

# THE GREEN SHORES Project

A Review of Green Building Assessment and  
Rating Tools and their Applicability to  
a GREEN SHORES Rating System System

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## 1. INTRODUCTION

The GREEN SHORES project is assessing the feasibility of developing a “GREEN SHORES rating system” to encourage sustainable development of coastal shores in British Columbia. The conceptual vision for the rating system is a voluntary assessment/certification process, similar to the LEED certification system for buildings. The GREEN SHORES initiative is based on four guiding principles:

1. Preserve the integrity or connectivity of coastal processes.
2. Maintain or enhance habitat diversity and function.
3. Minimize or reduce pollutants to the marine environment.
4. Reduce cumulative impacts to the coastal environment.

In developing this concept a number of issues have arisen including the need to develop quantifiable assessment criteria and the identification of the most suitable institutional structure for this type of initiative. This review is intended to assess various options and priorities in order to provide guidance as to the direction the GREEN SHORES project should take to best meet the goal of the GREEN SHORES rating system.

This document reviews and assesses existing assessment<sup>1</sup> and rating programs using a systematic framework designed to address the question “What is the best direction and institutional structure for the GREEN SHORES Project?” The document has been structured in four main sections:

1. A review of existing certification and rating tools.
2. An analysis of the attributes of rating tools, including their management structure.
3. Important characteristics of an ideal rating system.
4. Recommended steps for the development of the GREEN SHORES program.

## 2. REVIEW OF EXISTING RATING TOOLS

A number of Audit/Rating/Certification Programs for land/building development with focus on environmental and economic performance were reviewed. These are described below and in Appendix A. Each system has important distinguishing features which shape its structure, process of delivery and marketing reach. These programs are not necessarily shore focused and include:

1. Leadership in Energy and Environmental Design (LEED) Green Building Rating System
2. Green Globes Rating System (US and Canadian)
3. Green Guide to Health Care (US)

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<sup>1</sup> The term assessment in this context refers to a structured approach to measuring (or rating) the environmental (and possibly economic) performance of a specific design or development.

4. Green Star Building System (Australian) and
5. Smart Growth Development Checklist (New Westminster, BC, Canada)
6. A series of Green Building programs for residential projects.<sup>2</sup>

Three aspects of the tools selected were analyzed:

1. The attributes of the tool
  - Type of the tool (Guidelines, rating/certification system, regulations)
  - Objectives
  - Scope (areas of sustainability covered by the tool)
  - Type of projects the tool applies to (buildings/development; if buildings, types of buildings covered)
  - The nature of the standards used (prescriptive, performance based, process based)
  - The structure of the guidance documents
2. The management of the tool
  - Nature of the organization owning/managing the tool (sole owner vs. membership organization, public vs. private, profit vs. non-profit)
  - Process for the development and changes to the tool
  - Project evaluation process
3. Ability of the tool to transform the market
  - Geographic scope
  - Size and homogeneity of constituency
  - Number of projects certified
  - Other market characteristics

## 2.1 LEED GREEN BUILDING RATING SYSTEM

The LEED rating system was created in 2001 by the US Green Building Council (USGBC) to promote buildings that are environmentally responsible, profitable and healthy places to live and work. As of January 2006, the USGBC has 5,500 member organizations. The start-up money required to develop the tool and initiate the organization came from the US Department of Energy (DOE).

Since 2004 the tool has been under license in Canada with the Canada Green Building Council (CaGBC). The CaGBC has over 1,050 member organizations with a staff of 6 (two of these dedicated to the LEED tool) as of January 2006. Original funding came from various government agencies. Now funding for the Canadian and US organizations comes from membership fees, educational events, and donations

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<sup>2</sup> Largely based on the Review of Green Building Guidelines for Low-Rise (Part 9) Residential Projects in Greater Vancouver, GVRD Document 2005

including corporate donations. Adaptations of the LEED tools are now being used in Europe, North America and India.

LEED is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. LEED standards are currently available or under development for:

- New commercial construction and major renovation projects (LEED-NC)  
-  
Canadian version available
- Existing building operations (LEED-EB) – US version only
- Commercial interiors projects (LEED-CI) – US version only
- Core and shell projects (LEED-CS) – US version only
- Homes (LEED-H) – Pilot Stage
- Neighborhood Development (LEED-ND) – Pre Pilot Stage

Every new LEED tool in the US and in Canada is developed by technical committees reporting to a steering committee. Once a preliminary draft is approved by the steering committee the tool is released for public comment. The public comments are incorporated in a revised draft used in a series of pilot projects. The document is then further revised and made available for a second round of public comments. The public comments are reviewed prior to drafting the final version which is sent for balloting to all member organizations.

Revised versions of every LEED tool in the US and in Canada are developed by technical committees reporting to a steering committee. Once a draft is approved by the steering committee the tool is released for public comment. The public comments are reviewed prior to drafting the final version which is sent for balloting to all member organizations.

All technical and steering committees are composed of volunteer members.

In the US, LEED NC had 2,161 projects registered at the end of 2005 and 285 projects certified. In Canada LEED NC has 190 registered projects and two certified, however a number of Canadian projects were certified under the USGBC prior to the creation of the CaGBC.

## **2.2 GREEN GLOBES GREEN BUILDING RATING SYSTEM**

The Green Globes rating system (previously known as Green Leaf) was created in 1995 by ECD Energy and Environment Canada (a privately owned firm) as an adaptation of the British Building Research Establishment Environmental Assessment Method (BREEAM) and first published by the Canadian Standards Association (CSA). It was created “to provide a streamlined approach and a broader scope of

building environmental issues while maintaining the principles of credibility, affordability and efficiency”.

Enbridge Consumer Gas and Union Gas sponsored the development of the program. In December 2001, under the auspices of the Canadian Energy Efficiency Alliance (CEEAA) and CMHC, EDC completed a self-assessment version of BRREAM Green Leaf called Green Globes. Green Globes is an interactive, online tool, which can help building owners and managers benchmark the energy and environmental performance of their buildings, identifying operational savings, increasing tenant satisfaction and providing hands-on education for staff.

The tool is owned at no cost by stakeholder organizations. For example Green Leaf for Hotel is owned by the Canadian Hotel Association. EDC Energy and Environment Canada operates the program. Two committees oversee Green Globes. The Advisory Committee advises on the structure and delivery of the assessment and the Technical Committee on the content. The EDC Green Globes program has no membership. Currently all assessments are done by the same individual and the number of projects accredited is not known. It has been mostly used by DND and PWGS for retrofit projects.

In the US Green Globes has been under license since 2004 to the Green Building Initiative (GBI). The US organization has a staff of 4 and is planning to train and hire independent assessors. The US organization has 3,000 associate members in the US and membership is free. GBI is presently seeking American National Standards Institute (ANSI) recognition as a standard developing organization with the intent to further Green Globes™ within a full ANSI consensus-based process.

### **2.3 GREEN GUIDE TO HEALTH CARE**

The Green Guide to Health care was created by the Center for Maximum Potential Building Systems and sponsored by Hospitals for a Healthy Environment (H2E), the New York State Energy Research & Development Authority (NYSERDA) and the Merck Family Fund. Presently the Green Guide for Health Care gets financial support from Supporters, Partners, and Endorsers, who affirm the intent and principles of the document.

It was created to “reward those organizations that voluntarily steward the environment in the interests of human health”. It also creates incentives for the healthcare and related industries to change their practices, build sustainable environments, and enhance their overall accountability and performance.

