Guide to Implementing the

Build Better Buildings Policy

Newfoundland Labrador

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Developed by: Build Better Buildings Assessment Committee in partnership with Morrison Hershfield Limited

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Introduction

The Government of Newfoundland and Labrador's **Build Better Buildings Policy** came into effect in September 2010. The policy requires that new buildings, and renovations over a certain size and cost, must be built sustainably. The policy applies to all provincially-funded infrastructure projects.

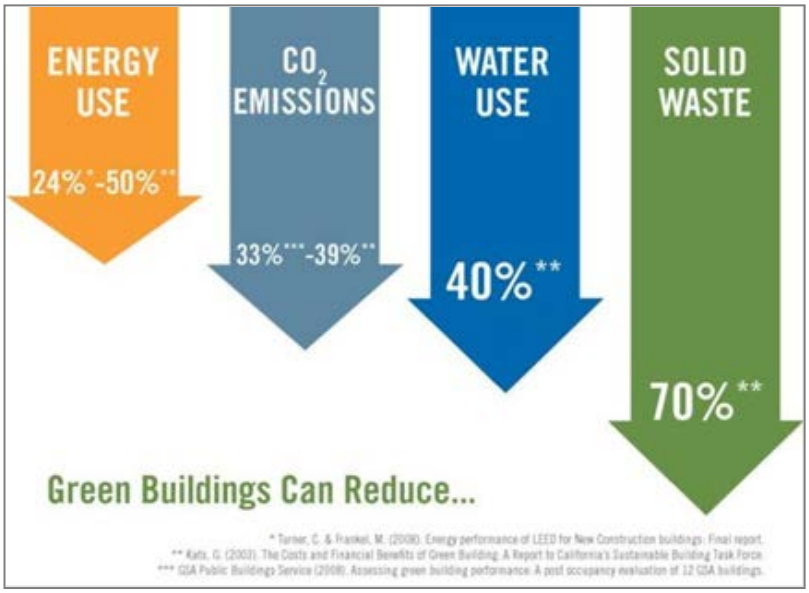
This Guide will assist key technical staff, project managers and senior decision makers to understand the benefits and requirements of the policy.

Given the opportunities and benefits that come from building more sustainably and the need to understand the standards of Leadership in Energy and Environmental Design (LEED) and the requirements of the 1997 Model National Energy Code for Buildings, the Build Better Buildings (BBB) Assessment Committee felt it would be advantageous to develop a Guide.

The Guide has two parts:

- The first provides an overview of the importance of building sustainably which is the premise of the Build Better Buildings policy.

- The second section is geared to those directly involved in project planning and infrastructure design and development, which have to incorporate and interpret LEED standards and energy efficiency requirements.



Buildings represent a significant portion of our collective carbon footprint, meaning that buildings have a significant impact on our environment, which in turn impacts economic opportunities and social impacts. As illustrated here, sustainable buildings reduce energy use, carbon dioxide emissions, water use and solid waste. All essential elements for delivering government's policy commitments on climate change, energy efficiency, and waste management.

Source: www.greendiary.com

Part A – Understanding the Importance of Sustainable Buildings

1.0 Benefits of Building Sustainably

The Government of Newfoundland and Labrador is committed to building sustainably, improving the outcomes of those using buildings (indoor environment) and reducing the impact that buildings have on the exterior environment.

There is a strong connection between buildings, the environment and the health of occupants, especially since people now spend more than 90 per cent of their time inside. Buildings that have too little fresh air, too little natural light and problems with mold and other air pollutants have contributed to documented rises in 'sick building syndrome' which in turn has a significant impact on the productivity of inhabitants.

Building practices, if not sustainable, can also have a significant impact on the exterior environment through increased air and water pollution, impact on climate change through greenhouse gas emissions, and the loss of flora and fauna during construction.

There are **many benefits** to constructing buildings that are more sustainable, some of which include:

- Improving the comfort of interiors for users
- Reducing harmful emissions into the atmosphere
- Conserving energy resources by consuming less energy
- Reducing operating and maintenance costs over the life of a building
- Improving the health and productivity of building users
- Demonstrating environmental leadership by building in sustainable ways

Imagine higher grades and less absenteeism in schools, reduced electricity costs in arenas, increased productivity of employees, improved health and recovery of patients, less erosion and damage from heavy rainfall ….all of these things are possible if we build better buildings!

2.0 Build Better Buildings Policy

Coming from the 2007 *Energy Plan: Focusing Our Energy,* was the Provincial Government's commitment to create a Build Better Buildings (BBB) Policy, so that the province would have more energy-efficient and environmentally-sustainable buildings.

The BBB Policy came into effect September 2010. Progress on this policy, as well as other commitments from the subsequent *2011 Energy Efficiency Action Plan*, will be reported at key intervals, with the first progress report occurring in 2014 and the second in 2016.

Two criteria that guide which building projects **must** follow the **Build Better Buildings Policy** if they receive provincial funding include:

- The area of a new building or extension to an existing building is 600 sq. m (6,458 sq. ft.) or more
- The cost of renovations and/or extensions to an existing building (600 sq. m. or more) exceeds 50 per cent of the cost of a new building of equivalent size and function

Note: If your project falls outside the scope identified above, it should be built sustainably, with energy efficiency in mind.

2.1 Requirements of the Build Better Buildings Policy

All provincially funded buildings that comply with the size and cost requirements must also:

- Be built to exceed 1997 Model National Energy Code in Canada for Buildings (MNECB) by 25 per cent;
- Register with the Canadian Green Building Council (CaGBC) and strive to achieve a minimum of a Silver Rating with Leadership in Energy and Environmental Design (LEED); and
- Complete a Life-Cycle Project Analysis (design, construction & operations). For a definition and guidance refer to Section 2.4.3. This is also known as net-present value in some departments.

Did You Know? If a building is 25 per cent better than MNECB, it will achieve the energy prerequisite for LEED.

2.2 Who does the Policy apply to?

All Provincial Departments, Agencies, Municipalities and Crown Corporations that receive provincial infrastructure funding, **must comply** with the BBB Policy. Note: For a full list of applicable departments, agencies, boards and commissions refer to www.gov.nl.ca or Annex A.

2.3 Build Better Buildings Assessment Committee

To help implement and oversee the BBB Policy, an Assessment Committee was established with representatives from the departments of Natural Resources; Transportation and Works; Municipal Affairs; Education; Environment and Conservation; Service NL; and the Office of Climate Change, Energy Efficiency and Emissions Trading.

2.4 Key Concepts for the Three Elements of the BBB Policy

The BBB Policy has three **key concepts** that you will need to understand to implement the policy, namely:

A. Model National Energy Code in Canada for Buildings (MNECB) 1997 [exceed by 25 per cent]
B. Leadership in Energy and Environment Design (LEED) [strive for Silver Rating]
C. Life Cycle Project Cost Analysis [completed for design, construction and operations]

2.4.1 Model National Energy Code of Canada for Buildings (MNECB)

The Model National Energy Code of Canada for Buildings (MNECB) was released in 1997. It provides minimum requirements for energy efficiency in **new** buildings and additions (or major renovations for LEED), except small residential buildings. It is one of the primary standards used to demonstrate LEED Energy compliance. The code regulates the design and construction of energy-efficient buildings, including the building envelope, systems and equipment for heating, ventilation and air-conditioning, service water heating, lighting, and electrical power systems and motors. The MNECB requirements were developed with consideration of the Canadian climate, fuel types and costs, as well as construction costs.

Exceeding the 1997 Model National Energy Code for Buildings in Canada by 25 per cent is a mandatory requirement of the BBB Policy. The MNECB contains three pathways to measure compliance in building construction; however, as the BBB Policy and LEED rating system both require the design to exceed the minimum requirements of the MNECB, the performance path must be pursued. The performance pathway allows the design's energy efficiency to be quantified through energy simulation, while the other pathways (prescriptive and trade-off) do not. As a result, all projects will demonstrate compliance through a whole building energy model.

- A **Building Energy Performance Path or Model** requires the use of a computer simulation tool (performance path) to estimate the amount of energy used within the building, typically incorporating multiple systems (e.g., lighting, heating, cooling, ventilation, fan power, hot water, etc.). The design's energy use is compared to that of a geometrically similar reference building, built to meet, but not exceed, the minimum prescriptive requirements of the MNECB. Also note that a lifecycle costing of lighting systems and other building systems should be factored in at the project initiation stages.

Descriptions of the other routes are included here for information purposes.

- The **Prescriptive Compliance** dictates the minimum thermal characteristics of the building envelope (walls, windows, roof assemblies, etc.), minimum efficiency of equipment, maximum lighting power, and required energy conservation measures.

- The **Trade-Off** route is available for the building envelope only. It provides flexibility to the design, allowing reduced thermal performance of the envelope in some areas so long as it is improved in other areas, resulting in the same or less energy consumption versus the minimum prescriptive values. HVAC, lighting and service water heating must still meet the prescriptive requirements.

The change from LEED version 1.0 (the old version of LEED, requiring 25% reduction in **energy consumption**) to LEED 2009 (the new version of LEED, requiring 23% reduction in **energy cost**) results in approximately the same target.

Since the introduction of the MNECB in 1997, there have been significant advancements in technology that can significantly contribute to design's energy efficiency to help achieve 25% better than the 1997 MNECB. For example, the 1997 model was based on the use of T12 florescent lamps. Current technology includes T8 and T5 florescent lamps, which can save 12.5% and 30% reduction in energy use, respectively, for the same light levels. Other examples include variable speed drives for pumps and fans, and higher efficiency heating and cooling equipment.

A major update to the MNECB was released in 2011 and is known as the 2011 National Energy Code for Buildings (NECB). On average, across all building types, the NECB represents a 25% improvement compared to the MNECB in terms of energy efficiency.

The current version of LEED (LEED 2009) references the 1997 MNECB (and the American Society of Heating, Refrigeration, and Air-Conditioning for Engineers [ASHRAE] 90.1-2007). Future versions of LEED are likely to adopt the newer energy codes and standards, which are updated as a result of more efficient and developing technologies. Currently, the BBB Policy only references the 1997 MNECB. As new versions of LEED are released, infrastructure teams will minimize compliance work by using the energy codes referenced in the applicable LEED rating systems. For technical audiences, it is worth noting that prescriptive pathway measures cannot be used to demonstrate compliance with BBB, but could only be used by designers to help develop early performance targets. Designers should also be cautioned about over-designing a facility as it may impact cost overruns. Life cycle cost analysis can help optimize the design by determining the most cost-effective design measures providing the best energy savings and return on investment.

2.4.2 Leadership in Energy and Environmental Design

Striving for a **Leadership in Energy and Environmental Design (LEED) Silver** is another requirement of the BBB Policy. LEED is the most recognizable sustainable building rating system in North America. It provides a point-based, market standard for designing and constructing sustainable buildings. The LEED rating system can be used to guide the design process and to focus on whole building sustainability, not just energy.

To strive for the silver rating, points must be attained and documented and the project must be registered with the Canadian Green Building Council (CaGBC), an independent body that is aiming to reduce the impact of the built environment. The CaGBC allows for an independent review of submitted documentation and verification of the pursuit of LEED certification.

LEED points are tabulated on score cards which illustrate the pursuit of LEED credits – see Annex F for an example of a blank score card. As illustrated in the graphic below, 40 is the minimum to achieve certified and 50 is the minimum for a silver designation. However, as a best practice for attaining LEED silver, designers are encouraged to aim for 55 points to allow for any unforeseen circumstances which could result in some targeted points not being achieved. The LEED rating system can help **guide** many key aspects of sustainable design, not just the energy requirements.

There are a total of up to 110 total points under the LEED rating system. The number of points a project achieves determines its level of certification. The adjacent image illustrates the four levels of certification.

What is meant by 'striving' for LEED Silver? Even if a project cannot attain the Silver rating, the building should still be constructed in the most sustainable way as practical. See Section 4.5 for green building practices in Newfoundland and Labrador.

Case Study: Churchill Falls Residence

Note the picture of Nalcor's Crew Housing Project in Churchill Falls, Labrador. A rural, remote and cold-climate community was successful in getting the province's first LEED silver designation, awarded in June 2013. This building used the LEED Canada for Homes rating system, which is not as rigorous as the LEED New Construction rating system. However, the LEED Canada for Homes rating system is ideal for most projects with over 50 per cent residential space such as group homes, dormitories, and some health treatment facilities.

2.4.3 Life Cycle Project Cost Analysis (design, construction & operations)

Conducting a Lifecycle Cost Analysis is the third requirement of the BBB Policy. Lifecycle cost analysis is sometimes also referred to as 'net-present value'. In simple terms, life cycle costing looks beyond the purchase price, when procuring goods and services, to the costs of operating and maintaining the goods and services. A lifecycle cost analysis is a method of economic analysis for all costs related to building (including LEED), operating, and maintaining a project over a defined period of time.

Source: www.ebsconsultants.com

Strong life cycle cost analyses include developing capital cost scenarios for architectural, electrical and mechanical costs over the service life of a building; operating costs that reflect current and projected revenues and expenses; and a scenario-based financial analysis with assumptions on future rates and expenditures. The more detail included in these steps, the better the project plan, the budget submission and future operating costs for the Provincial Government and Municipalities outlined in Annex A or all other owners.

Assumed escalation rates are used to account for increases in utility costs over time. Future costs are expressed in present day dollars by applying a discount rate. All costs and savings can then be directly compared and fully-informed decisions can be made.

This analysis should be based on reasonable forecasts and assumptions such as contractor's rates, annual electricity escalations, annual fuel costs, annual building and operating costs, as well as the costs of items such as energy use, maintenance, parts, repairs and training.

2.5 Exemptions Under BBB Policy

The BBB Policy became effective in September 2010; therefore projects that have financial planning completed after September 2010 must adhere to the policy. Given Government's commitment to building sustainably, project plans must be developed factoring in LEED costs – see Annex E for sample price ranges. The BBB Policy suggests that projects strive to achieve LEED silver; however, not achieving a LEED rating (silver or otherwise), is not grounds for an exemption.

