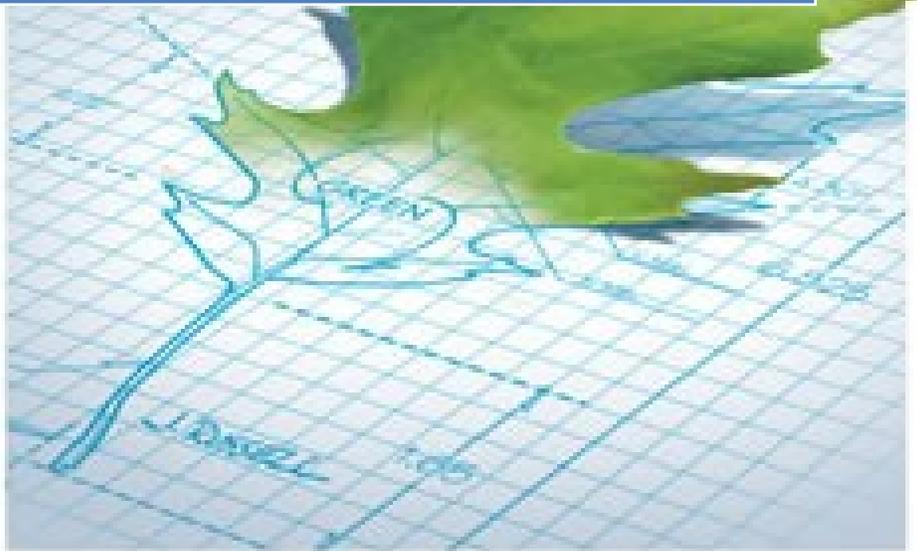


# Province of New Brunswick Green Building Policy for New Construction & Major Renovation Projects



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## **1.0 Policy Statement**

The Government of New Brunswick is committed to ensuring new and existing government funded buildings are constructed and operated consistent with sustainable design and green principles and will therefore incorporate sustainable building practices into the planning, design, construction and operation of these facilities.

## **2.0 Vision**

The vision of this policy is for the Government of New Brunswick to provide a leadership role in promoting sustainable building practices that will make a significant improvement in how buildings that are funded either in whole or in part by the Government perform over their entire lifecycle from an economic and environmental perspective.

## **3.0 Purpose**

The overall purpose of this policy is to demonstrate the Government's commitment to the economic, environmental and societal improvements made possible by adopting high-performance sustainable building practices and to provide leadership and guidance in the application and development of sustainable building practices in the province of New Brunswick.

With the adoption of this policy, the Government will strive to foster a market transformation towards high-performance green buildings for the benefit of all New Brunswickers.

## **4.0 Goals**

The goals of the policy are as follows:

- Significantly reduce energy consumption in new and renovated Government of New Brunswick funded buildings. Lower energy consumption will reduce greenhouse gas emissions and provide cost savings for the people of New Brunswick
- Reduce overall expenditures by taking a long-term, lifecycle approach to capital planning decisions
- Provide improved indoor environments that serve to enhance the health and well-being of building occupants
- Mitigate the detrimental environmental effects associated with building construction and operation
- Create a commonality to high-performance sustainable building standards across all provincial government departments, crown corporations and agencies as well as other organizations that receive funding from the provincial government for building construction and renovation projects

- Stimulate markets for sustainable technologies and products to accelerate the adoption of high-performance sustainable building practices in the private sector
- Align the planning, design, construction and operation of provincially funded buildings with the green building policy commitments made at the Council of the Federation meeting in July 2008 and in the Speech from the Throne, December 2008

## 5.0 Background

The built environment has a significant impact on the natural environment, human health, and the economy. Canada's residential, commercial and institutional buildings account for 54% of Canadian electricity consumption and 30% of total greenhouse gas emissions. The communities in which these buildings are located account for approximately 50% of all energy consumed in Canada<sup>1</sup>. The building sector is also a major source of air and water pollution, solid waste and has other detrimental environmental impacts.

In response to increasing energy costs and environmental concerns, government leaders are adopting green building policies and sustainable development practices to improve energy efficiency and reduce the environmental impact from the building sector. By adopting green building strategies, both the economic and environmental performance of the built environment can be optimized. Green buildings require less energy to operate, contribute fewer emissions to the environment, conserve water, generate less solid waste, and provide more comfortable and productive environments for their inhabitants.