The tool is supported by 6,700 registered members, with representation from every US state. There are 300 members in Canada and 63 from other countries. Registration is done through the website at no cost.

The tool is not intended to establish regulatory requirements, nor viewed as a minimum standard for design, construction or operations. Rather it is designed to serve as a voluntary educational guide for early adopters of sustainable design, construction, and operations practices, encouraging continuous improvement in the health care sector. As the general level of green building practices rises, it is anticipated that the Guide will be updated to encourage higher levels of rigor associated with creating high performance environments in the health sector. It is seen as the first quantifiable design tool integrating environmental and health principles and practices into planning, design, construction, operation and maintenance for health care facilities. Furthermore this document is intended to be a best practices guide, not a basis for industry code or regulatory standard.

The Green Guide for Health Care development initiative began in March 2003 with a professionally and geographically diverse group of green health care industry leaders convened as an independent Steering Committee to guide the document development. Steering Committee Working Groups for each section of the document drafted credit language that was reviewed and approved by the Steering Committee as a whole. The Green Guide for Health Care committee process is structured to include representation from a wide range of stakeholders and interests ensuring consistency and rigor in the document's development. Organizations with direct financial interests in the products or certification services addressed by the document are precluded from Steering Committee membership.

In December 2003, Version 1.0 of the Green Guidelines for Healthcare Construction was released in draft form for public comment by architectural, engineering, construction, healthcare, and manufacturing firms as well as industry associations. The Steering Committee reviewed all public comments prior to drafting Version 2.0.

## **2.4 GREEN STAR BUILDING SYSTEM**

The Green Star rating/certification system was created by the Green Building Council Australia (GBCA). The Council's objective is to promote sustainable development and the transformation of the building industry by promoting green building programs, technologies, design practices and operations. The Council has a staff of 8 accountable to a Board of 16 members. It has a membership of 16 paying firms. The membership of the GBCA is comprised of industry leaders, senior government representatives and other professionals; trade associations are excluded.

The Green Star environmental rating system for buildings was created in 2003 to:

- Establish a common language;
- Set a standard of measurement for green buildings; Promote integrated, whole-building design;
- Recognize environmental leadership;
- Identify building life-cycle impacts;

- Raise awareness of green building benefits; and
- Reduce the environmental impact of development.

The initial Green Star tool applies only to office buildings. The Green Star environmental rating system recognizes and rewards Best Practice, Australian Excellence and World Leadership.

Green Star was built on existing rating systems and tools in overseas markets, including the British BREEAM (Building Research Establishment Environmental Assessment Method) system and the North American LEED (Leadership in Energy and Environmental Design) system. Green Star has established individual environmental measurement criteria with particular relevance to the Australian marketplace and environmental context.

It is expected that within the next two years Green Star will provide rating tools for all phases of the building life-cycle (e.g. design, post-construction and operation) for different building classes in addition to office buildings (e.g. retail, education, health, residential etc.)

Changes to the tool are the results of feedback provided by users and reviewed on an annual basis.

## **2.5 SMART GROWTH DEVELOPMENT CHECKLIST**

This checklist was developed by the Advisory Planning Committee and the Design Panel of the City of New Westminster to help in making decisions regarding applications for Zoning Bylaw amendments.

## **2.6 RESIDENTIAL BUILDING RATING SYSTEMS**

These programs and tools tend to focus on smaller projects and are usually managed at the local or regional level. It is also only in this category that mandatory programs are found.

These programs fall in three sub-categories:

- Voluntary Green Homebuilding Programs. These more common programs have several performance categories with required and optional criteria, and several certifications levels (e.g. Whistler Green and Green Built Alberta)
- Mandatory Programs. The programs have only one certification level with relatively low green requirements and few additional optional criteria (e.g., Simon Fraser UniverCity Guidelines). The objective of these

programs is that all new housing within the jurisdiction achieves a better environmental performance.

- National programs. These initiatives generally focus on energy efficiency (e.g., EnerGuide for Homes)

Most of these programs have been developed in conjunction with the local homebuilders' association, thereby guaranteeing builders' involvement and providing valuable input into the guidelines.

The major differences between these residential/low rise rating systems and commercial/high rise rating systems are:

- Residential rating systems tend to be more prescriptive than the commercial rating systems.
- Being prescriptive they tend to provide more detail and less options.
- They tend to focus on specific strategies rather than on a process or intent.
- They do not look for synergies.

The USGBC is currently proposing a different delivery and certification system for LEED for Home than for its other tools. The proposed delivery system involves the participation of an intermediary between the practitioner and USGBC. This intermediary would oversee training and certification at a local level.

### 3. AN ANALYSIS OF RATING SYSTEMS ATTRIBUTES AND MANAGEMENT

#### 3.1 ATTRIBUTES

##### 3.1.1 Objectives of the tools

Most of the tools surveyed had two related objectives:

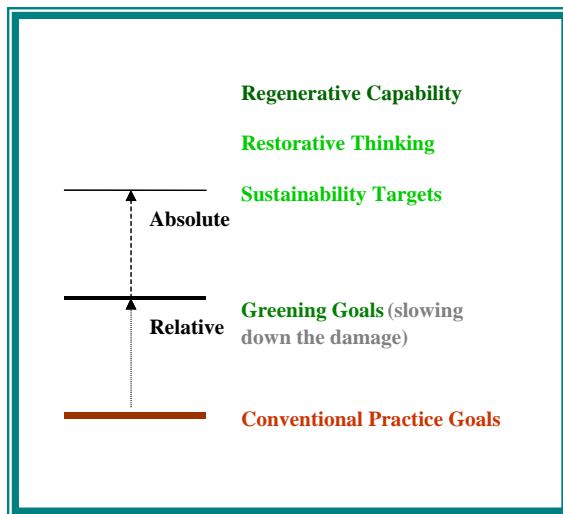
- Reduce environmental impact
- Transform the market

In practice these objectives are fundamentally linked; minimizing the environmental impact of the built environment by transforming the way buildings and development are designed and constructed. Therefore the environmental objective is supported by a market transformation objective.

##### *Environmental Objectives – How Green is Green?*

A distinction must be made between green design and sustainable design. It has been rightly argued that all of the tools in existence currently deal with “green” design rather than truly sustainable design. These tools challenge design team to do “better” (in some cases quite a lot better) than current and best practices, but none of the tools provide for truly sustainable development - one where the project is not consuming more resources than it is generating.

Most of the tools also propose green design solutions rather than “regenerative design”. Regenerative design is not solely based on reducing degeneration but aims at reversing degeneration. The following graphic illustrates the fact that “green” is only one step toward truly sustainable or regenerative design. The green design market is quickly evolving. While initially focused on energy efficiency some developers are now taking on the challenge of making development greenhouse gas (GHG) neutral. It is important to clearly understand where a rating system is located within the continuum shown on the graphic and what remains to be done to ensure that the rating system continues to “raise the bar” and improve current practice.



