BOMA BEST V2 Health Care

Basic Information

0.4 Is the building being recertified?

- [ ] Yes
- [x] No

0.7 Specify the building's location

- [ ] CBD or inner city
- [ ] Suburban
- [ ] Rural

CBD means Central Business District

0.44 Provide a brief general description of the building.

Provide a short description of the building. Note massing, placement on the lot, landscaping, any significant physical, historical or functional characteristics, and any significant renovations or retrofits within the last 5 years.

BEST Practices

* 1.3.2.1 Has the building had an energy assessment within the past three years that included recommendations with costs, savings and a payback period?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] BOMA-accepted equivalent

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

A minimum of an ASHRAE Level 1 Walk-through audit or equivalency is required that includes:

- • Utility billing analysis with benchmarking observations
- • Summary of major equipment and type of lighting systems in the buildings
- • List of potential energy conservation opportunities, estimated savings, and simple payback, based on walk-through audit of the facility

The assessment report must identify low-cost improvements and potential capital improvements as well as issues for a future more-detailed audit.

The BOMA-Accepted Equivalent is available for buildings where 75% or more of the building's energy is purchased directly by tenants or if the building has been occupied for fewer than two (2) years.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 1.3.3.1 Is there a building-specific Energy Management (reduction) Plan to address issues raised in the energy assessment?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] BOMA-accepted equivalent

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.
The Energy Management Plan must document building-specific measures to improve building energy efficiency and reduce demand based on the most recent energy assessment and targets. These measures should be based on a clearly identified energy performance target, identified through the energy assessment or by the operational staff. The Plan must show allocated resources, estimated payback, and implementation timelines for specific energy efficiency improvements.

The BOMA-Accepted Equivalent is available for buildings that have been occupied for fewer than two (2) years.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 1.3.8.14 Is there a Preventive Maintenance Program for the HVAC (Heating Ventilation and Air Conditioning) system and its components?

- [x] Yes
- [ ] No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

Preventive maintenance recognizes that certain systems and their components require scheduled periodic maintenance, as well as overhauling or replacement after a certain age, at certain intervals, or due to specific causes. The Preventive Maintenance Program is a systematic approach that outlines what equipment must be reviewed, the corrective action that must be taken and how frequently this must occur.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 2.3.1 Is there a written policy intended to minimize water use, and encourage water conservation?

- [x] Yes
- [ ] No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

A water conservation policy must express a commitment to reduce demand for water and to establish goals and strategies to reduce water consumption.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 2.3.4 Has a water assessment been completed within the last three years?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] BOMA-accepted equivalent

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

The water assessment report must include:

- • Water billing analysis including cost and consumption history;
- • Water intensity benchmarks;
- • Water-using equipment inventory and end-use analysis;
- • List of potential water conservation measures including maintenance procedures and retrofit measures;
- • Estimated costs, savings and payback times for recommended measures

The water assessment report may be incorporated into the energy assessment report.

The BOMA-Accepted Equivalent is available for buildings where 75% or more of the building's energy is purchased directly by tenants or if the building has been occupied for fewer than two (2) years.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 3.1.1.1 Is there a recycling program that incorporates the recycling of office paper, newspaper, cardboard, bottles, plastic and cans at the site, to the extent that local infrastructure is available to accommodate these materials?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] BOMA-accepted equivalent

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

The property must have an active recycling program. A BOMA-accepted equivalent may suffice in particular situations.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

* 3.1.2.13 Is there a written policy intended to minimize renovation / construction waste being sent to landfill?

- [x] Yes
- [ ] No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

Construction and demolition waste - which accounts for about 30% of Canada's landfill - can be reduced by implementing a source separation and recycling program on-site. The program must meet the minimal requirements of the jurisdiction (e.g. 3R Code of Practice). The waste specifications should address recycling of corrugated cardboard, metals, concrete blocks, clean dimensional wood, plastic, glass, gypsum board and carpet.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

Is there a documented management plan for Ozone Depleting Substances (ODS) that includes the following:

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

Maintenance of the refrigeration system can reduce operating costs by improving the chiller performance, avoiding costly repairs, and reducing the need for refrigerant replacement. If there are no ODS, mark "not applicable".

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

* 4.2.2.1 Inventory of refrigerants and records?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] N/A

Inventory should show the present ODS and records should show the historical quantities of ODS.

* 4.2.2.2 Maintenance reports, loss reports, and leak test results?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] N/A

* 4.2.2.3 Operational staff training?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] N/A

Environmental awareness courses should include course content on "Refrigerant Control" or "CFC Handling" that has been developed by the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) and Environment Canada. These courses are typically one day in length. When the maintenance of the equipment is outsourced, the contractor should provide evidence of meeting the staff training requirements.

* 4.2.2.4 Periodic leak testing?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] N/A

* 4.2.2.5 Is there a phase-out plan for ozone-depleting refrigerants?

- [x] Yes
- [ ] No - Certification not permitted
- [ ] N/A

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

Effective January 1, 2015, operating or allowing the operation of a chiller containing CFCs will be prohibited. If there are no ODS, mark "Not Applicable".

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

* 4.4.1.1 Has a hazardous building materials survey and a use-related chemical inventory been completed within the last three years?

- [x] Yes
- [ ] No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

A Hazardous Materials Survey should include only building-related hazardous materials and must indicate, at a minimum, whether the following four hazardous building materials are present in the building: Asbestos-containing materials (e.g., insulation coverings, putties and caulking, older equipment); Polychlorinated biphenyls (PCBs) (e.g., old fluorescent lighting ballasts, transformers); Lead (e.g., lead in paint); and Mercury (e.g., thermostats, lighting). The survey must indicate the type of hazardous materials present in the building, its location, the quantity, its condition, and a list of recommended actions to meet province-specific regulatory requirements with respect to maintenance, inspection, training and abatement.

In addition, a Hazardous Chemicals or Use-Related Products Inventory must also be conducted and include pesticides, at a minimum. This Inventory must include a list of chemicals or use-related products brought into the building for use, handling and storage; location, Safety Data Sheets for each chemical or use-related

product; approximate quantities; and a live index of the chemicals or use-related products including the chemical name and page reference for easy access to Safety Data Sheets (SDS) and other relevant information related to each chemical.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 4.5.2.2 Is there a Hazardous Products (hazardous chemicals) Management Plan?

☑ Yes

☐ No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

A hazardous products management plan should indicate how controlled products are received at the facility, how they are to be used and safe disposal procedures. It should also include the provision of WHMIS sheets for all products identified in the inventory. Chemicals used in buildings that are classified as hazardous include oils, biocides, solvents, insecticides, pesticides and herbicides. Biomedical waste (including cytotoxic waste) and pharmaceutical waste must also be included. They should be stored in rooms with proper ventilation, controlled temperatures, drain protection and adequate shelf space. Containers should be capped to avoid possible spills and fumes, properly labelled and kept in securely locked areas.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 5.1.8.1 Does building management have in place a documented means for addressing patient and staff concerns regarding indoor air quality (such as a complaint form and incident log)?

☑ Yes

☐ No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

Building management must have in place a documented means for addressing patient and staff concerns regarding indoor air quality. Complaint 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.

The incident log must provide fields to capture the following information:

- • Incident log number; Form completed by __; Date
- • Occupant Name; Company & Department; Location in Building
- • Date complaint was received; Description of Complaint; Suggested cause; Summary of problem
- • Actions completed; date of occupant interview
- • CO2 measurements; ventilation rate assessment (if required); ventilation system inspection; airborne contaminant sampling (if required)
- • Remedial action report completed
- • Occupant advised of actions taken

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 6.2.5 Does building management have a written policy for the selection of building materials that attempts to reduce any potential negative impact on the environment?

☑ Yes

☐ No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

The policy committing the organization to using low environmental impact building materials and equipment in its facilities must also be part of the construction/renovation guidelines. Examples of low impact building materials include materials with high recycled content or low off-gassing carpeting and furnishings. See section 5.6 Indoor Air Quality - Control of Pollutants at Source referring to the checklist of items to be discussed with architects etc.

Consider the following criteria:

- • Avoiding materials that will result in excessive scrap material because of sizing needs;
- • Salvaging reusable materials during demolition;
- • Selecting materials that have recycled content;
- • Selecting renewable materials;
- • Selecting materials with low embodied energy and low maintenance requirements.

Management should be able to demonstrate that the policy is actually implemented and put into practice in projects.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

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* 6.4.1.1 Has a documented Communications Work Plan been developed and/or updated for staff, patients and visitors regarding environmental initiatives and practices in the building within the past 12 months?

☑ Yes

☐ No - Certification not permitted

This question is a BEST Practice and is required for all levels of certification. Documentation demonstrating this BEST Practice must be uploaded.

Building management must have in place a building-specific Communications Work Plan, which must include evidence of communication strategies, activities, responsibilities and timelines for implementation. Staff, patients and visitors must be provided with information, and must have a forum or hotline to discuss their environmental concerns. Department staff must be provided with an opportunity to coordinate their activities.

The key aspects of effective communication are frequency, accuracy, comprehensiveness and inclusiveness. To ensure that facility occupants work together with building management to achieve environmental goals, there must be frequent communication.

Consult the **BEST Practice Guidelines** for a complete list of requirements concerning this BEST Practice.

1.0 Energy

1.1 Energy Consumption

1.1.1 Will you be entering energy consumption information for 100% of your building's GFA?

- [x] Yes
- [ ] No

In order to receive points for energy consumption in BOMA BEST you are required to enter consumption data for all energy sources (electricity, heating fuel, etc.) within 100% of your building's interior floor area - not simply the net or Gross Leasable Area. If you do not have 100% of your building's energy consumption data you will not be eligible to receive any points in this section.

1.1.2 What is the calculated weather-normalized site Energy Use Intensity (EUI) for this building (in GJ/m2)?

Using the BOMA BEST or the ENERGY STAR Portfolio Manager portals, generate a weather-normalized site EUI for the building. The data used to generate the weather-normalized site EUI must represent 24 consecutive months of consumption, at a minimum. Consumption must be entered for each month (cannot be a bulk amount representing the complete 24-month timeframe).

Enter consumption information for all fuel types used in the building.

Data must not be any older than the past 36 months nor should it represent consumption during periods of major renovations (such as upgrades to mechanical systems, building envelope systems and electric system upgrades including procurement of new lighting for more than 50% of the building's lighting fixtures).

- • To enter data using the BOMA BEST Online Portal, follow **these instructions**.
- • To enter data using your ENERGY STAR Portfolio Manager account, follow **these instructions** to link your account with BOMA BEST.

Only EUI generated by the BOMA BEST or the ENERGY STAR Portfolio Manager portals can be accepted. If using ENERGY STAR, your account must be linked with your BOMA BEST account.

Provide the EUI in GJ/m2. Include up to two decimals.

Tips on benchmarking your energy are available in this **FAQ**.

1.1.3 What is the facility classification?

- [ ] Hospital
- [x] Medical Office
- [ ] Long Term Care

Hospital: The Hospital designation applies to general medical and surgical hospitals, critical access hospitals, and children's hospitals.

These facilities provide acute care services intended to treat patients for short periods of time including emergency medical care, physician's office services, diagnostic care, ambulatory care, surgical care, and limited specialty services such as rehabilitation and cancer care.

To qualify as a Hospital, the following requirements must be met:

- • More than 50% of the gross floor area of all buildings must be used for general medical and surgical services; AND
- • More than 50% of the licensed beds must provide acute care services; AND
- • These facilities must operate on a 24/7 basis.

Facilities that use more than 50% of the gross floor area for long-term care, skilled nursing, specialty care, and/or ambulatory surgical centers OR that have less than 50% of their beds licensed for acute care services are not considered eligible hospitals under this definition.

Medical Office Building: A Medical Office Building designation applies to buildings that meet the following requirements:

- • More than 50% of total facility space is used primarily to provide diagnosis and treatment (no major surgery) for medical, dental, or psychiatric outpatient care;
- • These facilities do not operate on a 24/7 basis.

Long term care facilities (include residential care and outpatient rehabilitation/physical therapy): Also called "acute inpatient health care facilities", these facilities are certified as acute care hospitals and provide patients with acute care for extended inpatient stays of an average of 25 days or more.

A Long Term Care facility designation applies to buildings that meet the following requirements:

- • More than 50% of the total facility space is used primarily for long term acute care, cancer care, rehabilitation, and/or psychiatric care;
- • These facilities operate on a 24/7 basis.

Facilities where more than 50% of the space is not dedicated to long term acute care, such as retirement homes or assisted living facilities, are not considered eligible under this definition.

Facilities that meet the definition of Senior Care Community must use the Universal Questionnaire.

1.1.4 Select the appropriate range representative of your property's weather-normalized site EUI (for scoring purposes)

- ☐ 80 ekWh/ft²/yr and above
- ☐ Between 76.0 and 79.99 ekWh/ft²/yr
- ☐ Between 72.0 and 75.99 ekWh/ft²/yr
- ☐ Between 68.0 and 71.99 ekWh/ft²/yr
- ☐ Between 64.0 and 67.99 ekWh/ft²/yr
- ☐ Between 60.0 and 63.99 ekWh/ft²/yr
- ☐ Between 56.0 and 59.99 ekWh/ft²/yr
- ☐ Between 52.0 and 55.99 ekWh/ft²/yr
- ☐ Between 48.0 and 51.99 ekWh/ft²/yr
- ☐ Between 44.0 and 47.99 ekWh/ft²/yr
- ☐ Less than 44 ekWh/ft²/yr

1.1.4 Select the appropriate range representative of your property's weather-normalized site EUI (for scoring purposes)

- [ ] 34 ekWh/ft²/yr and above
- [ ] Between 32.0 and 33.99 ekWh/ft²/yr
- [x] Between 30.0 and 31.99 ekWh/ft²/yr
- [ ] Between 27.0 and 29.99 ekWh/ft²/yr
- [ ] Between 24.0 and 26.99 ekWh/ft²/yr
- [ ] Between 21.0 and 23.99 ekWh/ft²/yr
- [ ] Between 18.0 and 20.99 ekWh/ft²/yr
- [ ] Between 15.0 and 17.99 ekWh/ft²/yr
- [ ] Between 12.0 and 14.99 ekWh/ft²/yr
- [ ] Between 9.0 and 11.99 ekWh/ft²/yr
- [ ] Less than 9 ekWh/ft²/yr

1.1.4 Select the appropriate range representative of your property's weather-normalized site EUI (for scoring purposes)

- [ ] 59 ekWh/ft²/yr and above
- [ ] Between 54.0 and 58.99 ekWh/ft²/yr
- [ ] Between 51.0 and 53.99 ekWh/ft²/yr
- [ ] Between 48.0 and 50.99 ekWh/ft²/yr
- [ ] Between 45.0 and 47.99 ekWh/ft²/yr
- [ ] Between 42.0 and 44.99 ekWh/ft²/yr
- [ ] Between 39.0 and 41.99 ekWh/ft²/yr
- [ ] Between 36.0 and 38.99 ekWh/ft²/yr
- [ ] Between 33.0 and 35.99 ekWh/ft²/yr
- [ ] Between 30.0 and 32.99 ekWh/ft²/yr
- [ ] Less than 30 ekWh/ft²/yr

1.2 Energy Features

1.2.1 Lighting

Does the building incorporate any of the following high-efficiency lighting features?

Indicate which features apply to your building, and the percentage that has been implemented throughout the building.

1.2.1.1 Compact fluorescents and/or Light-Emitting Diodes (LED)

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%

Indicate the percentage of installed compact fluorescent lamps and/or LED compared to the total number of applicable bulbs including incandescent lamps.

1.2.1.4 T8 or T5 fluorescent lamps and/or Light-Emitting Diodes (LED) in building areas

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%

Indicate the percentage of installed lower wattage T8 or T5 lamps and/or LED compared to the total number of applicable tubes including T12 fluorescents.

1.2.1.6 T8 or T5 fluorescent lamps and/or Light-Emitting Diodes (LED) in garage areas

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%
- [ ] N/A

Indicate the percentage of installed lower wattage T8 or T5 lamps and/or LED compared to the total number of applicable tubes including T12 fluorescents. Where there is no garage area mark "not applicable".

1.2.1.8 EXIT signs with Light-Emitting Diodes (LED)?

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%

Indicate the percentage of installed LED-type exit lights compared to the total number of exit lights, including those that use incandescent bulbs.

1.2.M.1 Light-Emitting Diodes (LED) in Operating Rooms

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%
- [ ] N/A

Indicate the percentage of installed LED compared to the total number of applicable tubes including T12 fluorescents. If there are no operating rooms, mark "not applicable".

1.2.M.2 Light-Emitting Diodes (LED) for street lighting or outside parking areas

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%
- [ ] N/A

Indicate the percentage of installed LED compared to the total number of applicable tubes including T12 fluorescents. Where there is no street lighting or outside parking areas, mark "not applicable".

1.2.1.14.1 Automated lighting controls

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%

Indicate the percentage of ambient lighting that is linked to automated controls. These include lighting management software, digital addressable lighting interface (DALI), occupancy controls, daylight sensors or automatic dimmers. If some lighting zones cannot be manipulated due to regulation (such as in patient/critical areas), do not include those areas in your total calculation.

