can reduce non-point source pollution by focusing on using non-chemical control methods. When chemical options are used, these should be low in toxicity and persistence. Their use should be part of an overall landscape management plan.

Requirements

Strategies include:

A. >80% of landscaping contains native and drought resistant plant species
B. >80% of landscaping contains native and drought resistant flowering plants that encourage pollinators
C. Removal of invasive/non-native plant species
D. Environmentally preferable pesticides, fertilizers and herbicides
E. Bee hives or bee hotels
F. Bird-safe strategies include grey or black deterrent markers installed on reflective or clear glass surfaces

R1.2 – Sensitive Site Management - cont'd

Documentation

- Photos, specifications, excerpts from landscaping contract etc. showing example of specific strategy implemented

Adapted BB3 Question

Question 09.01.01 – Is a landscape management program in place for the building that includes the following considerations?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

References

CSA Bird-safe Design Guide: https://www.featherfriendly.com/csa-building-standards
Bird-friendly Certification: https://naturecanada.ca/defend-nature/how-you-help-us-take-action/bfc/
Pollinator Partnership Canada: https://pollinatorpartnership.ca/en/bee-city-canada

Crosswalk

N/A

Other Notes

If there is no landscaping on site then there is still the possibility of implementing the proposed strategies in other areas of the building, such as bee hives on the roof, bird-friendly films on glazing etc.

Measures should be in place for at least a year, or one prior summer season.

RESILIENCE & SITE	R2. CLIMATE HAZARDS & RISKS
Focus Area:	**Resilience & Site**
Topic:	**Climate Hazards & Risks**
Question:	**R2.1 – Future Climate Hazards** **Have the site-specific risks associated with potential future climate hazards and related events been identified?**

Answer

Select one of the following:	Points available:
- Yes	5
- No	0

Max. Points Available

5 - Pick one answer

Description

To enable preparation and planning, relevant climate-related hazards specific to a property's location should be identified. This requires consideration of past events that have caused damage and/or disruption and projected future events including their likelihood of occurring and potential consequences at the property level if they do.

Consider both climate hazards that are experienced as trends, such as rising annual temperatures, and climate hazards that are experienced as events, such as severe storms.

The time horizon under consideration should extend into the future, through at least 2050 or further, using climate projections from national and international climate data sources. From climate data projections and the team's input, the most relevant hazards for the property based on potential level of impact can be identified for assessment of climate risk.

Climate risk analysis is complex, and this question is intended to be an initial step rather than a comprehensive assessment.

Requirements

A. Determine the relevant climate hazards on the site, using climate projection data. Outline methodology and data sources.
B. Identify exposure of the site to high-impact climate-related hazards in the future, as it is relevant to the site and considering that every situation is different.
C. Establish the timeframe based on the organization's planning horizons, but extend to at least 2040.

For example: A property that is located far from any forests or grassland would likely have a low exposure to wildfires impacting the site now and through 2050. However, a property that is located near a forest in a region that regularly experiences wildfires now and is projected to experience more frequent droughts by 2050 could be considered to have a high exposure to wildfires now and through 2050.

R2.1 – Future Climate Hazards - cont'd

Documentation
- Narrative or in-house climate risk and adaptation survey or exposure assessment
- [Alternative] Building-Specific Climate Change Risk or Resilience Report

Adapted BB3 Question
Question 09.01.13 and 09.01.14 – Has a resilience or business continuity plan been prepared for the building that includes the following components? A long-term climate change risk assessment

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
In-house, with third-party support

References
Climate projection data is often available through regional or federal governments or related organizations, such as
https://www.climatedata.ca
https://www.climateriskinstitute.ca/climate-data/
https://www.floodsmartcanada.ca/floodplain-maps/
https://www.climateatlas.cacanada.ca/climate-servicesPCIC
BC:
https://www.pacificclimate.org/data
https://www2.gov.bc.ca/gov/content/environment/climate-change/adaptation/risk-assessment
California:
https://climateassessment.ca.gov/
https://www.cityresilienceindex.org/#/
https://climateriskinstitute.ca/climate-data/municipal
and regional floodplain maps http://floodsmartcanada.ca/floodplain-maps/)
Municipal zoning/DPAs (e.g., hazard lands, steep slopes, floodplains)
Regional/provincial climate risk assessments
Regional wildland urban interface fire risk class maps and landslide susceptibility maps
Scientific papers
Portfolio wide risk assessments

Crosswalk
N/A

Other Notes
If the hazards were identified through high-level portfolio-wide review, outline the methodology or framework (e.g. GRESB), tools used, level of accuracy and other pertinent information.

