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Manitoba Legislative Building

## SECTION 1

# MANITOBA GREEN BUILDING POLICY, PROGRAM, LEGISLATION & REPORTING

## GREEN BUILDING PROGRAM MANUAL

# MANITOBA GREEN BUILDING POLICY, PROGRAM, LEGISLATION & REPORTING

*Manitoba is committed to building green for a green future.*

*Policy and legislation are in place to endorse green building practices in Manitoba. The policy and legislation directs stakeholders involved with building design, construction and operation to incorporate green building practices to benefit the environment and strengthen our communities and the Manitoba economy over the long term.*

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# 1.1

## The Green Building Policy

### Policy Statement

The Manitoba government is committed to promoting sustainable building. Government organizations (departments, Crown corporations and agencies) are directed to implement the criteria identified in Manitoba's Green Building Program (GBP).

### Duty of Government Departments, Crown Corporations and Government Agencies

Incorporate the GBP criteria into contracts and agreements and forward project results to the Green Building Co-ordination Team (GBCT) at [greenbuilding@gov.mb.ca](mailto:greenbuilding@gov.mb.ca)

### Vision

The policy will optimize the life cycle performance of government funded buildings: from environmental, energy and economic perspectives.

### Purpose

The policy will demonstrate Manitoba's commitment to economic, environmental and social improvements by promoting the adoption of sustainable building practices and providing the leadership that overcomes the barriers affecting their wider adoption in Manitoba.

### Goals

Manitoba's Green Building Policy goals are:

- Reduce overall expenditures through improved building performance, full cost accounting and a lifecycle-approach to costing.
- Reduce Manitoba's exposure to the price volatility and long term supply concerns associated with the use of non-renewable fossil fuel imported from outside the province (ex: natural gas, fuel oil and propane).
- Create a common framework for green building standards across Manitoba government departments, Crown corporations, government agencies and other levels of government (ex: municipalities, local government districts) or entities that receive provincial government funding for building projects.
- Minimize the negative environmental impacts associated with building site selection, construction, renovation, operation, maintenance, repair, demolition or deconstruction, without impairing the intended use or function of the building.
- Reduce greenhouse gas emissions from Manitoba's building sector by improving energy efficiency and expanding use of clean, renewable energy.
- Capitalize on other benefits often achieved by green buildings such as healthier, more productive indoor environments and improved asset values.
- Create economic opportunities for Manitoba businesses by stimulating the demand for green building products and services.

## Background

The Manitoba Green Building Policy for Government of Manitoba funded projects (the policy) was approved in 2007. It was approved by Treasury Board, a subcommittee of cabinet responsible for the effective management of public funds to meet government objectives. The policy instructed government organizations to provide leadership and promote sustainable building practices in building projects they own or fund and participate in making a significant improvement in how buildings perform over their entire life cycle, from environmental, energy and economic perspectives.

The policy delivered three key messages:

1. It conveyed the policy directive.
2. It established the framework for the GBP in Manitoba.
3. It set the minimum green building criteria and reporting requirements for commercial and institutional new construction, major renovation and addition projects funded by the government organizations.

The list of the government organizations affected by the Green Building Policy is provided in Section 2.2 of the *Green Building Program Manual*.

## 1.2

### The Manitoba Green Building Program

The GBP describes sustainable criteria for planning, design, construction, operation and demolition of buildings in Manitoba. The GBP criteria reflect the government's commitment to create cost-effective buildings that respect the environment and contribute to healthier, more sustainable communities.

The GBP describes project reporting requirements. It also sets the minimum green building criteria for building projects funded by government organizations (departments, Crown corporations, agencies). All departments, Crown corporations and agencies should provide leadership and act as the catalyst to influence industry, professional services and owner decisions. They should stipulate the GBP standards and practices in contracts and funding agreements, gather information about project performance and report the results so the GBP can be refined or enhanced.

The criteria the components of the GBP (ex: new construction, leased accommodation, existing buildings and residential buildings) are periodically reviewed by the Interdepartmental Working Group on Green Building and the Industry Advisory Group on Green Building and recommendations are submitted to Treasury Board for adoption. Once approved, the criteria will be added to the GBP manual.

Government organizations adopt the published criteria from the GBP manual as appropriate to their programs.

## 1.3

### Manitoba Green Building Legislation

#### ***The Climate Change Emissions Reductions Act***, C.C.S.M. c. C135

The act addresses climate change, encourages and helps Manitobans reduce emissions, set targets for reducing emissions and promotes sustainable economic development and energy security. Funding requirements for green buildings are introduced in sections 7 through 10.

#### ***Green Building Regulation***, M.R. 38/2013

*The regulation establishes design energy and reporting requirements for new construction, renovation and build to suit leases when the building area is 600 square meters (m<sup>2</sup>) or greater and the project is funded by a government, department, Crown corporation or agency.*

## 1.4

### Green Building Program Reporting

Government departments, crown corporations and agencies report information about their funded green building projects to the GBCT.

GBCT uses the information to develop GBP reports for Treasury Board. The report for Treasury Board is prepared every five years and will begin in 2015. The report provides an account of green building projects funded by government organizations since 2007 and it will also evaluate the impact of the program on program goals.



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## SECTION 2

# GREEN BUILDING PROGRAM ADMINISTRATION

GREEN BUILDING PROGRAM MANUAL

# GREEN BUILDING PROGRAM ADMINISTRATION

*The Green Building Program supports the Manitoba Green Building Policy. It directs government organizations collectively referred to as the Government Reporting Entity (GRE) to promote sustainable building practices. The policy requires government organizations to apply the green building criteria and report building project results.*

*The Green Building Co-ordination Team (GBCT) are the stewards of the Green Building Program Manual which conveys Manitoba's minimum green building criteria (standards and practices) for buildings owned or funded by government organizations. The Green Building Program (GBP) is administered by the GBCT who provide technical support and policy interpretation; support and chair stakeholder committees; co-ordinate policy expansion and revision; and report the impact and benefits of the GBP back to government.*

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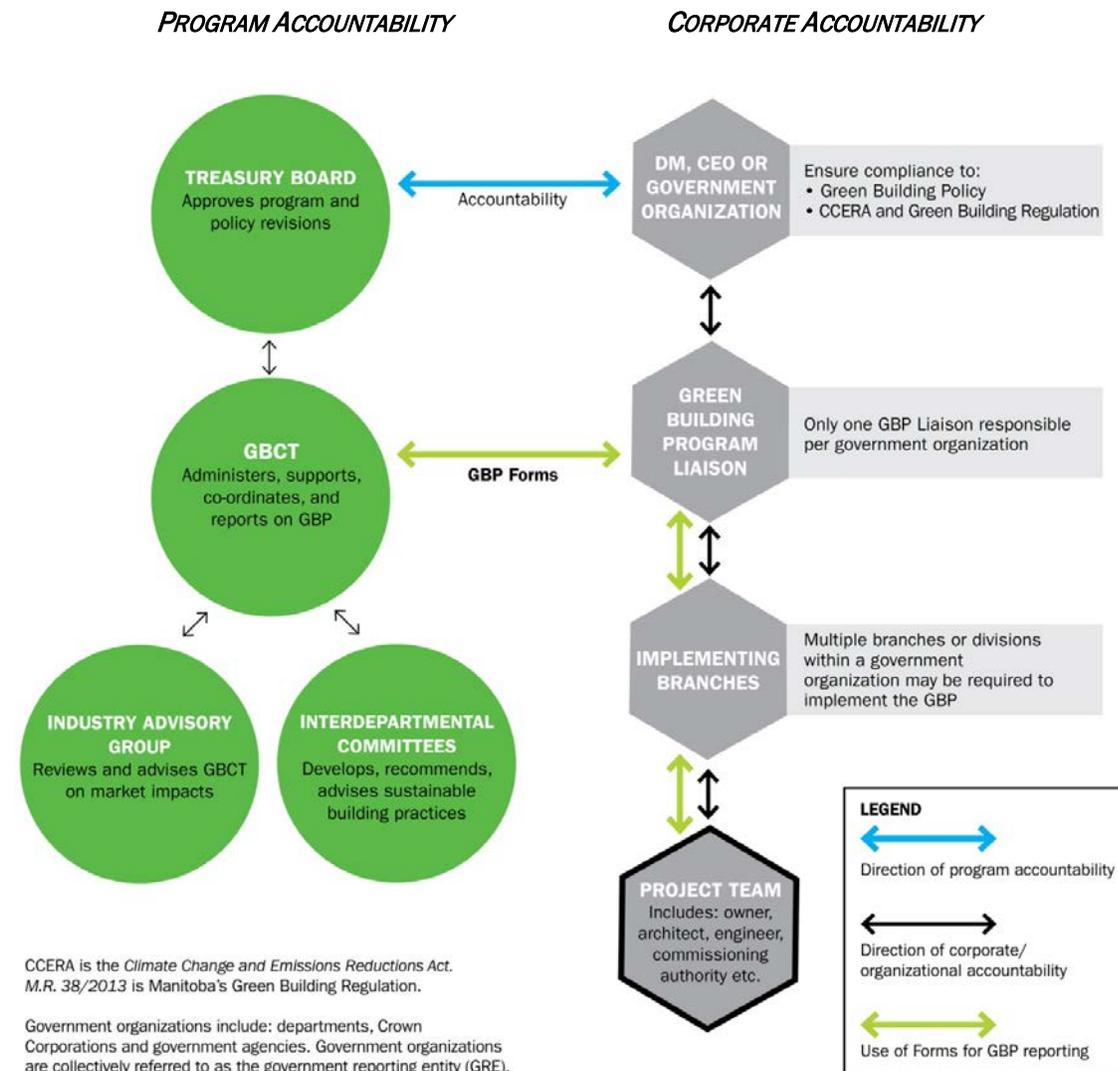
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# 2.1

## Program & Corporate Accountability

Treasury Board requires all government departments, Crown corporations and agencies that own or fund buildings to add the applicable green building program criteria into contracts and agreements. This will advance the green building effort and ensure the Manitoba government achieves its green building goals.

This diagram illustrates the responsibilities for program development and delivery. It also establishes the framework for the government’s commitment and accountability.



## 2.2

# Program Development & Maintenance

Program development and maintenance are the responsibility of the Green Building Co-ordination Team (GBCT). The team is a branch of Manitoba Infrastructure and Transportation (MIT), Accommodation Services Division.

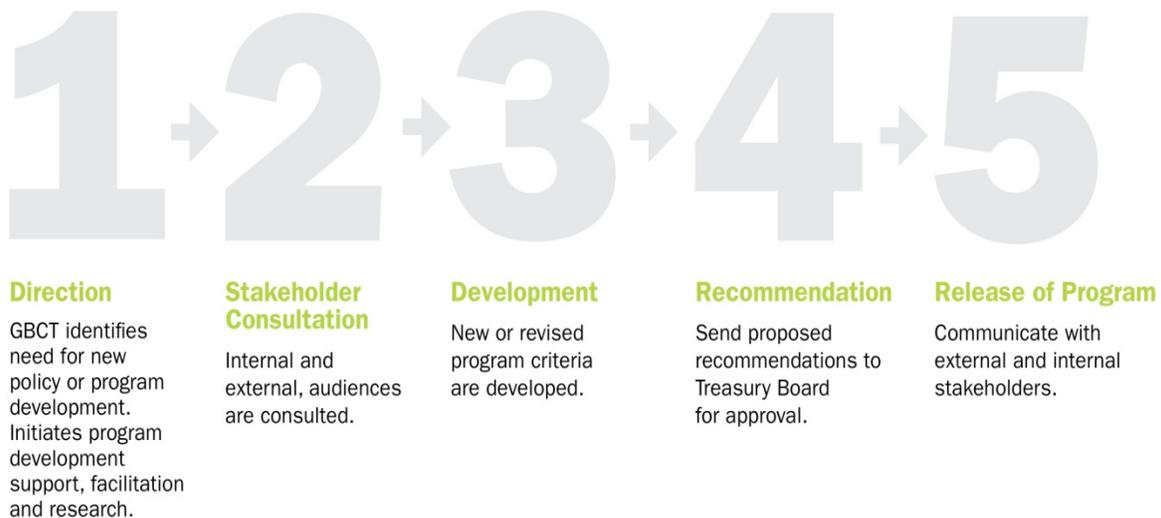
### Background

Before 2007, an interdepartmental working group identified the need for a common set of green building criteria that would apply to every government organization that owns, funds or operates buildings. The working group developed a green building proposal. Treasury Board approved the policy proposal and announced it would apply to the GRE. At the same time, Treasury Board created the GBCT and authorized the team to provide technical support and interpretation; co-ordinate future development and expansion of the proposal; evaluate the green building criteria; and report the impacts of green building activity on the environment and the economy.

### Process for Green Building Program Expansion and Maintenance

GBCT co-ordinates and activates program expansion and maintenance initiatives. These are based on government priorities, analysis of program results, market surveillance and technical or regulatory developments in the industry. The process is supported by government committees and industry stakeholder committees including Interdepartmental Working Group – Green Building (IWG-GB) and Industry Advisory Group – Green Building (IAG-GB).

**Process Diagram.** This diagram illustrates the five steps used to develop and refine Manitoba’s Green Building Program criteria.



## 2.3

### Government Organizations Affected

The Green Building Policy, *The Climate Change and Emissions Reductions Act* and the Green Building Regulation apply to government organizations; departments, Crown corporations and agencies comprising the GRE. The GRE is defined in Schedule 8 of *The Province of Manitoba's Annual Report* published by Manitoba Finance.

[http://www.gov.mb.ca/finance/pdf/annualreports/pubacct\\_1\\_13.pdf](http://www.gov.mb.ca/finance/pdf/annualreports/pubacct_1_13.pdf)

## 2.4

### Responsibility of Government Organizations

To comply with the policy, government organizations must:

- Provide leadership and promote sustainable building criteria to the renovation, construction, operation, maintenance, lease and demolition of buildings.
- Designate a GBP Liaison within their organizations to ensure compliance with the Manitoba Green Building Policy, the GBP and *The Climate Change and Emissions Reductions Act* and The Green Building Regulation (M.R. 38/2013) are satisfied.
- Apply the GBP criteria to building projects owned, leased or funded by the organization.
- Submit GBP forms and reports to the GBCT.

#### Who should be designated as the government organization's GBP Liaison?

The GBP Liaison is responsible for corporate green building policy and legislative compliance across their government organization. The Liaison may be appointed by the deputy minister or chief executive officer and will have responsibility for ensuring that the organization's financial commitments for buildings support government's goals and objectives.

When a liaison is appointed, the organization must notify the Director of the GBCT to ensure the government organization receives GBP updates and information. To contact the Director email [greenbuilding@gov.mb.ca](mailto:greenbuilding@gov.mb.ca)

## What does the GBP Liaison do?

The GBP liaison is responsible for compliance across the whole organization. The liaison will:

- Distribute GBP information within the government organization, specifically to people designated to enforce contractual commitments for building projects owned or funded by the organization.
- Confirm the organization's contracts and documents will meet the GBP criteria sanctioned by the Manitoba Green Building Policy.
- Ensure the organization reports GBP projects to the GBCT, using GBP forms.
- Reviews and respond to the opinions from the Director of GBCT. This will be done where the opinion affects the organization's projects and/or compliance with the policy or *The Climate Change and Emissions Reductions Act* and The Green Building Regulation (M.R. 38/2013).
- Recommends/appoint organization representatives to participate on GBP committees.
- Retains records to demonstrate the organization complied with Manitoba's Green Building Policy, the GBP, the requirements of *The Climate Change and Emissions Reductions Act* and The Green Building Regulation (M.R. 38/2013).

GBP forms and reporting requirements are provided in the supporting sections of this Manual.

## 2.5

### Responsibility of the Green Building Co-ordination Team

The Green Building Co-ordination Team (GBCT) was created by Treasury Board to support the Green Building Policy and administer the Green Building Program (GBP). The GBCT is part of Manitoba Infrastructure and Transportation, but is considered a central service to the organizations of the GRE. Government organizations are encouraged to contact the GBCT for information or advice on green building projects.

Government organizations identified in Section 2.2 must monitor building projects supported by their organization and report projects to GBCT, using the GBP forms.

Activities of the GBCT include:

- Technical and administrative support for the GBP:
  - developing and maintaining the GBP manual
  - providing outreach and education programs
  - identifying skills and tools to help implement the GBP criteria
  - providing interpretation of The Green Building Policy, program and legislation
  - providing guidance on variance applications
  - providing green building technical support to building owners and project teams

- Co-ordinate maintenance and expansion of the GBP:
  - consulting with stakeholders to assess expansion and revision needs
  - establishing working groups and committees to explore green building, criteria, methods and processes
  - monitoring and identifying industry conditions for program updates
- Prepare GBP reports for government:
  - monitoring the impacts and results of the policy and program
  - analyzing the information provided by government organizations
  - preparing a green building program reports for Treasury Board
  - preparing reports for the minister of Manitoba Conservation required by the Green Building Regulation C135 – M.R. 38/2013
- Develop and support the network of GBP liaisons and industry contacts:
  - ensuring the Green Building Policy, program and legislative requirements are communicated to government organizations and building industry professionals

**To contact the GBCT:**

**Green Building Co-ordination Team**

Manitoba Infrastructure and Transportation

Phone: 204-945-4680

Email: [greenbuilding@gov.mb.ca](mailto:greenbuilding@gov.mb.ca)





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SECTION 3

# GREEN BUILDING PROGRAM GUIDELINES

## GREEN BUILDING PROGRAM MANUAL



# GREEN BUILDING PROGRAM GUIDELINES

*The Green Building Program (GBP) guidelines were developed by the Green Building Co-ordination Team (GBCT) with help from Manitoba Hydro Power Smart New Business Program and industry consultants. The guidelines help building owners, government organizations and project teams interpret and apply green building program criteria.*

*The guidelines supplement other resources and should not be considered the primary source of information on the subject. Information in the guidelines is only intended to provide background, resource and guidance to support of the Green Building Program criteria.*

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## **3.1**

### **Project Co-ordination**

#### **What is the purpose of the Project Co-ordination Guideline?**

The Green Building Project Co-ordination Guideline helps building owners and project professionals understand and co-ordinate the requirements of the Manitoba GBP. It highlights the program milestones at pre-design, design, construction and post occupancy stages.