LEED may be used as a design tool to assist with this requirement. A good example is illustrated in Annex G, the Community Centre in Hopedale, Labrador. This is a very remote, rural community, dependent upon the shipping and building season. The town is diesel-powered and has limited maintenance staff with technical expertise, which limited innovations in heating systems and energy efficiency. Given these challenges, the project team could not achieve silver, but it still used LEED as a design tool and built sustainably. The team maintained the topography and did not landscape; they were able to attain 32% of the water reduction credits with low-flow fixtures; they achieved 100% of the low VOC credits and used locally supplied or recycled building materials.

Exemptions to the BBB Policy and sustainable building requirements may be granted in limited circumstances. **Reasons for exemptions** may include:

- A project does not meet the Minimum Project Requirements (MPR) under LEED (see below);
- If the 1997 Model National Energy Code in Canada for Buildings (MNECB) is not suitable because of the building type or function (i.e. vehicle storage facilities).

Should reasons for an exemption apply, the lead department, agency or proponent must contact the Chair of the BBB Assessment Committee (currently NR), requesting an exemption. This notification is achieved by writing a letter from the Departmental Deputy Minister. In the case of Municipal Affairs, the project proponent must write the Deputy Minister of Municipal Affairs, advising of the request for exemption, who will in turn notify the BBB Assessment Committee. See Annex B for a template for submitting an exemption.

The exemption will be considered by the BBB Assessment Committee, who provides a recommendation to the responsible Deputy Minister, and a decision communicated to the proponent. Any applications for an exemption must be submitted early enough so that, if the request is rejected, appropriate steps can be still taken to a achieve LEED rating, as documentation must occur early in a project.

LEED recognizes that not all projects are suited for certification and has established seven **Minimum Project Requirements (MPR)** that all projects seeking certification through LEED must comply with.

All projects must:

1. Comply with Federal, Provincial and Local Environmental Laws.

2. Be a complete, permanent building.

3. Use a reasonable site boundary (all adjacent areas associated with and supporting normal building operations).

4. Include a minimum of 93 m^2 of building floor area [as per LEED]
    a. 600 sq. meters for BBB Policy
    b. Note: small building should still be built sustainably

5. Serve at least 1 or more employees or Full Time Equivalents (FTE) - In cases for buildings with part-time workers, transients, students, volunteers, etc., the LEED Specialists typically adds up the number of people-hours expected in a year/month/week and then determines an applicable FTE – emphasis on "Equivalent". For fire halls, we would look at the number of volunteers, the average use of the building and then determine a number – remember that 1 is a completely acceptable number. The FTE is for identifying the buildings that will never have anyone use them – e.g., storage garages. The typical rule is, if there is a desk or an office – then there is at least 1 FTE.

6. Allow CaGBC access to Whole Building Energy and Water usage data.

7. Comply with a minimum building area to site area ratio – LEED project building must be no less than 2% of the gross land area (site area including building footprint) within the LEED project boundary.

Even if the project cannot attain a LEED certification, LEED is a tool that can be used to identify and document sustainable building strategies. To this end, all buildings that are **outside** the size, cost or functional requirements of the Build Better Buildings Policy and do not meet Minimum Project Requirements(MPR) under LEED, but receive funding from the Government of Newfoundland and Labrador, and involve constructing a new building or completing a significant renovation, where practical, are encouraged to:

1. Use LEED as a tool to guide the design of the project.
2. Implement and document strategies, which include:
    - Completing an erosion and sedimentation control plan (e.g. follow TW and MA specifications or similar).
    - Achieving an equivalent of a 25 per cent reduction of the 1997 MNECB (e.g. incorporate high efficiency lighting, building envelope performance, heating and ventilation systems).
    - Achieving an equivalent of 20 per cent reduction in water use (e.g. low water consumption fixtures).
    - Completing a waste diversions plan or installing waste diversion receptacles (i.e. preventing waste from entering landfills).
    - Completing a construction waste diversion plan (e.g. TW specifications).
    - Achieving enhanced indoor air quality through ventilation (e.g. demonstrate approach to meet ASHRAE 62.1-2007).
3. Take into account lifecycle cost considerations – see Section 2.4.3 for details.

Note: Section 4.5 of this guide contains tips on green building practices.

3.0 A Deeper Dive into LEED Canada 2009 Rating System

Think of LEED as an umbrella rating system. Just as there are spokes in an umbrella, there are a number of spokes or other rating systems within LEED that serve as the back bone. To determine the applicable LEED rating system, you have to identify the type of building, confirm its purpose and assess whether or not the initiative will meet the LEED Minimum Project Requirements as outlined previously.

There are five core building / project types, which dictate which type of LEED tool or rating system your project should use. The five project types and the sub-sets include:

1. Homes
2. Neighborhood Development
3. Commercial Interiors
4. Existing Buildings Operations and Maintenance
5. New Construction
    - Core and Shell
    - New construction and major renovation

It is the project manager's role to select the applicable LEED rating system that applies to a particular project. For the Provincial Government's context, the Build Better Buildings Policy typically falls into the *New Construction category*, which focusses on core and shell, new constructions and major renovations. The LEED Canada NC 2009 is the rating system for *New Construction*. The BBB Policy is intended to address new construction, additions and major renovation projects; hence the most applicable rating system for users of this guide will be the LEED Canada NC 2009 rating system. Users may find the other rating systems useful for design guidance, but the intent is that users will follow the most recent LEED version for new construction (LEED Canada NC 2009). Depending on the building's purpose (i.e. Churchill Falls Staff Residence), other rating systems may be used.

There are a number of LEED Canada rating systems available to meet the needs of different building and project types, which include:

- LEED Canada NC 2009 – New Construction and Major Renovations
- LEED Canada CS 2009 – Core and Shell
- LEED Canada for Commercial Interiors or LEED Canada-CI
- LEED Canada EB:O&M 2009 – Existing Buildings Operation and Maintenance
- LEED Canada for Homes
- LEED-ND 2009 with Canadian Alternative Compliance Path – Neighborhood Development

The LEED Canada NC 2009 rating system has seven categories of points that can be obtained through achieving specific requirements. A specific number of points **must** be attained, under the various credit categories to achieve certification.

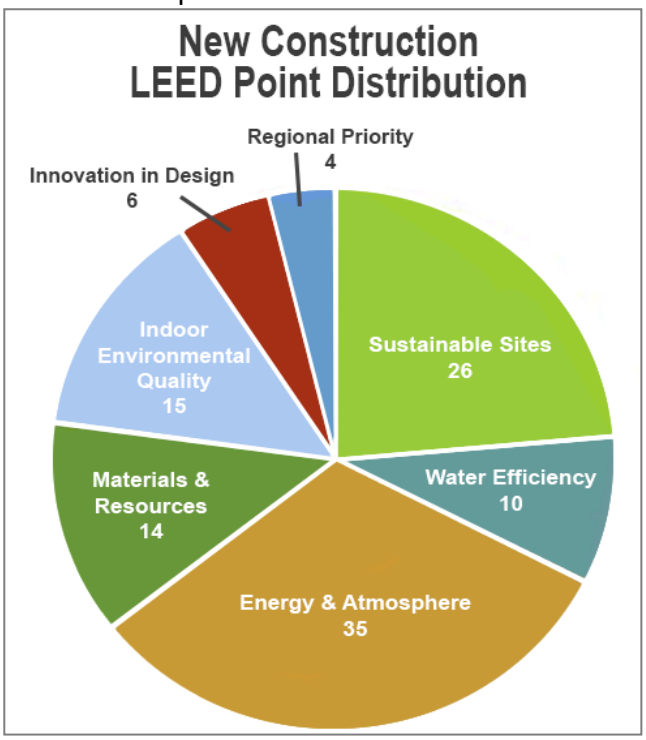
The seven Credit Categories in LEED Canada NC 2009 for new construction include:

1. **Sustainable Sites (26%)**
   - Points focus on the location of the building and the site aspects of the project. From a project planning perspective, the sustainable sites category is the initial category for consideration in mapping out the project and the LEED plan.

2. **Water Efficiency (10%)**
   - Points focus on conservation of potable water and allocation of "clean" water for consumption, rather than waste conveyance or irrigation.

3. **Energy and Atmosphere (35%)**
   - Points address environmental impacts and minimize the depletion of fossil fuel resources.

4. **Materials and Resources (14%)**
   - Points focus on conserving of existing buildings, diverting waste, reducing the carbon footprint associated with building materials, and minimizing the extraction of virgin materials.



Source: www.environmentalgeography.com

5. **Indoor Environmental Quality (15%)**
   - Points are divided between active mechanical systems and controls to improve air quality and thermal comfort, and passive means such as material selection and construction practices.

6. **Innovation in Design (6%)**
   - A "catch all" for sustainable building practices or strategies not already captured in the LEED requirements.

7. **Regional Priorities (4%)**
   - Recognize issues that are important regionally within Canada.

LEED certification levels are determined by the total number of credit category points that are attained.

Within each of the categories there are eight **prerequisite** or mandatory requirements. Even though the prerequisites have no point value, they **must** be achieved for LEED certification.

The **8 mandatory prerequisites** that must be met over the course of a project are:

1. Construction Activity Pollution Prevention (Erosion and Sedimentation Control)
2. Water Use Reduction
3. Fundamental Commissioning of Building Energy Systems
4. Minimum Energy Performance
5. Fundamental Refrigerant Management
6. Storage and Collection of Recyclables
7. Minimum Indoor Air Quality Performance
8. Environmental Tobacco Smoke (ETS) Control

For a detailed description of the LEED Canada 2009 Point Inventories and details on which points work best in urban and rural areas, refer to Annex C. Section 5.3 also provides an analysis of which LEED credits are most suitable for specific building functions in Newfoundland and Labrador.

3.1 Choosing Smart LEED Points

The Design and Construction Team **should always plan and construct buildings that are more energy efficient,** given the province's public commitments. Remember that under BBB Policy, projects should strive for a total of 50 points (best practice is 55), for the goal of attaining LEED silver. However, it is important not be too focused on 'point-shopping'.

If a point does not make sense for your purpose, facility or region then challenge the project team to choose more relevant options. As is the case with many mandated rating systems, there is a tendency to find the cheaper more easily attainable points. Not all of these easily-attainable points are 'smart' from an energy efficiency perspective or make sense given the unique qualities of the geography in Newfoundland and Labrador. So it is important to pursue LEED points that make sense for Newfoundland and Labrador or a specific location within the province, as well as the building's unique function. For example, in northern Labrador, it may not be possible to choose certain sustainable site credits, based on topography, but other points are still relevant.

Case Study: Corner Brook City Hall

In Newfoundland and Labrador, larger centres can capitalize on being in a dense community area with proximity to amenities and alternative transportation (carpooling, transit, walking, bikes). The staff and the Council at the City of Corner Brook have a 'green' philosophy and realize that sustainability is a way to attract businesses and new residents. In building City Hall they used LEED as a design tool, re-used an existing site in the center of town, partnered with the museum for co-location, used recycled materials, have a green garden roof and installed ground source heat pumps. They even lease hybrid vehicles. This building is on track for LEED Silver!

Not all rural sites have options like transit and brownfield redevelopments. Alternatively, rural sites may be able to focus more on site selection, retaining open space, protecting habitat, controlling storm water flows and minimizing light pollution. Refer to Section 5.3 for detailed information on strategies for attaining credits for specific building functions.

There are two key lessons learned over the last 5 years of applying the LEED rating system on projects in NL:

1. Rural projects typically achieve less points in the Sustainable Sites category and hence should focus more on energy optimization strategies.
2. Rural projects tend to rely more on Innovation and Design and Regional Priority categories, which should be considered in the upfront planning.

Rural projects can be more difficult to service with reliable, low-cost energy. Innovative strategies may need to be explored to achieve overall sustainability targets (LEED Silver) and cost effective projects. This could be accomplished by using strategies such as local materials, labour, or pre-fabricated systems to minimize shipping and installation costs. Rural projects should also take advantage of the LEED Credit Interpretation Ruling (CIR) option and present how the "intent" of a LEED credit is being met, rather than the stated credit requirement (e.g., instead of installing bike racks to minimize the carbon emissions associated with single vehicle use (SSc.4.2), teams can explore alternative means – ski racks or hybrid snowmobiles, etc.).

Tips for strengthening projects include:

- "Be organized from the beginning" - Create a custom LEED Scorecard for **each** project
- "No point-chasing" - Develop strategies that benefit the project and region
- "Future-proofing"- Minimize long-term maintenance and energy costs
- "Social & economic sustainability" - Educate the local economy and stimulate job activity
- "Being proactive" - Decide on systems that are most effective from both a building and operating perspective

The attached LEED Scorecard (Annex D) outlines the LEED Canada 2009 prerequisites and credits, with associated points. Additional columns have been added to the typical LEED Scorecard to illustrate projects in urban (e.g., St. John's) or rural (e.g., Lewisporte) locations. Highlighted LEED credits are also provided which present the **greatest benefits** to either urban or rural projects, and present **common approaches** to meet a LEED Silver target. Note: these score cards are examples only and illustrate only one way to approach a project. This sample has illustrated 55 points, to reinforce the concept that seeking additional points is a good practice, to provide a buffer in case some points are lost during the design, construction or final assessment. It is important that credits that are pursued are 'smart' in other words they make sense given the purpose of the building and its location.

3.2 Common LEED Mistakes to Avoid

Commonly pursued credits do not always correspond with those offering the greatest benefits for building sustainably. This is likely due to one or more of the following factors:

- Adopting a LEED Scorecard from another project.
- Not holding a charrette or planning session to align project goals with LEED credits.

- Point-shopping LEED credits, rather than selecting those with the greatest benefits for an area.
- Not seeking specific LEED credit knowledge if your design team doesn't have the expertise i.e. the "know-how".
- Understanding when not to pursue a credit, as **not all** LEED requirements can be met by all projects.
- Pursuing LEED credits too late in the design.
- Not completing a Lifecycle cost analysis to illustrate long-term benefits.
- Not factoring in operating costs such as the type of staff and training needs to sustain mechanical systems.
- Not factoring in LEED costs when developing project plans.
- Not training staff if integrating new technology into design (e.g., new mechanical systems, composting toilets, etc.)