High-performance green building practices can be integrated into buildings at any stage, from planning and design, to renovation and deconstruction. However, the most significant benefits can be obtained if the design and construction team takes an integrated approach from the earliest stages of a building project.

The National Building Code (NBC), which has been adopted for use in New Brunswick, is essentially a code of minimum regulations for public health, accessibility, fire safety and structural sufficiency for buildings. The code does not currently have minimum standards for green building design, construction or renovations. Instead, planners and designers use voluntary green building design guidelines and third-party certification systems such as LEED<sup>®</sup> (Leadership in Energy and Environmental Design) and Green Globes Design<sup>™</sup> to assess and rate the overall design.

Decisions the Government makes today about the design, construction and operation of buildings will impact the operating budgets as well as the physical, environmental, and social health of the communities where these buildings are situated for many years to come. By adopting high-performance green building practices, the Government serves as a model for all development in New Brunswick. This policy is expected to yield long term savings by efficiently managing energy, water, and waste while improving the health and comfort of building occupants.

This policy for New Construction and Major Renovation Projects is the first of three components that will form the entirety of the Provincial Green Buildings Policy. The other two components of the policy are the operating, maintenance and energy consumption standards that would apply

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<sup>1</sup> Environment Canada Buildings and Appliances Task Force, 2009

to existing Government owned buildings; and the design, environmental and energy requirements that would apply to accommodations leased by Government. The Provincial Green Building Policy will be expanded to include these components after the policy for new construction and major renovation projects has been adopted.

## 6.0 Scope

Building projects covered and government entities and other organizations affected by this policy are as follows:

### 6.1 Building Projects Covered by this Policy

This policy applies to the construction and major renovation of all public buildings larger than 500 square metres floor area (excluding Industrial occupancies and Farm buildings as defined in the National Building Code of Canada) *and* social housing projects, 3 storeys or less in height, having a building area less than 600 square metres (i.e. Part 9 Buildings as defined in the National Building Code of Canada), or those of wood-framed construction.

*A major renovation is defined as any project where the estimated renovation costs exceed 50 per cent of the cost to construct a new building of equivalent size and function.*

### 6.2 Government Entities and Organizations affected by this Policy

All entities within Parts I to IV of the Public Service must comply with this policy within the parameters of their respective overarching legislative schemes.

This policy also applies to any new building or renovation project for which an organization receives Funding from the Province of New Brunswick (PNB) for a new building or renovation project as described in Sub-section 6.1. (See Definitions Section, page 10, for definition of Funding)

### 6.3 Effective Date and Transition Period

Phase 1 – For purposes of entities in Parts I to IV of the Public Service this policy is effective April 1, 2010. (Note: Projects that have received Funding approval prior to this date are exempt from the policy but are encouraged to incorporate the green building practices detailed in Section 7 to the greatest extent practical.)

Phase 2 – For purposes of organizations that receive Funding for new building or renovation projects from PNB this policy is effective January 1, 2011.

## 7.0 Technical Requirements

The following are the mandatory technical requirements applicable to each of the building project types defined below:

### Type 1 Building Projects

Type 1 buildings, defined as having a floor area greater than 2,000 square metres, shall meet the requirements of Sub-section 7.1 and 7.2.1 of this policy.

### Type 2 Building Projects

Type 2 buildings, defined as having a floor area of 1,000 to 2,000 square metres, shall meet the requirements of Sub-section 7.2.2 of this policy.

### Type 3 Building Projects

Type 3 buildings, defined as having a floor area of 500 to 999 square metres, shall meet the requirements of Section 7.2.3 of this policy.

### Type 4 Building Projects

Type 4 buildings, defined as provincially funded social housing, 3 storeys or less in height and having a building area less than 600 square metres (i.e. Part 9 buildings as defined in the National Building Code of Canada), or those of wood framed construction, shall meet the requirements of section 7.2.4 of this policy.

Note: although not mandatory, all non-residential projects less than 500 square metres floor area are encouraged to incorporate as many energy conservation and green building practices as practical for the project. Contact the Green Coordinator identified in Sub-section 9.1 for recommendations specific to smaller building projects and for assistance in identifying green opportunities.

