Green Lease Guide
For Commercial Office Tenants
REALpac Green Lease Guide for Commercial Office Tenants

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About the Guide

This Guide is a companion publication to the REALpac “Office GREENLEASE™” National Standard Lease for Single-Building Projects” (Office GREENLEASE™). REALpac’s precedent lease is regarded as a ‘green lease’ because it sets out environmental objectives as part of the relationship between building owner and tenant.

Go to www.realpac.ca, to download the most recent version of the REALpac Office GREENLEASE™. To be informed of updates to this lease, please send an email to clave@realpac.ca with “Office GREENLEASE™” in the subject line.

Disclaimer

This document has been prepared as a Guide only and is unlikely to contain all the information that prospective tenants or their advisors may expect or require in order to make informed decisions on ‘green’ choices. Prospective tenants should therefore rely on their own enquiries in the decision-making process.

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Your feedback is welcome
If you have comments or questions relating to any of the material in this Guide, please email clane@realpac.ca and write “Office GREENLEASE™ Guide” in the subject line. Questions about specific building attributes and commitments should be addressed directly to your leasing representative.

Acknowledgements
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Abbreviations used in this Guide:

°C  Degrees Celcius
ANSI  American National Standards Institute
APPA  APPA Leadership in Educational Facilities
ASHRAE  American Society of Heating, Refrigerating and Air-Conditioning Engineers
B  Billion
BAAQMD  Bay Area Air Quality Management District
BEST  Building Environmental Standards
BOMA  Building Owners and Managers Association
BMS  Building Management System
BUG  Bicycle User Group
CaGBC  Canada Green Building Council
CCD  Certification Criteria Document
CFC  Chlorofluorocarbon
CO₂  Carbon dioxide
CO₂e  Carbon dioxide equivalent
CRI  Carpet and Rug Institute™
CR&S  Corporate Responsibility & Sustainability
CSA  Canadian Standards Association
eKWh  Equivalent kilowatt hours
EMP  Environmental Management Plan
EMS  Environmental Management System
EVO  Efficiency Valuation Organization
ft  Foot
FSC  Forest Stewardship Council
g  Gram
GEI  GREENGUARD® Environmental Institute
GHG  Greenhouse Gas
GJ  Gigajoule
GS  Green Seal™
HFC  Hydrofluorocarbon
HVAC  Heating, ventilation and air conditioning
HVAC & R  Heating, ventilation, air conditioning and refrigeration
IAQ  Indoor air quality
I-BEAM  IAQ Building Education and Assessment Model
IESNA  Illuminating Engineering Society of North America
IEQ  Indoor Environment Quality
IPMVP  International Performance Measurement & Verification Protocol
ISO  International Organization for Standardization
IT  Information Technology
kg  Kilogram
L  Litre
LED  Light emitting diode
LEED  Leadership in Energy and Environmental Design
LEED-CI  LEED® for Commercial Interiors (also known as LEED® Canada-CI at date of publication)
LEED-CS  LEED® for Core and Shell (also known as LEED® Canada-CS at date of publication)
LEED-EB  LEED® for Existing Buildings: Operations and Maintenance (also known as LEED® Canada-EB: O&M at date of publication)
LEED-NC  LEED® for New Construction and Major Renovations (also known as LEED® Canada-NC at date of publication)
m  Metre
MDF  Medium-density fibreboard
MERV  Minimum efficiency reporting value
MNECB  Model National Energy Code of Canada for Buildings
MPI  Master Painters Institute™
Mt  Megatonne
MtCO₂e  Megatonnes of carbon dioxide equivalent
NRCan  Natural Resources Canada
NRTEE  National Round Table on Environment and the Economy
OEE  Office of Energy Efficiency
OSB  Oriented-strand board
PJ  Petajoule
PVC  Polyvinyl chloride
REALpac  Real Property Association of Canada
SCS  Scientific Certification Systems
SDTC  Sustainable Development Technology Canada
sf  Square foot
SOP  Standard operating procedure
tCO₂e  Tonnes of carbon dioxide equivalent
USEPA  U.S. Environmental Protection Agency
VOC  Volatile organic compound
W  Watt
Many leading organizations are starting to use their workplaces to meet a range of financial drivers and to secure competitive advantage. The way you choose, design and manage your workplace can help you to:

- Enhance your company’s reputation;
- Attract and retain talented employees;
- Enhance employee wellbeing and productivity;
- Enhance organizational knowledge;
- Reduce liability;
- Reduce your company’s greenhouse gas (GHG) emissions;
- Prepare for any possible future GHG emissions reporting;
- Increase profitability; and
- Reduce relocation costs.

**Enhance your company’s reputation**

Organizations are increasingly expected by shareholders and the community at large to demonstrate corporate responsibility and sustainability - ‘doing the right thing’ in respect to the environment, employees and the community. Leading organizations are showing that corporate responsibility and sustainability starts at ‘home’, using their workplaces as a practical demonstration. This enhances reputation and minimizes potential risks to reputation, which has an indirect but potentially enormous financial benefit.

**Attract and retain talented employees**

The importance of attracting and retaining talented employees is increasing. Employees are more and more aware of their wellbeing at work, and the workplace has been shown to influence attraction and retention of staff. Demographic research shows that younger generations in particular have an increased awareness of corporate responsibility and sustainability issues, and are likely to choose employers whose values align with theirs. The ability to retain talented staff has significant financial benefits including avoiding replacement costs and improving business continuity.

**Enhance employee wellbeing and productivity**

Research indicates a link between a good indoor environment in offices and improved employee wellbeing. While this is difficult to measure compared to more tangible benefits like energy savings, there is growing evidence to support this link. Improved productivity and reduced absenteeism lead to financial benefits. Enhanced amenities (for example, nearby facilities such as fitness facilities, childcare, public transport, and cafés) can also have an influence on productivity and wellbeing.
“The environmental footprint of the building sector includes; 40% of energy use, 30% raw materials use, 25% of solid waste, 25% water use, and 12% of land use. At this time, the [United Nation’s] top priority is climate change and the building sector is responsible for more than one third of global GHG emissions and, in most countries, is the largest emissions source.... With proven and commercially available technologies, the energy consumption in both new and existing buildings can be cut by an estimated 30-50% without significantly increasing investment costs. Energy savings can be achieved through a range of measures including smart design, improved insulation, low-energy appliances, high efficiency ventilation and heating/cooling systems, and conservation behavior by building occupants.”


Enhance organizational knowledge

Your workplace design influences the way staff share and develop knowledge. Workplaces that are open, flexible and designed to encourage informal interactions have been linked to improved organizational learning. The sharing and retention of knowledge within an organization is critical to sustaining its productivity into the future.

Reduce liability

It is an employer’s duty to ensure a safe and risk-free working environment. Employees are becoming more demanding about their wellbeing at work. Occupational health and safety regulations in Canada already encompass aspects of indoor environment quality (IEQ).

Climate change and its potential impacts are becoming one of the most important topics for business owners looking into the future. The potential impacts of climate change are far-reaching and affect our economy, infrastructure, health, and the natural and built environment. All businesses, but especially those within the property ownership, construction, development, and property management spheres, will have to manage the business risks around GHG emissions and analyse their operations for ways to reduce total emissions and other environmental and social implications.

Reduce your company’s GHG emissions

Climate change and its potential impacts are becoming one of the most important topics for business owners looking into the future. The potential impacts of climate change are far-reaching and affect our economy, infrastructure, health, the landscapes around us, and the wildlife that inhabit them. All businesses, but especially those within the property ownership, construction, development, and property management spheres, will have to manage the business risks around GHG emissions and analyse their operations for ways to reduce total emissions.

Prepare for any possible future GHG emissions reporting

Many countries around the world are now discussing and debating various methods to encourage and enforce efforts to reduce GHG emissions. Voluntary reporting of GHG emissions already exists as well as global reporting standards and methodologies for GHG measurement and accounting. Examples include The Carbon Disclosure Project, an independent not-for-profit organization holding the largest database of primary corporate climate change information in the world (www.cdproject.net), The Greenhouse Gas Protocol (GHG Protocol), developed through a partnership between the World Resources Institute and the World Business Council for Sustainable Development (www.ghgprotocol.org), the CAN/CSA-ISO 14064 Greenhouse Gas Standards 1, 2, and 3 (www.csa.ca), and the Global Reporting Initiative.
Implementation of mandatory reporting regulations is currently underway in Canada following the release of the draft Greenhouse Gas Emissions Reporting Regulation and Guideline by Ontario’s Ministry of the Environment. Both the Regulation and Guideline can be found at www.ebr.gov.on.ca. Although the regulations are focused on large emitting sources, it is a wise risk management practice for all organizations to begin to look at measuring the impacts of their business activities on GHG emissions and climate change.

Increase profitability

All of these benefits can create significant cost savings for your organization! In addition, you’ll receive direct cost savings such as lower electricity bills. Other building costs that you may not directly pay for (such as waste management, water use, and air conditioning) are often lower in a green building and these savings are usually passed on to tenants under a net lease.

Reduce relocation costs

Lastly, a productive and pleasant workplace environment is one that you and your employees are more likely to want to stay in once your initial lease expires. This may reduce costs associated with future relocation.

1.1 How this Guide works

This Guide is designed to help you ask the right questions and make the right choices.

Section 1 Explains what a green lease is and why it’s of interest to organizations like yours.

Section 2 Explains what to look for when choosing a building. Complete the checklists to summarize the various benefits available.

Section 3 Explains important aspects to consider when designing your leasehold improvements and explains the benefits of implementing each of these aspects. This is where you have the opportunity to make commitments that will benefit your organization now, and into the future. This section also provides valuable tips on designing your office fit-out and choosing equipment, and suggests sources of further information.

1.2 How this Guide relates to your commercial lease

This Guide accompanies the REALpac “Office GREENLEASE™ National Standard Lease for Single-Building Projects” (Office GREENLEASE™). REALpac recognizes that the fundamental purpose of commercial (i.e., retail, office and industrial) buildings is to provide a productive and effective place for people to work. We believe that the best outcomes for landlords and tenants are achieved through a cooperative approach. With this Guide, REALpac hopes to support Canadian tenants in capturing the range of benefits discussed here.

“If we are successful in finding a sustainable way of living in the twenty-first century, then perhaps the principles we develop will become the guiding principles of a truly sustainable global civilization. Whatever the case, increasing awareness of our unique position and role on planet Earth will necessarily drive political, economic and social agendas long after our current preoccupations have faded.”

Tim Flannery, Now or Never
It’s a common misconception that to be ‘green’, a building has to demonstrate state-of-the-art technology and contemporary design. Some of the best performing buildings are older buildings where the building manager has taken measures to optimize performance, and supports tenants to do the same. Good building management is critical to achieving positive environmental outcomes.

Whether you’re looking at a new or older building, this section will help you to capture financial and environmental benefits. This section explains the most important things to look for in a building and a building manager, under the following categories:

• Management of indoor environment quality;
• Management of energy use and greenhouse gas emissions;
• Strategies for reducing travel demand and car dependency;
• Efficient water management;
• Efficient waste management;
• Cleaning services alignment with environmental objectives;
• Building management and tenant support; and
• Further innovations.

You may want to have the building owner or manager complete the following checklists to indicate which services, facilities or attributes apply to the building you’re considering. When the following checklists have been completed, you will be in a better position to know what options are available and why it’s of value to your organization.

“Canadians spend an average of 90% of their time indoors, where levels of pollutants may be two to five times – and occasionally more than 100 times – higher than outdoor levels.”

Canada Green Building Council (CaGBC), Leadership in Energy and Environmental Design for New Construction and Major Renovations (LEED Canada-NC)

“Deficiencies in IEQ are estimated to cost the U.S. economy between $40 billion and $258 billion annually in lost worker productivity. Poor IEQ in buildings causes “sick building syndrome” and a variety of other health problems that have been estimated to effect between 30 and 70 million Americans.”

Syracuse Center of Excellence, Excellence in Environmental & Energy Innovations
2.1 Management of indoor environment quality

A comfortable, productive and healthy indoor environment may be one of the most important things you can provide for your employees. Some elements of the building’s design and management, such as air quality, lighting quality and comfortable indoor temperatures, can have an impact on the quality of the workspace, and may:

• Offer potential savings by improving employee productivity and reducing employer liability;
• Improve the ability to attract and retain staff;
• Improve their wellbeing, and reduce absenteeism; and
• Demonstrate concern for employee wellbeing.

Building owners and managers can commit to providing enhanced indoor air quality (IAQ) to its occupants by developing and implementing an IAQ Management Program. The program will help optimize building practices, prevent IAQ problems from arising, correct issues when they occur, and maintain the well-being of all occupants. The United States Environmental Protection Agency’s (USEPA) model, *Indoor Air Quality Building Education and Assessment Model (I-BEAM)*, reference number 402-C-01-001, December 2002 (www.epa.gov), can be used as a template for a building’s IAQ Management Program. Another good reference is Health Canada’s *Indoor Air Quality in Office Buildings: A Technical Guide* (1995), which is a report from the Federal-Provincial Advisory Committee on Environmental and Occupational Health. This Guide, plus additional IAQ information, can be found at www.hc-sc.gc.ca on the Health Canada website.

Many of the materials commonly used in commercial office fit-outs emit volatile organic compounds (VOCs)—chemical substances that become airborne at room temperature. Exposure to VOCs has been linked to a range of health problems including headaches, fatigue, respiratory problems and skin irritations. VOCs are commonly emitted by paints, glues, composite timbers and synthetic fabrics and finishes. For more detailed information on VOCs, refer to Appendix A: Technical Guide to Standards.

For fire suppression systems, only systems than do not contain ozone-depleting substances (e.g. chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), halons) are to be installed and used. Smoking is now prohibited in almost all public places and workspaces in Canada. The LEED Green Building Rating System™ requires that exterior designated smoking areas be at least 7.5 meters away from entryways, outdoor air intakes and operable windows. Landlords and tenants should refer to provincial laws and regulations regarding smoking and allowances for employees to smoke at/near their workplace or office building.

### Checklist 1:

**Management of indoor environment quality**

Check the attributes that apply to your building

| Regular indoor air quality measurement across key parameters¹ | ☐ |
| Permanent, continuous monitoring systems installed to provide feedback on ventilation system performance | ☐ |
| Heating, ventilation and air conditioning (HVAC) regularly tested for contaminants, and any discovered contaminants removed² | ☐ |
| Maintenance contracts specify all paints, sealants, cleaners and adhesives are no or low-VOC emissions³ | ☐ |
| Monitoring and maintenance of indoor temperature at set summer and winter ranges⁴ | ☐ |
| Prompt action in response to building performance issues⁵ | ☐ |

**NOTES:**

Types of monitoring systems in place and the frequency of reporting? Any additional measures in place?⁶

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2.2 Management of energy use and greenhouse gas emissions

“Canada’s commercial building sector is a significant energy user and producer of carbon emissions. It accounts for 14% of end-use energy consumption and 13% of the country’s carbon emissions. Energy efficient technologies exist that could reduce costs to businesses and consumers while reducing the environmental impact of this major economic sector. But these technologies are not being taken up, with the result that energy use and carbon emissions continue to grow.”