While the guideline is based on a conventional project delivery model of design, bid and build, the milestones and activities can be applied to other models (ex; construction management or design build). Management may adjust the guideline as appropriate to the specifics of each project and integrate it into the project schedule.

It is important to ensure that the timing of green milestones and activities align with specific project stages and activities. Approvals, reports and documentation must be completed in time to ensure the project's eligibility for designations, certifications and financial incentives (if applicable).

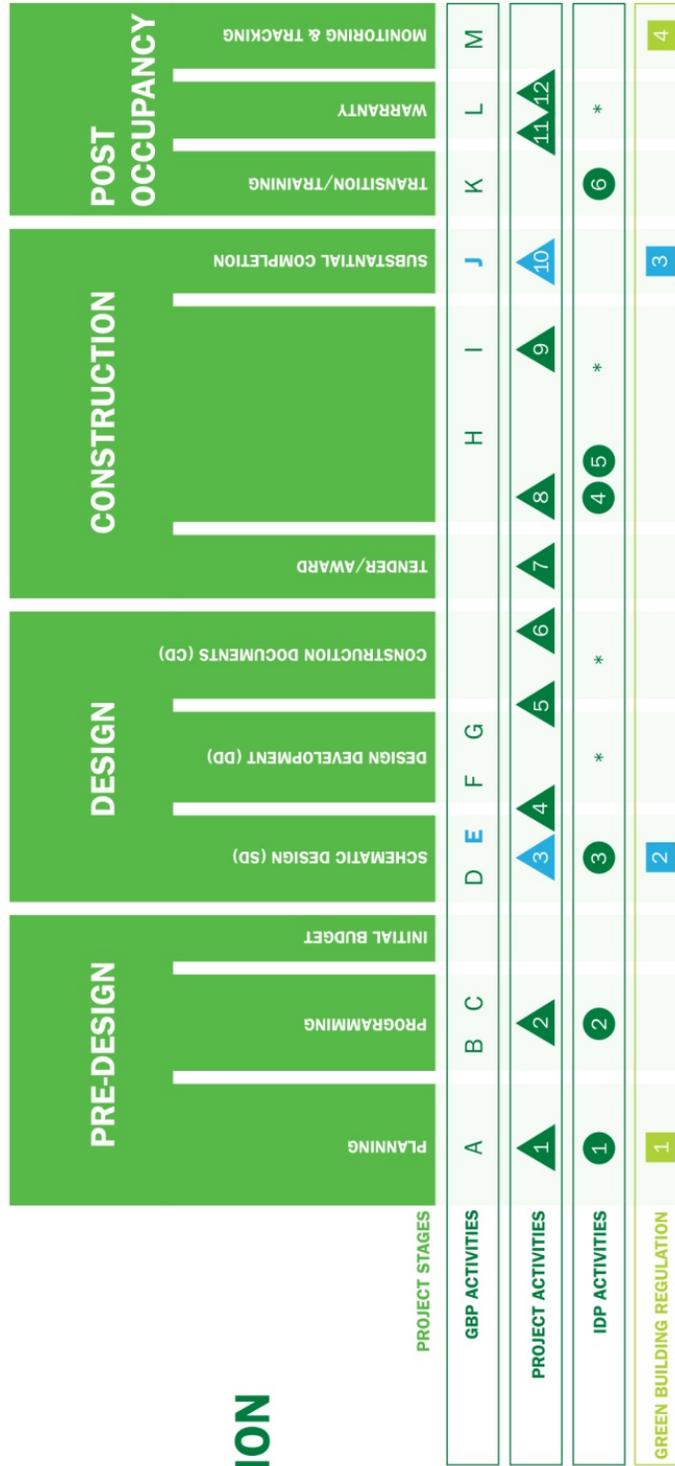
Print the Green Building Project Co-ordination Guideline and attach it to the Owner's Project Requirements (OPR) document. Review it with the project team throughout the project's design and construction to ensure the GBP criteria are implemented and that reporting is on track.

# GREEN BUILDING PROJECT CO-ORDINATION GUIDELINE

October 2013

Applies to the Building Construction Project Team  
 Applies to Government Departments, Agencies and Crown Corporations.

Indicates Green Building Program Milestones



NOTE:  
 This chart is typical of conventional design/bid/project delivery model. Timing for each phase may vary according to project size and scope. Projects with very tight schedules need to adjust the start and processes to accommodate project conditions.



**GBP ACTIVITIES LEGEND**  
 (guide for building owners/ building representatives and building recipients)

- A. Review the Green Building Program (GBP) standards and practices
- B. Submit MB Hydro Power Smart for Business New Buildings Program (PSNBP) application
- C. Complete Owner's Project Requirements (OPR) with consultant
- D. Have building simulation (energy) baseline model prepared
- E. Submit GBP Form 1
- F. Have building simulation model(s) prepared (at least 3 tested design scenarios)
- G. Ensure Basis of Design (BoD) is prepared
- H. Ensure building simulation compliance model is prepared
- I. Receive Power Smart Designation
- J. Submit GBP Form 2 and attachments
- K. Receive commissioning documentation
- L. Complete PSNBP Proven Performance Incentive forms (if applicable)
- M. Attend post occupancy interview with GBP Representative

**PROJECT ACTIVITIES LEGEND**  
 (guide for project managers)

1. Review IDP activities GBP and reporting mechanisms
2. Engage commissioning and programming consultants
3. Review GBP Form 1 (and variance considerations)
4. SD-Update Owner/Review/Obtain Owner Approval
5. DD-Update/Review/Approval
6. CD-Update/Review/Approval
7. Tender/ Award
8. Construction Start-Up
9. System Commissioning
10. Substantial Completion/ Beginning of warranty period, Review GBP Form 2 (confirm variance conditions were satisfied)
11. Warranty review at 10 months
12. Warranty period ends

**INTEGRATED DESIGN PROCESS (IDP) ACTIVITIES**  
 (guide for Consultant /IDP facilitator)

1. Schedule and conduct Business/Project Planning Meeting(s)
2. Schedule and conduct Programming Meeting(s)
3. Schedule and conduct Facility Performance/Multidisciplinary Team Start Up Meetings
4. Schedule and conduct General Contractor and Sub-contractor Start Up Meeting(s)
5. Schedule and conduct Construction Meeting(s)
6. Schedule and conduct Post Occupancy Deliverable Meeting(s)

★ Schedule and conduct Multidisciplinary Team Meeting(s) at least one in each phase

NOTE:  
 This Schedule indicates the approximate timing of "first" meetings for the IDP. Subsequent meetings will be scheduled as appropriate to the project.

**GREEN BUILDING REGULATION\***  
 (guide for Government Departments, Agencies and Crown Corporations)

1. GBP Liaison will advise agencies and other projects to include green building requirements in contracts and agreements and to report using GBP Forms.
2. Agency/branch will return completed GBP Form 1 to GBP Liaison. The Liaison confirms GBP Form 1 is also sent to Director of GBP.
3. Agency/branch does completeness check and returns completed GBP Form 2 to GBP Liaison. The Liaison does performance and compliance review for organization. Then sends copy of Form 2 to Director of GBP.
4. GBP Liaison retains copies of GBP Forms in the event the organization (government department, agency or Crown Corp.) is audited for compliance to legislation or Green Building Policy directives.

\* The Climate Change and Emissions Reductions Act, Green Building Regulation (C135-M.R./38/2013)

## 3.2

# Energy Modelling

### What is energy modelling?

Energy modelling uses computer software to approximate the energy use of a building before it is built. It can help optimize the building design and support design team decisions that yield the greatest efficiency in the building's energy use.

Modelling has limitations:

**It does not accurately predict the future.** A design or compliance model doesn't accurately predict the actual energy use of the building. It estimates energy use under certain scenarios. An energy model provides information that should be used in the same way as a mileage rating for a new vehicle. The mileage rating is used to compare vehicles that have been subjected to similar testing standards. The rating sticker doesn't guarantee the vehicle's actual fuel-use. A building's energy model is not precise because there are too many variables to anticipate. Examples include:

- The building may not get built exactly as designed.
- The occupants may use the building in ways other than predicted.
- The weather conditions may vary from the conditions used for the model.

Energy modelling is a tool that provides comparative scenarios that guides design decisions.

**It is only as good as the inputs.** Energy modelling is effective for supporting design decisions and assessing the life cycle costs of various options of the building design. However computer modelling relies heavily on the inputs provided by the project team. The adage "garbage in – garbage out" applies.

**It requires commitment to an energy target.** For best results identify the energy target early and stick to it, especially where an energy target is a requirement of a regulation, a funding agreement or certification program.

Despite the limitations, energy modelling is the most cost effective method of testing a proposed building design for energy use. It is irreplaceable when used in an iterative design process.

### Why do I need an energy model?

Energy models are used to:

- **Demonstrate an energy efficiency target is being met in a building design.**
- **Design high performance buildings.** High performance buildings are developed using energy modeling because they provide more accuracy in evaluating design strategies that impact building energy consumption. The models have the capacity to examine strategies (ex: building orientation and shape, day lighting, shading and envelope insulation) in design stages of the project that would be extremely difficult to otherwise predict and costly to modify in later stages of the building process.
- **Provide a level of protection to the building owner.** When used correctly, the model takes a building design or construction idea and simulates how it might affect the building's energy efficiency and operating costs for years to come.

- Qualify building projects for rebate programs, incentives and green building ratings.
- Challenge conventional building systems and practices.
- Evaluate synergies to optimize building system design and equipment sizes.
- Identify areas with the greatest potential impact for energy efficiency.
- Test counter-intuitive building performance relationships.

## How do I get an energy model?

**Include the energy efficiency design target in the scope of work for the prime consultant (usually the architect) or mechanical engineer and include the expectation that the model will be independently verified by the Manitoba Hydro Power Smart for Business New Buildings Program other independent agency.**

Energy modelling is normally performed by an engineer or independent consultant. Energy modelling and software must meet the minimum requirements of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) standard 90.1-2007 Appendix G, Section 3.

The Manitoba Green Building Program (GBP) recognizes two types of energy models:

- Prescriptive models (an energy model has already tested a series of specifications for a generic building type).
- Custom models (the services of an energy modeller are acquired to model the building's unique specifications).

The models are proof that certain design targets for energy efficiency were met or exceeded. The consultant, architect, engineer or energy modeller will be able to advise which model is best suited to the project.

Prescriptive models apply to simpler building types such as small offices, schools and community halls. They recognize that smaller, less complex buildings may reliably achieve performance gains by applying a set of key features to a building. Prescriptive models are limited to certain defined building types but are a good option to save on the cost of custom modelling.

## PRESCRIPTIVE ENERGY MODELS

If a building is being designed using all the prescriptive measures of a recognized building program, there is assurance that the building will perform to a published level of energy efficiency. If a recognized building energy program is used, the services of an energy modeller will not be required and the design team can rely on the prescribed measures published by the program (known as the prescriptive model). NOTE: Prescriptive models MAY not be sufficient if the project is applying for a financial incentive or is pursuing a green building certification. Consult these programs directly to confirm. Examples of prescriptive models and the applicable programs:

Program	
Power Smart Designation (prescriptive design path)	Power Smart Design Standards
LEED® Certification	ASHRAE Advanced Energy Design Guide Advanced Buildings™ Core Performance Guide
NECB 2011	Prescriptive Path

## CUSTOM ENERGY MODELS

A custom model is needed if a prescriptive building program does not fit the building because of its complexity, occupancy or size. In these situations, the services of a qualified energy modeller are required. Examples of custom models and the applicable programs:

Program	
Power Smart Designation <sup>1</sup>	Power Smart Custom Design Path
Power Smart Custom Design Path Incentive <sup>1</sup>	Power Smart Custom Design Path
LEED® Certification	ASHRAE 90.1 Model
Green Globes™ Certification (any level)	Custom Model
NECB 2011	Performance Path

<sup>1</sup> Manitoba Hydro Power Smart for Business New Buildings Program

## What does energy modelling cost?

Costs depend on the building's complexity, size and requirements of the model. The cost of energy modelling services for a simple building project with an area of 1800 m<sup>2</sup> (20,000 ft<sup>2</sup>) or less could range between \$10,000 and \$15,000.

The cost depends on the scope of services being provided and the skill of the modeller. Multiple quotes with details of the scope of work should be obtained to allow comparison. The modeller should at least provide: a baseline model, a compliance model, a minimum of three design scenarios and the reports as outlined in the next section What will I get and when?.

The above estimate does not include the cost of third party verification of the energy model. This is a requirement for some projects affected by the Manitoba GBP). Verification fees are also not included in certification costs if the project pursues, LEED® or Green Globes™. Verification fees may cost about \$5,000.

## What will I get and when?

These deliverables should be discussed with the project architect and engineer to ensure they are included in the project contracts and documents.

At a **minimum**, the energy modeller should provide:

- A report at each milestone of the project (schematic design, design development, construction documents, occupancy). The report must identify the input variables and the predicted energy performance using the variables at this stage of design.
- A baseline model representing minimum requirements of the Model National Energy Code for Buildings in Canada (MNEBC) (1997) at conceptual design.
- At least three tested design scenarios.
- A compliance model before occupancy simulating the final building design.

**Optional** requirements (not included in the average energy modelling cost):

A **calibrated model** which aligns the compliance model with actual performance after the building is constructed. This model can be used to effectively represent the real world performance of a new building. It is required if the project is pursuing the Measurement and Verification credit in LEED® or the performance incentive under the Power Smart for Business New Buildings Program.

A **fuel neutral analysis** is useful to provide a performance indicator for the building efficiency, independent of the fuel type. It is required to qualify for designation under Manitoba Hydro's Power Smart for Business New Buildings Program Custom Design Path.

## Resources:

*For information about the economic benefits of modelling, go to: [facilities.net.com](http://facilities.net.com) and search for:*

- Understanding What an Energy Model Can and Can't Do Is Critical To Its Success by Clark Denson (June 2011)
- Realistic Expectations Needed to get Most out of Energy Modeling by Clark Denson (June 2011)
- Energy Modeling Provides Benchmark of Benefits for Investments by Mehdi Jalyerian and David Callan (June 2010)

### 3.3 Integrated Design Process

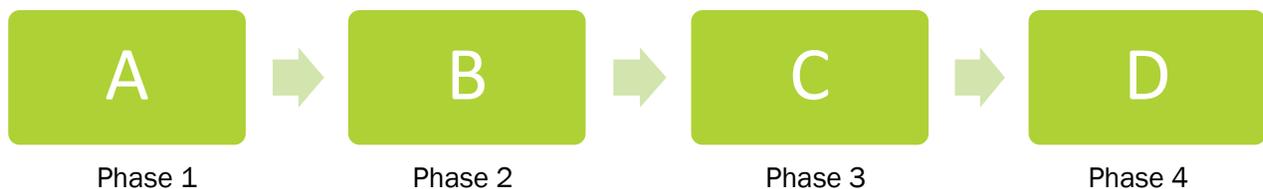
#### What is IDP?

Integrated design process (IDP) is a collaborative process that emphasizes a holistic approach to building design.

#### How is IDP different from conventional building design practices?

Conventional design proceeds is a process that is developed in a linear manner. Generally, someone determines what the building will look like. Then someone else decides what the systems will be. Then someone else builds it. Then someone else operates it. Conventional design does not accommodate changes to design without imposing cost or scheduling implications on the project.

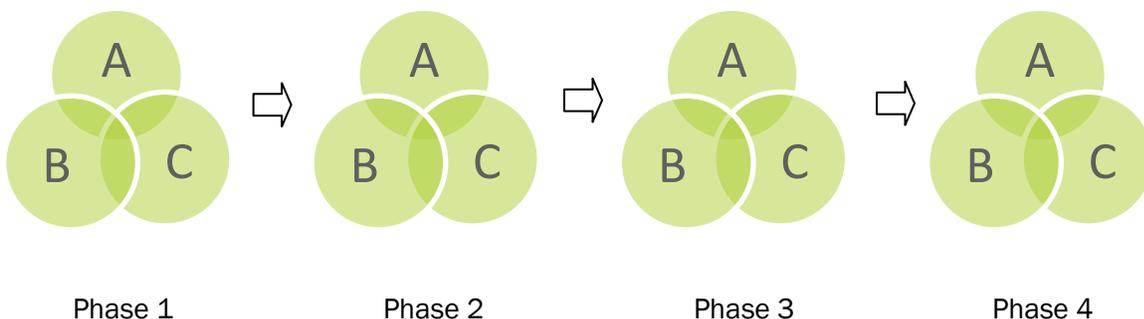
#### The conventional design process is linear



In IDP, a building is treated as an interdependent system. The building's stakeholders are brought together as an interdisciplinary team at the beginning. Their role is to explore, test and evaluate a broad range of solutions to find those with the greatest potential. In IDP, the team actively consult each other and contribute to the development of the final building design. Throughout the process, the team evaluates design suggestions and looks for synergies and tradeoffs that could create savings in the early stages of the building design.

*For example: a decision to eliminate windows on the side of a building might justify reducing the size of heating, ventilation and air conditioning (HVAC) equipment. Any savings that result from using a smaller HVAC system and eliminating the windows, identifies funds that will be available for other features of the project, without compromising the building function, comfort or the total budget.*

#### IDP for Decision Making and Design is collaborative



## Who should be represented on the interdisciplinary project team?

Representatives should be appointed to the team to represent their speciality, discipline or interest. Team members are appointed by the owner and prime consultant and can include:

- A. **owner:** responsible for establishing project goals, budget and expectations
- B. **owner's representative**
- C. **building commissioning professional**
- D. **building occupant representatives**
- E. **building maintenance and operation representatives**
- F. **architect**
- G. **prime consultant**
- H. **IDP facilitator**
- I. **construction manager**
- J. **civil engineer**
- K. **landscape architect**
- L. **mechanical and electrical engineers**
- M. **specialized consultants** (acoustics, lighting, ecology)

## What are the components a successful integrated design process?

1. **Establish measurable project goals and expectations.** Identify measurable building goals and expectations for the project early in the pre-design stage (see the Manitoba GBP Criteria and the Project Co-ordination Guideline).