## 7.1 Integrated Design Process

All Type 1 buildings shall use an integrated design process. The integrated design process (IDP) is a holistic process that considers the many disparate parts of a building or renovation project, and examines the interaction between design, construction and operations to optimize the energy and environmental performance of the project. The IDP brings together all of the project design professionals and consultants along with the building owner, the general contractor and sub-contractors (if already selected), future occupants and any other stakeholders early in the project initiation and planning stages. The highest performing buildings result from active, consistent, organized collaboration among all the stakeholders.

While not mandatory for Type 2, 3 and 4 building projects, it is recommended that an IDP be utilized to the fullest extent practical. On multi-disciplinary projects employing an architect and engineering professionals, it will be a mandatory requirement for the architect to engage the services of engineers early in the schematic design phase of the project.

*For more information about the Integrated Design Process, please refer to:*

- *Integrated Process Design Guide, Canada Mortgage and Housing Corporation*  
[http://www.cmhc-schl.gc.ca/en/inpr/bude/himu/coedar/upload/Integrated\\_Design\\_GuideENG.pdf](http://www.cmhc-schl.gc.ca/en/inpr/bude/himu/coedar/upload/Integrated_Design_GuideENG.pdf)

- *Integrated Design Process, Whole Building Design Guide, National Institute of Building Sciences*  
[http://www.wbdg.org/design/engage\\_process.php](http://www.wbdg.org/design/engage_process.php)

## 7.2 Energy and Environmental Requirements

### 7.2.1 Type 1 Buildings

All Type 1 buildings (those with a floor area greater than 2,000 square metres) shall achieve a minimum Silver certification under the Canada Green Building Council's (CaGBC) LEED® Canada-NC Green Building Rating System for New Construction and Major Renovations. Type 1 buildings must also comply with all of the mandatory technical requirements outlined in Appendix A.

*LEED® is a consensus-based third-party certification program and an internationally accepted benchmark for the design, construction and operation of high performance green buildings. For Canada, LEED® is offered by the CaGBC under licence from the U.S. Green Building Council (USGBC). The Canadian rating systems are an adaptation of the USGBC LEED® Green Building Rating System, tailored specifically for Canadian climates, construction practices and regulations.*

*LEED® awards points for specific prerequisites and credits that are organized into five categories: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality. Additional categories, Innovation & Design Process and Regional Priority, address sustainable building expertise as well as design measures not covered under these five categories. Building projects using LEED® are certified with a rating – Certified, Silver, Gold or Platinum – that is determined by the total number of points achieved.*

*For more information about LEED® Canada, please refer to:*

*Leadership in Energy and Environmental Design, Canada Green Building Council*

<http://www.cagbc.org/leed/what/index.php>

### 7.2.2 Type 2 Buildings

All Type 2 buildings (those with a floor area between 1,000 to 2,000 square metres) shall meet the Efficiency New Brunswick edition of the Advanced Buildings Core Performance™ Guide requirements specified in Appendix B, and although not required to register nor certify as a LEED® Canada-NC project with the CaGBC, shall also meet the intent of the LEED® Canada-NC requirements identified in Appendix A.

*Efficiency New Brunswick's edition of Advanced Buildings Core Performance™ is a prescriptive program designed to achieve significant, predictable energy savings in new commercial construction. The program describes a set of simple, discrete integrated design strategies and building features. When applied as a package, they result in energy savings of at least 20 to 30 per cent beyond the*

*performance of a building designed to meet the requirements of the Model National Energy Code for Buildings 1997 (MNECB).*

*The program is based on the results of an extensive energy modeling protocol used to identify consistent strategies that lead to anticipated energy savings across climates and building types. The strategies that make up the program represent 'state of the shelf' technologies and practices that are well understood and broadly available in the building industry, and have been demonstrated to be cost-effective.*

*For more information on Advanced Buildings Core Performance™, please see:  
<http://www.energycnb.ca/enb/3734/Prescriptive-Path---Core-Performance>*

*Model National Energy Code for Buildings, National Research Council Canada  
<http://www.nationalcodes.ca/eng/necb/index.shtml>*

### 7.2.3 Type 3 Buildings

All Type 3 buildings (those with a floor area between 500 to 999 square metres) shall meet the Efficiency New Brunswick edition of the Advanced Buildings Core Performance™ Guide requirements specified in Appendix B and the following green building practices.