For individual building assessments, review regional climate projections where available to determine potential future climate hazards through 2040, 2050 or beyond. Indicate the future emissions/ temperature scenario considered and the rationale for the chosen scenario.

RESILIENCE & SITE	R2. CLIMATE HAZARDS & RISKS
Focus Area:	**Resilience & Site**
Topic:	**Climate Hazards & Risks**
Question:	**R2.2 – Rank Climate Risks** **Have the climate risks been ranked and assessed for the building and site?**

Answer

Select one of the following:	Points available:
- Yes	4
- No	0

Max. Points Available

4 - Pick one answer

Description

Commercial real estate Suggested Leaders are increasingly recognizing the risks posed by extreme weather events that will continue to occur more frequently than in the past. Design and operations need to focus on business continuity, safety, and wellbeing to reduce risks to assets, occupant health and safety, and services.

Climate risks can be assessed on the basis of the likelihood of a high impact climate hazard occurring and the severity of the consequences to property components, people and systems that may occur. Consequences can include health and safety, displacement, asset damage, inaccessible and unusable space, legal liability, increased insurance premiums, supply chain and service interruptions, reputational impact, increased operations and maintenance costs, environmental effects, and other considerations.

The inclusion of climate resilience in planning, preparation, and implementation projects will reduce risks to ensure that people and property are protected, costs are minimized, reputation is maintained, environmental effects are reduced, and asset value is enhanced.

Requirements

A. Conduct a Climate Risk Assessment. Include information on the relative likelihood of occurrence for each hazard identified and the potential impacts.
B. For each high-risk hazard identified, determine the likelihood of occurrence through 2040. Rate and describe potential consequences on the building components identified as vulnerable to that hazard.

For example: major floods occur annually and are projected to increase in frequency by 2050, so the likelihood could be rated as 'high.' If the mechanical systems are vulnerable to flooding and located in the basement, the consequences of a flood event impacting the mechanical equipment could be total loss of HVAC systems and requirement for replacement, so the consequence could be rated as 'high.' However, if the mechanical room is on an upper floor, the consequence of a flood to that system could be 'low.'

R2.2 – Rank Climate Risks - cont'd

C. From this review, identify the highest risks based on the most significant consequences for the most likely, high-impact relevant hazards, where Risk = Likelihood x Consequences).

For example: provision of equipment and supplies, infrastructure upgrades, or retrofits to improve resiliency.

D. Provide an explanation/description of the data sources, methodologies and Representative Concentration Pathway (RCP) scenario(s) used to determine the highest or most important risks facing the building and site

Documentation

- Building-Specific Climate Change Risk or Resilience Report

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

Third-party

References

IPCC: https://www.ipcc.ch/climateatlas.cacanada.ca/climate-servicesPCIC
Climate Change Risk Assessment Guidance: https://ccme.ca/en/res/riskassessmentguidancesecured.pdf
https://icleicanada.org/barc-program/
Also refer to the BOMA website under 'climate resilience.': https://bomacanada.ca/wp-content/uploads/2022/07/ResilienceInTheCommercialRealEstateIndustry_EN_220713_small.pdf
ISO 31000:2018
Ontario Climate Change and Health Toolkit
PIEVC Engineering Protocol
BARC Milestone 2
Acceptable asset-level risk assessment frameworks include:- CRREM https://www.crrem.eu/wp-content/uploads/2020/09/CRREM-Risk-Assessment-Reference-Guide-2020-09-21.pdf
- PIEVC https://pievc.ca/
- ISO 31000 https://www.iso.org/obp/ui/#iso:std:iso:31000:ed-2:v1:en-
- GRESB https://www.gresb.com/nl-en/products/climate-risk-platform/
- BOMA Canada will accept other frameworks if equivalency is proven

Crosswalk

N/A

R2.2 – Rank Climate Risks - cont'd

Other Notes
Climate projection data referenced as part of hazard identification will typically include likelihood or increases in occurrence.