Distinguishing Greening Goals in to Sustainability Context (from Bill Reed, Natural Logic, based on a graph by Ray Cole)

***Implications for GREEN SHORES - Focus on greening objectives but challenge projects to raise the bar by ensuring that participants understand and focus on the intent (goal) of a credit rather than the requirements of individual credits.***

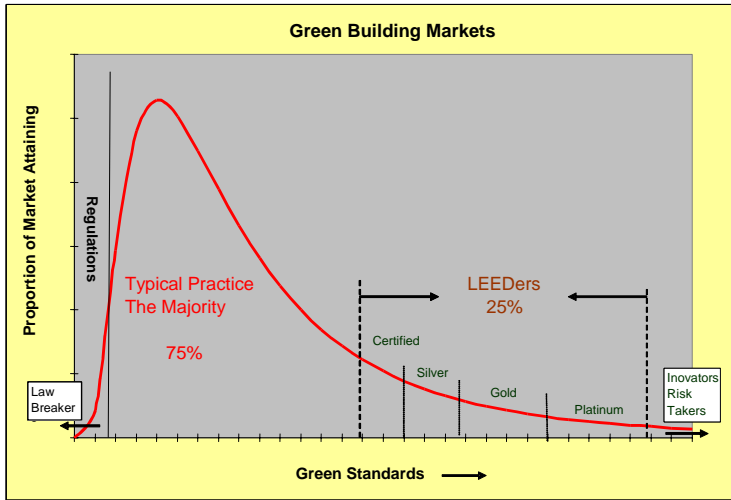
***Market Transformation – What market?***

The tools reviewed have a wide range of objectives some of which are stated explicitly, others are implied. On one hand there are programs that focus on making each project better than current practice regardless of what is happening elsewhere in the market. Others will challenge each project to improve on earlier projects. They provide a tool for what is called “market transformation”. They “provide clear guidance on the environmental strengths or deficiencies that can offer feedback to an evolving design; provide guidance for future remedial work, or aid prospective building purchasers or leasers understand the environmental merits of a building” (Ray Cole, UBC School of Architecture, 2001).

In the early stages of LEED the USGBC targeted a small percentage of the market; leaders and the early adopters (see graphic below). Focusing on this market had the advantage of targeting “innovative” individuals that did not require ready-made solutions and were prepared to take risks and face

uncertainties. This is essential in an emerging field that is challenging traditional processes. These leaders create and test technical solutions and design processes, providing tools to incorporate environmental considerations in a more systematic and effective manner.

Interestingly the USGBC has become a victim of its own success and is now criticized for a form of elitism which excludes, due to its cost and high level



requirements, “practical people who make most of the building industry’s decision and who influence 95% of all commercial and institutional; building design and construction”.<sup>3</sup> This may be an indication that the market has “transformed” in that green design is accepted by the “typical practitioners” shown on the left of the above figure.

Targeting Market Decides

**Implications for GREEN SHORES** – Those with an interest in GREEN SHORES approaches to shore development typically are asking for examples of Green Shore designs. Initially focusing the program at innovators and risk takers will provide the best models, supporters and spokespersons for the initiative. However the program needs to be responsive to changing market conditions in order to achieve the overall goals of reduced environmental impact and market transformation.

**3.1.2 Voluntary versus Mandatory Programs**

Most programs are voluntary and rely on support from either government, building owners and the building sector for their adoption. By being voluntary these systems have the ability to co-opt various sectors of the building industry concerned with the environmental issues and/or interested in differentiating themselves in the market place.

These volunteer programs may become mandatory when their applications are mandated by a particular jurisdiction. The mandatory requirement tends to occur for new buildings and developments where it can be tied to land purchase or lease, or a condition of rezoning or a master development agreement.

<sup>3</sup> Jerry Yudelson, Associate principal, Interface Engineering, Inc. Article in Business Examiner, February 20, 2006

*Implications for GREEN SHORES - Keeping the program voluntary provides the option for regulatory authorities to make it mandatory in their jurisdictions if they wish to. The voluntary nature of the initiative means that it will be perceived as industry-driven rather than regulator driven.*

### **3.1.3 Range of Sustainability Issues (Credit Categories)**

The majority of the tools scanned focused on environmental performance. Only one tool (New Westminster Smart Growth Checklist) explicitly includes economic and social considerations.

The most common considerations or categories included in the tools surveyed are:

- Site selection and development (including erosion and sedimentation, stormwater and transportation as well as land and water habitat protection),
- Water efficiency/water use,
- Energy,
- Material and resources,
- Air quality.

Many variations exist between programs with respect to the way in which performance categories are described and used. For instance programs may use different headings for the same category (e.g. Materials vs. Resource Efficiency), combine categories under one heading or keep them separate.

The category most relevant to GREEN SHORES is the “Site” category. This category can be expanded to include:

- Erosion and Sedimentation Control
- Site Selection
- Brownfield Development
- Transportation
- Ecosystem and Species Protection
- Ecosystem and Species Restoration and Enhancement
- Flood and Terrain Hazard Management
- Wildlife-Human Conflicts
- Pollution Prevention (Pesticides, groundwater and wells, waste, air quality, water quality)
- Stormwater Management
- Human Access

Some programs contain unique performance categories, such as project management, design process and innovation. Sustainable development involves a number of complex issues that are better dealt with through an integrated design

process which differs from the traditional, more linear approach to development. Recognizing and encouraging this integrated approach is often as important as applying rigorous requirements on a project. In addition the innovation category serves to encourage “raising the bar” to levels above those stipulated in the credit requirements.

*Implications for GREEN SHORES - include all environmental issues with relevance to GREEN SHORES. Look for synergies between issues; not everyone will undertake the process of green design for the same reason. For some energy is the prevalent reason, for others it will be air quality or water efficiency. However once involved in the process, the relevance and added benefits provided by the other environmental issues will strengthen buy-in.*

### **3.1.4 Applicability (Type of project and stages of design the tool applies to)**

Most of the tool assessed applied to commercial and institutional buildings and some have been adapted to various types of buildings. For example the USGBC has tools for Existing Buildings, addressing operation and maintenance issues, and New Construction, addressing design and construction issues. They have also created Adaptation Guides for specific building types such as Laboratory and High Rise Residential.

The only rating system dealing with large development and land use issues at a larger scale than the building site is the proposed LEED for Neighborhood. Both the USGBC and the CaGBC intend to develop this tool recognizing the limitations inherent to a “building” only system.

It is difficult to adapt these assessment tools to low rise and single-family residential buildings. Residential buildings are being addressed with a different set of tools, which are more regional or local in their reach.

Some programs also offer an assessment at different stages of design. For example Green Globe provides an assessment at two of eight project phases- schematic and construction documents. Green Guide to Health Care has two separate sections, design and development, as well as operation and maintenance.

*Implication for GREEN SHORES - Develop the formal assessment tool for mixed residential/commercial development first. Once this is done see how the tool can be adapted to the residential sector or for larger developments. Attempt to create a tool that addresses the different phases of design. However, the individual with authority at one stage of project design might not be the same than at another stage.*

### **3.1.5 Credit Structure**

Of the building tools reviewed the most common structure of a credit was as follows:

- Credit Intent or Objective – The main goal of the credit
- Requirements/Indicator – The criteria needed to satisfy the credit and the number of points available.
- Submittals/Documentation – The documentation required for an application for certification
- Summary of Reference Standards – many credits refer to technical standards developed by other organizations for performance evaluation.

All tools surveyed are organized by performance categories (site, water, energy etc.).