- Water Efficiency: Use fixtures with flow rates not to exceed:  
Toilets: 6 Litres/flush      Faucets: 8.3 Litres/min @ 414 kPa  
Urinals: 3.8 Litres/flush      Showerheads: 9.5 Litres/min @ 552 kPa
- Lighting: Incandescent lighting is prohibited.
- Construction Waste Recycling: Setup a recycling program for cardboard, metal, plastic, clean wood, glass and gypsum wallboard waste generated during the construction process.
- Low-Emitting Materials: Use only low Volatile Organic Compound (VOC) paints, adhesives, sealants, carpets, composite wood and wood laminate products.

### 7.2.4 Type 4 Buildings

Type 4 buildings shall meet the mandatory energy and environmental requirements described in Appendix C.

## 8.0 Equivalencies, Reduced Requirements or Exemptions

### 8.1 Equivalencies

The Green Globes Design™ for New Buildings and Retrofits will be considered an acceptable alternative green building rating system to LEED® Canada-NC. Achieving a minimum 3 Green Globe rating and meeting the Green Globes™ equivalencies to the

mandatory technical requirements for Type 1 buildings listed in Appendix A is an accepted equivalent to Sub-section 7.2.1 of this policy. Please contact the Green Building Coordinator identified in Sub-section 9.1 for a current list of Green Globes™ equivalencies.

Project proponents may also suggest additional alternatives to this policy at the schematic design and cost estimating phase of their project. The proponent must demonstrate that the intent of this policy will be maintained and that the performance of the building will meet or exceed the requirements in Section 7 applicable to the building type.

*Green Globes Design™ is a consensus based assessment tool that is operated and maintained by ECD Jones Lang LaSalle Ltd. Green Globes Design™ is both a guide for integrating green design principles and an assessment protocol. Using confidential questionnaires for each stage of project delivery, the program generates comprehensive on-line assessment and guidance reports. Using Green Globes helps to design a building that will be energy and resource efficient, will achieve operational savings and be healthier to work or live in.*

For more information about Green Globes Design™, please see:  
<http://www.greenglobes.com/design/about.asp>

## 8.2 Reduced Requirements

Lower levels of energy and environmental requirements may be accepted where it can be clearly demonstrated by a registered architect or professional engineer that the requirements specified in Sub-section 7.2 are not practical from a lifecycle cost basis, or would otherwise unduly impair the function, usability or appearance of the proposed project.

Requests for Equivalencies and Reduced Requirements for building Type 1, 2 & 3 projects should be directed to the Green Building Coordinator identified in Sub-section 9.1. Requests for Type 4 building projects covered should be directed to the Energy Efficiency and Conservation Agency and/or the Department of Social Development.

## 8.3 Exemptions

Certain projects may be exempted from some or all of the requirements of Section 7 where it can be clearly demonstrated that specific project requirements, features or conditions make it impractical to follow the policy. Examples of projects that may be exempted from some or all of the requirements include designated historical buildings, temporary or seasonal buildings, building repairs/renovations in response to a public emergency and buildings with specialized functions.

Requests for Exemptions for Type 1, 2 & 3 building projects must be made in writing to the Deputy Minister, Department of Supply and Services. Requests for Type 4 building projects should be directed to the Energy Efficiency and Conservation Agency and/or the Department of Social Development.

All exempted and reduced requirement projects must still attempt to incorporate green building practices to the fullest extent practicable.

## 9.0 Policy Administration, Implementation and Support

Type 1, 2 & 3 building projects shall be monitored by a Green Building Coordinator defined in Sub-section 9.1. Administration and monitoring of Type 4 Building Projects (social housing projects) shall be the joint responsibility of the Energy Efficiency and Conservation Agency and the Department of Social Development.

To inform entities outside Government covered under the scope of this policy, it will be necessary for all entities in Parts I to IV of the Public Service to ensure that their respective funding agencies include in their funding agreements any clauses necessary to facilitate implementation of the Policy.

### 9.1 Green Building Coordinator

A Green Building Coordinator shall be responsible for policy coordination and support for Type 1, 2 & 3 building projects covered under this policy. The duties include:

- ↪ To serve as the primary source for information regarding the green building policy in the province of New Brunswick
- ↪ To provide outreach and education for government entities and other organizations affected by the policy
- ↪ To provide any necessary clarifications, interpretations, or explanations required to support the application of the policy
- ↪ To provide liaison with various industry stakeholders to ensure the policy is effectively implemented
- ↪ To monitor the impacts and results generated by the policy
- ↪ To coordinate with the Green Building Policy Interdepartmental Steering Committee in drafting future revisions and updates to the policy

### 9.2 Project Verification

For Type 1, 2 & 3 building projects, the project proponent shall appoint a contact person who will be responsible for compliance with this policy and for communicating with the Green Building Coordinator.