To address these issues, one or more of the following best practices should be conducted:

- Hold a LEED charrette or kick-off planning session for the project.
- Establish sustainability goals for each project.
- Ensure members of the team become LEED accredited or attend a LEED education session.
- Pursue at least 5 extra points above the LEED certification target, to allow for lost points during design, construction or final assessment.
- Include sustainable building costs into the pre-design and pre-programming phases of the project.
- Conduct a strong life cycle cost analysis which includes capital cost scenarios for architectural, electrical and mechanical costs over the service life of a building; operating costs that reflect current and projected revenues and expenses; and scenario-based financial analyses with assumptions on future rates and expenditures.
- Training of building users and operations staff to ensure adequate knowledge of how to use building (e.g., mechanical systems integrated with window shades, operable windows and daylight harvesting), as well as adequate knowledge of "new" technology (e.g., geo-exchange pumps, passive ventilation).

Case Study: The Glacier, Mount Pearl

The Glacier in Mount Pearl is another building project on track for LEED Silver. It is part of a multi-phased project including a new 8 lane swimming pool, which will receive recovered heat from the rink. The design team understood the benefits of building sustainably and had a focussed plan on what would work best for the facility and the community. They collect rainwater and purify it so that it freezes quicker; they use an electric zamboni; the energy-efficient heat recovery system reuses heat by directing it into the bleachers and they purchased green guard certified furnishings.

3.3 LEED Myth Busting

1. You can only get a LEED certification in an urban centre. **MYTH**.
   - It is true that urban projects have advantages with greater access to alternative transportation. However, with careful site selection and early design guidance there are other options that allow for projects to customize their approach to suit their location, regional priorities and budgets.

2. You must use composting toilets, waterless urinals or rainwater harvesting to meet LEED water efficiencies. **MYTH.**
   - Such technologies can significantly reduce water use, but widely available and affordable low-flow water fixtures can achieve at least a 30 per cent reduction compared to baseline fixtures.

3. You need to use heat pumps, solar panels, or other such new technologies. **MYTH**.
   - Although heat pumps, solar panels and new technologies can provide higher consumption savings, traditional systems (e.g. electric resistance heaters) can be used in combination with improved building envelopes (insulation and windows), heat-recovery ventilation and building orientation to still achieve improved energy efficiency compared to typical buildings.

4. Projects need to use special green products with higher costs and lower durability to achieve LEED certification. **MYTH**.
   - This may have been true in years gone by, but a lot has changed in the composition and performance of materials. The building product industry has undergone enormous changes in the last 10-15 years. Although "green washing" (misleading marketing) is still seen in pockets of the market, products have come on the market to respond to the LEED requirements, hence driving the initial cost premium lower and increasing performance and lifespan.

5. Costs associated with LEED can make building sustainably unattainable in a fiscally constrained environment. **MYTH.**
   - It is true that LEED does have an associated cost with registration and documentation. However, when you factor in the energy savings, the benefits to inhabitants and the percentage of LEED costs in relation to the overall infrastructure project, it is marginal.
   - There are registration costs based on building dimensions, fees for consultants, administration fees for documentation and submission, and energy modeling costs. Lifecycle modeling will allow for accurate cost projections on supplies, design, maintenance and operating. Registration and certification fees for CaGBC are calculated based on the size of the project. Here is a link to the fees calculation table http://www.cagbc.org

6. A building must be occupied for a year or more before the proponent can apply for certification under LEED. **MYTH.**
   - The proponent can typically submit for LEED certification at the end of construction, once all documentation has been collected. Post-construction work, such as Commissioning, does not need to be completed prior to LEED submission. Typically a commitment letter is required for post-construction work. Note: Transportation and Works commissioning standards are designed to fulfill LEED commissioning requirements and CSA Standards.

4.0 Checklists for Managing Your Projects to Comply with the BBB Policy

4.1 Prerequisites, by Point Category for LEED Canada 2009

LEED required several prerequisite categories, which have no points attached, that are essential to receiving a LEED Rating.

- ☐ Construction Activity Pollution Prevention [Sustainable Sites]
- ☐ Water Use Reduction [Water Efficiency]
- ☐ Fundamental Commissioning of Building Energy Systems [Energy & Atmosphere]
- ☐ Minimum Energy Performance [Energy & Atmosphere]
- ☐ Fundamental Refrigerant Management [Energy & Atmosphere]
- ☐ Storage & Collection of Recyclables [Materials & Resources]
- ☐ Minimum Indoor Air Quality Performance [Indoor Environmental Quality]
- ☐ Environmental Tobacco Smoke (ETS) Control [Indoor Environmental Quality]

A thorough description of these point categories is contained in Annex C. The Canadian Green Building Council website also contains valuable descriptions and information for project managers http://www.cagbc.org/

4.2 Things to consider when choosing a LEED Consultant

Like all services, outcomes often depend on the amount of upfront research completed and referrals obtained from previous customers. Given some of the uniqueness of building in Newfoundland and Labrador it important to give some thought to choosing an appropriate LEED Consultant for your project.

Key questions and concepts the Project Lead should explore include:

- ☐ Determining previous experience in Newfoundland and Labrador (urban and rural)
- ☐ Evidence of status (Active) with CaGBC (Local/National)
- ☐ Experienced in the approach to documentation and support (Design + Construction)
- ☐ Experienced maximizing design solutions for each project i.e. seek examples from previous projects
- ☐ Exploring previous experiences with document requirements, seeking knowledge of barriers and solutions
- ☐ Familiar with BBB Policy requirements
- ☐ Strong track record with other LEED projects

4.3 How to Register with the CaGBC?

A LEED Professional, if on the design team, will likely be assigned with registering the project with the Canada Green Building Council (CaGBC). Registration can be completed electronically on www.cagbc.org.

Steps to Register a LEED Project:

- ☐ Select the LEED Rating System
- ☐ Enter the size of the building
- ☐ Calculate and pay registration fee
- ☐ Enter project data i.e. language, address, owner, project type

4.4 LEED Documentation Requirements

In Newfoundland and Labrador, recent experience with LEED has illustrated that some project teams struggle with documentation requirements. Documentation at the right time is a crucial element in obtaining certification. Be sure that the team discusses documentation early on.

- ☐ Establish a process for compiling and storing documents – get agreement upfront
- ☐ Follow documentation practices from the beginning
- ☐ Retain design drawings
- ☐ Take photos during construction
- ☐ Photos of the final construction
- ☐ Obtain aerial maps (web-based maps or similar) to illustrate building location, amenities and items such as bus stops (if using for points)
- ☐ Design calculations (e.g. ventilation effectiveness)
- ☐ Cut catalogue sheets for equipment (e.g. water flow rates, mechanical system efficiency)

4.5 List of Green Building Practices for Newfoundland & Labrador

There are many economic, social and environmental benefits to energy efficient buildings. Even if your project is not applicable under the BBB Policy or has received an exemption from BBB, project planners should be incorporating sustainable green building practices into project plans.

It is important to note that there are certain practices that are more realistic for Newfoundland and Labrador. The list below provides examples of relevant sustainable building practices.

- ☐ Partner to re-purpose existing facilities or future-proof buildings for easy adaptation
- ☐ Protect vegetation and habitats during site selection & choose high density, in-fill projects
- ☐ Embrace geography-specific planning i.e. passive solar heating in high sunlight areas such as Labrador or rainwater collectors on the Northeast Avalon
- ☐ Build structures that have energy efficient envelopes – sealed against air leaks and maximized for insulation
- ☐ Purchase systems that are water and energy efficient i.e. energy efficient lighting fixtures and low-flow faucets
- ☐ Utilize lighting systems that maximize solar harvesting or have light sensors
- ☐ Design lighting systems that meet or exceed best practices respecting lighting power intensity
- ☐ Commissioning systems to ensure proper performance
- ☐ Use high-performance windows for views and daylighting (40% Window/Wall ratio target)
- ☐ Ensure building durability (low maintenance finishes) e.g. Maintenance needs are factored into life cycle costs
- ☐ Implement localized thermal comfort for work spaces - open spaces allowed to fluctuate with season
- ☐ Increase outdoor air delivery with heat recovery
- ☐ Select materials with low VOCs, high recycled content, that are local and durable
- ☐ Maximize innovations i.e. local companies create solar panels out of recycled pop cans
- ☐ Use only native landscaping with no irrigation requirements
- ☐ Purchase energy efficient appliances, windows and doors

4.6 Project Team Questions & Answers (Q&A)

Q1: If I cannot meet one or more of the eight mandatory LEED prerequisites (sections 3.0 or 4.1), is the project no longer required to be built sustainably?

A1: No. At various checkpoints in the process it may become clear that LEED certification is not possible, but that does not mean that sustainable building practices can be ignored. In cases where an exemption is granted, following the intent of the policy is still a requirement and sustainable building practices should still be factored in. See Section 2.5 for determining when to seek an exemption and Section 5.1 for an overview of the BBB process.

Q2: Does the designer have to conduct multiple calculations or use multiple models to ensure the building meets LEED and exceeds MNECB by 25 per cent?

A2: Compliance with LEED's energy prerequisite (i.e., 25% better by consumption or 23% better by cost) is typically demonstrated by the use of a computer energy simulation. Early calculations (based upon 1997 MNECB requirements) can be conducted by the Designer for goal setting for lighting power density, insulation levels, window performance and ventilation. However, most compliance work will be conducted by an Energy Modeler.

Q3: What are the grounds for an exemption from the BBB Policy?

A3: Exemptions can only be granted in certain circumstances. Examples of possible reasons for exemptions include: if the 1997 Model National Energy Code in Canada for Buildings (MNECB) is not suitable because of the building type i.e. some rural vehicle storage facilities; or if a building does not meet the seven LEED Minimum Project Requirements (MPR) outlined in Section 2.5. Insufficient funding or concerns about not attaining a LEED designation is NOT grounds for an exemption.

Q4: Who is responsible for preparing a request for an exemption?

A4: The lead department, agency or proponent that builds or needs the facility e.g. HCS for a hospital; EDU for a school etc.; MA for a municipal-funded project, via the proponent.

Q5. What if we cannot achieve the prerequisites and at least 40 points, as required for LEED Silver, do we ask for an exemption?

A5. No. Exemptions are for projects cannot comply with LEED's Minimum Project Requirements or is not suitable based on function as outlined in the Model National Energy Code for Buildings.

Q6: If an exemption is granted, what level of green building practices needs to be followed, if any?

A6: As many as possible. The purpose of the policy is to improve the sustainability of buildings that government invests in. For details, see Section 4.5.

Q7: Do you need to exceed the 1997 Model National Energy Code by 25 per cent even if you are applying for an exemption from the BBB Policy?

A7: Yes. Energy efficiency is a key priority of government.

Q8: Would the committee provide financial assistance in achieving certification in difficult cases where point totals are below LEED thresholds due to funding availability?

A8: No. Requests for additional funding for a project must follow the infrastructure approval process. Building sustainably is the focus of the policy. Costs for LEED are built into funding requests up-front or proponents can seek additional funding from outside sources.

Q9: Is there a LEED Accredited Professional (AP) within the Government of Newfoundland and Labrador, to provide guidance on projects?

A9. No, this service is presently contracted out. However, there are internal staff that have a significant amount of knowledge about LEED.

Q10. When should LEED costs be factored into a project plan?

A10. In the project identification phase, when the business case is identified and a funding request is submitted for approval-in-principle.

Q11. When should consultants and contractors be advised of BBB requirements (LEED/ MNECB)?

A11. Consultants must be advised before submitting fees or notified during the RFP or the Request for an Expression of Interest (REOI) process. Contractors are made aware in the tender document.

Q12. If my project is over-budget, is LEED an area that can be removed from the project plan to reduce costs?

A12. No. The budget for LEED are added for the specific purpose of building more sustainably, is it not an area that can be used to top-up other project areas. Energy efficiency is a key priority for the Government of Newfoundland and Labrador, if projects are in a cost over-run, concept designs or the business case for the project should be re-visited. Sometimes if projects are over-designed, the concept design can be revisited to improve upon energy efficiency.

Q13. Why are LEED certification and documentation costs higher than expected?

A13. Now that LEED is becoming more established in the province and employees, project managers and designers are increasing their skills and abilities in sustainable design, the costs should decline. Energy efficiency is an upfront investment that will save money over time.

Q14. Who is responsible for submitting the application to the CaGBC for the LEED designation once all relevant documentation is gathered?

A14. Typically the LEED Consultant or LEED AP for the project will submit the documentation to the CaGBC for LEED certification. However, any CaGBC member, who has been identified as a project team member has access to upload information.

Part B - Technical Requirements for Building Design and Construction Managers

5.0 Fulfilling the BBB Policy: Requirements, Processes and Approvals

There are generic phases or project management approaches to most Provincial Government infrastructure initiatives which typically include some form of business case development, program planning, concept design, design development, tendering and construction. In each of these steps, **various approvals are required to ensure infrastructure projects follow sound financial management process and building sustainability requirements**. Managers must be fully aware of the various approval processes and stages.

This Guide seeks to incorporate the BBB Policy requirements into existing business and project management processes, by identifying where LEED requirements and infrastructure approval requirements should be incorporated. This technical section is designed specifically as a set of diagrams and checklists for technical experts to use with ease, in ensuring that projects are thoroughly planned, while incorporating sustainable building practices and the requirements of the BBB Policy.

> **Tip:** It is difficult, if not impossible, to go back after construction to collect the required LEED documents. Incorporate this into the project plan as you go.

The Department of Transportation and Works (TW) have developed a Project Management & Design Administration Manual (PMDA) for infrastructure projects. The manual tends to be used for many large-scale building projects and is relied on by Education and Health & Community Services. The manual is constantly evolving to keep current with new approaches and requirements. As an example, the Design-Build Approach will be added in the future. The manual can be a useful tool for step-by-step guidance on building projects. This manual can be found on the departmental website: http://www.tw.gov.nl.ca/works/index.html.

The Department of Municipal Affairs has begun to implement a Design-Build Approach to design and construct building projects, where a Request for Qualifications or Proposals are issued for contract teams with consultants. An Owner contracts with the Design-Builder to provide both design and construction services in one package. Design-Build is not a panacea and, in some instances, traditional project delivery systems may offer distinct benefits on certain projects. By carefully weighing all the benefits and disadvantages, Owners can select the method most appropriate to any given project. Some benefits of the Design-Build Approach include receiving a project plan that is fully defined upfront; overlapping design and construction activities; improving cooperation between builders and designers; improving price certainty and avoiding conflicts & disputes. There is no set approach for the Government of Newfoundland and Labrador to follow and Departments, Agencies or Crown Corporations may follow different approaches.