1.2.1.14.2 Describe controls:

1.2.1.15 Occupancy sensors in a minimum of 25% of low-traffic areas, where appropriate (e.g. conference rooms, storage rooms, washrooms)

- [ ] Yes
- [x] No
- [ ] N/A

Occupancy sensors should be used for fixtures located in low traffic, secondary corridors and bulk or open storage areas. Where sensors are not permitted by local building code mark "not applicable".

1.2.1.17 Daylight sensors

- [ ] Yes
- [x] No

Daylight sensors or photocells, sense natural light and turn a light fixture off when there is adequate day light.

1.2.1.23 What percentage of all interior lighting is “high-efficiency” lighting?

- [ ] 80%-100%
- [ ] 60%-79%
- [ ] 40%-59%
- [ ] 20%-39%
- [x] Under 20%
- [ ] None

Estimate the percentage either by floor area or by number of lights. "High efficiency interior lighting" means T8 and T5 fluorescents with electronic ballast rather than T12s, AND compact fluorescent or LED light bulbs rather than incandescent.

1.2.2 Major HVAC Equipment

1.2.2.1 Are the majority of boilers 20 years old or more?

- [ ] Yes
- [x] No
- [ ] N/A (no boilers)

This applies only to active boilers presently used for building heating. The average life cycle of a boiler is 25 years. A boiler older than 20 years may need to be replaced. If there are no boilers, mark "not applicable".

1.2.2.2.1 What percentage of heating boilers have a combustion efficiency rate of 85% or higher?

- [ ] 50%-100%
- [ ] 25%-49%
- [x] Under 25%
- [ ] N/A (no boilers)

For each boiler provide a copy of preventative maintenance procedures and combustion efficiency test results performed within the last year. Combustion efficiency tests must include analysis of temperature and CO_2 or O_2 levels of the flue gases as well efficiency measurements for at least two firing rates (e.g. low fire and high fire).

Electric boilers that meet outlined efficiency requirements are also eligible for points under this question.

Point synergy exists between this question and question 4.1.1 "What percentage of the building's boilers have low NOx emission rates?" The applicant is encouraged to review the performance requirements of question 4.1.1, and, if pursuing points in that category, should combine the combustion testing services to meeting the requirements of both questions.

1.2.2.2.2 Provide models and efficiencies:

1.2.2.3 Do the boilers have a control system that allows them to operate through a wide range of loads?

- [ ] Yes
- [x] No
- [ ] N/A (no boilers)

A built-in control system that regulates the air-fuel mixture in the burner makes the boiler more efficient for handling varying loads and delivering the desired burner output. If there are no boilers, mark "not applicable".

1.2.2.4.1 What percentage (by capacity) of the rooftop package units in the facility are high-efficiency?

- [ ] 50%-100%
- [ ] 25%-49%
- [x] Under 25%
- [ ] N/A (no package unit)

"High efficiency" means that roof top units must have a Seasonal Energy Efficiency Ratio (SEER) of 14 at minimum and an Energy Efficiency Ratio (EER) of 11.5 at minimum. For specific ratings of units by size category, consult the Core Performance Guide by Efficiency New Brunswick (July 2007). Proper maintenance is required to maintain the SEER ratio. This typically involves re-commissioning. Evidence of the SEER and maintenance must be available for review. If there are no roof-top package units, mark "not applicable".

1.2.2.4.2 Provide models and efficiencies and indicate whether original to the building or upgraded (year):

1.2.2.5.1 What percentage (by capacity) of chillers in the facility are high-efficiency?

- [ ] 50%-100%
- [ ] 25%-49%
- [x] Under 25%
- [ ] N/A (no chillers)

"High efficiency" means chillers with a full-load efficiency in the range of 0.46 -0.65 kW/ton (or a COP equal to or greater than 5.4) in contrast to old CFC-11 or CFC-12 chillers that have an efficiency in the range of 0.72 - 0.90 kW/ton. For minimum performance levels, consult NRCan Energy Efficiency Regulations Higher Efficiency Requirements for Chillers Bulletin on Amending the Standards May 2010. If there is no central cooling plant nor chillers, mark "not applicable".

1.2.2.5.2 Provide models and efficiencies:

1.2.2.6 Do the chillers have a control system that allows them to operate through a wide range of loads?

- [ ] Yes
- [x] No
- [ ] N/A

If there is no central cooling plant nor chillers, mark "not applicable"

1.2.3 Controls

1.2.3.1 Is temperature setback implemented in non-critical areas?

- [ ] Yes
- [x] No
- [ ] N/A

A simple way to reduce heating/cooling energy consumption is to match temperature with occupancy patterns by adjusting thermostats or by installing automatic controls and equipment programming. Generally, any controller that can automatically reduce temperature in the heating season can also automatically increase temperature in the cooling season. "Non-critical areas" means areas that are not being occupied 24/7. Mark "not applicable" where all areas are critical areas.

Are automatic temperature or steam pressure reset strategies implemented for the following, as applicable?

	Yes	No	N/A
1.2.M.3.1 Steam pressure	☐	☑	☐
1.2.M.3.2 Chilled water	☐	☑	☐
1.2.M.3.3 Hot water	☐	☑	☐
1.2.M.3.4 Supply air	☐	☑	☐

Check the appropriate selection if more than 50% of HVAC systems in the facility have automatic reset capability. Reset controls strategies usually monitor heating or cooling loads to provide the input signal. The outside temperature can also be used. In establishing the above percentage, omit and document systems servicing critical areas where resets are not possible.

1.2.M.3.1 Steam pressure - Pressure resets are generally implemented at boiler level or on main steam distribution lines. Where there are no steam systems mark "not applicable".

1.2.M.3.2 Chilled water - Chilled water temperature resets can be achieved by modulating chiller capacity. Where there are no chilled water systems mark "not applicable".

1.2.M.3.3 Hot water - Hot water resets can be achieved by modulating boiler capacity or mixing valves on hydronic networks. Where there are no hot water systems mark "not applicable".

1.2.M.3.4 Supply air - Supply air resets can be in cold air or hot air streams. Where there are no air supply systems mark "not applicable".

1.2.M.4 Does the BAS control HVAC for over 50% of the floor area?

- [x] Over 50% of the floor area
- [ ] Under 50% of the floor area
- [ ] N/A (No BAS)

This applies to package units and motors over 5HP. A Building Automation System (BAS) can control HVAC (Heating, Ventilating, Air Conditioning) and other systems to optimize their start-up and performance, improve the interaction of mechanical sub systems, improve occupant comfort, and lower energy use. The computer and controllers in the BAS can be networked to the internet or serve as a stand-alone system. Some can also provide off-site building control. A partial BAS would include control systems for only part of the building.

1.2.3.6 Is the Building Automation System (BAS) integrated with the energy monitoring and/or preventive maintenance systems?

- [ ] Both
- [ ] Energy monitoring
- [ ] Preventative maintenance
- [x] Neither
- [ ] N/A

Most BAS are capable of monitoring energy use for specific equipment and systems to allow more precise energy measurement and control. A BAS can also be used to schedule specific preventative maintenance procedures, a key factor in ensuring optimum energy performance, and in prolonging equipment life. If there is no BAS, mark "not applicable".

1.2.4 Hot Water

1.2.4.1.1 What is the predominant type of heating system used for Domestic Hot Water (DHW)?

- [ ] Natural gas/fuel oil
- [ ] Electric
- [ ] Small commercial type or centralized heating boilers
- [ ] Instantaneous natural gas
- [ ] Instantaneous electric
- [ ] Other

1.2.4.1.2 Describe

1.2.M.5 What percentage of hot water is produced with high-efficiency water heating equipment?

- [ ] 50-100%
- [ ] 25%-49%
- [x] Under 25%

"High efficiency" heating equipment means condensing water heaters, "tankless" (instantaneous) water heaters, heat pump water heaters or solar water heating technology, or electrical heaters in areas where hydroelectric production consists of more than 60% of the total generating capacity. This includes regions in BC, Manitoba, Quebec and Newfoundland.

1.2.4.4.1 What percentage of hot water faucets have water saving devices?

- [ ] 50-100%
- [ ] 25%-49%
- [x] Under 25%

Water-saving devices" means devices that reduce the rate and/or duration of water-flow in faucets, for example low-flow faucets with aerators or automatic faucet on/off controls.

1.2.4.4.2 Describe

1.2.5 Other Energy Efficiency Features

Are there variable speed drives on the majority (i.e. more than 50%) of each of the following fan and pump systems?

	Yes	No	N/A
1.2.5.1 Main supply air systems	☐	☑	☐
1.2.M.7 Main chilled water pumps	☐	☑	☐
1.2.M.8 Condenser (cooling tower) pump systems	☐	☑	☐
1.2.5.3 Heating pump systems	☐	☑	☐
1.2.5.4 Domestic water booster pumps	☐	☑	☐
1.2.5.5 Cooling tower fan motors	☐	☑	☐
1.2.M.9 Low-flow fume hoods in laboratories	☐	☑	☐

Variable speed drives control the motor speed by varying the frequency of the electrical supply to match actual load conditions. This reduces energy consumption, improves fan or pump control, and extends the life of the equipment. Mark "not applicable", where the systems are not present. Answer "Yes" only if there are variable speed drives on more than 50% of the particular system.

1.2.5.6 What percentage of motors on fans and pumps (of 5HP or more) are high-efficiency?

- [ ] 50%-100%
- [ ] 25%-49%
- [x] Under 25%

The motor's nameplate indicates if the motor is high efficiency with the inscription "NEMA Premium" or "Energy Efficient". Where no such inscription is available, motor efficiency can be verified by consulting the applicable minimum nominal efficiency associated with a particular motor type in standard CAN/CSA 390-10 (Table 3 or Table 2, respectively).

Are there other energy efficiency measures such as the following?

1.2.5.8 Exhaust air heat recovery

- [ ] Yes
- [x] No
- [ ] N/A

A heat-recovery system captures heat from building exhaust air and reuses some of the energy to precondition the incoming outside air before supplying it to the building. This could be in the form of an air-to-air heat exchanger, glycol heat-recovery loop, heat wheel or heat pipe. Where heat recovery has been investigated and found to be unfeasible, mark "not applicable".

1.2.5.15 Cogeneration (building or district scale)

- [ ] Yes
- [x] No
- [ ] N/A

Cogeneration is the simultaneous production of heat and electrical or mechanical power. It is achieved by capturing and recycling the rejected heat that escapes from an electricity generation or a manufacturing process in the building. Cogeneration can be used to reduce peak demand. Where cogeneration has been investigated and found to be unfeasible, mark "not applicable".

1.2.5.17 Elevators with efficient control systems

- [ ] Yes
- [x] No
- [ ] N/A

Mark "yes" where more than 70% of elevators are high efficiency. Energy efficient features include traction (vs. hydraulic) drives which ride on a steel rope with a counterweight on the other end, making it possible to generate energy on the way down; in-cab sensors and software that automatically enter sleep mode, turning off lights, ventilation, music, and video screens when unoccupied; and destination dispatch control software that batches elevator stop requests, making fewer stops and minimizing wait time. Where there are no elevators mark "not applicable".

1.2.6 Low-impact electricity

1.2.6.1 Is low-impact electricity purchased?

- [x] Yes
- [ ] No

To be recognized, low-impact electricity must be purchased from sources (generators/aggregators/distributers) that are certified under the EcoLogo or Green-e Energy programs.

Does the building utilize any of the following renewable on-site energy sources?

Renewable energy sources do not deplete natural resources.

1.2.6.3.1 Active Solar - This is generally used to increase the temperature of large volumes of water or air in commercial, residential and industrial buildings (e.g. solar wall or solar DHW panels).

1.2.6.4.1 Wind - This is generally used to generate electricity to offset electricity purchased from the electric utility.

1.2.6.5.1 Photovoltaic - Photovoltaic cells convert the sun's energy to usable electricity.

1.2.6.6.1 Ground Source "Heat Pump" - Using the temperature differential between above ground and below ground (or ground water), fluid is circulated in an underground (or underwater) loop. The energy collected is used for air and/or water heating. The system can be reversed in summer to provide cooling instead of heating.

1.2.6.7.1 Bio-mass - Fuel such as round wood, wood and agricultural waste, prepared wood fuels, landfill gas and digester gas are burned using high-efficiency combustion to provide space and/or water heating.

Describe:

- ☐ 1.2.6.3.1 Active Solar
- ☐ 1.2.6.4.1 Wind
- ☐ 1.2.6.5.1 Photovoltaic
- ☐ 1.2.6.6.1 Ground Source “Heat Pump”
- ☐ 1.2.6.7.1 Bio-mass

1.2.6.8.1 What percentage of the building’s total energy use is supplied by these renewable sources?

- ☐ Over 10%
- ☐ 10% or less
- ☑ 0%

Enter percentage of total annual energy requirements supplied from above sources.

1.2.6.8.2 Describe the source:

1.2.7 Envelope

Has the current performance of the building envelope been assessed in last 5 years in terms of the following?

	Yes	No
1.2.7.1 Water infiltration and condensation	☐	☑
1.2.7.2 Moist air transfer	☐	☑

1.2.7.3 Air flow	☐	☑
1.2.7.4 Heat transfer	☐	☑

An assessment of the current performance and condition of the envelope should consider the issues of relative humidity temperature and interior pressure.

1.2.7.1 Water infiltration and condensation - Consider the differences in temperature on the inner and outer surface of the building, and conditions that might promote condensation on the surface of thermal bridges, i.e. the mould and mildew "control points".

1.2.7.2 Moist air transfer - Consider the envelope permeability and the ability of materials to withstand, without deterioration, periods of freezing and thawing.

1.2.7.3 Air flow - Consider the air pressure differences and air-leakage characteristics of the envelope.

1.2.7.4 Heat transfer - Assess the thermal resistance and quantity of heat transferred through of the envelope.

1.2.M.10 What percentage of windows and doors has energy efficient glazing?

- ☐ 50%-100%
- ☐ 25%-49%
- ☑ Under 25%

Energy-efficient windows consist of, at a minimum, double-glazed low-e windowpane with frame spacers that have high thermal integrity. High performance weather stripping on doors and windows also increases their thermal performance. Repair or replace exterior door weather stripping, thresholds and door sweeps as needed.

1.2.7.5.2 Describe:

1.2.7.6.1 Does the building have window shading (e.g. exterior awnings, blinds or reflective film) to reduce the cooling load?

- ☐ Yes
- ☑ No
- ☐ N/A

Appropriate shading may include shade created by near-by building(s) and/or high structure(s). Mark "not applicable" if there are no windows or where windows are located on the north face of the buildings (no direct sunlight).

1.2.7.6.2 Describe:

1.2.7.9 Do the majority of public pedestrian entrances from the outdoors use double doors with a vestibule or revolving doors?

- ☐ Yes
- ☑ No

1.2.M.11 Where there are vestibule heaters, do the set points avoid excessive or continuous heating?

- [ ] Yes
- [x] No
- [ ] N/A

Mark "not applicable" if there are no vestibule heaters. A suitable temperature is 18°C, provided that this does not affect door closures.

Has the building envelope been air-sealed in the following areas?

Seal all exterior joints in the building envelope and around penetrations of the building envelope for the utility services. Stack effect and air leakage through the building envelope can cause significant heat loss and deterioration of the building envelope. One indication of a leaky building can be observed in the winter, when occupants in the lower levels complain of draft and cold and those in upper levels complain of over-heating.

Seal all exterior joints in the building envelope and around penetrations of the building envelope for the utility services. Stack effect and air leakage through the building envelope can cause significant heat loss and deterioration of the building envelope. One indication of a leaky building can be observed in the winter, when occupants in the lower levels complain of draft and cold and those in upper levels complain of over-heating.

1.2.7.11 The top part of the building

- [ ] Yes
- [x] No

Seal roof-to-wall connections and exterior openings of mechanical penthouse and floors in the upper part of the building.

1.2.7.12 The bottom part of the building

- [ ] Yes
- [x] No

Seal exterior openings and floor slab-to-wall connections and service core of the parking areas, entrance doors and the floors in the lower third of the building.

1.2.7.13 Vertical shafts and elevators

- [ ] Yes
- [x] No
- [ ] N/A

Seal service ducts and conduit penetrations, including excessive cable holes in the elevator shafts. In buildings with no vertical shaft or no elevators mark "not applicable".

1.2.7.14 Has a comprehensive Building Condition Report been produced within the last 5 years?

- [ ] Yes
- [x] No
- [ ] N/A

A building condition assessment conducted at least every 5 years helps to ensure that issues are addressed before they turn into major problems. This also provides advance notice to owners, enabling them to plan a

short, medium and long-term budget for repairs. In a building older than 10 years, the building envelope assessment should comprise a review of foundation, roof (for leaks), exterior walls (for cracking in the sealing and corrosion in exterior panel hangers), exterior windows, and infrared thermal imaging as needed. Systems to be assessed include plumbing systems, electrical systems, security systems, fire alarm systems, and mechanical systems. In buildings less than 10 years old and not requiring a Building Condition Report, mark "not applicable".

1.2.7.15 Were the recommendations of the Building Condition Report for the walls and windows carried forward into a Capital or Building Maintenance Plan?

- ☐ Yes
- ☑ No
- ☐ N/A

In buildings less than 10 years old and not requiring a Building Condition Report, mark "not applicable". In buildings 10 years or older, with no report done within the last 5 years, mark "no".