National Round Table on Environment and the Economy (NRTEE), Geared for Change – Energy Efficiency in Canada’s Commercial Building Sector

Sustainable Development Technology Canada (SDTC) Vision Statement:
By the year 2030, commercial buildings in Canada will consume 0.98 GJ/m² of energy and create 0.0587 tCO₂e/m² of GHG emissions per year. This is based on a 50% reduction in energy intensity from the 2007 levels of 1.97 GJ/m². Achieving this vision will result in an overall reduction of 1,093 PJ of energy and 74 MtCO₂e of GHG emissions per year from projected ‘business as usual’ levels.

SDTC, Commercial Buildings – Eco-Efficiency Business Case

“Canadian commercial and institutional buildings are responsible for approximately 37% of Canada’s primary energy consumption.”

CaGBC LEED Canada-NC 1.0 Reference Guide
Climate change is a major international concern. Employees will increasingly be asking what their employer is doing to reduce GHG emissions which contribute to climate change. Choosing a building with low direct and indirect GHG emissions may:

- Save your organization money and enhance its reputation;
- Reduce base building energy costs, which are passed generally on to tenants, indirectly or directly;
- Respond to employee concern about climate change; and
- Demonstrate leadership in addressing climate change.

The development and implementation of a Building Operating Plan that includes energy-efficient operating strategies will help to ensure “green” operating strategies are maintained as well as providing consistency and continuity of information and a foundation for training and system analysis.

The plan should include such elements as:

- Descriptions of all mechanical and electrical systems and equipment;
- Preventative maintenance plan for equipment described above;
- Schedules for occupancy and equipment run-times;
- Setpoints for all HVAC equipment;
- Design lighting levels; and
- Energy audit data and report(s).

A retrocommissioning, recommissioning, or ongoing commissioning plan may also be developed to help define options for optimizing energy performance and thus achieve energy savings. Analysis of building energy systems can also be done through conducting an energy audit combined with a cost versus savings analysis.
“REALpac [has adopted] an energy consumption target for office buildings of 20 equivalent kilowatt-hours of total energy use per square foot of rentable area per year (20 ekWh/ft²/year), to be achieved by 2015. In other words, “20 by ’15”. The target represents a reduction of up to one half of today’s energy use in Canadian office buildings. Achieving the target will lead to estimated energy cost savings in the order of $1.85 billion/year, and greenhouse gas emissions savings of 7.5 Megatonnes/year contributing 5% of Canada’s national 2020 goal.”
For more information on “green” building certification programs i.e. LEED® for New Construction and Major Revolutions (LEED-NC), LEED® for Core and Shell (LEED-CS), LEED® for Existing Buildings: Operations & Maintenance (LEED-EB: O&M), Building Owners and Managers Association, Building Environmental Standards (BOMA BESt), common energy standards used to benchmark resource use in buildings, and protocols for energy audits, refer to Appendix A: Technical Guide to Standards.

BOMA BESt Certified office buildings have an average energy performance of 31.52 ekWh/sf/year versus the National average energy performance for office buildings (NRCan data) of 35.48 ekWh/sf/year.

2009 BOMA BESt Energy and Environmental Report
BOMA Canada

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Checklist 2:

**Management of energy use and greenhouse gas emissions**

<table>
<thead>
<tr>
<th>Check the attributes that apply to your building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and implement a Building Operating Plan</td>
</tr>
<tr>
<td>Install and use a Building Management System (BMS) (software and hardware) to control and monitor the building’s mechanical and electrical equipment including those affecting ventilation, lighting, power systems, fire systems, and security systems.</td>
</tr>
<tr>
<td>Monitoring and reporting of tenancy energy use and greenhouse gas emissions</td>
</tr>
<tr>
<td>Monitoring and reporting of base building energy use and greenhouse gas emissions</td>
</tr>
<tr>
<td>Regular maintenance and recalibration of base building services</td>
</tr>
<tr>
<td>Prompt action in response to performance issues</td>
</tr>
<tr>
<td>Green power or renewable power sources available</td>
</tr>
<tr>
<td>LEED-NC, LEED-CS, LEED-EB: O&amp;M, BOMA BESt (top quartile target), REALpac 20 by ‘15 target, or other building rating/target achieved</td>
</tr>
</tbody>
</table>

**NOTES:**

Types of monitoring systems in place and the frequency of reporting?
Any additional measures in place? Utility costs for the last 3 years provided?

---
2.3 Strategies for reducing travel demand and car dependency

By providing a conveniently located office space, close to public transit and cycling options, you will:

- Provide employees with convenient, healthy and affordable transport options;
- Reduce the environmental impacts and costs associated with staff travel to and from work, and travel to and from meetings; and
- Demonstrate environmental leadership by responding to climate change and air pollution.

### Checklist 3:

#### Strategies for reducing travel demand and car dependency

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Check the attributes that apply to your building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximity to a range of public transport options (high number and frequency of services) or the availability of a shuttle service to and from the nearest transit hub</td>
<td>☐️</td>
</tr>
<tr>
<td>Secure bike storage</td>
<td>☒️</td>
</tr>
<tr>
<td>Showers, change room facilities and lockers for cyclists</td>
<td>☐️</td>
</tr>
<tr>
<td>Low consumption, high-efficiency hybrid or alternative fuel vehicles provided or alternative-fuel refuelling stations installed</td>
<td>☒️</td>
</tr>
<tr>
<td>Preferred parking for hybrid and alternative-fuel vehicles</td>
<td>☐️</td>
</tr>
<tr>
<td>Preferred parking locations for car/van poolers</td>
<td>☐️</td>
</tr>
<tr>
<td>Reserved parking for vehicles from car-share programs</td>
<td>☐️</td>
</tr>
<tr>
<td>Spaces for small cars, mopeds and motorbikes</td>
<td>☐️</td>
</tr>
</tbody>
</table>

**NOTES:**
Types of monitoring systems in place and the frequency of reporting? Any additional measures in place?

**“The Self-Serve Bikes program has been in operation for a number of years. Bikes can be borrowed free of charge weekdays between 9 a.m. and 4 p.m. throughout the summer. Occupants can use the bikes for business-related commutes or recreational riding.”**

Self-Serve Bikes, SITQ Real Estate Intelligence, www.sitq.com
“Pressure is mounting on the Great Lakes [politicians] to open up access to the lakes to the burgeoning megacities around the basin. In 2007, Lake Superior, the world’s largest fresh water lake, dropped to its lowest level in eighty years and the water has receded more than fifteen meters from the shoreline.”

Maude Barlow, Blue Covenant

2.4 Efficient water management

Choosing a water-efficient building that is well-managed will:

- Save money on water bills, directly or indirectly;
- Respond to employee concern about water shortages; and
- Demonstrate environmental leadership to shareholders, stakeholders and the community.
### Checklist 4: Efficient water management

Check the attributes that apply to your building

| Sub-metering of major base building water uses (e.g. cooling towers, washrooms, etc.) |
| Regular monitoring and reporting of base building water use |
| Regular inspections for leaks and other base building performance issues |
| Water-efficient fixtures and fittings in washrooms (e.g. hand sensors, low-flow/dual flush toilets, waterless urinals) |
| Innovative waste water technologies used |
| Rainwater (stormwater) and/or greywater harvesting and use/reuse (in areas where drought is not a concern) |
| Local native vegetation to minimize landscape irrigation |
| Water efficient irrigation to reduce or eliminate potable water consumption |
| Prompt action in response to performance issues |

**NOTES:**
Types of monitoring systems in place and the frequency of reporting? Any additional measures in place?

---

**SDTC Vision Statement:**
By the year 2030, commercial buildings in Canada will consume 712 L/m² of municipal water per year. This is based on a 65% reduction from the current 2007 levels of 2,033 L/m². Achieving this vision will result in an overall reduction of 1,409 BL of water per year from projected levels.

*SDTC, Commercial Buildings - Eco-Efficiency Business Case*
2.5 Efficient waste management

“Brookfield Properties’ waste-management program in Canada is designed to make recycling second nature to our tenants, encompassing everything from recycling paper, bottles and cans, to the safe disposal of batteries, cell phones and computers. For example, “Think Green,” our organics composting initiative, helps tenants to sort and dispose of organic food waste in the convenience of their office kitchen.”


SDTC Vision Statement:
By the year 2030, commercial buildings in Canada will produce 1.71 kg/m² of solid waste per year. This is based on an 85% reduction from the current 2007 levels of 11.4 kg/m². Achieving this vision will result in an overall reduction of 14.8Mt of solid waste per year from projected levels.

SDTC, Commercial Buildings – Eco-Efficiency Business Case

“The most effective method for promoting recycling activities is to create convenient opportunities for building occupants to recycle. This includes designating adequate space for recycling activities and storage of recyclable materials.”

CaGBC LEED Canada-NC 1.0 Reference Guide
What we commonly call 'waste' can be a valuable resource and a cost-saving opportunity. Landfill costs are increasing significantly in comparison to recycling costs and this trend is expected to accelerate. Waste management costs are passed directly or indirectly to tenants. A comprehensive waste minimization and recycling service can:

- Save on a building owner’s landfill fees, which may be passed on to you;
- Respond to employee concern about pollution and waste; and
- Demonstrate environmental leadership to shareholders, stakeholders and the community.

**Checklist 5:**

**Efficient waste management**

Facilities that are easily accessible and dedicated for separate storage and recycling of paper, cardboard, containers (plastic, glass, and metal [cans]) and food waste

Regular monitoring and reporting of waste going to landfill

Prompt action in response to performance issues

Waste stream audit conducted annually\(^22\)

Systems for recycling of items such as toner cartridges, fluorescent light tubes\(^23\), batteries, computers, printers and mobile phones

Areas provided for waste sorting and recycling during construction or renovation

**NOTES:**

Types of monitoring systems in place and the frequency of reporting? Any additional measures in place?

---

2.6 Cleaning services alignment with environmental objectives

It’s important that cleaning services align with the building’s environmental objectives. For example, some organic chemical solvent-based cleaning products can compromise indoor air quality. Enlisting the cooperation from cleaners with the waste management policy can ensure the effectiveness of the building’s environmental objectives and:

- Ensure that waste doesn’t end up in the landfill or cost more in landfill fees;
- Achieve an environmental benefit without costing more;
- Maintain good indoor environment quality; and
- Demonstrate environmental leadership and concern for employee wellbeing.
Green cleaning policies for the building and site cleaning materials under the control of site management should address:

- Purchasing cleaning equipment and products;
- Standard operating procedures (SOPs) for using, managing and auditing the cleaning processes;
- Strategies to promote hand hygiene (washing and sanitizing);
- Safe handling, storage and clean up (spills and accidents) of cleaning chemicals;
- Staffing and training requirements; and
- Continuous feedback and improvement of procedures and processes.

Further information for green cleaning service providers can be found within the Green Seal™ Environmental Leadership Standard for Commercial and Institutional Cleaning Services (GS-42) (www.greenseal.org).

Buildings managers may also wish to perform a custodial effectiveness assessment/audit to determine the appearance level of the facility. Audits may be conducted following the APPA Leadership in Educational Facilities’, Custodial Staffing Guidelines (www.appa.org).

Common standards to be used to identify sustainable cleaning products and materials include Green Seal, Environmental Choice EcoLogo™, USEPA guidelines and VOC level standards as described in Section 2.1, above, or in Appendix A: Technical Guide to Standards. For further information on standards referenced in the LEED Rating Systems, see Appendix A: Technical Guide to Standards.

---

**Checklist 6:**

**Cleaning services alignment with environmental objectives**

- Entryway systems (e.g. grills, grates, mats) at all public entryways as well as associated cleaning strategies
- Cleaning contracts specify use of natural, fragrance-free, solvent-free and hydrocarbon-free cleaning products, as well as low environmental impact disposable janitorial paper and trash bags
- Suppliers to satisfactorily complete a sustainability questionnaire prior to being awarded contracts
- Cleaning contracts specify compliance with waste management and energy efficiency policies
- Cleaning contracts specify relevant cleaning and maintenance procedures for specialist ‘green’ products (e.g. waterless urinals)
- Awareness-raising, training and re-training programs for cleaners
- Building exterior and hardscape maintenance contracts specify environmentally sensitive and low-impact practices

**NOTES:**

Any additional measures in place?
Building management that incorporates regular monitoring, maintenance and reporting can help tenants:

- Reduce ongoing costs, the savings of which may be passed on to tenants;
- Meet their environmental reporting obligations;
- Retain a competitive edge;
- Maintain a productive and healthy workplace;
- Align with increasing employee environmental awareness; and
- Enhance performance and help demonstrate your environmental achievements.

Building management that also values tenant input and bases relationships between the owner/manager and the tenant(s) on collaboration and open communication will ultimately have more success in achieving their sustainability goals. Cooperation between owners, managers and tenants as well as cooperation between tenants can help build motivation and teamwork around green objectives.

The establishment of a Building Management Committee which meets periodically can help to ensure the efficient communication of performance data, allow for informal review of performance data and specific targets, and ensure maintenance and cleaning services are aligned with sustainability objectives. Committee members should include:

- Property managers;
- Owner representatives;
- Tenant representatives; and
- Other parties who impact operational performance of the building (e.g. suppliers, cleaners, contracted maintenance professionals).

Building managers and/or the responsible leasing professional may want to keep the building’s environmental objectives in mind when creating the tenant mix. Complementary tenants who share similar environmental values may work synergistically within the building to meet or exceed green objectives.

“Oxford knows that sustainability is fundamentally about good management – respecting our stakeholders, the environment, and the communities in which we do business. Our industry leading Sustainable Intelligence program recognizes the importance of working with our tenants to help them achieve their sustainability goals and make our buildings more efficient.”

Darryl Neate
Director, Sustainability,
Oxford Properties Group
## Checklist 7:

### Building management and tenant support

Check the attributes that apply to your building.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability education program and tips provided to building occupants</td>
<td></td>
</tr>
<tr>
<td>Environmental Management Plan (EMP) or sustainability operating requirements and plans in place for building</td>
<td></td>
</tr>
<tr>
<td>Suppliers to satisfactorily complete a sustainability questionnaire prior to being awarded contracts</td>
<td></td>
</tr>
<tr>
<td>Environmentally Preferable Purchasing policy in place for the building</td>
<td></td>
</tr>
<tr>
<td>Regular reporting to tenants on base building environmental performance, GHG emission reductions, building rating system achievements, or progress on other targets</td>
<td></td>
</tr>
<tr>
<td>Formal mechanisms for gathering tenant feedback (e.g. regular surveys)</td>
<td></td>
</tr>
<tr>
<td>Green specifications in Tenant Improvement Manual</td>
<td></td>
</tr>
<tr>
<td>Dedicated contact for tenants within the building management staff that are either LEED AP or are well versed in sustainability efforts</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**

Frequency of reporting? Any additional measures that support tenants in meeting their environmental objectives?