In the planning stage of the project, the project proponent contact person shall submit the following information to the Green Building Coordinator:

- Project name, location, building area and floor area
- Intended function of the building
- Names and contact information of key project personnel

The verification process applicable to each of the four building types identified in Section 7.0 that will be used to confirm adherence to the policy is as follows. All required

documentation is to be forwarded to the Green Building Coordinator or Department of Social Development/Energy Efficiency and Conservation Agency as applicable for the building type. Final documentation is required within 60 days of post-occupancy completion of project.

9.2.1 Type 1 Buildings (>2,000 m<sup>2</sup>)

- Submit copies of minutes from all Integrated Design Process meetings
- Submit a copy of the green building certification report (LEED<sup>®</sup>, Green Globes<sup>™</sup> or approved equivalent) achieved for the project
- Provide a copy of the projected MNECB 1997 energy performance validation report received as part of the Natural Resources Canada's ecoENERGY for Buildings and Houses Initiative, or a validation report from an equivalent provider as defined by the CaGBC (or Green Globes<sup>™</sup>)

For more information regarding Natural Resources Canada validation of projected energy performance with respect to MNECB 1997 please see: <http://oee.nrcan.gc.ca/commercial/newbuildings/validation.cfm?attr=20>

9.2.2 Type 2 Buildings (1,000 - 2,000 m<sup>2</sup>)

- Submit a copy of the Core Performance<sup>™</sup> certificate achieved for the project.
- Provide a signed declaration from the architect or engineer of record that the project has complied with the LEED<sup>®</sup> Canada-NC requirements of Appendix A.

9.2.3 Type 3 Buildings (500 - 999 m<sup>2</sup>)

- Provide a signed declaration from the architect or engineer of record, or responsible party, that the project has complied with both the environmental requirements of Sub-section 7.2.3 and the specific requirements of the Core Performance<sup>™</sup> Guide listed in Appendix B.

9.2.4 Type 4 Buildings

- Plan Review: Submit building drawings and specifications for review prior to construction. The proponent will be informed of any deficiencies so that modifications to the building specifications can be made prior to construction.
- Verification: Building specifications and construction will be verified by site visits and testing as required at or near substantial completion of the project. The proponent will be informed of any deficiencies so that modifications can be made prior to release of final payment from the funding department.

## 10.0 Reporting and Evaluation

The impacts of this policy will be assessed on an ongoing basis by the Green Building Coordinator. Recommendations for revisions to this policy will be made when necessary after consultation and approval by the Green Building Policy Interdepartmental Steering Committee. The policy shall be reviewed annually to ensure alignment with applicable codes, standards and technologies.

Following one-year of occupancy of completed Types 1, 2 & 3 building projects, project proponents will be required to provide a post-occupancy comparison of target efficiencies versus actual. This information will be compiled by the Green Building Coordinator and will be used to evaluate the impact of the policy. Post occupancy data for Type 4 building projects (social housing) are not required.

### Definitions Used in this Policy:

**Building Area:** As defined in the NBC, is the greatest horizontal area of a building above grade within the outside surface of exterior walls or within the outside surface of exterior walls and the center line of fire walls.

**Built Environment:** The man-made surroundings that provide the setting for human activity.

**Farm Building:** a building or part thereof that does not contain a residential occupancy and that is associated with and located on land devoted to the practice of farming, and used essentially for the housing of equipment or livestock, or the production, storage or processing of agricultural and horticultural produce or feeds.

**Floor Area:** As defined in the NBC, is the space on any storey of a building between exterior walls and required firewalls, including the space occupied by interior walls and partitions, but not including exits, vertical service spaces, and their enclosing assemblies.