1.2.8 Energy Innovation

1.2.8.2.1 Are there other energy-saving systems or measures?

- ☐ Large impact
- ☐ Small impact
- ☑ None

"Large impact" refers to technologies that have reduced energy use/carbon emissions by more than 10% of previous levels. "Small impact" refers to less than 10% reduction. Energy-saving systems or measures could include deep-lake cooling, solar absorption chillers, CO_2 demand ventilation, displacement ventilation, dehumidification methods, thermal mass storage, free cooling capability without using chillers, innovation in on-site production of medical vacuum or oxygen, or demand-response capability such as participation in a program for off-peak scheduling of significant building electricity loads.

1.2.8.2.2 Describe:

1.3 Energy Management

1.3.1 Energy Policy

1.3.1.1 Is there an energy management policy endorsed by senior management?

- ☐ Yes, there is a formal energy management policy
- ☑ No, there is no energy management policy

This must be a public document that expresses a commitment to establish energy targets, assign responsibilities, monitor performance, and undertake an annual review and report. This document must be endorsed by the highest level of authority in the facility.

1.3.3 Energy Management, Monitoring and Targeting

1.3.3.2.1 Is there a documented protocol for the regular review of energy consumption by a qualified and designated person to identify anomalies or excessive consumption and take corrective action as needed?

- [x] Not actively done
- [ ] By onsite staff using in-house spreadsheets
- [ ] By onsite staff using third party tools
- [ ] By an Energy Manager
- [ ] By a contracted energy company

Monthly energy bills must be reviewed and monitored by the designated Energy Manager to identify anomalies or excessive consumption. Whenever a review has been done, this must be logged.

1.3.3.2.2 Describe how this is done:

1.3.3.4.1 Is there evidence that energy management practices and/or energy conservation strategies are helping to achieve established energy targets over time?

- [ ] Yes
- [x] No

Evidence of successful energy management must be based on a review of energy data over a period of 3 years. This must show the savings that have resulted from an energy management/ conservation program or a specific energy efficiency project; or it could show that energy consumption levels have stayed the same despite an increase in energy demand (for example, due to the introduction of new diagnostic equipment). The effectiveness of an energy management program is determined by monitoring consumption during an ongoing energy program or before-and-after implementation of a project. Appropriate adjustments should be made to account for changes in conditions such as weather, and any significant change to building occupancy, hours of operation, changes to building use or function, major renovations / additions / deletions to the building, building envelope, and HVAC systems.

1.3.3.4.2 Describe:

1.3.3.5 Does the building automation system (BAS) have the capability to shed non-critical electrical loads during periods of peak demand on the utility's distribution network?

- [ ] Yes
- [x] No
- [ ] N/A

"Load shedding" means that the BAS is able to reduce the building's electrical load for HVAC and/or lighting during periods of high demand on the Utility's network, typically at the request of, and perhaps with incentives from the utility. Such load reductions are usually just a few hours per day, or a few days per year. Although indoor conditions may be somewhat adversely impacted, the situation is usually only temporary, and presents no great hardship to the occupants. "Non-critical areas" means areas that are not being occupied 24/7. Mark "not applicable" where all areas are critical areas.

1.3.4 Energy Training

1.3.4.1.1 Is there a continuing education plan for operations staff including new employees, on how to implement energy monitoring, equipment preventive maintenance, and energy efficiency measures?

- [ ] Yes
- [x] No

Training can be in-house or external. Training needs should be identified, for example, for new staff, and whenever there are system upgrades. For new employees, this would comprise an introduction to the building's energy goals and energy efficiency operations. For current staff, the training would consist of ongoing, regular updates.

1.3.4.1.2 List the training courses or internal training taken by operations staff in last two years and for the next 12 months:

1.3.4.2 Does management provide training for staff on the Building Automation System (BAS)?

- [ ] Yes
- [x] No
- [ ] N/A

Where there is no BAS, mark "not applicable".

1.3.5 Financial Resources

1.3.5.1.1 Does the operating budget include items that relate to improving energy efficiency OR is the building participating in a program for energy efficient upgrades?

- [ ] Yes
- [x] No

This can consist of an energy efficiency improvement budget for operations and capital improvements or participation in a program that provides financial assistance for energy upgrades.

1.3.5.1.2 Describe:

1.3.6 Sub-metering

Have sub-meters been installed to measure the following major energy uses OR is the Building Automation System (BAS) used to track these energy uses?

Mark "not applicable" where the particular energy use is not present in the facility.

1.3.6.3 Data centres

- [ ] Yes
- [x] No
- [ ] N/A

In buildings with more than one major data centre, answer "Yes" only if there is sub-metering of ALL major data centres.

1.3.6.4 Cooling plant

- [ ] Yes
- [x] No
- [ ] N/A

1.3.6.5 Cooling towers

- [ ] Yes
- [x] No
- [ ] N/A

1.3.6.6 Food court/restaurant

- [ ] Yes
- [x] No
- [ ] N/A

1.3.M.1.2 Radiology equipment

- [ ] Yes
- [x] No
- [ ] N/A

1.3.M.1.3 Parking areas

- [ ] Yes
- [x] No
- [ ] N/A

1.3.6.7 Other uses

- [ ] Yes
- [x] No
- [ ] N/A

1.3.6.8 Describe sub-metering:

1.3.7 Documented Operating Instructions

1.3.7.1 Are there readily available operating instructions covering standard control settings and basic trouble-shooting for all major equipment and related sub-systems?

- [ ] Yes
- [x] No

There must be a user-friendly, accessible operating manual that lists all the building systems along with a description of their function, and standard control settings and/or basic trouble shooting. For each system, the standard control settings should be outlined for each day from Monday to Sunday plus holidays, and each time-

of-day, as well as for the modes of operation - for example, occupied vs. unoccupied; day vs. night, etc. While an electronic manual may be available, there could also be a printed copy in an accessible location. Thus, in the event that computers are down or regular staff is not available, someone who is not entirely familiar with the system can still take over. The manual needs to be updated as systems are revised and serviced. In addition to the manual, a best practice is to post an instruction sheet of operating parameters (e.g. temperature set points, pressures, operating schedule) for each piece of equipment in the room.

1.3.8 Maintenance and Commissioning

Does the regular mechanical systems maintenance schedule include the following?

The maintenance schedules must be documented and records maintained. The following operations and maintenances tasks must be performed bi-annually, or as recommended by the manufacturer, or in accordance with ASHRAE/IES Standard 100-2006R, *Energy Efficiency in Existing Buildings*.

1.3.8.2 Check boiler systems and measurements of boiler efficiency

- ☐ Yes
- ☑ No
- ☐ N/A

To monitor for proper combustion efficiency, carry out efficiency tests at least annually and calibrate burners so that delivered efficiency meets manufacturer specifications. If there are no boilers, mark "not applicable".

1.3.8.3 Check the correct operation of ventilation and cooling controls

- ☐ Yes
- ☑ No
- ☐ N/A

This involves checking that all set points are adjusted to meet efficiency requirements as well as seasonal and operational needs of the occupants for each day (including holidays), and time-of-day. If there is no HVAC, mark "not applicable".

1.3.8.4 Check temperature and humidity controls to ensure they are set correctly and are responding as intended

- ☐ Yes
- ☑ No

There must be bi-annual evaluations of the control systems.

1.3.8.5 Check air supply grilles to ensure they are not blocked and are delivering air as required

- ☐ Yes
- ☑ No
- ☐ N/A

Mark "not applicable" where there are no air grilles.

1.3.8.6 Check for refrigerant leaks

- [ ] Yes
- [x] No
- [ ] N/A

For systems using refrigerant, maintain the refrigerant charge per the manufacturer's requirements. Keep refrigerant leakage under 5%. If there is no cooling plant, mark "not applicable".

1.3.8.7 Check cooling towers

- [ ] Yes
- [x] No
- [ ] N/A

This must include reviewing water treatment, bleed control and cycles of concentration, water temperatures, pump operation and sequencing, and sump during operation. If there are no cooling towers, mark "not applicable".

1.3.8.8 Schedule filter replacement

- [ ] Yes
- [x] No
- [ ] N/A

Replace or clean filters in accordance with manufacturer's recommended schedule or design pressure drop. Ensure correct size and type of filter. If there is no air handling unit, mark "not applicable"

1.3.8.9 Clean and sterilize wet regions in the air conditioning system and checking for accumulation of dirt

- [ ] Yes
- [x] No
- [ ] N/A

If there is no air handling unit, mark "not applicable".

1.3.8.10 Periodic caulking inspection and repair program of building envelope

- [ ] Yes
- [x] No

High performance weather stripping on doors and sealing around windows combined with regular checking and maintenance increases their thermal performance.

1.3.8.12 Periodic check and repairs of all exterior doors and windows, and associated caulking or weather-stripping to ensure tight fit with minimal infiltration of outside air

- [ ] Yes
- [x] No

High performance weather stripping on doors combined with regular checking and maintenance increases their thermal performance.

1.3.M.2 Check medical gas piping systems such as medical air, medical gas, medical vacuum, oxygen and nitrous oxide systems

- [ ] Yes
- [x] No
- [ ] N/A

To ensure that medical gas piping systems are operating efficiently and reliably (production, distribution, and security of supply) these must meet manufacturer recommendations and CSA Z7396.1. Where no medical gas piping systems are in place, mark "not applicable".

1.3.8.15 Is there fault detection and diagnostic capability to verify and maintain operational performance of rooftop HVAC equipment?

- [ ] Yes
- [x] No
- [ ] N/A

Incorporate fault detection and diagnostic (FDD) capabilities in all rooftop manufactured HVAC equipment to monitor equipment performance in following categories: refrigerant charge, airflow, economizer option, and cycling duration operations. Where there are no rooftop units, mark "not applicable".

1.3.8.16.1 Are ongoing commissioning practices implemented in response to changes to facility occupancy, usage, repair or retrofits?

- [ ] Yes
- [x] No

"Ongoing commissioning" means a continuous process to resolve operating problems, improve comfort, optimize energy use and identify the need for retrofits in existing commercial and institutional buildings and central plant facilities. It does this by monitoring the accuracy of calibrations, efficiency of operations, and synchronization of existing systems. Ongoing commissioning can be done using BAS or data-loggers. A BAS can be programmed to continuously evaluate data that is being collected and generate an output message whenever the measured parameters fall outside of their programmed ranges. A lower-cost alternative is to regularly and frequently (typically monthly) monitor system performance using data-loggers and analyze the data manually.

Note: Re-commissioning is required at the time of major retrofits and occupancy changes. It focuses on improving overall system control and operations for the building and helps to ensure that the building and systems operate optimally to meet the current building conditions and occupancy requirements (which may differ from those when the building was originally designed). Installing an energy management system that allows ongoing commissioning through data collection points allows a facility management team to keep a building "tuned" without the cost of re-commissioning.

1.3.8.16.2 Describe:

1.3.8.17 Is periodic recommissioning performed?

- [ ] Every 3-5 years
- [ ] Every 6-9 years
- [ ] Every 10 years or more
- [ ] The building is less than 3 years old
- [x] No

"Recommissioning" means a quality assurance process to optimize the functioning of building equipment and systems and their controls. It is recommended at the time of major retrofits and occupancy changes and as a period "tune-up" to improve overall system control and operations to meet building conditions and occupancy requirements (which may differ from when the building was originally designed). A recommissioning investigation typically focuses on low-cost/no-cost opportunities for performance improvement and greater efficiency - which can avoid the need for major retrofits

1.3.8.19 Do commissioning projects include staff re-training at the time of major retrofits or occupancy changes to facilitate ongoing maintenance of achieved improvements and benefits?

- [ ] Yes
- [x] No

The final ("hand-off") phase of a re- or retro-commissioning project must include a plan to (re)train staff on the updated operational procedures including operational controls, scheduling and adjustments that have been identified during the project. Training facility staff is critical to ensuring persistence of the benefits achieved through the commissioning process. Qualified commissioning professionals should design (and typically deliver) training to your staff at the end of the project.

1.4 Transportation

1.4.1 Public Transportation

1.4.1.1 What is the building's walkability index?

- [ ] Over 80%
- [ ] 65%-80%
- [x] Under 65%

Enter the walkability score for your building from www.walkscore.com.

1.4.1.2 Does the building have access to public transit within 500 meters OR is the Public Transit index greater than 75%?

- [ ] Yes
- [x] No
- [ ] N/A

The Public Transit index can be found at www.walkscore.com. Where the building is located outside the public transportation network mark "not applicable".

1.4.1.3 Is there service at least every 15 minutes during rush hour?

- [ ] Yes
- [x] No
- [ ] N/A

Commuters expect public transit service at least every 15 minutes during rush-hour periods. Where the building is located outside the public transportation network mark "not applicable".

1.4.1.5 Has a Transportation Demand Management Survey (and follow up Plan) been conducted to determine the travel patterns of building workers and occupants who work at and commute to the building?

- [ ] Yes
- [x] No

Conducting a transportation demand management survey will provide building management with valuable information on staff travel patterns. This may help to put in place measures that will facilitate commuting for example, a carpooling program based on identified common routes or a shuttle bus to high staff density areas.

1.4.2 Cycling Facilities

1.4.2.3 Are there bicycle racks for a minimum of 5% of occupants OR is there a bicycle rack vacancy of 10% at all times?

- [ ] Yes
- [x] No
- [ ] N/A

Providing bicycle facilities at destinations encourages cycling to work. If the building is outside a 10 km radius of residential areas, mark "not applicable".

1.4.2.4 Are the majority of bike racks protected from inclement weather?

- [ ] Yes
- [x] No
- [ ] N/A

Sheltering bicycles from rain further encourages cycling to work. If the building is outside a 10 km radius of residential areas, mark "not applicable".

1.4.2.5 Are there changing facilities and showers for staff?

- [ ] Yes
- [x] No
- [ ] N/A

Although cyclists and joggers can change in washrooms and can store their clothes in the workplace, providing dedicated facilities for them to freshen up encourages commuters to cycle to work. If the building is outside a 10 km radius of residential areas, mark "not applicable".

1.4.3 Innovation Points - Other measures

1.4.3.1.1 Are there other measures to reduce car dependency (e.g. a transportation demand plan, initiatives that support car-pooling, preferred parking spaces for car poolers, subsidies for transit passes, nearby auto share services)?

- [ ] Yes
- [x] No

A transportation demand plan is generally based on a study of commuting habits of stakeholders. Providing a database where staff can share postal code information enables them to make carpooling arrangements.

Getting a reduced price on transit passes for all building occupants greatly encourages them to use public transport. Locating car-share services on the premises gives building occupants flexibility in the way they commute. Improving the site access for pedestrians and bikes using signage and/or landscaping can also help to decrease car dependency.

1.4.3.1.2 Describe:

1.4.M.1.1 Are there other innovative sustainable transportation initiatives?

☐ Yes

☑ No

Sustainable transportation initiatives include:

- • using hybrid or electric service vehicles;
- • providing on-site electric vehicle charging stations (Level 2, at a minimum);
- • purchasing policy that favor low-carbon methods of shipping; and
- • disposing/diverting waste locally (reducing energy and greenhouse gas emissions produced in transporting waste).

1.4.M.1.2 Describe:

2.0 Water

2.1 Water Consumption

2.1.1 Will you be entering water consumption information for 100% of your building's GFA?

- [x] Yes
- [ ] No

In order to receive points for water consumption in BOMA BEST you are required to enter consumption data for all water sources (indoor and outdoor) within 100% of your building's interior floor area - not simply the net or Gross Leasable Area. If you do not have 100% of your building's water consumption data you will not be eligible to receive any points in this section.

2.1.2 What is the calculated Water Use Intensity (WUI) for the building (in m3/m2/year)?

Using the BOMA BEST or the ENERGY STAR Portfolio Manager portals, generate a WUI for the building

The data used to generate the WUI must represent 12 consecutive months of consumption, at a minimum, for all meters (indoor and outdoor). The data must not be any older than the past 18 months nor should it represent consumption during periods of major renovations.

- • To enter data using the BOMA BEST Online Portal, follow **these instructions**.
- • To enter data using your ENERGY STAR Portfolio Manager account, follow **these instructions** to link your account with BOMA BEST.

Only WUI generated by the BOMA BEST or the ENERGY STAR Portfolio Manager portals can be accepted.
If using ENERGY STAR, your account must be linked with your BOMA BEST account.

Provide the WUI in m3/m2/year. Include up to two decimals.

Tips on benchmarking your water are available in this **FAQ**.

2.1.3 What is the facility classification?

- [x] Hospital
- [ ] Medical Office
- [ ] Long Term Care

Hospital: The Hospital designation applies to general medical and surgical hospitals, critical access hospitals, and children's hospitals.

These facilities provide acute care services intended to treat patients for short periods of time including emergency medical care, physician's office services, diagnostic care, ambulatory care, surgical care, and limited specialty services such as rehabilitation and cancer care.

To qualify as a Hospital, the following requirements must be met:

- • More than 50% of the gross floor area of all buildings must be used for general medical and surgical services; AND

- • More than 50% of the licensed beds must provide acute care services; AND
- • These facilities must operate on a 24/7 basis.

Facilities that use more than 50% of the gross floor area for long-term care, skilled nursing, specialty care, and/or ambulatory surgical centers OR that have less than 50% of their beds licensed for acute care services are not considered eligible hospitals under this definition.

Medical Office Building: A Medical Office Building designation applies to buildings that meet the following requirements:

- • More than 50% of total facility space is used primarily to provide diagnosis and treatment (no major surgery) for medical, dental, or psychiatric outpatient care;
- • These facilities do not operate on a 24/7 basis.