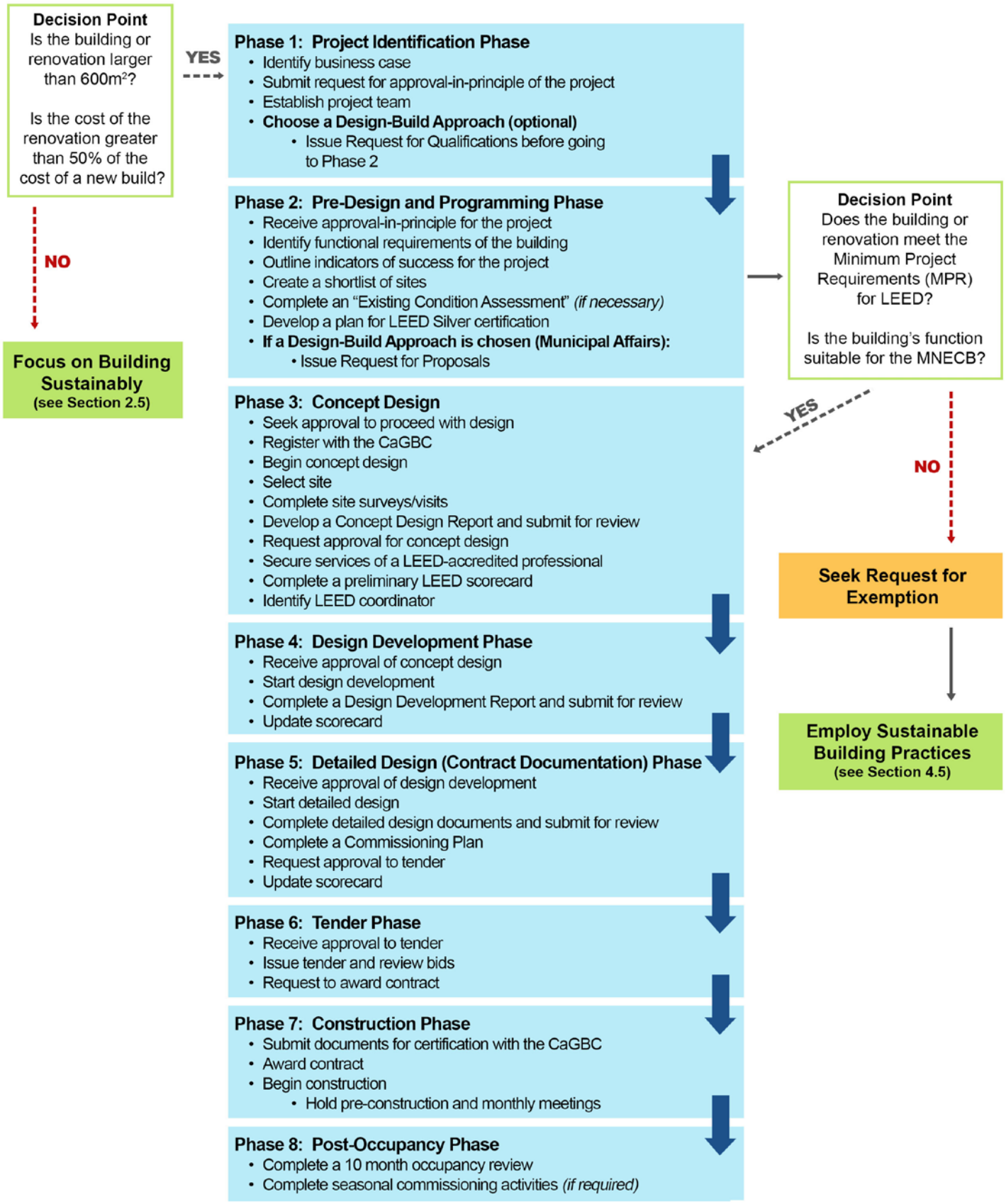
Whichever project management approach used, and whether or not a project can achieve a LEED Silver certification, all buildings must be built sustainably. Teams must demonstrate the LEED credits they pursued and report on sustainable strategies used.

For the purpose of this Guide, the following project management steps will be used:

- ☐ Project Identification
- ☐ Pre-Design & Programming
- ☐ Concept Design
- ☐ Design Development
- ☐ Detailed Design (or Contract Documentation)
- ☐ Tender
- ☐ Construction
- ☐ Post-Occupancy

The following tables and charts can be removed from the guide for quick reference on which steps to follow in moving forward on your building project.

5.1 Implementing the BBB Policy



5.2 Checklists for Project Managers

Phase 1: Project Identification Phase

Project Identification & Financial Approval Requirements	BBB Policy Guidelines
Business Case or need for project is identified by department, agency or proponent.	☐ Awareness of compliance with BBB Policy required. ☐ Does the build meet size and cost requirements? If no, still consider sustainable building practices Section 2.5. ☐ Does the build meet function requirements under MNECB or Minimum Project Requirements under LEED? If no, apply for an exemption from the BBB Assessment Committee (see Section 2.5). ☐ Check to see if there are synergies with other departmental requirements for buildings in the same area or community. ☐ Consider existing buildings in the region: can there be renovations, add-ons or partnership to meet primary or secondary needs?
Request submitted for approval-in-principle for budgetary commitments.	☐ Cash flow estimate, **factoring in LEED costs**, is included in submission for approval-in-principle. Ensure that training and operating costs are also factored in.
Consider establishing Project Team to guide early decisions.	☐ Consider adding a LEED professional to the project team to assist with proactive decision making.
A Design-Build Approach / Request for Qualifications or Proposals can be developed and issued at this point, if that is the desired direction of the department or funder.	☐ LEED Sustainable Sites and Materials & Resources credits will be impacted by decisions made in this stage. ☐ Before going to Phase 2, issue Request for Qualifications. LEED requirements are outlined. ☐ Add LEED (AP) professional to the project team.

Phase 2: Pre-Design & Programming Phase

Pre-Design / Programming & Financial Approval Requirements	BBB Policy Guidelines
Infrastructural Approval-in-principle received	---
Identify the functional requirements of the building, considering the program or service to be delivered. Consider: ☐ Functional Spaces ☐ Furniture requirements ☐ Mechanical specialties ☐ Electrical / Communications ☐ Specialties	☐ Determine what LEED rating system should be used to comply with the BBB Policy, refer to Section 3.0 of the Guide. ☐ The Owner's Project Requirements (OPR's) or Statement of Requirements should be documented at this stage – the OPR's form part of the Commissioning Process (Cx) Plan. ☐ Commissioning is a process by which facility systems and equipment is tested to verify the design objectives as stated in the performance criteria and outlined in the specifications. ☐ Be sure to engage the owner in this early stage to discuss system requirements, to ensure that decisions are made on systems that can be sustained. This is especially relevant for municipal projects. ☐ Operating a sustainable building is the responsibility of the owner after construction is complete – be sure to factor in practical features that can be maintained.
Outline the indicators of success for the infrastructure project – go beyond infrastructure needs alone (e.g. increased attendance, reduced duration of stay, etc.,)	☐ Supports Government's commitment to building more sustainably

Pre-Design / Programming & Financial Approval Requirements	BBB Policy Guidelines
Potential sites are shortlisted.	☐ Selection should be cognizant of LEED implication and sustainable site credits. ☐ LEED Sustainable Sites and Materials & Resources credits will be impacted by decisions made in this stage. ☐ Avoid land that is within 30 m of a wetland or body of water, lower than 1.5m above a 100-year flood plain, habitat protected, as well as farmland and park lands. ☐ Are there existing land areas that are: underdeveloped; contaminated and in need of restoration; near community centres; close to bus, bike or walking routes and major amenities. ☐ Are potential sites suited for alternative power supply; settlement ponds etc.,
Existing Facility Condition Assessment completed (if necessary).	☐ Assess whether or not resources or equipment can be re-used for the Materials & Resources LEED credit
Site Selection	☐ Be sure to review LEED Prerequisites as a part of site selection, see Section 4.1. ☐ Have the sites being evaluated for contaminated soil? Photographing and recording is needed for LEED requirements. ☐ The site or potential sites should be narrowed down in order to make fundamental decisions. ☐ The majority of the LEED documentation, at least for design credits, will be completed during this stage.
Site Survey / Visits	☐ Have the sites been evaluated for building orientation for solar access? ☐ Have the sites been evaluated for wind direction, biota (current and ancient flora and fauna), water sources and depth, land shape, etc.? ☐ If an existing building is being considered:

Pre-Design / Programming & Financial Approval Requirements	BBB Policy Guidelines
	☐ Has a pre-condition audit been conducted? ☐ Can existing equipment be reused? ☐ Does the existing equipment contain CFC's or HCFC? ☐ Does the existing building contain mold, asbestos, lead, or other contaminants? ☐ How much of the building's shell or interior surface would need to be removed? (e.g., to establish service life of building and major components)
Develop a plan for LEED Silver certification, targeting 55… [best practice is 5 points above minimum for silver]. Secure services of a LEED Accredited Professional (if needed). A preliminary LEED® Score Card shall be completed to assess the viability of committing the design and financial efforts required for a LEED® project as defined by the BBB Policy. At this time, any point which is deemed to be not feasible for financial, construction, or end user/maintenance reasons should be flagged for discussion, to avoid 'point-shopping' and reach consensus on practical decisions for the project.	☐ Host a LEED Charrette to kick-start the Design Process. ☐ All disciplines are to perform a detailed review of ALL LEED credits and determine the requirements to be implemented into the design. ☐ Determine what LEED rating system should be used to comply with the BBB Policy? (e.g. New Construction, Homes, Existing Building, Commercial Interiors). ☐ Provide a preliminary LEED ® scorecard identifying points to be targeted, points which will not be pursued and those points which need to be explored further. ☐ No LEED Documentation required at this stage. ☐ At the onset of the project the initial LEED scorecard is developed and reviewed. This should be done in conjunction with scope development for the consultant. ☐ At this stage the goal level of certification shall be defined.

Pre-Design / Programming & Financial Approval Requirements	BBB Policy Guidelines
In cases where the Minimum Project Requirements under LEED® cannot be met, an exemption should be requested to exclude the project from the requirements of the BBB Policy. The exemption is to be written by the Client Department and submitted to the Build Better Buildings Assessment Committee with the appropriate documentation. Note there is no guarantee an exemption will be permitted, so planning must continue on the basis that LEED is a requirement until such time as an exemption is granted.	☐ A request for exemption should be made at this time. ☐ This then allows for clear direction and more cost efficient design process. ☐ Note there is no guarantee an exemption will be permitted, so planning must continue on the basis that LEED is a requirement until such time as an exemption is granted. ☐ If an exemption is granted, a plan to build sustainably is to be developed
Cost-Planning Budget Updates	☐ All "normal" project costs with life cycle costs **and** LEED costs are factored in.
If the Design-Build Approach is chosen (MA), issue an RFP.	☐ LEED requirements are issued as part of the RFP.
Request submitted for approval-to-design	---

Phase 3: Concept Design

Concept Design & Financial Approval Requirements	BBB Policy Guidelines
Seek approval to proceed with design	☐ Once granted, proceed as outlined below.
Concept Design Begins	☐ Register with CaGBC ☐ Include LEED AP and all services required for the LEED process in the project costs. ☐ Design Meetings are held on a regular basis, with LEED as a discussion point on the agenda. Depending on the scope of the project separate LEED meetings may be required. ☐ A commissioning authority should be engaged by the Owner to oversee the Commissioning (Cx) process. ☐ Avoid over-designing a facility in order to make it more sustainable ☐ Consider building orientation early in the concept design phase.
Concept Design Report is developed by Consultants and submitted for review and comment	☐ The majority of the LEED documentation, at least for design credits, will be initiated during this stage. A system needs to be put in place for ensuring these are collected and filed for use later. ☐ Describe each of the proposed systems to be utilized in the facility, specific attention to those associated with LEED credits. ☐ Various options should be considered at this stage for heating, ventilating, air conditioning and hot water heating. Each should be evaluated for the synergies (overlapping benefits), lifecycle cost, ability to meet performance targets, as well as specific operating requirements of facility. ☐ Initial Life Cycle Cost analysis to be completed and included in the report. ☐ Are there opportunities for on-site renewable energy production? ☐ Early Energy Models are developed to determine the electrical and HVAC loads for the building.

Concept Design & Financial Approval Requirements	BBB Policy Guidelines
	(continued on next page) ☐ All Innovation and Design Credits should be sought. ☐ Owner should evaluate existing Policies to assist (e.g., Green Cleaning, Scent-free zones, Education tours/signage, etc.). ☐ As the building begins to take shape, consider elements such as solar orientation and prevailing wind direction. These key areas need to be established early in order to take advantage of passive (non-mechanical) heating, cooling and ventilation options. ☐ Design team to evaluate LEED Regional Priority credits for Urban or Rural locations. ☐ Elemental cost breakdown to be included in the report.
Request to approve Concept Design submitted	☐ Ensure LEED Costs and requirements are factored in, or the concept design can be rejected, slowing the process down.

Phase 4: Design Development Phase

Design Development & Financial Approval Requirements	BBB Policy Guidelines
Approval of Concept Design	☐ Once received, proceed as outlined below
Design Development begins	☐ Design Meetings are held on a regular basis, with LEED as a discussion point on the agenda. Depending on the scope of the project separate LEED meetings may be required. ☐ Avoid over-design to make a building more sustainable.
Design Development Report is developed and submitted for review and comment	☐ The LEED documentation will be proceed with further development to prepare for submittal to the CaGBC (if there has been a decision to apply for independent review). ☐ The LEED ® scorecard at this stage is confirmed in regard to the points which will not be explored. No further debate on those should occur during the process – this helps to keep the project focused and on track. ☐ Describe each of the selected systems associated with LEED credits. ☐ The Energy Model should be updated to illustrate chosen strategies, to evaluate point range. ☐ Provide detailed plan for document control and list of deliverables required from each discipline consultant and contractor in order to achieve the credits targeted. ☐ Elemental cost breakdown to be submitted.
Request to approve Design Development submitted	☐ BBB Exemptions should not be sought or needed after this stage, if project is appropriately planned.