The owner's goals and project expectations are clearly communicated to the entire project team using a owner's project requirements (OPR) document. Use the OPR to specify that IDP must be used and assign the responsibility to oversee the IDP activities to someone (ex: IDP facilitator). See the OPR Guideline in Section 3.6.

2. **Assemble an interdisciplinary project team.** Assemble a team of stakeholders and professionals with relevant disciplines. Team members should have the relevant skills, knowledge, values and perspectives to satisfy the owner's project expectations. The team must be cohesive and collaborative. Once the membership of the team is established, allocate responsibilities, identify the contracting and reporting responsibilities, discuss the fee structure for services (ex: charrettes or energy modelling) and address risk tolerance and risk management strategies that support the decision making processes.
3. **Consult the interdisciplinary project team at key stages throughout the project.** Appoint an IDP facilitator. The facilitator will run planning and design meetings at key points throughout the project that include all members of the interdisciplinary project team. These meetings are design charrettes.

A list of IDP meeting types, their purpose and the timing are outlined in the following chart. (See the Project Co-ordination Guideline for a recommended schedule of IDP meetings.)

## IDP Meeting Chart

Type of IDP Meeting	Purpose	Timing
Comprehensive business/project planning meeting(s)	Identify building project requirements, budget, site issues, schedules or other constraints, etc.	Pre-Design - planning stage
Programming meeting(s)	Determine building's programming requirements.	Pre-Design - program stage
Facility performance meeting(s)	Discuss facility performance requirements.	Within the first 2-3 weeks of the Design - schematic design stage
Multidisciplinary team meetings	Review owner's project goals, discuss design features/building requirements and design options highlighting implications, if any to the interests of areas represented by the team members.	At least once at each stage of the project. Pre-Design, Schematic Design, Design Development, Construction Documents, Construction and Post Occupancy.
General contractor and sub-contractor meetings	Review owner's project goals, objectives, Pollution and Contamination Prevention Plans documentation and reporting requirements.	Pre-Construction
Construction meetings	Review project goals, objectives, Pollution and Contamination Prevention Plans documentation and reporting requirements.	Construction
Post -occupancy deliverable Meetings	Review how operating practices (utility monitoring, commissioning activities), occupant complaints and building maintenance issues will be monitored at occupancy and annually thereafter.	Substantial Completion and Warranty Period

**4. Apprise owner of progress and achievements at key stages of the project.** The prime consultant will monitor how IDP is working; ensure collaboration occurs throughout the design process; and report progress to the project owner at each stage of the project. The reports will highlight design decisions that affect the project's goals, expectations or budget.

Project teams are encouraged to go beyond what is described in the IDP Guideline to recognize the unique conditions of each project. IDP is effective and should be implemented to the extent that is practical for project size, complexity and budget.

### What does IDP cost?

IDP is a process and its cost is embedded in the professional services of your project team. Typically, a project team that employs IDP will spend more time in the design stage of a project because design decisions will require more testing and consultation. Benefits may include:

- reduced initial capital cost
- fewer change orders
- fewer construction delays
- lower long term operating costs

Overall, the outcomes of using IDP more than offset the costs of requiring it.

### For more information on IDP search the internet for:

Roadmap for the Integrated Design Process, BC Green Building Roundtable, 2007

## 3.4

# Pollution & Contamination Prevention Planning

Construction activities have the potential to pollute and contaminate the environment harming workers, the community, building occupants and ecosystems. It is the responsibility of the building owner and the project team to ensure safeguards are in place to reduce the impact of waste, pollutants and contaminants generated during construction.

### What is a Pollution and Contamination Prevention Plan?

A construction Pollution and Contamination Prevention (PCP) plan is a document(s) that outlines safeguards, specific procedures and preventive measures that will be enforced during construction. A PCP plan normally contains three components:

1. Construction waste management plan
2. Construction erosion and sedimentation control plan
3. Construction indoor air quality plan

Collectively, these help to ensure that potential pollution and contamination generated during construction are minimized. Also, if they are discovered, a plan for remediation is in place and executed quickly.

### How much does a PCP plan cost?

PCP Plans are not typically included in conventional construction projects so there will be a small additional cost to have them in place and executed. The cost of a PCP plan will vary based on conditions at each project. For example, the cost for erosion and sediment control measures will be based on slope conditions, plant coverage, proximity to natural waterways and neighbouring occupancies. However costs for construction waste diversion in urban areas can be negligible. Generally, PCPs are fairly well established as common construction practice in Manitoba and the associated costs are competitive.

### What should the owner expect and when?

Once the design team has reviewed each component of the PCP Plan with the Owner, regular reporting on the status of PCP activities (positive or negative) is essential. It is needed to keep all members of the project team informed of any occurrences that could compromise certification or the health of workers, the community, building occupants or ecosystems. Owners should expect to receive:

- regular reports on the status and activity of each component of the PCP plan during construction
- written summary reports and supporting documents verifying compliance with each component of the PCP plan after construction

If the project is pursuing a green building certification, the contractor and the design team must meet the requirements of the certification program. They must also collaborate to ensure the requirements are communicated to the subcontractors and trades and that the documents and reports are collected in a timely manner. For example: a construction waste diversion report is required for the GBP at substantial completion of the building.

## What should be included in each component of a PCP plan?



The PCP Plan is developed by the contractor in response to specifications and site analysis provided by the design team. These activities and measures should be included in each of the component plans.

Note: The component plans are not limited to the described activities and measures.

### 1. Construction Waste Management Plan (WMP)

The construction WMP establishes practices and procedures to divert construction and demolition waste from municipal landfill. It reduces, recovers, reuses and recycles materials. The contractor (or delegate) develops and implements the plan and provides a diversion report at the end of the project.

The construction WMP should contain:

- The project's construction waste diversion targets can be a statement to maximize opportunities for diversion or state and actual target (ex: a minimum 50% diversion target is very achievable in urban areas).
- The types of construction and demolition waste to be generated during construction should be noted.
- The types of construction and demolition waste to be collected and monitored at the site should be noted.
- Where and how the waste will be collected (ex: separated or mingled) and stored should be stated.
- Destination of waste (where waste will end up) should be stated.
- How waste will be measured (GBP Form 2 reporting requires that waste be measured by the tonne) should be shown.
- Reporting mechanisms, schedules and templates should be outlined.
- There should be descriptions of methods used to inform workers of the site's waste management practices.

Note: Excavation or land-clearing debris is not considered construction, demolition or renovation waste and would not require tracking.

## 2. Construction Erosion and Sedimentation Control Plan (ESC)

The construction ESC plan describes the activities, practices or devices used to prevent or reduce erosion or sediment. It should cover:

- the release of sediment and other pollutants into receiving water bodies, streams, catch basins, or other environmentally sensitive areas
- the detachment of soil particles at locations on the site into surrounding areas

The roles and responsibilities for an ESC plan depend on the extent and complexity of a project. The owner and design team identify areas of concern and the appropriate extent of erosion and sedimentation control required in the construction drawings and specification. The contractor then prepares a construction ESC plan describing the temporary procedure, vegetation and mechanical control measures to be used during active construction.

Typically, the contractor's ESC plan should describe activities specific to:

- site housekeeping
- erosion control
- transport control
- sedimentation control

**Site housekeeping activities** are the practices that mitigate the transport of mud or dust generated by activities at the construction site. Practices include:

- designating locations for construction vehicles to enter or exit the site
- gravelling or paving access roads to minimize tracking of mud off-site
- designating internal haul roads and or track packs to reduce offsite tracking
- installing a wash down facility for truck wheels before vehicles leave the site
- protecting catch basins and manholes from sediment and debris
- implementing dust control measures (ex: vegetation, water, windbreaks, screens) and limit vehicle speeds to prevent blowing dust from disturbed soil surfaces
- removing accumulated sediment and debris as required
- removing construction materials and structures when construction is done
- placing dirt and soil stockpiles away from watercourses, environmentally sensitive areas, drainage course, ravings and existing adjacent developments
- placing physical barriers around the perimeter of the construction site to protect surrounding areas from debris, sediment and other particulates

**Erosion control activities** are the practices that minimize soil detachment from taking place. These activities protect exposed surfaces and control run off by maintaining existing vegetation or applying slope treatments, seeding, mulching, sodding, erosion control blankets or mats and dust control.

**Transport control activities** are practices that manage the velocity and flow of storm water at the site to minimize erosion and channel sediment to desired locations. Control activities are accomplished by directing storm water away from exposed soils. Typical practices include channelling water into

grassed waterways, creating storm water ditches or channels, or installing silt fences, buffer strips, filters and check dams.

**Sedimentation control activities** are practices that capture eroded soil by filtration or the deposit of sediment from the water flow. Typical practices may include settling ponds and filters. Measures may be temporary or permanent.

Temporary measures are implemented during construction and ultimately will be removed, or will naturally biodegrade or photo-degrade. Temporary measures include: silt fences and fabrics, sediment control basins, seeding and mulching, use of diversions and install pipes to manage concentrated flows.

Permanent measures are part of the project design, provided by the design team, and become part of the long term site storm water management plan. Permanent ESC plan measures may include: infiltration basins and trenches, grassed swales, vegetation strips, sediment basins, wet ponds and detention ponds and constructed wetlands.

Note: These activities can serve more than one purpose. It is not intended that all the activities need to be used at every job.

### **3. Construction Indoor Air Quality (IAQ) Management Plan**

The indoor air quality (IAQ) of a building can become contaminated with substances that are harmful to human health even before it is occupied. An IAQ Management plan identifies practices and measures during construction to ensure a healthier indoor environment for jobsite workers and future occupants. As a result, the building will be physically cleaner, have a hygienic air handling system and be less prone to mould and moisture.

The owner should include construction indoor air quality management in the OPR. The design team should integrate the requirement into the construction specifications. The contractor will develop the IAQ Management Plan based on the specifications provided. Contractors must audit work activities at least monthly to confirm the IAQ Management Plan is being followed. Photographs should be taken at each inspection to document the practices at the construction site. They will be essential if the project is pursuing a green building certification.

Normally, IAQ Management plans identify the construction practices to protect air quality under<sup>1</sup>:

- HVAC system protection
- contaminant source control
- pathway interruption
- housekeeping
- scheduling

Although no two construction projects are identical, IAQ Management Plans have many similarities. There are many practices or activities that are shared by most plans.

HVAC protection measures:

- Avoid using the installed building HVAC systems during construction and demolition where possible. Consider using temporary ventilation units to protect permanent systems.

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<sup>1</sup> Based on Sheet Metal and Air Conditioning Contractors National Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 2<sup>nd</sup> Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3)

- If using the installed building HVAC systems during construction and demolition:
  - do frequent maintenance while the HVAC system is being used
  - use filters at air intakes and returns
  - replace filters as they become loaded, before building flush out and before occupancy
- Shut down installed HVAC system and seal off the supply diffusers and return air ducts:
  - during any demolition
  - when performing construction activities that produce dust, such as drywall sanding, concrete cutting, masonry work, wood sawing or adding insulation
  - whenever the HVAC system is not in use during construction, to prevent accumulation of dust and debris
- Do not store construction or waste materials in mechanical rooms
- Provide periodic duct inspections during construction. If the ducts are contaminated, clean them professionally in accordance with National Air Duct Cleaning Association (NADCA) Standards.
- The general contractor should take photographs to show the measures are in place.

#### Contaminant source control measures:

- Identify control measures for handling and storing materials containing Volatile Organic Compound (VOC) and other toxic ingredients.
- Restrict traffic volume and prohibit idling of motor vehicles where fumes could be drawn into the building.
- Use electric or natural gas alternatives instead of gasoline and diesel equipment, where possible
- Cycle equipment off when not being used or needed.
- Exhaust pollution sources to the outside with portable fan systems. Prevent exhaust from re-circulating back into the building.
- Keep containers of wet products closed as much as possible. Cover or seal containers of waste materials that can release odour or dust.
- Protect porous materials, such as insulation and ceiling tiles, from exposure to moisture.
- The general contractor should take photographs to show measures are in place.

#### Pathway interruption measures:

- Provide dust curtains and/or differential pressurization to prevent dust and odours from migrating to clean or occupied areas.
- Minimize accumulation of air contaminants in occupied or work spaces by managing ventilation. Shut down supply and exhaust systems to isolate pollution or exhaust contaminated air directly to the outside.
- The general contractor should take photographs to show measures are in place.

Housekeeping measures:

- Clean HVAC equipment and building spaces regularly to remove contaminants from the building prior to occupancy.
- Keep all coils, air filters, fans and ductwork clean during installation and construction. If required, clean before performing the testing, adjusting and balancing of the systems.
- Suppress and minimize dust with wetting agents or sweeping compounds. Use efficient and effective dust collecting methods such as damp cloth, wet mop, or vacuum with particulate filters, or a wet scrubber.
- Remove accumulation of water inside the building.
- Thoroughly clean all interior surfaces before replacing filters and running HVAC system for system balancing, commissioning and building flush out.
- Provide photographs of these activities during construction, to document compliance.

Scheduling measures:

- Schedule activities that use high VOC emitting products (ex: paints, sealers, insulation, adhesives, caulking, cleaners) before installing highly absorbent materials (ex: ceiling tiles, gypsum wall board, fabric furnishings, carpet, insulation). These materials act as sinks for VOCs, odors and other contaminants and will release them later occupancy.

## Resources:

### **Waste Management:**

Use an internet search engine to search for Develop a Waste Management Plan BRANZ; or go to: [www.branc.co.nz](http://www.branc.co.nz)

### **Erosion and Sedimentation Control:**

Use an internet search engine to search for:

Erosion & Sedimentation Control Guideline for Urban Construction (Dec. 2006)

Alberta Transportation Erosion and Sediment control Manual (June 2011)

### **Indoor Air Quality Management:**

Sheet Metal and Air Conditioning Contractors National Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 30)

## 3.5

# BUILDING COMMISSIONING

### What is building commissioning?

Commissioning is a process that ensures a building is designed, constructed and operated in accordance with the requirements of the Owner's Project Requirements (OPR) document. The commissioning process will ensure building systems are properly sized and calibrated and that facility operators have the training and resources they need to effectively manage a new building.

Commissioning is determined by project size, complexity and budget. Owners need to evaluate building commissioning decisions carefully. Opting out of commissioning won't save money in the long run. Building commissioning can reduce the risk that something will be missed during planning or construction causing mechanical inefficiencies or increased operating costs over the building's life. Protect your investment and rely on building commissioning to ensure:

- building systems are documented, verified, inventoried and calibrated for performance
- a comprehensive systems manual is assembled
- training is provided for the operations staff so they will know how to operate the building efficiently and economically for years to come

An owner should hire or appoint a building commissioning professional as early as the pre-design stage. Commissioning professionals lead, plan, schedule and co-ordinate the implementation of the project commissioning and can help owners develop a solid OPR document.

### What are the qualifications of a building commissioning professional?

A building commissioning professional can be a person or an entity. Commissioning professionals are also known as "Commissioning Authorities (CxA)" or "Commissioning Agents (CxA)". Depending on the complexity of the project, it may involve a team of commissioning agents with different specialties, (ex: building design, construction or testing).

Green building has increased the demand for building commissioning professionals with certifications such as those offered by the University of Wisconsin-Madison (CxAP<sup>SM</sup> - Accredited Commissioning Process Authority Professional, CxM<sup>SM</sup> - Accredited Commissioning Process Manager, and GCxP<sup>SM</sup> - Accredited Green Commissioning Process Provider), or the Building Commissioning Association (CCP - Certified Commissioning Professional, ACP - Associate Commissioning Professional, CCF - Certified Commissioning Firm).

There is a shortage of certified commissioning professionals in Manitoba. Owners must rely on the applicant's experience, reputation and professional resume. At minimum, the professional's resume should confirm they:

- have building commissioning experience with two or more projects of similar occupancy, size and/or complexity
- have technical knowledge of the systems that need to be commissioned
- have a complete understanding of the commissioning process and indicate compliance with a recognized commissioning protocol such as:
  - ASHRAE Guideline 0-2005 - The Commissioning Process

- ANSI/ASHRAE/IES Standard 202-2013 - Commissioning Process for Buildings and Systems
- CSA Z320-11 Building Commissioning
- have organization, documentation, communication and team-building skills to lead and coordinate a commissioning team and ensure the OPR is met
- have experience writing commissioning specifications
- have experience verifying training requirements including the development of operations and maintenance systems manuals.

A building commissioning professional should not be directly involved in the design or construction of the project. Independent parties are more objective and are able to play a quality assurance role. If the available commissioning professional, happens to be an employee of the design or construction firm involved in your project, they should not be directly involved in the design or construction aspects of the project.

### **What does a building commissioning professional do?**

It is up to the owner to set the commissioning professional's scope of work. At the very least, the commissioning professional should be hired to:

- contribute to the development of the OPR
- develop the Commissioning Plan
- compare the Basis of Design (BoD) to the OPR
- do a design review
- ensure commissioning requirements are included in project specifications
- develop construction checklists and functional test requirements
- verify/spot check submittals
- run commissioning team meetings
- do periodic site visits to meet with team members, review construction and verify/spot check the completion of construction checklists by the trades
- witness start-up and execution of functional testing
- co-ordinate and verify training and training manuals for operator, maintenance and building occupants
- assemble the systems manual
- issue a commissioning report

Optional: An owner may also ask the commissioning professional to:

- conduct seasonal testing
- establish an ongoing commissioning program for the building/facility

The involvement of the commissioning professional and the degree of detail identified in the commissioning plan, depends on the commissioning professional's assessment of the project's complexity, budget and the owner's expectations, experience, resources and risk tolerance.