Other elements of the credit structure (including supporting documents) are:

- Environmental issues
- Potential technologies and strategies
- Interpretations – providing additional advice on meeting credit requirements.
- Synergies and trade-offs – This section identifies design approaches or credits that are likely to affect or interact with design elements that address a specific credit intent
- Detailed documentation requirements including calculations
- Regional variations – additional commentary related to handling regional differences
- Resources and References – key websites and documents (general and regional) that can assist the design team meet the credit requirements

*Implications for GREEN SHORES – there is merit to following a structure similar to LEED as it is the prevalent structure and it is well known by the building industry.*

### 3.1.6 Required and Optional Credits

A number of tools have a combination of required and optional credits. Required credits usually do not grant points, only optional credits do. Each optional credit is associated with a specified number of points. Each level of certification requires a project to obtain a certain number of points or a percentage of points. **For certification a project must meet all required credits plus a number of optional ones.**

Programs either have required credits in each performance category or only in a specified number of categories. For example LEED has only 7 required credits called “prerequisites” and not all performance categories include a prerequisite. Some programs require a certain amount of points per performance category while others do not specify where the points can be achieved, giving more freedom for participants to choose the most relevant credit for the project.










**Implications for GREEN SHORES** - Develop a draft rating system and see what makes sense in terms of required and optional credits. Credits should be designated “required” only if:

- the credit addresses an issue that is critical in terms of its impact,
- it is essential to the long term maintenance of the overall objective of the program and
- the credit is achievable without undue cost and effort using available tools and methods to reach the stated level of performance.

**3.1.7 Certification Levels**

Most programs offer a range of certification levels. The number of levels for certification levels varies from 6 for Green Star in Australia, 4 for LEED (Certified, Silver, Gold, Platinum) and 5 for Green Globes in Canada. In the United States the Green Gloves Level has been reduced to 4 as the lowest level has been eliminated. A small number of programs have only one certification level.

**Green Globes Rating Levels**

	Canada	U.S.
86+%		
71 - 85%		
56 - 70%		
36 - 55%		
15 - 35%		

There are four levels of Green Globes recognized in the U.S. vs. five in Canada

These levels are important as they provide a means to differentiate a project’s performance. These levels also provide a benchmark for practitioners to improve performance over time.

The lower level usually represents best practice. The higher levels require significant effort and creativity on the part of the design team, challenging them to push the boundaries. These higher levels are responsible for real market transformation.

**Implication for GREEN SHORES** –the preferred approach is to provide a range of certification levels, the lowest being reasonably higher than common practice and the higher levels providing incentives for innovation.

**3.1.8 Supporting Documentation and Training**

The programs surveyed provide supporting material. Each organization offers a different combination of these materials, including:

- Credit Interpretation Ruling – Issues may arise when applying the rating tool to a specific project. Some of these issues may not necessarily be addressed in the supporting documentation. In this case the organization will provide an interpretation ruling. This is usually provided for a fee after the project is registered. These are then posted for every one to use.

- Online Access to Discussion Forum – The Green Guide to Health Care offers online forum for members to discuss specific design issues.
- Reference Guide – A major document that provides users with clarification on the various criteria. The guide usually provides examples of effective and practical strategies, case studies and links to resources
- Templates – Documents that assist project team track progress and prepare its application for certification
- Training Sessions – Most organization provide training sessions to introduce the tool. Some provide additional sessions on specific aspects of the tool.
- Conferences – A number of organization organize conferences for its members. These are opportunity for exchanges and keeping up to date on the latest development in the field. These have been instrumental at creating a community of support for practitioners involved in sustainable development.
- Chapters – National organization have created regional chapters to provide local green building resources, education and leadership opportunities.

*Implications for GREEN SHORES - the goals of these support tools are twofold: education and marketing. A reference document supporting the rating system and training sessions are probably the first two supporting tools that GREEN SHORES should invest in.*

### **3.1.9 Tool Flexibility**

Tool flexibility refers to degree of flexibility offered to the program user in order to meet program requirements. In addition to the number of required credits (prerequisites), programs vary in terms of the choice of credits selected to achieve a particular level of certification. Certain programs will allow total freedom in the choice of credits; others will mandate that a certain number of credits be achieved in each performance category.

Another level of flexibility is the way each credit can be achieved. Most assessment methods allow for “equivalencies”. The users do not have to achieve a credit as stated by the requirement as long as an equivalency to the stated performance level can be demonstrated. Criteria for demonstrating equivalency are usually provided.

### **3.1.10 Measuring Performance**

Assessment implies measuring performance against a declared scale. All assessment tools assign points to various environmental criteria but each tool assigns points in a different manner.

Criteria to assign points can be either performance or prescriptive based. Performance based means that the points are based on actual measurable

performance: annual energy used, water used etc. A prescriptive approach is based on the presence or absence of specific features or strategies. Prescriptive approaches are often used to address qualitative performance where no metric exists or is widely accepted. Most of the programs use a mix of these two approaches although prescriptive based approach seems to be used for the majority of the credits.

When available, performance is often judged on proven compliance to an existing standard. For example this is the case for energy performance credits, which have to demonstrate meeting the requirement of the Canadian Model National Energy Code for Buildings (MNECB) or ASHRAE/IESNA 90.1 – 1999, two established energy standards for buildings.

Some environmental issues are more significant than others and these priorities may vary from region to region and change over time. For this reason weighting is becoming a critical issue in the field of sustainability, however developing credible weightings of environmental issues remains a challenge. Weighting can be based on scientific evidence but this is not always possible. Most weighting systems are developed by surveys of a broad range of expert opinion (Delphi approach). Only the Australian Green Star program is using a weighting system (see inset below).

#### **Environmental Weightings (From Australian Green Star Program)**

An environmental weighting is applied to each category score (except Innovation). The weightings were derived by considering a variety of scientific and stakeholder opinion including:

- The OECD Sustainable Buildings Project Report;
- Australian Greenhouse Office, Environment Australia, CSIRO, the Cooperative Research Centre for Construction, and the Commonwealth Dept. of Environment and Heritage; and
- A national survey conducted by the Green Building Council, which informed the development of the tool and assisted in assessing regional variation.

Weightings also vary by geographical location, to reflect issues of importance in each state or territory. For instance, potable water has a greater significance in South Australia than the Northern Territories, and therefore the Water category has a higher weighting in South Australia.

The weighted category score is then calculated as follows:

Weighted Category Score = Category Score (%) x Weighting Factor (%) / 100

The way points are tallied also varies from one system to another. For some the certification level will be determined by the number of points obtained by the

project out of a maximum number of points available, for others it will be determined on a percentage basis. For example Green Globes does not hold projects accountable for strategies that are not applicable, so the actual number of available points varies by project. This is not the case for LEED, which assesses a project against all credits whether or not they are applicable to the project.

***Implications for GREEN SHORES** - Choose performance based criteria wherever possible, supported by established standards where they exist. Do not consider weighing credits at this time, rather use “required” and “optional” to distinguish priorities. Consider adopting a system which uses a percentage of the applicable points rather than penalizing projects for criteria that are not applicable (this will need to be tested in the Case Examples).*

### **3.1.11 Certification Process**

All programs provide the opportunity to self-assess; some are exclusively self-assessment (such as the Green Guide to Health Care), while others encourage third party certification. Another model is used by the residential Built Green program (King and Snohomish Counties) where the first three certification levels are self-assessed and the top two undergo third-party verification. The same is true for the Australian Green Star system: the first three levels are self-assessed. A project that achieves 4 stars or above is eligible for certification

The rigour of the certification process varies greatly among programs in three major ways:

- The amount of documentation and “proof” required to demonstrate that a credit has been achieved
- The thoroughness and consistency of the verification process
- The qualifications of the person carrying the assessment

There are wide ranges of requirements. Some programs such as LEED have very specific, fairly demanding requirements for documentation, including calculations, drawings and cut sheets that have to be submitted when applying for certification. Others require this documentation to be available on demand while others only require a statement on the part of the responsible member of the team to attest that the credit has been achieved.