Phase 5: Detailed Design (or Contract Documentation) Phase

Detailed Design (or Contract Documentation) & Financial Approval Requirements	BBB Policy Guidelines
Approval of Design Development	☐ Once approved, proceed as outlined below
Detailed Design begins	☐ Design Meetings are held on a regular basis, with LEED as a discussion point on the agenda. Depending on the scope of the project separate LEED meetings may be required.
Detailed Design Documents (drawing and specifications) are developed and submitted for review and comment	☐ The LEED documentation will proceed to demonstrate how it is built sustainably (preparing for submittal to the CaGBC). ☐ Document submittal shall include ALL LEED Design Credit documentation (Calculations, photos, equipment catalogue cut sheets, LEED Letter Templates, etc.) not requiring contractor input. ☐ The strategies for achieving the LEED credit requirements will be implemented. ☐ Energy Models are to be completed and ready for the Energy Modeler to review (or completed by a 3rd party, depending approach). ☐ Finalize the LEED ® scorecard at this stage. ☐ Ensure that LEED specification sections are included and all other specifications reference LEED as required. ☐ The Contract / Construction documents should contain all requirements for the Contractor to complete the necessary Construction LEED credits (e.g., Erosion and Sedimentation Control Plan requirements, material VOC limits, etc.). ☐ The detailed plan for document control and list of deliverables from each discipline is reviewed for completeness of work. ☐ Materials to be selected to meet the following: ☐ Volatile Organic Compound (VOC) limits (as per LEED) ☐ Recycle content (as set in score card) *(continued on next page)*

Detailed Design (or Contract Documentation) & Financial Approval Requirements	BBB Policy Guidelines
	☐ Regional content (measured in distance from site) ☐ 3rd-party certified (e.g., Forest Stewardship Council (FSC), Carpet & Rug Institute (CRI), Green guard, etc...) is to be utilized on all projects. ☐ Updated elemental cost breakdown to be submitted for pre-tender approval (if this approach is taken). ☐ Final project cost estimate updated (just prior to submission of tender package, if this approach is used).
Commissioning Requirements	☐ The Commissioning Plan should assembled throughout this stage, as draft. Note LEED connection here. ☐ Along with the drawings and specifications a "Systems Manual" is required to be submitted, describe the final design of each of the system to be utilized in the facility.
Request for 'Approval to Tender'	☐ Submittals depend on departmental approach taken

Phase 6: Tender Phase

Tender & Financial Approval Requirements	BBB Policy Guidelines
Approval to Tender Received	---
Tender Period begins	☐ The tender documents should clearly stipulate the building is to achieve the required level of LEED. ☐ Requests for clarification or substitutions during the tender period. These are to be reviewed to ensure they maintain the integrity of the design and not jeopardize any planned LEED credits. ☐ Note: Addendums issued as necessary resulting from the requests or designer additions/modifications.
Tender Period Closes	☐ Bids are received and reviewed, noting any discrepancies for LEED.
Issued For Construction Documents	☐ Consultant submits "Issued for Construction" documents. At this time a LEED scorecard is to be submitted with ALL corresponding documents. ☐ To ensure proper documentation of LEED submissions, all design credits should be completed with the release of the "Issued for Construction" documents.
Request to award contract is made	☐ Submittals depend on departmental approach taken

Phase 7: Construction Phase

Construction & Financial Approval Requirements	BBB Policy Guidelines
Construction Contract awarded	---
Construction begins	☐ Submit documents for certification with CaGBC. ☐ Pre-Construction Meeting including LEED on the agenda is held. ☐ The Contractor shall identify a LEED coordinator. ☐ Typically, LEED Consultants will provide "Green Material Data Sheets" (forms that outline material requirements to achieve specific LEED credits) to assist Contractors with the submission of LEED materials for review. ☐ Monthly constructions meetings shall have a standing agenda item for LEED discussions. Periodically throughout construction, specific LEED meetings are required. ☐ At a minimum, monthly Commissioning meetings are required. The frequency will increase as the project progresses and the Commissioning Agent requires (this depends on the level of commissioning chosen). ☐ Project budget cost information will be required from Contractor to determine LEED requirements for some material credits (e.g., recycle content, regional materials, etc.) ☐ Periodic or monthly submissions are typically required to illustrate compliance with LEED requirements, including: ☐ Erosion and Sedimentation Plan ☐ Construction Indoor Air Quality ☐ Material Submissions ☐ The Contractor submissions will occur as credits are completed, which is typically at the end of construction. ☐ Complete the Contractor LEED submissions. ☐ Complete Building Commissioning requirements. ☐ Finalize Building Energy Model. ☐ Issue finalized model of 3rd-party review (LEED requirement) *(continued on next page)*

Construction & Financial Approval Requirements	BBB Policy Guidelines
	☐ Complete all LEED documentation for submission to CaGBC, including: ☐ Project narratives (description of project) ☐ Minimum Project Requirements (MPR) ☐ Drawings, photographs and credit submission documents.
Evaluation reports for contractors and project to be completed	☐ The LEED Consultant will: ☐ Write up project case study for LEED Certification ☐ Finalize LEED scorecard ☐ Prepare (and submit) LEED Submission to the CaGBC ☐ Project photographs illustrating elevations & interior spaces ☐ Project Case Study
Substantial Completion and Final Completion activities.	☐ All Commissioning Activities are complete prior to issuance of Substantial Completion.

Phase 8: Post-Occupancy Phase

Post-Occupancy Requirements	BBB Policy Guidelines
Post-Occupancy Requirements of the Project Lead	☐ 10 Month occupancy review is completed. ☐ Seasonal commissioning activities, if required are completed. ☐ Report submitted to the BBB Committee with CaGBC review results.

5.3 LEED Strategies to Consider in Newfoundland & Labrador

Given building function and the uniqueness of building in Newfoundland and Labrador, some LEED credits have particular relevance to Newfoundland and Labrador. This table provides an in-depth analysis of the LEED Rating system by building function and project type. Understanding the building environment and the building function also helps to avoid 'point chasing'.

Relevant LEED points for Newfoundland and Labrador				
Sustainable Sites (SS)			**Possible Points: 26**	**Strategies**
SS	Prereq 1	Construction Activity Pollution Prevention	Required	Erosion and sedimentation control is a GNL requirement. Address by stockpiling topsoil, installing silt fencing or settling ponds, etc. Relevant for all building types.
SS	Credit 1	Site Selection	1	Avoid farmland, floodplains, certain elevation grades etc., valuable for all projects. Promote in-fill projects and review sites early on. Also consider sites where buildings can be re-purposed. Relevant for all building types.
SS	Credit 2	Development Density and Community Connectivity	3,5	Consider mixed-use development areas, or proximity to amenities when selecting sites or the centre of rural communities, instead of on the outskirts, unless future expansion plans are slated.
SS	Credit 3	Brownfield Redevelopment	1	Choose brownfield sites. Classification of 'brownfield' or land available for re-use may be a challenge in NL, but valuable to consider during initial site selection. Relevant for all building types.
SS	Credit 4.1	Alternative Transportation: Public Transportation Access	3,6	Consider developing in more densely populated parts of the community. There are credit interpretation rulings for rural and remote locations but this may be easier in larger centres. Relevant for schools, hospitals, community centres, crown corporations, clinics, town halls, etc.
SS	Credit 4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	1	Consider partnerships with community-based organizations or other groups like the RCMP for bike-share programs. Factor in the showers and bike racks early into the planning process. Beneficial for schools, office buildings, staff of health facilities, and crown corporation buildings.

Relevant LEED points for Newfoundland and Labrador				
Sustainable Sites (SS)			**Possible Points: 26**	**Strategies**
SS	Credit 4.3	Alternative Transportation: Low-Emitting & Fuel-Efficient Vehicles	3	Car sharing programs are becoming very popular for larger Cities (St. John's, Corner Brook and Grand Falls/Windsor). Most teams use electric charging stations – slow charge with "regular" (220V) plugs (8-12 hour charge) or "fast" charge (4 hours) with a specialized plug. High efficiency fleet vehicles is another approach for government projects (police, delivery trucks, service trucks, etc.) While electric vehicles are not currently widespread in NL, eight charging stations were opened on the island portion of the province in 2013 – check: www.turnbackthetide.ca
SS	Credit 4.4	Alternative Transportation: Parking Capacity	2	Strategies include adding specialized parking places for carpooled vehicles. Valuable for all building types & functions to minimize vehicle emissions.
SS	Credit 5.1	Site Development: Protect and Restore habitat	1	Limit disturbances during upfront development, minimize the footprint of the building, and maximize local vegetation. Valuable for all project / building types.
SS	Credit 5.2	Site Development: Maximize open space	1	Reduce the development footprint and maximize open space. Useful for schools, healthcare facilities and community centres that use open space for health reasons. Common example is an accessible green roof. Valuable for all project / building types.
SS	Credit 6.1	Stormwater Design: Quantity Control	1	Storm water control will be easier with projects that have more open space. Strategies include low-phosphorus fertilizers, detention ponds, drain restrictions, and infiltration galleries. Valuable for all project / building types.
SS	Credit 6.2	Stormwater Design: Quality Control	1	Implement a storm water management control plan to capture and treat water run-offs. Relevant for all building types.

Relevant LEED points for Newfoundland and Labrador

Sustainable Sites			Possible Points: 26	Strategies
SS	Credit 7.1	Heat Island Effect: Non-Roof	1	Higher proportions of human activities make areas warmer, especially urban communities. Credit is important for schools, health facilities, community centres, and offices. Strategies include grip pavers, light colored hard-scaping, vegetation and trees that provide shade.
SS	Credit 7.2	Heat Island Effect: Roof	1	Strategies include using roofing material with solar reflectance or install a vegetated roof. Important to factor in care and maintenance costs of a living roof.
SS	Credit 8	Light Pollution Reduction	1	Important for all buildings to reduce light pollution. Useful for all buildings, even though benefits are mostly community-based. Strategies include using cut-off lights, directional lights, minimizing light spillage, use of LED lights, light parking lots appropriately, etc.

Relevant LEED points for Newfoundland and Labrador				
Water Efficiency (WE)			**Possible Points: 26**	**Strategies**
WE	Prereq 1	Water Use Reduction	Req.	Strategies include using low flow fixtures and hands-free sensors. The absolute lowest-flow fixture may not be beneficial if higher maintenance costs are required. Needs of owner are to be factored in. Credit important for all buildings that are large consumers of potable water i.e. schools, health facilities, and community centres.
WE	Credit 1	Water Efficient Landscaping	2,4	Reduce potable water consumption for irrigation by 50 per cent. Schools with playgrounds and hospitals with healing gardens can gain more points by using captured rain. Strategies include working with MUN to obtain native species i.e. native grasses.
WE	Credit 2	Innovative Wastewater Technologies	2	Reduce potable water consumption for sewage by 50 per cent. Common strategy is to use cisterns for storing and reusing waste water.
WE	Credit 3	Water Use Reduction	2-4	Good for all buildings. Plan for the future, while there are presently limited costs for water; this may change in the future. Water harvesting and re-using grey water are useful strategies to consider. Ensure you reduce water use relative to the baseline of the building's water usage.

Relevant LEED points for Newfoundland and Labrador

Energy and Atmosphere (EA)			Possible Points: 26	Strategies
EA	Prereq 1	Fundamental Commissioning of Building Energy Systems	Req.	Relevant for all building types. Engage a commissioning authority to complete a commissioning report. In-house services are available through TW.
EA	Prereq 2	Minimum Energy Performance	Req.	Requirement under BBB and beneficial for all building types. Conduct life cycle costing on equipment. Demonstrate a 23 per cent cost improvement in the proposed building performance rating compared to ASHRAE 90.1-1997. Design must include all usages, including plug loads. Strategies: identify relationship between design/construction and operation budgets, ground source heat pumps, heat recovery ventilators, automatic interior lights, heat reclamations, etc.
EA	Prereq 3	Fundamental Refrigerant Management	Req.	This is a legal requirement in NL. Important for all building types to minimize ozone depletion. Strategies include not using CFC-based refrigerants and consider phasing out CFC in renovation of older buildings.
EA	Credit 1	Optimize Energy Performance	1-19	Complete lifecycle costing on equipment and materials. Strategies include using an Energy Modeler, minimizing thermal bridging, creating a high performance building envelope, designing to harvest daylight, ensuring high levels of heat recovery, installing heat pumps, etc. Important that all building focus on energy conservation. Rural locations should be targeting a higher percentage of points here.
EA	Prereq 3	Fundamental Refrigerant Management	Req.	This is a legal requirement in NL. Important for all building types to minimize ozone depletion. Strategies include not using CFC-based refrigerants and consider phasing out CFC in renovation of older buildings.
EA	Credit 1	Optimize Energy Performance	1-19	Complete lifecycle costing on equipment and materials. Strategies include using an Energy Modeler, minimizing thermal bridging, creating a high performance building envelope, designing to harvest daylight, ensuring high levels of heat recovery, installing heat pumps, etc. Important that all building focus on energy conservation. Rural locations should be targeting a higher percentage of points here.

Relevant LEED points for Newfoundland and Labrador				
Energy and Atmosphere (EA)			**Possible Points: 26**	**Strategies**
EA	Credit 2	Renewable Energy	1-7	May be more beneficial in remote locations, with good solar access, close proximity to oceans, with consistent wind e.g. Western NL and Labrador, or for buildings with high electricity requirements. LEED considers the following as eligible for on-site systems: Photovoltaic, wind energy, solar thermal, biofuel based electrical and thermal, geothermal heating, geothermal electric, low-impact hydroelectric, wave and tidal power. Note: Geo-exchange (or ground source heat pumps) is not the same as Geo-thermal. On-site renewable energy requires a significant capital investment, with typically longer payback periods. However, in communities dependent on diesel generators, or unreliable electricity, alternative means of power productions may be advantageous. The LEED credit outlines which are eligible on-site systems, and which are not. e.g., (NOT) Architectural features, passive solar strategies, day lighting strategies, geo-exchange systems (ground-source heat pumps).
EA	Credit 3	Enhanced Commissioning	2	Enhanced Commissioning (Cx) ensures that the correct systems are installed, tested, balanced and operating as intended. In order to get CaGBC approval, project must be tested for intended outcomes. Transportation & Works provides this service.
EA	Credit 4	Enhanced Refrigerant Management	2	This is important for all building types to minimize ozone depletion. This may be challenging for renovation projects; however, LEED allows a phase-out period.
EA	Credit 5	Measurement & Verification	3	Very beneficial to projects that have more complicated mechanical systems, larger uses of water and energy, and requirements for annual operating budgeting. Office buildings, or their tenants, can benefit from this credit, if they have the ability to change equipment and are sub-metered. Typically a specialized Mechanical Engineer is required for this credit; this would be an additional cost to most projects. Additional costs may also be required for managing data storage, interpretation and action (this would typically be an internal cost).