The commissioning professional's role during planning, design, construction and occupancy may also be affected by the requirements of funding agreements or building certification programs (ex: LEED®, Green Globes, Power Smart).

Green building certification and quality assurance programs (ex: LEED® and Power Smart New Buildings Program) require building commissioning for baseline participation. Discuss the commissioning process and hire a commissioning professional before the pre-design stage.

## **What does building commissioning cost?**

The cost of commissioning a building depends on the requested commissioning activities, the size of the building, and the number, type and complexity of systems. Generally, the cost of commissioning new buildings will range from .5% of the total construction cost (for relatively simple projects such as an office building) to 1.5% for complex laboratories and medical facilities. This would include the services of the building commissioning professional.

For system based commissioning, budget 2% and 4% of the construction cost of each system being commissioned.

Commissioning is an essential component of the project budget and reduces the costs of change orders during construction and the costs of operating the building once it is occupied. The commissioning professional provides quality assurance on your investment, so allocate the project budget appropriately.

The National Institute of Building Sciences reports commissioning can create savings of \$4 for every \$1 invested over the first five years of occupancy. This represents the cost of correcting deficiencies plus the cost of inefficient operations.

Commissioning adds tangible value to the building project and delivers assurance that it will perform to the owner's expectations throughout occupancy. Commissioning affects the project from design to occupancy and the pay-off occurs after the building is built.

## **Resources:**

Use an internet search engine to find:

The Whole Building Design Guide: Building Commissioning, National Institute of Building Sciences;  
Commissioning Guide for New Buildings, Natural Resources Canada, 2010

## 3.6

# OWNER'S PROJECT REQUIREMENTS

### What is the Owner's Project Requirements?

An Owner's Project Requirements (OPR) is a document that describes the building owner's goals, expectations and requirements for the building project and its commissioned systems. It is used throughout the project delivery and commissioning process as a reference for baseline decision making. It contains the owner's performance expectations. It is consulted during design development and at occupancy it is used to verify that the building systems' energy and environmental performance meet the original criteria of the owner.

An OPR needs to be completed in consultation with the design team during pre-design on a new construction project. The document becomes an integral guideline and design tool during the project.

Updates to the OPR will be made by members of the project team throughout the course of project. The updates reflect new decisions and agreements co-ordinated with, and agreed to, by the owner and the design team.

### Why do I need an OPR?

The OPR contains the owner's requirements. Without an OPR, members of the project team will not have the information they need to satisfy the owner's expectations.

At the end of the project, the OPR document should be passed onto the building operations and maintenance staff as part of the systems manual. Operation and maintenance staff will refer to the OPR to answer questions about the building, systems and equipment so they can be maintained optimally over their useful life.

### What is included in an OPR?

As a minimum, an OPR should provide clear, concise instructions for:

- owner and user requirements
- environmental and sustainability goals
- energy efficiency goals
- indoor environmental quality requirements
- equipment and systems expectations
- building occupant expectations and
- operation and maintenance personnel expectations

If your organization does not have an OPR template, you can download a template from the Manitoba Green Building Program website at: [www.gov.mb.ca/mit/greenbuilding/index.html](http://www.gov.mb.ca/mit/greenbuilding/index.html)

The OPR template was developed by the Manitoba Hydro Power Smart Program and is provided with their permission.

**Resources:**

Manitoba Hydro New Buildings Program, Custom Design Path Program Guide, 2013 (request the Manitoba Hydro Owner's Project Requirements template or download it from the Manitoba Green Building Program website: [www.gov.mb.ca/mit/greenbuilding/index.html](http://www.gov.mb.ca/mit/greenbuilding/index.html))



University of Manitoba

## SECTION 4

# COMMERCIAL & INSTITUTIONAL BUILDINGS

## GREEN BUILDING PROGRAM MANUAL



# COMMERCIAL & INSTITUTIONAL BUILDINGS

*The best opportunity to incorporate green building measures is during the design and construction of a building because it will set the conditions for sustainable building operation over the life of the building.*

*The Green Building Program (GBP) criteria are standards and practices for commercial and institutional buildings that:*

- *protect occupant health*
- *improve air quality*
- *reduce waste streams*
- *use energy, water and other resources more efficiently*
- *reduce the overall impact of building construction and operation on the environment*
- *minimize the strain on local infrastructure.*

*Any increase in capital cost needed to implement the GBP criteria is typically offset by lower operating costs. Studies show that the initial investment in building construction and materials is only 15% of the lifecycle operating expenses. Wise investment up front pays back in life cycle benefits.*

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## 4.1

# Green Building Program Application to Commercial & Institutional Buildings

The GBP application provides guidance for projects that must:

- 1) report performance of the GBP criteria
- 2) incorporate the GBP criteria into applicable contracts, construction documents and funding/contribution agreements

Every building can be greener. Some projects will be outside the program application parameters. In those cases, the GBP forms and GBP criteria can still be used to guide “green building” project decisions and reap the benefits of a greener building.

### **Commercial & Institutional Program Application Parameters:**

The GBP for Commercial and Institutional buildings applies to:

A) **New construction** projects:

The new building project is identified as a occupancy described in Section 4.1,  
The new building project is owned or funded by a government organization and  
The new building project has a floor area of 600 m<sup>2</sup> (6,458 ft<sup>2</sup>) or larger.

B) Building **renovation** projects:

The new building project is identified as a occupancy described in Section 4.1,  
The building being renovated is owned or funded by a government organization,  
The cost of the renovation is at least 50 per cent of the cost of constructing an equivalent new building and  
The area of renovation is 600 m<sup>2</sup> (6,458 ft<sup>2</sup>) or larger

C) **Additions to or enlargements** of existing buildings:

The addition or enlargement is identified as a occupancy described in Section 4.1,  
The addition or enlargement being added is owned or funded by a government organization and  
The area of addition or enlargement is 600 m<sup>2</sup> (6,458 ft<sup>2</sup>) or larger.

*If the program application parameter applies, the Government organization must report the projects to the GBCT. GBP Forms 1 and GBP Form 2 are used for reporting purposes.*

## Funding

Any government organization included in the Government Reporting Entity (government departments, Crown corporations and government agencies) that uses it's own funds or provides funds for a new construction or major renovation project must participate in the Green Building Program. There is no minimum level for funding. However, these funding sources are exempted:

- provincial tax incentives
- provincial loans or loan guarantees
- designated heritage grants program
- Power Smart Program

## Occupancy Type

The GBP for Commercial & Institutional Buildings applies to the following occupancy types identified in Table 3.1.2.1, Major Occupancy Classification of the Manitoba Building Code:

- Group A – Assembly occupancies – excluding Division 4 open air (ex: community halls, arenas, pools, gymnasias, libraries, schools, colleges)
- Group B – Care or detention occupancies (ex: hospitals, correctional facilities, personal care homes)
- Group D – Business and personal services occupancies (ex: offices, medical offices, police stations)
- Group E – Mercantile occupancies (ex: exhibition halls, stores)

Where a building has more than 80% of total area comprised of an excluded occupancy type such as a garage, unconditioned space or manufacturing floor, contact GBCT to determine how the criteria applies.

## Construction Type

The GBP criteria for Commercial and Institutional projects applies to new construction (new buildings, addition or extension) and major renovation projects. A building renovation is considered to be major if the cost of the renovation is at least 50% the cost of constructing an equivalent new building. The cost for comparison may be identified by using the most current Hanscomb Yardsticks for Costing – Gross Building Costs (see Section E), an equivalent guide (identified) or cost estimate by a qualified construction company or quantity surveyor.

Costs should be calculated for construction only and should not include land, furnishings and equipment, and soft costs such as consultant fees and financing.

## Area

Projects with a total floor area greater than or equal to 600 m<sup>2</sup> (6,458 ft<sup>2</sup>) must apply the GBP criteria.

The total floor area is the total of each horizontal floor area (storey) above grade measured to the outside face of the exterior walls. Where a floor is partially below grade (ex: walk-out basement) and the area has an assigned occupancy, the area is to be included in total. Where space is partially developed (exterior shell and rough-in only) for future development, the area is to be included in the total.

Where total floor area is less than 600 m<sup>2</sup>, government organizations should still encourage funded projects to incorporate the GBP criteria. In those cases, GBP Form 1 & 2 can be used to guide project decisions and help owners achieve the benefits of building green. In those cases reporting is at the discretion of the government organization providing funding.

### **Practical Application Guidance**

*The program recognizes some projects may not be able to incorporate all the GBP criteria. Practicality should be applied where the owner and project team deem that a recommended standard or practice is ineffective or impractical, or would unduly impair the function or operation of the building, addition or renovation. In those cases, a building owner should seek a variance by identifying the criteria in question on GBP Form 1 Section B, and complete Section C: Variance Options. The owner must provide an explanation for why it cannot be satisfied. A Variance must be requested as early as possible to allow the Director of the Green Building Co-ordination Team (GBCT) the opportunity to address the rationale with the owner or project team, as appropriate. All the GBP criteria are achievable by projects in Manitoba. Project teams should make every effort to accommodate the GBP criteria where practicable.*

## **4.2**

### **Descriptions of the Green Building Criteria**

The criteria listed and described in this section are the recommended minimum standards and practices for green building design, construction, material selection and operations. All the GBP criteria should be applied to projects funded by a government organization. Detailed descriptions of the criteria follow the Summary of GBP Criteria for Commercial and Institutional Buildings.

**The green building criteria for commercial and institutional buildings are organized under six categories. Use the following summary in conjunction with the detailed descriptions that follow.**

Criteria labelled with a “**M**” are mandatory and all projects must deliver on these criteria.

Criteria labelled with a “**R**” must report on delivery of that criteria by submitting GBP Form 2 at substantial completion of the building.

All remaining criteria are **recommended** and will be required for variance projects.

## Summary of Green Building Program Criteria

This summary applies to GBP Form 1 & 2 Reporting of Commercial & Institutional Buildings

**M** is mandatory for funded projects, **R** indicates reporting on GBP Form 2. All remaining criteria are recommended.

<b>1. Verification</b>	<p>Benefit: Protects owner investment, proves delivery of green building criteria and provides quality assurance.</p> <p>Evidence must be provided for:</p> <ul style="list-style-type: none"> <li>• energy efficient design ..... <b>M-R</b></li> <li>• environmental impacts ..... <b>M-R</b></li> <li>• building commissioning ..... <b>M-R</b></li> </ul>
<b>2. Planning &amp; Design</b>	<p>Benefit: Maximizes potential for occupant comfort, community infrastructure and financial/environmental sustainability.</p> <p>The design process will include:</p> <ul style="list-style-type: none"> <li>• integrated design process ..... <b>M-R</b></li> <li>• life cycle cost analysis</li> </ul> <p>The design and planning criteria will include:</p> <ul style="list-style-type: none"> <li>• recycling stations..... <b>M</b></li> <li>• active transportation facilities</li> <li>• natural light and views</li> <li>• low water landscape principles</li> <li>• indoor air quality standards ..... <b>M</b></li> <li>• potable water metering ..... <b>M</b></li> <li>• energy consumption metering ..... <b>M</b></li> <li>• access to community amenities</li> </ul>
<b>3. Adaption &amp; Resilience</b>	<p>Benefit: Reduces potential risks associated with climate change and energy supply volatility.</p> <p>The design team should identify and evaluate options for:</p> <ul style="list-style-type: none"> <li>• energy sources ..... <b>M-R</b></li> <li>• adaptability of systems</li> </ul>
<b>4. Sustainable Materials</b>	<p>Benefit: Augments occupant health, supports resource conservation and supports a green economy in Manitoba.</p> <p>Project team should prioritize use of:</p> <ul style="list-style-type: none"> <li>• low or zero emitting materials ..... <b>M</b></li> <li>• water efficient fixtures and fittings ..... <b>M-R</b></li> <li>• Manitoba manufactured products..... <b>M-R</b></li> <li>• products with recycled content ..... <b>M-R</b></li> <li>• salvaged building materials ..... <b>M-R</b></li> </ul>
<b>5. Responsible Construction</b>	<p>Benefit: Protects the community and the environment by using construction practices that avoid waste and pollution.</p> <p>Construction activities must include:</p> <ul style="list-style-type: none"> <li>• pollution prevention planning ..... <b>M</b></li> <li>• waste diversion..... <b>M-R</b></li> </ul>
<b>6. Transition to Occupancy</b>	<p>Benefit: Ensures persistence of green building investments during occupancy.</p> <p>Owners and operators should set policies and practices to:</p> <ul style="list-style-type: none"> <li>• purchase energy efficient electronics and appliances</li> <li>• purchase low emitting products and furnishings</li> <li>• use green cleaning methods</li> <li>• enforce a non-smoking environment ..... <b>M</b></li> <li>• participate in local recycling programs ..... <b>M</b></li> <li>• engage in energy and water use monitoring ... <b>M</b></li> </ul>

## Descriptions of criteria for Commercial and Institutional Buildings

All the green building criteria are achievable by Manitoba projects. However, building owners have options when a green building criteria is impracticable relative to the building's budget, size, complexity or function. The options, where available, are identified on GBP Form 1, Section C: Variance Options.

The green building criteria are labelled MANDATORY or RECOMMENDED. The building owner must review the criteria and confirm the intent to comply on GBP Form 1: Section B. It is the owner's responsibility to ensure the chosen criteria are added to the list of project requirements in the Owner's Project Requirements (OPR) document.

If criteria are not indicated, the government funding organization will request an opinion from the GBCT. If recommended by the GBCT, the government organization may schedule a meeting to review the owner's decision.

# 1. Verification

*Protects owner investment, proves delivery of green building criteria and provides quality assurance.*

## Energy Efficient Design

MANDATORY | REPORT REQUIRED

### **Confirm the building was designed to meet the energy efficiency target of the Manitoba Green Building Regulation, M.R. 38/2013.**

An energy efficient building provides lower utility bills and reduces greenhouse gas emissions.

For government funded projects (including projects owned or funded by government organizations), energy efficient design requirements are established by *The Climate Change and Emissions Reductions Act*, Green Building Regulation M.R. 38/2013. The regulation requires:

1. The building be designed to a targeted energy efficiency level of at least 33% more energy efficient than the same building designed to meet the minimum requirements of the Model National Energy Code for Buildings (1997).
2. The building's design must be proven to achieve the targeted level of energy efficiency by achieving Designation under the Manitoba Hydro Power Smart for Business, New Buildings Program.

The Manitoba Hydro Power Smart for Business New Buildings Program must give pre-approval before beginning any design work. Manitoba Hydro can determine if the project is eligible to participate in the Manitoba Hydro Power Smart for Business, New Buildings Program and qualify for Power Smart Designation.

## Selecting Compliance or Variance

The Manitoba Hydro Power Smart Designation satisfies the Green Building Regulation and the GBP. However, if Manitoba Hydro advises that the project does not qualify for Power Smart Designation, or if a building project cannot attain the energy efficiency design target then the owner must:

- request a Variance on GBP Form 1: Section B and complete Section C: Variance for Energy Efficient Design.
- return the completed GBP Form 1 to the government organization providing funding as early as possible during project planning and design, before construction.

- The GBCT will be consulted on the request. If the Director advises against the variance request, the government organization will arrange a meeting with the owner and the Director of GBCT to discuss alternatives.

### Summary Chart of Compliance and Variance Options for Energy Efficient Design

Situation	Design Tool or Prescriptive Program*	Verification Method*
<u>Compliance:</u> Select Compliance on GBP Form 1: Section B, Energy Efficient Design	Manitoba Hydro Power Smart for Business, New Buildings Program  Design Standards or Custom Path	Achieve Designation as a Power Smart Building under the Manitoba Hydro Power Smart for Business, New Buildings Program.
<u>Variance: Option 1*:</u> Select Variance on GBP Form 1: Section B, Energy Efficient Design  Complete Form 1: Section C, Variance Energy Efficient Design.	Prepare an energy model based on the building design. (See GBP Guideline 3.2 Energy Modeling. )	Verify the energy model as part of LEED® certification.  Verify the energy model as part of Green Globes™ certification.  Verify the energy model using an experienced energy modeller from the list published by the Canada Green Building Council.
<u>Variance: Option 2*:</u> Select Variance on GBP Form 1: Section B, Energy Efficient Design  Complete Form 1: Section C, Variance Energy Efficient Design	Apply a prescriptive program such as but not limited to:  <i>ASHRAE Advanced Energy Design Guide.</i>  <i>Advanced Buildings™ Core Performance Guide, New Building Institute.</i>	Use a commissioning authority to verify the energy efficiency measures.

\*Other tools, prescriptive programs and verification methods will be considered when identified on Form 1: Section C, Variance Energy Efficient Design.

#### Guidance for Manitoba Hydro Power Smart for Business, New Building Program Designation

Receiving a Power Smart financial incentive for insulation or lighting is not the same as achieving Power Smart Designation. The Manitoba Hydro Power Smart for Business, New Building Program provides both incentive and Designation for energy efficient design and provides technical help to achieve it.

Projects can obtain Power Smart Designation in two ways:

**Prescriptive Path** requires the design team to incorporate the Manitoba Hydro Power Smart design standards into the building's design. If Manitoba Hydro recommends the use of the prescriptive path – the project will not require an energy model to receive the Power Smart designation.

**Custom Design Path** requires the use of integrated design process, building commissioning and energy modelling to confirm the proposed building's design meets the minimum energy efficiency requirements to obtain the Power Smart designation.