**Funding:** Building projects of the type described in this policy that are funded in whole or in part using the following Government of New Brunswick funding types will be subject to this policy:

- a. Direct capital contributions
- b. In-kind contributions such as donations of property, and services
- c. Operating funding intended for the payment of mortgages and/or loans incurred from a construction or renovation project (e.g. nursing homes)

Operating funding not related directly to building projects, or the debt resulting from same, will *not* trigger the application of this policy (e.g. year-to-year grants for salaries and other operating expenses).

**Green Building:** An integrated framework of planning, design, construction, operations and demolition practices that encompasses the environmental, economic, and societal impacts of buildings. Green Building practices recognize the interdependence of the natural and built environments and seek to minimize the use of energy, water, and other natural resources and provide a healthy, productive indoor environment.

**Industrial Occupancy:** the occupancy or use of a building or part thereof for the assembling, fabricating, manufacturing, processing, repairing or storing of goods and materials.

Lifecycle Analysis: An evaluation tool that assesses the net present value of the design, construction, operation, maintenance, and demolition of a facility as well as the health and productivity of its occupants, the costs of measurable external environmental impacts, and the cost of measurable and relevant social impacts.

Sustainable Development: “Meeting the needs of the present without compromising the ability of future generations to meet their own needs” – The World Commission on Environment and Development, The Brundtland Commission, 1987. Sustainable Development seeks to balance human development, growth, and equity with ecological stewardship.

**APPENDIX A – Mandatory Technical Requirements for All Buildings 1,000 m<sup>2</sup> and Larger**

No.	Mandatory Requirement	LEED® Canada-NC 2009 Credit	Type 1 Buildings (>2,000 m <sup>2</sup> )	Type 2 Buildings (1,000-2,000 m <sup>2</sup> )(1)
1	Construction Activity Pollution Prevention (Prerequisite) (2)	SSp1	•	•
2	Alternative Transportation: Bicycle Storage & Changing Rooms	SSc4.2	•	•
3	Alternative Transportation: Parking Capacity	SSc4.4	•	•
4	Stormwater Design: Quantity Control	SSc6.1	•	•
5	Light Pollution Reduction	SSc8	•	•
6	Water Efficient Landscaping: No Potable Water Use or Irrigation	WEc1	•	•
7	Water Use Reduction: 30% Reduction	WEc3	•	•
8	Optimize Energy Performance: Min. 33% Below MNECB 1997	EAc1	•	(3)
9	Enhanced Commissioning	EAc3	•	
10	Enhanced Refrigeration Management	EAc4	•	•
11	Recycled Content: 10%	MRC4	•	•
12	Regional Materials: 20% Extracted and Manufactured Regionally	MRC5	•	•
13	Construction IAQ Management Plan: During Construction	IEQc3.1	•	•
14	Construction IAQ Management Plan: Before Occupancy	IEQc3.2	•	•
15	Low-Emitting Materials: Adhesives & Sealants	IEQc4.1	•	•
16	Low-Emitting Materials: Paints & Coatings	IEQc4.2	•	•
17	Low-Emitting Materials: Flooring Systems	IEQc4.3	•	•
18	Low-Emitting Materials: Composite Wood and Agrifibre Products	IEQc4.4	•	•
19	Indoor Chemical and Pollutant Source Control	IEQc5	•	•
20	Thermal Comfort: Design	IEQc7.1	•	•
21	Thermal Comfort: Verification	IEQc7.2	•	•
22	Durable Building	RPc1	•	•
23	Energy Utilization Index Targets (4)	N/A	•	

Control Strategies applicable for all building types:

- a. All heating sources to be locked out at outdoor air temperatures above 18C.
- b. Mechanical cooling to be locked out at outdoor air temperatures below 15C and during unoccupied periods.
- c. Humidifiers to be locked out at outdoor air temperatures above 10C.
- d. Maintain a maximum unoccupied night temperature setback of 18C during heating season.

Notes:

1. Type 2 buildings are not required to register nor certify as a LEED® Canada-NC 2009 project with the CaGBC, but are to meet the intent of the individual LEED® Canada-NC 2009 credit as designated.
2. Construction Activity Pollution Prevention (SSp1) is a LEED® Canada-NC 2009 prerequisite and is therefore mandatory for Type 1 buildings seeking certification. It is also a mandatory requirement for Types 2 buildings even though LEED® Canada-NC 2009 certification is not required.
3. Energy performance requirements for Type 2 buildings are addressed through the Core Performance™ Guide. See Appendix B for specific requirements.
4. Energy Utilization Index (EUI) targets are applicable to Type 1 buildings only and are as follows:
  - a. Office Buildings – 161 ekWh/m<sup>2</sup>/yr (0.58 GJ/m<sup>2</sup>/yr)
  - b. Schools, K-12 – 161 ekWh/m<sup>2</sup>/yr (0.58 GJ/m<sup>2</sup>/yr)
  - c. All Other Buildings – Proponent to Submit EUI Projections to Green Building Coordinator for review.