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2.8 Further innovations

“Energy efficiency policy monitoring and evaluation needs to be improved in Canada. It can ensure that policies remain dynamic and up-to-date for maximum performance and relevant to current market characteristics. Post-implementation evaluations of energy policy have been inconsistent in Canada. More transparent and higher quality data collection is required to provide a baseline for comparison and to elaborate the monitoring and evaluation procedures for policy impacts. Increased stringency in policy monitoring and evaluation is required to show the non-energy benefits of policy such as reductions in GHG emissions and indoor air quality.”

NRTEE, Geared for Change – Energy Efficiency in Canada’s Commercial Building Sector

There are many additional ways your building owner or manager can help you as a tenant to demonstrate corporate responsibility and sustainability. This can include initiatives that will support your corporate responsibility and sustainability commitments, such as providing on-site amenities for use by tenants and the local community (e.g. childcare facilities, meeting spaces, recreation spaces) or negotiating the reuse/recycling of fit-out materials. Refer to REALpac’s “National Corporate Responsibility & Sustainability Guidelines” and REALpac’s “Internal Corporate Responsibility & Sustainability (CR&S) Policy/Program” for ways that you can demonstrate corporate responsibility and sustainability. Both documents may be downloaded at www.realpac.ca. Ask your building owner or manager to list any further sustainability initiatives they will provide to you.

NOTES:
The fit-out stage provides your organization with a cost-effective opportunity to enhance its reputation, boost employee satisfaction and lock-in ongoing cost savings over the term of the lease. These benefits all have an impact on an organization’s commercial success and exposure to risks. At this stage you have the opportunity to make decisions that can, at little or no additional upfront cost:

• Improve employee productivity and organizational learning;
• Help you to attract and retain staff;
• Enhance your corporate image and provide competitive advantage;
• Enhance your organization’s culture;
• Reduce your energy bills and other expenses; and
• Minimize your occupational health and safety liabilities.

This section of the Guide is in three parts:

1. **Environmental Management Plan** — sign a Green Lease with an EMP.

2. **Fit-out design and construction** helps you to lock-in significant benefits by identifying design and construction principles for your fit-out. We recommend that you include the completed checklists in your brief to your designers and contractors. Some, or all, aspects of your fit-out (e.g. lighting, carpet) may be provided by the building owner. If so, ask the owner’s representative to fill out the relevant commitments in this schedule.

3. **Office management and operation** provides tips on office management and equipment purchasing. We recommend that you give the completed checklists to your office manager and those responsible for equipment purchasing.
3.1 Environmental Management Plan

“In 2006, the NRTEE published a report on long-term energy use in Canada, stating that energy efficiency measures should be used to reduce carbon emissions from the commercial sector by 58% below the projected ‘business as usual’ scenario in 2050, a target of 53 megatonnes of CO₂ emissions per year by 2050. In 2007, SDTC released a business case report on commercial buildings stating an industry vision for the sector of reducing emissions to 36 Mt CO₂e in 2030. These targets must be achieved in a context where the population is increasing and greater stress is being placed on buildings and energy infrastructures. Statistics Canada estimates that Canada’s population will increase by 10 million people between now and 2050, and it can be assumed that Canadians will continue to expect efficient, reliable, and affordable energy resources.”

All tenants are encouraged to sign a “green” lease, and one that contains an EMP.

The REALpac “Office GREENLEASE™ National Standard Lease for Single-Building Projects – 1.03 – 2010”, released as of January 1, 2010, contains the details of an Environmental Management Plan in its Schedule “E”. REALpac’s precedent Office GREENLEASE™ is regarded as a ‘green lease’ because it enables environmental objectives to be set out as part of the relationship between building owner and tenant. Refer to Appendix B of this Guide, for a copy of the aforementioned EMP.

To download the REALpac Office GREENLEASE™, go to www.realpac.ca. Users of the REALpac Office GREENLEASE™ may send an email to clane@realpac.ca to be notified of notes, bulletins and updates to REALpac Office GREENLEASE™ and to ensure timely access to the latest authentic version for comparative purposes. REALpac may make changes to its Office GREENLEASE™ at any time without notice.
3.2 Fit-out design and construction

Include these completed checklists in the brief to your design and construction contractors.

When you move out of your existing tenancy, reuse whatever you can. ‘Make good’ clauses in leases often lead to significant wastage of materials such as carpet, light fittings and furnishings. Ask your existing building owner or manager whether it’s possible to leave millwork and furnishings in good condition for reuse by future tenants. Also, check with your proposed new building owner or manager whether elements of the previous tenancy fit-out can be reused. This approach can result in significant cost savings for you. Refer to the publication titled “LEED Green Building Rating System for Commercial Interiors”, published by the Canada Green Building Council (refer to www.cagbc.org), herein referred to as LEED-CI. Other documents that may be applicable include “LEED® Green Building Rating System for Existing Buildings: Operations and Maintenance”, the “Application Guide for Core and Shell Buildings and Leased Tenant Spaces” as per LEED® for Core and Shell, and “LEED® Green Building Rating System for New Construction and Major Renovations”.

Your efforts can result in:
• Potential savings in employee costs (productivity) and savings on energy costs;
• A productive and healthy environment for employees; and
• Demonstrate environmental leadership to shareholders, stakeholders and the community.

In this section, you and your building manager will nominate key commitments in relation to:
• LEED-CI rating;
• Lighting;
• Floor finishes;
• Walls and ceilings;
• Millwork (doors, built-in furniture, kitchenettes);
• Workstations;
• General office furniture;
• Kitchen fixtures and appliances;
• Paints, sealants and adhesives;
• Washrooms fixtures;
• Supplementary air conditioning;
• Sub-meters and ‘smart’ meters;
• Indoor plants; and
• Demolition and construction waste management.

The following set of checklists is for you to complete

3.2.1 LEED for Commercial Interiors (LEED-CI)

LEED-CI is a comprehensive, voluntary, market-driven green building rating system for commercial interiors. LEED-CI is an interior design tool used to minimize environmental impacts and maximize occupant comfort and performance of tenant spaces. LEED-CI addresses performance areas in office, retail, and institutional buildings including:
• Selection of sustainable tenant space;
• Efficiency of water usage;
• Energy performance optimization including lighting and lighting controls;
• Resource utilization for interior building systems and furnishings; and
• Indoor environmental quality including comprehensive emissions criteria.

LEED-EB, LEED-CS, and LEED-NC also address building performance in the same categories as LEED-CI and are collectively referred to as the LEED Rating Systems in this document and endnotes.

Checklist 8:

**LEED-CI rating (or LEED-NC/LEED-CS/LEED-EB)**

<table>
<thead>
<tr>
<th>Check the attributes that apply to your building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable sites – outline/list applicable credit(s) to be achieved</td>
</tr>
<tr>
<td>Water efficiency – outline/list applicable credit(s) to be achieved</td>
</tr>
<tr>
<td>Energy and atmosphere – outline/list applicable credit(s) to be achieved</td>
</tr>
<tr>
<td>Materials and resources – outline/list applicable credit(s) to be achieved</td>
</tr>
<tr>
<td>Indoor environmental quality – outline/list applicable credit(s) to be achieved</td>
</tr>
</tbody>
</table>

**NOTES:**

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“Compact fluorescent lamps typically use 75% less energy and last 10 times longer than incandescent bulbs. By replacing one incandescent lamp with a fluorescent lamp, production of three-quarters of a ton of carbon dioxide and 15 pounds of sulphur dioxide are avoided over the lifetime of the lamp. This substitution also saves $30 to $50 in energy costs over the operating lifetime of the lamp.”

“For emergency lighting, use highly efficient LED (light-emitting diode) ENERGY STAR-rated exit signs. A typical long-life incandescent exit sign consumes 40 watts and its lamps must be replaced every 8 months; typical compact fluorescent exit signs consume 10 watts and the lamps must be replaced every 1.7 years, on average. A typical LED exit sign consumes less than 5 watts and has a life expectancy of over 80 years.”
Lighting accounts for a large percentage of the average tenant's energy costs and represents the largest single opportunity for energy savings. If you've chosen a tenancy space that makes good use of natural light, you're already ahead. Efficient lighting design and management can:

- Reduce your lighting energy bill;
- Reduce the heat load on the base building air conditioning, resulting in further indirect cost savings;
- Earn ongoing savings in energy bills;
- Create a more comfortable and productive work environment for employees - avoids glare and eye strain; and
- Reduce your tenancy's GHG emissions.

Efficiency depends on a range of variables including the lamp, the fitting, the type of ballast, the lighting controls and the lighting design (appropriate layout and power density). The principle of good lighting design is to provide light levels appropriate to the various tasks carried out in the space, while using as little energy as possible.

The basic principles of efficient lighting are to:

- Ensure the appropriate number of fittings are installed (many premises are vastly overlit); 28
- Design lighting zones to ensure that most areas may be switched off when not needed;
- Select the most efficient fittings and ensure they are switched off when not needed;
- Install “intelligent lighting” systems with dimmable, adjustable ballasts with light-level sensors and occupant sensors to ensure lights are dimmed on bright days and turn off automatically when not needed; 29
- Control lights with motion-based sensors;
- Avoid ‘low voltage’ dichroic, halogen and incandescent special purpose lighting. ‘Low voltage’ does not mean ‘low energy’; it's the wattage that's important;
- Use compact fluorescent or LED lighting for special purpose lighting. An LED spotlight uses about a tenth the energy of an incandescent or dichroic lamp with the same light output. It also generates negligible heat, reducing the load on air conditioning;
- Use efficient fluorescent lights with specular reflectors and electronic ballasts for general office lighting; and
- Paint your office walls and ceilings a light colour to minimize lighting demand.

www.oee.nrcan.gc.ca

Checklist 9:

**Lighting**

<table>
<thead>
<tr>
<th><strong>Lighting</strong></th>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of daylight and views to the outside environment for a significant proportion of occupants</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>General office lighting: Efficient (T8 or better), fluorescent, electronic ballast (less than 10 W/m² or less than 0.85 W/ft²)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Special purpose lighting: Compact fluorescent or LED</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lighting controls: Comprehensive occupancy-based lighting control system with appropriate zoning and daylight linking</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Light pollution reduction through installation of automatic turn-off systems for after-hour periods</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Window coverings linked to BMS</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

**NOTES:**
3.2.3 Floor finishes

Over the life of an average office building, floor finishes have the greatest single environmental impact of any fixed item. This is because they tend to be replaced at the end of every lease cycle. If retaining the existing floor finishes is not possible or practical, many environmentally friendly options are available at a similar, and sometimes lower, cost than standard alternatives. Environmentally friendly carpet tiles and a variety of alternative flooring options can be found. Environmentally friendly floor finishes can:

- Achieve environmental benefits at the same cost as alternatives, and sometimes less cost;
- Contribute to good indoor environment quality; and
- Reduce environmental impact significantly.

Select floor finishes that are:

- Modular (e.g. tiles); these are easier to repair and replace and result in less waste;
- High in recycled content;
- Manufactured from rapidly renewable materials;\(^{34}\)
- Low in VOCs - carpet tile and glue;
- Virgin (non-recycled), and with the polyvinyl chloride (PVC) content minimized;
- Low in pesticides and fire retardants;
- From a manufacturer that has a lease option or a manufacturer take-back program; and
- From a manufacturer that has measures in place to reduce ecological impact of manufacturing process.

---

**Checklist 10:**

<table>
<thead>
<tr>
<th>Floor finishes</th>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retain existing floor finishes</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Modular carpet, reconditioned or with recycled content, and with low-VOC emissions</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Timber: Recycled, Forest Stewardship Council (FSC) – certified(^{35}) or fast-growing plantation (e.g. bamboo)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Use of building materials and products that are regionally extracted/harvested/recovered and/or manufactured (within 800 kilometres)(^{36})</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Other eco-preferable material (e.g. linoleum instead of vinyl)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

**NOTES:**

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3.2.4 Walls and ceilings

Environmentally friendly options for walls and ceilings are available. Fewer walls mean:

- Less expense;
- More and improved natural light;
- More effective air conditioning and ventilation;
- Reduction in upfront costs; and
- Improvement in organizational learning.

When considering walls and ceilings:

- Reduce wall material required through open plan design;
- Eliminate unnecessary linings;
- Use materials that don’t require a finish or are pre-finished;
- Use modular systems that can be easily disassembled and reused;
- Use mechanical fixings in preference to adhesives (easier disassembly, adhesives contain VOCs);
- Select wall panels and sheet linings with recycled content;
- Select demountable and reusable wall systems (check to make sure they avoid or minimize use of PVC); and
- Select ceiling tiles with recycled content (e.g. fly ash and paper, if generally available).

Checklist 11:

Walls and ceilings

<table>
<thead>
<tr>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal walls:</strong></td>
<td></td>
</tr>
<tr>
<td>Minimize new walls, open plan design</td>
<td>![ ] ![ ]</td>
</tr>
<tr>
<td>Modular, reusable wall systems, high recycled content</td>
<td>![ ] ![ ]</td>
</tr>
<tr>
<td>Wall linings and glazing frames with recycled content</td>
<td>![ ] ![ ]</td>
</tr>
<tr>
<td><strong>Ceilings:</strong></td>
<td></td>
</tr>
<tr>
<td>Retain existing ceilings</td>
<td>![ ] ![ ]</td>
</tr>
<tr>
<td>New modular ceiling, eco-preferable material</td>
<td>![ ] ![ ]</td>
</tr>
</tbody>
</table>

NOTES:
3.2.5 Millwork (doors, built-in furniture, kitchenettes)

The growing importance of corporate responsibility and sustainability initiatives presents an incentive to use the many environmentally friendly alternatives available. Minimising the use of formaldehyde and other VOCs, commonly found in composite timbers, glues and varnishes:

- Presents an opportunity to create healthier indoor environments for employees;
- Achieves environmental benefit at no or marginal additional cost;
- Creates a healthier indoor environment; and
- Demonstrates environmental leadership in protection of biodiversity.

When considering millwork (doors, built-in furniture, kitchenettes), minimize adverse environmental impacts by:

- Avoiding old growth and rainforest timber;
- Reducing the likelihood of adverse health impacts by minimising levels of formaldehyde and other VOCs (commonly used in composite timbers such as medium density fibreboard (MDF) and plywood);
- Looking for FSC Certification; an international labelling scheme for forest products that is recognized by environment groups as well as industry. All forest products carrying the FSC logo have been independently certified as coming from forests that meet the internationally recognized FSC Principles and Criteria of Forest Stewardship; and
- Using low-VOC products. Composite timber can give off toxic emissions due to the glues and solvents used to bind the timber particles (such as formaldehyde). Low-VOC composite timber is becoming easier to source, particularly when ordering large volumes.

For substrate materials:

- Use materials that are recycled or FSC-certified (preferably) or from sustainably managed plantations;
- Use substrate products manufactured from rapidly renewable materials;\(^{37}\)
- Make sure composite timber is low-VOC; and
- Use mechanical fixings in preference to glues.

In terms of veneers, laminates and finishes:

- Ensure timber veneers are FSC-certified or from sustainably managed plantations;
- Use natural finishes (e.g. plant-based oils and waxes) where possible. Otherwise, use low-VOC finishes and laminates; and
- Avoid the use of PVC (for edge strips, etc.).