To apply:

As early as possible, contact Manitoba Hydro New Buildings Program and obtain the Power Smart New Buildings Program application requirements. **All new building projects must be pre-approved before any design work begins.** To contact the program:

Email: [powersmartforbusiness@hydro.mb.ca](mailto:powersmartforbusiness@hydro.mb.ca)

Phone: 204-360-3676 in Winnipeg ; or toll-free 1-888-624-9376

Link to the *Prescriptive Path Program Guide*

[www.hydro.mb.ca/your\\_business/new\\_building/prescriptive\\_building\\_path\\_guide.pdf](http://www.hydro.mb.ca/your_business/new_building/prescriptive_building_path_guide.pdf)

Link to the *Custom Path Program Guide*

[www.hydro.mb.ca/your\\_business/new\\_building/custom\\_design\\_path\\_guide.pdf](http://www.hydro.mb.ca/your_business/new_building/custom_design_path_guide.pdf)

**Tips:**

1. Don't forget to report results of the energy efficient design in GBP Form 2: Table at Substantial Completion.
2. Be sure the energy efficient design target and reporting are included early in the planning and budgeting for your project. The best method for including it is in the Owner's Project Requirements (OPR) document. This document should be generated in the pre-design stage (See Section 3.1 Green Building Project Co-ordination Guideline and Section 3.6 Owner's Project Requirement Guideline). The Building Commissioner should be able to guide the generation of this document; or contact Power Smart New Building program for a template.
3. Some projects (ex: major renovations) may not be eligible for Power Smart Designation. Confirm with Power Smart and consult with GBCT for alternative compliance requirements.
4. If you are participating in the LEED® certification program:
  - a. PSNBP Designation will NOT guarantee LEED® energy credits. Check with the LEED® program to confirm acceptable proof of compliance for LEED®.
  - b. The LEED® template for Energy and Atmosphere credits may be submitted in lieu of Form 2: Table 1 Energy Efficient Design.

**Environmental Impacts**

MANDATORY | REPORT REQUIRED

**Confirm the building's design and construction had minimal environmental impacts.**

Green buildings minimize the negative environmental impacts and enhance potential health and financial benefits. Investing in green building infrastructure is good for the economy, good for the environment, good for the owner and good for the community:

- It creates consumer demand for environmentally friendly construction materials and products like energy and water efficient equipment, recycled building materials and non-toxic finishes.
- It protects the environment during construction and occupancy.
- It incorporates efficiencies to reduce the demand for energy and water, reducing utility bills and saving money.
- It provides a safe and healthy environment for the occupants who use them.
- It helps the community:
  - protect the ecosystems
  - reduce the amount of waste going to landfill
  - reduce the demand for potable water and wastewater treatment
  - defers expansion plans for landfill, water and wastewater treatment facility
  - prevents expansion costs from being passed on to the residents of the community

When a significant investment is made for a green building it is important to ensure value has been provided.

The most reliable way to prove a new building is green is to establish the specific green criteria at the outset and have the project evaluated by a knowledgeable, independent party. An independent review provides building owners with a report card that confirms green building criteria/standards and practices have been met.

The recognized independent third party for government funded projects is the Canada Green Building Council. The Council evaluates green building projects using LEED® program criteria and awards a certification rating (certified, silver, gold or platinum) to the building owner. The certification supports the claim that a building is green.

Manitoba's GBP also recognizes other third party green building certification/rating systems but considers LEED® Silver certification to be the reference standard attainable for most Manitoba funded projects.

### Selecting Compliance or Variance

At minimum, a LEED® Silver certification for a provincially funded construction project satisfies the requirements of the GBP however, if the building owner and project team deems a LEED® Silver rating to be impractical, a variance request must be submitted to the government organization providing funding. This must be done as early as possible during project planning and design and before construction.

A variance request must describe why a LEED® Silver rating was impractical. It must also propose an alternate green building program or verification method to prove the building design and construction had minimal impacts on the environment. This decision should be reviewed with the project team and supported with a solid rationale.

Situations where a project may not be practicable for LEED® include:

- A LEED® pre-requisite cannot be attained.
- An extraordinary circumstance, event or decision makes pursuing LEED® certification at any level impractical.
- Building complexity or size (less than 1,860 m<sup>2</sup> or 20,000 ft<sup>2</sup>) makes it impractical to pursue LEED® Silver.

If LEED® Silver is not practical, the owner may propose one of the following as an alternate to LEED® Silver certification:

- LEED® certification at a lower level
- Green Globes™ Certification (three globes rating)
- a combination of Power Smart Designation and a narrative from the project team
- other certification system, process or standard

These situations and alternates are suggestions only. They do not guarantee acceptance of the variance request. A complete description of conditions warranting variance is highly recommended. If a variance option is selected, the government organization providing funding will consult with the director of GBCT to determine if it satisfies the intent of the GBP. If the director advises against the request, the government organization may arrange a meeting with the owner and the GBCT to discuss options.

### **Tips:**

1. Don't forget to report on LEED® certification in GBP Form 2: Table 2 at substantial completion. While certification will not likely be completed at that point, evidence of the application for certification will be required.
2. Commit to a green building certification program and target from the very start of the project and include it in the OPR. Clarity of direction is the most efficient path for project development and will save time and money.
3. Target all the equivalent certification program credits, measures and activities described in the Green Building Program criteria. Collectively, they will not be enough to achieve the LEED® Silver target. Additional measures must be selected that are appropriate to the individual project.
4. Be sure that project team members accept responsibility for documentation, reporting and providing regular updates. The updates must confirm that the documents for certification and the activities of the project team are on track. Documentation and performance deliverables for green building certification should be an integral part of the project. Delayed delivery of documentation can cost time and money and may jeopardize certification. To determine project milestones see the GBP **Guideline 3.1 Green Building Project Co-ordination** in the GBP manual.
5. If you are participating in the LEED® certification program, the GBP forms and reports are not a substitute for the documents required to support a LEED® credit. If a LEED® template has been prepared and it contains the information requested in a GBP form, the template may be substituted for a GBP report/table requested on GBP Form 2.

## **Building Commissioning**

MANDATORY | REPORT REQUIRED

### **Confirm the building was designed and constructed to the Owner's Project Requirements, calibrated to the specifications, and the building and staff are made ready for optimal building operation.**

Commissioning is a quality assurance process that ensures building systems are tested for proper function and that they interact according to the owner's requirements and contract documents.

The building commissioner is the owner's advocate and will help establish the OPR as the basis for ensuring the completed building meets the original goals. The commissioner's work is then to track and review the project as it develops from design and drawings to specifications, construction and occupancy.

Hire a building commissioner early in the pre-design stage to oversee all commissioning activities in accordance with ASHRAE 202-2013 Commissioning Process for Buildings and Systems or CSA Z320-11 Building Commissioning. The commissioner will have access to commissioning agents who test the relevant specialty systems and proceed based on established commissioning processes prescribed by ASHRAE or the CSA. More detailed information on building Commissioning is available in **Section 3.5 GBP – Guideline for Building Commissioning**.

**Tips:**

1. Don't forget to report on this criterion on GBP Form 2: Table 4 at substantial completion of the building.
2. If you are participating in the LEED® certification program, fundamental commissioning is a prerequisite. The GBP recommends a scope of commissioning that may also qualify for LEED® credit for enhanced commissioning.
3. Commissioning activities are required for Power Smart Designation in the Custom Path.
4. The extent of commissioning should be established by size and complexity of the project and the requirements of certification programs ex: LEED®, Green Globes™, Manitoba Hydro's Power Smart Program.
5. For more information see:
  - a. CSA Z320-11 Building Commissioning
  - b. ASHRAE 189.1, Standard for the Design of High Performance Buildings, 10.3.1.2 Building Project Commissioning
  - c. ASHRAE Guideline 0-2005, The Commissioning Process
  - d. ANSI/ASHRAE/IES Standard 202-2013, Commissioning Process for Buildings and Systems
  - e. The Manitoba Green Building Services and Products Directory lists building commissioners available in Manitoba

## 2. Planning & Design

*Maximizes the potential for occupant comfort, community infrastructure and financial/ environmental sustainability.*

### Integrated Design Process

MANDATORY | REPORT REQUIRED

#### **Use an integrated design approach and confirm that the appropriate project stakeholders are engaged.**

Integrated Design Process (IDP) is a collaborative process that emphasizes a holistic approach to building design. In IDP, the decision making process is multidisciplinary and includes key stakeholders, from conception to completion. Because of this diversity of participants, the goals and overall project objectives must be clearly established, early.

Integrated design process maximizes opportunities across stakeholder interests and design disciplines. It sets optimal building designs with higher occupant satisfaction and lower capital costs. In IDP, costs are mitigated by exposing the project to wider stakeholder input around the design table rather than on the construction site where changes and delays can be very expensive. An integrated design process also provides great returns when implemented from the onset of the project design. An example of a successful approach may be that extra expenditures for one system (ex: sun shading devices) may reduce costs in other systems (ex: capital and operating costs for a cooling or lighting system).

More detailed information is available in **Section 3.3 GBP – Guideline for Integrated Design Process.**

**Tips:**

1. Don't forget to report on the Integrated Design Process on GBP Form 2: Table 4 Integrated Design Process at substantial completion.
2. Include the people who will be operating the building, early. Their input at the design stage will impact the building operation and potential for savings for the long term.
3. For larger, more complex projects or stakeholder groups, hiring a facilitator may be warranted.

**Life Cycle Analysis**

RECOMMENDED

**Conduct life-cycle cost (LCC) analysis on major building systems.**

A LCC analysis evaluates design options that consider the initial investment for supply and installation of a system plus the cost of operation, debt service, expected disposal and other contributing factors. It can help to establish whether the long term savings of a more expensive, but more energy efficient, piece of equipment is worth the initial investment.

LCC should be performed to evaluate options before major design commitments are made. This practice does not have to apply to all systems. However, it should be considered where project size, performance and complexity will affect affordability and long term operations of the building. Typical systems for LCC analysis may include:

- heating and cooling systems
- renewable energy options
- building envelope systems (ex: windows, insulation, roofing)
- lighting systems

**Tips:**

1. Include LCC in your OPR and indicate your intent to comply on GBP Form 1: Section B.
2. A simple pay back approach, which does not adjust for inflation is not recommended.
3. LCC analysis should not be confused with life cycle assessment (LCA). LCA is a technique that accounts for the environmental impacts associated with a product from raw material extraction, manufacturing processes, transportation and disposal. It is not required for Life Cycle Cost analysis.
4. For more information on applying LCC to a building project:
  - The National Institute of Standards and Technology (NIST); Life-Cycle Cost Analysis
  - The Canada Mortgage and Housing Corporation (CMHC) Life-Cycle Costing Tool

## Recycling Stations

MANDATORY

### Provide permanent space for sorting and storage of recyclables.

Capturing material for recycling reduces demand on municipal landfills and promotes resource conservation as materials are recycled into new products. Planning for space and proper storage of materials helps to maximize collection of materials (ex: paper, cardboard, glass, metals, plastics and organic waste) by making it convenient for the building operators and occupants.

#### *Tips:*

1. Include recycling space in the Owner's Project Requirements and indicate your intent to comply on GBP Form 1: Section B.
2. If you are participating in the LEED® certification program, storage and collection of recyclables is a LEED® prerequisite (MR Prerequisite 1).
3. Recycling programs are available across Manitoba. For more information, go to Green Manitoba's, Recycling website: [greenmanitoba.ca/your-nearest-depot/](http://greenmanitoba.ca/your-nearest-depot/).

## Active Transportation Facilities

RECCOMENDED

### Provide active transportation (AT) facilities.

Provide active transportation to support healthy lifestyles and reduce GHG emissions from fossil fuel based transportation. Facilities for AT should include equipment storage and change facilities to adequately address needs of occupants and accommodate visitors. Bicycle storage and change rooms are typically provided. However, facilities for any active transportation mode may be considered where there is participation and AT infrastructure.

#### *Tips:*

1. Include active transportation facilities in your OPR and indicate intent your to comply on GBP Form 1: Section B.
2. If you are participating in LEED® certification, alternative transportation: bicycle storage and changing rooms (SS4.2) is recommended as a LEED® credit to target.

## Natural Light and Views

RECCOMENDED

### Provide natural lighting and views to the exterior from occupied spaces.

Maximize the use of natural lighting to save on energy costs, provide occupants with exposure to a full light spectrum and create a connection to the outdoors. Natural daylight and views increase productivity by reducing stress, depression and providing a sense of well-being.

#### *Tips:*

1. Include natural light and views in your OPR and indicate intent to comply on GBP Form 1: Section B.
2. If you are participating in LEED® certification, daylight and views (IEQ8.1 and IEQ8.2) are recommended as LEED® credits to target.

**Apply low water landscape principles and practices.**

Low water landscaping principles and practices save money and other resources by cutting maintenance costs. They also need little or no potable water for irrigation. Low water use landscaping techniques and practices are often referred to as “xeriscaping”.

Generally, site plans and landscape design should:

- include plants that need less water
- group plants with similar water needs together
- reduce use of lawn turf
- include features that trap snow and other moisture
- amend soils to improve water absorption
- include application of mulches to slow evaporation from the soil and prevent erosion
- use automated irrigation systems with a high efficiency label (ex: US EPA Water Sense label), if needed

**Tips:**

1. *Include low water landscaping principles and practices in your OPR and indicate you intent to comply on GBP Form 1: Section B.*
2. *If you are participating in LEED® certification, water efficient landscaping (WEC1) is recommended as a LEED® credit to target.*
3. *For more information on applying low water landscaping principles and practices, consult a landscape architect or go to: [Creating the Prairie Xeriscape](#) by Sara Williams.*

**Design ventilation in accordance with ASHRAE 62.1-2007 (sections 4-7, Ventilation for Indoor Air Quality).**

Manitobans spend about 90% of their lives inside buildings. Enhanced indoor air quality requirements promote occupant comfort, health and well-being by providing better, fresher air in those buildings. Strategies for air quality also include limiting sources of indoor air contaminants, and controlling the introduction of outdoor air contaminants. The ASHRAE standard provides guidance to achieve this.

**Tips:**

1. *Include the enhanced ventilation standard in your OPR. This measure is Mandatory criteria of the GBP.*

## Potable Water Metering

MANDATORY

### **Install a permanent meter to measure potable water use for the building and grounds.**

Efficient potable water use saves money and reduces excessive sewer outputs. Installed water meters provide the most basic means to monitor and manage water use and reduce loads on the municipal water infrastructure and reduce the associated utility costs.

Additional meters or sub-meters for building processes or equipment that use larger quantities of water may be desirable for more precise management of water use. This is not a requirement of the GBP but may be valuable to the building operators.

#### ***Tips:***

- 1. Include permanent water meters in the OPR. This measure is mandatory under of the GBP.*
- 2. If you are participating in LEED® certification, providing permanent water meters is only one part of the LEED® prerequisite requirements for Water Use Reduction (WEp1).*
- 3. Other resources and standards, include consulting your water utility service, or see the American Water Works Association Guideline (AWWA) M6 Water Meters – Selection, Installation, Testing and Maintenance.*

## Energy Metering

MANDATORY

### **Install a permanent meter to measure each energy source used in the building and grounds.**

Efficient energy use saves money and reduces GHG emissions. Installed energy meters provide the most basic means to monitor and manage energy use to and cut demands on the power infrastructure and associated utility costs.

Permanent meters should measure electricity, fossil fuel utilities (ex: natural gas, propane) and energy from central plants (ex: steam or chilled water). Thermal or mechanical energy from sources such as ground source heat (geothermal) or passive solar heat are not required to be metered by the GBP. Their benefits should be reflected in the overall reduced energy consumption.

Owners should consider energy sub-metering for ongoing energy management benefits. However, this is not a mandatory requirement of the GBP.

#### ***Tips:***

- 1. Include permanent energy meters in the OPR. This measure is mandatory under the GBP.*
- 2. If you are participating in LEED® certification, providing permanent energy meters is only one part of the LEED® prerequisite requirements for Minimum Energy Performance (EAp2). Also, measurement and verification (EAc5) could be considered if sub-metering energy sources are being considered.*
- 3. For more information on installing energy meters and sub-metering, consult your utility provider*

**Locate the building close to community amenities.**

Locating buildings close to established community amenities saves money and resources by using existing municipal and utility infrastructure. It encourages healthy lifestyle choices by making active or public transportation more convenient and reduces development pressure on undeveloped or natural sites. Examples of community amenities include:

banks	place of worship	groceries	day care centres	public transit
laundries	libraries	cleaners	fitness facilities	shops
schools	entertainment	parks	restaurants	

**Tips:**

1. Not all projects will have the opportunity to choose a building site. Apply this criteria where there's opportunity to choose from different building sites.
2. Include access to community amenities in your OPR and indicate your intent to comply on GBP Form 1: Section B.
3. If you are participating in LEED® certification, development density and community connectivity (SSc2) and alternative transportation (SSc4) are recommended as a LEED® credits to target.

### 3. Adaptation & Resilience

*Reduces potential risks associated with climate change and energy supply volatility.*

**Evaluate the use of renewable energy sources.**

Using renewable energy sources for buildings can reduce operating costs, GHG emissions. It also supports a green energy industry in Manitoba. Examples of renewable energy options include:

- solar (electric, thermal, passive)
- biomass
- ground source heat
- hydro (electricity)

Renewable energy sources and systems should be prioritized for space and domestic water heating, ventilation, lighting, and other major building loads (not including temporary, back-up or emergency power). However, a practical, cost effective life-cycle approach is recommended. Using a renewable energy source is not required if a renewable energy source was not selected, identify on GBP Form 2, Table 5: Energy Source the renewable energy source(s) that were considered.

Use LCC analysis to compare the long term cost implications of renewable energy sources against fossil fuel energy sources (natural gas, propane). If renewable sources are not found to be cost-effective, particularly for the base heating loads, then only high efficiency fossil fuel based systems may be considered.

Although electricity in Manitoba is a renewable hydro electric energy source, avoid using electric resistance systems (conventional baseboard heaters) as the primary heating source for a building.