Note: ekWh/m<sup>2</sup>/yr is the energy consumption in *equivalent* kilowatt-hours per square metre of floor area per year and includes all energy consumption for a building (electricity, natural gas, fuel oil, steam, propane, diesel, gasoline and wood). Refer to Natural Resources Canada Office of Energy Efficiency (OEE) for further information about calculating EUI.

## **APPENDIX B – Energy Performance Requirements for Buildings 500 to 2,000 m<sup>2</sup>**

The following are mandatory energy conservation requirements from the Efficiency NB Edition of the Core Performance™ Guide applicable to Types 2 & 3 Buildings

<b>Section</b>	<b>Description</b>	<b>Type 2 Buildings (1,000-2,000 m<sup>2</sup>) (1)</b>	<b>Type 3 Buildings (500-999 m<sup>2</sup>)(2)</b>
	<i>Design Process Strategies</i>		
1.1	Identify Design Intent	•	
1.2	Communicating Design Intent	•	
1.3	Building Configuration	•	
1.4	Mechanical System Design	•	•
1.5	Construction Certification	•	•
1.6	Operator Training and Documentation	•	•
1.7	Performance Data Review	•	
	<i>Core Performance Requirements</i>		
2.1	Energy Code Compliance	•	•
2.2	Air Barrier Performance	•	•
2.3	Minimum IAQ Performance	•	•
2.4	Opaque Envelope Performance	•	•
2.5	Fenestration Performance	•	•
2.6	Lighting Controls	•	
2.7	Lighting Power Density	•	•
2.8	Mechanical Equipment Efficiency Requirements	•	•
2.9	Dedicated Mechanical Systems	•	
2.10	Demand Control Ventilation	•	•
2.11	Domestic Hot Water System Efficiency	•	•
2.12	Fundamental Economizer Performance	•	•
2.13	Heat Recovery	•	•
2.14	Supply Air Temperature Reset	•	
	<i>Enhanced Performance Strategies</i>		
3.1	Daylighting and Controls		
3.2	Additional Lighting Power Reductions		
3.3	Plug Loads/Appliance Efficiency		
3.4	Night Venting	•	
3.5	Premium Economizer Performance	•	
3.6	Variable Speed Control	•	
3.7	Demand-Responsive Building (Peak Reduction)	•	
3.8	On-Site Supply of Renewable Energy		
3.9	Additional Commissioning Strategies		
3.10	Fault Detection and Diagnostics		

### Notes:

1. Type 2 building projects are required to meet all of the mandatory Core Performance™ requirements as well as the Enhanced Performance Strategies listed above, and achieve certification under the program.
2. Type 3 buildings projects are not required to achieve certification under the Core Performance™ program, but are to meet the requirement of the particular sections listed.

## **APPENDIX C – Mandatory Requirements for Provincially Funded Social Housing Projects**

The following minimum prescriptive guidelines will apply to new social housing projects, i.e. Type 4 Building projects (single family detached, semi-detached, row housing and multi unit housing). As an alternative, the project can be modeled so as to achieve a minimum EnerGuide 83 rating with the condition that the foundation, window and door guidelines meet the specifications listed below in the Building Envelope section. For more information about EnerGuide Rating please refer to <http://oee.nrcan.gc.ca/residential/personal/new-homes/upgrade-packages/rating.cfm?attr=0>

### 1. Building Envelope:

Ceiling Insulation	RSI-8.8	(R-50)
Above Grade Wall Insulation	RSI-4.6	(R-26)
Floor Headers Area	RSI-4.6	(R-26)
Below Grade Wall Areas	RSI-4.2	(R-24)
Slab on Grade Foundations (1.2 m (4 ft) perimeter)	RSI-1.8	(R-10)
Windows	ENERGY STAR Zone C or D	
Exterior Doors	ENERGY STAR Zone C or D	

Note: RSI (R) values shown are nominal. Wall, floor header and below grade wall area RSI (R) values are based on RSI-3.5 (R-20) batt insulation placed between framing members plus an additional layer of foam insulation with an RSI-1.1 (R-6) value for above grade walls and floor headers and RSI-0.7 (R-4) for below grade wall areas. Ceiling RSI (R) values represent the total value of the insulation material installed. Alternative construction assemblies that achieve comparable effective total RSI (R) values are acceptable upon review.