Identification of level of risk will vary for each organization, and criteria for determining high, medium, and low consequence and risk should be established internally.

A recommended scenario is Representative Concentration Pathway 8.5 (RCP8.5) from the Intergovernmental Panel on Climate Change (IPCC).

RESILIENCE & SITE	R2. CLIMATE HAZARDS & RISKS
Focus Area:	**Resilience & Site**
Topic:	**Climate Hazards & Risks**
Question:	**R2.3 – Resilience Strategies** **Have resilience strategies been identified to address the most significant climate risks at the building and site level?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available

3 - Pick one answer

Description

Commercial real estate Suggested Leaders are increasingly recognizing the risks posed by extreme weather events that will continue to occur more frequently than in the past. Design and operations need to focus on business continuity, safety, and wellbeing to reduce risks to assets, occupant health and safety, and services.

The inclusion of climate resilience in planning, preparation, and implementation projects will reduce risks to ensure that people and property are protected, costs are minimized, reputation is maintained, environmental effects are reduced, and asset value is enhanced.

While the previous question provides guidance on conducting a high-level assessment of risks to your facility, having a comprehensive assessment done that follows one of the acceptable climate risk assessment frameworks will provide greater depth and detail, and can provide a stronger foundation for planning and decision-making, particularly if completed by a climate risk expert.

Requirements

A. Conduct a Climate Risk Assessment and highlight the framework used to undertake the assessment, as well as the Representative Concentration Pathway (RCP) scenario(s) evaluated
B. Acceptable asset-level risk assessment frameworks include CRREM, PIEVC, ISO 31000, GRESB or similar, but must focus on the individual property.
C. If not identified in the report, for each of the highest risks, indicate any measures that have been implemented to address identified risks. Examples include equipment and supplies, infrastructure upgrades, retrofits or other tangible actions

Documentation

- Climate Risk Assessment, referencing industry-accepted framework used

R2.3 – Resilience Strategies - cont'd

Adapted BB3 Question
New in BOMA BEST 4.0

Applicability
Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead
Third-party

References
Acceptable asset-level risk assessment frameworks include:- CRREM https://www.crrem.eu/wp-content/uploads/2020/09/CRREM-Risk-Assessment-Reference-Guide-2020-09-21.pdf
- PIEVC https://pievc.ca/
- ISO 31000 https://www.iso.org/obp/ui/#iso:std:iso:31000:ed-2:v1:en-
- GRESB https://www.gresb.com/nl-en/products/climate-risk-platform/
- BOMA Canada will accept other frameworks if equivalency is proven

Crosswalk
N/A

Other Notes
IPCC's recommended Representative Concentration Pathway (RCP) scenario(s) is RCP8.5 – see https://www.ipcc.ch/ and https://climate-scenarios.canada.ca/?page=scen-rcp

RESILIENCE & SITE	R3. CLIMATE PLANNING & VULNERABILITIES
Focus Area:	**Resilience & Site**
Topic:	**Climate Planning & Vulnerabilities**
Question:	**R3.1 – Emergency Preparedness** **Do emergency preparedness and response plans include climate hazards and related extreme events?**

Answer

Select one of the following:	Points available:
- Yes	5
- No	0

Max. Points Available

5 - Pick one answer

Description

Commercial real estate leaders are increasingly recognizing the risks posed by extreme weather events that will continue to occur more frequently than in the past. Design and operations need to focus on emergency preparedness, safety, and wellbeing to reduce risks to assets, occupant health and safety, and services.

The inclusion of climate resilience in planning, preparation, and implementation projects will reduce risks to ensure that people and property are protected, costs are minimized, reputation is maintained, environmental effects are reduced, and asset value is enhanced.

Planning activities to respond to high priority climate risks will increase resilience. Risks must be addressed in operations, including emergency response plans and business continuity plan.

Requirements

Demonstrate the extent to which climate change and related hazards have been incorporated into the building-specific emergency preparedness and response plans

Documentation

- Highlight relevant sections in Emergency Preparedness and Response Plans

Adapted BB3 Question

Question 09.01.13 and 09.01.14 – Has a resilience or business continuity plan been prepared for the building that includes the following components?