Long term care facilities (include residential care and outpatient rehabilitation/physical therapy): Also called "acute inpatient health care facilities", these facilities are certified as acute care hospitals and provide patients with acute care for extended inpatient stays of an average of 25 days or more.

A Long Term Care facility designation applies to buildings that meet the following requirements:

- • More than 50% of the total facility space is used primarily for long term acute care, cancer care, rehabilitation, and/or psychiatric care;
- • These facilities operate on a 24/7 basis.

Facilities where more than 50% of the space is not dedicated to long term acute care, such as retirement homes or assisted living facilities, are not considered eligible under this definition.

Facilities that meet the definition of Senior Care Community must use the Universal Questionnaire.

2.1.4 Select the appropriate range representative of your property's WUI (for scoring purposes)

- [x] 3.0 $m^3/m^2/yr$ and above
- [ ] Between 2.60 and 2.99 $m^3/m^2/yr$
- [ ] Between 2.20 and 2.59 $m^3/m^2/yr$
- [ ] Between 1.70 and 2.19 $m^3/m^2/yr$
- [ ] Between 1.30 and 1.69 $m^3/m^2/yr$
- [ ] Between 0.90 and 1.29 $m^3/m^2/yr$
- [ ] Less than 0.9 $m^3/m^2/yr$

2.1.4 Select the appropriate range representative of your property's WUI (for scoring purposes)

- [ ] 1.60 $m^3/m^2/yr$ and above
- [ ] Between 1.40 and 1.59 $m^3/m^2/yr$
- [ ] Between 1.20 and 1.39 $m^3/m^2/yr$
- [ ] Between 1.0 and 1.19 $m^3/m^2/yr$
- [ ] Between 0.80 and 0.99 $m^3/m^2/yr$
- [ ] Between 0.50 and 0.79 $m^3/m^2/yr$
- [ ] Less than 0.5 $m^3/m^2/yr$

2.1.4 Select the appropriate range representative of your property's WUI (for scoring purposes)

- [ ] 1.90 m³/m²/yr and above
- [ ] Between 1.70 and 1.89 m³/m²/yr
- [ ] Between 1.30 and 1.69 m³/m²/yr
- [ ] Between 1.10 and 1.29 m³/m²/yr
- [ ] Between 0.90 and 1.09 m³/m²/yr
- [ ] Between 0.60 and 0.89 m³/m²/yr
- [ ] Less than 0.6 m³/m²/yr

2.2 Water Efficiency Features

Does the building incorporate any of the following high-efficiency water features?

2.M.1 Single or dual flush toilets that use equal to or less than 6.0 L/flush

- [ ] All toilets are 4.8 L/flush or less
- [ ] All toilets are 6.0 L/flush or less
- [x] Some toilets are more than 6.0 L/flush

Recommended efficiencies are 4.8 L/flush (preferred) or 6.0 L/flush (acceptable). Mark 4.8 L/flush only if all the toilets meet this standard. Where only some toilets are 4.8 L/flush and the rest are 6.0 L/flush, mark 6.0 L/flush.

2.M.2 Ultra low flush urinals that use equal to or less than 3.8 L/flush or waterless urinals

- [ ] All urinals are 1.9 L/flush or less
- [ ] All urinals are 3.8 L/flush or less
- [x] Some urinals are more than 3.8 L/flush

Recommended efficiencies are 1.9 L/flush (preferred) or 3.8 L/flush (acceptable). Mark 1.9 L/flush only if all the urinals meet this standard. Where only some urinals are 1.9 L/flush and the rest are 3.8 L/flush, mark 3.8 L/flush.

2.M.3 Shower heads with flow rate of 9.5 L/min or less

- [ ] All showerheads are 7.6 L/min or less
- [ ] All showerheads are 9.5 L/min or less
- [x] Some showerheads are more than 9.5 L/min
- [ ] N/A

Recommended efficiencies are 7.6 L/min (preferred) or 9.5 L/min
(acceptable). Mark 7.6 L/min only if all the showerheads meet this standard. Where only some showerheads are 7.6 L/min and the rest are 9.5 L/min, mark 9.5 L/flush. Where there are no showers, mark "not applicable".

2.M.4 Kitchen faucets with flow rate of 8.35 L/min or less

- [ ] All kitchen faucets are 5.7 L/min or less
- [ ] All kitchen faucets are 8.35 L/min or less
- [x] Some kitchen faucets are more than 8.35 L/min

Recommended efficiencies are 5.7 L/min (preferred) or 8.35 L/min. (acceptable). Mark 5.7 L/min only if all the faucets meet this standard. Where only some faucets are 5.7 L/min and the rest are 8.35 L/min, mark 8.35 L/min.

2.M.5 Lavatory sink faucets with flow rate of 8.35 L/min or less

- [ ] All bathroom faucets are 5.7 L/min or less
- [ ] All bathroom faucets are 8.35 L/min or less
- [x] Some bathroom faucets are more than 8.35 L/min

Recommended efficiencies are 5.7 L/min (preferred) or 8.35 L/min. (acceptable). Mark 5.7 L/min only if all the faucets meet this standard. Where only some faucets are 5.7 L/min and the rest are 8.35 L/min, mark 8.35 L/min.

2.M.6 Are microfiber cleaning systems being utilized?

- [ ] Microfiber cleaning widely implemented
- [ ] Microfiber cleaning in some but not all areas
- [x] No

Microfiber cleaning programs reduce the usage of chemicals in the water.

2.M.7.1 Is there re-use of water from medical, mechanical or cleaning systems?

- [ ] Water re-use is widely implemented
- [ ] There is some water re-use
- [x] No

For example wet scrubbers with water recirculation systems.

2.M.7.2 Describe:

2.M.8 Are water-saving sterilization processes or equipment used such as mechanical vacuum systems and/or water tempering devices?

- [ ] 70%-100% of equipment uses water-saving sterilization
- [ ] 40%-69%
- [x] Under 40%

Mechanical vacuum systems are applicable where the volume of equipment needing to be sterilized is high or where equipment needs to be sterilized quickly. A vacuum drawing on the chamber allows better contact with the steam. Water tempering reduces the amount of water needed to cool the hot condensate created during sterilization before it can be sent down the drain. A condensate tempering system monitors the temperature of the draining water and applies cold water only when needed - e.g. when the water from the sterilizer is hotter than 60°C (140°F).

2.2.8.1 Is the use of water in cleaning procedures being minimized?

- [ ] Yes
- [x] No

Use of water can be minimized by using dry-cleaning methods such as sweeping instead of hosing. Hoses should have water-efficient, high-pressure nozzles.

2.2.8.2 Describe:

2.2.9.1 Does all landscaping minimize the need for irrigation?

- [ ] Yes
- [x] No
- [ ] N/A

Landscaping that requires low or no supplemental irrigation, known as xeriscaping, involves the use of plant species that require little watering and techniques that help reduce the amount of water needed for irrigation. If the exterior landscaping is less than 5% of the site area, mark "non-applicable". Irrigation does not apply to watering of interior plants.

2.2.9.2 Describe:

Does the building use non-potable water for irrigation?

- [ ] Yes
- [ ] No
- [x] N/A

If there is no irrigation OR if the exterior landscaping is less than 5% of the site area or there is no irrigation, mark "not applicable".

Are the following non-potable sources of water used for irrigation?

2.2.10 Rainwater - Rainwater is water collected in cisterns either inside or outside the building. A green roof that uses no irrigation also qualifies as a rainwater capture system.

2.2.11 Externally supplied recycled water - Some municipalities supply externally recycled water.

2.2.12 Grey Water - Grey water is treated waste-water from sinks and showers (not toilets) that has had soils and undesirable bacteria removed.

- [ ] 2.2.10 Rainwater
- [ ] 2.2.11 Externally supplied recycled water
- [ ] 2.2.12 Grey Water

Does the building use water-efficient technology for irrigation?

- [x] Yes
- [ ] No
- [ ] N/A

If there is no irrigation OR if the exterior landscaping is less than 5% of the site area or there is no irrigation, mark "not applicable".

Is the following water efficient technology used for irrigation?

Use of water can be minimized by using dry-cleaning methods such as sweeping instead of hosing. Hoses should have water-efficient, high-pressure nozzles.

2.2.16.2 Describe:

- [ ] 2.2.13 Drip irrigation
- [ ] 2.2.14 Root-fed irrigation
- [ ] 2.2.15 Moisture sensors
- [ ] 2.2.16 Other water efficient technology

2.M.9 Does the building avoid the use of once-through water-cooled units?

- [ ] 80% or more units avoid once-through water
- [ ] 60% or more units avoid once-through water
- [ ] 40% or more units avoid once-through water
- [ ] 20% or more units avoid once-through water
- [x] 20% or less units avoid once-through water

Some equipment is cooled by a single-pass flow of water, often from a municipal water supply. After passing through and cooling the equipment, the water is discarded.

2.2.18.1 Is the water consumption of cooling towers being reduced by automated controls and/or use of non-potable makeup water?

- [ ] Yes
- [ ] No
- [x] N/A

Water efficiency of cooling towers can be improved by installing a conductivity meter and automatic controls to adjust the bleed rate and maintain the proper concentration at all times. Where there are no cooling towers, mark "not applicable".

2.2.18.2 Describe:

2.3 Water Management

2.3.2 Is there a documented protocol for the regular review of water bills to identify and investigate all occurrences of excessive or unusual water use?

- [ ] Yes
- [ ] No
- [x] N/A

Water use must be monitored on a regular, scheduled basis. Monthly water bills must be carefully reviewed and compared to water meter readings for anomalies or excessive consumption, and action must be taken to identify the causes of undesirable trends. Whenever a review has been done, this must be logged. Mark "not applicable" where water is not metered.

2.3.5.1 Are there water-use reduction targets?

☐ Yes
☑ No

Water usage targets must be defined and recorded. Targets can be expressed as a volume or percent reduction over a specific period of time, or as a percentage reduction in Litres/person.

2.3.5.2 Describe:

2.3.6 Are there regular procedures for checking and fixing water leaks?

☐ Yes
☑ No

Leaks can be detected by conducting visual and auditory inspections, or by recording water meter readings before and after a set time period when there is no water use. Building occupants may also contribute to detecting and reporting leaks if the proper communication pathways have been established by building management.

2.4 Innovation Points - Other Measures

2.4.1.1 Are there other water-saving features or measures?

☐ Yes
☑ No

Other water-saving features include but are not limited to: use of grey water, black water, or reverse osmosis rejection water within the facility (for purposes other than irrigation).

2.4.1.2 Describe:

3.0 Waste Reduction and Site

3.1 Waste Reduction and Recycling

3.1.1 Recycling, Handling and Storing Recyclable

3.1.1.2 Are there separate storage/handling facilities for used paper products, glass, metal and plastic?

- [ ] Yes
- [x] No

A separate designated area for storage will help to avoid recycled waste being inadvertently hauled away with other refuse.

3.1.1.3 Are there clearly marked collection points for sorting paper, glass, metal and plastic in the areas where waste is generated?

- [ ] Yes
- [x] No

Recycling rates increase when collection points are located near the area where waste is being generated. All collection must separate recyclables from waste garbage as per local or hauler requirements. Clearly labelled containers (such as with pictures) increase diversion rates.

Is there a recycling program for the following?

3.1.1.5 Batteries

- [ ] Yes
- [x] No

3.1.1.6 Fluorescent lamps

- [ ] Yes
- [x] No

3.1.1.8 Electronic waste

- [ ] Yes
- [x] No

3.1.M.1 Scrap furniture

- [ ] Yes
- [x] No

3.1.1.9 Merchandise bulk packaging including pallets

- [ ] Yes
- [x] No

3.1.M.2 Other

- [ ] Yes
- [x] No

For example, saline and other types of IV bags, blue gowns, etc.

3.1.1.12 Does the building have a composting program for organic waste, not including a municipal program?

- ☐ Yes
- ☑ No
- ☐ N/A

Composting may be done on-site or off-site at a special centralized facility. If the facility is already participating in a municipal composting program, mark "not applicable".

3.1.2 Waste Reduction Program

3.1.M.4 Is there a building-specific Waste Management (Reduction) Program?

- ☐ Yes
- ☑ No

The Waste Management (Reduction) Program must document measures to improve the building's waste management processes and reduce waste generated and/or sent to landfill. The Program must include the following components:

- • A mechanism to track and report waste based on weight or volume, and associated costs related to disposal/recycling;
- • Logistics for receiving, handling, returning, storing, and safe disposal of recyclables and waste;
- • Training to educate new and existing employees, and on-site contractors regarding their responsibilities;
- • A process for continuous, documented review and update of the Program and progress reports to the decision-making bodies.

Is there an integrated waste management program that addresses waste reduction objectives for the following departments or activities?

An integrated waste management program recognizes that each department faces its own challenges and opportunities for reducing the amount of waste sent to landfill and that their respective programs should complement the overall Waste Management (Reduction) Plan. Each participating department must:

- • Provide a list of initiatives to be implemented by the participating department (e.g. replacing disposable food service ware with reusable);
- • Assign responsibility for a designated initiative;
- • Establish clear objectives and timeline for achievement;
- • Schedule regular opportunities for review to assess progress.

Mark "not applicable" if the department in question is not part of the facility.

3.1.M.5.1 Facilities management (includes administrative areas and common spaces such as waiting rooms, hallways, etc.)

- ☐ Yes
- ☑ No

3.1.M.5.2 Food services

- [ ] Yes
- [x] No
- [ ] N/A

3.1.M.5.3 Processing (sterilization)

- [ ] Yes
- [x] No
- [ ] N/A

3.1.M.5.4 Operating Rooms

- [ ] Yes
- [x] No
- [ ] N/A

3.1.M.5.5 Laboratory – diagnostic (pathology)

- [ ] Yes
- [x] No
- [ ] N/A

3.1.M.5.6 Laboratory – research

- [ ] Yes
- [x] No
- [ ] N/A

3.1.M.7 Clinical practice (in patient, ambulatory patient, etc.)

- [ ] Yes
- [x] No
- [ ] N/A

3.1.M.8 Does the janitorial staff receive training to comply with the facility’s waste diversion policies and practices?

- [ ] Yes
- [x] No

Janitorial staff, whether contracted or on-site, should be trained and made aware of the facility's waste management program and waste reduction objectives.

3.1.M.9 What percentage of cafeteria and vending areas provide access to free drinking water?

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%

Access to free drinking water from the public water supply reduces the waste and environmental impact associated with bottled water. This can be facilitated by installing water fountains and bottle refilling stations throughout the facility, installing signage in vending areas and break rooms directing users to the nearest water fountain/bottle refilling station, as well as providing reusable water containers/cups in break rooms and cafeterias. In cafeterias, free drinking water must be easily accessible, with reusable cups provided nearby. Vending areas (i.e. with vending machines) must provide clear signage directing users to free drinking water available on the same floor and within 50 metres.

3.1.2.1 How frequently are waste audits conducted?

- [ ] Annually
- [ ] Every 2-3 years
- [ ] At longer intervals
- [x] None scheduled

A waste audit can be conducted in-house, or by an external third party. It must identify the performance period in question along with the types and quantities (weight / volume) of waste generated in the building.

3.1.2.2 Is regular monitoring of waste conducted?

- [ ] Yes
- [x] No

This is done by recording the weight or volume of waste that is leaving the building.

3.1.2.3 What is the current waste diversion rate?

- [ ] More than 35%
- [ ] 25%-35%
- [ ] 10%-25%
- [ ] Less than 10%
- [x] Unknown

The Diversion Rate is the proportion by weight of all waste diverted from disposal (i.e. landfill or incineration) to the total weight of all waste material generated, expressed as a percentage. This number must not include contaminated waste.

The following activities are considered diversion actions: actions to prevent waste materials from being generated, actions to reduce material generation, reuse (internal or external), source-separated recycling, composting (on-site or off-site.) Materials that are treated with thermal applications (incineration or EFW) are not considered diverted.
The diversion rate can be determined through various methods and combinations such as hauler records, waste audit, etc.

Determine the building's diversion rate based on the following calculation: [**A** / (**A**+**B**)] x 100
A = Annual weight of all materials currently diverted from disposal
B = Annual weight of all materials currently sent for disposal (includes landfill, incineration and EFW)

Express the annual weight in metric tonnes or kilograms.
The diversion rate must be based on 12 months of data. Data cannot be older than the past three (3) years.

Only include materials for which there is an established market in the calculation.

Annual weight of all materials currently diverted from disposal includes daily generated waste, but also all other materials diverted from building activities such as e-waste, batteries, lamps, scrap metal, wood debris, etc., that may not be captured by the waste audit.

Annual weight of all materials currently sent for disposal does not include hazardous waste such as hazardous industrial waste, chemicals, PCBs, or waste that is ignitable, corrosive, reactive, pathological, leachate or radioactive. It can include construction, renovation and demolition project waste if it was also included in the waste audit

3.1.M.10 Is there evidence that waste management practices and/or waste reduction strategies are helping to achieve established waste reduction targets over time?

- [ ] Yes
- [x] No

Evidence of successful waste reduction strategies must be based on a review of solid waste figures over a period of 3 years. Waste (landfill destined waste plus recycling) must be tracked and measured to reliably determine what reductions have been achieved as a result of waste management/reduction programs. Management practices can also be considered successful where capture rates have remained consistent despite an increase in volume of activity.