### 2. Heat Recovery Ventilation Systems: Must be HVI Certified.

### 3. Lighting:

- a. Common Areas: Fluorescent or Compact Fluorescent energy efficient bulbs or lighting with a lower consumption rating are required in common areas.
- b. Dwelling Units: Fluorescent tube fixtures or compact fluorescent energy efficient bulbs should be installed in fixtures within dwelling units. Certain specialty fixtures may be exempt.

### 4. Water Conservation:

- a. Toilets: maximum 6 Litres/flush
- b. Shower heads: maximum 9.5 Litres/min @ 552 kPa
- c. Faucets (Lavatory and Kitchen): maximum 8.3 Litres/min @ 414 kPa

### 5. Heating Systems:

- a. Air or Ground Source Heat Pumps: use ENERGY STAR rated equipment.
- b. Natural gas and oil furnaces or boilers: use ENERGY STAR rated equipment.
- c. Wood Burning Equipment: All wood-burning appliances must be certified as meeting either CSA-B415.1-M92 *Performance Testing of Solid-Fuel-Burning Heating Appliances*, or the U.S. Environmental Protection Agency (EPA) wood-

burning appliance standards (1990), 40 CFR Part 60 and be installed by a Wood Energy Technical Training program (WETT) certified installer.

NOTE: Electric baseboard heating will only be considered as an option if the developer can demonstrate that the cost of installing the above-mentioned heating systems increases total building costs by more than 5 percent.

6. Air Conditioning: use ENERGY STAR rated equipment
7. Domestic Hot Water:
  - a. Natural Gas: ENERGY STAR rated equipment with an Energy Factor (EF) of .80 or higher *or* indirect water heaters with a minimum of 50 mm (2 inches) of insulation connected to modulation boilers.
  - b. Oil: Equipment achieving an Energy Factor (EF) of .80 or higher *or* indirect water heaters with a minimum of 50 mm (2 inches) of insulation connected to boilers with multi stage burners.
  - c. Electric Water Heaters: Equipment achieving an Energy Factor (EF) of .90 or higher with appropriately sized drain water heat recovery equipment installed where possible.
8. Appliances: use ENERGY STAR certified appliances.

### **Recommended Measures**

1. Solar Ready: Buildings to be built ready for the installation of solar hot water or photovoltaic (pv) equipment. (see NRCan web site for further information <http://oee.nrcan.gc.ca/residential/personal/new-homes/solar-homeowner.cfm?attr=4>)
2. Indoor Air Quality: Use only low Volatile Organic Compound (VOC) paints, adhesives, sealants, carpets, composite wood and wood laminate products. Buildings are to be designed to reduce high moisture/condensation potential.
3. Material Conservation: Where practical, use materials produced using recycled content and that are produced regionally.
4. Waste Management: Where facilities exist, setup a recycling program for cardboard, metal, plastic, clean wood, glass and gypsum wallboard waste generated during the construction process.

## Appendix D – Document Revision History

<b>Rev.</b>	<b>Section</b>	<b>Change</b>	<b>Date</b>
<b>0</b>		Original Issue	1 April 2010
<b>1</b>	Appendix A	Mandatory Technical Requirements updated for LEED® Canada-NC 2009. Deleted Construction Waste Management, MRc2.1	5 November 2010
<b>1</b>	7.1, 7.2.2	Updated hyperlinks for CMHC Integrated Process Design Guide and Model National Energy Code for Buildings	5 November 2010
<b>1</b>	7.2.3	Type 3 Building Project Faucet Flow Rate revised from 9.5 L/min to 8.3 L/min @ 414 kPa	5 November 2010
<b>1</b>	Appendix C	Flow Rate for Showerheads revised from 9.8 L/min to 9.5 L/min @ 552 kPa	5 November 2010
<b>2</b>	Appendix A	Deleted Daylight and Views: Daylight, IEQc8.1	25 January 2011