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**Checklist 12:**

**Millwork**

<table>
<thead>
<tr>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Retain existing materials:</strong></td>
<td></td>
</tr>
<tr>
<td>Retain existing doors</td>
<td>o</td>
</tr>
<tr>
<td>Retain existing built-in millwork (if applicable)</td>
<td>o</td>
</tr>
<tr>
<td>Retain existing kitchenette</td>
<td>o</td>
</tr>
<tr>
<td><strong>New fit-out:</strong></td>
<td></td>
</tr>
<tr>
<td>Recycled, FSC-certified or plantation timber (including veneers)</td>
<td>o</td>
</tr>
<tr>
<td>Use of building materials and products that are regionally extracted/harvested/recovered and/or manufactured (within 800 kilometres)</td>
<td>o</td>
</tr>
<tr>
<td>Low-emission composite timber</td>
<td>o</td>
</tr>
<tr>
<td>Low-emission laminates, finishes and glues</td>
<td>o</td>
</tr>
</tbody>
</table>

**NOTES:**

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\(^{37}\)
### 3.2.6 Workstations

Workstations can have a significant environmental and health impact, depending on the materials and energy needed to manufacture them, the toxicity of the glues and solvents used and how easy they are to disassemble and reuse. You can save money and protect the environment by reusing existing workstations where practical. There are several environmentally friendly workstation options available. You can also improve indoor environment quality by minimising the use of products that contain VOCs. By considering your environmental responsibility in regard to workstations you can:

- Achieve environmental benefits at no additional upfront cost, and sometimes lower upfront cost;
- Create a healthier indoor environment; and
- Reduce environmental impact significantly.

When considering workstations:

- Use recycled, FSC-certified or plantation timber (plantation good, FSC better, recycled best);
- Use recycled-content steel or aluminum;
- Use products manufactured from rapidly renewable materials; \(^{41}\)
- Choose designs for easy disassembly, recycling and/or reuse;
- Select workstations that use no or low-VOC glues and solvents (including those used in MDF/ply);
- Do not use virgin PVC (may use environmentally preferred alternatives such as linoleum, high density polyethylene);
- Select a manufacturer that has a lease option or a manufacturer take-back program; and
- Select a manufacturer that has measures in place to reduce ecological impact of manufacturing process.

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### Checklist 13:

**Workstations**

<table>
<thead>
<tr>
<th>Check the attributes that apply to your selected design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Existing workstations reused</strong> (^{42})</td>
</tr>
<tr>
<td><strong>New eco-preferable workstations used</strong></td>
</tr>
<tr>
<td>Use of building materials and products that are regionally extracted/harvested/recovered and/or manufactured (within 800 kilometres) (^{43})</td>
</tr>
</tbody>
</table>

**NOTES:**

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3.2.7 General office furniture

A significant percentage of the waste going to landfill in Canada is from office ‘churn’. This includes office furniture. Save money by reusing as much of your office furniture as you can. Cost-effective, environmentally friendly and healthy (no or low-VOC) products are readily available, and some manufacturers also take back products for reuse and recycling at the end of their life. A range of manufacturers are now producing stylish, environmentally friendly office furniture. Selecting environmentally friendly office furniture can:

- Achieve environmental benefits without costing more upfront (there are many cost-effective environmentally friendly products available);
- Create a healthier indoor environment;
- Reduce environmental impact; and
- Provides a tangible demonstration of this to employees and visitors.

When considering furniture, look for the following:

- Modular design;
- Design and fabrication that minimizes materials use and waste;
- Recycled content (structure, substrate, fabric and other finishes); 44
- Natural, renewable materials;
- Recycled, FSC-certified or plantation timber (substrate and veneers);
- High durability;
- Designs for easy disassembly and repair, reuse, recycling of components;
- Take-back or lease programs by the manufacturer that incorporate end-of-life reuse or recycling;
- Mechanical fixings in preference to glues where possible;
- No or low-VOCs (including substrate material, glues and finishes);
- Low embodied energy;
- No or minimal use of fire retardants and pesticides in fabrics, etc.;
- Manufacturers that have measures in place to reduce ecological impact of the manufacturing process; and
- Manufacturers that have International Organization for Standardization (ISO) 14001 - Certified Environmental Management System (EMS) in place.

Checklist 14:

General office furniture

Check the attributes that apply to your selected design

**Chairs:**
- Reuse existing chairs
- New, eco-preferable product

**Workstation partitions:**
- Reuse existing partitions
- New, eco-preferable product

**Cabinets and shelving:**
- Reuse existing cabinets and shelves
- New, eco-preferable product

**Tables:**
- Reuse existing tables
- New, eco-preferable product

NOTES:
3.2.8 Kitchen fittings and appliances

On average, kitchen appliances only account for a low percentage of office energy use, but it still makes sense to choose the most efficient models. Water-saving appliances save energy too, because they help cut down on hot water use. Selecting environmentally friendly kitchen fittings and appliances may:

- Generate an energy and water saving opportunity at no or marginal extra upfront cost;
- Likely be aligned with employee values; and
- Provide a tangible demonstration of energy and water saving to employees and visitors.

ENERGY STAR® is an international symbol of energy efficiency that helps businesses/consumers easily identify major appliances and other energy-using equipment that save energy. ENERGY STAR in Canada is a voluntary arrangement between Natural Resources Canada’s Office of Energy Efficiency and organizations that manufacture, sell or promote products that meet the ENERGY STAR levels of energy performance. ENERGY STAR identifies products as the top high efficiency performer in their category.

Office equipment that displays the ENERGY STAR logo must meet established, continually updated energy efficiency standards. ENERGY STAR features include the ability to power down or sleep during periods of inactivity and wake up again when needed. It is extremely important to choose equipment that has efficient sleep and hibernation modes as well as operating modes. For more information on ENERGY STAR and to compare appliance ratings under ENERGY STAR, go to the NRCan OEE website at www.nrcan-rncan.gc.ca/com.

**Faucets (taps)**

When considering faucets (taps):

- Add flow restrictors to existing taps, or (if new) choose taps with the best available ENERGY STAR rating;
- Use powder-coated or stainless steel tapware in preference to chromium-plated steel (where possible) because the latter generates toxic by-products in its production; and
- Use tap aerators. Tap aerators cost a few dollars each and save much more in water over the life of your tenancy. Appliances with the best available ENERGY STAR ratings for energy and water can sometimes be more expensive to buy. If you are cost-constrained, at least choose appliances with a rating of no less than one star below the best available. These should be available at competitive prices.

Of the total amount of treated potable water that is distributed to all buildings, only about 3% is actually used for human consumption.
Refrigerators
When considering refrigerators:
• Choose a fridge with a high ENERGY STAR rating and low energy consumption;
• Select a suitable size fridge. Bigger fridges tend to use more energy, so be careful not to oversize the fridge for your needs;
• Choose a model that uses hydrocarbon refrigerants in preference to HFCs;
• Locate the fridge in a cool spot, with adequate ventilation around it;
• Check that the seals on older fridges are still effective; and
• Set the thermostat no lower than 4 degrees Celsius (°C).

Dishwashers
When considering dishwashers:
• Choose a model with a high ENERGY STAR rating for energy and water (efficient dishwashers use half the water of non-efficient dishwashers); and
• Only run the dishwasher with full load.

Kettles
When considering kettles:
• Choose a kettle with auto-switch off and water level indicator; and
• Ensure the kettle has a timer and manual switch off, uses less than 50 W on standby, is well insulated and has a maximum capacity of 2.5 L.

Checklist 15:

<table>
<thead>
<tr>
<th>Kitchen fittings and appliances</th>
<th>Provided by tenant</th>
<th>Provided by building designer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water-efficient fixtures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water and ENERGY STAR® energy efficient appliances (e.g. fridge, microwave, dishwasher)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No hot water boiler (use kettle with auto switch-off)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No supplemental heaters or room air conditioners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kitchen waste sorter with separate recycling bins</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
3.2.9 Paints, sealants and adhesives

Minimising the VOC content of paints, adhesives and sealants will contribute to a healthy and pleasant environment for staff. Low-VOC paints are readily available and cost around the same as standard paints. Natural paints tend to cost a little more than standard paints, but are completely VOC-free and do not contain toxic additives. Use of natural paints provides a tangible demonstration of your commitment to maintaining a healthy environment for employees. This is not the case with all low-emission paints. For more information on reference standards and labelling of low-VOC (no-VOC) paints, sealants, and adhesives, refer to Section 2.1 above, Management of indoor environment quality.

Selecting environmentally friendly paints, sealants and adhesives may:
- Achieve benefits without cost penalty (low-VOC products);
- Provide a healthy and productive environment for staff; and
- Provide a tangible demonstration of your concern for employee wellbeing.

Interior wall and ceiling paints

When considering interior wall and ceiling paints:
- Use light colours on interior surfaces can save energy by reducing artificial lighting needs;
- Select low-VOC paints;
- Remember that adding darker pigments to a low-VOC paint base can increase the VOC content, so check with your paint manufacturer. This is not the case for natural paints, which contain no VOCs or toxic additives regardless of the colour; and
- To keep costs and emissions low, consider using a low-VOC paint for ceilings and light-coloured walls, and natural paints where you want darker or bolder colours, for example reception areas or feature walls.

Varnishes, stains and enamels

For varnishes, stains and enamels (millwork, floors etc.):
- Where possible, use natural plant-based oils, resins and waxes as finishes to timber floors and millwork. Otherwise, use low-VOC water-based finishes.

Glues

In terms of glues:
- Use low-VOC, water-based glues.
### Checklist 16: Paints, sealants and adhesives

<table>
<thead>
<tr>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
</table>

#### Interior wall paints:
- Natural (plant-based)
- Low-VOC

#### Varnishes, stains and enamels (millwork, floors, etc.):
- Natural (plant-based oils, natural resins, waxes)
- Low-VOC

#### Glues/adhesives:
- Low-VOC
- Water-based

#### NOTES:

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3.2.10 Washrooms and toilets (if included within tenancy fit-out)

“In Canada, more than one trillion litres of untreated sewage is dumped into waterways each year, a volume that would cover the entire 7,800-kilometer length of the Trans-Canada Highway, six storeys high.”

Maude Barlow, Blue Covenant

“Water efficiency measures in commercial office buildings can easily reduce water usage by 30% or more. In a typical 10,000m² office building, for example low-flow fixtures coupled with sensors and automatic controls can save a minimum of approximately 4 million Litres of water per year, based on 650 building occupants each using an average of 75 Litres per day.”

CaGBC LEED Canada-NC 1.0 Reference Guide
If washrooms are new, installing efficient fittings and fixtures may:
  • Save you money on water bills for the life of the tenancy.

If you are upgrading existing washrooms, there are some very cost-effective things you can do to reduce your water use, which may:
  • Save water at little or no additional cost;
  • Align with employee values; and
  • Contribute to low water usage in your building.

When considering washrooms and toilets that are part of your tenancy fit-out:
  • Choose water-efficient fixtures and products that do not cost extra upfront and create ongoing water savings.\(^\text{47}\)

To make existing fixtures more efficient:
  • Install an aerator or flow restrictor which can reduce a tap’s water use significantly;
  • Use special products to convert some urinal types to waterless use;
  • Install displacement devices or flush arresters in inefficient toilets to reduce water use; and
  • Check the Internet as most water utilities have water saving information and products on their websites.

### Checklist 17:

<table>
<thead>
<tr>
<th>Washroom fixtures</th>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water-efficient toilets and urinals (including waterless urinals)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Water-efficient showerheads</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Water-efficient taps</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Hand sensors for taps</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Energy-efficient hand dryers or paper-conserving dispensers</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

### NOTES:

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3.2.11 Supplementary air conditioning

If you need supplementary air conditioning for server rooms or other special purposes, it’s important to choose the most energy-efficient system possible. Since air conditioning is a major contributor to peak demand for energy it can contribute disproportionately to energy bills. By choosing efficient lighting and controls you may be able to downsize supplementary air conditioning systems and achieve savings in capital costs as well as operating costs. Note that there are excellent advancements in computer systems which generate significantly less heat. By employing best practices in terms of supplementary air conditioning, you may be able to:

- Achieve a moderate to significant cost-saving opportunity (especially if you can avoid the need for it!);
- Maintain better comfort levels if it’s an efficient and properly sized system, rather than oversized; and
- Lower greenhouse gas emissions.

In regard to supplementary air conditioning, consider the following:

- If you need supplementary air conditioning, base your choice on cost over the life of your lease in preference to upfront cost;
- Before you install the system, reduce any unnecessary heat load through efficient lighting and enabling ENERGY STAR on electronic equipment (and install shading if you’re receiving heat load through windows);
- Correct sizing of the system according to needs and the existing base building system is important. If the air conditioner is oversized it will cycle on and off more, reducing efficiency and creating greater temperature fluctuations. This also causes parts to wear out more quickly;
- Choose an energy-efficient model with a high coefficient of performance, or that is ENERGY STAR qualified if it is a room or split system; and
- Install the system to allow easy access for servicing, and make sure it’s maintained regularly. Ideally controls should be timer-based or linked to occupancy detectors so the system operates only when needed.

### Checklist 18:

**Supplementary air conditioning**

<table>
<thead>
<tr>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>No supplementary air conditioning required</td>
<td>☐ ☐</td>
</tr>
<tr>
<td>Energy-efficient supplementary air conditioning sized for maximum efficiency</td>
<td>☐ ☐</td>
</tr>
</tbody>
</table>

**NOTES:**
“The foundation for addressing energy efficiency in individual buildings and portfolios is the seemingly mundane (and sometimes arcane) world of utility bills. While there is considerable room for improvement in billing reliability and clarity, unlocking the wealth of data contained in monthly utility bills is necessary for carbon reporting, and can also provide essential insight into current performance, point to areas for improvement, and verify the effectiveness of actions taken. Net metering technology expands this potential. Interval meters and smart meters can provide real-time windows into daily, weekly and seasonal building operations and areas for improvement.”
3.2.12 Sub-meters and ‘smart’ meters

Installing sub-meters or ‘smart’ meters to measure different energy and water uses enables you to:

- Better monitor, improve and promote your office’s good energy performance;
- Detect and fix performance problems, therefore saving you money;
- Align with employee values;
- Raise awareness of energy and water use; and
- Identify your performance and allow you to improve it.

Checklist 19: Smart metering

<table>
<thead>
<tr>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total energy metering/data collection as well as energy metering of specific building systems (i.e. major energy-use categories)</td>
<td>□</td>
</tr>
<tr>
<td>Separate metering of tenancy lighting, information technology (IT) rooms and general tenancy power usage</td>
<td>□</td>
</tr>
<tr>
<td>Water metering for entire building and grounds total potable water use</td>
<td>□</td>
</tr>
<tr>
<td>Separate water metering of specific building systems (i.e. irrigation, indoor plumbing and fixtures, cooling towers, hot water tanks)</td>
<td>□</td>
</tr>
</tbody>
</table>

NOTES:
“Today, we are the most numerous mammal on Earth, and our huge ecological footprint (that is, the amount of land and water needed to meet our demands) has been amplified beyond that of any other species by our technological muscle power, voracious appetite, and global economy. It has only been forty-seven years since Rachel Carson told of the costs of our technological prowess in her influential book Silent Spring. Despite her prescient warnings, pesticides are used today in far greater amounts and many are far more toxic than those used in 1962.”