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord’s control)

R3.1 – Emergency Preparedness - cont'd

Suggested Lead
In-house, with third-party support

References
Resilience in the CRE Industry: https://bomacanada.ca/wp-content/uploads/2022/07/ResilienceInTheCommercialRealEstateIndustry_EN_220713_small.pdf
Ahead of the Storm: https://bomacanada.ca/wp-content/uploads/2020/07/Ahead-of-the-Storm-1.pdf and https://bomacanada.ca/wp-content/uploads/2020/07/BOMA-Resillience-Single-Pager-v2.pdf
BOMA Canada – Resilience Brief: https://bomacanada.ca/wp-content/uploads/2019/11/BOMA_Resilience_Brief_Eng_v5.pdf
Intergovernmental Panel on Climate Change (IPCC): https://www.ipcc.ch/

Crosswalk
N/A

Other Notes
None

RESILIENCE & SITE	R3. CLIMATE PLANNING & VULNERABILITIES
Focus Area:	**Resilience & Site**
Topic:	**Planning & Vulnerabilities**
Question:	**R3.2 – Maintain Critical Systems** **Have the building's critical systems been identified that must be maintained in an extreme climate-related hazard event?**

Answer

Select one of the following:	Points available:
- Yes	4
- No	0

Max. Points Available

4 - Pick one answer

Description

The focus of this question is to guide owners and landlords to think about how future climate events may impact critical building systems, and to plan accordingly. It is meant to go beyond day-to-day emergency preparedness practices.

Resilient buildings reduce vulnerability to climate-related hazards; maintain and enhance healthy, liveable spaces for occupants; and mitigate carbon emissions. Investments in building infrastructure protect against damage and losses and reduce insurance premiums. The owner or landlord should determine which elements are important to review, since every building and situation is different.

Components and systems could include elements related to buildings, site, infrastructure, programs and services, operations, health and safety, or other categories that the owner or landlord deems important for the property. Each element may be reviewed to determine its relative level of exposure and sensitivity to relevant hazards, as well as current ability to adapt to them. In combination, these criteria can be used to assess a building element's vulnerability to climate hazards.

Requirements

A. List or describe the critical systems that must be maintained in an emergency situation and the building function that requires these systems
B. For each of the relevant hazards identified, indicate which of the systems could be affected
C. Provide an explanation of the measures necessary to maintain the critical systems, including critical spare equipment components

Also see Other Notes

R3.2 – Maintain Critical Systems - cont'd

Documentation

- Highlight relevant sections in Emergency Preparedness and Response Plans and associated Policies
- Documentation must be building-specific

Adapted BB3 Question

Question 09.01.13 and 09.01.14 – Has a resilience or business continuity plan been prepared for the building that includes the following components? A long-term climate change risk assessment

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

Third-party

References

BOMA Canada: https://bomacanada.ca/climate-resilience/
GRESB: https://www.gresb.com/nl-en/scaling-building-resilience-in-the-face-of-climate-change/
RDH's report "Climate Change Resilience for Buildings Primer": https://www.rdh.com/wp-content/uploads/2021/07/Climate-Change-Resilience-for-Buildings-Primer.pdf
Resilience in Hospitals: https://www2.gov.bc.ca/assets/gov/environment/climate-change/cng/symposium/2016/14_lessons_in_hospital_resilience_-_robin_guenther.pdf

Crosswalk

N/A

Other Notes

Example for a power outage due to an extreme storm:
Electricity: Is adequate backup/emergency power in place? Note, backup power should be provided with 72 hours of fuel for critical systems/spaces at a minimum
Heating, cooling and ventilation: What provisions are in place for maintaining safe conditions in case of a power outage?
Security and communications: What provisions are in place for maintaining security and communications in case of a power outage?
Accessibility: How will individuals with disabilities fare during power outages and what supports might they need?
Other: e.g. water, sanitary plumbing, natural gas, stormwater drainage

RESILIENCE & SITE	R3. CLIMATE PLANNING & VULNERABILITIES
Focus Area:	**Resilience & Site**
Topic:	**Planning & Vulnerabilities**
Question:	**R3.3 – Capital Planning** **Are capital upgrade and renewal planning processes informed by climate-related risks?**

Answer

Select one of the following:	Points available:
- Yes	3
- No	0

Max. Points Available

3 - Pick one answer

Description

Planning activities to respond to high priority climate risks will increase resilience. Risks must be addressed in operations, including emergency response plans and business continuity plan.