3.1.2.8.1 Are there waste-reduction targets?

- [ ] Yes
- [x] No

Targets can be expressed as a waste quantity by weight or percent reduction.

3.1.2.8.2 Describe:

3.1.M.12 What is the facility's capture rate?

- [ ] More than 75%
- [ ] 50 to 75%
- [ ] 25 to 49%
- [x] Less than 25%
- [ ] Unknown

The Capture Rate is the proportion by weight of all waste currently diverted from disposal (i.e. landfill or incineration) to the total weight of all waste material that could have been diverted, expressed as a percentage. This number must not include contaminated waste. Capture rate calculations are based on all existing opportunities to divert waste materials available in your region, not just the materials collected in the building.

The following activities are considered diversion actions: actions to prevent waste materials from being generated, actions to reduce material generation, reuse (internal or external), source-separated recycling, composting (on-site or off-site.) Materials that are treated with thermal applications (incineration or EFW) are not considered diverted.

Determine the building's capture rate based on the following calculation: [**A** / (**A**+**C**)] x 100
A = Annual weight of all materials currently diverted from disposal
C = Annual weight of all materials that could have been diverted from disposal, but were found in the stream headed for disposal

Express the annual weight in metric tonnes or kilograms.

The capture rate must be based on 12 months of data. Data cannot be older than the past three (3) years.

Only include materials for which there is an established market in the calculation.

Annual weight of all materials currently diverted from disposal includes daily generated waste, but also all other materials diverted from building activities such as e-waste, batteries, lamps, scrap metal, wood debris, etc., that may not be captured by the waste audit.

Annual weight of all materials that could have been diverted from disposal includes the same as the above however these materials were found in the stream headed for disposal.

3.1.3 Innovation Points - Other Measures

3.1.M.13.1 Have programs been implemented to increase diversion rates beyond typically recycled materials?

- [ ] Yes
- [x] No

Innovative waste reduction programs might include: treating biomedical waste with alternative disposal or treatment technologies (such as anaerobic digestion of waste, with recovery of materials and combustion of biogas); diverting office supplies or furniture to the community (i.e. schools); donating leftover food to community organizations; and implementing documented Take Back programs (i.e. returning toner cartridges), etc.

3.1.M.13.2 Describe:

3.2 Site

3.2.1 Site Pollution

3.2.1.1 Is the building site free of contamination?

There must be evidence that the site is free of contamination or that it has been remediated to an acceptable level.

- [ ] Yes
- [ ] No
- [x] Unknown

If the site is known to be free of contamination, which of the following is this based on:

3.2.1.2 Document Search - A document search has been conducted and there is no reason to suspect that the site is contaminated (i.e. it has never had underground storage tanks (USTs) or outside storage tanks (ASTs), it was always an office or other facility that did not use chemicals, it is not situated near gas stations or other problem industries, there have been no previous potential problem businesses on the site).

3.2.1.3 Phase 1 Environmental Assessment - A Phase 1 Environmental Site Assessment has been conducted that proves the site to be free of contamination.

3.2.1.4 Confirmation Phase 2 Environmental Site Assessment or Phase 3 Clean Up Report - The site was once contaminated, but has been remediated to an acceptable level, as indicated by a Phase 3 Cleanup Report.

- [ ] 3.2.1.2 Document Search
- [ ] 3.2.1.3 Phase 1 Environmental Assessment?

☐ 3.2.1.4 Confirmation Phase 2 Environmental Site Assessment or Phase 3 Clean Up Report?

☐ None

3.2.1.5.1 If the site is known to be contaminated, are efforts being made to clean it up?

If the site is known to be contaminated, efforts to clean up the site include conducting an engineering assessment of potential hazards, developing cost estimates to eliminate the problem, and hiring a contractor for removal and cleanup. Evidence of the management of the risk with regular inspections and leak detectors approved by the Dept. of Environment is also acceptable. .

3.2.1.5.2 Describe:

☐ Yes

☐ No

3.2.1.1a

☑ The building's state of contamination is unknown

3.2.2 Site Enhancement

Does building exterior management include the following practices?

	Yes	No
3.2.2.1 Selection of maintenance equipment that minimizes energy, water and noise	☐	☑
3.2.2.2 Building Exterior/Façade Cleaning	☐	☑
3.2.2.3 Sidewalk/Hardscape Cleaning	☐	☑

3.2.2.1 Selection of maintenance equipment that minimizes energy, water and noise - Best practices include using equipment that minimizes use of energy and water and reduces noise emissions (for example, using brooms, rakes, shovels, ice picks etc.). Where conventional mechanical maintenance equipment is needed, it should be phased out when it reaches the end of its useful life and replaced with environmentally preferable equipment that performs well in terms of energy and water efficiency, emissions and noise levels.

3.2.2.2 Building Exterior/Façade Cleaning - Best practices include use of high pressure water with no added chemicals to impact vegetation and groundwater. Window cleaning should utilize pH neutral products. Low VOC sealants should be used on the building's exterior should be used "as-needed" as part of the preventive maintenance program.

3.2.2.3 Sidewalk/Hardscape Cleaning - Products, equipment and procedures should minimize the use of harmful chemicals, energy waste, water waste, air pollution, solid waste and/or chemical runoff. The building's sidewalks should be swept frequently and cleaned as needed with a GS-37 certified chemical. Parking garages should be cleaned with a propane-powered sweeper.

3.2.2.4 Does the site use "moderate to high drought tolerant plants" that are also included in a local or regional "native species" plant list OR Does the site include a native butterfly garden?

- [ ] Yes
- [x] No
- [ ] N/A

Plant lists include those from universities, water agencies, government or nursery growers associations. Mark "not applicable" where there is no landscaping.

3.2.2.5 Does the site contribute to a wildlife corridor where adjacent sites include naturalized landscaping?

- [ ] Yes
- [x] No
- [ ] N/A

Mark "not applicable" where adjacent sites do not provide conditions to establish a contiguous wildlife corridor.

3.2.M.1 Are there Healing Gardens?

- [ ] Yes
- [x] No
- [ ] N/A

Healing gardens provide patients, visitors, and staff with a place of respite that offers the health benefits of the natural environment. Healing gardens should:

- • Be accessible from within the building or located within 200 feet of a building entrance or access point;
- • Be open to fresh air, the sky and the natural elements, including seasonal weather;
- • Provide options for shade or indirect sun. Shade structures include trellises and tree-shaded wheelchair accessible seating areas;
- • Provide a minimum of one seating space per 200 square feet of garden area with one wheelchair space per five seating spaces;
- • Use drought tolerant/native species.

If the facility is a Medical Office, mark "not applicable".

3.2.M.2 Are there measures in place to conserve or enhance existing natural site areas?

- [ ] Yes
- [x] No
- [ ] N/A

Conserving and restoring natural site areas can increase the site's biodiversity, assist in reducing the heat island effect and provide occupants with outdoor places of respite. A "natural" site area can include such landscape features as indigenous flower gardens, wooded areas, or other greenery that help reduce soil erosion and storm water runoff, support healthy soil ecosystems and promote biodiversity. The site must have more diversity than lawn grass to qualify for points. If the exterior landscaping is less than 5% of the site area, mark "not applicable".

3.2.2.6 Does the site include storm water management enhancements to help divert storm water from roof, parking lots and sidewalks before it reaches the storm sewer or adjacent natural body of water?

- [ ] Yes
- [x] No
- [ ] N/A

Diversion measures include a green roof, directing stormwater run-off to swales, a rain garden, retention basin, pervious pavements or a cistern (for re-use) before it reaches the storm sewer. If the exterior landscaping is less than 5% of the site area, mark "not applicable".

3.2.2.7 Is outdoor lighting designed to minimize night-time light pollution?

- [ ] Yes
- [x] No

Exterior lighting should comply with International Dark Sky and Illuminating Engineering Society Model Lighting Ordinance (MLO). The MLO specifies the allowable lighting densities for exterior lighting zones (LZ0-4) and incorporates the Backlight-Uplight Glare (BUG) rating system for luminaires, which provides more effective control of unwanted light.

3.2.2.8 Are bird-friendly measures in place that include measures to mitigate daytime collisions AND nighttime collisions?

- [ ] Yes
- [x] No

Measures for mitigating daytime collisions include (at a minimum) applying primary window treatments to all glass building facades up to 16 metres. Primary (exterior) treatments must cover 85% of window surfaces if it represents more than a 2 m2 area of contiguous glass. When appropriate, the remaining 15% should be treated with secondary (internal or other exterior) treatments if it represents more than a 2 m2 area of contiguous glass. Measures for mitigating nighttime collisions include "lights-out" programs AND shielding or projecting light downward on the building exterior.

Review the **BOMA BEST Bird-Friendly Guidelines - details (Q3.2.2.8)** for more details on these requirements.

3.2.2.9.1 Are there measures to reduce the heat island effect including trees or high albedo paving or a combination of trees and high albedo paving on at least 20% of non-permeable landscaping?

- [ ] Yes
- [x] No

The heat island effect can be reduced by increasing the heat reflectance of paved areas by using material of SRI of 29 or higher, and by providing tree-shade or other shading of hardscapes.

3.2.2.9.2 Describe:

3.2.2.10 What percentage of the roof is covered with high albedo surfacing?

- [ ] 70%-100%
- [ ] 40%-69%
- [ ] Under 40%

- [x] None
- [ ] N/A

The heat island effect can be reduced by the introduction of white (high albedo) roofs having a Solar Reflectance Index (SRI) of 70 or higher for low slope roofs, or SRI of 29 or higher for steep slope roofs. If the roof is 100% covered with a green roof, mark "not applicable".

3.2.M.3 Is there a maintenance program in place that ensures that high albedo surfaces (roof and paving, if applicable) are cleaned at a minimum every 2 years?

- [ ] Yes
- [x] No
- [ ] N/A

High albedo surfaces will maintain good reflectance if they are cleaned at least every 2 years. Mark "not applicable" where there is no high-albedo roofing.

3.2.2.11 What percentage of available roof space forms a green roof?

- [ ] 70%-100%
- [ ] 40%-69%
- [ ] Under 40%
- [x] None
- [ ] N/A

The heat island effect can be reduced by the introduction of vegetated (green) roofs.

A green roof is an extension of an above-grade roof, building on top of a human-made structure that allows vegetation to grow in a growing medium. Green roofs can be either extensive (shallow growth media with low and hardy, typically alpine, dryland or indigenous plants) or intensive (deeper growing medium which can accommodate shrubs and trees).

Components of a green roof can include: vegetation, growing media, moisture retention mat, drainage panel and filter fabric, root barrier, waterproofing membrane and a protection board.

Applicants should be able to produce construction or design drawings for the green roof and must allow access for the verifier to visually inspect the green roof.

If the roof is 100% covered with high albedo surfacing, mark "not applicable".

3.2.2.12 Describe measures to reduce the heat island effect of the roof:

4.0 Emissions and Effluents

4.1 Air Emissions

4.1.1 Boiler Emissions

4.1.1 What percentage of the building’s boilers have low NO_x emission rates?

- [ ] 75%-100%
- [ ] 50%-74%
- [ ] 25%-49%
- [ ] Under 25%
- [x] None
- [ ] N/A

A low-NOx emitting boiler which uses gaseous fuel produces the following emissions:

• 26 g/GJ for boilers with capacity of 10.5-105 GJ/hr;
• 40 g/GJ for boilers with capacity above 105 GJ/hr;

If there are no boilers, mark "not applicable".
Electric and condensing boilers are considered low-NOx emitting boilers.
Typically the burners are set up to achieve the required NOx emission rates during initial commissioning. A third party testing company will sometimes attend and test to confirm. During the annual combustion setup/tune, NOx emission rates should be checked again and adjusted to maintain permitted levels.
The BOMA BEST program requires a copy of the initial (if the boiler has been in use for no longer than one year), or most recent, annual combustion analysis test report, which must include NOx emission rates.
Combustion analysis testing must be performed annually. For additional guidelines please refer to the Canadian Council of Ministers of the Environment document titled National Emission guidelines for commercial/industrial boilers and heaters, released in 1998.

Point synergy exists between this question and question 1.2.2.2.1 "What percentage of boilers have combustion efficiency greater than 85%?" The applicant is encouraged to review the performance requirements of question 1.2.2.2., and, if pursuing points in that category, it is recommended that applicants combine combustion testing services so that they meet the requirements of both questions.

4.1.2 Are records kept of the cleaning and calibration of burners, monitoring of controls, and analysis of flue gas?

- [ ] Yes
- [x] No
- [ ] N/A

To help maintain proper combustion efficiency, carry out efficiency tests annually as a minimum, preferably more often, and calibrate burners so that the delivered efficiency meets manufacturer specifications. If there are no boilers, mark "not applicable".

4.1.4 Do purchase orders or contracts for fuel oil specify low sulphur content?

- [ ] Yes
- [x] No
- [ ] N/A

"Low sulphur content fuel oil" means no more than 0.05% sulphur content. If fuel oil is not used, mark "not applicable".

4.1.M.1 Do medical waste incinerators have pollution control systems in place?

- [ ] Yes
- [x] No
- [ ] N/A

Waste incinerators must be capable of meeting the Canada Wide Standards (CWS) for dioxins/furans (80 pg I-TEQ/Rm3 @ 11% O_2) and mercury. Stack testing must be carried out as required by the regulatory authorities in order to verify that these standards are met. If there are no incinerators, mark "not applicable".

4.2 Emissions - Ozone Depletion

4.2.1 Refrigerants

What percentage of your building’s refrigerants have an ODP below 0.014?

- [x] Less than 10%
- [ ] 10%
- [ ] 20%
- [ ] 30%
- [ ] 40%
- [ ] 50%
- [ ] 60%
- [ ] 70%
- [ ] 80%
- [ ] 90%
- [ ] 100%
- [ ] N/A

The "Ozone-depleting potential (ODP)" of a substance means the measure of its contribution to ozone depletion relative to that of CFC11 - the higher the value, the more damaging it is to the ozone layer. Include refrigerants from packaged or window A/C units (where applicable), if owned by the building. Indicate the percentage use of refrigerants based on the total cooling capacity of the chillers utilizing each refrigerant. If there are no ozone depleting substances (ODS), mark "not applicable".
Ozone depleting potential of refrigerants surveyed: R11/CFC 11 (ODP = 1.0); R12/CFC 12 (ODP = 1.0); R22/HCFC22 (ODP = 0.05); HCFC123 (ODP = 0.014); HFC134 (ODP = 0); R410A (ODP = 0); R410B (ODP = 0)

4.2.M.1 What is the percentage of the total number of mechanical rooms with refrigeration equipment that have automatic refrigerant leak detectors?

- [ ] 70%-100%
- [ ] 40%-69%
- [x] Under 40%
- [ ] N/A

There should be refrigerant sensors in machinery rooms where refrigerant vapour from a leak may be concentrated. In well-ventilated areas, leak detection should consist of air-sampling lines connected to specific parts of the refrigeration system, such as the compressor housing. If there are no ODS, mark "not applicable".

4.2.2 Management of Ozone Depleting Refrigerants

4.2.2.6 Is there a maintenance contract for the cooling system with a certified contractor?

- [ ] Yes
- [x] No
- [ ] N/A

A "Certified Contractor" is one who is recognized by the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI) as qualified to handle ODS. The contract should be for regular maintenance and monitoring of the refrigeration system, the distribution piping, and the leak detection system. If there are no ODS, mark "not applicable".

4.3 Emissions - Water Effluents

4.3.1 Waste Water Effluents

4.3.1 Are chemicals, chemical waste and liquid pharmaceutical waste stored in way that minimizes and contains spills?

- [ ] Yes
- [x] No
- [ ] N/A

At a minimum, there must be containment of chemicals and pharmaceutical used in building operations, for example, oils, solvents, rust inhibitors, biocides, pesticides and liquid pharmaceutical waste (such as the disinfectant (HDL) glutaraldehyde). This can consist of secondary containment with plastic trays to store the materials. Where there are no chemicals or pharmaceuticals in the building, mark "not applicable".

4.3.M.1 Is there a policy in place that specifically discourages the discharge of chemicals into the sanitary sewer while also explicitly prohibiting all discharges exceeding legal limits?

- [ ] Yes
- [x] No

This policy must explicitly identify all departments that are expected to comply (for example, pathology, research, printing, housekeeping, dentistry, etc.). Departments are expected to report their discharge activity to the staff member responsible for regulatory compliance.

4.3.2 Are roof drains connected to sanitary or combined sewers?

- [x] Yes
- [ ] No

Disconnecting roof drains from sanitary or combined sewers avoids unnecessary loading of wastewater treatment facilities.

4.3.M.2 Is the potable water system protected through the installation of backflow prevention devices?

- [ ] Yes
- [x] No

Backflow prevention devices protect the potable water supply from contamination in the case of reduced pipe pressure when back-siphonage or back pressure might occur.

4.3.3.1 Are measures implemented to reduce contaminated storm water run-off from outdoor hazardous or biomedical waste storage areas?

- [ ] Yes
- [x] No

Storm water may contain effluent from outdoor hazardous and biomedical waste storage areas unless appropriate measures are taken to properly contain and protect these storage areas from dripping, spilling, and overflowing in rainstorms. Best management practices can be structural or operational. Structural measures include: installing a water-tight lid on the storage bin, or placing a catchment container under the bin. Operational practices include: regular monitoring of these storage areas to ensure they are in good condition (no holes), and placing hazardous/biomedical waste storage bins outdoors only on collection days.