Relevant LEED points for Newfoundland and Labrador				
Energy and Atmosphere (EA)			**Possible Points: 26**	**Strategies**
EA	Credit 6	Green Power	2	The benefits of this credit are related to the promotion of green power. You are buying credits for the promotion of green power. The key with this credit is like off-setting carbon. First, reduce your consumption (or change behavioral patterns), second off-set or purchase green power credits. Currently, not well accepted in NL, but a good green thing to do.

Relevant LEED points for Newfoundland and Labrador				
Materials and Resources (MR)			**Possible Points: 35**	**Strategies**
MR	Prereq 1	Storage & Collection of Recyclables	Req.	Designate an area for the storage of recycling in the building plans. Provide collection bins for paper, cardboard, glass, plastics, metals, and organic waste. Extra floor space may add to cost. This is valuable for all projects, to help reduce the waste that is generated by occupants. Composting is being encouraged more for projects. These elements need to be considered early in the planning stage.
MR	Credit 1.1	Building Reuse: Maintain Existing Walls, Floors, and Roof	1-3	Have the architect develop a floor plan of the existing structure. Assess the condition of the structural components, and prepare a fit up plan for the interior. Valuable for all renovation projects.
MR	Credit 1.2	Building Reuse: Maintain Interior Non-Structural Elements	1	Identify items for re-use and store until ready for the re-construction. Less likely for health care facilities, more likely for industrial buildings, can be considered for other building types.
MR	Credit 2	Construction Waste Management	1-2	Investigate what types of recycling facilities exist in your area. Incorporate waste diversion into contracts with waste haulers. Go with what works in your community. Valuable for all projects. May be difficult to comply with LEED requirements for rural or remote locations where facilities do not exist.
MR	Credit 3	Materials Reuse	1-2	Involves salvaging items form existing buildings such as using old doors etc. Valuable for all projects.

Relevant LEED points for Newfoundland and Labrador

Materials and Resources (MR)			Possible Points: 35	Strategies
MR	Credit 4	Recycled Content	1-2	Search for suitable products and materials with high pre-consumer or post-consumer recycled content. Specify large ticket items that contain a minimum amount of recycled content if appropriate. Valuable for all projects to minimize the use of virgin materials.
MR	Credit 5	Regional Materials	1-2	Investigate which local materials are available and incorporate them into the building design. For materials which need to come from far away, try to arrange to have them shipped by rail or boat to reduce the environmental impacts. Contact sector specialists in the Department of Innovation Business & Rural Development for local producers.
MR	Credit 6	Rapidly Renewable Materials	1	These materials are typically made from plants harvested within a 10-year cycle. Use rapidly renewable materials for 2.5 per cent of the total value of all building materials. Beneficial for schools, hospitals, community centres and offices due to fewer health issues and the importance of sanitation; less beneficial for industrial buildings.
MR	Credit 7	Certified Wood	1	Investigate which wood providers in the area offer certified wood. If the project is big enough you may be able to encourage your wood provider to obtain certification. Ask for copies of the chain-of-custody certificates for the wood purchased. Less likely to be used in hospitals but useful in schools, community centres and offices for sustainability and work performance reasons.

Relevant LEED points for Newfoundland and Labrador				
IE	Prereq 1	Minimum IAQ Performance	Req.	Comply with ASHRAE 2007 Ventilation for Acceptable indoor quality. By meeting the minimum ventilation rates the building can help reduce contaminants, particulates, and microorganisms. This will reduce negative health effects for occupants. This is valuable for all projects.
IE	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Req.	This is a requirement in NL. Preventing smoking increases the health and well-being of occupants, and improves the indoor air quality.
IE	Credit 1	Outdoor Air Delivery Monitoring	1	Beneficial for all building because high CO2 concentrations result in headaches and dizziness. The strategy with this credit is to address the high density areas, when they are densely populated (e.g., a

Relevant LEED points for Newfoundland and Labrador				
				board room may be used only periodically, hence the ventilation rate should fluctuate with the number of people in the room, or C02 levels). Design a system that can monitor and adapt the ventilation rate accordingly and provide a higher level of outdoor air than typical. This is a controversial credit, as it has a negative consequence on energy conservation – more outdoor air, more heating or cooling. However, higher outdoor air amounts have shown to improve concentration and minimize work fatigue.
IE	Credit 2	Increased Ventilation	1	Increased ventilation will improve the comfort and productivity of occupants, but it will use more energy and raise operating expenses.
IE	Credit 3.1	Construction IAQ Management Plan: During Construction	1	Having an Indoor Air Quality management plan will protect building materials from moisture damage which will affect their useful life. It also protects the ventilation system from contamination, which is essential for good indoor air quality regardless of the building type. This is valuable for all projects.
IE	Credit 3.2	Construction IAQ Management Plan: Before Occupancy	1	This credit is beneficial for all buildings, except industrial settings, as it will reduce any VOCs from the air.
IE	Credit 4.1	Low-Emitting Materials: Adhesives & Sealants	1	This credit is beneficial for most buildings where people gather or inhabit (except industrial settings) as low emitting products will reduce the sources of VOCs which can pollute the indoor air long after construction is finished.
IE	Credit 4.2	Low-Emitting Materials: Paints and Coatings	1	Choose low-emitting materials. This credit is beneficial for most buildings where people gather or inhabit (except industrial settings) as low emitting products will reduce the sources of VOCs which can pollute the indoor air long after construction is finished.
IE	Credit 4.3	Low-Emitting Materials: Flooring Systems	1	Choose low-emitting materials. This credit is beneficial for most buildings where people gather or inhabit (except industrial settings) as it will eliminate the sources of VOCs which can pollute the indoor air long after construction is finished.
IE	Credit 4.4	Low-Emitting Materials: Composite Wood and Agrifibre Products	1	Choose low-emitting materials. This credit is beneficial for most buildings where people gather or inhabit (except industrial settings) as it will eliminate the sources of VOCs which can pollute the indoor air long after construction is finished.
IE	Credit 5	Indoor Chemical & Pollutant	1	This credit is beneficial for all buildings as it reduces the amount of pollutants which enter the building.

Relevant LEED points for Newfoundland and Labrador				
		Source Control		Strategies include; entrance grills and walk-off mats, floor-to-floor partitions to minimize transfer of contaminants between floors, dedicated ventilation for janitorial rooms, high-volume copy rooms, and dedicated chemical sinks for janitorial rooms (where chemicals are being mixed or disposed of).
IE	Credit 6.1	Controllability of Systems: Lighting	1	By reducing excess lighting, energy can be saved. This credit is beneficial to all building types. It allows lighting levels for group or individual spaces to be adjusted to suit the task being performed.
IE	Credit 6.2	Controllability of Systems: Thermal Comfort	1	By allowing occupants to control the temperature and humidity their comfort and well-being can be improved. The exception being building types where physical activity occurs, because those taking part in sports will have different requirements than spectators. This credit is beneficial to most building types.

Relevant LEED points for Newfoundland and Labrador				
IE	Credit 7.1	Thermal Comfort: Design	1	Thermal comfort is valuable for all buildings. By keeping the temperature and humidity in a comfortable range it will increase occupant productivity and happiness. Design HVAC and building envelopes to comply with ASHRAE Standard 55-2004.
IE	Credit 7.2	Thermal Comfort: Verification	1	This credit is not widely used. It requires additional work to survey occupants as well as the installation of a permanent monitoring system to monitor thermal comfort conditions. This credit verifies IEQc7.1 but does not provide any additional benefits.
IE	Credit 8.1	Daylight & Views: Daylight	1	Choose sites and orientations that maximize daylight. This credit is beneficial to any building where there are regularly occupied spaces, to improve productivity.
IE	Credit 8.2	Daylight & Views: Views	1	Views are beneficial to all buildings with regular inhabitants as views of the natural environment can increase productivity and attention.
Relevant LEED points for Newfoundland and Labrador				
ID	Credits 1.1 – 1.5	Innovation in Design	1	Things like Scent Free Policy, green education programs for build users and visitors, green cleaning and innovative site selection are important for all projects. See page 57 for further details.
ID	Credit 2	LEED™ Accredited Professional	1	Optional but good opportunity to obtain a credit.
Relevant LEED points for Newfoundland and Labrador				
Regional Priority (RP)			**Possible Points: 4**	**Strategies**
RP	Credit 1	Durable Building	1	Establish a Building Lifespan early and select building envelope assemblies that will meet at least ½ the building life as well as performance expectations (minimize heat transfer, air leakage and vapor diffusion).
RP	Credits 2.1 – 2.3	Regional Priority Credit	1-3	There is a list of Regional Priority Credits (RPCs) for use in the LEED Canada New Construction (NC) 2009 and Core & Shell (CS) 2009 projects, depending on when the project was registered with CaGBC. Projects registered after August 31, 2012 are required to use pre-selected credits depending on whether or not the project is an urban or rural setting.

Relevant LEED points for Newfoundland and Labrador				
Regional Priority (RP)			Possible Points: 4	Strategies
				Projects registered previous to August 31, 2012 have the option of updating to the new methodology for all regional priorities or using the old methodology of submitting a justification for their choice of regional priorities. However, note that the newer methodology is more simplistic. The CaGBC website provides guidance on the compliance path. For rural settings in NL, note the following credits. • SS c1 – Site Selection; • SS c4.1 – Alternative Transportation: Public Transportation Access (Option1, 2 or 3); • SS c5.1 – Site Development: Protect and Restore Habitat; • SS c8 – Light Pollution Reduction; • MR c2 – Construction Waste Management ≥ 75% For urban settings in NL, note the following credits. • SS c2 – Development Density and Community Connectivity (Option 1,2 or 3) • SS c6.1 – Stormwater Design: Quality Control • MR c2 – Construction Waste Management (≥75%) • MR c5 – Regional Materials (≥30%) • EA c1 – Optimize Energy Performance (option 1) • RP c1 – Durable Building

Annexes

Annex A – List of Departments, Agencies, Boards and Commissions

Entity Required to Comply with the BBB Policy	Entity Category
Municipalities of the Province	N/A
Board of Regents of the Memorial University of Newfoundland	1
Central Regional Integrated Health Authority	1
College of the North Atlantic Board of Governors	1
Conseil scolaire francophone provincial	1

Entity Required to Comply with the BBB Policy	Entity Category
Department of Advanced Education and Skills	1
Department of Child, Youth and Family Services	1
Department of Education	1
Department of Environment and Conservation	1
Department of Finance	1
Department of Fisheries and Aquaculture	1
Department of Health and Community Services	1
Department of Innovation, Business and Rural Development	1
Department of Justice	1
Department of Municipal Affairs	1
Department of Natural Resources	1
Department of Service Newfoundland and Labrador	1
Department of Tourism, Culture and Recreation	1
Department of Transportation and Works	1
English School Board * name to be confirmed	1
Francophone School Board	1
Eastern Regional Integrated Health Authority	1
Forestry and Agrifoods Agency (Included in Department of Natural Resources)	1
Labour Relations Agency	1
Labrador-Grenfell Regional Integrated Health Authority	1
Multi-Materials Stewardship Board (includes the Trust Fund)	1
Nalcor	1
Newfoundland and Labrador Housing Corporation	1
Newfoundland and Labrador Hydro	1
Office of the Chief Information Officer	1
Provincial Information and Library Resources Board	1
Research and Development Corporation	1
The Rooms Corporation	1
Western Regional Integrated Health Authority	1
Workplace Health, Safety, and Compensation Commission	1
C.A. Pippy Park Commission	2
Central Regional Service Board	2
Eastern Regional Service Board	2
Fire and Emergency Services - Newfoundland and Labrador	2
Government Purchasing Agency	2
Municipal Assessment Agency - Board of Directors	2
Newfoundland and Labrador Centre for Health Information	2
Newfoundland and Labrador Film Development Corporation	2
Newfoundland and Labrador Liquor Corporation	2
Northern Regional Service Board	2

Entity Required to Comply with the BBB Policy	Entity Category
Office of Climate Change, Energy Efficiency and Emissions Trading	2
Public Health Laboratory	2
Public Service Commission	2
Volunteer and Non-Profit Secretariat	2
Women's Policy Office	2
Avalon Peninsula Regional Council	3
Board of Commissioners of Public Utilities	3
Burin Peninsula Regional Council	3
Business Advisory Board (IA)	3
Business Investment Corporation - Board of Directors	3
Cancer Control Advisory Committee	3
Caribou Resource Committee	3
Chicken Farmers of Newfoundland and Labrador	3
Clarenville-Bonavista Regional Council	3
Commissioner of Lobbyists	3
Consumer Advocate	3
Corner Brook - Rocky Harbour Regional Council	3
EDGE Evaluation Board	3
Fish Processing Licensing Board	3
Gander – New-Wes-Valley Regional Council	3
Government Money Purchase Pensions Plan Committee	3
Grand Falls-Windsor - Baie Verte - Harbour Breton Regional Council	3
Heritage Foundation of Newfoundland and Labrador	3
Human Rights Commission	3
Intergovernmental and Aboriginal Affairs	3
Labour Relations Board	3
Labrador Affairs Office	3
Labrador Regional Council	3
Land Consolidation Review Committee	3
Livestock Owners Compensation Board	3
Marystown Shipyard Ltd.	3
Medical Consultants' Committee	3
Memorial University Pension Fund	3
Mineral Rights Adjudication Panel	3
Minister's Advisory Committee on Labrador Transportation	3
Newfoundland and Labrador Arts Council	3
Newfoundland and Labrador Crop Insurance Agency	3
Newfoundland and Labrador Farm Products Corporation (IA)	3
Newfoundland and Labrador Geographical Names Board	3
Newfoundland and Labrador Industrial Development Corporation	3

Entity Required to Comply with the BBB Policy	Entity Category
Newfoundland and Labrador Municipal Financing Corporation	3
Newfoundland and Labrador Sports Centre	3
Newfoundland Government Fund Limited - Board of Directors	3
Newfoundland Hardwoods - Board of Directors	3
Newfoundland Immigrant Investment Fund Ltd.	3
Newfoundland Legal Aid Commission	3
Newfoundland Ocean Enterprises Ltd.	3
Northeast Avalon Regional Planning Advisory Authority	3
Occupational Health & Safety Advisory Council	3
Office of the Executive Council	3
Private Industry Air Access Advisory Committee	3
Provincial Council of the Rural Secretariat	3
RNC Public Complaints Commission - Panel of Adjudicators	3
RNC Public Complaints Commission	3
Rural Secretariat	3
Species Status Advisory Committee	3
St. Anthony - Port aux Choix Regional Council	3
St. John's Land Development Advisory Authority	3

Annex B – Exemption Request Form

BUILD BETTER BUILDINGS

Exemption Request

Project Name:
Project Number:
Project Location:
Project Sponsor: (Name, Position and Department)
Project Manager: (Name, Position and Department)
Project Description: Describe the facility function, size, purpose, building type, etc.
Justification for Exemption: Describe specific reasons why the BBB requirements cannot be met. Attach full list of credits indicating which will be achieved and which not.
Project Inclusions: Identify what "smart" LEED credits and green building practices will be included regardless of LEED certification?