**Tips:**

1. Don't forget to report on the use of Energy Sources on GBP Form 2: Table 5 to identify primary and secondary energy sources as well as any other energy sources that were considered. GBP Form 2 is submitted at substantial completion of the building.
2. Include consideration for renewable energy options in the OPR. This measure is a Mandatory criterion of the GBP.
3. If you are participating in LEED® certification:
  - a. Note that the LEED® credit for On-Site Renewable Energy (EAc2) recognizes renewable energy as it applies to electricity generation only, not heat. The GBP recognizes renewable energy providing heat and cooling such as passive solar thermal technology, solar walls or ground source heat pumps.
  - b. The LEED® template for Optimizing Energy Performance (EAc1) may be submitted in lieu of GBP Form 2, Table 5 provided that a narrative describing the other considered energy sources is also included.
4. Consider hybrid systems and combinations of energy sources to provide flexibility and options for energy management, redundancy during power outages or to better serve intermittent loads such as ventilation.
5. For more information on renewable energy sources and potential funding opportunities in Manitoba see:

*Manitoba Green Building and Energy Efficiency, Energy Division, Manitoba Innovation Energy and Mines and the Manitoba Hydro Power Smart Ground Source Heat Pump incentive.*

**Adaptability of Systems**

RECOMMENDED

**Design the main heating system to accommodate integration or conversion to other energy sources in the future.**

A flexible central heating system increases building longevity. It allows building systems to convert to other energy sources should fuel pricing or fuel availability change.

Design systems to accept more than one energy source or require that the heating system be easily converted. A hot water radiant heating system for example can be heated by a gas, electric or bio mass boiler.

**Tips:**

1. Include energy source flexibility for the heating system in your OPR and indicate intent to comply on GBP Form 1: Section B.

## 4. Sustainable Materials

*Augments occupant health supports resource conservation and supports green economy in Manitoba.*

### Low or Zero Emitting Materials

MANDATORY

#### Select low-emitting finishes, products and materials.

Products and materials can emit toxic chemicals harmful to humans and accumulate in the indoor air. Volatile organic compounds (VOC) and urea formaldehyde are the most common chemicals emitted from manufactured products and materials. At one end of the scale, these chemicals can be simple irritants to occupants or they can cause allergy problems. At the other end of the scale, they can be carcinogenic and are linked to numerous cancers.

Permanently installed products and materials for use on the interior of the building should have low or no VOC content and no added urea formaldehyde resin. Specifying products that carry a third-party certification label can help achieve desired outcomes:

- Ecologo
- Green Seal
- Standard Carpet and Rug Institute Green Label
- Florscore Program

These above specifications should focus on the following materials:

- adhesives
- sealants
- paints
- flooring systems
- ceiling systems
- composite wood and agrifiber products (ex: particle board, plywood, medium density fiberboard (MDF), door cores)

#### **Tips:**

1. Include a requirement for low-emitting finishes, products and materials in your OPR and indicate intent to comply on GBP Form 1: Section B.
2. If you are participating in LEED® certification, low-emitting materials (IEQ c4.1 to 4.4) are recommended as LEED® credits to target.

**Select water fixtures and fittings in accordance with, or more efficient than, ASHRAE 189.1 (2011) Standard for The Design of High Performance Buildings (where ASHRAE requirements exceed Manitoba Plumbing Code).**

Efficient water use can reduce building operating costs and municipal costs for wastewater infrastructure. Reducing wastewater also reduces risk of raw sewage spills into rivers and lakes.

Specify water use efficiency requirements and ensure they are accommodated in the design of the whole building plumbing system and operational planning.

Use caution when installing water efficient fixtures in existing building systems. Higher efficiency fixtures, fittings and appliances use and eject less water and may have implications on the plumbing infrastructure connected to them.

**Tips:**

1. Include a requirement for water efficient fixtures and fittings in your OPR. This measure is mandatory under the GBP.
2. Report which water efficient fixtures and fittings were installed on GBP Form 2: Table 6. GBP Form 2 is submitted at substantial completion of the building.
3. If you are participating in LEED® certification, water use reduction (WE p1) is a LEED® prerequisite **and** a mandatory criterion for the GBP. Water Use Reduction (WE c3) is recommended as a LEED® credit to target. The LEED® template for Water Use Reduction may be submitted in lieu of completing the GBP Form 2: Table 6 Water Efficient Fixtures and Fittings.
4. For more information,:
  - ASHRAE 189.1 (2011) Standard for The Design of High Performance Buildings, section 6.3.2 Building Water Use Reduction
  - Manitoba Plumbing Code
  - US EPA WaterSense label

**Select products manufactured in Manitoba.**

Selecting products manufactured regionally reduces the GHG emissions for transporting materials to the project site and supports the development of a green economy in Manitoba.

Manitoba building products should be selected where functionally appropriate and cost effective.

**Tips:**

1. *Include consideration for Manitoba building products in your OPR. This measure is mandatory under the GBP.*
2. *Report which Manitoba building products were used on GBP Form 2: Table 7 Products Manufactured in Manitoba. GBP Form 2 is submitted at substantial completion of the building.*
3. *If you are participating in LEED® certification, regional materials (MR c5) is recommended as a LEED® credit to target. The LEED® template for this credit may be attached to GBP Form 2 in lieu of completing Table 7, Products Manufactured in Manitoba.*
4. *For more information see: Manitoba green building products, product distributors and service providers listed on the Manitoba Green Building Products and Services Directory website: [greenbuildingproductsmb.ca/home/](http://greenbuildingproductsmb.ca/home/).*

**Specify products with recycled content.**

Using building products with recycled content conserves resources, reduces demand on landfill sites and supports development of recycling as part of a green economy in Manitoba.

Building products with recycled content should be selected where functionally appropriate and cost effective.

**Tips:**

1. *Include consideration for building products with recycled content in your OPR. This measure is mandatory under the GBP.*
2. *Report which building products were used on GBP Form 2: Table 8. GBP Form 2 is submitted at substantial completion of the building.*
3. *If you are participating in LEED® certification, recycled content (MR c4) is recommended as a LEED® credit to target. The LEED® template for this credit may be attached to GBP Form 2 in lieu of completing Table 8, Products with Recycled Content.*
4. *Building products with recycled content that are available in Manitoba are listed on the Manitoba Green Building Products and Services Directory website.*

**Consider reusing existing buildings and salvaged building components.**

Selecting salvaged building components and materials for use in a new building can save cost, conserve valuable virgin resources, reduce demand on landfill sites and support development of building salvage as part of a green economy in Manitoba.

Opportunities for salvaged building components and materials should be identified early in the design process. They should be included for refurbishment and installation in a new building where functionally appropriate and cost effective.

**Tips:**

1. Include consideration for salvaged building products with recycled content in your OPR. This measure is mandatory under the GBP.
2. Report what salvaged building products were used on GBP Form 2: Table 9, Salvaged Building Materials. GBP Form 2 is submitted at substantial completion of the building. Note that where no salvaged product or material has been used, a report of "Not Applicable" is acceptable.
3. If you are participating in LEED® certification, materials reuse (MR c1) is recommended as a LEED® credit to target. The LEED® template for this credit may be attached to GBP Form 2 in lieu of completing Table 9, Salvaged Building Materials.
4. For more information see: *Building product salvage companies in Manitoba* listed on the *Manitoba Green Building Products and Services Directory* website: [greenbuildingproductsmb.ca/home/](http://greenbuildingproductsmb.ca/home/)

## 5. Responsible Construction

*Protects the community and the environment by using construction practices that avoid waste and pollution.*

**Pollution Prevention & Planning**

MANDATORY

**Require plans for Erosion and Sedimentation Control and Indoor Air Quality Management during construction.**

Preventing pollution and contamination during the construction process reduces negative environmental and human health impacts during construction. It protects natural waterways from air and water-borne contaminants, reduces potential respiratory irritation and enhances health and comfort during and after construction.

A requirement for pollution and contamination prevention plans should be specified in construction documents. Ensure the plans are implemented during construction. When oversights to the plan occur, they should be noted and corrected.

For more information, see GBP – **Guideline 3.4 Pollution and Contamination Prevention Planning.**

**Tips:**

1. *Include requirements for Erosion and Sedimentation Control and Indoor Air Quality Management Plans in your OPR. These plans are Mandatory under the GBP.*
2. *If you are participating in LEED® certification, construction activity pollution prevention (SS p1) is a prerequisite of LEED® and a mandatory requirement of the GBP. Construction IAQ Management Plan: During Construction (IEQ c3.1) is mandatory under the GBP and recommended as a LEED® credit to target.*

**Waste Diversion**

MANDATORY | REPORT REQUIRED

**Divert construction and demolition waste from landfills.**

A large percentage of waste from construction and demolition can be reused or recycled. Doing so may reduce costs and will also conserve valuable virgin resources, reduce demand on landfill sites and support development of salvage and recycling business in Manitoba.

Require that a construction waste management plan is developed and implemented. The materials should be separated onsite to be recycled or reused.

The materials may include but are not limited to:

- wood
- concrete/brick/stone/asphalt
- metals
- drywall
- paper
- plastic

See GBP – **Guideline 3.4 Pollution Prevention Planning.**

**Tips:**

1. *Include construction and demolition waste diversion in your OPR. This measure is mandatory under the GBP.*
2. *Report what was diverted on GBP Form 2: Table 10, Waste Diversion. GBP Form 2 is submitted at substantial completion of the building.*
3. *If you are participating in LEED® certification, construction waste management (MR c2) is mandatory under the GBP and recommended as a LEED® credit to target. The LEED® template associated with this credit may be attached to GBP Form 2 in lieu of completing Table 10, Waste Diversion and MUST BE reported by weight, not volume.*

## 6. Transition to Occupancy

*Ensure persistence of green building investments during occupancy.*

### Energy Efficient Electronics and Appliances

RECOMMENDED

#### **Purchase energy efficient electronics and appliances.**

The first step of purchasing equipment is to evaluate if the purchase is even necessary. If it is, adopt a policy or business practice to purchase energy efficient electronics and appliances. They can prolong the benefits of green building investments, save energy and water costs, and help keep the building infrastructure running at peak performance.

Plug in loads comprise up to 15% of a building's total electrical energy consumption. It's advantageous to require energy and water efficiency for original or replacement equipment. The more energy efficient a product is, the less it costs to operate.

Specify Energy Star and/or WaterSense qualified products to ensure the purchased equipment is efficient.

#### **Tips:**

1. Ensure the purchasing policy is written and available to all building staff and occupants who may be involved in buying this equipment
2. More information is available online at Sustainable Procurement in Manitoba Website under the Goods and Services tab: [www.manitobasustainableprocurement.com/](http://www.manitobasustainableprocurement.com/).

### Low Emitting Products and Furnishings

RECOMMENDED

#### **Purchase low emitting products and furnishings when doing building maintenance or renovation.**

Buying low emitting products during occupancy and operation of a green building preserves indoor air quality and protects the health and well-being of building occupants.

Adopt practices or policies for purchase of low emitting products (ex: paints, solvents, flooring, cleaning products, furniture) during building maintenance or renovations throughout the building's occupied life

For more information, see the criteria for **Low or Zero Emitting Materials** under Sustainable Materials.

#### **Tips:**

1. Ensure that the purchasing policy is written and available to all building staff and occupants who may be involved in buying this equipment.
2. More information is available on-line at Sustainable Procurement in Manitoba website: [www.manitobasustainableprocurement.com/](http://www.manitobasustainableprocurement.com/).

## Green Cleaning Methods

RECOMMENDED

### **Require green cleaning methods, equipment and products.**

Green cleaning methods, equipment and products have positive environmental attributes (ex: biodegradability, low toxicity, reduced packaging, low life cycle energy use). Green cleaning can:

- minimize harmful effects on custodial workers and building occupants
- improve indoor air quality
- reduce water and ambient air pollution

Adopt the most current requirements for cleaning services described in the **Sustainable Procurement in Manitoba** website: [www.manitobasustainableprocurement.com/](http://www.manitobasustainableprocurement.com/).

#### **Tips:**

1. *Ensure that a green cleaning policy, manual or procedure is written and available to all building staff and occupants who may be involved in buying or providing cleaning services,*

## Non-Smoking Environment

MANDATORY

### **Implement a non-smoking policy in and around the building.**

A non-smoking environment protects occupants from the negative effects of tobacco smoke and second hand smoke.

Smoking in public buildings is already prohibited in Manitoba. Owners should refer to *The Non-Smokers Health Protection Act* and, supporting regulations to determine if the building is exempted from having a non-smoking policy by regulation. Owners should post non-smoking signs and enforce compliance with provincial legislation.

#### **Tips:**

1. *Include requirements for a Non-Smoking environment in your OPR under the GBP and by legislation.*
2. *If you are participating in LEED® certification, environmental tobacco smoke control (IEQ p2) is a prerequisite of LEED® **and** a mandatory requirement under the Green Building Program.*
3. *For more information, see The Non-Smokers Health Protection Act, Manitoba.*

**Participate in local recycling programs.**

Recycling material from everyday occupancy of a building can save costs. Conserves valuable virgin resources, reduces demand on landfill sites and support development of recycling as part of a green economy in Manitoba.

Promote and support local recycling programs. Use the designated areas in the building for separation, collection and storage of recyclable materials (ex: paper, corrugated cardboard, glass, metals, plastics and organic wastes).

**Tips:**

1. *If you are participating in LEED® certification, storage and collection of recyclables (MR p1) is a prerequisite of LEED® and a mandatory requirement of the GBP.*
2. *For more information about recycling in Manitoba, see:*
  - a. *The Green Manitoba website, “Recycling” tab at [greenmanitoba.ca/splash/](http://greenmanitoba.ca/splash/).*
  - b. *Sustainable Procurement in Manitoba website, “Recycling Services” under the Goods and Services, Waste Management tab <http://www.manitobasustainableprocurement.com/>.*

**Monitor building energy and water use during occupancy to ensure building is operating optimally.**

On-going monitoring of energy and water use can save money, energy and water, prevent premature deterioration of building equipment and help resolve obvious inefficiencies and waste.

Monitor energy and water use closely using consumption data, not just utility bills on a regular basis.

Generate a utility report at least annually comparing year-to-year building energy and water use to identify trends in building performance and possible savings opportunities

Energy and water consumption monitoring is the basis for effective building and energy management and should be combined with periodic building recommissioning.

**Sample report for energy and water use:**

<b>Building Name and Address</b>				
BUILDING AREA XX,XXX (m <sup>2</sup> )	YEAR 1	YEAR 2	YEAR 3	YEAR 4
ENERGY				
Electricity	Kwh/m <sup>2</sup>			
Natural Gas	eKwh/m <sup>2</sup>			
WATER				
Water	L or m <sup>3</sup>			

**Sample report of energy and water cost:**

<b>Building Name and Address</b>				
BUILDING AREA XX,XXX (m <sup>2</sup> )	YEAR 1 \$/ m <sup>2</sup>	YEAR 2 \$/ m <sup>2</sup>	YEAR 3 \$/ m <sup>2</sup>	YEAR 4 \$/ m <sup>2</sup>
ENERGY				
Electricity				
Natural Gas				
WATER				
Water				

**Tips:**

1. National Resources Canada offers the free, on-line tool Energy Star /Portfolio Manager for basic energy use tracking and energy performance benchmarking. An Energy Star rating is available for some building types – check the National Resources Canada website at: [www.nrcan.gc.ca/energy/efficiency/buildings/energy-benchmarking/](http://www.nrcan.gc.ca/energy/efficiency/buildings/energy-benchmarking/).
2. Manitoba Hydro can provide basic annual electricity and natural gas consumption reports directly. Contact your Manitoba Hydro account representative for details.
3. Consider sharing the building energy and water consumption with the community to increase awareness of the potential for conservation.

Buildings that receive funding from government (departments, Crown corporations and agencies) are encouraged to enroll in a **free** online energy and water management program (Energy Star Portfolio Manager) supported by Natural Resources Canada. The program calculates building performance attributes (ex: water, energy and greenhouse gas emissions). If your organization would like a customized presentation or webinar, or you would like to speak to someone about this valuable tool, email [info.services@nrcan-rncan.qc.ca](mailto:info.services@nrcan-rncan.qc.ca). Or [greenbuilding@gov.mb.ca](mailto:greenbuilding@gov.mb.ca). Free online training is available at: <http://www.energystar.gov/buildings/>.

## 4.3

### Reporting & Forms

Manitoba's Green Building Policy applies to building projects funded by government organizations.

Government organizations are required to:

- ensure the green building program criteria is incorporated into the building project
- report using GBP Form 1 and GBP Form 2
- collect GBP forms and send them to Green Building Co-ordination Team (GBCT) to demonstrate compliance with the Manitoba Green Building Policy.

The forms for the Manitoba Green Building Program (GBP) were designed for two purposes:

1. Provide reporting and compliance information to the government of Manitoba.
2. Provide a tool to help in project management:
  - a. identifies green building requirements
  - b. commits the project team to deliver the requirements
  - c. assigns responsible parties on the project team with specific deliverables

#### Definitions:

**Government Reporting Entity (GRE):** This refers to organizations government uses to deliver its goods and services. It includes core government and crown corporations, government businesses and public sector organizations (ex: regional health authorities, school divisions, universities,, colleges. For the list of government organizations included in the GRE see the Green Building Program Manual, Section 2.2 or go to the Province of Manitoba – Annual Report, Volume 1, Summary Financial Statements, Schedule 8.

**Funder:** This is a government organization included in the GRE that provides funding (in whole or in part) for a building project.

**Funder's Contact:** This is the person who manages the funding for a building project/contribution agreement or contract. The person may be a project officer, funding officer, project manager or financial officer representing the funder.

**Funder's GBP Liaison:** This is the person responsible for the government organization's corporate compliance with Green Building Policy and Green Building Regulation appointed by a deputy minister or equivalent.

**Building Owners:** This is the owner of the building, or the funding recipient.

## Instructions for Funder (Funder's contact and GBP liaison)

If you need assistance completing the forms, refer to the Green Building Program (GBP) manual at <http://www.gov.mb.ca/mit/greenbuilding/index.html> or email questions to the GBCT at [greenbuilding@gov.mb.ca](mailto:greenbuilding@gov.mb.ca)

- PDF fillable versions of GBP Form 1 and Form 2 PDF can be downloaded at: [www.gov.mb.ca/mit/greenbuilding/index.html](http://www.gov.mb.ca/mit/greenbuilding/index.html)
- Transmittal Forms 1 & 2 are available from the funder's GBP liaison or from the GBCT.