The certification process can also vary from program to program. Programs such as LEED have a formal, well-defined certification process with checks and balances built-in at different stages as well as a quality assurance check. The program manager will verify the assessment done by the accredited assessors at different stages of the process. It also includes an appeal process. Originally all credits were verified, resulting in very high costs. This process was amended and now all required credits and only a specified number of optional credits are verified. The CaGBC differentiates between audited and non-audited credit documentation requirements. Additional documentation is required for certification review should a credit be audited.

The verification process for Green Globes program is performed during an interview with the user where the application is reviewed and discussed and some of the documentation is verified. This process provides for a more flexible but more subjective approach.

Third party certification is usually performed by certified assessors although this is not necessary the case.

Important issues with respect to the certification process include:

- The credibility of the tool - the more thorough the verification process, the more credible the tool will be.
- The cost of providing certification - the more thorough the verification process, the more costly the process will be.
- The ability to use the tool as a benchmark against which various buildings can be compared - the more standardized the evaluation process the easier it will be to compare results between projects.

**Implication for GREEN SHORES** – This issue requires further discussion as its resolution will be critical to the success for the tool. The options selected will be dependent on the target market and the ultimate objective of the tool.

**3.1.12 Cost of Certification**

<b>CaGBC Members</b>		
<b>Registration</b>		
<2,500m <sup>2</sup>	Between 2,500m <sup>2</sup> & 22,000m <sup>2</sup>	>22,000m <sup>2</sup>
\$1,000	\$1,000 + \$0.75/m <sup>2</sup> for any area over the minimum threshold of 2,500m <sup>2</sup>	\$2,500
<b>Certification</b>		
<2,500m <sup>2</sup>	Between 2,500m <sup>2</sup> & 22,000m <sup>2</sup>	>22,000m <sup>2</sup>
\$2,500	\$2,500 + \$0.56/m <sup>2</sup> for any area over the minimum threshold of 2,500m <sup>2</sup>	\$13,500
<b>Non Members</b>		
<b>Registration</b>		
<2,500m <sup>2</sup>	Between 2,500m <sup>2</sup> & 22,000m <sup>2</sup>	>22,000m <sup>2</sup>
\$1,500	\$1,500 + \$0.125/m <sup>2</sup> for any area over the minimum threshold of 2,500m <sup>2</sup>	\$4,000
<b>Certification</b>		
<2,500m <sup>2</sup>	Between 2,500m <sup>2</sup> & 22,000m <sup>2</sup>	>22,000m <sup>2</sup>
\$3,750	\$3,750 + \$0.83/m <sup>2</sup> for any area over the minimum threshold of 2,500m <sup>2</sup>	\$20,000
*GST will be added to all fees		

Two types of costs are discussed below: the direct cost of the tool to the users and the impact of the tool on development costs. Both will have an influence on the marketability of the tool. From the perspective of market penetration it is important to ensure that the system remains relatively inexpensive. This relates to all aspects of costs.

The cost of the tool varies greatly from program to program and can be broken down as follows:

**Project Registration and Certification**

There is usually a separate cost for registration and for certification. Most programs require registration as a prerequisite for obtaining support. Once a project is registered it can either submit “credit interpretation rulings”, or have access to an online discussion forum. For most building programs,

these costs are dependent on the size of the project; the larger the project the higher the fee. Often larger projects will subsidize the smaller ones. Members usually benefit from a lower fee.

Registration and certification fees must be high enough to cover cost of administrating the program (including assessment costs) but not so high that it discourages users to apply. It is interesting to note that the CaGBC, when faced with this dilemma, decided that these fees would be used exclusively cover the direct cost of administrating the certification process for a project. Other costs such as tool development and program administrative costs would come from other sources. The table to the right shows LEED Canada Registration and Certification Costs

Green Globe costs by comparison are: \$500 to register per self-assessment for the US version. (The Canadian version is \$250 per project). The cost of a third party certification in the US, is on average \$4,000 but varies depending on the size and complexity of the project.

Costs for residential programs are much lower and range from 0 to \$500 and usually includes membership.

### ***Cost of Documentation***

These costs vary depending on the data collection process, the experience of the team managing the documentation process and with the sophistication of the various performance measuring tools, e.g. energy modeling tool. The time, effort and skills required to gather, analyze and document the results greatly influence the cost of an assessment. In order to reduce this cost organizations such as the USGBC have development templates and guides for compiling documentations.

### ***Membership***

Programs vary their membership requirements. Usually members can benefit from lower costs of registration and certification and may have access to more reference materials than non-members.

### ***Support Costs (training, guide, references etc).***

These costs are generally in addition to the cost of registration. Organization such as the CaGBC and the USGBC are using these services as their major sources of revenue to cover the cost of tool development and overall program administration.

### ***Development Costs***

The cost of using these tools will depend on the following:

- The owner's definition of what is valuable and the project goals
- The project specific circumstances, site, size etc.
- The Level of Certification aimed at
- The initial cost vs. life cycle costs

However, it is important to understand the following (often perceived rather than real) impact on costs of using these tools.

*Design cost* - Additional design time is often required upfront to analyze options and achieve performance. An integrated design approach may also involve more players than the traditional more linear design approach. These costs are however difficult to quantify and are now seen by major firms as normal costs of doing business. In addition, this extra design time often results in lower costs during later stages of design as less change orders are required and more guesswork is taken out of design early on.

*Capital costs* – This refers to the incremental capital costs due to sustainable design over “standard” practice. These incremental costs implications often drive decisions about sustainable design. As most of the credits are optional, the majority of the projects achieve new goals within their original budget or small incremental funding. There is usually no one-size-fits-all answer to this question as each project is unique and costs will vary. Benchmarking against other projects can be valuable but not predictive. The perception of increased incremental costs is often more relevant than the actual cost. Each credit however, will have a certain cost associated with it. Some will be cheaper than others to achieve. The cost of achieving a credit should not be so prohibitive as to discourage people from attempting to address the issue raised by the credit. Note that the Sustainable Site credits from LEED are usually achieved at no additional cost for new development. This is due to the fact that a green approach will generally result in reduced costs for site preparation and clear-cutting, and parking lots and roads.

A useful way to analyze the costs of particular credits is to divide them in three categories:

Type 1 – Little or no cost premium

Type 2 – Cost premium but short term return on investment

Type 3 – Cost premium with long term return on investment or no return

This classification will provide the information owners will need to make decisions about the level of sustainability to achieve. However looking at each credit in isolation may be misleading as a higher cost in one category (premium for higher quality window) may result in lower cost in another category (smaller HVAC system required).

*Operating costs* – Sustainable design should be viewed from a holistic, long-term perspective. An integrated design process will include life cycle costing of options with one of the goals being the reduction of operating costs. As shown in the inset below sustainable design will often result in lower operating costs.

### **Environmental Weightings (From Australian Green Star Program)**

An environmental weighting is applied to each category score (except Innovation). The weightings were derived by considering a variety of scientific and stakeholder opinion including:

- The OECD Sustainable Buildings Project Report;
- Australian Greenhouse Office, Environment Australia, CSIRO, the Cooperative Research Centre for Construction, and the Commonwealth Dept. of Environment and Heritage; and
- A national survey conducted by the Green Building Council, which informed the development of the tool and assisted in assessing regional variation.