David Suzuki, foreword of Now or Never

Research has found that indoor plants can:

- Contribute to the wellbeing of building occupants;
- Absorb and break down harmful airborne substances;
- Positively influence productivity, health and wellbeing;
- Lower workplace stress;
- Decrease respiratory disorders;
- Release moisture into the air;
- Absorb heat and noise;
- Demonstrate your concern for employee wellbeing; and
- Improve the look of your office.

Contact your professional commercial interior plantscaper for plants known for their effect on indoor air quality and those best suited to office environments. Avoid the use of toxic herbicides, pesticides, and fertilizers on these indoor plants.

**Checklist 20:**

<table>
<thead>
<tr>
<th>Indoor plants</th>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor plants with low water use (at least one plant per work setting)</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

**NOTES:**

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minimize waste
3.2.14 Demolition and construction waste management

Given that most office fit-out materials in Canada ultimately end up in landfill, reducing the amount of waste you send to landfill presents an opportunity to:

- Save money in new material costs and expensive landfill fees;
- Reduce your environmental impact;
- Reap cost savings in cities where landfill charges are high;
- Align with employee values; and
- Demonstrate your commitment to reducing resource use and waste going to landfill.

Ensure waste minimization principles are incorporated in your fit-out design, for example:

- Reuse existing materials where possible;
- Use an open plan layout and minimize the need for new walls where appropriate;
- Use modular systems that are easy to deconstruct and reuse;
- Avoid unnecessary materials and finishes;
- Use materials with high recycled content;
- Ask materials suppliers to take back and reuse packaging from materials delivered to site where appropriate;
- Ask your designer or contractor to prepare a waste management plan that includes targets for diversion of waste from landfill; and
- For large jobs, make sure the contractor has an EMP in place.

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**Checklist 21:**

<table>
<thead>
<tr>
<th>Waste minimization</th>
<th>Provided by tenant</th>
<th>Provided by building owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and implement a Construction Waste Management Plan with quantifiable material diversion goals</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Reuse materials on site where practical[49]</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Demolition contractors to maximize recycling of redundant fit-out materials (more than 50% or 75%)[50] and provide certification</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Contractors to maximize diversion of construction waste from landfill and incineration facilities (more than 50% or 75%)[51] and provide certification</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

**NOTES:**

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3.3 Office management and operation

Give this completed schedule to your office manager and administration staff.

In this section you will nominate key commitments in relation to:

- Company policies and procedures;
- Purchasing smart office equipment (electronics);
- Managing office equipment (electronics);
- Purchasing stationery and consumables;
- Lighting and HVAC management;
- Waste minimization and recycling;
- Sustainable transport strategies;
- Green power; and
- Cleaning and maintenance contracts.

3.3.1 Company policies and procedures

“The common perception has been that improving energy efficiency in buildings is all about technology, retrofitting and capital expenditure. The emerging new understanding is that policy, process and people are in fact at the heart of achieving and sustaining high levels of energy efficiency and deep reductions in greenhouse gas emissions.”

RE AL PAC
Real Pac

20 by 15
It is well recognized that the marketing value of a ‘total package’ is worth more than its individual parts. There are many things an organization can do internally to reduce the environmental impacts of its activities and promote the wellbeing of employees and the community at large, as part of a comprehensive sustainability policy. A comprehensive approach to corporate responsibility and sustainability is much more valuable than a few isolated initiatives and may allow you to:

- Sustain and increase profit;
- Ensure your policies and procedures include sustainability guidelines for all purchasing decisions;
- Reinforce employee and community wellbeing as core values for a sustainable organization; and
- Provide an opportunity to demonstrate leadership in corporate responsibility and sustainability.

NRCan’s OEE offers opportunities to raise awareness of energy efficiency in your organization and national recognition to organizations that successfully implement energy efficiency savings. More ideas on how promoting energy efficiency plans and savings in your organization can be found in the publication *A Guide to Implementing an Energy Efficiency Awareness Program* (2004).

www.oee.nrcan.gc.ca

Your organization may be considering or already implementing some of the options outlined below. If so, there is an opportunity to incorporate these commitments into your green lease.

**Checklist 22:**

**Company policies and procedures**

Check the attributes that apply to the tenant

**Policies and implementation mechanisms:**

- Organizational sustainability policy and implementation plan
- Mechanisms in place to encourage staff accountability, awareness and participation

**Organizational targets:**

- Annual targets for greenhouse gas reduction
- Annual targets for water use reduction
- Annual targets for reduction of office waste going to landfill

**Tenancy level monitoring and reporting:**

- Annual office waste audit

**NOTES:**
The NRCan OEE website for Energy Efficient Equipment for Commercial and Institutional Organizations can also show you simple calculations of how much you could save by using more efficient equipment. Lists of different equipment can be found at www.oee.nrcan.gc.ca.

General equipment and technical information for Commercial and Institutional Organizations such as information on how to purchase, operate, and maintain energy-efficient equipment, technical guides, case studies, modeling tools and energy use calculators, research, and other international publications can be found on the OEE website at www.oee.nrcan.gc.ca.

Selecting energy-efficient office equipment will save you money and help the environment. ENERGY STAR, in partnership with NRCan, has published a guide for selecting and using energy-efficient office equipment. “ENERGY STAR® for Office Equipment – Simple Steps to an Energy-Smart Office” (2009) can be used by everyone from procurement professionals in large organizations to small business owners and can be downloaded from www.oee.nrcan.gc.ca.
3.3.2 Purchasing smart office equipment (electronics)

Office equipment accounts for a large proportion of the average tenancy's energy use. Computers and monitors should be a focus, as they account for a significant percentage of office equipment energy costs. The savings don’t stop at energy; the biggest ongoing cost saving is probably the reduction in paper use made possible by choosing equipment that allows double-sided printing and print size reductions. Flat screens and efficient multi-function devices take up less office space too. Paper-efficient office equipment can significantly reduce paper costs and office waste. Energy-efficient office equipment can use less energy than standard equipment. It also generates less heat, which keeps your office more comfortable and can reduce air conditioning costs. All of this can be gained at no extra upfront cost. You have an opportunity to:

- Reduce energy, paper and toner costs;
- Reduce heat load from equipment and improves workspace comfort levels; and
- Reduce tenancy greenhouse emissions and paper waste;
- Consider leasing arrangements with companies who commit to recycling or reuse of equipment at the end of its lease period;
- Check that the equipment is ENERGY STAR compliant and make sure this function is enabled (see ‘Managing office equipment’);
- Compare the energy use of all the different power modes (e.g. active, standby, sleep, deep sleep). Office equipment spends much of its time in low power modes, and there can be a wide variation in efficiency even amongst ENERGY STAR compliant equipment;
- Check the specifications. Multi-function equipment (for example a combined fax/printer) can be a good idea if it saves you more energy than having separate machines; and
- Seek out manufacturers that take back non-recyclable product packaging for reuse.

Computers and monitors

When selecting computers and monitors:

- Choose efficient LCD flat-screen monitors that are ENERGY STAR compliant;
- Purchase laptop computers. Laptops are by far the most energy-efficient option, and when efficiently operated can use less energy than a desktop computer. They also allow more flexible working arrangements (work from home or other locations), which is becoming increasingly important to employees, especially younger employees; and
- Choose ‘none’ or ‘blank’ as a screensaver option. It’s a popular misconception that screen savers save energy. Not only do they use as much energy as the regular screen display, but many require considerable processing energy as well.

Photocopiers

When selecting photocopiers, cost savings can be achieved by choosing models that reduce demand for paper and consumables. Look for the following:

- Low energy use compared to other models in range (for all power modes);
- ENERGY STAR compliant;
- ‘Energy save’ button (users can select low power mode as soon as they finish copying);
- Programmable power management features;
- Rapid wake-up from energy-saving mode;
- Automatic duplex (double-sided) printing;
- Print reduction capability;
- Uses reused and recycled components;
- Uses remanufactured or refillable consumables (e.g. cartridges);
- Warranty allows use of paper with high recycled content;
- Product take-back and recycle at end of life (including easy disassembly of components for recycling);
- Seven day timer (auto switch-off on weeknights and weekends); and
- Ask manufacturers to demonstrate the power management features to staff upon installation. Note that accessories such as document feeders or collators may consume a lot of energy if they don’t power down with the rest of the machine. Ensure the quoted power rating in low power mode includes any power used by the accessories.

Printers

Printers that meet the criteria below should save in energy per unit per year, and save much more in reduced paper and toner costs. They will also reduce waste management costs. Look for the following:

- Low energy use compared to other models in range (for all power modes);
- ENERGY STAR compliant;
- Double-sided printing and print reduction (e.g. two-to-a-page) capacity;
• Toner/ink saving mode available;
• Trays for both double-sided and reused paper (single-sided) printing;
• The use of long-life consumables used in the production of the printer;
• The use of recycled or remanufactured consumables in the production of the printer;
• A manufacturer that has a lease option, or a manufacturer take-back program or recycling at the end of life; and
• A manufacturer that has measures in place to reduce ecological impact of manufacturing process.

Fax machines
Fax machines spend most of their time sitting idle. For this reason, it’s important to ensure the model you select has low energy use in all modes, particularly standby and sleep. Make sure your office has paperless fax capability (staff able to send and receive faxes by computer) to save time, paper and toner. When selecting a fax machine, look for the following:
• Low energy use compared to other models in range (all power modes, particularly standby and sleep);
• ENERGY STAR compliant;
• Plain paper fax, warranty allows reused paper to be used;
• Toner/ink saving mode available;
• Ability to scan double-sided pages;
• Long-life consumables available;
• Use of recycled or remanufactured consumables;
• A manufacturer that has a lease option, or a manufacturer take-back program or recycling at the end of life; and
• A manufacturer that has measures in place to reduce ecological impact of manufacturing process.

After lighting, efficient office equipment is the next biggest opportunity to reduce ongoing energy costs at no additional upfront cost.

According to the LEED Rating Systems, more than 70%, by rated-power, of the ENERGY STAR eligible equipment should be ENERGY STAR rated.
3.3.3 Managing office equipment (electronics)

Overseeing the efficient management of office electronics should be part of the job description of relevant staff, for example, your IT manager or your office administrator. To make sure the equipment is well implemented, it should also be included in staff training and induction. Reminder signs on equipment can also help. You have the opportunity to:

- Reduce energy, paper, and toner costs;
- Reduce heat load from equipment and improves workspace comfort levels; and
- Reduce tenancy greenhouse emissions and paper waste.

Consider the following:

- Simply ensuring the energy efficiency settings are enabled on all equipment can reduce the electricity consumption of your office equipment. Further reductions can be achieved by turning equipment off when it’s not in use;
- On delivery of equipment, ask the supplier to enable ENERGY STAR and demonstrate the power management settings on equipment. The power management settings usually allow you to select the time lapse after which the equipment moves to low power, sleep and off modes (set to as low as is practical). The default settings are often conservative and can lead to unnecessarily high energy bills;
- Some photocopiers require the lid to be closed to enable ENERGY STAR to function - check with your manufacturer and if this is the case use signage to remind staff to close the lid after use;
- Enable ENERGY STAR on all equipment (set lowest practical time spans to move to low power modes);
- Ensure staff switch off their computers and monitors overnight and when away from workstations for significant periods of time;
- Encourage use of ink and toner saving settings where appropriate;
- Encourage automatic duplex (double-sided) printing;
- Reuse any single-sided paper (in printers, photocopiers, for notepaper);
- Make sure staff know how to use paperless fax option;
- Use timers to switch off photocopiers overnight and on weekends; and
- Switch off equipment at the power point over holiday periods.

Checklist 24:

Managing electronic office equipment

| Checks are in place to make sure energy-efficient settings are enabled on all equipment | ○ |
| Signs for employees to switch off the power on equipment over weekends and holiday periods | ○ |
| Information or reminders for staff on saving energy and paper (e.g. signs) | ○ |

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3.3.4 Purchasing stationery and consumables

A purchasing policy that focuses on choosing products with low environmental impact will demonstrate your organization’s commitment to corporate responsibility and sustainability. This doesn’t need to cost you any more; in fact, it may save you money. You have the ability to:

- Achieve benefits at no additional upfront cost, with savings possible;
- Align with employee values;
- Provide a tangible demonstration of your environmental values to employees; and
- Demonstrate leadership in reducing resource use and waste.

Some of the general principles of sustainable product purchasing include:

- Minimize packaging (especially non-recyclable packaging);
- Purchase locally (to save on transportation and support local industries);
- Choose durable, long-life products (avoid disposable items e.g. cutlery, cups, where possible);
- Choose products with recycled content and a demonstrated low environmental impact; and
- Choose products (e.g. fair trade coffee, charity products) that demonstrate your corporate responsibility and sustainability commitments.

This checklist focuses on paper and toner – products consumed in significant quantities by offices, and for which there are readily available environmentally friendly options.

Checklist 25:

**Purchasing stationery and consumables**

- Office paper with high (60% or more) post-consumer recycled content, locally manufactured
- Remanufactured/refilled toner cartridges for printers and photocopiers

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3.3.5 Lighting and HVAC management

HVAC accounts for a significant proportion of total energy costs in commercial buildings. Lighting accounts for a large percentage of the average tenant’s energy costs. Light fittings with ‘built-in’ occupancy motion detectors can eliminate the need for switches and separate control circuitry. If you have installed HVAC systems to supplement the base building system, you can reduce their energy use simply by using and maintaining them correctly. Efficient management of lighting and HVAC has the potential to:

- Reduce costs associated with HVAC and lighting;
- Save on energy bills;
- Align with employee values; and
- Demonstrate leadership in reducing greenhouse emissions.

“Glare control is perhaps the most common failure in daylighting strategies. Glare is defined as any excessively bright source of light within the visual field that creates discomfort or loss in visibility. Large window areas provide generous amounts of daylight to the task area; but if not controlled properly, this daylight can produce unwanted glare. Measures to control glare include light shelves, louvers, blinds, fins and shades.”

CaGBC LEED Canada-NC 1.0 Reference Guide

Further references for energy modeling standards and minimum efficiency standards for building energy systems can be found in Appendix A: Technical Guide to Standards.

Checklist 26:

Checklight the attributes that apply to your building

Lighting and HVAC management

Lighting management:

- Introduction of daylight and views to the outside environment for a significant proportion of occupants
- Control systems regularly checked and maintained
- Signs for employees and cleaners to turn off lights after use and during after-hour periods
- Lights cleaned periodically to remove dust build-up
- Individual office lighting controls

HVAC thermostats (if controlled by tenant):

- Settings: 22°C or less (winter); 24°C or more (summer)
- Individual occupant thermal and ventilation control

Supplementary HVAC:

- Use temperature sensors and timers or occupancy sensors to control energy use
- Make sure the system is regularly checked, monitored, and maintained
- Set IT room temperature higher than surrounding office space (e.g. set to 24°C or higher)
- Discourage use of individual portable heaters and air conditioners
3.3.6 Waste minimization and recycling

Over half of a typical office’s potential waste is paper. Used paper is increasingly being recognized as a valuable resource. Reduction and recycling schemes can:

- Reduce the environmental impacts of paper use;
- Achieve direct savings in avoided paper costs and indirect savings in avoided landfill costs;
- Align with employee values; and
- Demonstrate leadership in reducing waste to landfill.