### Funder's contact:

1. Ensure GBP requirements are communicated to building owners and funding recipients.
2. Provide building owner or funding recipient with GBP Form 1 and GBP Form 2.
3. Collect GBP Form 1 before completion of schematic design phase and prior to the start of construction.
4. Review GBP Form 1, ensure Sections A and B (and Section C if applicable) are completed. The mandatory criteria in Section B must be acknowledged (boxes checked). If not, consult GBCT to determine if follow-up actions are required.
5. Complete the top section of the Transmittal for GBP Form 1.
6. Provide Transmittal and GBP Form 1 to the funder's GBP liaison.
7. Collect GBP Form 2 at substantial completion of building, before the final release of government funds or grant funds.
8. Review GBP Form 2 to ensure tables are completed and supporting templates and letters are attached. Call GBCT if questions arise.
9. Complete the top section of the Transmittal for GBP Form 2.
10. Provide Transmittal, GBP Form 2, and attachments to the funder's GBP liaison.

### Funder's GBP liaison:

1. Review GBP Form 1 and complete the liaison section of the Transmittal for GBP Form 1.
2. Send Transmittal and GBP Form 1 to the GBCT. Keep copies for policy compliance records.
3. Review GBP Form 2 and attachments. Complete the Liaison section of the Transmittal for GBP Form 2.
4. Send Transmittal, attachments and GBP Form 2 to the GBCT. Keep copies as record of policy compliance.

## Instructions for building owner/funding recipient

If you need assistance completing the forms, refer to the Green Building Program manual at <http://www.gov.mb.ca/mit/greenbuilding/index.html> or email questions to the GBCT at [greenbuilding@gov.mb.ca](mailto:greenbuilding@gov.mb.ca).

### Building owner/funding recipient:

1. Obtain GBP Form 1 and GBP Form 2 from the funder's contact.
2. Review each section of GBP Form 1 & GBP Form 2.

#### Prior to completion of schematic design phase and prior to construction

3. Complete and return Form 1 to the Funder's Contact.
  - Complete Section A: Building Information.
  - Complete Section B: *Review each criteria and mark with a " ✓ " the ones selected for the funded building project. Some criteria have reporting requirements on GBP Form 2.*
  - Complete and sign the Acknowledgement by Owner.
  - Complete Section C only if a Variance was indicated in Section B.

If a Variance is requested the funder must consult with the GBCT for a decision. GBCT's decision is relevant and could affect a condition of the funding agreement. Wait for GBCT's opinion in the event their decision impacts project planning or cost.

- Review GBP Form 2 when completing GBP Form 1 and assign reporting responsibilities to the members of the project team.
4. Review the requirements of the Green Building Program regularly with the project team. Ensure the project team collects the information required for GBP Form 2.

#### At substantial completion

5. Complete and return GBP Form 2 with attachments to the funder's contact. The final disbursement of funds may be withheld until GBP Form 2 is completed to the funder's satisfaction.

Copies of GBP Forms are presented here for information only. PDF versions of each form can be downloaded from: [www.gov.mb.ca/mit/greenbuilding/index.html](http://www.gov.mb.ca/mit/greenbuilding/index.html)



## GBP Form 1: Project Information

Manitoba's Green Building Program applies to all new building construction, major renovation and building addition projects owned or funded by a provincial government organization. Government organizations require:

- The Green Building Program (GBP) criteria to be incorporated into the project, and
- Project reporting using GBP Forms 1 & 2.

### INSTRUCTIONS TO BUILDING OWNER<sup>1</sup>

Complete the GBP Forms and return to FUNDER<sup>2</sup>:

- 1) GBP Form 1 must be returned before completion of schematic design, prior to construction.

GBP Form 1 has three sections. Complete Section A and B. Complete Section C ONLY if a VARIANCE is indicated in Section B.

- Section A: Building Information**
- Section B: Green Building Program Criteria**
- Section C: Variance Options**

- 2) GBP Form 2 must be returned at substantial completion of the building.

Descriptions of the program criteria are provided in the GBP Manual at <http://www.gov.mb.ca/mit/greenbuilding/index.html>

### Section A: Building Information

<b>Project Name:</b> <input type="text"/>	
<b>Project Address:</b>	
Street: <input type="text"/>	
City: <input type="text"/>	Postal Code: <input type="text"/>
<b>Building Type:</b>	
<input type="checkbox"/> Office <input type="checkbox"/> School <input type="checkbox"/> Hospital <input type="checkbox"/> Recreation Centre <input type="checkbox"/> Community Hall <input type="checkbox"/> Arena	
<input type="checkbox"/> Other (Identify) <input type="text"/>	
<b>Project Type:</b>	
<input type="checkbox"/> New Construction <input type="checkbox"/> Major Renovation <input type="checkbox"/> Addition/Enlargement <input type="checkbox"/> Lease	
<b>Estimated Building Area</b> (total floor area <sup>3</sup> ): <input type="text"/> m <sup>2</sup>	
<b>Estimated construction cost<sup>4</sup>:</b> \$ <input type="text"/>	
<b>Estimated total capital cost<sup>5</sup>:</b> \$ <input type="text"/>	
<b>Property Legal Description:</b> <input type="text"/>	
<b>Estimated Construction Start</b> MM/YYYY	<b>Estimated Occupancy</b> MM/YYYY
<b>Building Owner:</b>	
Organization/Other: <input type="text"/>	

<sup>1</sup>**BUILDING OWNER:** The legal owner of the property. May be an individual or an organization. To complete these forms, the owner may assign a delegate.

<sup>2</sup>**FUNDER:** Government organization that provides funds for the project.

<sup>3</sup>**Total Floor Area:** Total of each horizontal floor area where each floor above grade is measured to the outside face of the exterior wall. Where a floor is partially below grade (e.g. "walk out basement") and area is to be occupied, floor area is to be included in total. Where exterior envelope is complete but interior is left unfinished for future occupancy, area is to be included in total.

<sup>4</sup>**Construction Cost:** The direct costs related to construction. Does not include design fees or land. Construction costs include materials, labour and installation.

<sup>5</sup>**Capital Cost:** Includes construction costs, design and other professional fees plus other costs related to the project.

## Section B: Green Building Criteria

All the green building criteria identified in Section B are achievable by Manitoba projects however; the BUILDING OWNER has options if the green building criteria are impracticable relative to the building's budget, size, complexity or function. Review Green Building Program Manual Section 4 for guidance.

The following program criteria are labeled MANDATORY or RECOMMENDED. Review the criteria and mark with a "✓" the ones selected for the building project. Some criteria have reporting requirements on GBP Form 2. Review GBP Form 2 and assign reporting responsibilities before submitting this form to the FUNDER.

NOTE: The FUNDER will consult with Manitoba's Green Building Coordination Team (GBCT) for an opinion if a MANDATORY criteria is not selected or a VARIANCE is requested. The FUNDER will convey the opinion to the OWNER and convene a meeting if required.

### Verification

Protects the owner's investment, proves delivery of green building criteria and provides quality assurance. Check the box next to each criteria that will be included in the project.

<p>Confirm the building design meets the energy efficiency target of the Manitoba Green Building Regulation M.R. 38/2013.</p> <p>Select either compliance or variance option:</p> <p><input type="checkbox"/> <b>Compliance:</b> Project will obtain the Manitoba Hydro Power Smart Designation to satisfy requirement of the Green Building Regulation, M.R. 38/2013.</p> <p><input type="checkbox"/> <b>Variance:</b> Project cannot practicably obtain the Manitoba Hydro Power Smart Designation therefore an alternate method of verification is proposed. <b>Complete Section C: Variance for Energy Efficient Design.</b></p>	<p><b>Mandatory</b> <input type="checkbox"/></p> <p>Reporting Required GBP Form 2, Table 1</p>
<p>Confirm the building's design and construction had minimal environmental impacts.</p> <p>Select either compliance or variance option:</p> <p><input type="checkbox"/> <b>Compliance:</b> Project will obtain a minimum of LEED® Silver (Leadership in Energy and Environmental Design) building certification.</p> <p><input type="checkbox"/> <b>Variance:</b> Project cannot practicably obtain LEED® Silver and therefore an alternate method of verification is proposed. <b>Complete Section C: Variance for Environmental Measures.</b></p>	<p><b>Mandatory</b> <input type="checkbox"/></p> <p>Reporting Required GBP Form 2, Table 2</p>
<p>Commission the building. Confirm building was designed and constructed to the Owner's Project Requirements (OPR), calibrated to the specifications, and building staff received training and system manuals.</p> <p>Select either compliance or variance option:</p> <p><input type="checkbox"/> <b>Compliance:</b> A commissioning professional independent of the project's design or construction firm will conduct building commissioning.</p> <p><input type="checkbox"/> <b>Variance:</b> Commissioning services will be provided by the design or construction firm involved with the project.</p>	<p><b>Mandatory</b> <input type="checkbox"/></p> <p>Reporting Required GBP Form 2, Table 3</p>

### Planning & Design

Maximizes potential for occupant comfort, community infrastructure and financial/environmental sustainability. Check the box next to each criteria that will be included in the project.

Utilize an integrated design approach and confirm the appropriate project stakeholders are engaged.	<b>Mandatory</b> <input type="checkbox"/> Reporting Required GBP Form 2, Table 4
Conduct life cycle cost analysis on major building systems.	<b>Recommended</b> <input type="checkbox"/>
Provide permanent space for sorting and storage of recyclables.	<b>Mandatory</b> <input type="checkbox"/>
Provide active transportation facilities (ex: bicycle storage and change rooms).	<b>Recommended</b> <input type="checkbox"/>
Provide natural light and views to the exterior from occupied spaces.	<b>Recommended</b> <input type="checkbox"/>
Apply low water landscaping principles and practices.	<b>Recommended</b> <input type="checkbox"/>
Design ventilation in accordance with ASHRAE 62.1-2007 (sections 4-7, Ventilation for Indoor Air Quality).	<b>Mandatory</b> <input type="checkbox"/>
Install a permanent meter to measure potable water use for the building and grounds.	<b>Mandatory</b> <input type="checkbox"/>
Install a permanent meter to measure each energy source used in the building and grounds.	<b>Mandatory</b> <input type="checkbox"/>
Locate the building close to community amenities.	<b>Recommended</b> <input type="checkbox"/>

<b>Adaptation &amp; Resilience</b>	
<i>Reduces potential risks associated with climate change and energy supply volatility. Check the box next to each criteria that will be included in the project.</i>	
Evaluate the use of renewable energy sources.	<b>Mandatory</b> <input type="checkbox"/> Reporting Required GBP Form 2, Table 5
Design the main heating system to accommodate integration or conversion to other energy sources in the future.	<b>Recommended</b> <input type="checkbox"/>
<b>Sustainable Materials</b>	
<i>Augments occupant health, supports resource conservation and supports a green economy in Manitoba. Check the box next to each criteria that will be included in the project.</i>	
Select low-emitting finishes, furnishings, products and materials.	<b>Mandatory</b> <input type="checkbox"/>
Select water efficient fixtures and fittings in accordance with, or more efficient than, ASHRAE 189.1 (2011) Standard for the Design of High Performance Buildings (where ASHRAE requirements exceed Manitoba Plumbing Code).	<b>Mandatory</b> <input type="checkbox"/> Reporting Required GBP Form 2, Table 6
Select products manufactured in Manitoba.	<b>Mandatory</b> <input type="checkbox"/> Reporting Required GBP Form 2, Table 7
Specify products with recycled content.	<b>Mandatory</b> <input type="checkbox"/> Reporting Required GBP Form 2 Table 8
Consider reusing existing buildings and salvaged building components.	<b>Mandatory</b> <input type="checkbox"/> Reporting Required GBP Form 2, Table 9
<b>Responsible Construction</b>	
<i>Protects community and the environment by using construction practices that avoid waste and pollution. Check the box next to each criteria that will be included in the project.</i>	
Require plans for Erosion and Sedimentation Control and Indoor Air Quality Management during construction.	<b>Mandatory</b> <input type="checkbox"/>
Divert construction and demolition waste from landfills.	<b>Mandatory</b> <input type="checkbox"/> Reporting Required GBP Form 2, Table 10
<b>Transition to Occupancy</b>	
<i>Ensures persistence of green building investments during occupancy. Check the box next to each criteria that will be included in the project.</i>	
Purchase energy efficient electronics & appliances.	<b>Recommended</b> <input type="checkbox"/>
Purchase low emitting products and furnishings when doing building maintenance or renovation.	<b>Recommended</b> <input type="checkbox"/>
Require green cleaning methods, equipment and products.	<b>Recommended</b> <input type="checkbox"/>
Implement a non-smoking policy in and around the building.	<b>Mandatory</b> <input type="checkbox"/>
Participate in local recycling programs.	<b>Mandatory</b> <input type="checkbox"/>
Monitor building energy and water use during occupancy to ensure building is operating optimally.	<b>Mandatory</b> <input type="checkbox"/>
<b>Acknowledgment by Building Owner</b>	
<b>Check the boxes that apply and sign below.</b>	
<input type="checkbox"/> I will convey the selected criteria in Section B to the project team.	
<input type="checkbox"/> I am proposing a VARIANCE and Section C is attached. (check if applicable)	
<input type="checkbox"/> I am providing GBP Form 1 to the FUNDER before completion of schematic design, prior to construction.	
<input type="checkbox"/> I will provide GBP Form 2 and supporting documentation to the FUNDER at substantial completion of the building.	
<b>Print Name:</b> _____	
_____ SIGNATURE OF BUILDING OWNER	_____ DATE

### Section C: Variance Options

Section C must be completed if a VARIANCE OPTION is requested in Section B.

All VARIANCE proposals are submitted to the FUNDER and are reviewed by the GBCT. GBCT's opinion will be communicated back to the BUILDING OWNER via the FUNDER.

#### VARIANCE FOR ENERGY EFFICIENT DESIGN:

Project will not obtain the Manitoba Hydro Power Smart Designation to satisfy requirement of the Green Building Regulation, M.R. 38/2013. Complete the following sections:

Describe why full compliance option was not selected:

- Renovation project – not eligible for Power Smart Designation.
- Other – Provide narrative.

Identify the energy efficiency design target for the building project.

- Building will be designed to be at least 33 percent more energy efficient than a similar building designed to meet the minimum requirements of the Model National Energy Code of Canada for Buildings (1997).
- If not, specify the building's energy efficiency design target:

Identify the tool or program of prescriptive measures used to achieve the identified energy efficiency design target. Indicate the tool or program.

- An energy model
- Prescriptive program such as: (Select one)
  - ASHRAE Advanced Energy Design Guide
  - Advanced Buildings™ Core Performance Guide, New Buildings Institute
  - Other (Identify)

Indicate how the energy efficiency design target will be independently verified.

- Verified during the process of LEED® certification.
- Verified during the process of Green Globes™ certification.
- Verified by an experienced Energy Modeler from the list published by the Canada Green Building Council (CaGBC).
- Energy efficiency measures will be verified by a commissioning authority.
- Other (Identify)

#### FOR INTERNAL USE ONLY

This section is completed by the Director of GBCT.

- Variance is approved as proposed.
- Variance is approved with amendment – see attached.
- More information is required – see attached.
- Recommended for exemption from the Manitoba Green Building Regulation, M.R. 38/2013

**Project Name:**

<span style="border: 1px solid gray; display: inline-block; width: 95%; height: 14px;"></span>		<span style="border: 1px solid gray; display: inline-block; width: 95%; height: 14px;"></span>
SIGNATURE OF DIRECTOR GREEN BUILDING CO-ORDINATION TEAM		DATE

This section is completed by the Minister of Manitoba Infrastructure and Transportation.

- Exemption from the Manitoba Green Building Regulation, M.R. 38/2013 is approved

<span style="border: 1px solid gray; display: inline-block; width: 95%; height: 14px;"></span>		<span style="border: 1px solid gray; display: inline-block; width: 95%; height: 14px;"></span>
SIGNATURE OF MINISTER OF MANITOBA INFRASTRUCTURE AND TRANSPORTATION		DATE

**VARIANCE FOR ENVIRONMENTAL IMPACTS**

*Project will not obtain LEED® Silver certification. Complete the section below.*

**Reason:** Describe why LEED® Silver certification will not be obtained. (Select one)

A LEED® prerequisite cannot be achieved. (Identify the prerequisite, provide explanation.)

An extraordinary circumstance makes pursuing LEED® Silver certification impractical. (Explain)

The building's complexity or size (less than 1,860m<sup>2</sup> or 20,000 ft<sup>2</sup>) makes it impracticable to pursue LEED® (Explain)

Other (Provide narrative)

**Alternate:** Propose an alternate target, process or program in lieu of LEED® certification.

The project will achieve a lower level of LEED® certification.

The project will meet or exceed a 3 Globes rating under the Green Globes™ NC v.2 certification program.

The project will achieve a different green building certification. Specify the program and level:

A green building certification is not being targeted. In lieu, a written report will be provided at substantial completion. The report will include:

- A brief narrative for each of the Green Building Criteria defined in GBP Form 1: Section B. The narrative will:
  - Confirm the criteria was specified in project contracts and construction documents.
  - Describe how the GBP criteria was verified by a project professional or consultant. If the Green Building Criteria was not verified, describe why.
  - Include the signature of the person who prepared sections of the narrative, and the signature of a peer who reviewed the narrative.
- Include a letter from the owner acknowledging the narrative was reviewed by the owner and the project team.

Other (Describe) **NOTE: Power Smart designation is not an approved alternate for this section.**

**FOR INTERNAL USE ONLY**

*This section is to be completed by the Director of the GBCT*

Variance is approved as proposed.

Variance is approved with amendment – see attached.

More information is required – see attached.

Variance is not approved; and compliance option is recommended.