Weightings also vary by geographical location, to reflect issues of importance in each state or territory. For instance, potable water has a greater significance in South Australia than the Northern Territories, and therefore the Water category has a higher weighting in South Australia.

The weighted category score is then calculated as follows:

Weighted Category Score = Category Score (%) x Weighting Factor (%) / 100

### **3.1.13 Nature of the Award**

The programs surveyed provided a range of recognition for achieving performance. These included:

- Marketing Kit
- Permission to use logo and claiming certification in marketing material
- Plaque and/or Certificate
- Promotion through case studies or other means such as organization's website etc.

## **3.2 ASSESSMENT OF MANAGEMENT INFRASTRUCTURE**

### **3.2.1 Type of organizations**

*Non-profit membership organizations.* - The majority of the tools surveyed were owned and managed by non-profit membership organizations. These vary in terms of the size, role and condition of their membership.

There are three fundamental differences:

- Individual versus company membership – individual membership allows for a larger membership to be built quickly. However, company membership demonstrates a stronger commitment on the part of an organization.

- Non-paying members versus paying – the same argument can be made here. Most organization with paying members has a declining scale of fees depending on the size of the organization.
- Participation versus information access - in certain organizations members may vote on a number of important issues and access volunteer functions within the organization while in other organizations membership provides only access to information. This is an important issue if the organization is concerned about transparency and inclusiveness.

USGBC has only recently, and after a long debate and consultation process, accepted trade associations as members. Green Guide for Health Care precludes organizations with direct financial interests in the products or certification services addressed by the document from participating in the tool development.

*Public sector organizations* – a small number of tools, principally residential rating systems are run by public sector agencies. The major issue for public sector agencies taking on that task is resources. For example Simon Fraser UniverCity Trust has developed and is managing its own rating system.

*Sole ownership* – only one tool was owned and managed by a private company with sole ownership, Green Globes in Canada. The license for the tool is owned and managed by a non-profit organization and tool development is overseen and supported by a number of quasi government agencies (see Section 2.2 above).

***Implications for GREEN SHORES - A tool supported by a not-for-profit organization allows for input and participation from stakeholders.***

### **3.2.2 Processes for development and changes**

These vary in terms of the formality of the process established to make changes to the tool and the level of required consultation. Organizations such as the USGBC and the CaGBC have a very formal process detailed in a document called LEED Foundations Policy Manual that describes USGBC/CaGBC policy for consensus-based development of the LEED family of products. This process involves the involvement of a number of volunteer committees, a public wide comment period and a final ratification vote by all members.

Changes for other rating tools are made as needed and managed by ad hoc committees created for that specific purpose. Changes are made on the recommendation of the users or to reflect advances in technologies.

***Implication for GREEN SHORES - This issue requires further discussion however the process adopted should be transparent, consensus based, and reflect feedback from users as well as advances in technology and knowledge.***

### 3.2.3 Process of marketing and dissemination

For larger building rating systems the organizations have relied principally on branding. This is certainly the case with LEED, which has now become a name recognized worldwide. Membership in these associations has also played a major role in marketing the products. Being the users of the tool and having recognized the competitive advantage of using it, the members of the USGBC and the CaGBC, in particular, have been very active in promoting the tool and their own success, achievement and commitment.

Most of the residential programs reviewed are local or regional in geographic scope and marketing is on a small scale or only to interested clients. Often marketing efforts are limited to the offering of training courses and are directed at builders and builders' associations.

*Implication for GREEN SHORES - A marketing strategy should be developed as part of the business plan.*

### 3.2.4 Nature of tool ownership

Options include registering a trademark and copyrighting.

### 3.2.5 Funding sources for the tool

The non-government organizations surveyed have relied primarily on three sources of funding:

*Government* - usually a one-time funding provided for the development of the tool and start-up costs. This was the case for both the USGBC and the CaGBC.

*Sponsors* – A number of programs receive support from sponsors. This is the case for the Green Guide for Health Care but also for Green Globes and a number of the residential programs

*Fees* – Fees for membership or services provided (project registration etc.) make up the major part of the revenues for most organizations.

## 4.0 AN IDEAL RATING SYSTEM

### 4.1 CHARACTERISTICS OF AN IDEAL TOOL

The following section outlines some of the characteristics of an ideal rating tool. Conflicts may exist between the various characteristics. Understanding them will assist in determining priorities and will set the tone for the type of tool to develop. This list is adapted from “A Building Environmental Assessment Method for British Columbia” by Dr. Raymond Cole, UBC School of Architecture, 2001.

***Simple and practical in its application***

Simplicity will be reflected in the number and type of criteria covered in the tool. The tool should also offer a clear, simple set of directives and performance targets. Practicality refers to the ease of applying the tool by both the designers and the assessors. This can be interpreted by the amount of time and effort required to gather and analyzed the data. The tool should also be easily adopted and implemented by authorities wishing to do so and should be easily maintained.

***Inexpensive***

The tool should be seen to be offering value for money. The cost of using a tool can severely limit its adoption. The cost as seen above includes not only the registration and certification costs but also the cost incurred in gathering the documentation required for certification.

***Transparent***

It is important for users to understand the basis upon which the tool has been developed allowing them to comprehend the intention, relative significance and basis for assessment of each criterion.

***Credible***

If a tool is to be accepted and supported by the industry and the general public it must be seen as credible.

Credibility refers to the following:

- A rational, factual and verified basis for measurements of environmental impacts, performance and priorities for environmental issues.
- The tool should have been developed, owned and/or administered by a legitimate, recognized and respected authority or organization.
- The development of the tool should have engaged leaders of the environmental community and should be endorsed by this community.
- The tool should provide perceived value to owners, designers and other stakeholders.
- The tool should have a track record of success or have been endorsed by respected organizations.

***Challenging***

Although the performance goals of the tool must be seen as being achievable they must also challenge current practices. The tool should therefore be relatively easy to enter but challenging at higher score levels.

***Covering essential environmental and resources issues***

The tool should cover the critical environmental issues relevant to the scope of the project. The tool may also need to distinguish between the various phases of development: design, construction, and operations.

***Versatile***

The tool should be easily applied or adapted to various situations. For example the same tool should be able to be used in a rural, urban or suburban context. The tool should also be adapted to various climates or, in the case of GREEN SHORES, to various types of shorelines.

***Offering multiple ways to communicate results***

A tool may have different audiences and users. It must be able to communicate different stories about project performance. A single overall score or label may be useful for the general public and for general marketing of the project. However, a structure that allows breaking down the components of performance will provide more useful detailed information for authorities and users as well as potential buyers of the product. The ability to break down the information this way also provides a tool for education.

***Globally applicable, yet regionally specific***

The system should be flexible enough to be used under different circumstances and climates.

***Capable of evolving***

A tool should have the capability of evolving to reflect new knowledge and understanding and incorporate emerging issues and technologies.

***Encouraging innovation***

The field of environmental design is evolving rapidly. The tool will never be able to keep up with the latest developments nor will it cover every aspects of sustainability. It should not however discourage users to pursue these. It should encourage innovation in areas that are not explicitly covered and provide users with an opportunity to initiate strategies not tried before.

***Useful as a design tool***

The tool should provide an organized set of design relevant information. Whether or not the tool has been built as a design tool it will typically be used as such.