“Recycling of paper, metals, cardboard and plastics reduces the need to extract virgin natural resources. For example, recycling one tonne of paper prevents the processing of 17 trees and saves approximately 2.3 cubic meters of landfill space. Recycled aluminum requires only 5% of the energy required to produce virgin aluminum from bauxite, its raw material.”

CaGBC LEED Canada-NC 1.0 Reference Guide

**Checklist 27:** Waste minimization and recycling

<table>
<thead>
<tr>
<th>Check the attributes that apply to your building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste minimization strategies in place (e.g. products purchasing criteria, paper reuse, double-sided printing)</td>
</tr>
<tr>
<td>Secure document destruction contractor who processes waste to recycling, not landfill</td>
</tr>
<tr>
<td>Recyclables separated in accordance with building’s waste management policy</td>
</tr>
<tr>
<td>Mechanisms in place to engage staff in waste minimization and recycling</td>
</tr>
</tbody>
</table>

**NOTES:**
3.3.7 Sustainable transport strategies

Policies that promote sustainable and healthy transport will demonstrate your commitment to corporate responsibility and sustainability and help your employees save money, particularly in the context of rising gasoline costs. Policies that support flexible work arrangements (e.g. work from home or other locations) and reduce travel demand have been linked to increased employee satisfaction.

In Toronto, for example, the Bicycle User Group Network (BUG) exists to encourage and support cyclists who wish to improve conditions for cycling in their workplace, neighbourhood, community, or school. See if your community has its own BUG or start one of your own!

You have the potential to:

- Save on parking space rental;
- Save on business travel (e.g. taxis) by providing alternatives;
- Improve employee satisfaction; and
- Demonstrate leadership in corporate responsibility and sustainability.

Checklist 28:

Check the attributes that apply to your building

Sustainable transport strategies

- Strategies to reduce travel demand (e.g. flexible work arrangements, teleconferencing/telecommuting)
- Transport access guide (public transport information) for staff and clients
- Carbon offsets purchased for business travel
- Employee public transit subsidy programs
- Landlord to provide showers and secure bicycle paddock
- Landlord to provide alternative-fuel vehicles or alternative-fuel refuelling stations

NOTES:
Green Power
3.3.8 Green power

After you’ve taken measures to reduce energy use and implemented sustainable transport strategies, green electricity can provide the next step in reducing your organization’s greenhouse gas emissions. Green power comes from clean, renewable electricity sources such as hydroelectric, wind, and solar energy. Your building owner or manager may be able to help you access green electricity providers. Some leading businesses are becoming ‘carbon neutral’ by purchasing 100% green electricity. To note, while any tenant may purchase green power to reduce their carbon footprint, it is advisable to coordinate with your building manager before finalizing your purchase to confirm alignment with any potential efforts being taken at the overall building level.

Alternatively, you may want to purchase carbon offsets to reduce the carbon footprint from office energy use, and airplane and vehicle travel.

You have the opportunity to:
• Reduce and/or offset greenhouse gas emissions;
• Align with employee values; and
• Demonstrates leadership in corporate responsibility and sustainability.

According to the LEED Rating Systems, renewable or “green” power sources are defined as those that meet Environment Canada Environmental Choice program’s EcoLogo requirements (or equivalent) for green power supplies. More information on the EcoLogo Program and renewable power can be found at www.terrachoice-certified.com.

Checklist 29:

Green power

100% electricity used by the tenancy is green ☐
At least 50% of tenancy electricity is green ☐
At least 10% of tenancy electricity is green ☐

NOTES:
Is there any on-site renewable energy sources for tenant use, such as ground source energy, solar power generation or wind power generation?

Check the attributes that apply to your building.
3.3.9 Cleaning and maintenance contracts

An environmentally responsible cleaning service doesn’t have to cost you more. It’s important to make sure your cleaners will work with you, and not against you, to implement your corporate responsibility and sustainability commitments. You have the ability to:

• Achieve environmental benefits without extra costs;
• Maintain good indoor environment quality for employees; and
• Demonstrate concern for employee wellbeing.

If you are arranging your own cleaning contracts for your tenancy, make sure all the following items are covered. If the cleaning service is provided for you as part of your lease, refer to the information on building management in Section 2 of this Guide.

“There are no passengers on Spaceship Earth. We are all crew.”

Marshall McLuhan, 1964

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Checklist 30: Cleaning and maintenance contracts

| Cleaning contracts specify use of natural, solvent-free and hydrocarbon-free cleaning products^6^ | 
| Cleaning contracts specify compliance with the building’s energy and waste management policies |
| Cleaning contracts specify relevant cleaning and maintenance procedures for specialist ‘green’ products |
| No herbicides, fungicides, insecticides or pesticides used on plants, indoors and outdoors |
| Pest control measures specify nontoxic or the least-toxic chemicals to be used in the treatment of pests |

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NOTES:

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Volatile Organic Compounds (VOCs)

Many of the materials commonly used in commercial office fit-outs emit VOCs—chemical substances that become airborne at room temperature. Exposure to VOCs has been linked to a range of health problems including headache, fatigue, respiratory problems and skin irritations. VOCs are commonly emitted by paints, glues, composite timbers and synthetic fabrics and finishes.

For paints and coatings:

“No-VOC” or “Zero-VOC” options are categorized as 5g/L or less VOCs according to USEPA Reference Test Method 24 (www.epa.gov).

“Low-VOC” options can be categorized in “E” ranges if using the Master Painters Institute (MPI) Environmental Performance Rating, for example:

Latex, Interior (MPI gloss level 2)

<table>
<thead>
<tr>
<th>MPI VOC Ranges*</th>
<th>(grams/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E0</td>
<td>outside range or not applicable</td>
</tr>
<tr>
<td>E1</td>
<td>101 – 150 g/L</td>
</tr>
<tr>
<td>E2</td>
<td>51 – 100 g/L</td>
</tr>
<tr>
<td>E3</td>
<td>&lt; 51 g/L</td>
</tr>
</tbody>
</table>

*Ranges vary depending on the type of paint or coating, and color; refer to the MPI website for further information (www.specifygreen.com)

Other standards and references that can be used include:

- Green Seal Environmental Standard for Paints and Coatings (GS-11), Anti-Corrosive Paints (GC-3), Commercial Adhesives (GC-36), Stains and Finishes (GS-47), and Industrial and Institutional Floor Finishes and Floor Finish Strippers (GS-40) (www.greenseal.org);

- South Coast Air Quality Management District regulations regarding Architectural Coatings (Rule 1113) and Adhesive and Sealant Applications (Rule 1168) (www.aqmd.gov);
• Bay Area Air Quality Management District Regulation 8, Rule 51 for Adhesive and Sealant Products (www.baaqmd.gov); and

• MPI Green Performance™ Standards (GPS-1 and GPS-2) (www.specifygreen.com).

Founded in 1988 by the Government of Canada but now recognized world-wide, Environmental Choice Program’s EcoLogo is North America’s largest, most respected environmental standard and certification mark. EcoLogo provides customers – public, corporate and consumer – with assurance that the products and services bearing the logo meet stringent standards of environmental leadership. The EcoLogo Program is a Type I eco-label, as defined by the ISO, which means that the Program compares products/services with others in the same category, develops rigorous and scientifically relevant criteria that reflect the entire lifecycle of the product, and awards the EcoLogo mark to those that are verified by an independent third party as complying with the criteria. More information on paints, sealants and adhesives, as well as thousands of other products certified with an EcoLogo symbol, can be found at www.ecologo.org.

For carpets and rugs:
The Carpet and Rug Institute (CRI) has a Green Label/Green Label Plus program to test carpet, cushions and adhesives to help identify products with very low emissions of VOCs. For more information on products, standards and testing methodologies, go to the CRI website at www.carpet-rug.org.

For non-carpet finished flooring:
The FloorScore® program, developed by the Resilient Floor Covering Institute in conjunction with Scientific Certification Systems (SCS), tests and certifies flooring products for compliance with indoor air quality emission requirements adopted in California. Flooring products include vinyl, linoleum, laminate flooring, wood flooring, ceramic flooring, rubber flooring, wall base, and associated sundries. A flooring product bearing the FloorScore seal has been independently certified by SCS to comply with the volatile organic compound emissions criteria of the California Section 01350 program. Thus, products with the FloorScore seal have passed a third party certification process and are recognized as contributing to good indoor air quality in order to protect human health. More information on FloorScore can be found at www.rfci.com.

For general office furniture and building materials:
The GREENGUARD Environmental Institute (GEI) has established performance based standards to define goods with low chemical and particle emissions for use indoors, primarily building materials, interior furnishings, furniture, cleaning and maintenance products, electronic equipment, and personal care products. GREENGUARD Indoor Air Quality Certified® products and methodologies are listed on the GEI website at www.greenguard.org.

**Building Certification Programs and Energy Use Standards**

BOMA BEST is BOMA Canada’s national environmental certification program for existing commercial buildings. All BOMA BEST certified buildings must meet the Go Green Best Practices including having an energy audit, energy...
management and reduction plan, water audit, a recycling program, hazardous materials management, indoor environment management and tenant communications. For more information, and to see whether the building you are a tenant of is certified, go to www.bomabest.com.

The LEED Green Building Rating System™ is a third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED-CI, LEED-CS, a derivative of LEED-NC, is the green benchmark for the tenant improvement market. Other LEED Rating Systems that may be applicable for green leasors and leasees are LEED-NC and LEED-EB. The Canadian rating systems are an adaptation of the US Green Building Council's LEED Green Building Rating System, and have been tailored specifically for Canadian climates, construction practices and regulations. For more information, go to the CaGBC website at www.cagbc.org.

Standards that are referenced in LEED Rating Systems for energy efficiency include the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), Illuminating Engineering Society of North America (IESNA) Standard 90.1-1999 or 90.1-2004, respectively (later superseded by American National Standards Institute (ANSI)/ASHRAE/IESNA Standard 90.1-2007), Energy Standard for Buildings Except Low-Rise Residential Buildings (www.ashrae.org) and the most recent version of Natural Resources Canada Procedures for Modeling Buildings to CBIP and MNECB.

Energy audits should meet the requirements of the Level 1 assessment or Level 2 survey procedures as described in ASHRAE’s Procedures for Commercial Building Energy Audits (www.ashrae.org) as well as be certified by a Professional Engineer, as per the LEED Rating Systems.

Energy efficiency and performance can be rated using tools such as the USEPA’s ENERGY STAR Portfolio Manager tool or equivalent energy modeling procedures. These tools allow buildings to be benchmarked against national energy data and then set appropriate targets for reduction programs and may lead to credits within the LEED Rating Systems.

**Sustainable Cleaning Products, Materials, and Equipment**

As per the LEED Rating Systems, programs or standards for disposable janitorial paper and trash bags can include:

- USEPA Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners (www.epa.gov);
- Green Seal Environmental Standards for Paper Towels and Paper Napkins (GS-9) and Tissue Paper (GS-1) (www.greenseal.org); and/or
- EcoLogo Standards for Toilet Tissue (CCD-082) and Hand Towels (CCD-086) (www.terrachoice-certified.com).

Common standards used for cleaning products include:

- Green Seal Environmental Standards for Industrial and Institutional Cleaners (GS-37); and/or
- EcoLogo Standards for Disinfectants and Disinfectant Cleaners (CCD-166), for Cleaning and Degreasing Compounds – Biologically-based (CCD-110), for Hardsurface Cleaners (CCD-146), and for Carpet and Upholstery Cleaners (CCD-148).
Common standards used for specific cleaning purposes (not addressed above) include:

- Green Seal Environmental Standard for Industrial and Institutional Floor Finishes and Floor Finish Strippers (GS-40); and/or
- EcoLogo Standards for Biological Digestion Additives for Cleaning and Odour Control (CCD-112), for Drain and/or Grease Trap Additives – Biologically-based (CCD-113), for Odour Control Additives – Alternatives (CCD-115), and for Floor Care Products (CCD-147).

Common standards used for hand soaps include:

- Green Seal Environmental Standard for Hand Cleaners and Hand Soaps Used for Industrial & Institutional Purposes (GS-41); and/or

Cleaning equipment should also meet certain environmentally low-impact requirements within a green cleaning program. The Carpet and Rug Institute has a “Green Label” testing program for vacuum cleaners and a “Seal of Approval” testing program for deep-cleaning extractors. Equipment sound levels should be below 90 dBA and have high-efficiency, low-emission engines that meet the requirements of the California Air Resources Board (www.arb.ca.gov), or USEPA for that specific engine type.

**Energy Modeling and Efficiency Requirements**

For energy modeling standards and methodologies, refer to ASHRAE/IESNA Standard 90.1-2004 (or later) (www.ashrae.org) or the Model National Energy Code of Canada for Buildings (MNECB) 1997 (www.nationalcodes.ca) and applicable Commercial Building Incentive Program energy simulation guidance documents.

For common standards applicable to minimum energy efficiency in tenant space systems, refer to ASHRAE/IESNA Standard 90.1-2004 (or later), or local energy codes, which ever is more stringent.

The following text is excerpted from the REALpac “Office GREENLEASE™ National Standard Lease for Single-Building Projects – 1.03 – 2010”, released as of January 1, 2010. Users of the REALpac Office GREENLEASE™ may send an email to clane@realpac.ca to be notified of notes, bulletins and updates to REALpac Office GREENLEASE™ and to ensure timely access to the latest authentic version for comparative purposes. REALpac may make changes to its Office GREENLEASE™ at any time without notice.

SCHEDULE E
ENVIRONMENTAL MANAGEMENT PLAN

SECTION 1 - ENVIRONMENTAL OBJECTIVES

1.1 Context

The provisions of this Environmental Management Plan have been designed to encourage and promote the implementation of certain environmental objectives on the part of each of the Landlord and the Tenant.

[OPTION 1: The provisions of this Environment Management Plan shall form part of this Lease and comprise a covenant on the part of the Landlord or the Tenant, as the case may be, respectively.]

[OPTION 2: A breach by either the Landlord or the Tenant of any of the provisions of this Environmental Management Plan on the part of either the Landlord or the Tenant to be observed or performed, as the case may be, shall not constitute a default under this Lease, but the party committing such breach agrees, to the extent possible under the circumstances, to use commercially reasonable efforts to cooperate with the other party to remedy such breach. In addition to the foregoing, the Tenant and the Landlord agree to constructively consult with each other on: (i) enhancements that may achieve the Environmental Objectives and the Landlord and Tenant shall consider undertaking any such enhancements; and (ii) issues, events and circumstances likely to detract from achieving the Environmental Objectives.]