BUILD BETTER BUILDINGS

Exemption Request

Build Better Buildings Exemption Committee Acceptance:

_____

BBB Exemption Committee Chair

_____

BBB Exemption Committee Member

_____

Date

Annex C – Point Categories in LEED 2009

There are seven LEED categories that need to be incorporated in building project plans to achieve accreditation. The percentages represent total point distribution of all possible points. Categories include:

1. Sustainable Sites (26%)
2. Water Efficiency (10%)
3. Energy and Atmosphere (35%)
4. Materials and Resources (14%)
5. Indoor Environmental Quality (15%)
6. Innovation in Design (6%)
7. Regional Priorities (4%)

Sustainable Sites (SS)

The Sustainable Sites category focuses on the location of the building and the site aspects of the project.

This category makes up almost **one quarter** of the total available points in the LEED Canada 2009 score card. As stated previously, this category is sometimes a challenge in Newfoundland and Labrador due to limitations with sites in rural areas that have few options for development. A solution is to focus on retaining open space, protecting habitat, and controlling stormwater flows and light pollution. If in an urban area, sites can capitalize on extra points by being in the centre of a community

Sustainable Sites		**26 Possible Points**
☐ Prereq 1	Construction Activity Pollution Preventions	1
☐ Credit 1	Site Selection	3,5
☐ Credit 2	Development Density and Community Connectivity	1
☐ Credit 3	Brownfield Development	1
☐ Credit 4.1	Alternative Transportation: Public Transportation Access	3,6
☐ Credit 4.2	Alternative Transportation: Bicycle Storage and Changing Rooms	1
☐ Credit 4.3	Alternative Transportation: Low-Emitting and Fuel-Efficient Vehicles	3
☐ Credit 4.4	Alternative Transportation: Parking Capacity	2
☐ Credit 5.1	Site Development: Protect and Restore Habitat	1
☐ Credit 5.2	Site Development: Maximize Open Space	1
☐ Credit 6.1	Stormwater Design: Quantity Control	1
☐ Credit 6.2	Stormwater Design: Quality Control	1
☐ Credit 7.1	Heat Island Effect: Non-Roof	1
☐ Credit 7.2	Heat Island Effect: Roof	1
☐ Credit 8	Light Pollution Reduction	1

Water Efficiency (WE)

The primary focus of this category is on conservation of potable water and allocation of "clean" water for consumption, rather than waste conveyance or irrigation. LEED requires that occupant water use fixtures be reduced by at least 20% and include water meters (Prerequisite #1). This is achievable for almost any building type or geographic location by incorporating low-flow fixtures and faucet sensors. Further reductions in water use require ultra-low flow fixtures.

Beyond water use fixtures, additional points are provided for reducing or eliminating potable water use for irrigation. This requires early strategies for the selection of native and drought tolerant vegetation and/or non-potable sources for irrigation. This credit is achievable for all building types and most geographic locations, but may require some education and behavioral changes (allowing vegetation to go dormant during dry periods).

The potential for reducing potable water for sewage conveyance (e.g., rainwater harvesting) or treating wastewater on-site requires early commitments, discussion with regional departments and business case analysis. These initiatives may be best suited in remote locations, areas with water shortages or aged wastewater infrastructure. Considerations for community scale wastewater treatment or strategies should be evaluated for economy of scale.

WATER EFFICIENCY		10 POSSIBLE POINTS
❒ Prereq 1	Water Use Reduction	Required
❒ Credit 1	Water Efficient Landscaping	2, 4
❒ Credit 2	Innovative Wastewater Technologies	2
❒ Credit 3	Water Use Reduction	2-4

Energy and Atmosphere (EA)

The Energy and Atmosphere credits are heavily weighted to address the environmental impacts such as reducing the area's Carbon Footprint and minimizing the depletion of fossil fuel resources.

As you will see from the credit chart below, optimizing energy points (credit 1) will be a key to success. This category requires that teams work with an Energy Modeler to investigate energy saving opportunities based on a "baseline" building. Baseline buildings are established with software when using either 1997 MNECB (Model National Energy Code for Buildings) or ASHRAE 90.1 (American Standard for Heating, Refrigeration and Air-Conditioning Engineers). High performance strategies include: high performance building envelopes (high levels of insulation and high performance glazing), heat recovery on ventilation, low energy consuming lighting equipment, ground source heat pumps, and advanced building automation systems. As an example, use of an Energy Model for the St. John's Long Term Care Facility demonstrated consumption savings in heating and domestic hot water use of approximately 52% in LEED Canada version 1.0 compared to 1997 MNECB baseline model.

One of the hallmarks of LEED is the requirement for building commissioning. Building Commissioning is basically the requirement to set goals, check equipment installation, balance/test and train staff. The goal of commissioning is to optimize equipment performance, minimize problems and ensure continued operation. LEED recognizes the importance of commissioning with two separate credits, one prerequisite for Fundamental Commissioning, and another credit for Enhanced Commissioning – the difference is that enhanced includes additional equipment and design-review requirements. Recently, commissioning activities have been extended to include the building envelope, in recognition of the passive heating/cooling elements of the building.

One credit that has been historically overlooked is EA c.5 - Measure and Verification – representing 10% of the category. This credit award teams that implement a measurement and verification plan and meters, to record ongoing building energy consumption over time (at least 1 year past occupancy). The information recorded allows owners to verify performance, track systems, make improvements and compare buildings. Ideally, this credit should be considered for projects to monitor energy consumption and compare projects.

In rural and remote locations, higher levels of energy optimization (e.g., 70% of EAc.1 points) should be considered for the operational savings, as well as environmental and community impacts associated with delivering and relying upon electricity.

ENERGY AND ATMOSPHERE		35 POSSIBLE POINTS
❒ Prereq 1	Fundamental Commissioning of Building Energy Systems	Required
❒ Prereq 2	Minimum Energy Performance	Required
❒ Prereq 3	Fundamental Refrigerant Management	Required
❒ Credit 1	Optimize Energy Performance	1-19
❒ Credit 2	On-Site Renewable Energy	1-7
❒ Credit 3	Enhanced Commissioning	2
❒ Credit 4	Enhanced Refrigerant Management	2
❒ Credit 5	Measurement and Verification	3
❒ Credit 6	Green Power	2

Material and Resources (MR)

The Material and Resources credits represent 14% of the total LEED points. The focus on materials and resources is on conservation of existing buildings, diverting waste, reducing the carbon footprint associated with building materials, and minimizing virgin material extraction. An additional 2 of the 3 Regional Priority credits are also available for construction waste diversion and regional materials.

Given that there are limitations to the building materials produced in Newfoundland and Labrador, there may be challenges obtaining “true” regional materials available for projects (Note: LEED calculates regional by distance traveled by truck: 800Km or ship/rail: 2400Km). It is worthwhile to note that some materials are available i.e. concrete, concrete block masonry, limited lumber (Sexton’s), landscaping, backfill and asphalt.

Waste diversion and recycling may be challenging in some rural areas. Recycling programs including paper, glass and metals are will become more active in communities as markets respond, justifying the implementation of the LEED prerequisite for Storage and Collection of Recyclables. Materials with high recycled content or sustainably harvested woods (certified through Forest Stewardship Council) are becoming more mainstream and affordable in the marketplace, making LEED credits for recycle content and sustainable wood more easily attainable. The successful pursuit of MR credits does not lean to favor urban over rural project locations, speak to community members to understand the area and opportunities that exist.

MATERIALS AND RESOURCES		14 POSSIBLE POINTS
❒ Prereq 1	Storage and Collection of Recyclables	Required
❒ Credit 1.1	Building Reuse: Maintain Existing Walls, Floors, and Roof	1-3
❒ Credit 1.2	Building Reuse: Maintain Interior Non-Structural Elements	1
❒ Credit 2	Construction Waste Management	1-2
❒ Credit 3	Materials Reuse	1-2
❒ Credit 4	Recycled Content	1-2
❒ Credit 5	Regional Materials	1-2
❒ Credit 6	Rapidly Renewable Materials	1
❒ Credit 7	Certified Wood	1

Indoor Environmental Quality (IEQ)

As our society tends to spend more and more time within buildings, the need for cleaner and healthier indoor environments is paramount. This is especially true for schools and healthcare facilities, which shelter and nurture our youth and elders.

The IEQ category accounts for approximately 15% of the total LEED points. The focus is divided between active mechanical systems and controls to improve air quality and thermal comfort, and passive means such as material selection and construction practices.

Recently there has been a renewed focus on increasing the amount of fresh air coming into our buildings. With tighter building envelopes and less passive air movement through our exterior shell, the need for active air delivery and circulation systems has become critical to comfort and healthy interiors. However, with increased ventilation, there is a trade-off with energy consumption, hence a balance strategy must be considered (i.e., Carbon Dioxide sensors).

Trade-offs are also seen with increasing day-lighting and views (building assemblies with lower insulation values and increased air leakage potential) to all regularly occupied spaces. However, the use of daylight simulation tools, proper glazing selection and placement has helped to balance the passive and occupant benefits of glazing with building performance requirements.

The IEQ credits are not dependent on geographic location and hence provide an excellent opportunity for projects in Newfoundland and Labrador.

INDOOR ENVIRONMENTAL QUALITY		15 POSSIBLE POINTS
❒ Prereq 1	Minimum Indoor Air Quality Performance	Required
❒ Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required
❒ Credit 1	Outdoor Air Delivery Monitoring	1
❒ Credit 2	Increased Ventilation	1
❒ Credit 3.1	Construction Indoor Air Quality Management Plan: During Construction	1
❒ Credit 3.2	Construction Indoor Air Quality Management Plan: Before Occupancy	1
❒ Credit 4.1	Low-Emitting Materials: Adhesives and Sealants	1
❒ Credit 4.2	Low-Emitting Materials: Paints and Coatings	1
❒ Credit 4.3	Low-Emitting Materials: Flooring Systems	1
❒ Credit 4.4	Low-Emitting Materials: Composite Wood and Agrifibre Products	1
❒ Credit 5	Indoor Chemical and Pollutant Source Control	1
❒ Credit 6.1	Controllability of System: Lighting	1
❒ Credit 6.2	Controllability of System: Thermal Comfort	1
❒ Credit 7.1	Thermal Comfort: Design	1
❒ Credit 7.2	Thermal Comfort: Verification	1
❒ Credit 8.1	Daylight and Views: Daylight	1
❒ Credit 8.2	Daylight and Views: Views	1

Innovation and Design (ID)

The Innovation and Design category is important to be incorporated upfront as an integrated methodology or goal for the project or project team. In instances where it gets overlooked it is often due to a lack of knowledge of the benefits, options or LEED ID requirements; or the lack of LEED or sustainability project champions. Although standard ID credits are available, such as the pre-approved green cleaning, scent-free zones, or education, project teams should really consider a more site specific, project specific and occupant specific approach. A review of operational or health benefits associated with sustainable approaches would be a recommended place to start the conversation.

The innovation and design category is intended to recognize a project's contribution towards true innovation and act as a "catch all" for sustainable building practices or strategies not already captured in the LEED requirements. There are 5 points available for innovative strategies and one for using a LEED Accredited Professional (LEED AP) on the project team. Three of the five ID credits are available for exemplary performance of other LEED credits (typically exceeding credit requirement by a specific percentage), while two must be outside the existing credit structure.

Projects located in rural or remote locations should capitalize on the 6 ID credits available within the LEED ID category to make-up for short falls in other categories. One potential ID Credit for projects in Newfoundland and Labrador is the new GreenUp program offered by the CaGBC. The GreenUp program is a benchmarking tool, similar to the WOW (Windows on the World), or other energy use tracking tools.

Regional Priority (RP)

The Regional Priority category was added to the LEED Canada 2009 rating system to recognize issues that are important regionally within Canada. There are 4 points available within this category; one reserved for Durable Building, and another 3 for regional issues.

On August 31, 2012 the CaGBC released a list of pre-selected RP credits for both urban and rural locations in each Province and Territories. The pre-selected credits were the result of surveying LEED AP's living or working within the Provinces or Territories. Projects registered with CaGBC after August 31, 2012 must use the pre-selected RP credits. Projects registered before August 31, 2012 have the option of using this list, or using the older methodology of submitting justification for their choice. The projects registered under the LEED Canada 2009 program are relatively new, and hence we do not have reliable data on the acceptance or targeted credits under this category yet.