***Educational***

The tool should be useful for educating the design and construction industry on environmental issues in terms of both process and content.

**4.2 CHARACTERISTICS OF AN IDEAL ORGANIZATION*****Transparent***

An organization which provides the means to access information related to actions taken. Transparency involves the quantity and quality of the information the organizations provide internally and externally. Transparency is key to gaining the confidence of investors, employees, and customers and key to building credibility and

support.

### ***Coherent***

A clear vision and mandate with an alignment of strategy between markets, customers, leadership and staff. Innovative cultures that are driven by engagement and inspiration are usually highly coherent. This coherence in turn attracts passionately loyal customers.

### ***Inclusive***

Inclusive organizations are more responsive and flexible, while maintaining their mission and goals, in order to encourage full participation of their staff and members. An organization that is inclusive also has the capacity to unleash human potential, so that individual and collective creativity and innovation can flourish. It can harness the energy and support of its staff and members.

### ***Allowing for continuous learning and adaptation***

Of particular importance here is the ability of the organization to regularly question its goals, values, frameworks and strategies rather than taking them for granted and focusing only on making the strategies more effective. Processes are questioned rather than used to justify assumptions.

A learning organization:

- fosters inquiry and dialogue, making it safe for people to share openly and take risks.
- embraces creative tension as a source of energy and renewal.
- is continuously aware of and interacts with its environment.

This type of thinking is essential when dealing with emerging and often controversial issues. These organizations will constantly have to face the pressure from interest groups. To keep their credibility the organization must be prepared to publicly discuss controversial issues and accept to question their original set of values and goals.

## **5.0 RECOMMENDED STEPS FOR THE DEVELOPMENT OF A GREEN SHORES PROGRAM**

### **5.1 OPTIONS FOR GREEN SHORES**

The GREEN SHORES program should develop a business model in parallel with developing a rating tool. The outcome of the decision on the best business structure for the tool could have an impact on the tool itself.

It is proposed that GREEN SHORES explore the following three options:

**Option 1:** Nest the GREEN SHORES rating system within an existing organization such as the CaGBC

**Option 2:** Nest the Green Shore rating system within an existing organization but create regional organizations responsible for the delivery of the program. The regional mandate could include training, local marketing, certification.

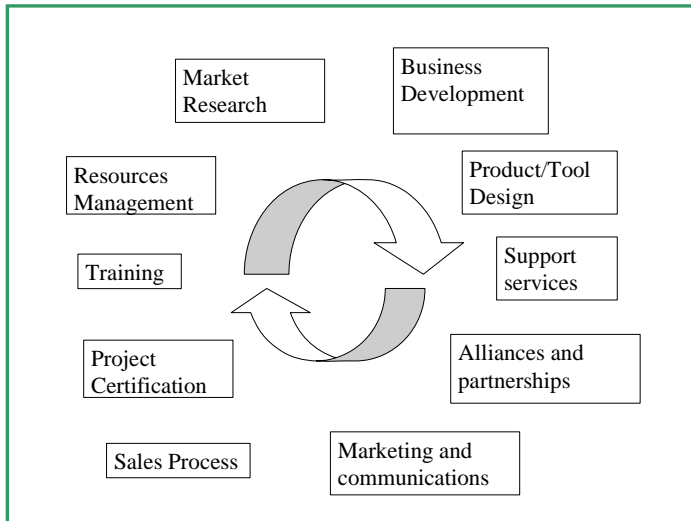
**Option 3:** Create a separate organization to deliver the GREEN SHORES program

**Implications for GREEN SHORES** - The cost of administering a program under Option 3 would be fairly high and not necessarily recoverable through revenues. GREEN SHORES should further investigate the fit between the proposed GREEN SHORES program and other compatible programs.

**5.2 NEXT STEPS**

The following outlines the work to be done *assuming that a new organization is created*. The scope may change if other options are chosen regarding an institutional model for the program.

The following tool development process (also called a value chain) shows at a glance what is involved in developing a tool and bringing it to market. This chart has been borrowed from the USGBC Foundations papers and, although it presents a process more complex to the one needed for GREEN SHORES, it is shown to illustrate the complexity of bringing a tool such as GREEN SHORES to market.



Elements of Development of a Rating Tool

what is involved in developing a tool and bringing it to market. This chart has been borrowed from the USGBC Foundations papers and, although it presents a process more complex to the one needed for GREEN SHORES, it is shown to illustrate the complexity of bringing a tool such as GREEN SHORES to market.

The elements shown in the figure are explained in the Table below:

Market Research	Business Development	Product/ Tool Design	Support Services	Alliances/ Partnerships	Marketing Communication	Sales Process	Building Certification	Training Management	Resources Management	Relationship Management
Customer Satisfaction Surveys	Funding Sources	Certification System Development	Staff/ membership Training	Professional Societies	Promotional Materials Development	LEED Staff Training	LEED Application Process	LEED Institute Registration	LEED Reference Guide/ Manuals	Regional Chapter Processes
Customer Interviews	Pricing Strategy	User Guidelines Documentation	Technical Support	Conference Organizations	Communication with USGBC membership	Volunteer Training	Initial Facility Qualification	Curriculum Development	Curriculum Materials Development	Account Management
Info Tech/ Database Research	Distribution Strategies	Software Development	Legal Review Issues	Manufacturing Corporations	Targeted Database Marketing	Direct Marketing Process	LEED Certification Process	Faculty Development	Background Papers	Customer Service
Focus Groups	Strategic Alliances	Intellectual Capital Development	Human Resources Issues	Architects/ Building Designers	Marketing Workshops	Website Sales	Rating-System Improvement Process	Training Site Development	Presentation Development	Awards and Recognition
Vertical Markets (Benchmarks)	Market Development Segmentation	Codes and Standards Review		Building Contractors	Public and Media Relations	Trade Show Sales	Technical Support	Related Programs	Website Development	Customer/ Partner Training
Socia/ Economic Issues	Product Positioning	Delivery Processes		Utility Companies	Communication with Professional Societies	Sales from Workshop Presentations		Delivery Process		Customer Feedback
Geographic Issues	Database Management	Strategic Product Planning		Government Agencies	Proof Sources	Sales Force Development				
Industry Issues	Government Relations			Voluntary Standards Organizations	National Event Development	Partners Sales				
Federal/Local Law Review	Strategic Planning			Consultant Partnerships	Strategic Communication Planning					
Mrktg/Tech	Marketing	Technical	Tech/Ops	Marketing	Marketing	Marketing/Ops	Prduct Delivery	Prduct Delivery	Prduct Delivery	Mrktg/Ops

The development of the rating system itself is a small part of this overall process. The following simplified version of the process is proposed and described below.

1. Determination of Target Market
2. Tool Development Process
3. Alliances and Partnerships
4. Business Development Model

### ***The Target Market***

A better understanding of the market for the tool would be useful for in terms of future marketing for the product but also to assist in the identification of potential members, partners and alliance members. It is recommended that GREEN SHORES undertake to complete a formal marketing survey.

The survey should provide information both on the supply and demand sides:

- Potential target audiences
- The companies involved in shore developments
- The developers
- The municipalities etc...
- What are their needs in terms of GREEN SHORES?
- Education
- Financing
- Tools etc...

How big is the market for shore development projects? What percentage of this market could be targeted for GREEN SHORES?