4.3.3.2 Describe measures:

4.3.6 Are there documented procedures to ensure that glycol discharges from the flushing of cooling coils are minimized or eliminated?

- [ ] Yes
- [x] No
- [ ] N/A

Used glycol and water from cooling towers should be tested to ensure that they meet local sewer-use by-laws before being discharged into the drain system. Ethylene glycol, used as an anti-corrosion agent, and in freezing point depressants in air conditioning systems, is toxic to humans and animals. Mark "not applicable" if glycol is not being used.

4.3.7.1 Are there documented policies for snow and ice management that aim to minimize damage to the environment by minimizing contaminated run-off?

- [ ] Yes
- [x] No

Snow should be removed from building entrances and high-traffic exterior walkways using manual snow shovels and brooms. Only when heavy snowfall exceeds the ability to manually remove snow and ice, should this be done with mechanical snow brushes and snow blowers. Prompt removal of snow should reduce the need for de-icer. Certified environmentally friendly de-icers should be specified. During extreme cold, sand should be used as an abrasive, and the application of de-icing agents discontinued. Unused de-icing agents should be carefully

stored to eliminate the potential for chemical runoff.

4.3.7.2 Describe:

4.4 Emissions - Hazardous Materials

4.4.2 Asbestos

4.4.2.1 If there is asbestos present, is there an up-to-date inventory based on an asbestos survey that includes records of locations and the condition of all asbestos?

- ☐ Yes
- ☑ No
- ☐ N/A

Buildings constructed before 1981 are more likely to contain asbestos. If there is no asbestos in the building mark "not applicable".

4.4.2.2 Is all friable asbestos encapsulated to prevent the fibres from becoming air-borne?

- ☐ Yes
- ☑ No
- ☐ N/A

The presence of asbestos-containing materials does not, in itself, constitute a health hazard, provided the asbestos is intact. Friable asbestos can crumble. Encapsulating it avoids the health hazards, which can occur when asbestos fibres become airborne. If the building was completed after 1981, mark "not applicable".

4.4.2.3 Is there a documented asbestos management plan that includes training and the precautions to be taken during repairs and renovations?

- ☐ Yes
- ☑ No
- ☐ N/A

The management plan should include the provision for regular inspections of all friable asbestos in the building and training for anyone who may have some responsibility for, or contact with asbestos. During repairs or renovations, asbestos that was originally stable may be disturbed and become hazardous. When asbestos is being removed, building occupants must be notified; the work area must be isolated and clearly identified and in some circumstances, pressure sealed and provided with an air-filtration system. Workers (including building staff and contractors) must be fully trained to use specially designed protective clothing and equipment to handle the asbestos in the prescribed manner. Once removed, the asbestos must be packaged in a rigid, impermeable, sealed container of sufficient strength to accommodate the weight of the friable asbestos waste, or it should be double bagged within two 6mm polyethylene bags. The final disposal of asbestos waste must be at an approved sanitary or designated industrial landfill site. If the building was completed during a period when legislation was in place forbidding the use of asbestos (e.g. after 1981) or there is no asbestos mark "not applicable".

4.4.3 Radon

4.4.3.1.1 Is the building located outside a high risk area for radon, OR If the building is in a high risk area for radon, has a radon survey been done which indicates levels below 200 Bq/m3?

- ☐ Yes
- ☑ No

Radon is a colourless, odourless, naturally occurring, radioactive gas produced by radium decay. It is believed to cause lung cancer. The most common source of indoor radon is uranium in the soil or rock upon which facilities are built. Areas considered high-risk in Canada are Winnipeg, Calgary, Vancouver, Sherbrooke, Saint John and Sudbury. A Phase 1 Environmental Site Assessment will typically make reference to radon levels.

4.4.3.1.2 Where applicable, describe precautions that are being taken:

4.4.4 PCBs

4.4.M.1 Is there a PCB management plan that includes documented procedures for the safe handling, removal, and disposal of PCB-containing equipment in the building?

- ☐ Yes
- ☑ No
- ☐ N/A

The plan and procedures should explicitly identify where PCBs can be found in the building, designate responsibilities for their care, stipulate storage requirements and describe a strategy for phasing out and disposing of PCB-containing equipment. Until the early 1980s, PCBs were used in fluorescent lamp ballasts for interior lighting and in some high-intensity discharge (HID) ballasts for exterior lighting. There are also electrical transformers and capacitors still in operation that contain PCBs. If the building was constructed after 1980 there is little likelihood that PCBs are present. Where PCBs do exist, clear procedures for their safe removal, storage and disposal must be outlined. If there are no PCBs, mark "not applicable".

4.4.5 Storage Tanks

4.4.5.1 Are there any above-ground (AST) or under-ground (UST) storage tanks?

- ☐ Yes
- ☑ No

Most tank systems are used for storing heating fuel, but some are also used to store fuel for electric generators and vehicles; solvents, lubricants and hazardous substances, such as corrosive or noxious chemicals.

Is there a storage tank management plan that includes the following operation and maintenance procedures?

	Yes	No
4.4.5.3 Inventory (reconciliation) control	☐	☐
4.4.5.4 Tank upgrading and replacement schedule	☐	☐
4.4.5.5 System testing	☐	☐
4.4.5.6 Filling, transferring operations and spill protection	☐	☐

4.4.5.7 Emergency preparedness	☐	☐
4.4.5.8 Record keeping	☐	☐
4.4.5.9 Tank closure, abandonment or removal	☐	☐

Choose as many procedures as apply.

Inventory (reconciliation) control: Inventory (reconciliation) control.

Tank upgrading and replacement schedule: The components that are subject to upgrade are leak detection, secondary containment, corrosion protection, overfill protection and spill containment. Mark "yes" if tanks were already replaced or upgraded.

System testing: System tests include leak tests and dipping for diesel in water and for water in diesel.

Filling, transferring operations and spill protection: The Technical Guidelines and Codes of Practice may require property managers to install systems for spill containment, overfill protection, secondary containment, dispenser sump and leak detection. Various systems are available for both above-ground and under-ground storage tank systems.

Emergency preparedness: An emergency preparedness plan should identify response personnel who are to be trained, and their responsibilities in the event of a leak or spill.

Record keeping: All inspections, maintenance, alterations and upgrades should be documented.

Tank closure, abandonment or removal: A storage tank system must be properly decommissioned when replaced or taken out of service.

4.4.6 Anesthetic Gases

4.4.M.2 Is fluorinated anesthetic waste captured instead of being discharged to the exterior?

- ☐ Yes
- ☑ No
- ☐ N/A

Fluorinated anesthetic waste (such as desflurane, sevoflurane, and isoflurane) is typically vented to the outdoors through a dedicated scavenging system. This practice poses significant environmental and public health risks. Anesthetic gas should instead be filtered and harmful gases captured before the remaining gas is vented to the atmosphere. Once captured, gases can be processed into raw material to manufacture new anesthetics. The capture process must be monitored regularly, with monthly reporting. If no anesthetic gas is used in the facility, mark "not applicable".

4.5 Emissions - Hazardous Products and WHMIS

4.5.1 WHMIS Program

4.5.1.1 Are Material Safety Data Sheets (MSDS), spill clean-up kits, and safety equipment such as eye-wash stations located in an accessible place near the chemical storage areas?

☐ Yes

☑ No

Material Safety Data Sheets (MSDS) contain information about the properties and safe handling of each hazardous product.

4.5.1.2 Are the MSDSs less than 3 years old?

☐ Yes

☑ No

4.5.1.3 Are WHMIS labels present on regulated products?

☐ Yes

☑ No

Implementing the Workplace Hazardous Materials Information System (WHMIS) is a Canada-wide legal requirement, designed to ensure that chemicals and other hazardous substances are handled safely and that information about them including the relevant protective measures is disseminated to workers and employers. Common chemicals requiring the WHMIS label include ammonia, bromine, chlorine, ethylene glycol, hydrogen peroxide, mercury, and various acids.

4.5.2 Health & Safety and Management of Hazardous Products

4.5.2.1 Are chemicals and hazardous materials stored under appropriate conditions in secure locations?

☐ Yes

☑ No

Hazardous chemicals used in buildings include oils, biocides, solvents, insecticides, pesticides and herbicides. They should be stored in rooms with proper ventilation, controlled temperatures, drain protection and adequate shelf space. Containers should be capped to avoid possible spills and fumes, properly labelled and kept in securely locked areas.

4.5.2.3 Are education and training sessions provided for the people responsible for the management of chemicals and for staff who may be required to work with them?

☐ Yes

☑ No

"Education" means the provision of general information about the WHMIS program and the hazards of controlled products. "Training" refers to site-specific instruction related to the proper use of the products and emergency procedures.

4.5.2.4 Is there a designated person responsible for managing hazardous products?

☐ Yes

☑ No

The designated person should be responsible for:

1. 1) advising workers of potential and actual hazards

2. 2) ensuring that workers use the prescribed protective equipment devices, and
3. 3) taking every reasonable precaution for the protection of workers.

Responsible person(s) may work off-site overseeing several buildings.

4.5.2.5 Are there inventories and records of hazardous and biomedical waste including their removal and disposal?

- [ ] Yes
- [x] No

The inventory must identify the hazardous waste streams, the operations in the building that produce them, how and where the hazardous waste is handled and stored, and who is responsible for it. The records should show that the organization tracks the hazardous waste from the facility through a provincially licensed or certified carrier to a waste disposal facility that is also licensed or certified by the province to accept hazardous waste. Specific procedures should be outlined for disposing of pharmaceutical and medical waste such as silver, fixer solution from x-ray technologies, and lead radiology aprons.

4.5.M.1 Has a Pollution Prevention Strategy been implemented that specifies that safer alternatives should be purchased instead of hazardous products where possible?

- [ ] Yes
- [x] No

A pollution prevention policy requires departments to minimize the use of hazardous products by substituting them with safer alternatives, for example replacing the sterilant ethylene oxide (EtO). The list of safe substitutes must be updated and maintained regularly to ensure it remains relevant.

4.5.3 Pesticides

4.5.3.1 Are there suitable measures to ensure that food or food waste is well contained and that there are no unprotected openings, to minimize access by rodents?

- [ ] Yes
- [x] No

One way to minimize pesticides usage indoors is through the planned elimination of food sources and pest habitats.

4.5.3.2.1 Do landscaping practices minimize the use of pesticides, herbicides, fertilizers and petroleum-based products?

- [ ] Yes
- [x] No
- [ ] N/A

"Pesticide" means insecticides, herbicides, fungicides, rodenticides, disinfectants, anti-foulants and plant growth regulators. Alternatives to pesticides include use of local, resistant plants in landscaping, trap plants, introduction of beneficial insects, companion planting and low toxicity pesticides. If there is no landscaping, mark "not applicable".

4.5.3.2.2 Describe the extent to which these products are used, and any alternative methods being employed on both the exterior and interior:

4.5.M.2 Is there an integrated pest control management program?

- [ ] Yes
- [x] No

An integrated pest control management system should include the following components: emphasis on minimizing the use of chemicals, identify alternatives to hazardous pesticides, outline the procedure for safely using pesticides, establish a schedule for regular inspection of traps, pest access points, etc. Logs should be kept of visual inspections.

4.5.3.4 Do pest control contracts require that the staff be licensed and use integrated pesticide management methods?

- [ ] Yes
- [x] No
- [ ] N/A

The contract should require that records be kept on the type and frequency of applications of pesticides, alternative pest management approaches, compliance with legislation, and communication to tenants to notify them of pesticide applications in locations that they use. Where there is no landscaping (e.g. where the building footprint and parking cover more than 100% of the site area) or where pest management is not required, mark "not applicable".

5.0 Indoor Environment

5.1 Indoor Air Quality

5.1.1 Indoor Air Quality - Ventilation System

5.1.1.2 Are air intakes located far from sources of pollution such as parking areas, bus stops, cooling towers or stagnant water?

- ☐ Yes
- ☑ No

If intakes are on the roof, check for stagnant pools of water, insects and pigeon droppings. If intakes are near the ground level, check for sources of vehicle emissions (parking and idling), industrial or commercial pollution. Check for proximity to sources of contaminants such as cooling towers (which give off spray) and building envelope penetrations such as gas vents or oil fill pipes. Note the wind direction with regard to these potential sources of contaminants.

5.1.1.3 Are all air intakes located at least 10 metres away from building exhaust outlets?

- ☐ Yes
- ☑ No

Separating air intakes from exhaust avoids "re-entrainment" (short-circuiting) of exhaust air. Also consider the prevailing direction of the wind relative to the intakes and exhaust.

5.1.1.4 Are all air intakes checked regularly to ensure that the openings are protected and free from obstruction?

- ☐ Yes
- ☑ No

As part of the regular HVAC maintenance system, check that the grilles on the fresh-air supply inlets are free from obstruction by leaves, snow, insects and pigeon droppings. At minimum, do this in the spring after snow has melted, and during fall when there are more leaves and debris.

5.1.1.9 Is there free-standing water which cannot drain away in the condensate drip trays?

- ☐ Yes
- ☑ No
- ☐ N/A

Verify that there is no free-standing water in the air-conditioning ductwork, particularly in the condensate drip trays of cooling coils, downstream from humidifiers, which can result in contamination of ducts by bacteria and fungi. If there is no air-conditioning, mark "not applicable".

5.1.1.10 Are there signs of corrosion, loose material (such as damaged filter bags) or sound attenuation material in any of the air-handling units (AHU)?

- [ ] Yes
- [x] No
- [ ] N/A

Inspect the air-handling units (air-mixing chambers, coils and fan blades) and duct interiors including any crawl spaces, tunnels or other areas that are used as ducts or which may be in contact with the ventilation air stream. If there are no air-handling units, mark "not applicable".

5.1.1.14.1 Does the staff have local control over the ventilation rates in the areas in which they work, either through hybrid system (operable windows) or local HVAC controls in the majority of the air conditioned spaces?

- [ ] Yes
- [x] No

Local controls refer to zoning that would cover 8 workstations or less.

5.1.1.14.2 Describe:

Indoor Air Quality - Laboratories

5.1.M.1 Is air-flow optimized to ensure that contaminants are contained and workers are protected?

- [ ] Yes
- [x] No
- [ ] N/A

5.1.M.2 Are measures in place to ensure that the use of exterior doors does not compromise laboratory safety?

- [ ] Yes
- [x] No
- [ ] N/A

Lab room doors should have door stop devices and door latches should work properly.

5.1.M.3 Are there failsafe, self-identifying alarm systems as needed?

- [ ] Yes
- [x] No
- [ ] N/A

5.1.M.4 Are biological safety cabinets labeled with an annual dated certification and instructions for proper operation?

- [ ] Yes
- [x] No
- [ ] N/A

5.1.M.5 Are in-line filters for biological safety cabinet vacuum lines inspected monthly and changed if necessary?

- [ ] Yes
- [x] No
- [ ] N/A

5.1.M.6 Where corrosive substances are used, are there nearby, easy to access emergency eyewashes and/or showers free from obstructions?

- [ ] Yes
- [x] No
- [ ] N/A

5.1.M.7 Is the supply air system interlocked to prevent air-pressure drop in indoor spaces? (i.e., fans, dampers, electrical) with Exhaust air, Doors or Windows?

- [ ] Yes
- [x] No
- [ ] N/A

Interlocked doors refer to a combination of doors that cannot be opened simultaneously. This prevents air pressure drops, reduces AHU energy consumption and extends the life of filters.

5.1.M.8 Are laboratories kept under positive or negative pressure (as required) to prevent entry of pollutants?

- [ ] Yes
- [x] No
- [ ] N/A

5.1.M.9 Is there differential pressure monitoring in adjacent areas?

- [ ] Yes
- [x] No
- [ ] N/A

5.1.2 Indoor Air Quality - Filtration System

5.1.2.2 Are there manometers or pressure sensors to indicate when filters should be cleaned or changed?

- [ ] Yes
- [x] No
- [ ] N/A

A manometer, which measures the pressure drop across the filters, indicates when these need cleaning or replacing. Manometers connected to BAS give even better warning. Mark "not applicable" if there are no manometers, but a regular filter inspection and replacement program.

5.1.2.3 Is there easy access for cleaning and inspecting filters?

- [ ] Yes
- [x] No

Providing good access makes it easier to visually check whether air is bypassing the filters and whether the filters are properly installed. Relocate objects that are impeding access to the HVAC equipment. Maintain

service lighting.

5.1.2.4 Do filters fit snugly within the filter supports?

- [ ] Yes
- [x] No

Verify that there is a snug fit, that the filters are the right size and that they are installed in the correct direction.

5.1.M.11 Are air duct tests done on regular basis?

- [ ] Yes
- [x] No

Regular duct cleaning avoids the occurrence of health care associated infections.

5.1.3 Indoor Air Quality - Humidification System

5.1.3.1 Does the building have a humidification system (indicate type)?

- [ ] Yes - Steam
- [ ] Yes - Spray
- [ ] Yes - Other (including dehumidification)
- [x] No

Where more than one type of system is being used, select the type that is most prevalent. The humidification load is based upon the amount of outdoor air entering the space either through the ventilation system or from infiltration through the envelope including doors and windows. Humidification systems are needed to correct low relative humidity problems which could impact occupant comfort, electronic equipment and building contents.