Newfoundland & Labrador	
Urban	SSc2 - Development Density and Community Connectivity
	SSc6.1 - Stormwater Design: Quantity Control
	MRc2 - Construction Waste Management (≥75%)
	MRc5 - Regional Materials (≥30%)
	EAc1 - Optimize Energy Performance - Option 1 (≥40%)
	RPc1 - Durable Building
Rural	SSc1 - Site Selection
	SSc4.1 - Alternative Transportation: Public Transportation Access
	SSc5.1 - Site Development: Protect and Restore Habitat
	SSc8 - Light Pollution Reduction
	MRc2 - Construction Waste Management (≥75%)
	MRc5 - Regional Materials (≥30%)

Annex D – Urban & Rural Comparison Score Card

		LEED Canada-NC 2009 Project Checklist - Urban/Rural project review					
Project Totals (pre-certification estimates)			110 Possible Points				
Certified 40-49 points **Silver 50-59 points** Gold 60-79 points **Platinum** 80 points and above							
Sustainable Sites			**26** Points	Urban Projects		Rural Projects	
				Greatest Benefits	Common Approaches in NL to meet LEED Silver Target	Greatest Benefits	Common Approaches in NL to meet LEED Silver Target
	Prereq 1	Construction Activity Pollution Prevention	Required				
	Credit 1	Site Selection	1		1		1
	Credit 2	Development Density and Community Connectivity	3, 5		3		
	Credit 3	Brownfield Redevelopment	1				
	Credit 4.1	Alternative Transportation: Public Transportation Access	3, 6		6		
	Credit 4.2	Alternative Transportation: Bicycle Storage & Changing Rooms	1		1		1
	Credit 4.3	Alternative Transportation: Low-Emitting & Fuel-Efficient Vehicles	3				
	Credit 4.4	Alternative Transportation: Parking Capacity	2		2		2
	Credit 5.1	Site Development: Protect and Restore habitat	1				1
	Credit 5.2	Site Development: Maximize Open Space	1		1		1
	Credit 6.1	Stormwater Design: Quantity Control	1		1		1
	Credit 6.2	Stormwater Design: Quality Control	1		1		1
	Credit 7.1	Heat Island Effect: Non-Roof	1				
	Credit 7.2	Heat Island Effect: Roof	1				
	Credit 8	Light Pollution Reduction	1		1		1
					17		9
Water Efficiency			**10** Points	Urban Projects		Rural Projects	
	Prereq 1	Water Use Reduction	Required				
	Credit 1	Water Efficient Landscaping	2, 4		4		4
	Credit 2	Innovative Wastewater Technologies	2				
	Credit 3	Water Use Reduction	2 - 4		3		3
					7		7
Energy & Atmosphere			**35** Points	Urban Projects		Rural Projects	
	Prereq 1	Fundamental Commissioning of Building Energy Systems	Required				
	Prereq 2	Minimum Energy Performance	Required				
	Prereq 3	Fundamental Refrigerant Management	Required				
	Credit 1	Optimize Energy Performance	1 - 19		8		12
	Credit 2	On-Site Renewable Energy	1 - 7				
	Credit 3	Enhanced Commissioning	2		2		2
	Credit 4	Enhanced Refrigerant Management	2		2		2
	Credit 5	Measurement and Verification	3				
	Credit 6	Green Power	2				
					12		16
Materials & Resources			**14** Points	Urban Projects		Rural Projects	
	Prereq 1	Storage and Collection of Recyclables	Required				
	Credit 1.1	Building Reuse: Maintain Existing Walls, Floors, and Roof	1 - 3				
	Credit 1.2	Building Reuse: Maintain Interior Non-Structural Elements	1				
	Credit 2	Construction Waste Management	1 - 2				
	Credit 3	Materials Reuse	1 - 2				
	Credit 4	Recycled Content	1 - 2		2		2
	Credit 5	Regional Materials	1 - 2		1		1
	Credit 6	Rapidly Renewable Materials	1				
	Credit 7	Certified Wood	1		1		1
					4		4

	Indoor Environmental Quality		15 Points	Urban Projects		Rural Projects	
	Prereq 1	Minimum Indoor Air Quality Performance	Required				
	Prereq 2	Environmental Tobacco Smoke (ETS) Control	Required				
	Credit 1	Outdoor Air Delivery Monitoring	1		1		1
	Credit 2	Increased Ventilation	1				
	Credit 3.1	Construction IAQ Management Plan: During Construction	1		1		1
	Credit 3.2	Construction IAQ Management Plan: Before Occupancy	1		1		1
	Credit 4.1	Low-Emitting Materials: Adhesives and Sealants	1		1		1
	Credit 4.2	Low-Emitting Materials: Paints and Coatings	1		1		1
	Credit 4.3	Low-Emitting Materials: Flooring Systems	1		1		1
	Credit 4.4	Low-Emitting Materials: Composite Wood and Agrifibre Products	1				
	Credit 5	Indoor Chemical and Pollutant Source Control	1		1		1
	Credit 6.1	Controllability of System: Lighting	1		1		1
	Credit 6.2	Controllability of System: Thermal Comfort	1				
	Credit 7.1	Thermal Comfort: Design	1		1		1
	Credit 7.2	Thermal Comfort: Verification	1		1		1
	Credit 8.1	Daylight and Views: Daylight	1				
	Credit 8.2	Daylight and Views: Views	1		1		1
					11		11
	Innovation in Design		6 Points	Urban Projects		Rural Projects	
	Credit 1.1	Innovation in Design	1		1		1
	Credit 1.2	Innovation in Design	1				1
	Credit 1.3	Innovation in Design	1				1
	Credit 1.4	Innovation in Design	1				1
	Credit 1.5	Innovation in Design	1				
	Credit 2	LEED® Accredited Professional	1		1		1
					2		5
	Regional Priority		4 Points	Urban Projects		Rural Projects	
	Credit 1	Durable Building	1		1		1
	Credit 2.1	Regional Priority Credit	1	Stormwater Control		light pollution reduction	1
	Credit 2.2	Regional Priority Credit	1	Optimize Energy (>40%)		site development: protect and restore habitat	1
	Credit 2.3	Regional Priority Credit	1	Durable Building	1	Construction waste management	
					2		3
					55		**55**

Annex E – Guidelines to Key LEED Costs:

- Registration & Certification Costs
    - Registrations range from $550 (Size under 2,500 m2) to $4,950 (size 25,000 m2 or greater) – CaGBC member prices
    - Certification costs are based on building size, but range from $4,000 (size under 2,500$m^2$) to $31,125 (size 25,000 m^2 or greater) – note: there are extra charges for documentation requirements.
    - Note: there are lower rates for members

- Consulting costs
    - LEED Specialist ($ 75,000 to $ 150,000+)
    - Energy Modeling ($5,000 to $20,000)
    - Building Commissioning ($30,000 to $ 200,000)
    - Durable Building ($20,000+)
    - Recently there have been Miscellaneous charges ranging from ($40,000 to $ 100, 000) to deal with documentation of credits.

Annex F – Blank Scorecard Checklist

LEED Canada-NC 2009 Project Checklist

Project Name

Yes	?	No		
0	0	0	**Project Totals** (pre-certification estimates)	110 Possible Points

Certified 40-49 points **Silver** 50-59 points **Gold** 60-79 points **Platinum** 80 points and above

Yes	?	No			
0	0	0	**Sustainable Sites**		26 Points
✓			Prereq 1	**Construction Activity Pollution Prevention**	Required
			Credit 1	**Site Selection**	1
			Credit 2	**Development Density and Community Connectivity**	3, 5
			Credit 3	**Brownfield Redevelopment**	1
			Credit 4.1	**Alternative Transportation: Public Transportation Access**	3, 6
			Credit 4.2	**Alternative Transportation: Bicycle Storage & Changing Rooms**	1
			Credit 4.3	**Alternative Transportation: Low-Emitting & Fuel-Efficient Vehicles**	3
			Credit 4.4	**Alternative Transportation: Parking Capacity**	2
			Credit 5.1	**Site Development: Protect and Restore habitat**	1
			Credit 5.2	**Site Development: Maximize Open Space**	1
			Credit 6.1	**Stormwater Design: Quantity Control**	1
			Credit 6.2	**Stormwater Design: Quality Control**	1
			Credit 7.1	**Heat Island Effect: Non-Roof**	1
			Credit 7.2	**Heat Island Effect: Roof**	1
			Credit 8	**Light Pollution Reduction**	1

Yes	?	No			
0	0	0	**Water Efficiency**		10 Points
✓			Prereq 1	**Water Use Reduction**	Required
			Credit 1	**Water Efficient Landscaping**	2, 4
			Credit 2	**Innovative Wastewater Technologies**	2
			Credit 3	**Water Use Reduction**	2 - 4

Yes	?	No			
0	0	0	**Energy & Atmosphere**		35 Points
✓			Prereq 1	**Fundamental Commissioning of Building Energy Systems**	Required
✓			Prereq 2	**Minimum Energy Performance**	Required
✓			Prereq 3	**Fundamental Refrigerant Management**	Required
			Credit 1	**Optimize Energy Performance**	1 - 19
			Credit 2	**On-Site Renewable Energy**	1 - 7
			Credit 3	**Enhanced Commissioning**	2
			Credit 4	**Enhanced Refrigerant Management**	2
			Credit 5	**Measurement and Verification**	3
			Credit 6	**Green Power**	2

Yes	?	No			
0	0	0	**Materials & Resources**		14 Points
✓			Prereq 1	**Storage and Collection of Recyclables**	Required
			Credit 1.1	**Building Reuse: Maintain Existing Walls, Floors, and Roof**	1 - 3
			Credit 1.2	**Building Reuse: Maintain Interior Non-Structural Elements**	1
			Credit 2	**Construction Waste Management**	1 - 2
			Credit 3	**Materials Reuse**	1 - 2
			Credit 4	**Recycled Content**	1 - 2
			Credit 5	**Regional Materials**	1 - 2
			Credit 6	**Rapidly Renewable Materials**	1
			Credit 7	**Certified Wood**	1
Yes	?	No			
0	0	0	**Indoor Environmental Quality**		15 Points
✓			Prereq 1	**Minimum Indoor Air Quality Performance**	Required
✓			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
			Credit 1	**Outdoor Air Delivery Monitoring**	1
			Credit 2	**Increased Ventilation**	1
			Credit 3.1	**Construction IAQ Management Plan: During Construction**	1
			Credit 3.2	**Construction IAQ Management Plan: Before Occupancy**	1
			Credit 4.1	**Low-Emitting Materials: Adhesives and Sealants**	1
			Credit 4.2	**Low-Emitting Materials: Paints and Coatings**	1
			Credit 4.3	**Low-Emitting Materials: Flooring Systems**	1
			Credit 4.4	**Low-Emitting Materials: Composite Wood and Agrifibre Products**	1
			Credit 5	**Indoor Chemical and Pollutant Source Control**	1
			Credit 6.1	**Controllability of System: Lighting**	1
			Credit 6.2	**Controllability of System: Thermal Comfort**	1
			Credit 7.1	**Thermal Comfort: Design**	1
			Credit 7.2	**Thermal Comfort: Verification**	1
			Credit 8.1	**Daylight and Views: Daylight**	1
			Credit 8.2	**Daylight and Views: Views**	1
Yes	?	No			
0	0	0	**Innovation in Design**		6 Points
			Credit 1.1	**Innovation in Design**	1
			Credit 1.2	**Innovation in Design**	1
			Credit 1.3	**Innovation in Design**	1
			Credit 1.4	**Innovation in Design**	1
			Credit 1.5	**Innovation in Design**	1
			Credit 2	**LEED® Accredited Professional**	1
Yes	?	No			
0	0	0	**Regional Priority**		4 Points
			Credit 1	**Durable Building**	1
			Credit 2.1	**Regional Priority Credit**	1
			Credit 2.2	**Regional Priority Credit**	1
			Credit 2.3	**Regional Priority Credit**	1

Annex G – Sample Project Information Sheet

Project Information Sheet – Design Development Phase

BBB Policy Reviewed:	YES
Energy Model:	YES, project meets minimum requirement of 25% better than MNECB
Life Cycle Cost Analysis:	-
LEED Certification Target:	LEED® Silver (50 – 59 points) *NOTE: LEED Certified requires a minimum of 40 points
Rating System:	LEED® Canada New Construction (NC) 2009
LEED Assessment Complete:	YES, Design Development Scorecard attached
Anticipated Rating:	Not Certified (20 Anticipated, 15 Meeting Credit Intent = 35 total points "pursued")
Registered with CaGBC:	NO
Prerequisite's Met:	SSp1 Construction Activity Pollution Prevention - YES WEp1 Water Use Reduction - No water meter, but reduction % achieved EAp1 Fundamental Commissioning - YES EAp2 Minimum Energy Performance - YES EAp3 Refrigerant Management - YES MRp1 Storage + Collection of Recyclables - YES IEQp1 Indoor Air Quality Performance (ASHRAE 62.1-2007) - YES IEQp2 Tobacco Smoke Control - Yes
Site Designation:	Rural (Population < 100,000), Previously Developed/Graded
Existing Site Imperviousness:	35%
Post Development Imperviousness:	57%
Project Site Area:	4076 m^2 (0.41ha)
Building Footprint:	829m^2
Gross Floor Area:	1130m^2
Project Density:	2769m^2/ha (13,800m2/ha required for SSc5.2)
Roof Area:	845m^2 (Low Slope: SRI $\geq$ 78 required for SSc7.2)
FTE Occupants:	5 (Staff + Volunteers)
FTE Transients:	30 (Visitors)
Bicycle Racks:	0 (2 required for SSc4.2)
Showers:	0 (1 required for SSc4.2)

Parking Capacity:	12 spaces (Cars/Trucks), 10 spaces (ATVs/Snowmobile)
Carpool Spaces:	0 (5% required for SSc4.4, i.e. 2 spaces + Car Pool Management Plan)
Parking Area:	641m^2 (gravel)
Access Road:	410m^2 (gravel)
Hardscape Areas:	0m^2 (No hardscape, all gravel)
Landscaped Areas:	0m^2 (require min. 5% , i.e. 195m2, for WEc1)
Bioswale Areas:	0m^2 (removed at DD)
Protected/Restored Areas:	0m^2 (adaptive/native plants), 0m^2 (undisturbed areas) **1623m^2 vegetated, open required for* SSc5.1
Open Areas:	2196m^2 (gravel areas, not vegetated) **829m^2 vegetated, open space required for* SSc5.2
Water Use Reduction:	32.26% (above baseline)
Energy Savings (Cost):	33% (above MNECB)
Energy Savings (Consumption):	33.1% (above MNECB)