Capital project investments will be required to ensure that assets can respond to and recover from extreme weather events. Projects addressing climate risks should be incorporated into capital projects.

Requirements

A. Provide an explanation of how climate risks are incorporated into planning and budgetingShow the inclusion of climate risk mitigation projects that have been incorporated into the 10 year plan
B. List completed, initiated or budgeted climate risk mitigation capital projects, identifying the risks addressed
C. Indicate the extent of the improvements and the implementation stage

Documentation

- Explanation of how climate risks have been incorporated into planning and budgeting.
- List of climate mitigation capital projects and identify the risks addressed

Adapted BB3 Question

Question 09.01.13 and Question 09.01.15 – Has a resilience or business continuity plan been prepared for the building that includes the following components? An adaptation plan based on assessed long-term climate risks

Applicability

Applicable to Office, Healthcare, Enclosed Shopping Centre, Universal and Multi-Unit Residential buildings

R3.3 – Capital Planning - cont'd

Suggested Lead
Third-party

References
None

Crosswalk
N/A

Other Notes
None

RESILIENCE & SITE	R4. TRAINING & INNOVATION
Focus Area:	**Resilience & Site**
Topic:	**Training**
Question:	**R4.1 – Training in Resilience** **Did the building operations and management team receive resilience training in the previous three years?**

Answer

Select one of the following:	Points available:
- Yes	2
- No	0

Max. Points Available

2 - Pick one answer

Description

Over time, technologies and preferred practices in building operations and maintenance change. Providing regular professional development opportunities is a good way to help retain staff. Offering training and educational opportunities related to environmental/sustainable building performance not only benefit staff but improve the performance of the building when staff training is applied at the building level.

Requirements

A. List the names of staff members to whom the competencies covered under these topics would apply
B. Provide the applicable course outline or syllabus
C. Provide evidence of competency or training received such as credentials, completion certificate, record of attendance

Documentation

- Name of building O&M team member who received the training
- Course outline or syllabus
- Training Certificate or Record of Attendance

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

Suggested Lead

In-house, with third-party support

R4.1 – Training in Resilience - cont'd

References
N/A

Crosswalk
None

Other Notes
None

RESILIENCE & SITE	R4. TRAINING & INNOVATION
Focus Area:	**Resilience & Site**
Topic:	**Innovation**
Question:	**R4.2 – Innovation in Resilience & Site** **Is an innovative process or technology in place at the building that goes beyond the requirements outlined in this section**

Answer

Select all that apply:	Points available:
- Non-potable sources of water is used for irrigation	1
- Actions are being taken to address climate risk hazards identified	1
- [Other Asset Classes] Electric Vehicle (EV) charging stations installed for >2% of parking stalls	1
- [MURBs] Electric Vehicle (EV) charging stations installed for >2% of resident suites	1
- Other	1
- Not Applicable	-

Max. Points Available

4 - Max points cap

Description

Many processes and technologies exist that go beyond the standards and requirements set out in the BOMA BEST Assessment. If building managers/owners have invested in innovative processes or technologies that go beyond these standards, innovation points can be earned under this question

Requirements

A. Provide details of the technology or process applied at the building
B. Indicate when the technology or process was implemented and the steps that are in place to ensure the technology or process' ongoing success
C. [If "Other" is selected] Explain how the technology or process has improved the building's resilience and site management practices for it to be considered innovative

Documentation

- Narrative of innovative technology or process and its impact

Adapted BB3 Question

New in BOMA BEST 4.0

Applicability

Applicable to all buildings (systems or equipment in the owner or landlord's control)

R4.2 – Innovation in Resilience & Site - cont'd

Suggested Lead
In-house, with third-party support

References
None

Crosswalk
N/A

Other Notes
None