5.1.M.12 Describe the building's humidification system(s) and indicate approximately the percentage of floor area serviced by each:

5.1.3.2 If steam humidification is used, is clean steam rather than treated boiler water utilized?

- [ ] Yes
- [ ] No

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.

5.1.3.3 If spray humidification is used, is the system rigorously maintained and free of rust, algae, or loose contaminants of any kind?

- [ ] Yes
- [ ] No

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 carryover;
• Minimizing stagnant water in humidifier and water spray sumps.

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

5.1.4 Indoor Air Quality - Cooling Towers

5.1.4.1 Are the cooling towers located away from fresh air intakes and flue outlets?

- ☐ Yes
- ☑ No
- ☐ N/A

Check the relative positions of ventilation intakes to cooling tower drift, and the prevailing wind direction. If there are no cooling towers, mark "not applicable".

5.1.4.2 Are cooling towers equipped with drift eliminators?

- ☐ Yes
- ☑ No
- ☐ N/A

Drift eliminators remove water droplets generated by the cooling tower. This saves water and reduces the risk of downdraft spray that could contain Legionella. Eliminators can be internal or external to the cooling tower. If there are no cooling towers, mark "not applicable".

Is there a maintenance program for cooling towers which includes the following?

	Yes	No	N/A
5.1.4.3 At least monthly inspection of cooling towers for evidence of mould or slime, which could indicate elevated levels of bacteria	☐	☑	☐
5.1.4.4 Regular treatment of the cooling tower water employing non-toxic treatment chemicals or chemical-free cooling tower systems	☐	☑	☐
5.1.4.5 Complete cleaning of each cooling tower at least every six months using non-toxic cleaning chemicals or a chemical-free treatment system	☐	☑	☐
5.1.M.13.1 Regular inspection of the conductivity meter and automatic controls to ensure they are operating correctly, including correct adjustment of the bleed rate and that	☐	☑	☐

appropriate concentrations are being maintained at all times			
5.1.M.13.2 A formal registry of inspections along with tests results	☐	☑	☐
5.1.M.13.3 Explicit reference to meeting the Legionellosis prevention guidelines stated in either the Cooling Technology Institute Guidelines – Best Practices for Control of Legionella or ASHRAE Standard 12-2000 Minimizing the Risk of Legionellosis Associated with Building Water Systems	☐	☑	☐

There should be at least monthly inspections of cooling towers that include checking for evidence of slime or mold (which could indicate an elevated level of bacteria), regular treatment of the cooling tower water, and complete cleaning and disinfection of each cooling tower at least every six months. If there are no cooling towers, mark "not applicable".

5.1.5 Indoor Air Quality - Parking and Receiving

5.1.5.1 Are enclosed parking areas mechanically ventilated?

- ☐ Yes
- ☑ No
- ☐ N/A

Closed garages are generally underground and require mechanical ventilation to avoid carbon monoxide, oil and gas fumes becoming concentrated in the garage and entering the building. Open or partially open garages, which are typically above-grade, may not need mechanical ventilation. If there are no enclosed parking areas, mark "not applicable".

5.1.5.3.1 Are there measures to prevent intake of exhaust fumes into the building interior from the loading dock and parking areas?

- ☐ Yes
- ☑ No
- ☐ N/A

Measures include posting notices to turn off vehicles; having well-sealed doors between the parking and occupied areas, ensuring that offices near parking garages and loading docks are under positive pressure and increasing exhaust ventilation in the garage and loading docks. If there is no loading dock nor parking areas, mark "not applicable".

5.1.5.3.2 Describe:

Is there a carbon monoxide detection and monitoring system in the following places?

	Yes	No	N/A
5.1.5.5 In enclosed parking garages	☐	☑	☐
5.1.5.6 Near gas or fuel-fired	☐	☑	☐

heating boilers			

5.1.5.5 In enclosed parking garages - Control of garage ventilation fans using a carbon monoxide detection system reduces energy use by operating the fans only as required to dispel CO build-up. If there are no enclosed parking areas, mark "not applicable".

5.1.5.6 Near gas or fuel-fired heating boilers - If there are no gas or fuel-fired boilers, mark "not applicable".

5.1.6 Indoor Air Quality - Control of Pollutants at Source

Have there been ongoing observations or complaints of symptoms of mould or excess moisture such as the following?

	Yes	No
5.1.6.1 Stained ceilings or walls	☑	☐
5.1.6.2 Musty odours	☑	☐
5.1.6.3 Damp or musty carpets	☑	☐

Check for visual or odour clues in the following areas: crawl spaces, sub-floor cavities and service tunnels, cold surfaces such as under windows and in corners formed by exterior walls, un-insulated cold water piping, bathrooms, indoor areas in the vicinity of known roof or wall leaks, floors and ceilings under plumbing, duct interiors near humidifiers, cooling coils, outdoor air-intakes and under carpets.

Do the following areas have effective local exhaust?

	Yes	No	N/A
5.1.M.14.1 Kitchens and food services	☐	☑	☐
5.1.M.14.2 Utility and housekeeping closets and storage areas	☐	☑	☐
5.1.M.14.3 Public restrooms and patient room bathrooms	☐	☑	☐
5.1.M.14.4 Labs, animal facility, morgue	☐	☑	☐
5.1.M.14.5 Pharmacy	☐	☑	☐
5.1.M.14.6 Printing and copying	☐	☑	☐
5.1.M.14.7.1 Other	☐	☑	☐

Some special-use areas may require additional local exhaust to prevent air pollutants from accumulating in or spreading beyond a local area. Fans should operate continuously when the source is present, not only when the room is occupied. Test the exhaust effectiveness with chemical smoke or light tissue paper.

5.1.6.6 Are there grates or mats at all high volume occupant entryways into the building throughout the year?

☐ Yes

☑ No

Grates and walk-off mats help remove moisture and dirt from people's shoes at the entrance of buildings. This helps to protect floors from wear-and-tear. Mats need to be kept throughout the year. If only in the winter, these mats will not capture the summer dust and particulate matter.

5.1.6.7.1 Are there documented measures and logged records (as applicable) showing that pollutants are being controlled at source in areas such as washrooms, kitchens, printing areas, chemical storage and general storage areas?

☐ Yes

☑ No

There should be evidence that at least five of the following measures are being implemented:

- • In washrooms that are not frequently used, toilets are flushed and water run in the sinks to ensure water does not stagnate in the supply lines. This is logged;
- • Gas appliances are vented and there is a regular schedule for checking leaks. This is logged;
- • Waste bins are located to avoid odours entering into the building and are regularly checked for cleanliness;
- • Signs are posted prohibiting vehicles from idling their engines;
- • There is an annual inventory of materials and supplies and scheduled clean-up to avoid the accumulation of junk, materials, boxes or other miscellaneous objects. This is logged.
- • Storage rooms are well organized and are easy to access for floor cleaning.

5.1.6.9 Has a Green Cleaning Program been established that provides instruction to the building cleaning staff or contractors on how to use environmentally preferable cleaning materials and/ or devices?

☐ Yes

☑ No

Best management practices call for a Green Cleaning Plan which promotes products, equipment and procedures that minimize the use of harmful chemicals, energy and water. Staff must be trained in green cleaning procedures. Cleaning products or devices must meet standards for industrial and institutional cleaning - i.e. general-purpose (i.e. Green Seal GS-37 or GS-57), bathroom, glass and carpet cleaners; cleaning and decreasing compound (i.e. Ecologo CCD-110), hard surface cleaners (i.e. CCD-146), and, for drains or grease traps (i.e. CCD-113).

5.1.6.12.1 Is there a standard checklist that includes items connected to indoor air quality that must be discussed with architects, engineers, contractors, and other professionals prior to renovations and repairs?

☐ Yes

☑ No

Discussion is essential to avoid design features that could interfere with ventilation or thermal comfort, or which could result in the selection of inappropriate materials or systems.

- • Procedures must be in place to avoid releasing throughout the building dust and hazardous products used in construction. Renovation procedures must also be discussed to avoid the release of dust and fumes from sealants, finishes, carpets and furnishings that emit volatile organic compounds (VOCs).
- • Adhesives, sealants and paints must have a VOC content that meets or exceeds the local VOC limit requirements or Green Seal requirements. Paints must that meet the GS-11 VOC limits of 50 grams/Litre for flat topcoats, 100 grams/Litre for non-flat topcoats, 100 grams/Litre for primers or undercoats, 100 grams/Litre for floor paint, 250 grams/Litre for anti-corrosive coatings, 50 grams/Litre for reflective wall coatings and 100 grams/Litre for reflective roof coatings. Exterior sealants must adhere to South Coast Air Quality Management Rule 1168 limits of 150 grams/Litre for outdoor carpet adhesives, 100 grams/Litre for wood flooring adhesives, 65 grams/Litre for ceramic tile adhesives, 50 grams/Litre for VCT and asphalt tile adhesives, 50 grams/Litre for panel adhesives, 50 grams/Litre for cove base adhesives, 70 grams/Litre for multi-purpose construction adhesives, 100 grams/Litre for structural glazing adhesives and 250 grams/Litre for single ply roof membrane adhesives.

- • Non-carpet finished flooring must be environmentally certified. Carpet and carpet cushions must meet the requirements of an Environmental Carpet Testing Program.
- • Composite panels and agri-fibre products must contain no added urea-formaldehyde resins. Best management practices call for the use of paints and sealants with the smallest environmental impact in regards to air pollution and chemical runoff.

5.1.6.12.2 Describe:

5.1.6.13 Does the building's water system maintenance program include measures to eliminate the occurrence of Legionella?

☐ Yes
☑ No

ASHRAE Standard (SPC188) Prevention of Legionellosis Associated with Building Water Systems establishes absolute requirements for the prevention of legionellosis associated with building water systems. The standard requires Hazard Analysis and Critical Control Point (HACCP) risk management to be used to reduce the potential of legionellosis associated with buildings. Having point-of-use water heaters OR by maintaining water temperatures between 50 and 55°C and avoiding stratification and dead legs in water circulation systems may a simplest way of meeting the standard.

5.1.8 Indoor Air Quality Management

5.1.M.15 Is there a Hazard Analysis and Critical Control Point (HACCP) risk management plan used to prevent legionellosis associated with buildings?

☐ Yes
☑ No

ASHRAE Standard 188, Prevention of Legionellosis Associated with Building Water Systems, recommends Hazard Analysis and Critical Control Point (HACCP) risk management plan.

5.1.8.2 Has the building had an indoor air quality audit in the past year?

☐ Yes
☑ No

The audit must be detailed enough for management to gain a comprehensive understanding of all of the factors that could influence the building's indoor air quality. The audit must consist of a walkthrough inspection of the building and must report on a review of the following: a list of responsible staff and/or contractors, evidence of training, and job descriptions, HVAC design data, manuals and operating instructions including control settings and operating schedules, HVAC maintenance and calibration records, testing and balancing reports, inventory of locations where occupancy, equipment, or building use has changed, identification of areas where positive or negative pressures should be maintained, a record of locations that need monitoring or correction, and an inventory of HVAC system components needing repair, adjustment, or replacement.

Are there documented procedures for maintaining good indoor air quality that include the following?

	Yes	No
5.1.8.3 Scheduled HVAC	☐	☑

maintenance		
5.1.8.4 Preventive maintenance	☐	☑
5.1.8.5 Housekeeping procedures including care and maintenance of floors	☐	☑
5.1.8.6 Mould management	☐	☑
5.1.8.7.1 Procedures for unscheduled maintenance	☐	☑

Building management must have heating, ventilation and air conditioning (HVAC) procedures and a preventive maintenance program in place.

5.1.8.3 Scheduled HVAC maintenance - There must be daily, weekly and monthly schedules including a coil-cleaning program.

5.1.8.4 Preventive maintenance - This must include a scheduled program for monitoring, cleaning and/or replacing HVAC components such as outside air intakes, outside air dampers, air filters, drain pans, heating and cooling coils, the interior of air handling units, fan motors and belts, air humidification, controls and cooling towers.

5.1.8.5 Housekeeping procedures including care and maintenance of floors - The program must include the following:

- 1) Identify all areas that should be cleaned
- 2) Specify the products that are to be used
- 3) The appropriate application for each product
- 4) Provide a cleaning schedule

A floor care program typically includes the use of finishes, strippers and cleaners.

- • Floor finishes provide a protective coating that increases stain and water resistance, and makes cleaning easier. Many floor finishes contain zinc, which is highly toxic to aquatic life. They must be free of zinc or other metals and a VOC concentration no more than 7% by weight.
- • Floor strippers must have no more than 7% VOC when diluted for use as directed. All products must avoid ammonia, ammonium hydroxide, or ammonium salts, dibutyl phthalate or alkylphenol ethoxylates. Products must have phosphorus concentration of 0.5% or less by weight, a pH no higher than 11.5 and a flash point above 150°F. Choose products in recyclable or refillable containers.

Education in floor care is important. Even an environmentally preferable product may still pose a health hazard or environmental risk. Education of janitorial workers in proper floor cleaning and maintenance methods can reduce the amount of floor-care products used over the long term. There are techniques that make it possible to use of smaller quantities of the product. For example, regular wet-mop, dust, and vacuum will help to preserve the finish and avoid too-frequent stripping. Floor-maintenance schedules should be based on wear patterns rather than simply following a calendar schedule. Follow label directions for proper dilution amounts and procedures. A stripped floor should be thoroughly rinsed to neutralize the surface prior to applying the new floor finish.

5.1.8.6 Mould management - The program must include the following:

- 1) Procedures for preventing moisture/water or mold growth conditions;
- 2) A regular inspection routine that makes it possible to detect moisture and mold growth early to minimize property damage and liability; and
- 3) Procedures for responding to moisture/water or mold growth conditions

5.1.8.7.1 Procedures for unscheduled maintenance - Procedures for unscheduled maintenance must be documented in the event of equipment failures which may require the prolonged deactivation or modification of the building's HVAC equipment.

5.1.8.7.2 Describe procedures for maintaining good indoor air quality:

5.1.8.10 Is the operations staff sufficiently trained to implement an indoor air quality program to address occupant concerns?

☐ Yes

☑ No

The training should be adequate to enable staff to identify, prevent and solve indoor air quality problems. Indoor air quality problems can be complex. Staff should also have a clear understanding of when it is advisable to call in a professional and the authorization to do so.

5.2 Thermal Comfort

Are the following being monitored regularly?

	Yes	No
5.2.1 Temperature at set summer and winter ranges	☐	☑
5.2.2 Humidity	☐	☑

The building must conform to ASHRAE 55-2004 for thermal comfort. Part of regular HVAC systems maintenance should be to inspect thermostats and other field devices to ensure settings are as desired, and devices have not been altered or adjusted. Inspections should also be conducted immediately after significant changes to space layout.

5.2.3 Has an occupant thermal comfort survey been done within the last 12 months?

☐ Yes

☑ No

The thermal comfort occupant survey may be part of an overall occupant satisfaction survey. Because occupants with cause for dissatisfaction are more likely to respond than satisfied occupants, a response rate of 40% of building occupants is sufficient. Questions to each occupant should include the following: "What adjustments or controls do you have?" (check all that apply: e.g. window blinds, thermostat, ceiling fan, adjustable air vents etc.) "How satisfied are you with temperature in your workspace?" "Overall, does your thermal comfort in your workspace enhance or interfere with your ability to get your job done?" Any "dissatisfied" responses should trigger secondary questions that examine what the sources of discomfort might be. For example, they ask about the days/times of day when discomfort is experienced, issues with environmental controls, and also include open-ended questions to further assist in the diagnosis of problems. Questions related to thermal comfort should include those found in the UC Berkeley/CBE or the BUS surveys, which include a question designed to help occupants identify thermal problems related to the HVAC and/or building envelope.

5.2.4 Does the occupant satisfaction survey of thermal comfort indicate that there appear to be no overall problems related to the HVAC and building envelope?

☐ Yes

☑ No

The survey must include a question that enables occupants to identify thermal problems that might relate to poor design and/or performance of the HVAC or the building envelope, for example humidity that is too high/low, air movement that is too high/low, incoming sun, hot/cold surrounding surfaces, drafts from windows, drafts from

vents, uneven temperatures in an area, heating/cooling that does not respond to the thermostat.

5.3 Lighting

5.3.1 Lighting Features

5.3.1.1 Are high frequency (electronic) ballasts fitted to luminaires?

- [ ] Yes
- [x] No

Electronic ballasts help prevent eyestrain and headaches which are often associated with the flicker produced by standard magnetic ballasts. In addition they can result in 10 to 15% energy reduction compared to conventional ballasts.

5.3.1.2 Are there controllable internal or external blinds and do light fixtures prevent glare at computer monitors (Visual Display Terminals or VDT)?

- [ ] Yes
- [x] No

Glare and reflections are distracting, even when they do not mask the work, and the added stress they cause often results in the need for longer rest pauses. The cut-off angle of downward light should be appropriate to reduce glare on VDT screens. Solar control blinds should be on all windows that are orientated more southerly than NE or NW. They should be adjustable to allow occupants to regulate the amount of direct light entering their space.

5.3.M.1 What percentage of patients have an outside view from their beds?

- [ ] More than 75%
- [ ] More than 50%
- [x] Fewer than 50%

Access to natural views and natural light in healthcare facilities has been linked to reduced length of stay and reduced pain. Views of atria which allow for generous amounts of day lighting AND natural features (such as plants) can also be beneficial.