1.2 General Objectives

(a) The Tenant acknowledges the Landlord’s intention to operate the Building so as to provide for:

(i) a comfortable, productive and healthy indoor environment;

(ii) reduced energy use and reduced production, both direct and indirect, of Greenhouse Gases;

(iii) reduced use of potable water and the use of recycled water where appropriate;
(iv) the effective diversion of construction, demolition, and land-clearing waste from landfill and incineration disposal, and the recycling of tenant waste streams;
(v) the use of cleaning products certified in accordance with EcoLogo® (Canada), Green Seal™ (United States) or equivalent standards;
(vi) the facilitation of alternate transportation options for individuals attending at the Building;
(vii) the avoidance of high-VOC emitting materials, furniture and improvements within the Building and individual tenant premises; and
(viii) [Optional] the achievement of such other more specific targets as may be set out in Section 1.3 below.

(b) The Tenant also acknowledges that the Building currently has achieved or qualifies for the following accreditations, ratings or certifications: [NTD: choose as applicable]

(i) LEED® for New Construction and Major Renovations (“NC”) certified [silver, gold, platinum, as applicable];
(ii) LEED® for Core and Shell (“CS”) certified [silver, gold, platinum, as applicable];
(iii) LEED® for Existing Buildings: Operations and Maintenance (“EB:O&M”) certified [silver, gold, platinum, as applicable];
(iv) Building Research Establishment Environmental Assessment Method (“BREEAM”) rating of ____________;
(v) ENERGY STAR rating of ____________; and/or
(vi) BOMA BEST rating of <*>.

The Tenant agrees that the Landlord shall be entitled to operate, manage and maintain the Building so as to retain at least such level of accreditation, rating or certification.

(c) The Tenant acknowledges the Landlord’s intention to operate the Building so as to achieve and retain:

(i) a LEED® for Existing Buildings: Operations and Maintenance (“EB:O&M”) certified standard [silver, gold, platinum as applicable];
(ii) a top quartile ranking under BOMA BEST;
(iii) a top quartile ranking under the ENERGY STAR program; and/or
(iv) other. [NTD: add any other specific accreditation, such as Green Building Initiative’s Green Globes for Continual Improvement for Existing Buildings (“CIEB”), American Society of Heating, Refrigerating, and Air-Conditioning Engineers (“ASHRAE”) or other standard]

(d) The Landlord shall be entitled from time to time during the Term, to seek such other and further building certifications as may be reasonably necessary, in the Landlord’s sole opinion, to ensure the Building remains compliant with all Applicable Laws (including expected enhancements thereto), as well as certifications prevalent in the marketplace or necessary to attract leading tenants from time to time.
1.3 Specific Objectives

(a) Notwithstanding the provisions of Section 1.2 in this Schedule “E” above, the Tenant acknowledges the Landlord’s intention to achieve, and maintain, the following specific targets for the Building, by <*> [NTD: target date if not today]

(i) electricity use averaging not greater than <*> kilowatt hours per square foot of Rentable Area of the Building per year (kWh/sf/yr) [or equivalent kilowatt hours per square foot of Rentable Area where normalization of data has occurred];

(ii) natural gas consumption averaging not greater than <*> cubic metres per square foot of Rentable Area of the Building per year (M³/sf/yr) [or equivalent cubic metres per square foot of Rentable Area where normalization of data has occurred];

(iii) water consumption levels averaging not greater than <*> litres per square foot of Rentable Area of the Building per year (l/sf/yr) [or equivalent litres per square foot of Rentable Area where normalization of data has occurred];

(iv) a waste diversion rate not less than <*>% per year; and

(v) indoor CO₂ levels compared to outdoor CO₂ levels of not greater than <*> Parts Per Million (“PPM”) measured in accordance with the ASHRAE Standard 62.1-2004 (or later) or equivalent standard as it may be amended or replaced from time to time.

(b) The Landlord shall be entitled, acting reasonably, at any time and from time to time, to adjust the foregoing specific targets for the Building based on the type and intensity of space usage within the Building, having regard to the then current tenant base for the Building, the energy or other resource consumption profile of the Tenant, or to “normalize” the foregoing specific targets for the Building having regard to the then tenant base of the Building, the energy or other resource consumption profile of the Tenant, and the change in use or energy consumption for various parts of the Building, including underground parking areas (if any), food courts (if any) or other Common Areas.

(c) In addition, the Landlord shall be entitled to modify the foregoing specific targets to accord such targets with the standards that may be established pursuant to a third party certification or rating scheme such as LEED EB:O&M, ENERGY STAR, BOMA BESt, or any specific building labelling scheme that may be promulgated in Canada either on a voluntary or mandatory basis, from time to time.

1.4 Regulatory Standards

Notwithstanding the provisions of Section 1.2 and 1.3 herein, in the event that any governmental authority imposes a resource reduction target on the Building for any utility or resource otherwise than as set out in Sections 1.2 and 1.3 above, then the Environmental Objectives shall be deemed to have been amended so as to stipulate such resource reduction target and all changes required to be made by the Landlord to the Environmental Management Plan, or which are necessitated as a result of such mandatory resource reduction target, shall be deemed to be included and permitted, as the case may be, pursuant to the provisions of this Section and this Lease.
1.5 Carbon Offset Credits and Carbon Offset Costs

(a) The Landlord shall be entitled to all Carbon Offset Credits that may be created, credited or recoverable as a result of activities conducted within the Premises or the Building, excluding Carbon Offset Credits to which the Tenant is entitled in accordance with Applicable Law. The Landlord shall be entitled to allocate, acting reasonably, to the tenants of the Building, Carbon Offset Credits (net of all costs of aggregating, auditing and certifying same, not otherwise included in Operating Costs) created with the participation of the Tenant and/or other tenants in the Building.

(b) Where, as a result of energy consumption in the Building, the Landlord is required to incur a Carbon Offset Cost, such Carbon Offset Cost shall be included in Operating Costs and recoverable pursuant to the provisions of Section 6.5 of this Lease.

1.6 Determination of Compliance

Any issue in respect of the compliance of either party with the general objectives set out in Section 1.2 above or the specific objectives set out in Section 1.3 above shall be determined by an Expert as appointed by the Landlord, and the provisions of Section 16.6 of the Lease to which this Schedule forms a part, shall apply to such Expert’s determination. Such Expert shall advise, in respect of any question pertaining to the achievement of a specific objective of the Building or the Premises as to why the Building or the Premises, as the case may be, does not appear to be or have achieved such objective or target, the Expert’s perspective on the allocation of responsibility for such non-performance, and recommendations for improvement or ways in which the prescribed objective or target could be achieved.

SECTION 2 - ENVIRONMENTAL MANAGEMENT PLAN IMPLEMENTATION

2.1 The Tenant agrees to conduct its operations in the Building and within the Premises in accordance with the following provisions:

(a) Comfortable, Healthy and Productive Indoor Environment

(i) The Landlord shall be entitled at any time and from time to time to undertake Greenhouse Gas production monitoring and testing, including testing within the Premises, on reasonable Notice to the Tenant and accompanied by a representative of the Tenant if required, which representative Tenant agrees to make available.

(ii) The Tenant shall ensure that all work done within the Premises by the Tenant or its representatives shall be undertaken in accordance herewith and with the Tenant Construction Manual. Notwithstanding the foregoing, the Tenant shall specify that all paints, sealants and adhesives used or to be used within the Premises meet EcoLogo™, Green Seal™, South Coast Air Quality Management District (“SCAQMD”) regulations, MPI Green Performance™ Standards or equivalent so as to ensure no or low emissions of VOCs within the Building. Landlord may from time to time conduct tests to measure VOCs within the Premises.

(iii) The Tenant shall have regard to the Tenant Procurement Guidelines in procuring furniture, fixtures, materials, supplies and equipment to be brought into the Premises.

(iv) Should the Tenant be permitted to undertake its own cleaning of, or within, the Premises, the Tenant shall require that in any cleaning contracts granted directly by it, the cleaning contractor shall use
cleaning products certified in accordance with EcoLogo™, Green Seal™ or equivalent. The Landlord shall reserve the right to approve, acting reasonably, any such Tenant cleaning contracts, but without liability. The Tenant shall ensure that any cleaning contracts entered into by it require the cleaning contractor to comply with elements of the Environmental Management Plan applicable to it. Particularly, any cleaning contracts let by the Tenant in respect of specialized green facilities, such as waterless urinals, shall ensure the cleaning contractor properly understands and is trained on the maintenance of such specialized green facilities.

(v) At the Tenant's sole cost and expense, and subject to the approval of the Landlord acting reasonably, the Landlord agrees to purge Building air during a Tenant move in to minimize off-gassing of wallpaper, carpet and furniture glues and dyes.

(vi) OPTIONAL: [In undertaking any work within the Premises, the Tenant shall ensure that

(A) its contractors follow the air quality approach of the Sheet Metal and Air Conditioning National Contractors Association (“SMACNA”) Indoor Air Quality Guideline for occupied buildings under construction, 1995 (Chapter 3) (or later) or Canadian equivalent standard as it may be amended or replaced from time to time.

(B) filtration media for any air filtration required has a Minimum Efficiency Reporting Value (“MERV”) of 8 as determined by ASHRAE 52.2 - 1999, or Canadian equivalent or as amended from time to time and ensure that any such filtration media are replaced after construction and immediately prior to occupancy with filtration media having a MERV of 13.

(C) all paints and coatings achieve Green Seal’s standard GS-11 or Canadian equivalent requirement, all carpet meets the Carpet and Rug Institute (“CRI”) Green Label Plus Carpet Testing Program requirements, and any carpet cushion meets the requirements of the CRI Green Label Testing Program or Canadian equivalent.

(D) sustainable cleaning chemicals shall meet the Green Seal GS-37 standard or Canadian equivalent and carpet care products shall meet the requirements of GS-37 or Canadian equivalent and/or EcoLogo CCD-148.

(E) floor finishers and strippers shall adhere to Green Seal’s standard GS-40 or Canadian equivalent and/or EcoLogo CCD-147.

(F) contractors shall reduce connected lighting power density below that allowed by ASHRAE/IESNA Standard 90.1-2004 (or later) by a minimum of 15%.

(b) Reduce Indirect and Direct Energy Consumption and Greenhouse Gas Emissions

(i) The Tenant agrees to the installation of electricity smart meters in respect of the Tenant's consumption of electricity within the Premises, at the Tenant's sole cost and expense, payable as Additional Rent under this Lease.

(ii) The Tenant shall take reasonable steps to minimize its electrical consumption within the Premises such as, by way of example only, adopting conservation practices (e.g. reducing its use of lighting where unnecessary); the use of ENERGY STAR equipment; the types of lighting, lighting switches, sensors and zones as may be specified in the Tenant Construction Manual; and using the types of
equipment suggested in the Tenant Procurement Guidelines or the REALpac Green Lease Guide for Commercial Office Tenants.

(iii) The Landlord shall be entitled at any time or from time to time to acquire (A) all or part of the power for its Common Area and Facilities; or (B) shared electrical power from sources with low Greenhouse Gas emissions. In addition to the foregoing, where it is considered feasible to do so, the Landlord may install onsite generation capacity either to reduce peak load or to supplement base load requirements for the Building from time to time, and any incremental cost in so doing shall be included in Operating Costs. Without limiting the generality of the foregoing, the Tenant shall, where available on commercially reasonable terms, ensure that equipment purchased for the Premises is ENERGY STAR certified where available.

(iv) The Tenant shall be entitled at any time or from time to time to specify in writing that it wishes to have its electrical power consumption sourced or offset from renewable energy sources, and if it shall elect to do so, the cost of same shall be at the Tenant’s sole cost and expense, either payable directly by it to the supplier so chosen, or recoverable by the Landlord if paid by the Landlord as Additional Rent.

(v) The Landlord shall be entitled to benchmark itself against any building rating system for electrical, natural gas, water or other resource consumption.

(vi) The Landlord shall operate Building Common Areas and Facilities in accordance with, and use its reasonable efforts to cause other tenants to operate in conformity with, the Environmental Objectives.

(vii) [Optional: The Tenant agrees to limit annual average consumption of electricity within its Premises to <*> watts per square foot, exclusive of Building standard lighting and specific equipment which may be approved by the Landlord in writing from time to time.]

(c) Reduce Water Consumption

(i) The Tenant agrees to the installation of water meters or check meters in respect of the Tenant’s consumption of water, at the Tenant’s sole cost and expense, payable as Additional Rent under this Lease.

(ii) Where potable water usage is not a necessity, the Tenant acknowledges and consents to the use of treated recycled or treated natural water in washrooms and in other applications within and around the Building.

(iii) The Tenant consents to rainwater collection, treatment and reuse by the Landlord and wastewater collection, treatment and reuse by the Landlord from time to time. The Tenant consents to the use of water-saving appliances, such as waterless urinals, and other equipment as may be otherwise consistent with the Environmental Objectives.

(iv) The Tenant shall ensure that any fixtures purchased for the Premises shall be certified by the United States’ Environmental Protection Agency’s Water Sense Program or a Canadian equivalent, if any, and follow the Energy Policy Act of 1992 (or later amended), for water fixture performance requirements, or Canadian equivalent, as referenced in relevant LEED Reference Guides.

(v) [Optional: The Tenant agrees to limit annual average consumption of water within its Premises to <*> litres per square foot of Rentable Area of the Premises exclusive of consumption within Building standard washrooms.]
(d) Recycled Materials Usage and Waste Diversion

(i) Tenant shall be entitled to use recycled materials in its Leasehold Improvements and Alterations if so permitted either pursuant to the Tenant Construction Manual, or as may be consented to by the Landlord, acting reasonably. The Tenant agrees to consider locally extracted, harvested, sourced, and manufactured materials where possible in the completion of Leasehold Improvements, consistent with the terms as set out in the Tenant Construction Manual and the Tenant Procurement Guidelines.

(ii) Tenant shall be entitled to use recycled furniture, fixtures and equipment in the Premises to the extent consistent with the Environmental Objectives and the Tenant Procurement Guide.

(iii) The Tenant agrees to recycle or reuse or cause its contractor to recycle or reuse as much as possible any waste created in the demolition of existing Leasehold Improvements or Alterations within the Premises so as to minimize the amount of waste ending in landfill. The Landlord reserves the right to monitor and measure the amount of waste leaving the Building from the Premises and going to landfill from time to time. If available, the Landlord agrees to provide to the Tenant a staging area for the sorting and recycling of materials during construction.

(iv) The Landlord may refuse to collect or accept from the Tenant’s Premises waste that is not appropriately sorted into the appropriate recycling container.

(e) Tenant Certifications

(i) The Landlord will use commercially reasonable efforts to co-operate with the Tenant, at the Tenant’s sole cost, in the certification of the Premises pursuant to any rating scheme, such as ASHRAE standard 189.1, LEED-CI standard (as specified by the U.S. Green Building Council until adopted by the Canada Green Building Council) or equivalent standard as the Landlord may agree to, acting reasonably.

(ii) Tenant agrees to provide all reasonable information required by the Landlord consistent with the accreditation or certifications contained in the Environment Management Plan, in a form acceptable to the Landlord, acting reasonably, within 10 Business Days of request.