Addressing the issues of GREEN SHORES in a formal way is something relatively new. Most individuals, whether designers or landowners, do not understand what a Green Shore is. One of the critical roles that the tool will have to play is in educating both the general public and the developers/builders/owners. In order to do so it will need to gain visibility and credibility.

It is suggested that the tool initially be targeted to the risk takers and the leaders in the field and that the success and experience gained be documented and publicised.

A question remains as to whether you can reach both target markets (mixed residential/commercial development projects and waterfront residential developments) with the same tool. A simplified tool may be required for the single-family residential property. This segment of the market may require a more prescriptive tool similar to the one developed by the Alberta Built Green program. This program lists specific strategies to which the developer/builder must adhere rather than a specific performance level. However, in the area of GREEN SHORES this might be more difficult to achieve.

It recommended that a tool be first developed for mixed residential/commercial projects and that the tool be assessed for adaptability to single family residential properties.

### ***Tool Development Process***

Objective: Ensure inclusiveness in the development of the tool and allow for a feedback loop after each new pilot project.

#### Proposed Tool Development Process

- Rating criteria development
- Conduct an expert charette to finalize pre-pilot version of the rating criteria
- Pilot test of rating criteria
- Public comment period on proposed rating criteria
- Integration of comments into final rating criteria
- Launch of approved product

### ***Alliances and Partnerships***

To build credibility and support and address future criticisms it is important to identify early influential and important partners and seek their participation as appropriate.

### ***Business Development Model***

A business development model should be developed and should contain at a minimum the following information:

- Vision
- Mission
- Membership Profile
- Financial Plan for 5 years
- Key Opportunities and Challenges
- Strategic Objectives for the first year of operation
- Key Strategies



## **APPENDIX A**

### **SUMMARY OF GREEN RATING SYSTEMS**



Key Green Rating Systems and their Characteristics							
	Description	Applicability Type of Buildings Market Segment	Areas of sustainability covered by the tool	Number of certification levels	Overall performance measure	Certification process	Number of projects
<b>LEED NC*</b>	Voluntary Program Rating/Certification System Contains Mandatory and Optional credits Program Start Date: June 2001 Canada October 2004	New commercial construction and major renovation projects Used by: Architects, developers, builders, planners	Sustainable site development, water savings, energy efficiency, materials selection and indoor, innovation	Four certification levels: Certified Silver Gold Platinum	Number of points achieved out of a Maximum of 69 pts in US and 70 pts in Canada	Formal third party process done by accredited assessors	In the US LEED NC - 2161 projects registered at the end of 2005 - 285 certified In Canada LEED NC -190 registered projects and two certified
<b>Green Globes</b>	Voluntary Program Rating/Certification System All credits are optional Program Start Date; Canada 2001 2004	Commercial and institutional buildings new buildings and retrofits Used by: Architects, developers, builders, planners	Management; site; energy; water; resources; emissions, effluents and other impacts; and indoor environment	5 in Canada 4 in the US 1 to 4/5 Globes	Percentage of applicable 1000 points available Green Globes rating are given at two stages: the Schematic Design Stage and the Construction Document Stage	Once the building has been assessed (self-assessment, a third party review may be conducted to obtain certification. In Canada the verification is done during a meeting with the design team. A more formal process being developed in the US	Not available
<b>Green Star</b>	Voluntary Program Rating/Certification System Contains mandatory and Optional credits Program Start Date; June 3002	Commercial office buildings Used by: Architects, developers, builders, planners	Management, indoor environmental quality, energy, transport, water, materials, land use and ecology, emissions, innovation	6 levels of rating with only the top three being certifiable 1 to 6 Stars	The score for each category is based on the % of credits achieved. Then an environmental weighting is applied (except for Innovation). The single (overall) score is equal to total of all the weighted category scores plus the innovation points (which are not weighted). The maximum possible score for the weighted categories is 100 with an additional 5 points for innovation. The Green Star rating is determined by comparing the overall score with a rating scale	Formal third party assessment process	Not available
<b>Green Guide to Health Care</b>	Voluntary Program Guideline Contains Mandatory and Optional credits Program still being piloted Program Start Date: Dec 2003	Health care facilities, including new facilities, additions, and extensive rehabilitation/adaptive reuse projects. Used by: Architects, developers, builders, planners	First section on construction same as LEED. Second section on Operation includes: integrated operation, energy conservation, water conservation, chemical management, waste management, environmental services, environmental purchasing, innovation	No threshold ranking available to date	96 points available for Construction and 72 pts for Operations	Self-assessment	As of Jan 2006, 79 pilot projects, 23 states, 6 countries
<b>Smart Growth Development Check List</b>	Application for Zoning Bylaw amendments as well as development permits are required to complete the checklist Guideline/Checklist	New developments Used by: Architects, developers, builders, planners	Environmental, economic and social considerations	No rating	Not applicable	Not Applicable	Not available

<b>Key Characteristics of organizations responsible for the management of green rating systems</b>						
	<b>TOOL</b>	<b>Type of Organization</b>	<b>Goal of the Organization</b>	<b>Management Structure</b>	<b>Size and characteristic of membership</b>	<b>Funding Sources</b>
<b>US Green Building Council/ Canada Green Building Council</b>	LEED tools	Not-for-profit	To promote buildings that are environmentally responsible, profitable and healthy places to live and work	Elected Board working with committees of volunteers. Staff : USGBC has a staff of over 20. CaGBC has a staff of 6, two of these dedicated to the LEED tool as of Jan 06	USGBC has 5500 (paying) member organizations representing all segments of the building industry. CaGBC has over 1050 member organizations.	In the US originally the funding came from DOE. Now funding comes from membership fees, educational events, and donations. The CaGBC received some initial government funding now funding comes from membership fees, educational events, and donations.
<b>ECD Energy &amp; Environment Canada Ltd.</b>	Green Globes in Canada	Private sector firm	ECD specializes in the environmental assessment of buildings in terms of energy and environmental impact and indoor health. Activities include building assessments and audits, research and development, design advice, thermal analysis, advice on specifications and post occupancy monitoring. The primary focus of ECD has been as the operating agent of the BREEAM Canada methodology	Staff of 1?	No members in Canada.	Development of the tool was funded by various governmental agencies and Utilities.
<b>Green Building Initiative</b>	Green Globes in the United States	Not-for-profit	To accelerate the adoption of building practices that result in energy-efficient, healthier and environmentally sustainable buildings by promoting credible and practical green building approaches.	Staff of 4 and in the US the organization is planning to train and hire independent assessors	3,000 associate members in the US (free membership). Free membership is offered to architects, developers, building owners, realtors. Fee-based membership is offered to product manufacturers, retailers, NGOs.	Early support for GBI came from industry associations. Not clear where funding comes from at the moment
<b>Green Building Council Australia</b>	Green Star	Not-for-profit	To promote sustainable development and the transition of the property industry by promoting green building programs, technologies, design practices and operations.	8 staff responding to a Board of 16	200 paying member companies	Sponsorship for product development, then membership fees as well as education and certification fees.
<b>Center for Maximum Potential Building Systems</b>	Green Guide for Health Care	Not-for profit	To reward those organizations that voluntarily steward the environment in the interests of human health. It also creates incentive for the healthcare and related industries to change their practices, build sustainable environments, and enhance their overall accountability and performance.		Over 6,700 registered non-paying members	The Green Guide for Health Care gets its financial support from Supporters, Partners, and Endorsers. Supporters, Partners and Endorsers affirm the intent and principles of the document.



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### Funding Partners

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