**Project Name:**

SIGNATURE OF DIRECTOR GREEN BUILDING CO-ORDINATION TEAM

DATE

## GBP Form 2: Project Report

**TO BE COMPLETED BY THE BUILDING OWNER.**

Provide GBP Form 2 to the FUNDER at substantial completion.

This information is used by the GBCT for program evaluation and analysis. GBCT may request proof of performance for any GBP criteria in addition to the following reports (Tables 1-11).

Use the following chart to assign reporting responsibilities to the members of your project team when completing GBP Form 1 and to perform a completeness check before submitting GBP Form 2 to your FUNDER.

	Assign reporting responsibilities for each Table. <i>(Typical assignments in grey)</i>	Completeness Check Verify that the table or template and letter are completed/attached	
		Table	Template in Lieu of Table <i>(Ensure the template provides all the information requested in the Table)</i>
<b>Table 1: Energy Efficient Design</b>	Mechanical Engineer	<input type="checkbox"/>	<input type="checkbox"/>
Obtain Power Smart designation letter	Architect	<input type="checkbox"/> Letter Attached	
<b>Table 2: Environmental Impacts</b>	Sustainability Consultant	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/> Report Attached (if applicable)	
<b>Table 3: Building Commissioning</b>	Commissioner	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 4: Integrated Design Process</b>	Architect	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 5: Energy Sources</b>	Mechanical Engineer	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 6: Water Efficient Fixtures and Fittings</b>	Mechanical Engineer	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 7: Manitoba Manufactured Products</b>	Architect or Contractor	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 8: Products with Recycled Content</b>	Architect or Contractor	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 9: Use of Salvaged Building Materials</b>	Architect or Contractor	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 10: Waste Diversion</b>	Contractor	<input type="checkbox"/>	<input type="checkbox"/>
<b>Table 11: Acknowledgment by Owner</b>	Owner	<input type="checkbox"/>	<input type="checkbox"/>

**Table 1: Energy Efficient Design**

Enter Values or Information	
Provide the building's energy efficiency design target	<input type="text"/> % better than Model National Energy Code for Buildings (1997)
Indicate the tool or program used to achieve the building's energy efficiency design target.	Identify either the tool or the program: <input type="checkbox"/> Energy modeling The modeling software used: <input type="text"/> <input type="checkbox"/> Prescriptive Program Identify: <input type="text"/>
Indicate how the building's energy efficiency design target was verified.	<b>Select all that apply</b> <input type="checkbox"/> Power Smart Designation. The letter is attached. <input type="checkbox"/> LEED® certification. <input type="checkbox"/> Green Globes™ certification. <input type="checkbox"/> Experienced energy modeler from the list published by the Canada Green Building Council (CaGBC). A letter is attached. <input type="checkbox"/> Verified by a commissioning professional. <input type="checkbox"/> Other (identify) <input type="text"/>

**Table 2: Environmental Impacts**

<p><b>Indicate method of verification.</b></p>	<p><input type="checkbox"/> LEED® certification.</p> <p>Indicate level _____</p> <p>Estimate certification date: _____</p> <p><input type="checkbox"/> Other Certification (<i>describe</i>) _____</p> <p>Indicate level _____</p> <p>Estimate certification date: _____</p> <p><input type="checkbox"/> Written Report required by variance (<i>attach report if applicable</i>)</p> <p><input type="checkbox"/> Other (<i>describe</i>) _____</p>
<p><b>Access to green building certification account.</b></p>	<p>Provide the following to allow GBCT access to the LEED® or other certification account identified above</p> <p>Account Number _____</p> <p>Password _____</p> <p>Authorization Granted by the Authority who Registered the Project</p> <p><b>Print name:</b> _____</p> <p>_____</p> <p style="text-align: center;">SIGNATURE</p> <p style="text-align: right;">DATE</p>

**Table 3: Building Commissioning**

*Indicate the activities performed by the commissioning professional.*

- Participated in the development of the Owner's Project Requirements (OPR)
- Developed the building commissioning plan
- Reconciled the Basis of Design (BoD) to the requirements of the OPR
- Conducted a design review
- Included the commissioning requirement in the project specifications
- Developed construction checklists and functional test requirements
- Verified /spot checked project submittals
- Conducted commissioning team meetings
- Conducted periodic site visits with team members for review of construction
- Verified /spot checked the completion of construction checklists by the trades
- Witnessed start up and execution of functional testing
- Verified that training and manuals were provided to building operator, maintenance and building occupants
- Coordinated the provision of training for building operator, maintenance and building occupants
- Assembled the systems manual
- Issued a commissioning report to the owner
- Reviewed the commissioning report with the owner and project team.

**Table 4: Integrated Design Process**

		<b>IDP Meeting Types</b> (Indicate participation in meetings with a ✓) <b>Refer to IDP Guideline in Manitoba GBP Manual Section 3 for definition of meeting types.</b>							
<b>Major Stakeholders</b> (Note: all stakeholders are not required by all projects)	<b>Company or Organization</b>	<b>Development and Review of Owner's Project Requirements</b>	<b>Comprehensive Project Planning Meetings</b>	<b>Programming Meetings</b>	<b>Facility Performance Meetings</b>	<b>Multi disciplinary Team Meetings</b>	<b>General Contractor and Sub Contractor Meetings</b>	<b>Construction Meetings</b>	<b>Post Occupancy Meetings</b>
Building Owner or delegate		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Architect		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Commissioning Professional		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landscape Architect		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interior Designer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical Engineer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical Engineer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General Contractor		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Building Operator		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sustainability Consultant		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Project Manager		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IDP Facilitator		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Construction Manager		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Civil Engineer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structural Engineer		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Energy Modeller		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Specialized Consultants		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Occupant Representative		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other disciplines and stakeholders (add to list as required)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Table 5: Energy Sources**

(for example: wind, solar, ground source, electricity, natural gas, diesel, bio-mass, etc.)

Purpose	Primary Energy Source	Secondary	Considered
Heating			
Cooling			
Service Water			
Power (non-emergency)			
Power (emergency)			
Other			

**Table 6: Water Efficient Fixtures and Fittings**

Fixture/Fitting	Lavatory & hand faucet	Shower Head	Pre-rinse spray valve	Water closet (toilets)	Urinals	Other	Other	Other
Quantity								
Flow Rate								

**Table 7: Manitoba Manufactured Products**

(List of up to 7)

Product	MB Manufacturer
1.	
2.	
3.	
4.	
5.	
6.	
7.	

**Table 8: Products with Recycled Content**

(List of up to 7)

Product	Manufacturer
1.	
2.	
3.	
4.	
5.	
6.	
7.	

**Table 9: Use of Salvaged Building Materials**

(List of up to 7, indicate NA under product if none were used)

Product	Source (Dealer/Distributor)
1.	
2.	
3.	
4.	
5.	
6.	
7.	

**Table 10: Waste Diversion**

Description of Material	Tonnes	Destination (landfill, recycler or other (specify))
1.		
2.		
3.		
4.		
5.		
6.		
7.		

**Table 11: Acknowledgment by BUILDING OWNER**

**Project Name:** \_\_\_\_\_

Is the property address or project name different than reported on GBP Form 1?  Yes  No  
 If Yes – provide new address or name.  
 \_\_\_\_\_

Is the building Total Floor Area<sup>1</sup> (m<sup>2</sup>), building type or project type different than reported on GBP Form 1?  Yes  No  
 If Yes – provide new information.  
 \_\_\_\_\_

**Actual Construction Start Date:** \_\_\_\_\_ **Date of Substantial Completion:** \_\_\_\_\_  
 MM/YYYY MM/YYYY

**Construction Cost<sup>2</sup> \$** \_\_\_\_\_  
**Total Capital Cost<sup>3</sup> \$** \_\_\_\_\_

**Contact:** The GBCT may request additional information about this project or conduct follow up surveys.  
 Do you consent to a follow up by the GBCT?  Yes  No

If yes, provide a name and the contact's information for future correspondence.  
**Name:** \_\_\_\_\_  
**Title:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_  
**Email:** \_\_\_\_\_

**Check the boxes that apply and sign below.**

I have reviewed Tables 1-10 provided by the Project Team and deem them to be complete and accurate to the best of my knowledge.

Letters or documents identified in the completeness check are attached.

I am providing this Form to the FUNDER at substantial completion of the building.

\_\_\_\_\_  
 SIGNATURE OF BUILDING OWNER

\_\_\_\_\_  
 DATE

<sup>1</sup>**Floor Area:** Total of each horizontal floor area where each floor above grade is measured to the outside face of the exterior wall. Where a floor is partially below grade (e.g. "walk out basement") and area is to be occupied, floor area is to be included in total. Where exterior envelope is complete but interior is left unfinished for future occupancy, area is to be included in total.

<sup>2</sup>**Construction Cost:** Costs related to construction. Does not include design fees or land. Construction costs include materials, labour and installation.

<sup>3</sup>**Capital Cost:** Includes construction costs, design and other professional fees plus other costs related to the project.



Université de St Boniface

## SECTION 5

# LEASED BUILDINGS & SPACES

GREEN BUILDING PROGRAM MANUAL



# LEASED BUILDINGS & SPACES

Manitoba is committed to building for a greener future.

In 2012, the Manitoba government proclaimed the green building section of *The Climate Change and Emissions Reductions Act*, C.C.S.M. c. C135. The section directs government organizations (departments, Crown corporations and agencies) that own, operate or fund buildings to comply with regulated green building requirements.

In 2013, the *Green Building Regulation*, C135 - M.R. 38/2013 came into effect and prescribed design energy efficiency requirements for buildings owned, funded or leased by government or government organizations.

The regulation requires government and government organizations to prove the energy efficient design of:

- new buildings, built under agreement to suit the needs of government or a government organization
- ***new buildings where the entire gross leasable area of the building is leased exclusively by government or a government organization***
- new buildings owned or funded by government or government organizations
- significant renovations or enlargement of existing buildings owned or funded by government or government organizations

The requirement for energy efficient design is described in Section 4: *Commercial and Institutional Buildings* and is repeated in this Section: *Leased Buildings and Spaces* for convenience.

Government organizations/agencies are identified in Section 2.4 of the *Green Building Program manual*.

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## 5.1

### Green Building Program Application to Leased Buildings and Spaces

Under the Green Building Regulation, energy efficiency requirements apply where government organizations (departments, Crown corporations and agencies):

- fund the construction of a new building that is specifically built to suit the needs of government or a government organization, or
- will lease the gross leasable area of a new building and will be the first tenant

In each case the new building's owner (the landlord or lessor) must prove to the government organization (the tenant or lessee), the building is designed to be at least 33 per cent more energy efficient than the building would be if it were designed to meet the minimum requirements of the Model National Energy Code of Canada for Buildings (1997).

A new building is a newly constructed building that has a floor area of more than 600 m<sup>2</sup> (6,458 ft<sup>2</sup>); and is classified as belonging to one of the occupancy groups referred to in Table 3.1.2.1.: Major Occupancy Classification of the Manitoba Building Code, Manitoba Regulation 31/2011.

- Group A - assembly occupancies, excluding Division 4 (open air)
- Group B - care or detention occupancies
- Group D - business and personal services occupancies
- Group E - mercantile occupancies

## 5.2

### Descriptions of the Green Building Program Criteria

The owner of the new building must prove to the government or government organization that the new building meets the design energy efficiency target of the Manitoba Green Building Regulation, M.R. 38/2013. The government/government tenant (lessee) will accept as proof, the verification methods identified in the green building program criteria for energy efficient design below. (The criteria below is identical to that which is provided in Section 4.

#### Energy Efficient Design

MANDATORY | REPORT REQUIRED

**Confirm the building was designed to meet the energy efficiency target of the Manitoba Green Building Regulation, M.R. 38/2013.**

An energy efficient building provides lower utility bills and reduces greenhouse gas emissions.

For government funded projects (including projects owned or funded by government organizations), energy efficient design requirements are established by *The Climate Change and Emissions Reductions Act*, Green Building Regulation M.R. 38/2013. The regulation requires:

1. The building be designed to a targeted energy efficiency level of at least 33% more energy efficient than the same building designed to meet the minimum requirements of the Model National Energy Code for Buildings (1997).
2. The building’s design must be proven to achieve the targeted level of energy efficiency by achieving Designation under the Manitoba Hydro Power Smart for Business, New Buildings Program.

The Manitoba Hydro Power Smart for Business New Buildings Program must give pre-approval before beginning any design work. Manitoba Hydro can determine if the project is eligible to participate in the Manitoba Hydro Power Smart for Business, New Buildings Program and qualify for Power Smart Designation.

### Selecting Compliance or Variance

The Manitoba Hydro Power Smart Designation satisfies the Green Building Regulation and the Green Building Program (GBP). However, if Manitoba Hydro advises that the project does not qualify for Power Smart Designation, or if a building project cannot attain the energy efficiency design target then the owner must:

- request a Variance on GBP Form 1: Section B and complete Section C: Variance for Energy Efficient Design
- return the completed GBP Form 1 to the government organization providing funding as early as possible during project planning and design, before construction

The GBCT will be consulted on the request. If the Director advises against the variance request, the government organization will arrange a meeting with the owner and the Director of GBCT to discuss alternatives.

### Summary Chart of Compliance and Variance Options for Energy Efficient Design

Situation	Design Tool or Prescriptive Program*	Verification Method*
<u>Compliance:</u> Select Compliance on GBP Form 1: Section B, Energy Efficient Design	Manitoba Hydro Power Smart for Business, New Buildings Program  Design Standards or  Custom Path	Achieve Designation as a Power Smart Building under the Manitoba Hydro Power Smart for Business, New Buildings Program.
<u>Variance: Option 1*:</u> Select Variance on GBP Form 1: Section B, Energy Efficient Design  Complete Form 1: Section C, Variance Energy Efficient Design.	Prepare an energy model based on the building design. (See GBP Guideline 3.2 Energy Modeling. )	Verify the energy model as part of LEED® certification.  Verify the energy model as part of Green Globes™ certification.  Verify the energy model using an experienced energy modeller from the list published by the Canada Green Building Council.

Situation	Design Tool or Prescriptive Program*	Verification Method*
<p><b>Variance: Option 2*:</b></p> <p>Select Variance on GBP Form 1: Section B, Energy Efficient Design</p> <p>Complete Form 1: Section C, Variance Energy Efficient Design</p>	<p>Apply a prescriptive program such as but not limited to:</p> <p><i>ASHRAE Advanced Energy Design Guide.</i></p> <p><i>Advanced Buildings™ Core Performance Guide, New Building Institute.</i></p>	<p>Use a commissioning authority to verify the energy efficiency measures.</p>

\*Other tools, prescriptive programs and verification methods will be considered when identified on Form 1: Section C, Variance Energy Efficient Design.

### Guidance for Manitoba Hydro Power Smart for Business, New Building Program Designation

Receiving a Power Smart financial incentive for insulation or lighting is not the same as achieving Power Smart Designation. The Manitoba Hydro Power Smart for Business, New Building Program provides both incentive and Designation for energy efficient design and provides technical help to achieve it.

Projects can obtain Power Smart Designation in two ways:

**Prescriptive Path** requires the design team to incorporate the Manitoba Hydro Power Smart design standards into the building's design. If Manitoba Hydro recommends the use of the prescriptive path – the project will not require an energy model to receive the Power Smart designation.

**Custom Design Path** requires the use of integrated design process, building commissioning and energy modelling to confirm the proposed building's design meets the minimum energy efficiency requirements to obtain the Power Smart designation.

To apply:

As early as possible, contact Manitoba Hydro New Buildings Program and obtain the Power Smart New Buildings Program application requirements. **All new building projects must be pre-approved before any design work begins.** To contact the program:

Email: [powersmartforbusiness@hydro.mb.ca](mailto:powersmartforbusiness@hydro.mb.ca)

Phone: 204-360-3676 in Winnipeg ; or toll-free 1-888-624-9376

### Tips:

1. Don't forget to report results of the energy efficient design in GBP Form 2: Table at Substantial Completion.
2. Be sure the energy efficient design target and reporting are included early in the planning and budgeting for your project. The best method for including it is in the Owner's Project Requirements (OPR) document. This document should be generated in the pre-design stage (See Section 3.1 Green Building Project Co-ordination Guideline and Section 3.6 Owner's Project Requirement Guideline). The Building Commissioner should be able to guide the generation of this document; or contact Power Smart New Building program for a template.
3. Some projects (ex: major renovations) may not be eligible for Power Smart Designation. Confirm with Power Smart and consult with GBCT for alternative compliance requirements.
4. If you are participating in the LEED® certification program:
  - a. PSNBP Designation will NOT guarantee LEED® energy credits. Check with the LEED® program to confirm acceptable proof of compliance for LEED®.
  - b. The LEED® template for Energy and Atmosphere credits may be submitted in lieu of Form 2: Table 1 Energy Efficient Design.

Although the green building regulation for leased buildings and spaces currently applies only to the energy efficiency of new buildings that are constructed under agreement for government or a government organization, or are leased exclusively by government or a government organization as the first tenant, building owners are encouraged to use all the green building program criteria for the design and construction of buildings in Manitoba described in Section 4 of the GBP manual.

Manitoba's GBP criteria has been shown to:

- protect occupant health
- improve air-quality
- reduce waste streams
- cause energy, water and other resources are used more efficiently, reduce the impact of building construction and operation on the environment, and minimize the strain on local infrastructure.

Any increase in capital cost needed to implement the GBP criteria is typically offset by lower operating costs. Studies show that the initial investment in building construction and materials is only 15 per cent of the lifecycle operating costs. Wise investment up front pays back in the life cycle benefits.

## **5.3**

### **Reporting & Forms**

Government departments, Crown corporations and agencies are required to show their compliance with the Green Building Regulation, C135 - M.R. 38/2013 by reporting leased new buildings to the Green Building Co-ordination Team (GBCT). Use GBP Form 1 and GBP Form 2 to report.

Contact the GBCT at [greenbuilding@gov.mb.ca](mailto:greenbuilding@gov.mb.ca) for assistance if required.