(f) External Environment

(i) [OPTIONAL: The Tenant shall ensure that any exterior work undertaken by it shall prevent loss of soil during construction, shall protect any soil stockpiled for re-use, shall minimize soil erosion from wind and water and shall prevent dust and air pollution due to wind blowing over any such soil or other construction materials.]

SECTION 3 - ENVIRONMENTAL ASSESSMENT AND REPORTING

3.1 The Landlord and Tenant, acting reasonably and in good faith, agree to cooperate from time to time in determining compliance with the Environmental Objectives as set out in Section 1 herein and in refining such Environmental Objectives from time to time. The Landlord and the Tenant agree to meet at least <*> annually in order to determine and discuss the achievement of the Environmental Objectives for the Building and the Premises and any further steps that could be taken to achieve the Environmental Objectives.

¹Note that this standard is, as of January 1st, 2010, a “draft” standard.

Refer to the USEPA’s Guidelines for HVAC System Maintenance (www.epa.gov) and the ANSI/ASHRAE Standard 52.2-1999 (or later), *Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size* (i.e. LEED specifies that during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used and replaced with filtration media with a MERV of 13 prior to occupancy, for all outside air intakes and inside air recirculation returns). After construction and before occupancy, flush-out procedures or baseline Indoor Air Quality testing should be performed. Refer to LEED Reference Guides or the USEPA protocol, *Compendium of Methods for the Determination of Air Pollutants in Indoor Air* (www.epa.gov/iaq/pubs). Ensure CFC-based refrigerants are not used in any HVAC&C refrigeration (R) systems in the building. If there are CFC based refrigerants being used, a phase-out plan must be put in place. More information on refrigerant management procedures can be found in the USEPA’s *Clean Air Act*, *Title VI, Rule 608* (www.epa.gov). Additional concerns that may need to be addressed include the determination of HVAC performance capabilities with the installation of various levels of MERV filter media or the implementation of a filter replacement program.

In addition, composite wood and agrifiber products, including core materials, should not contain added urea-formaldehyde resins. Composite wood and agrifiber products include particle board, MDF, plywood, oriented-strand board (OSB), wheat board, strawboard, panel substrates, and door cores.

Ranges for commercial and institutional organizations should be 22°C (or less) in the winter and 24°C (or more) in the summer. Setback temperatures (for when space is not occupied) should be 2-3°C lower than daytime setpoint temperature in winter and 2-3°C higher than daytime setpoint temperature in summer, according to Natural Resources Canada’s *Energy Efficiency Planning and Management Guide*, (www.oee.nrcan.gc.ca). Also refer to ANSI/ASHRAE Standard 55-2004, *Thermal Environmental Conditions for Human Occupancy* (www.ashrae.org) as required by the LEED Rating Systems.

Tenant premises may have to be isolated from other tenant premises to prevent cross contamination of indoor air or occupied space.

Landlords and tenants should not only discuss the monitoring and reporting of IAQ equipment performance but also may choose to discuss the full disclosure of building performance reports, the use of third-party verification for performance reports, the disclosure of building systems commissioning reports and results, and/or the ability of the HVAC equipment to adjust ventilation rates and air changes if necessary.

For energy modeling standards and methodologies discussed in the LEED Rating Systems, refer to ASHRAE/IESNA Standard 90.1-2004 (or later) (www.ashrae.org) or the *Model National Energy Code of Canada for Buildings (MNECB)* 1997 (www.nationalcodes.ca) and applicable *Commercial Building Incentive Program (CBIP)* energy simulation guidance documents. For common standards applicable to minimum energy efficiency in tenant space systems, refer to ASHRAE/IESNA Standard 90.1-2004 (or later), or local energy codes, which ever is more stringent. Options for monitoring and reporting tenant energy use include, but are not limited to, installation of sub-metering equipment and the development of a measurement and verification plan as per the Efficiency Valuation Organization’s (EVO’s) 2001 (or later) International Performance Measurement & Verification Protocol (IPMVP) *Volume 1: Concepts and Options for Determining Energy and Water Savings* or for new construction EVO’s 2003 (or later) *IPMVP Volume III: Concepts and Options for Determining Energy Savings in New Construction* (www.evo-world.org). In order to earn LEED credits, targets for reduction in energy cost for new buildings should be at least 25% less than the reference MNECB reference building (15% for existing buildings) or at least 18% less than the ASHRAE/IESNA 90.1-2004 (or later) reference building (5% for existing buildings).

According to the LEED Rating Systems, lower emissions from energy use reductions should be tracked and recorded for both base building and tenancy spaces. Reporting of emissions and emissions reductions should be through third-party voluntary reporting or certification protocol such as the World Resource Institute GHG Inventory Protocol (www.wri.org/project/ghg-protocol) or the Canadian Standards Association (CSA)/International Organization for Standardization (ISO) 14064 for Greenhouse Gases (www.iso.org). Buildings may also want to join a voluntary GHG Registry (e.g. The Climate Registry or CSA’s GHG Registry) which requires third-party verification. Emissions that should be documented include CO₂, sulfur dioxide (SO₂), nitrogen oxides (NOₓ), nitrous oxide (N₂O), methane (CH₄), mercury (Hg), small particulate matter (PM2.5), large particulate matter (PM10), VOCs, and nuclear waste.

Verification should be performed initially and on a routine basis to ensure that all energy-related systems in a building are installed, calibrated and perform as intended.

According to the LEED Rating Systems, renewable, or “green”, power sources are defined as those that meet Environment Canada Environmental Choice program’s EcoLogo™ requirements (or equivalent) for green power supplies. More information on the EcoLogo Program and renewable power can be found at www.terrachoice-certified.com. Both off-site and on-site renewable energy options should be considered.

In regards to energy performance and GHG emissions, landlords and tenants should discuss what is actually being measured in each performance report and what benchmarks are being used. Other items to consider include whether or not tenants pay directly for their energy consumption and/or what the impacts are if other tenants in the building have excessive energy use.

Under LEED, the building should be located within 800 meters of a commuter rail, light rail, or subway station or within 400 meters of two or more public bus lines.

To be located no more than 183 meters from the building and serve at least 5% of the tenant occupants, or as per the local authority, whichever rule is more stringent, according to LEED Rating Systems.

To be located no more than 183 meters from the building and serve at least 5% of the tenant occupants, or as per the local authority, whichever rule is more stringent, according to LEED Rating Systems.

Vehicles should be provided for at least 3% of building occupants (with preferred parking) or the refuelling stations should be located no more than 500 meters from the site and be able to service at least 3% of the total parking capacity of the site, to qualify for LEED credits.

Under LEED, priority parking should be provided for carpools/ vanpools and/or car-share program vehicles for at least 5% of tenant occupants or at least 10% of non-visitor parking spaces at site. Total parking capacity should not exceed minimum number for local zoning requirements.

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Refer to the US Energy Policy Act of 1992 (EPAct 1992) (or later), for water fixture performance requirements (www1.eere.energy.gov) that are to be met before a water use baseline is calculated for tenant space. Once a baseline is calculated, targets of 20% or 30% reduction in potable water use are recommended in the LEED Rating Systems.

This includes treatment of waste water on-site to tertiary levels and/or the use of other technologies to reduce the use of municipally provided potable water for building sewage conveyance 50% to 100% under LEED Rating Systems.

The use of captured stormwater or recycled site water for irrigation can reduce or eliminate the need to use potable water. Other options include micro irrigation, moisture sensors or weather data-based controllers. Targets should be at least 50% reduction to 100% reduction in potable water use, according to LEED Rating Systems.

This does not include durable goods or construction waste. Targets of at least 50% reduction (through recycling, reusing, and composting) of the ongoing consumables waste stream should be set, calculated by weight or volume, in order for buildings to earn LEED credits.

Fluorescent lamps contain mercury which is toxic to the human nervous system, but by recycling, the recovered mercury can be reused.

Entryway systems help reduce the amount of dirt, dust, pollen and other particles from entering the building and thus reduce or prevent contamination of the building interior.

See Appendix A: Technical Guide to Standards for specifications and recommended standards, as discussed in the LEED Rating Systems.

Exterior and hardscape management practices should avoid the use of harmful chemicals, avoid excess resource and energy use, and reduce solid waste and/or chemical run-off as compared to standard practices. Elements that can be addressed in an Exterior/Hardscape Management Plan include choice of maintenance equipment, snow and ice removal practices, exterior cleaning (windows, walls, sidewalks and pavement) and exterior paint and sealant use.
In order for buildings to earn LEED credits, a minimum of 10% or 20% of building materials should have at least 80% of their mass extracted, processed and manufactured within 800 km of site (or 2400 km if shipped by rail or water). Rapidly renewable materials and products are those made from plants that are typically harvested within a ten-year cycle, or shorter. Some materials to consider include bamboo flooring, wool carpets, straw board, cotton batt insulation, linoleum flooring, poplar OSB, sunflower seed board, or wheatgrass cabinetry.

A minimum of 50% of wood-based materials are to be FSC-certified, according to LEED.

In order for buildings to earn LEED credits, a minimum of 10% or 20% of building materials should have at least 80% of their mass extracted, processed and manufactured within 800 km of site (or 2400 km if shipped by rail or water).

For further energy efficiency and cost reductions, the connected power lighting density should be reduced 15-35% below that allowed in ASHRAE/IESNA Standard 90.1-2004 (or later), according to the LEED Rating Systems.

Under LEED, at least 45% of all occupants should have a direct line of sight to the outdoor environment in regularly occupied spaces. At least 50% or 75% of all regularly occupied spaces should achieve a minimum Daylight Factor (the ratio of outside luminance over inside luminance, expressed in percent) of 2% or should achieve at least 250 Lux (25 foot candles) of illumination, up to a maximum of 5400 Lux.

Under LEED, lighting controls should be provided for at least 50% or 90% of occupants, for at least 50% of individual workstations and in all shared multi-occupant spaces.

All non-emergency, built-in lighting with a direct line of sight to openings in the building envelope should be turned off after business hours in order to improve night sky access and reduce light pollution. In addition, ensure the angle of maximum candela from each interior luminaire intersects opaque interior surfaces and does not exit the building through windows, as per the LEED Rating Systems.

Rapidly renewable materials and products are those made from plants that are typically harvested within a ten-year cycle, or shorter. Some materials to consider include bamboo flooring, wool carpets, straw board, cotton batt insulation, linoleum flooring, poplar OSB, sunflower seed board, or wheatgrass cabinetry.

A minimum of 50% of wood-based materials are to be FSC-certified, according to LEED.

Composite wood and agrifiber products include particle board, medium-density fiberboard (MDF), plywood, oriented-strand board (OSB), wheat board, strawboard, panel substrates, and door cores. In addition, composite wood and agrifiber products, including core materials, should not contain added urea-formaldehyde resins.

Rapidly renewable materials and products are those made from plants that are typically harvested within a ten-year cycle, or shorter. Some materials to consider include bamboo flooring, wool carpets, straw board, cotton batt insulation, linoleum flooring, poplar OSB, sunflower seed board, or wheatgrass cabinetry.

The LEED Rating Systems target 30% of the total furniture and furnishings budget of a tenant improvement project to come from salvaged, refurbished or used furniture/furnishings. It is also recommended that all furniture, workstations, and seating be GREENGUARD Indoor Air Quality Certified.

The LEED Rating Systems target 30% of the total furniture and furnishings budget of a tenant improvement project to come from salvaged, refurbished or used furniture/furnishings. It is also recommended that all furniture, workstations, and seating be GREENGUARD Indoor Air Quality Certified.

The use of building materials and products that are regionally extracted/harvested/recovered and/or manufactured (within 800 kilometres) is required under LEED.

More than 70%, by rated-power, of the ENERGY STAR eligible equipment should be ENERGY STAR rated, according to the LEED Rating Systems.
Metering data should be recorded on a regular basis and compiled into monthly and annual summaries. System-level metering should cover at least 40% or 80% of total annual water consumption of the building and 40% or 80% of total expected annual energy consumption of the building, as per the LEED Rating Systems. Meters should also be calibrated within the manufacturers recommended interval unless owned by third-parties (i.e. utilities, government).

According to LEED Rating Systems, tenants should retain or maintain at least 40% or 50%, by area, of existing non-shell, non-structure components in tenant fit-out design and implementation. It is also recommended to use salvaged, refurbished, or reused materials for at least 5% or 10% of the total cost of building (construction) materials, excluding furniture and furnishings.

This can be measured by weight or volume, but it must be consistent throughout.

Long term-lease commitments are considered “greener” than short-term lease commitments since moving consumes not only operational and financial resources, but environmental resources as well. Committing to a lease that is more than 10 years long will help reduce environmental impacts such as the creation of construction waste and pollutants from frequent consumption/transportation of materials. Ensure this policy includes sustainability guidelines for all purchasing decisions.

Under LEED, at least 45% or 90% of all occupants should have a direct line of sight to the outdoor environment in regularly occupied spaces. At least 50% or 75% of all regularly occupied spaces should achieve a minimum Daylight Factor (the ratio of outside luminance over inside luminance, expressed in percent) of 2% or should achieve at least 250 Lux (25 foot candles) of illumination, up to a maximum of 5400 Lux.

For further energy efficiency and cost reductions, the connected power lighting density should be reduced 15-35% below that allowed in ASHRAE/IESNA Standard 90.1-2004 (or later), according to the LEED Rating Systems.

As discussed in the LEED Rating Systems, daylight responsive controls should also be installed in all regularly occupied spaces within 4.5 meters of windows and under skylights. Lighting controls should be provided for at least 50% to 90% of occupants, for at least 50% of individual workstations and in all shared multi-occupant spaces.

Ranges for commercial and institutional organizations should be 22°C (or less) in the winter and 24°C (or more) in the summer with setback temperatures (for when space is not occupied) 2-3°C lower than daytime setpoint temperature in winter and 2-3°C higher than daytime setpoint temperature in summer, according to Natural Resources Canada’s Energy Efficiency Planning and Management Guide, (www.oee.nrcan.gc.ca).

Also refer to ANSI/ASHREA Standard 55-2004, Thermal Environmental Conditions for Human Occupancy (www.ashrae.org), as per the LEED Rating Systems.

Refer to the ANSI/ASHRAE Standard 62.1-2004 (or later), Ventilation for Acceptable Indoor Air Quality, for buildings with operable windows (www.ashrae.org). Thermal and ventilation controls should be provided for at least 50% of the occupants and all shared multi-occupant spaces, according to the LEED Rating Systems.

Under LEED, the building should be located within 800 meters of a commuter rail, light rail, or subway station or within 400 meters of two or more public bus lines.

To be located no more than 183 meters from the building and serve at least 5% of the tenant occupants, according to the LEED Rating Systems.

Vehicles should be provided for at least 3% of building occupants (with preferred parking) or the refuelling stations should be located no more than 500 meters from the site and be able to service at least 3% of the total parking capacity of the site in order to earn LEED credits.

Refer to Section 2.6, above, or Appendix A: Technical Guide to Standards for common standards used to rate sustainable and environmentally-friendly cleaning products/processes.
Green Lease Guide
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