5.3.1.8 Do at least 50% of open work spaces have lighting controls with a minimum of three adjustable lighting levels to meet occupants' preferences AND are the manual controls located where the person who is operating them sees the luminaires that are being controlled?

- [ ] Yes
- [x] No
- [ ] N/A

For shared multi-occupant spaces, there should be multi-zone control systems that enable occupants to adjust the lighting to meet group needs and preferences. This may consist of dual switching of alternate rows or switching of individual lamps independently of adjacent lamps within a luminaire. Switches or manual controls must be located such that a person operating the controls has a direct line of sight of the luminaires being controlled. Mark "not applicable" where there is stepped or continuous dimming by photocell control or where there are no open office areas.

5.3.1.9 In private offices are there lighting controls with at least three adjustable lighting levels to meet occupants' preferences?

- [ ] Yes
- [x] No

The three levels are "on", "off" and "mid-level". In a private office or workstation, this requirement can be met where there is control for ambient lighting along with task lighting, which effectively provides a "mid-level" control.

5.3.1.10 Are there separate lighting controls for rooms where presentations are given such as conference rooms or training rooms?

- [ ] Yes
- [x] No
- [ ] N/A

In "presentation rooms" such as conference or training rooms, lighting must be separately controlled from the rest of the lighting in the space. Mark "not applicable" where there are no presentation rooms.

5.3.M.2 Do all lighting levels meet recommended practices for health care facilities?

- [ ] Yes
- [ ] No
- [x] Unknown

Lighting levels for all areas must meet recommended standards as published by ANSI/IESNA RP-29-06: Lighting for Hospitals and Health Care Facilities. For example, recommended levels are 300 lux for general lighting; 500 lux for simple examination areas; and 1000 lux for examination and treatment areas. Measurements should be taken at a working height of 0.8 m.

5.3.2 Lighting Management

5.3.2.2 Is there a planned schedule of cleaning light fixtures?

- [ ] Yes
- [x] No
- [ ] N/A

As lamps, reflectors, and shielding materials accumulate dirt, light output goes down. This might lead to illuminance levels falling below recommended IESNA values, which is a lighting quality issue. It can also be an energy issue if the site has daylight harvesting using dimming, because dimming can't go as low in maintaining recommended illuminance. Even in very clean conditions, where there is little dirt in the environment and the air system is filtered, light output can drop by 5 percent per year. In dirtier environments, cleaning the fixture, especially the reflector surfaces and the lens, can increase existing light levels between 25 and 50 percent. Cleaning is usually needed no more often than once a year, but no less often than once every three years. Since group relamping every three years is often the most economical frequency for an office building, relamping can coincide with cleaning and reduce labour costs. Where lighting does not warrant this approach, such as when fixtures are easy to reach, or the type of fixtures do not require additional attention, mark "not applicable".

5.3.2.3 Is there a group-relamping schedule that is based on lighting power density?

- [ ] Yes
- [x] No
- [ ] N/A

Lamps that are changed before they burn out produce greater light output, resulting in better quality light. Group relamping at planned intervals can also reduce labour costs to between one-fifth and one-tenth of the cost per lamp for spot relamping. (Spot relamping is the replacement of individual lamps when they burn out.) The time needed for someone to replace a single lamp includes the time a maintenance worker spends determining which particular lamp is to be replaced, getting the new lamp, placing the ladder, opening the fixture, replacing the lamp (and hopefully cleaning the fixture), returning the ladder, and disposing of the old lamp. This time is much greater than the time involved for replacing each lamp in an organized replacement of all lamps at once. As relamping is often done at nights and on weekends, when higher hourly wages are paid, the ability to reduce the number of times each fixture must be serviced should be considered as part of the cost-savings equation. In a group relamping plan, all lamps are replaced at a preplanned point in the life of the group of lamps. The most economical time to relamp can be predicted on the basis of the known rate of burnouts. Ordinarily, the most economical group-relamping period is at about 70 to 80 percent of rated life. When depreciation of lamp quality is appreciable and with a view to the required lighting levels for various tasks. The Energy Manager should create a re-lamping schedule based on the expected intervals at which lighting output falls below a certain level. Where fixtures are easy to reach and group relamping is not necessary, mark "not applicable".

5.3.2.4 Is there regularly scheduled verification of the correct operation of lighting controls?

- [ ] Yes
- [x] No

There must be an inventory of all lighting controls and verification to ensure their correct placement, programming and operation. Functional testing must be performed on dimmers, multi-scene controls, occupancy sensors, time switches photo-sensors, vacancy sensors, motion sensors or daylight harvesters.

5.4 Noise

5.4.2 Has a staff and patient satisfaction survey been conducted within the past 12 months that addresses acoustic privacy, noise disturbances and ease of interaction?

- [ ] Yes
- [x] No

The acoustic survey could be part of an overall occupants' satisfaction survey. Since stress can slow the healing process, patient satisfaction must also be assessed on a regular basis. It must be designed to differentiate between acoustic problems such as privacy (which may not be within the purview of building management) versus HVAC noise and noise from outside sources (which are generally related to the base building). Because occupants with cause for dissatisfaction are more likely to respond than satisfied occupants, a response rate of 40% of building occupants is sufficient. The survey should also identify daily or seasonal conditions that may degrade the acoustic performance such as operating conditions of the HVAC equipment or levels of background sounds.

It should include the following questions: "How satisfied are you with the noise level in your workspace?", "How satisfied are you with the sound privacy in your workspace (ability to have conversations without your neighbours overhearing and vice versa)?" and "Overall, does the acoustic quality in your workspace enhance or interfere with your ability to get your job done?"

For patients, the following questions should be included "How satisfied are you with the noise level in your room?" and "Overall, does the acoustic quality in your room enhance or interfere with your ability to sleep or

rest?" Where responses indicate dissatisfaction related to excessive noise provide a menu from which to select contributing factors that are contributing to the problem (e.g. people talking on the phone; outdoor traffic noises; noise from office lighting etc.) This will help to identify issues that are related to the base building.

5.4.3 Do results of the survey indicate satisfaction with respect to noise levels related to base building conditions and operations?

- ☐ Yes
- ☑ No

The results should indicate that there are no acoustic problems associated with base building conditions and operations such as mechanical (HVAC), plumbing or electrical noise, noise from toilets, noise/impact from areas such as dance studios, cafeterias, mechanical rooms, gymnasia, noise and vibrations from stairwells, excessive echoing, noise etc. If no occupant satisfaction survey has been conducted, mark "no".

Is it easy to engage in a conversation using a normal voice, understand a phone conversation, and have a private conversation using lowered voices in the following?

	Yes	No	N/A
5.4.M.1.1 Waiting areas	☐	☑	☐
5.4.M.1.2 Nursing Stations	☐	☑	☐
5.4.M.1.3 Open office spaces	☐	☑	☐
5.4.M.1.4 Emergency rooms	☐	☑	☐
5.4.M.1.5 Patient rooms	☐	☑	☐

There should be a documented history that there are no acoustic problems associated with building conditions or operations (i.e. if there have been problems in the past, have these been corrected and follow-up measurements taken). Mark "not applicable" where these types of spaces are not present.

6.0 Environmental Management Systems

6.1 Environmental Management System (EMS) Documentation

6.1.1 Does building management have a written environmental policy?

- [ ] Yes
- [x] No

Integrating environmental considerations into building operations requires a cross-disciplinary approach between the different departments. The facility's written environmental policy is an overarching document which addresses the role and responsibility of each department in achieving its stated targets. It must be endorsed by top management. The policy must be a public document that is easily accessible to all staff. It must express a commitment to comply with relevant laws or other requirements, and to strive for continuous improvement and pollution prevention. Note: Policies specifically referred to in other sections of this questionnaire should be included in this overarching document.

6.1.M.1 Does the facility have a Sustainability Report which outlines the objectives and achievements of the facility?

- [ ] Yes
- [x] No

Sustainability reporting is a valuable tool for publically communicating an organization's commitment to achieving its sustainability goals. This report must be no older than 3 years old and must provide readers with an understanding of the organisation's objectives, achievements, and future areas for improvement. The report must be publically available.

6.1.M.2 Is there an environmental committee or Green Team that is representative of the facility as a whole and supported by the facility’s top management?

- [ ] Yes
- [x] No

Since integrating environmental considerations across a facility's departments requires a holistic approach, the environmental committee must be representative of the facility as a whole, not just a specific department. A dedicated environmental committee or green team of committed and passionate individuals can have a tremendous impact on developing and implementing successful environmental initiatives. Top management support of environmental objectives is a key factor when assessing the success rate of implementation.

6.1.M.3 Is a member of top management on the environmental committee?

- [ ] Yes
- [x] No
- [ ] N/A

Commitment from top management is a critical indicator of success for sustainability programs. It can also help to create a culture of sustainability within the organisation. If there is no environmental committee, mark "not applicable".

6.1.M.4 Are there facility-wide action plans for improving the environmental performance of the facility?

☐ Yes

☑ No

Integrating the action plan with the environmental policy will ensure clarity in objectives. The action plans listed throughout this questionnaire (energy, water, waste, hazardous materials, occupant satisfaction, etc.) should be included in this document. The action plans must outline implementation strategies, timelines, training and resources needed to achieve stated targets. They must be reviewed, revised and updated on a regular, scheduled basis.

6.2 Environmental Purchasing

6.2.1 Does your institution (or group purchasing organisation) have a written green procurement policy?

☐ Yes

☑ No

Implementing a green procurement policy demonstrates commitment to reducing greenhouse gas emissions, minimizing air and soil pollution, and using resources sustainably. The policy will inform department responsibilities for (corporate) purchasing. The policy will outline minimum training standards for purchasers, specific product characteristics to be used by in-house staff, and requirements for cleaning contractors. The most effective policies engage directly with suppliers by providing them with the opportunity to adapt their processes to be compliant with the facility's environmental objectives.

Green procurement policies typically contain the following:

- • a commitment to evaluate new technologies, procedures and processes regularly to ensure newly available low-impact alternatives are considered;
- • purchase of non-toxic alternatives when possible;
- • use of non-virgin paper resources in janitorial paper and other disposable product applications;
- • use of products that are Processed Chlorine-Free®, when applicable;
- • a preference for re-usable, and long-lasting products over disposable (for example preference is given to reusable hard containers instead of disposable sterile wrappers);
- • a minimum of 10% post-consumer content in plastic-based products (such as single-use plastic bags);
- • disposable products are made of compostable material that is compatible with the facility's composting program;
- • supplier specification on minimizing packaging waste;
- • buying in bulk to reduce packaging;
- • the avoidance of fragrance-emitting devices such as air fresheners or urinal blocks;
- • use of low irritant products such as cleaning products and hand washing soaps that are fragrance free.

6.2.2.1 Is there a list of preferred products used in housekeeping and building maintenance?

☐ Yes

☑ No

Staff need a list of feasible environmentally friendly substitutes and their suppliers. Because products are frequently discontinued and new products introduced to the market, the list should be regularly reviewed and updated.

6.2.2.2 Identify who maintains the list:

6.2.2.3 Provide examples of products being used:

6.2.3.1 Does the procurement policy include a requirement to purchase energy efficient building equipment?

- [ ] Yes
- [x] No

The policy must include the requirement that any purchases of appliances and HVAC should involve consulting the EnerGuide and/or purchase of Energy Star rated products.

6.2.3.2 Provide examples:

6.2.4 Are Material Safety Data Sheets (MSDS) reviewed by staff who purchase hazardous products?

- [ ] Yes
- [x] No

Those responsible for purchasing must ensure that up-to-date Material Safety Data Sheets (MSDS) for controlled products are reviewed and are available to employees. They must not be dated more than 3 years previous to the receiving date.

6.2.M.1 Is the facility engaged in a food procurement initiative that specifies the purchase of sustainable foods for food prepared on-site (e.g. cafeteria, patient meal catering)?

- [ ] Yes
- [x] No
- [ ] N/A

Purchasing sustainably produced foods supports good agricultural practices such as reduced use of pesticides and responsible fishing. Examples of sustainable food include food that is certified as organic or fair trade by recognizable certification bodies, locally sourced food, as well as food purchased from suppliers who are committed to reducing the impact of packaging and transportation on the environment. A sustainable food procurement initiative must include the following:

1. 1. Clearly outlined purchasing objectives (for example purchasing in-season fruits and vegetables when possible, purchasing from local and organically-certified distributors);
2. 2. Requirements set out by the sustainable food procurement initiative must be integrated in existing sourcing procedures;
3. 3. Requirements must be understood by those making purchasing decisions; and
4. 4. A roadmap with specific key performance indicators for reaching these objectives in the years to come.
5. Mark "not applicable" if there is no food prepared on-site or if all food is prepared by a third-party (private retail food vendor).

6.2.M.2 Is the facility taking active steps to engage private retail food vendors in developing and/or complying with a sustainable procurement program?

- [ ] Yes
- [x] No
- [ ] N/A

Engaging the private retail food vendors in a facility-wide sustainable procurement program will provide them with the opportunity to align their actions with the facility's environmental objectives. This may take the form of implementing a reusable mug incentive program, participating in the facility's composting program, putting in place sustainable food purchasing objectives similar to the facility's, etc. An effective sustainable procurement engagement program will include clear performance indicators (listing specific initiatives and implementation timelines) and be regularly reviewed to assess the success of any given initiative with modifications made as needed. Mark "not applicable" if there are no private food retail vendors in the facility.

6.3 Emergency Response

6.3.2 Is there an Emergency Plan outlining emergency procedures, reporting and record-keeping?

- [ ] Yes
- [x] No

The Plan must designate accountability with respect to ensuring regulatory compliance, record-keeping and reporting. It should identify the building's vulnerabilities to emergency situations; indicate how to prevent or mitigate potential effects; describe staff response; and provide a blueprint for recovery. The plan should be condensed into an Emergency Plan handbook.

6.3.4 Is there easy-to-access equipment on-site to deal with environmental emergencies, such as spills?

- [ ] Yes
- [x] No

The environmental Emergency Plan must require that equipment such as spill control kits, absorbents, and personal protection equipment be on-site for quick and easy access.

6.3.5 Are there contingency plans for both short-term and long-term power failures?

- [ ] Yes
- [x] No

Planning for power failures must address the following elements: communication to patients/staff; security; provision of emergency power and water; and, if necessary, evacuation.

6.3.6 Is there an up-to-date site map showing the location of environmentally significant features such as shut-off valves, underground and above ground storage tanks etc.?

- [ ] Yes
- [x] No

This is helpful for first responders. Site plans must identify environmentally significant features such as hazardous waste storage rooms, PCB-containing equipment, sanitary and storm sewer lines, CFC equipment, storage tanks as well as emergency equipment.

6.4 Tenant Awareness

Are patients, visitors and staff informed about the facility's environmental objectives in regards to the following?

6.4.2 Energy conservation including plug load reduction

- [ ] Yes
- [x] No

An inexpensive way to reduce energy costs is by developing energy efficiency procedures and personal habits. Provide information to occupants on energy use and means of saving energy (such as information on turning off lights and equipment in unoccupied spaces, after normal office hours and the correct use of blinds).

6.4.3 Water conservation

- [ ] Yes
- [x] No

6.4.4 Waste reduction and recycling

- [ ] Yes
- [x] No

This can include promotional materials such as brochures and newsletters to keep occupants informed about how they can reduce the amount of waste being sent to landfill through such things as recycling and composting.

6.4.5 Proper handling, storage and disposal of medical waste and toxic products

- [ ] Yes
- [x] No

The information must be of a general nature and should communicate that each toxic product has its own characteristics, which require proper handling, storage and disposal.

6.4.6.1 Other initiatives

- [ ] Yes
- [x] No

Other initiatives available to patients, visitors, personnel and members of the public such as Earth Day/Earth Hour events, green tenant events, Environment Days and/or educational programs that emphasizes the relationship between a healthy environment and human health.

6.4.6.2 Describe:

6.5 Community Environmental Contributions

6.5.M.1.1 Are climate-related hazards explicitly discussed and considered when developing, revisiting or updating the facility's risk assessments and emergency management plans?

☐ Yes
☑ No

Developing a health care facility's resilience to the impacts of climate change is an iterative process. A facility's ability to continue providing care in a changing climate is in part dependent on the infrastructure and system elements in place that provide a safe and healthy environment. A resilient health care facility is one where the building's vulnerability to climate change has been assessed and this information is continually used to inform risk assessments and emergency management plans. Applicants must demonstrate that at least two initiatives have been implemented from the list below:

- • Officials at the health care facility actively seek out opportunities to obtain information about climate-related risks that could inform risk management activities (e.g., supporting conferences, strengthening partnerships with knowledgeable experts).
- • Risk assessments consider damage to the facility from gradual degradation and from climate-related hazards such as extreme heat, extreme cold, extreme rain and snowfall, extreme weather (freezing rain, ice storm), and increased incidence of poor outdoor air quality and smog.
- • Future retrofit and construction plans are informed by the risks identified in the climate-related risk assessment (e.g., moving equipment from lower floors in case of flooding; repaving with permeable pavement to decrease the risk of flooding).
- • When conducting risk assessments, the health care facility receives and exchanges information about risks in the community (e.g., vulnerability of infrastructure, critical resources, vulnerability of the population) from knowledgeable community partners.
- • Emergency management plans are updated using results from climate-informed risk assessments.

6.5.M.1.2 Describe: