LEED Certification: Gold Standard or Gold Star

by

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ABSTRACT

Since its launch by the US Green Building Council (USGBC), Leadership in Energy and Environmental Design (LEED) certification has been postured as the "gold standard" for environmentally conscious, sustainable building design, construction and operations. However, as a "living measurement", one which requires ongoing evaluation and reporting of attainment and compliance with LEED certification requirements, there is none. Once awarded, LEED certification does not have a required reporting component to effectively track continued adherence to LEED standards. In addition, there is no expiry tied to the certification; once obtained, a LEED certification rating is presumed to be a valid representation of project certification status. Therefore, LEED lacks a requirement to demonstrate environmental impact of construction materials and building systems over the entire life of the project. Consequently, LEED certification is merely a label rather than a true representation of ongoing adherence to program performance requirements over time. Without continued monitoring and reporting of building design and construction features, and in the absence of recertification requirements, LEED is, in reality, a gold star rather than a gold standard. This thesis examines the lack of required ongoing monitoring, reporting, or recertification requirements following the award by the USGBC of LEED certification; compares LEED with other international programs which do have ongoing reporting or recertification requirements; demonstrates the need and benefit of ongoing reporting or recertification requirements; and explores possible methods for implementation of mandatory reporting requirements within the program.

DEDICATION

This work is dedicated to my mentors, past and present, who encouraged me to believe in the validity of my questions ("question everything") and the value of seeking answers (don't take 'no' for one), that passion and drive can overcome obstacles ("there's no such thing as can't"), and that one person CAN make a difference -- "*ILLEGITIMI NON CARBORUNDUM!*"

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GLOSSARY OF TERMS

GBCA: Green Building Council Australia. The GBCA is a national non-profit organization established in 2002 to develop sustainable building practices and protocols in Australia by utilizing collectively education, advocacy and outreach, as well as through the development and administration of the Green Star environmental rating system.

BRE: Building Research Establishment. BRE is the largest non-profit charitable organization in the United Kingdom (UK) dedicated to research, consultancy and education in the built environment. BRE is comprised of built environment professionals, contractors, material and product suppliers; university departments; and building owners, managers and occupants dedicated to sustainable building practices for the built environment, and administers the BREEAM certification program via its sister corporation, BRE Global.

BREEAM: Building Research Establishment Environmental Assessment Method. BREEAM is the first established international environmental assessment and building rating system which utilizes third party verification to achieve certification as a demonstration of best practice in sustainable building design and environmental performance. Performance evaluations encompass a broad spectrum of categories, and include aspects relative to energy and water use, materials and waste, pollution, transport, ecological impact, health and well-being of the internal environment, and management processes.

CASBEE: Comprehensive Assessment System for Built Environment Efficiency. Japan's version of the LEED certification program, developed with the support of the Japanese Ministry of Land Infrastructure Transport and Tourism (MLIT) in cooperation with industry, academia, and government authorities. CASBEE is an environmental performance

evaluation tool developed as a holistic application of evaluating and rating the environmental performance and quality of life relative to the built environment.

Green Star: A comprehensive rating system administered by the GBCA which is designed to rate the environmental impact and sustainability of as-built, construction, and soon, ongoing performance of the built environment based on resource consumption, conservation, innovation and design concepts.

IBEC: Institute for Building Environment and Energy Conservation. Administrational secretariat for the Japanese GreenBuild Council (JaGBC)/Japanese Sustainable Building Consortium (JSBC) and the CASBEE program.

LEED: Leadership in Energy and Environmental Design. An internationally recognized green building certification system that provides third-party verification that a building or community was designed and built using strategies aimed at improving performance across a variety of sustainability metrics, including energy savings, water efficiency, carbon dioxide (CO2) emissions reduction, improved indoor environmental quality, stewardship of resources and sensitivity to their impacts.

USGBC: U.S. Green Building Council. A non-profit 501(3)c organization formed in 1993 with the mission of promoting sustainability in the building and construction industry. USGBC constituents include builders and environmentalists, corporations and nonprofits, teachers and students, lawmakers and citizens who, as of this writing, comprise 77 chapters, 13,000 member organizations and 181,000 LEED professionals. The USGBC administers LEED certification, and provides advocacy, outreach and education, including LEED professional credentialing.

INTRODUCTION

Introduction to LEED

Since its launch by the US Green Building Council (USGBC), Leadership in Energy and Environmental Design (LEED) certification has been postured as the "gold standard" for environmentally conscious, sustainable building design, construction and operations. LEED Certification, a voluntary program emphasizing impact minimization of buildings on the environment and human health, establishes a process for awarding new and remodeled building owners with a document proclaiming the eco-consciousness of the building to stakeholders, employees and the general public. According to the Illuminating Engineering Society (IES), "the original LEED offering was the face that launched a thousand ships, a marketing gambit that incentivized stakeholders to 'go green'….the fact that 'LEED Platinum' became such an early millennial status symbol was both powerful and elevating" (IES, 2011, para. 1). Although applicable to both commercial as well as residential development, the focus is arguably commercial development. In fact, the National Resource Defense Council headlines the LEED portion of the website with the following statement:

> "In the United States and in a number of other countries around the world, LEED certification is the recognized standard for measuring building sustainability. Achieving LEED certification is the best way for you to demonstrate that your building project is truly 'green' (NRDC, 2013, para. 1)."

So important is the perception of LEED certification as gold standard of sustainability, even the General Service Administration (GSA), an independent agency of the United States federal government and a significant participant in the building industry, has, since 2003, required all projects to use and achieve a certified LEED rating (Fowler & Rauch, 2006, p. ii).

The rewards of achieving this status are multi-faceted, although the motivations for aspiring to LEED are equally as complex. From an altruistic perspective, motivators for obtaining LEED certification are purely environmentally based; for example, seeking to minimize carbon footprints, conserve natural resources, improve indoor air quality, and model good stewardship. However, from a more avaricious perspective, motivators for certification are less puritan, tending more towards commercial gain through posturing, i.e. publicly flaunting a "green" persona. The more salacious of these motivations is prevalent, emerging into what has been termed by the industry as "greenwashing", sold to the general public via "greenspeak". "Greenwashing" is the result industries or individuals who position themselves to be viewed by an eager public to be seen as environmentally friendly, generally on the basis of carefully selected evidentiary acts rather than totality of practice (Hoffman and Hoffman, 2009). "Greenspeak: emerges from efforts to integrate scientific knowledge claims with "what is linguistically realized as advocacy or program or critical commentary on human practices", which, as such, "can easily conceal ideological compromise, and serve the evasion, denial, or outright subversion of consequential ecological action and awareness (Goshorn, 2001).

With this in mind, it could be argued that LEED, in the absence of ongoing accountability protocols, has become more of a status symbol than an actualization of

sustainable building practices; potentially, albeit expensive and labor intensive, a method of "greenwashing". The question then becomes: In the absence of ongoing reporting or recertification requirements, how can overall success of a program such as LEED be truly evaluated in terms of overall environmental impact?

LEED began as a basic idea – provide a scoring system by which buildings could be measured and compared, a system in which builders would aspire to achieve a "greener" presence. Although providing an excellent baseline template for sustainable building, there have been several factors which have garnered concern with the program. The first issue of concern was of course financial, with builders asking how they could justify the additional cost for implementing LEED design, as well as how, when, and from where they would recoup their costs. A great deal of debate continues along these lines, as quantifying return on investment is challenging. Fiscal milestones are not set in stone, and vary widely depending on the nature of the business implementing the designs. Obviously a hotel is going to generate a different revenue stream than an architectural firm, as a university would generate a different revenue stream than an arts center. Additionally, not all businesses implementing LEED design do so for financial gain; rather, they do so out of a sense of personal obligation to the environment. How can the degree of success for such projects be measured when the motivations and individual goals may or not be quantifiable (money versus conscience)? Indeed, while LEED sets standards to achieve, it does not necessarily provide a method for measuring long-term success of outcomes.

One method of evaluating LEED is the Life Cycle Analysis (LCA), which measures the overall cost of a green building project over the lifespan of the project. In essence, LCA is a cradle-to-grave assessment of project costs compared to project savings, beginning at

inception with construction costs, continuing forward, evaluating operation and maintenance costs for the project, and, in best case scenarios, taking into consideration possible projected reuse for the property (salvage value) in the event that it ceases operating in the originally intended capacity. With regard to sustainable building, LCA refers to the environmental impact of construction materials and building systems over the entire useful life of project. However, if one is to consider LCA as a "living measurement", one which requires ongoing evaluation and reporting of attainment and compliance with LEED certification requirements, and accountability measures for non-compliance or non-attainment, there is none; LEED lacks a required ongoing reporting requirement.

There are no requirements for ongoing reporting under LEED; therefore, there is a lack of ongoing accountability within the current LEED program. It can be postulated that, the lack of accountability may actually increase rather than decrease the overall negative environmental impact of LEED construction projects, because builders may be more intent on initially racking up points to achieve certification, rather than maintaining a level of accountability and concern regarding the actual overall environmental impact over a projects lifespan. While points are offered within the certification protocols for having a LCA for the project, an ongoing reporting mechanism with punitive measures associated with not meeting originally defined standards for achieving certification does not exist. Therefore, it is conceivable that over the lifespan of a project, modifications to projects could be made that are not consistent with the original project scope. If such modifications were significant enough, the LEED points originally credited to a project would be reduced in the event of a recertification review. Hence, a project that was originally certified as Platinum under the LEED rating system may, after modification, only qualify as a Gold status, or an even lesser

status designation. Because there is no ongoing reporting requirement, a project could potentially enjoy Platinum status, even though they may be currently operating at a much lesser level according to the standards.

Statement of the Problem

Once awarded, LEED certification does not have a required reporting or recertification component to effectively track continued adherence to LEED standards. There is no mechanism in place which requires ongoing reporting of compliance with the standard, such as those utilized with professional certifications which require continuing education or recertification, and there are no ongoing evaluation standards or punitive measures for non-compliance. From the inception of LEED certification in 1998 through November 1, 2012, according to USGBC Public LEED Project Directory (www.gbci.org), a total of 13,109 projects have been evaluated for LEED certification globally, with 90% of those evaluated (11,821) being located in the United States. These figures do not include LEED for Homes, and capture only publicly available project information. The LEED certification program lacks an ongoing reporting or recertification component; therefore, LEED lacks a requirement to demonstrate environmental impact of construction materials and building systems over the entire life of the project. The measurement of success is a one-time achievement as opposed to an ongoing demonstration of sustainable practices. As such, changes to building systems and components, and/or operational methods originally utilized as a means to obtain certification, are not routinely audited, tracked or verified. This loophole opens the door for building material substitutions or modifications to both materials and processes over time without a review under the LEED evaluation process.

Consequently, LEED certification can be postulated as a label rather than a true picture of ongoing adherence to program performance standards.

Professional Significance of the Problem

Sustainable building practices are the key concept of the LEED rating system, developed by the USGBC as the vehicle by which to fulfill the USGBC mission, "to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life (USGBC, 2008)." The following statement can be found in the USGBC *Green Building and LEED Core Concepts Guide* (2011):

> "Sustainability is not a one-time treatment or product. Instead, green building is a process that applies to buildings, their sites, their interiors, their operations, and the communities in which they are situated. The process of green building flows throughout the entire life cycle of a project, beginning at inception of a project idea and continuing seamlessly until the project reaches the end of its life and its parts are recycled or reused (USGBC, 2011, p. 5)."

An approach often utilized as a gauge for sustainability concepts is the "triple bottom line", a term coined by John Elkington 1998, and first applied to socially responsible business practices to characterize all kinds of projects in the built environment (USGBC, 2011). According to the USGBC (2011), the triple bottom line concept is meant to incorporate a long-term view for assessing potential effects and best practices for the following three resources:

- **PEOPLE (Social Capital).** All the costs and benefits to the people who design, construct, live in, work in, and constitute the local community and are

influenced, directly or indirectly, by a project. This is the social responsibility component of triple bottom line.

- **PLANET (Natural Capital).** All the costs and benefits of a project on the natural environment, locally and globally. This is the environmental stewardship component of the triple bottom line.
- **PROFIT (Economic Capital).** All the economic costs and benefits of a project for all the stakeholders (not just the project owner). This is the economic prosperity component of the triple bottom line.

Commitment to the triple bottom line requires commitment to all three aspects of the concept; specifically, social responsibility, environmental stewardship, and economic prosperity. According to the USGBC (2011), this commitment means "looking beyond the status quo…to determine the impacts of a given project and find new solutions that are truly sustainable." If LEED is truly sustainable according to the triple bottom line concept, it too must move programmatically beyond the status quo currently represented by a certified project in the absence of required ongoing reporting or recertification requirements. Additionally, with the potential for perceived and actual "greenwashing" in the absence of ongoing monitoring, it is critical for LEED to implement such requirements to demonstrate ongoing program integrity.

LEED standards are important for evaluating overall program benefits as well as aiding in definition of areas for improvement, but ongoing progress indices are necessary to demonstrate continued compliance with the standards. In the absence of ongoing reporting or recertification requirements, LEED is nothing more than a gold star for a gold standard.

Scope of Work

This research will focus on the historic lack of ongoing reporting and recertification requirements in the USGBC LEED program, compare LEED with other international programs which do have ongoing reporting or recertification requirements, demonstrate the need and benefit of ongoing reporting and recertification, and explore possible methods for implementing mandatory reporting and recertification into the LEED program.

Objectives

- Discuss the importance of ongoing reporting and recertification requirements as a measure of continued accountability under sustainable building programs.
- Evaluate LEED in comparison with other international sustainable building programs.
- Evaluate the possible benefits, weaknesses and impediments resulting from lack of ongoing reporting and recertification requirements to remain LEED certified.
- Provide suggestions for utilization of ongoing reporting and recertification as an integral component of LEED.

Limitations

This thesis is a qualitative analysis of LEED as compared to other international sustainable building rating systems. For the purposes of this paper, the focus will be primarily on commercial entities. This study is limited to publicly available information obtained either voluntarily or via the Freedom of Information Act from agencies, entities, and individuals participating in the USGBC LEED certification program. Suggestions provided herein are based on historical performance of individual programs as of the time of

this study, and therefore should not be presumed to include any changes or alternations of historical program performance beyond the date of its publication.

Assumptions

Data utilized in this study originates from the program originator, various institutions, and professional publications, and is presumed to be valid.

LITERATURE REVIEW

Literature Review

In order to adequately evaluate the impact of the absence of ongoing performance standards within the LEED program, comparative analysis of similar sustainable building rating programs must be undertaken. As early as 2004, there were approximately 600 tools globally that measure or evaluate the social, environmental and economic dimensions of sustainability (Reed, Bilos, Wilkinson, and Schulte, 2009). According to Reed, Bilos, Wilkinson and Schulte (2009), three of the most common rating tools are the Building Research Establishment's Environmental Assessment Method (BREEAM), LEED and Green Star, which seek to develop common metrics that will help international stakeholders compare buildings in different cities using an 'international language'. In addition, according to Lee (2011):

> "Among the large number of assessment schemes being used in different regimes, BREEAM from the United Kingdom and LEED from the United States are evidently the most widely recognized, i.e., not limited to their place of origin; they represent the two main streams of methods currently in use across the world and have influenced enormously the development of more recent establishment schemes. Other development regimes like Japan and Hong Kong are very conscious of environmental impacts of buildings and have developed their own schemes which have significant effects on their respective building industries. The metric system

of [Comprehensive Assessment System for Built Environment Efficiency] CASBEE is considered note-worthy (Lee, 2011, para.2)."

It is for these reasons that BREEAM, LEED, Green Star and CASBEE were chosen as the basis of comparison for this study.

This section discusses the LEED program requirements as compared to some of the most common internationally utilized rating systems; specifically, Building Research Establishment's Environmental Assessment Method (BREEAM), Green Star, and the Comprehensive Assessment System for Built Environment Efficiency (CASBEE).

An Overview of LEED

The USGBC's LEED program is a voluntary certification program designed to recognize green building design, construction and operation as a means of reducing environmental impact of the built environment on natural resources. There are currently nine different categories, called 'Rating Systems', which projects can utilize to qualify for LEED certification. These systems include New Construction and Major Renovations; Existing Buildings, Operation and Maintenance; Commercial Interiors; Core & Shell; Retail; Homes; Neighborhood Development; Schools; and Healthcare. Rating systems are continually evaluated and updated on a regular basis in an effort to incorporate new and improving technologies as well as policy changes. The figure below presents the current LEED rating systems as they apply by project type and scope.

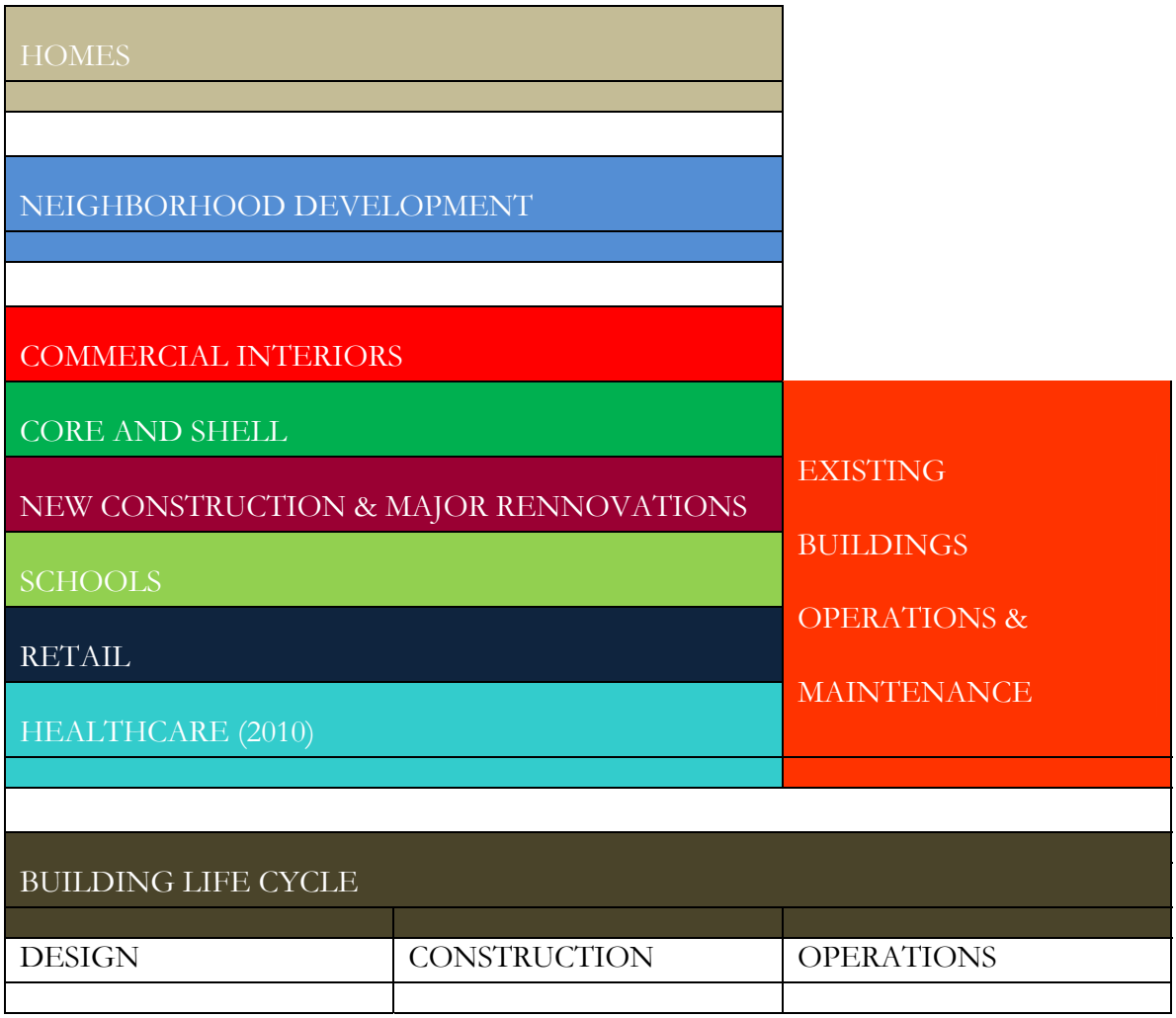


Figure 1. LEED Rating Systems (USGBC, 2013).

Within each system there are set categories under which a project can earn points towards certification, with the total number of points earned determining what level of LEED certification is achieved. There are five main credit categories and two bonus credit categories available across all rating systems which focus on a specific aspect of sustainability. The five main credit categories include Sustainable Sites (SS), Water Efficiency (WE), Energy and Atmosphere (EA), Materials and Resources (MR), and Indoor Environmental Quality (IEQ). The two bonus credit categories are Innovation in

Operations (IO), and Regional Priority (RP) (USGBC, 2011). The Neighborhood Development and the Homes rating systems offer additional credit categories, which include Neighborhood Pattern & Design and Green Infrastructure & Buildings for Neighborhood Development, Awareness & Education credits for Homes, and a Location & Linkage credit which is common to both. Broad definitions for each credit category are presented in the figures below.

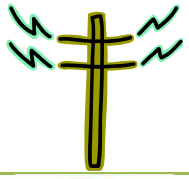
LEED MAIN CREDIT CATEGORIES	
	**SUSTAINABLE SITE CREDITS** Encourage strategies that minimize the impact on ecosystems and water resources
	**WATER EFFICIENCY CREDITS** Promote smarter use of water, inside and out, to reduce potable water consumption
	**ENERGY& ATMOSPHERE CREDITS** Promote better building energy performance through innovative strategies
	**MATERIALS & RESOURCE CREDITS** Encourage using sustainable building materials and reducing waste
	**INDOOR ENVIRONMENTAL QUALITY CREDITS** Promote better indoor air quality and access to daylight views

Figure 2. LEED Main Credit Categories (USGBC, 2013).

LEED BONUS CREDIT CATEGORIES	
	**INNOVATION IN DESIGN OR INNOVATION IN OPERATIONS CREDITS** Address sustainable building expertise as well as design measures not covered under the five LEED credit categories. Six bonus points are available in this category.
	**REGIONAL PRIORITY CREDITS** Address regional environmental priorities for buildings in different geographic regions. Four bonus points are available in this category.

Figure 3. Bonus Credit Categories (USGBC, 2013).

ADDITIONAL LEED FOR NEIGHBROOD DEVELOPMENT CREDIT CATEGORIES	
	**SMART LOCATION & LINKAGE CREDITS** Promote walkable neighborhoods with efficient transportation options and open space.
	**NEIGHBORHOOD PATTERN & DESIGN CREDITS** Emphasize compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities.
	**GREEN INFRASTRUCTION & BUILDING CREDITS** Reduce the environmental consequences of the construction and operation of buildings and infrastructure.

Figure 4. Additional Neighborhood Development Credit Categories (USGBC, 2013).

ADDITIONAL LEED FOR HOMES CREDIT CATEGORIES	
	**LOCATION & LINKAGE CREDITS** Encourage construction on previously developed or infill sites and promote walkable neighborhoods with access to efficient transportation options and open space.
	**AWARENESS & EDUCATION CREDITS** Encourage home builders and real estate professionals to provide homeowners, tenants, and building managers with the education and tools they need to understand and make the most of the green building features of their home..

Figure 5. Additional Homes Credit Categories (USGBC, 2013).

The structure of the LEED rating systems includes required and optional elements, called credits. Required elements or green building strategies are called "prerequisites", and must be included as an integral project component for a LEED certified project. There are also optional elements, or elective strategies which can be used to achieve points (credits) toward LEED certification. In order to receive certification under the LEED program, all prerequisites must be satisfied and a minimum established number of credits earned. Each LEED rating system corresponds to a LEED reference guide detailing credit criteria, benefits of credit compliance, and suggested approaches to achieve credit compliance (USGBC, 2011, p. 90). With the exception of LEED for Homes, the LEED rating system has, in general 100 base points, six Innovation points, and four Regional priority points, for a total of 110 points; LEED for Homes levels vary slightly due to a 125 point rating system with 11 innovation points. There are four levels of certification available to projects attempting LEED certification; specifically, Certified, Silver, Gold and Platinum.

The following figure depicts LEED certification point scales associated with commercial projects.

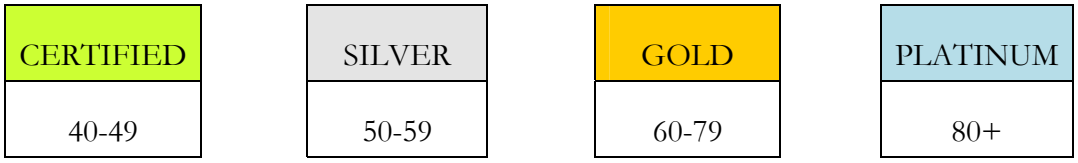


Figure 6. LEED Certification Levels (USGBC, 2013).

Once a project has been LEED certified, there are no ongoing reporting or recertification requirements. A project may participate in the USGBCs Building Performance Partnership (BPP), an ongoing tracking and reporting system; however, this is strictly voluntary, and not a requirement of maintaining certification (USGBC, 2011). Participation in the BPP is free, with the caveat that once enrolled, a project commits to sharing data for at least one year by submitting monthly energy and water data for the project via the United States Environmental Protection Agency's (US EPA) ENERGY STAR Portfolio Manager for commercial buildings, and WegoWise for residential buildings (USGBC, 2011). In exchange for providing energy and water consumption data, USGBC provides an individual online performance dashboard which can be used to track and evaluate consumption patterns, in graphical form, providing provides "report cards" and diagnostic aids (Wellman, 2011). A sample report is provided in Appendix A. Again, participation is strictly voluntary, is not required for certification, and there are no punitive measure for non-participation; once certified, the project is, in essence, permanently branded.

An Overview of BREEAM

The oldest and arguably most established building rating system originates from the United Kingdom. The Building Research Establishment Environmental Assessment Method (BREEAM) was launched in 1990 as a measure of sustainable design and environmental performance for the built environment. By utilizing recognized measures of performance set against established benchmarks, BREEAM seeks to set the standard for best practices in building design, construction and operation (BRE Global, 2012). BREEAM ranges in format from country specific schemes, adapted for local conditions, to international schemes, which can be utilized anywhere in the world. The seven formats of BREEAM which allow for such wide applicability are as follows:

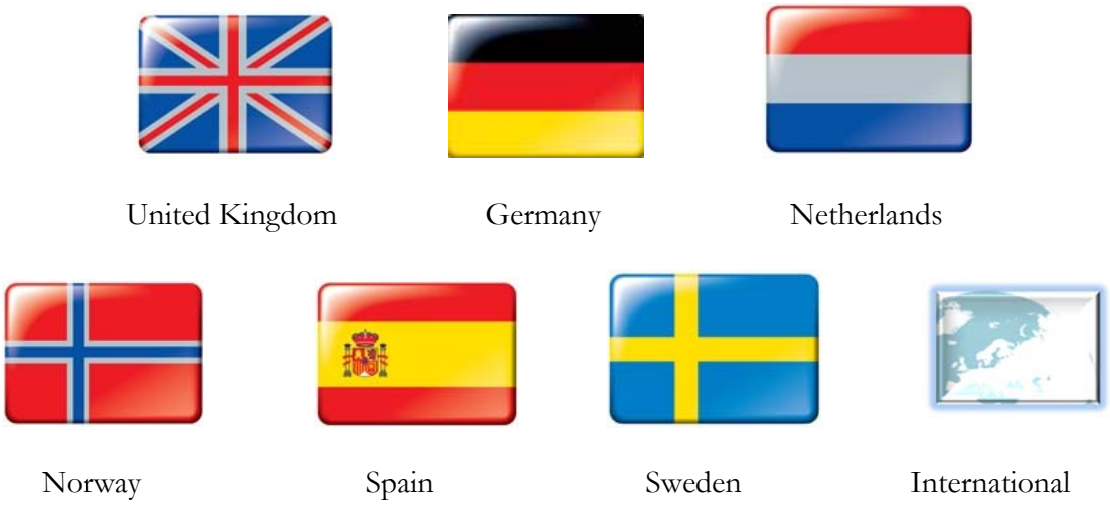


Figure 7. BREEAM Formats (BRE Global, 2012).

Standard schemes exist for building assessment across domestic and non-domestic parameters, and include BREEAM New Construction, BREEAM Communities, BREEAM In-Use, EcoHomes, BREEAM Refurbishment, and Code for Sustainable Homes, BREEAM Commercial, and International Bespoke. BREEAM awards points or "Credits" in ten environmental impact groups, including Energy, Management, Health and Wellbeing, Transport, Water, Materials, Waste, Pollution, Land Use and Ecology. These credits are then multiplied by an environmental weighting factor which takes into account the relative importance of each section. Section scores are then added together to tabulate a single overall score, and the overall score of a building is translated into a rating scale and accompanying star rating (BRE Global, 2012). A general overview of BREEAM credit groups, the rating scale, and the star system is provided in the figures below.

BREEAM CREDIT GROUPS	
Energy	Operational energy and carbon dioxide (CO_2)
Management	Management policy, commissioning, site management and procurement
Health & Wellbeing	Indoor and external issues (noise, light, air, quality, etc.)
Transport	Transport-related CO2 and location related factors
Water	Consumption and efficiency
Materials	Embodied impacts of building materials, including lifecycle impacts like embodied carbon dioxide
Waste	Construction resource efficiency and operational waste management minimization
Pollution	External air and water pollution
Land Use	Type of site and building footprint
Ecology	Ecological value, conservation and enhancement of the site

Table 1. BREEAM Credit Groups (BRE Global, 2012).

BREEAM RATING SYSTEM				
Pass	Good	Very Good	Excellent	Outstanding
				

Figure 8. BREEAM Rating System Scale (BRE Global, 2012).

Once a project receives a BREEAM Rating, certification is valid for a period of one year from date of issue. Annual reassessment is required to be conducted in order to confirm that no changes have occurred and that compliance is maintained. Facilities conduct annual reviews alongside an assigned auditor who verifies documentation demonstrating ongoing compliance with original certification standards (BRE Global, 2011), at which time the project is recertified.

An Overview of Green Star

In Australia, the Green Building Council of Australia (GBCA) oversees the Green Star program. Green Star is a national comprehensive rating system designed to rate the environmental design and construction of the built environment. Applicable to commercial, residential, and industrial buildings, the system includes nine categories, called rating tools, to determine environmental impact of a project under the Green Star – Design and Green Star – As Built programs, while the Green Star – Communities program includes six categories. Categories under the Design and As Built program include Management, Indoor Environment Quality, Energy, Transport, Water, Minerals, Land Use and Ecology, Emissions, and Innovation. Categories under the Communities program include Governance, Design, Livability, Economic Prosperity, Environment and Innovation. Each category is further divided into credits for specific aspects or areas of improvement for sustainable performance, with points awarded based on credit objective achievement. Once credits are assigned, a percentage score is calculated and weighting factors applied to allow consideration for the diversity of environmental concerns and variables (GBCA, 2013).

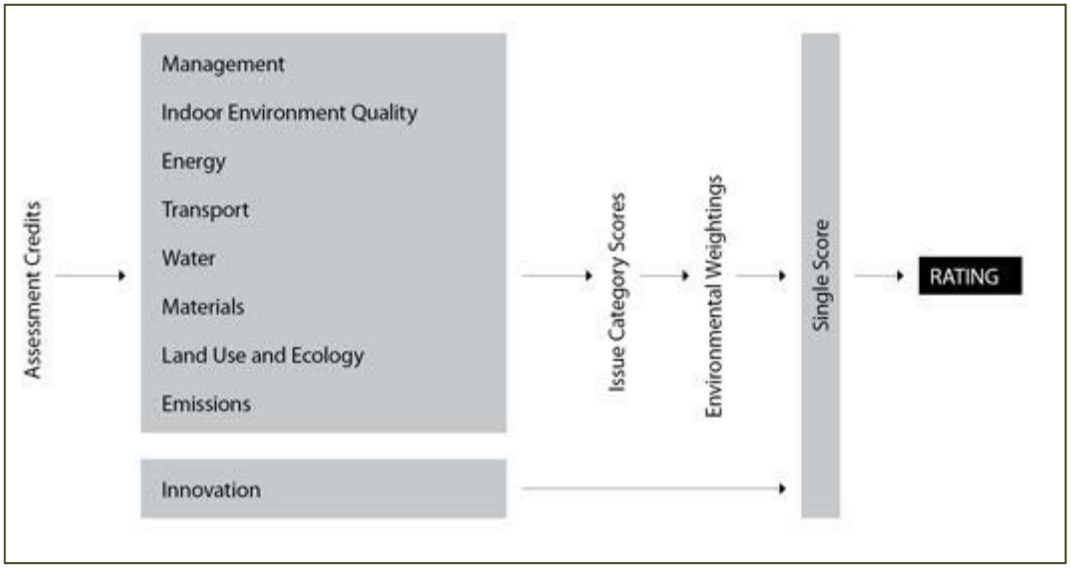


Figure 9. Green Star Credit Rating Systems (GBCA, 2013).

There are six Star ratings associated with Green Star, however, certification is not awarded to projects with ratings of 1 Star (Minimum Practice outcome), 2 Star (Average Practice outcome) or 3 Stars (Good Practice outcome), as the system recognizes and rewards only projects that achieve Best Practice outcomes (4 Stars) or better. The outcomes for Green Star and associated point/star assignments are presented in the figure below; outcomes resulting in Green Star certification are denoted by bold-case text.

POINT SCORE	GREEN STAR RATING	OUTCOME
10 - 19	1 Star	Minimum Practice
20 - 29	2 Star	Average Practice
30 - 44	3 Star	Good Practice
45 - 59	**4 Star**	**Best Practice**
60 - 74	**5 Star**	**Australian Excellence**
75+	**6 Star**	**World Leader**

Table 2. Green Star Rating Scale (GBCA, 2013).

While there are no ongoing reporting requirements associated with Green Star certification, a measure that has recently come into place to ensure buildings perform as they are designed is an expiry of the design rating. The design rating is only valid for 24 months post practical completion, at which point the building must undergo an As Built or Performance rating in order to maintain Green Star status (Jacqui/GBCA, personal communication, March 10, 2013). A new tool which is not yet available to the public, Green Star – Performance, is about to be released by the GBCA, and will have a reporting component in addition to rating expiry. According to the GBCA:

> "Green Star – Performance ratings may be valid for three years. Annual 'desktop audits' of 'big ticket items' may be used to keep the certified rating current during years 2 and 3. This may be done with a National Australian Built Environment Ratings System (NABERS) Energy certificate, a NABERS Water certificate, and some occupant satisfaction proxy.

Certified assessments may be available for all star levels, from 1 to 6 stars (Jacqui/GBCA, personal communication, March 10, 2013)."

An Overview of CASBEE

The Comprehensive Assessment System for Building Environmental Efficiency, or CASBEE, is Japan's version of LEED certification. Developed with support of the Japanese Ministry of Land Infrastructure Transport and Tourism (MLIT), the result of cooperative efforts between industry, academia and the government, CASBEE is a tool for evaluating the environmental performance of buildings, both in terms of environmental impact, as well as the quality of life provided by the buildings. The first edition of CASBEE was released in 2002, and according to the Shibaura Institute of Technology in Japan, represents the first attempt in the world to apply an eco-efficiency approach to this sort of system (Akimoto, 2010).

CASBEE City is an additional measure for determining environmental performance of cities as a whole, wherein cities are evaluated and given a score for environmental efficiency on the basis of carbon dioxide (CO2) emission and environmental quality. CASBEE for Cities uses a triple bottom line approach of environment, society and economy as a means to objectively assess the effectiveness of local environmental policies and environmental measures (Japan GreenBuild Council (JaGBC)/Japan Sustainable Building Consortium (JSBC), 2013).

There are three general ratings categories, which include Housing, General Building, and Urban. Numerous subsets exist within the individual categories, as presented in Figure 12.

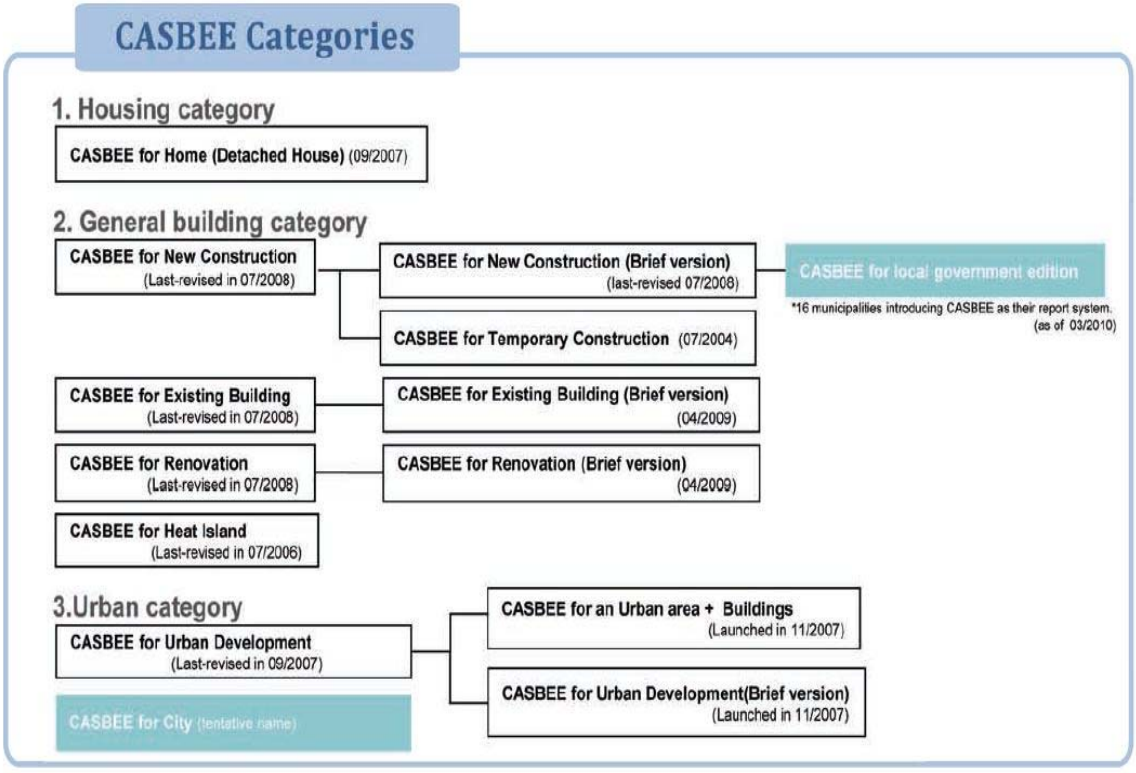


Figure 10. CASBEE Categories (Japan GreenBuild Council (JaGBC/Japan Sustainable Building Consortium (JSBC), 2013).

Developed as a cyclical building design process consisting of pre-design, design and post design phases, there are four associated assessment tools (groups) corresponding to the building design, known collectively as CASBEE Family. As presented in the figure below, the Family consists of four individual assessment groups include Pre-Design, New Construction, Existing Buildings, and Renovation.

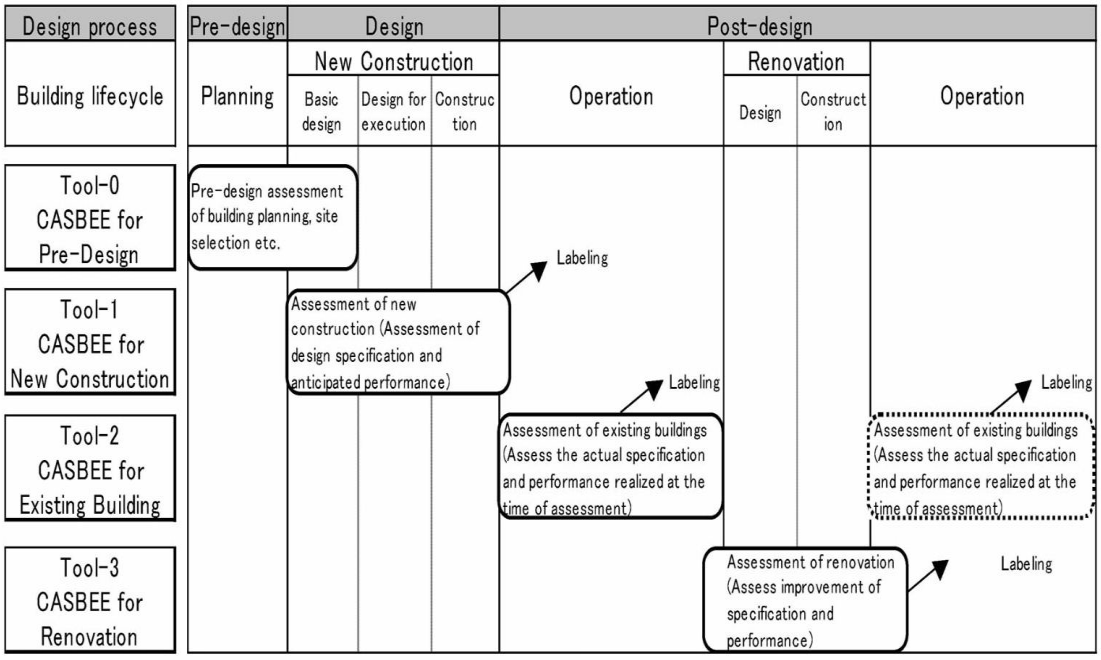


Figure 11. Building Life Cycle and Four Assessment Tools (Japan GreenBuild Council (JaGBC)/Japan Sustainable Building Consortium (JSBC), 2013).

CASBEE is based on three major concepts, which include consideration of lifecycle states of buildings; environmental load (L) and quality (Q) of building performance, and building environmental efficiency (BEE), which is an eco-efficiency indicator (Akimoto, 2010). Assessment category Q looks at positive impacts within the projects boundaries, where Q is the Quality of Building performance in total, which is the sum total of Indoor Environment (Q1), Quality of Service (Q2), and Outdoor Environment on Site (Q3). Assessment category L looks at the negative impacts outside of the project boundaries, where L is the Environmental Load, calculated as the sum total of Energy (L1), Resources and Materials (L2) and Off-site Environment (L3). BEE is calculated by dividing the Quality of the Building (Q) by the Building Environmental Load (L) to produce an Eco-Efficiency

rating which represents Quality of Life as impacted by Environmental Load. BEE is an indicator for achieving higher quality with lower environmental load (Akimoto, 2010, p. 10). A ranking is then assigned to a project based on the calculated score. Ranks are S for Excellent, A for Very Good, B+ for Good, B- for Rather Poor, and C for Poor. As presented by Akimoto, 2010, the figure below provides a visual representation of the CASBEE labeling and raking system.

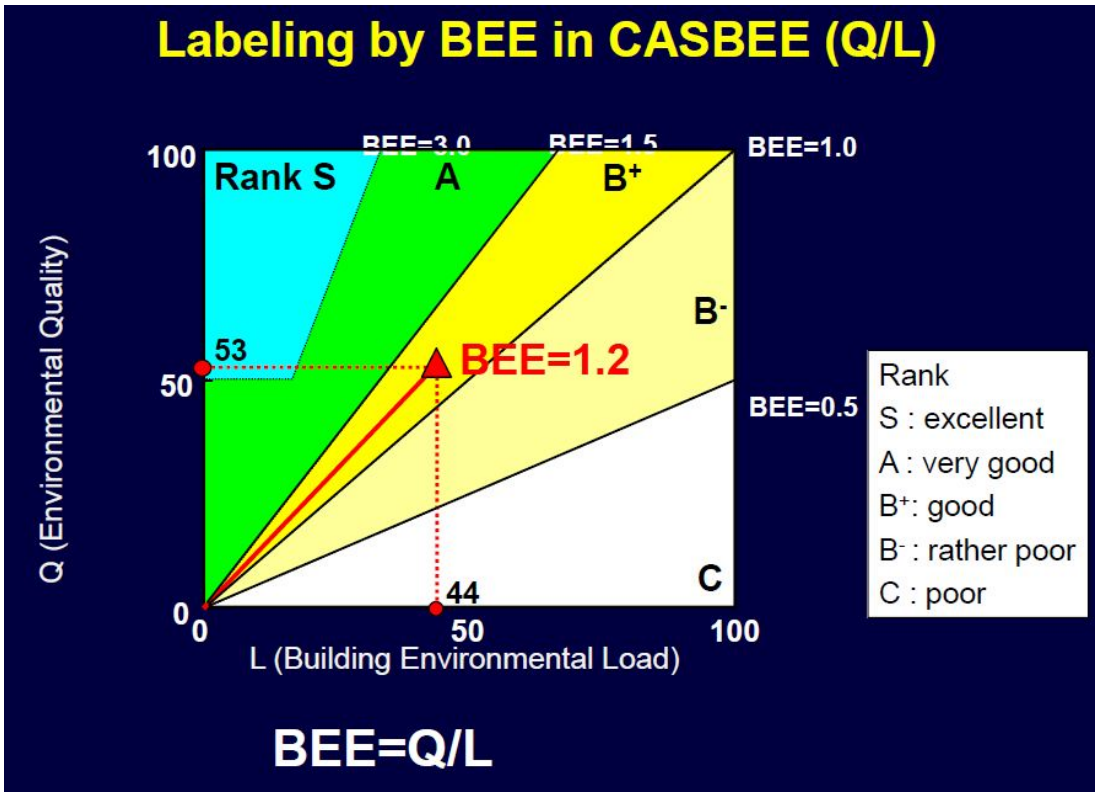


Figure 12. CASBEE Labels and Ranking (Akimoto, 2010, p.11)

CASBEE is more holistic in nature, with no check lists or point ratings to meet, but rather broader goals of improving environmental quality and reducing environmental load (Suchenski, 2011). However, like its LEED counterpart in the United States, CASBEE does not have an ongoing reporting or recertification requirement once certification is awarded, which, even from a holistic perspective, makes proof of ongoing compliance with any level of CASBEE ethereal at best.

METHODOLOGY

A Description of the General Methodology

In order to accurately evaluate ongoing performance of the LEED Program, it is necessary to compare ongoing performance requirements of LEED against similar programs. For comparative purposes, the following four programs, recognized by the World Green Building Council (WGBC), were evaluated: LEED, BREEAM, Green Star and CASBEE.

The purpose of this thesis is to evaluate the lack of ongoing performance standards within the LEED program, and present connotations which can be inferred by the lack of ongoing accountability requirements for LEED certification. The basis of this evaluation is a comparative analysis of LEED certification with similar building rating systems to elucidate whether LEED certification is a reliable and true indicator of sustainability in the absence of ongoing reporting or recertification requirements.

The Research Context

The research conducted in this thesis is qualitative in nature. Methods for ensuring continued adherence with certification standards and ongoing reporting protocols utilized by other building rating systems within the international community are compared to the LEED certification system. A narrative comparative analysis is presented.

A Summary Statement of the Methodology

The objective of this research is to define opportunities for improvement within the LEED program which could increase program accountability and provide a more accurate measurement for long-term sustainability within the USGBC LEED certification program. Research was conducted to determine how, based on other internationally recognized green

building programs, a higher level of accountability could be integrated within the LEED program.

The analysis utilizes information gained through extensive literature review and in depth evaluation of programmatic components of LEED, BREEAM, Green Star, and CASBEE. Suggestions for implementation of an ongoing reporting and recertification requirement are based on comparative analyses of these programs. Additional punitive measures are suggested for failure to provide ongoing documentation of compliance.

The anticipated outcome of this research is to demonstrate that, under current requirements, LEED is essentially a label of origin rather than a sign of ongoing sustainability; a gold star rather than a gold standard. In the absence of ongoing reporting or recertification requirements, there are no measures to assure continued compliance with original certification standards; therefore, mandatory ongoing reporting or recertification should be instituted as a component of obtaining and maintaining LEED certification. Ongoing reporting or recertification is necessary not only to demonstrate ongoing project integrity under LEED, but to ensure that the LEED building rating system proffers truly sustainable building practices in accordance with the triple bottom line concept.

RESULTS

An Overview

The qualitative analysis aims to validate the following hypothesis:

There is a lack of ongoing performance standards and long-term accountability protocols for LEED certifications which effectively result in LEED certification being a one-time programmatic label, as opposed to being a reliable indicator of ongoing sustainability practices for the life of a project. Ongoing reporting or recertification is necessary as a measure of demonstrating continued programmatic compliance with certification requirements, and to maintain continued integrity under the LEED rating system, as well as programmatic integrity of LEED.

Summary of Results

BREEAM and Green Star require annual certification, whereas LEED and CASBEE obligate a project to recertify merely on an "as required" basis. There are no ongoing audits or evaluations to determine whether or not a project maintains initially instituted measures for certification, and there are no punitive measures in place for failure to update changes to items utilized to obtain certified status. Therefore, if building or programmatic changes are effected which result in a building system which no longer meets originally reported certification standards, and the changes are not reported to the USGBC, a project can potentially maintain a certification status that is no longer applicable or appropriate. Although BREEAM influenced, to some degree, the early development of LEED, in spite of the common sustainability aim, there are significant differences in certification processes (Sleeuw, 2011). Certification under LEED and CASBEE are interminable; there is no expiration on the certification, and no renewal of standard compliance is required.

Certification under BREEAM and Green Star are awarded for a finite period of time, at which point reassessment is necessary in order to reaffirm certification status; renewal is not automatic under BREEM and Green Star. If a project is found not to meet the standards under which certification was originally granted, a new assessment must be conducted to determine certification and status. Additionally, the GBCA is improving on the Green Star program by instituting an ongoing reporting requirement for a new rating system, Green Star – Performance, but this program has not yet been released for the public.

The figure below presents general aspects of LEED, BREEAM, Green Star and CASBEE; ongoing reporting/recertification requirements are listed as "Update Process".

	BREEAM	LEED	Green Star	CAS8EE
Launch Date	1990	1998	2003	2004
Ratings	PASS/GOOD/VERY GOOD/EXCELLENT/ OUTSTANDING	Certified/Silver/Gold/ Platnum	One Star/Two Star/Three Star/Four Star/Five Star/ Six Star	C/B–/B+/A/S
Weightings	Applied to each issue category (consensus based on scientific/open consultation)	All credits equally weighted, although the number of credits related to each issue is a de facto weighting	Applied to each issue category (industry survey based)	Highly complex weighting system applied at every level
Information Gathering	Design/management team or assessor	Design/management team or Accredited Professional	Design team	Design/management team
Third-Party Valuation	BRE	N/A	GBCA (Green Building Council of Australia) nominated assessors	Third-party agencies e.g., JSBC (Japan Sustainable Building Consortium)
Certification labeling	BRE	USGBC (United States Green Buildings Council)	GBCA	JSBC
Update Process	Annual	As required	Annual	As required
Governance	UK Accreditation Service (UKAS)	USGBC	GBCA	JSBC
Required qualification	Competent persons scheme	Passed exam	Training scheme and exam	N/A
Assessor/AP CPD requirements	Carry out at least one assessment per year	No CPD requirements	Status renewed every three years	N/A

Figure 13. Comparative Analysis of LEED, BREEAM, Green Star and CASBEE (Reed, Bilos, Wilkinson and Schulte, 2009, p.11).

According to Alyami and Rezgui (2012), core management subjects of most environmental tools are management of site activities and construction process, with the

goal of ensuring the protection of both social and environmental aspects, in addition to an appropriate level of commissioning.

> "Providing building guidance that demonstrates clear understanding of how buildings can be sufficiently operated and maintained is one of BREEAM's sustainable principals. BREEAM has independently established the most significant principles of sustainable management, whereas both LEED and CASBEE can be considered relatively weak in this regard (Alyami, Rezgui, 2012, p.56)."

While innate variability exists between BREEAM, CASBEE, LEED and Green Star, as dictated by, among other things, regional variation, is a method of ensuring ongoing compliance should be a commonality among the systems to demonstrate program integrity. BREEAM and Green Star succeed in this arena, LEED and CASBEE fail.

Discussion of Findings

The annual recertification requirements of BREEAM and Green Star provide an accountability measure which is lacking in both LEED and CASBEE. By requiring perpetual proof of compliance with originally scoped certification items, BREEAM and Green Star effectively provide a reliable gauge of project validity under respective rating systems, even in the absence of ongoing reporting requirements. Conversely, the lack of ongoing reporting combined with the interminable nature of both LEED and CASBEE certifications allow for potential abuse of program certifications via unreported modifications to originally scoped certification items.

According to an article addressing LEED accountability,

> "LEED is not tried and true. It hasn't been perfected…and because you often have taxpayer money involved, there's going to be questions asked about LEED-certified projects, which is what's starting to happen across the country…By tracking performance, which I think is critical, we'll be able to truly differentiate those selling an idea and those offering actual quality service. (Clinton, 2011, para. 1)."

This same article quotes Scot Horst, Senior Vice President of the USGBC's LEED program as agreeing that "the next evolution of the rating system must include greater tracking of building performance long after the initial certification plaque is hung on the wall", that "going forward, the value of your LEED plaque will be seen in its most recent date", and that "if a building just has its initial plaque from say, five years ago, show it was certified this is what the building could do, it doesn't say anything about what it actually is doing (Clinton, 2011, para. 1)."

Voluntary participation in ongoing reporting via BPP is offered under LEED for a limited set of metrics, specifically energy and water consumption, however, the voluntary nature and limited scope of BPP effectively render this effort ineffective in substantiating overall sustainable building conformance. Although limited in scope, having a track record of energy and water consumption is necessary, at a minimum, to determine whether a building is meeting performance standards of initial certification. "If you don't know how much energy and water you're using, how do you know you're green (Clinton, 2011, para. 1)?" The available [sustainability] indicators mostly succeed at measuring unsustainable

trends that can be targeted by management action, but fall short of defining or enduring sustainability (Dahl, 2011).

The lack of ongoing reporting or recertification for LEED certification is a fundamental flaw which threatens program credibility under long-term sustainability goals. Ongoing reporting stands to not only provide a measure of accountability, but also to offer up "lessons learned" for other projects and provide opportunities for improvement for the program on the larger scale.

Suggestions for Improved Accountability and Expansion of the LEED Program

Providing suggestions for utilization of ongoing reporting and recertification as an integral component of the LEED program are an objective component of this thesis. As such, these suggestions are offered as initial steps for implementing additional protocols to establish accountability within the LEED certification program. These suggestions are in no way, shape or form connected to, requested for, or sanctioned by the U.S. Green Building Council (USGBC) or the LEED program, which are intended merely to provide an ideology for improving LEED as visualized by its author.

These suggestions are written based on information obtained by reviewing the USGBC LEED certification program, and suggests implementation of additional protocols for LEED which are currently in use or being scoped for use by the Green Building Council of Australia (GBCA) as part of the Green Star program, and the New South Wales (NSW) Department of Environment and Climate Change (DECC) as part of the National Australian Built Environment Rating System (NABERS). The overall objective of these suggestions is to prescribe a more holistic approach to LEED certification which would

improve program integrity. As part of this approach, new requirements would be implemented in LEED certification which would:

1. put in place a required ongoing reporting requirement which is currently absent in the current LEED program; and
2. establish a certification expiry period and recertification requirement, and
3. institute additional certification/recognition for maintaining LEED certification over time.

The new protocols would ensure ongoing accountability and compliance with originally scoped certification status, and provide for more credibility within the LEED program.

Objectives of Improving Accountability and Expanding the LEED Program

The USGBC LEED certification has historically lacked an ongoing reporting requirement, and certification does not expire; therefore, a need exists to establish a method of ongoing accountability in the program. The following proposed items would be accomplished by instituting a required ongoing reporting requirement as well as requiring recertification, outside of which the certification would expire. Main goals of implementing these actions are, in parallel with the GBCA Green Star – Performance Draft Scoping Paper (2010):

- ensure LEED remains a worth and credible rating scheme;
- access existing buildings from a more holistic operational performance approach, to include benchmarking and maintenance;
- allow stakeholders to compare buildings both with and without LEED ratings;

- provide a pathway for improvement, allowing for and rewarding compliance and incremental improvements;
- focus on operational outcomes;
- be simple, user friendly, and cost effective;
- reference existing reporting systems where possible, including US EPA ENERGY STAR and WegoWise as a requirement, as well as moving toward additional reporting systems such as the NABERS Waste and NABERS Indoor Environment as optional dimensions;
- be applicable to all building types currently covered by LEED certification.

The objectives of instituting ongoing reporting requirements and certification expiry within the LEED program are to provide an increased level of accountability for individual projects as well as for the LEED program. As with the proposed Green Star – Performance program (2010), the institution of ongoing energy and water reporting requirements will provide a more representative picture of true, ongoing sustainability for LEED certified projects, while the addition of waste tracking and indoor environmental management tools will provide a more robust spectrum for as-built environmental assessments. The addition of certification expiry and associated recertification requirements will demonstrate an ongoing adherence to overall LEED program objectives, and close loopholes associated with current one-time, perpetually valid certification.

Major Features of Improved Accountability and Expansion of the LEED Program

In order to meet increased accountability objectives, program modifications should focus on instituting mandatory ongoing reporting for certified projects on operational issues,

including performance, benchmarking and maintenance. As outlined in the Green Star – Performance proposal (2010), modified for LEED application, definitions for the major features of assessment are:

- Operations encompasses processes that take place while the building is in use, whether mechanical or human in nature. Tracking of energy and water consumption are included as requirements, while waste and indoor environmental monitoring are optional.
- Performance examines the building's ability to achieve the task for which it was intended while in use. Desktop auditing during years 1 and 2 achieve this goal, with recertification after year 3 ensuring continued adherence to originally scoped LEED certification status.

Maintenance addresses the level of upkeep required to ensure the building operates and performs to expected levels. Maintenance should include not only routine maintenance of building environs, but ongoing tracking of components as part of a holistic project life cycle analysis (LCA) to document actual materials management and associated costs (GBCA, 2011).

Proposed LEED Improvement Assessment Methodology Outputs

The proposed outputs are based on the idea that both certified and non-certified assessments are worthwhile endeavors towards achieving sustainable building practices, as well as providing information for the sustainable community at large. Both certified and non-certified assessments would become available under the proposed program improvements as follows:

- Non-certified assessments. Self assessments will be possible, allowing buildings to set sustainability performance targets, inform investment decisions, etcetera. LEED certification is not a component of self assessment, therefore, would be non-marketable. Non-certified assessments are intended to be utilized as a guidance measure and a potential pathway for tracking toward LEED certification.
- Certified assessment – LEED certification rating. Projects currently LEED certified will continue to maintain LEED certification if buildings perform at the same level originally certified. If a project is found to fall below the originally scoped LEED certification level, the option exists to either, a) provide tangible documentation of performance at the originally scoped LEED certification level within six months of documenting initial performance deficit, b) opt for a reduced LEED certification status, or, c) resign LEED certification status.

Proposed Ongoing Reporting Requirement for the LEED Program

Participation in the USGBC Building Performance Partnership (BPP) will become mandatory to maintain continued certification. Monthly data submission to either the US EPA ENERGY STAR database for commercial entities, and to the WegoWise database for residential facilities, will be a mandatory requirement under the proposed new certification protocols. Annual reporting of these results, in combination with desktop audits, will provide more representative project data, providing a tangible demonstration of ongoing project success as well as identifying areas for improvement. Additional programs similar to the NABERS Waste and NABERS Indoor Environment will be developed and instituted to

provide a more robust, holistic picture of project sustainability, but will not be mandatory initially under these proposed modifications to the program.

Proposed Certification Expiry and Recertification for the LEED Program

Certified ratings will be valid for a period of three years. As with the proposed Green Star – Performance program (2010), annual 'desktop audits' of 'big ticket items' in tandem with submission of data accumulated over the year from monthly BPP energy and water audits will be used to keep the certified rating current during years 1 and 2, while full audit will be required to maintain certification at the end of year 3. At the end of year 3, a full recertification must be performed in order to maintain certification status. If at the time of recertification, a project is found to fall below originally scoped LEED certification criteria, the option will exist to either, a) provide documentation validating originally scoped project performance criteria within six months of documenting the deficit, b) opt for a reduced LEED certification status, if available, or, c) resign LEED certification status. Alternatively, if a project is found to be performing beyond originally scoped LEED certification criteria, the option will exist to upgrade to a higher LEED certification status.

Proposed Additional Certification Component for the LEED Program

A new certification status would be implemented to recognized projects which have maintained or improved their rating status for a period of ten years. Buildings which maintain or improve their rating status for 25 years or longer will receive a Lifetime LEED designation, which could potentially be tied to some form of tax credit as an incentive.

CONCLUSIONS AND RECOMMENDATIONS

Objective Review

There is a lack of ongoing performance standards and long-term accountability protocols for LEED certifications which effectively result in LEED certification being a one-time programmatic label, as opposed to being a reliable indicator of ongoing sustainability practices for the life of a project. Once awarded, LEED certification does not have a mechanism by which to effectively track continued adherence to LEED standards, there are no ongoing evaluation standards or punitive measures for non-compliance, and the certification never expires. Ongoing reporting or recertification is necessary as a measure of demonstrating continued programmatic compliance with certification requirements, and to maintain continued integrity under the LEED rating system, as well as programmatic integrity of LEED.

The lack of ongoing reporting requirements and indefinite certification period opens the door for building material substitutions or modifications over time without a review to determine continued applicability of the original LEED designation status. If LEED is truly sustainable according to the triple bottom line concept, it too must move programmatically beyond the status quo currently represented by a certified project in the absence of required ongoing reporting or recertification requirements. Additionally, with the potential for perceived and actual "greenwashing" in the absence of ongoing monitoring, it is critical for LEED to implement such requirements to demonstrate ongoing program integrity.

The USGBC does offer a voluntary program, the BPP, which is designed to improve green building performance by providing a platform for tracking, benchmarking, and analyzing building performance data (USGBC, 2013). All LEED projects participating in BPP receive an annual Performance Report summarizing building performance, which can be used as a tool to evaluate what is working and where there are opportunities for improvement. The focus of this program however is strictly energy and water, which, while helpful, only measures a small portion of project impact on the as-built environment.

> "While automated energy and water data collection is a key component of BPP, the true story of building performance includes a much broader and holistic list of metrics. USGBC and the BPP participants will continue to grow the BPP infrastructure for data beyond the traditional measures of energy and water usage supplied by utilities. This includes delving deeper into energy and water use through sub-metering but also reaching beyond the utilities to look at waste management, alternative transportation use, occupant experience and other critical components of a high-performance building (USGBC, 2013)."

The information provided in the Results section of this paper, based on the GBCA proposed Green Star – Performance program, is proffered up as suggested methods for implementing additional programmatic measures to ensure ongoing demonstrated accountability within the current USGBC LEED program.

Recommendations for Further Study

Apart from making changes in the awarding of LEED certification, a set of standards for ongoing project accountability should be established and made mandatory as part of obtaining and maintaining certification. Certifying projects for a finite period of time, beyond which the certification would expire, and requiring reassessment/recertification to verify ongoing compliance would improve validity and credibility associated with a LEED rating. An additional item for consideration would be making post certification reporting a requirement so that there are matrices for comparison purposes. Ongoing accountability should not be optional. Long-term evaluation and cradle-to-grave impact analysis of each project should become integrated within the process. The ability to show definitive sustainability indicators could potentially earn a project a status differentiation over time, achievable only over time, to encourage "lifelong" attention to a project, rather than the goal being merely to obtain initial certification, and nothing more. Another item for consideration would be the addition of a designation or designations which are achievable only over time, such as the addition of a category which recognizes the longevity of a project maintaining its rating for 10 years, 25 years, or even beyond the life of the original project. An even more prestigious recognition could be designed to recognize a project which has been, essentially, "reborn", i.e. certified and then either renovated or rebuilt as a different, separately certified structure/project. This designation would be elusive and only earned by those proving a focused commitment to the cause.

Finally, LEED certification should require that a certain percentage of the elements implemented must have higher long-term beneficial environmental impact. Effecting items such as more stringent pre-certification requirements, post certification reporting, and certification expiry will keep LEED in the lead, allowing the USGBC to document, tangibly, with hard statistics and relative certainty, the positive impacts of the program, thereby affirming the programs validity as a more than a gold star, but a good standard.

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APPENDIX A

USGBC BUILDING PERFORMANCE PARTNERSHIP SAMPLE REPORT

2010
PERFORMANCE REPORT

Building Performance Partnership

January 2011
U.S. GREEN BUILDING COUNCIL

Introduction

BPP ANNUAL PERFORMANCE REPORT

USGBC would like to thank you for partnering with us to raise awareness of the importance of ongoing building performance monitoring and for participating early in the Building Performance Partnership. As you read through your 2010 Performance Report, consider what pieces of information matter the most and what USGBC can do to improve the report for next year.

Keep an eye on USGBC's BPP website for updates on the program, and email us with any questions:

→ www.usgbc.org/bpp
→ LEEDperformance@usgbc.org

ABOUT THIS REPORT

Your 2010 Performance Report is a summary of current energy and water operational data compared to design expectations and performance baselines set during your LEED certification. The project information and data used in this report is based on the data you uploaded in ENERGY STAR's Portfolio Manager and the documentation submitted during LEED® certification.

USGBC views this Performance Report as one of many planned feedback mechanisms to inspire ongoing attention to building performance. Target audiences include:

- **Building Owners: keep track of year to year changes in performance** and the impact of facility investments
- **Property Managers: use for communications to current and** prospective tenants
- **Facility Engineers: assess long term facility performance trends**

Consider the content of this report to inform 2011 operations, systems improvement, preventative maintenance, and to provide feedback to the BPP program for how to improve the reports for next year.

HOW TO READ THIS REPORT

The report has three major sections:

- **General facility characteristics,**
- **Energy performance, and**
- **Water performance.**

Please verify your facility characteristics and review noted space type changes, as these directly influence energy and water performance. Look back and review sustainability goals pursued during LEED certification and those set after certification was achieved. The BPP team strongly encourages you to pay attention to the date ranges used for current and baseline energy and water benchmarking; these dates may be different in the energy and water sections depending on the utility data provided. Lastly, refer to the report Glossary for definitions of unfamiliar terms and How to Read an Energy Signature for instructions on interpreting your project's energy signature.

General Facility Characteristics

LEED PROJECT NAME:
Sample Building

ADDRESS:	Sample Street San Francisco, CA
BUILDING OWNER:	Property Managers
BUILDING TYPE:	Office
LEED CERTIFICATION:	LEED EB O&M, Gold April 2010
GROSS SQUARE FOOTAGE:	1,052,296
YEAR BUILT:	1973
# OCCUPANTS:	3977
# PC'S:	3714
Weekly Hours:	55

LEED Scorecard

Total Points	**56***
Sustainable Sites	8
Water Efficiency	6
Energy & Atmosphere	17
Materials & Resources	8
Indoor Environmental Quality	10
Innovation in Operations	7

**Out of a possible 92 points*

Energy Efficiency Measures from LEED Certification Documents

Existing Building Commissioning- Implementation

Whole Building Metering

Water Efficiency Measures from LEED Certification Documents

Cooling Tower Water Management Plan

Water Efficient Landscaping- 61% reduction*

Plumbing Fixture Efficiency- 21.28% reduction*

*(*reduction from calculated baseline)*

Energy Performance

Site Energy Use Intensity (EUI)

This facility is currently using 51% less energy per square foot than similar facilities in the U.S. Total site EUI has decreased 2% from the baseline year.

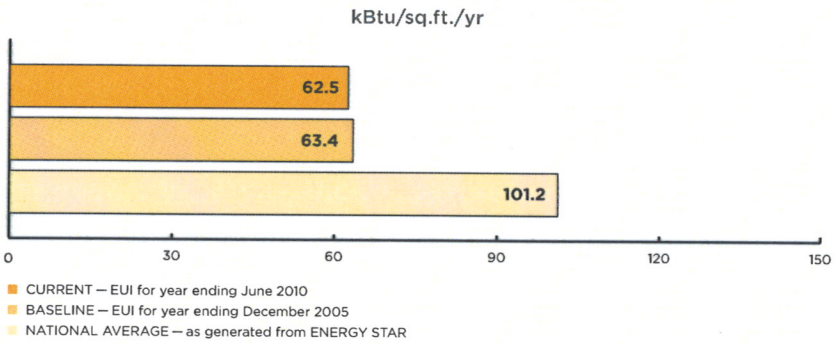
The ENERGY STAR Rating has increased indicating an improvement in energy performance relative to other similar buildings in the U.S.

Energy Use:
(Current EUI: 62.5 kBtu/sq.ft/yrs)

2%

Current ENERGY STAR Rating:
(baseline is 87)

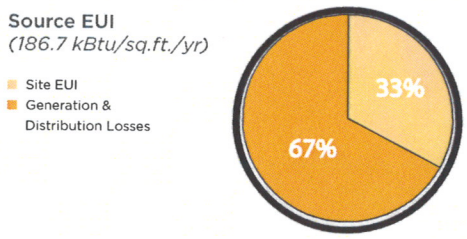
88



Total Greenhouse Gas Emissions

With the current fuel mixture in this facility, approximately 2.0 Btu's of energy are lost in transmission and distribution for every Btu used on site.

Source EUI
(186.7 kBtu/sq.ft./yr)



For the 12-month period ending June 2010, this facility was responsible for 5,918 MtCO2e attributed to energy use. This is a 2% increase from the emissions from the baseline year ending December 2005.

EMISSIONS:
(5,918 MtCO2e for 07/09-06/10)

2%

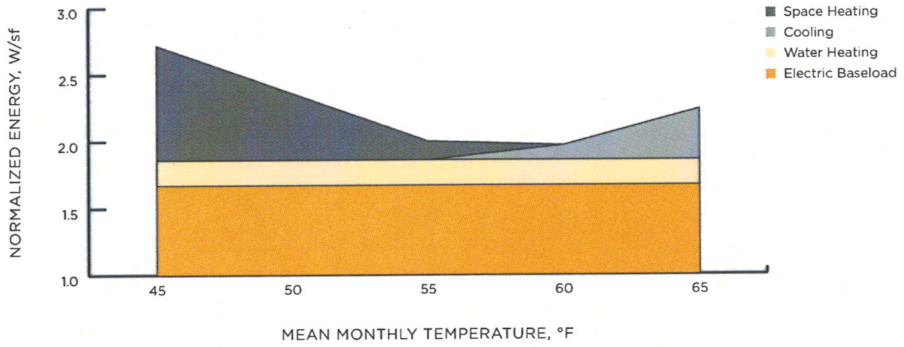
Energy Performance

Energy Signature by End Use

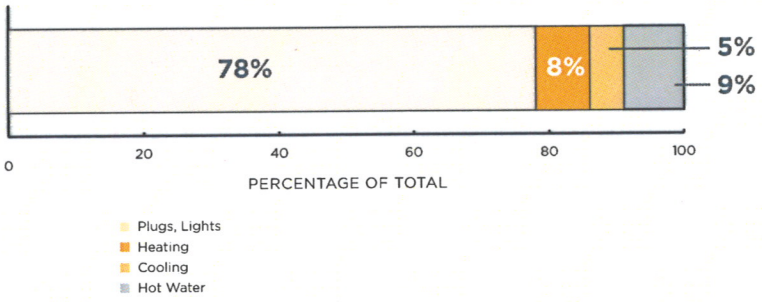
Energy Signatures analyze the monthly measured energy use (vertical axis) in relation to the actual average outside temperature (horizontal axis). That perspective permits an effective first view of how energy is being used in the building and areas that may warrant further investigation.

• Energy Signature analysis performed by: New Buildings Institute in Vancouver, WA

Energy Signature by End Use *(July 2009 - June 2010)*



Approximate Distribution of Actual Energy by End Use



Energy Performance

Energy Signature Observations

Electric baseload:
Typical electric baseload

Overall gas use:
Very high gas heat use

Heating impact of shell and ventilation:
High temperature sensitivity of shell/ventilation

Gas baseload:
HIgh gas baseload: circulation/ standby loss, or reheat

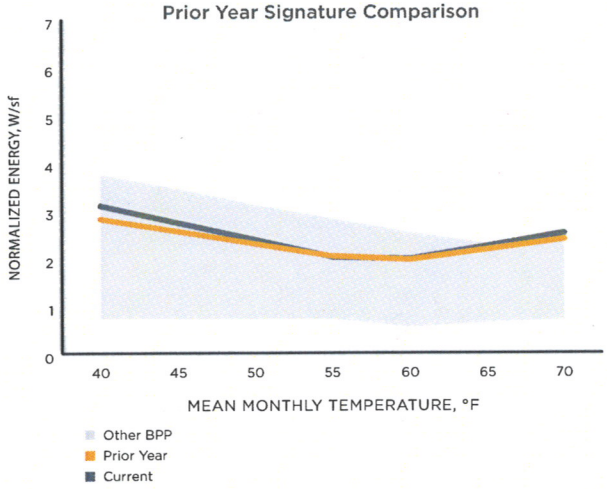
Cooling efficiency:
Typical cooling efficiency

Reheat:
Possible excessive reheat

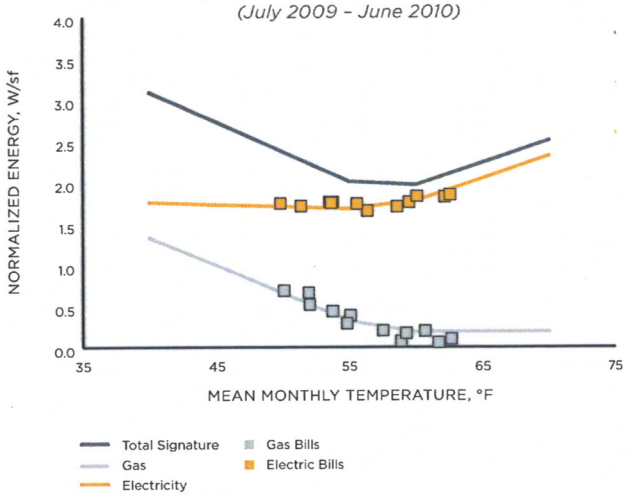
HVAC fan/pump use:
No apparent excessive energy use by systems fans/pumps

Data consistency:
Orderly monthly performance

Prior Year Signature Comparison



Signature with Metered Energy Use
(July 2009 - June 2010)



Water Performance

Potable Water Use

Indoor water use change from projected values is unavailable because design improvements were not implemented until after January 2010.

Indoor water use in 2009 was 10% lower than the previous year baseline.

Indoor Water Use Change from Previous Year Baseline:
(baseline usage: 7099.2 kGal/year)

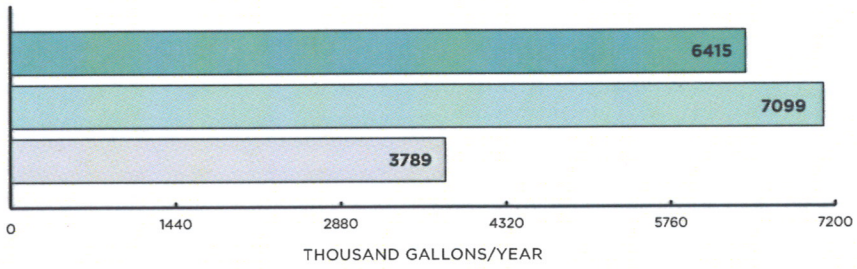
10%

Current potable water use for irrigation in the 12 month period ending January 2010 has remained unchanged compared to the reference year .

Potable Water Use for Irrigation:
(current usage: 10.2 kGal/year)

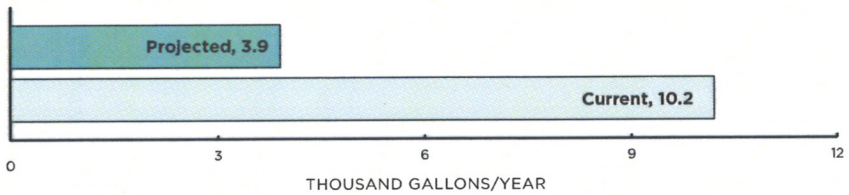
0%

Indoor Water Use



- CURRENT — for February 2009 to January 2010
- BASELINE — previous year
- PROJECTED — predicted indoor water use calculated for LEED certification

Outdoor Water Use

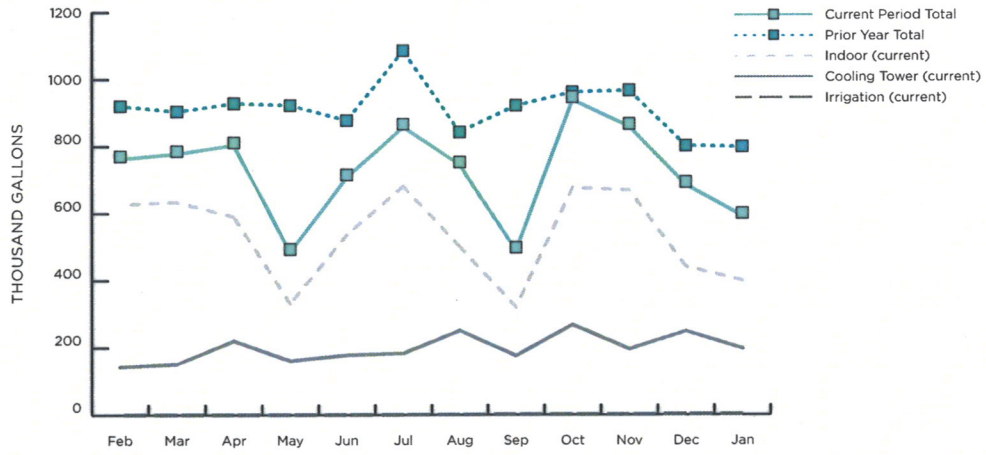


Water Performance

Water Use Over Time

Sub-metered cooling tower and irrigation water use data was used to isolate indoor water use from the main meter readings. An abnormally high or low meter reading could indicate a data error or a billing error.

Total Potable Water Consumption *(in thousands of gallons)*



Glossary

ENERGY USE INTENSITY

Energy Use Intensity (EUI) is a unit of measurement that describes a building's energy use. EUI represents the energy consumed by a building relative to its size. A building's EUI is calculated by taking the total energy consumed in one year (measured in kBtu) and dividing it by the total floor space of the building. (Definition from: www.energystar.gov)

ENERGY PERFORMANCE RATING

The Energy Performance Rating is the benchmark rating for a facility on a scale of 1-100 relative to similar buildings nationwide using EPA's national energy performance rating system. The benchmark rating is based on your facility's source energy use, level of business activity, and geographical location.

The rating indicates the percentile rank of the facility once all required data is entered. A rating of 68 means that the facility is in the 68th percentile of all comparable facilities nationwide. To qualify for the ENERGY STAR, a facility must have a rating of 75 or higher. (Definition from: www.energystar.gov)

METRIC TON

Common international measurement for the quantity of greenhouse gas emissions.

METRIC TONS OF CARBON DIOXIDE EQUIVALENT (MtCO2e)

A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP. (Definition from: www.epa.gov)

POTABLE WATER

Potable water meets or exceeds EPA's drinking water quality standards and is approved for human consumption by the state or local authorities having jurisdiction; it may be supplied from wells or municipal water systems.

SITE ENERGY

Site Energy is the amount of heat and electricity consumed by a building as reflected in utility bills. (Definition from: www.energystar.gov)

SOURCE ENERGY

Source energy represents the total amount of raw fuel that is required to operate the building. It incorporates all transmission, delivery, delivery, and production losses, thereby enabling a complete assessment of energy efficiency in a building. (Definition from: www.energystar.gov)

TOTAL GREENHOUSE GAS EMISSIONS

The total greenhouse gas emissions added across all active energy meters at the site, excluding any sub-meters that have been marked as "do not add to total". This is reported in metric tons of carbon dioxide equivalents (MtCO2e). Total greenhouse gas emissions is the sum of Direct emissions from fossil fuels burned on site and Indirect emissions from power generated off-site such as electricity or district steam. Greenhouse gas emission calculations used in this report are generated from ENERGY STAR Portfolio Manager.

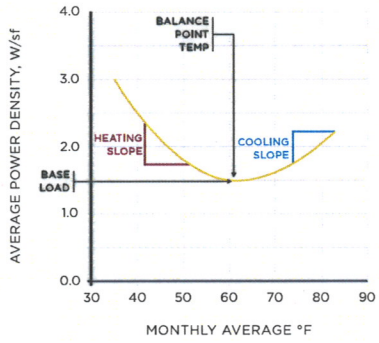
How to Read an Energy Signature

An Energy Signature is a display of monthly energy use in relation to outside temperature for the same period. The Energy Signatures in this document were generated by the New Buildings Institute First View tool. This First View identifies general performance areas that appear particularly efficient or may warrant investigation for possible savings. The resulting pattern readily indicates factors such as:

Baseload: the lowest energy use level reached during the year, when minimal heating or cooling is needed.

Heating and cooling slopes: the steepness of the increase in energy use for heating (as temperatures get colder) or cooling (as temperatures rise).

The Fist View diagrams in this report show an approximate split of the building's total signature into major end use components. The split is based on underlying calculations that find a coherent, physics-based model that matches the observed energy/temperature relationship in the billing data for each energy type. Without submetered equipment or end uses, these components are necessarily broad, but still provide helpful indications of areas



COMPONENT	REPORTING LEVELS	DESCRIPTION
1. Electric baseload	Low (good), Typical, High	Incorporates end uses that are typically relatively constant throughout the year: equipment and plug loads, lighting, pumps and fans associated with HVAC.
2. Overall gas use	Low (good), Typical, Moderately high, Very high	Compares the total gas use with that of a reference office building in the same climate, where that reference is based on an NBI study of a set of 155 Energy Star rated offices throughout the country.
3. Impact of shell and ventilation	No excess (good), High sensitivity	A steep heating slope often suggests a poorly insulated shell or excessive outside air, though infiltration or ventilation, resulting in more heating than would otherwise be needed.
4. Gas baseload	No excess (good), High excess	In the absence of special process loads such as laundry, cooking, or exercise (shower) facilities, office building summer gas use is generally minimal. High gas baseloads may be caused by HVAC or domestic water circulation/standby losses or reheat.
5. Cooling efficiency	High (good), Typical, Low	A steep cooling slope suggests poor cooling equipment efficiency
Control Areas:		
6. Reheat	Not apparent (good), Probable (bad)	At the monthly data level, most office buildings will show a slight level of overlapping heating and cooling use in the 50 – 65o average monthly temperature range. Excessive reheat is suggested by overlaps covering a wider temperature range, high levels of both heating and cooling, and high summer gas use.
7. HVAC fan and pump use	Not apparent (good), Possible, High (bad)	Billing data alone, without submetering or interval metered load profiles, can't distinguish between occupant activity and schedule-based electricity use and excessive HVAC system overhead from distribution energy (e.g. from with single speed fans and pumps). Knowing the nature of the occupancy pattern and plug loads can help the owner/building operator identify which aspects of electricity baseload are the likely contributors to high totals.
8. Data consistency	Orderly (good), Irregular	The above energy signatures are smooth patterns fit as well as possible to the actual monthly energy data. Irregular data, resulting in a poor signature fit, decreases the credibility of the end use estimates. Irregular monthly data typically arises from erratic system controls, inaccurate reporting of monthly energy use, or very irregular occupant loads/schedules.

Feedback Survey

USGBC would like your feedback on the first Building Performance Partnership 2010 Performance Report. The development and distribution of the reports is a learning experience for both USGBC and our BP Partners; we will use your answers and general comments to inform the direction and content of our 2011 reports.

Please submit your feedback through our electronic survey or send your answers to the following questionsvia email :

→ www.usgbc.org/BPP
→ LEEDperformance@usgbc.org

SURVEY QUESTIONS

1. **Who read your 2010 Performance Report?**
2. **Please rate each of the following report elements in terms of clarity and usefulness: General Facility Characteristics, Site Energy Use Intensity, Greenhouse Gas Emissions, Energy Signature, and Water Performance.**
3. **What did you like about 2010 Performance Report?**
4. **How will you use the information in the 2010 Performance Report?**
5. **Will you share the information in the 2010 Performance Report with parties external to your building operations and management?**
6. **What didn't you like about the 2010 Performance Reports?**
7. **What information, benchmarks or analysis was missing from the 2010 Performance Reports?**
8. **What additional content would you like to see in the 2011 Performance Reports?**
9. **Are you interested in talking with USGBC about your 2010 Performance Report?**
10. Please provide any general comments about the 2010 Performance Report that you would like to share.

APPENDIX B

GREEN STAR – PERFORMANCE DRAFT SCOPING PAPER

Building a sustainable future

GREEN STAR - PERFORMANCE

DRAFT SCOPING PAPER

Date Issued: December 2010 (For public comment)

green building council australia

greenstar

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These leading organisations have already joined as sponsors of the Green Star – Performance rating tool development. Become a leading organisation and sponsor Green Star – Performance today!

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TABLE OF CONTENTS

VERSION CONTROL

Version	Release Date	Description of Changes
1.0	December 2010	Release for public comment
1.1	February 2011	Additional page added to the scoping paper 'Sponsorship Opportunities' (page 14) and some minor adjustments to 'Providing Feedback' (page 13) also occured.

EXECUTIVE SUMMARY

This Scoping Paper has been prepared as a first step in the development of a Green Star assessment methodology to address the sustainability performance of existing buildings, known as Green Star – Performance. 'Existing buildings' in the context of this paper refer to many building types and uses, not only commercial office buildings.

This paper has been written based on feedback from stakeholders. A Stakeholder Reference Group (refer to Appendix A) was formed in July 2010 to provide advice and recommendations to the Green Building Council of Australia (GBCA) on the guiding principles of Green Star assessment methodology for existing buildings.

In addition to supporting the overall objectives of the GBCA, this project's key objective is to provide a holistic sustainability rating system for existing buildings in Australia - a gap in the market identified by stakeholders. More specifically, stakeholders have identified that a Green Star assessment methodology for existing buildings should:

(1) address holistic operational performance of buildings that currently have a Green Star rating; and

(2) allow buildings that don't currently have a Green Star rating to assess their sustainability performance holistically; and

(3) allow stakeholders to compare Green Star designed buildings with non-Green Star designed buildings in operation, providing better understanding of holistic sustainability performance in the market.

These objectives must also result in lower environmental impact, increasing sustainability outcomes for the property sector in Australia. Stakeholders have indicated that this project should focus on assessing existing buildings based on operational impacts. There will be no duplication of measurements or benchmarks where widely accepted market practices exist, such as NABERS Energy and NABERS Water in the commercial office market. Green Star-specific credits will be developed to address other operational environmental impacts not addressed by other tools.

The major features of the proposed assessment methodology are:

Assessment methodology outputs:

1. Individual building assessments –

(a) Non-certified assessments - self-assessments, allowing buildings to set sustainability performance targets, inform investment decisions, etc.

(b) Certified assessments - a certified Green Star rating. Buildings that currently have a Green Star rating (Design and/or As Built) AND buildings that currently do not will both be eligible for a certified assessment.

Certified ratings may be valid for 3 years. Annual 'desktop audits' of 'big ticket items' may be used to keep the certified rating current during years 2 and 3. This may be done with a NABERS Energy certificate, a NABERS Water certificate and some occupant satisfaction proxy. Certified assessments may be available for all star levels, from 1 to 6 stars.

2. Portfolio assessments –

self-assessments and certified ratings, following the individual assessment of buildings within a portfolio.

3. Guidance / diagnostics –

links to external resources on how to improve the sustainability performance of existing buildings would be referenced and presented as features.

Sustainability Categories & Impacts:

the assessment methodology will maintain a holistic approach by addressing all current Green Star categories: Management, Indoor Environment Quality, Energy, Transport, Water, Materials, Land Use & Ecology, Emissions and Innovation. Keeping all the Green Star categories also assists with maintaining the credibility associated with the other Green Star tools.

Target building types:

education facilities, healthcare facilities, industrial buildings, commercial offices, retail centres and public buildings. Supermarkets and 'big box' retailers are also to be explored.

Target users:

this assessment methodology would be of interest to a large stakeholder audience (institutional investors, building occupants and consultants); however the main target users are believed to be facilities managers, including maintenance professionals; building owners; portfolio managers; and government organisations.

Delivery mechanism and cost:

the assessment methodology for existing buildings would be delivered fully online, as an online platform would be user-friendly, cost effective and easy to update and upgrade. It may be too soon to have a proper sense of cost-benefit relating to the assessment methodology. Its 'perceived value' in the market, for instance, is a crucial question to be explored.

A number of 'further opportunities' have been indentified in section 5, particularly opportunities relating to training and education. These should be considered additional benefits to the assessment methodology.

The information provided in this paper should not be considered final and stakeholders are encouraged to consider additional information.

1.0 INTRODUCTION

This Scoping Paper has been prepared as a first step in the development of a Green Star assessment methodology that addresses the sustainability performance of existing buildings. Its purpose is to identify and scope issues associated with the development of such tool and to identify matters which should be considered in the next phases.

An 'existing building' in the context of this Scoping Paper, is any building that has been operating at 75% occupancy or greater for at least 24 months. 'Existing buildings' refer to many building types and uses, not only commercial office buildings.

> The Green Building Council of Australia invites feedback from stakeholders on the definition of the term 'existing building'.

This paper identifies a number of characteristics that a Green Star assessment methology for existing buildings may have and provides information about the way forward in the development process.

GREEN STAR - PERFORMANCE

The Green Building Council of Australia (GBCA) has received extensive feedback from stakeholders on how 'existing buildings' could be addressed by Green Star. This feedback is the result of both formal and informal consultation, and was collected via industry discussions, presentations, meetings and stakeholder workshops.

A very insightful piece of feedback, related to the approach used in the now discontinued Green Star – Office Existing Building EXTENDED PILOT tool. This tool applied many of the requirements and design attributes of the Green Star – Office Design tool to existing buildings, not directly addressing operational issues. Feedback indicated that stakeholders involved in the EXTENDED PILOT process wanted a greatly streamlined tool, which addressed operational issues under the control of building owners, facilities managers and building occupants.

A Stakeholder Reference Group was formed in July 2010 to provide advice and recommendations to the GBCA on the benefits and guiding principles of a Green Star assessment methodology that addresses operations-related sustainability of existing buildings. This Stakeholder Reference Group met with the GBCA three times between July and October 2010, providing extensive feedback and comments. Appendix A outlines the members of the Stakeholder Reference Group up and the member organisations they represent.

Feedback from the Stakeholder Reference Group has been very useful in informing the content of this paper and its structure. The following consensus items were drawn from a workshop held with the Stakeholder Reference Group and they represent 'what industry wants' from a Green Star assessment methodology for existing buildings; this tool should:

- ensure Green Star remains a worthy and credible rating scheme;
- assess existing buildings in terms of holistic operational performance, including benchmarking and maintenance;
- allow stakeholders to compare buildings both with and without Green Star Design and/or As Built ratings;
- provide a pathway for improvement, and allow for and reward incremental improvements;
- focus on operational outcomes;
- be simple, user friendly and cost effective;
- reference existing reporting systems where possible, including NABERS Energy and Water;
- be applicable to 'bigger' and 'smaller' stakeholders;
- provide appropriate training and accreditation for building management;
- address all the current Green Star environmental impact categories;
- assess all building types currently addressed by the Green Star suite of rating tools.

3.0 OBJECTIVES

The objectives of a Green Star tool that addresses holistic operational performance of existing buildings are in alignment with the GBCA's mission and key objectives, as outlined below:

GREEN BUILDING COUNCIL OF AUSTRALIA'S KEY OBJECTIVES

To drive the transition of the Australian property industry towards:

- sustainability by promoting green building programs, technologies, **design practices and operation**;
- integration of green building initiatives into mainstream **design, construction and operations of buildings**.

Another objective of this project is to provide a holistic sustainability rating system for existing buildings in Australia, a gap in the market which has been identified by stakeholders. Feedback from the Stakeholder Reference Group and other stakeholders has identified more specific objectives for a Green Star assessment methodology for existing buildings. It should:

- address holistic operational performance of buildings that currently have a Green Star rating;
- allow buildings that don't currently have a Green Star rating to assess their sustainability performance, communicating the holistic impacts / benefits associated with Green Star for 'the other 95%' of buildings;
- allow stakeholders to compare 'Green Star designed' buildings with 'non-Green Star designed' buildings in operation, providing better understanding of holistic sustainability performance in the market.

4.0 MAJOR FEATURES

Stakeholders have indicated that in order to meet its objectives, this project should focus on assessing existing buildings based on operational issues, including performance benchmarking and maintenance. Since the major features of the assessment methodology will address these key aspects, it is useful to define them:

- Operations encompass the processes that take place within the building when in use, whether they are mechanical or human oriented.
- Performance examines the building's ability to achieve the task for which it was intended, when in use.
- Maintenance is concerned with the level of upkeep required to ensure the building operates and performs to expected levels.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the definition of the terms above, including 'operations', 'performance' and 'maintenance' in the context of the built environment.

4.1 ASSESSMENT METHODOLOGY OUTPUTS

The proposed outputs of the assessment methodology are based on feedback from industry stakeholders, including the Stakeholder Reference Group:

- Individual building assessments:
  - Non-certified assessments – as with other Green Star tools, 'self-assessments' will be possible, allowing buildings to set sustainability performance targets, inform investment decisions, etc. This would be a non-marketable assessment with no opportunity to use the Green Star trademark.
  - Certified assessments (a Green Star rating) - a certified assessment of the sustainability performance of existing buildings. Buildings that currently have a Green Star rating (Design and/or As Built) AND buildings that currently do not will both be eligible for a certified assessment.
- Portfolio assessments – both self-assessments and certified ratings would be outputs of the assessment

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the features of 'portfolio assessments' and how they would add the most value to their organisations.

- Guidance / diagnostics – links to external resources such as the Property Council of Australia's existing building survival strategies, detailed case studies and other resources on how to improve the sustainability performance of existing buildings would be referenced and presented as features of the assessment methodology.

It is proposed that certified ratings be valid for 3 years, allowing re-certification to be sought at the end of the 3 year period. Annual 'desktop audits' have been suggested as a possible method to keep the certified assessment current during years 2 and 3, perhaps by verifying the performance of three 'big ticket items'. This may be done with a NABERS Energy certificate, a NABERS Water certificate and some occupant satisfaction proxy.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the length of certification validity and related processes, as discussed above.

Feedback from the Stakeholder Reference Group and other stakeholders suggests that certified assessments should be available for all star levels, from 1 to 6 stars. This would allow stakeholders, for instance, to have a 3-Star Green Star certified rating and market their building as such.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the availability of Green Star certification for all levels, from 1 to 6 stars, within the operational performance assessment methodology.

4.2 SUSTAINABILITY CRITERIA AND IMPACTS

Stakeholders have identified that it is desired that a Green Star assessment methodology for existing buildings retains a holistic approach, as displayed in the other Green Star tools. As such, it is proposed that all the current Green Star categories are addressed as a starting point for the existing buildings assessment methodology.

These categories are: Management, Indoor Environment Quality, Energy, Transport, Water, Materials, Land Use & Ecology and Emissions (point source pollution). It has also been suggested that the Innovation category be kept, rewarding innovative operational performance improvement and maintenance. Keeping all the Green Star categories also assists with maintaining the credibility associated with the other Green Star tools.

Embodied energy has also been mentioned as something to be explored, perhaps within the materials category. Further investigations in the next phase of the project are required to more clearly define this approach.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders onthe range of environmental impact categories proposed for inclusion in the Green Star – Performance rating tool and details of particular credits that should be considered.

Stakeholder feedback has also strongly suggested that other reporting standards such as NABERS Energy and Water, be referenced into the proposed Green Star assessment methodology whenever possible. It has been suggested, for instance, that NABERS Energy and Water ratings be used as a 'plug-in' for the respective Categories (one of the 'credits') within the Green Star assessment methodology for existing buildings. Green Star-specific credits will be developed to address other operational environmental impacts not addressed by other tools.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the adoption of NABERS Energy, NABERS Water,NABERS Indoor Environment and NABERS Waste as 'industry practice' in the real estate market.

4.3 TARGET BUILDING TYPES

Initial feedback from the Stakeholder Reference Group and other stakeholders indicates that a Green Star assessment methodology for existing buildings should address all building types and uses which are currently addressed by Green Star Design and As Built tools. These include – education facilities, healthcare facilities, industrial buildings, commercial office buildings, retail centres, public buildings and multi-unit residential.

However, after discussions with the Stakeholder Reference Group, it is recommended that further investigations are carried out in regard to the demand for the proposed assessment methodology in the multi-unit residential market.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the need for a Green Star assessment methodology for existing buildings in the multi-unit residential market.

Other specific building uses, such as supermarkets and 'big box' retailers are also to be explored during the next phase of development.

The initial intention of the Green Star existing buildings project is to address 'base building' and 'whole building' holistic sustainability performance, depending on industry standards for a particular building type. However, feedback from stakeholders has indicated that a 'tenancy' holistic sustainability performance rating should also be explored. It has been suggested that the separation between 'base building' and 'tenancy' in this assessment methodology should follow the NABERS Energy approach, whenever this is available.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the need for a Green Star assessment framework for existing building occupiers or 'tenancies'.

4.4 TARGET USERS

It is understood that a Green Star assessment methodology for existing buildings would be of interest to a large stakeholder audience, such as institutional investors, building tenants and consultants; however the main target users of the assessment methodology are believed to be:

- Building owners
- Facilities managers, including maintenance professionals
- Portfolio managers
- Government organisations

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders onother uses of the Green Star assessment methodology for existing buildings and how those users might interact with the rating tool.

During the next phase of the development process, other specific users of the assessment methodology may be identified.

4.5 DELIVERY MECHANISM AND COSTS

Stakeholders have identified the need for the assessment methodology to be user-friendly, cost effective and easy to update and upgrade. These characteristics lend themselves to an online delivery mechanism. It is therefore proposed, that the Green Star assessment methdology for existing buildings be delivered fully online, as a response to stakeholder feedback. An online platform would:

- streamline the 'self-assessment' and rating processes, utilising simple questions to illicit the required input from stakeholders;
- streamline the certification process, utilising upload facilities to diminish the amount of documentation required for a certified rating;
- diminish the amount of time required for project certification, reducing costs;
- allow all the documentation related to the assessment methodology, such as manuals and guides to be easily accessible;
- allow other resources to be directly referenced within the assessment methodology, such as standards, case studies and other external resources;
- facilitate the management and upgrade of information.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the costs associated with building operations, such as 'annual operational budgets' or 'upgrade budgets'. Metrics based on lettable area of buildings would be of most use.

It has been suggested that a 'subscription service' could be used to deliver portfolio level assessments, allowing a fixed number of individual building assessments to be carried out for a reduced fee.

5.0 FURTHER OPPORTUNITIES

Stakeholders have suggested that there are a number of further opportunities associated with a Green Star assessment methodology for existing buildings. These opportunities require further development and should be considered as additional benefits to the assessment methodology.

Some of these opportunities relate to Green Star specific training and education. These suggestions include:

- specific Green Star training for facility managers within the context of existing buildings (working together with FMA Australia)
- specific Green Star training and educational resources for maintenance contractors;
- specific Green Star training and educational resources delivered in association with DECCW and the NABERS team.

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on any further opportunities relating to this project.

6.0 THE DEVELOPMENT PROCESS

The development process for Green Star - Performance will be broken down into two separate but integrated phases, as described below.

Phase 1 – current phase

The GBCA, in conjunction with other key stakeholders, has developed the concept of an assessment methodology that addresses the operational performance of existing buildings, Green Star - Performance. This Scoping Paper is one of the main outcomes of Phase 1 of the development process.

This Scoping Paper has been made available for public comment until 04 March 2011. Feedback collected during the public comment period will be incorporated into the final paper as appropriate. During the public comment period, 'Expressions of Interest' to participate in the process as part of a Technical Working Group will also be collected.

Phase 2

There will be a number of issues to be worked out during Phase 2, including:

- design the specific credits within the assessment methodology criteria (build the assessment methodology itself);
- build the online tool and related resources;
- define the certification process;
- develop Green Star training requirements;
- address other outstanding items.

During this phase of the development process, individual credits will be developed within the appropriate categories concentrating on operational issues, including performance benchmarking and maintenance related items. International precedents, such as 'LEED Existing Buildings: Operations and Maintenance' and 'BREEAM IN-USE' will be explored during the credit development phase of the project.

These issues, and others that emerge throughout Phase 2, will be addressed by GBCA staff and the Technical Working Group (TWG).

7. PROVIDING FEEDBACK

Stakeholders are encouraged to contact the Green Building Council of Australia for further information and to provide feedback.

greenstar

Green Star - Peformance. Scoping Paper Feedback

The Green Building Council of Australia (GBCA) has prepared the scoping paper as the first step in the development of a Green Star assessment methodology that addresses the sustainability performance of existing buildings. The GBCA is inviting feedback on the scoping paper, using this online survey. Thanks for taking the time to provide your feedback.

There are no mandatory questions. While the Green Building Council welcomes your feedback on every question, please feel free to limit your responses to the areas you are interested in if you prefer.

There is a SUBMIT button at the end of each page of the survey. Pressing SUBMIT will take you to the next page.

Definitions

The scoping paper defines some key terms. If you think these definitions can be improved please provide your suggestions below.

1 **Existing Building:** Any building that has been operating at 75% occupancy or greater for at least 24 months *Page 4 of the Green Star - Performance Scoping paper*

PROVIDE YOUR FEEDBACK...

The Green Building Council of Australia invites feedback from industry stakeholders on the entire Green Star - Performance Scoping Paper.

8. SPONSORSHIP OPPORTUNITIES

Sponsoring the Green Star – Performance tool is a great way to get involved in the next generation of Green Star.

As a sponsor, you will have the opportunity to contribute to the development of the Green Star – Performance tool and receive recognition as a green building industry leader.

Some of the sponsorship benefits include:

- National and international recognition as a leader in sustainable building practices
- Provide input into the development phase and help guide the rating tool's direction
- Opportunity to submit a project to test the PILOT version of the tool
- Brand association with one of the world's leading environmental rating systems for buildings
- Achieve your organisation's environmental and corporate social responsibility objectives by contributing to a national Green Star project that seeks to address the existing building market

For more detailed information on sponsorship benefits, visit the Green Star - Performance page of the Green Building Council of Australia's website.

There are several different sponsorship levels to choose from – find one that's right for your company today.

Do you have questions? Let's talk:

Robert Milagre

Project Leader, Green Star – Performance

Phone: (61) 2 8239 6200

Fax: (61) 2 8252 8223

Email: performance@gbca.org.au

APPENDIX A

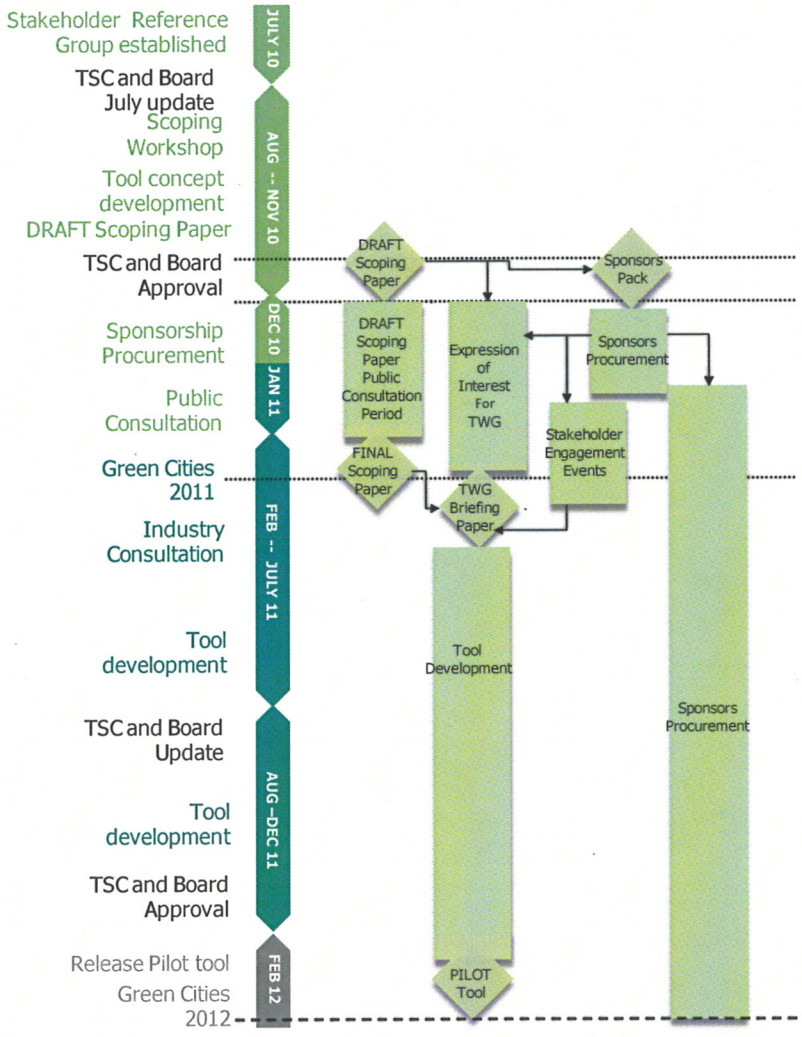
STAKEHOLDER REFERENCE GROUP MEMBERS

Stakeholders are encouraged to contact the Green Building Council of Australia for further information and to provide feedback.

Organisation	Name	Title
AMP Capital Investors	Dominic Ambriano	Environmental Performance Manager
Charter Hall	Matt Nolan	Head of Asset Services
Coles Property Group (Wesfarmer)	Nik Wallis	Development Manager
Coles Property Group (Wesfarmer)	Paul Lang	Environment Manager
Colonial First State Asset	Rowan Griffin	Head of Sustainability
Colliers International	Simon Cox	Head of Sustainability
Department of Environment, Climate Change & Water NSW	Matthew Clark	Manager - NABERS
Department of Climate Change & Energy Efficency	Mark Davis	(Acting) Manager - NABERS
FMA Australia	Matthew Trigg	National Policy Advisor
FMA Australia	Bryon Price	Non-executive Director
GPT Group	Bruce Precious (Chair)	Sustainability Manager
Investa Property Group	Craig Roussac	General Manager
Mirvac	Chris Luscombe	Director, Engineering & Operations
Property Council of Australia	Jane McNamara	National Policy Advisor
Property Council of Australia	Paul Waterhouse	Executive Director National Policy
RICS / J Goddard & Co	John Goddard	Chair of RICS Oceania Sustainable Group
Stockland	Greg Johnson	National Environment Manager
Tertiary Education FMA	Dominic Marafioti	TEFMA President (current)
Tertiary Education FMA	Bart Meehan	TEFMA President (incoming)

APPENDIX B

TIMELINE

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green building council australia

greenstar

Building a sustainable future

Green Star – Performance Scoping paper Stakeholder Feedback Report

DATE ISSUED: AUGUST 2012

Version Control

Version	Release Date	Description of Changes
1.0	December 2011	First release

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Table of contents

Executive summary

This report is the result of feedback collected from several stakeholders, including 24 formal submissions, between December 2010 and March 2011 in response to the draft Green Star – Performance Scoping Paper. The Green Star - Performance Scoping Paper was prepared as a first step in the development of a Green Star assessment methodology to address the ongoing operational performance of existing buildings.

The Green Building Council of Australia (GBCA) has received feedback from stakeholders in various formats, including emails, formalised report submissions and via an online questionnaire.

Most stakeholders (*71% of the submissions*) agreed with the proposed definition for an 'existing building' presented in the Scoping Paper. The majority of stakeholders (*65% of submissions*) thought the proposed definition of 'operations' was appropriate. The proposed definitions for 'performance' and maintenance were also supported in general terms by the majority of stakeholders (*59% of submissions*).

No specific comments were submitted in regard to non-certified or certified individual building assessments. However, there were many comments submitted regarding 'portfolio assessments'. The majority of stakeholders supported the idea of 'portfolio assessments', both as a way to obtain discounted 'volume certification' and as a way to officially disclose a portfolio's averaged Green Star ratings.

Most stakeholders (*78% of submissions*) agreed with the proposed 3 year validity of Green Star – Performance certified ratings and various comments were provided on how this could be achieved. Similarly, the proposal to make certified ratings available for all star levels (1 through 6, not only 4, 5 and 6) was supported by most stakeholders (*85% of submissions*).

The proposal to keep all nine Green Star categories in Green Star – Performance was supported by majority of stakeholders (*78% of submissions*). All respondents (*100% of submissions*) suggested that *NABERS Energy* should be referenced in Green Star – Performance, since it is widely used by industry and it has been written into legislation for the commercial office sector. Similarly, most stakeholders (*86% of submissions*) agreed that it would be beneficial to reference *NABERS Water* in the Green Star – Performance rating tool.

Less than half the stakeholders (*38% of submissions*) considered *NABERS Waste* to be accepted practice in the real estate industry, indicating that its current format and processes have not been widely adopted by industry. Similarly, *NABERS Indoor Environment* is not currently widely used by the real estate industry as only *26% of respondents* considered it to be 'industry practice'.

Half the stakeholders (*53% of submissions*) indicated that it would be beneficial to have a Green Star – Performance rating tool available for the multi-unit residential market, while the majority of stakeholders (*65% of submissions*) thought it would be desirable for tenants / occupants to be involved in Green Star – Performance, either through an independent rating or as an integral part of a 'whole building' rating.

It is the intention of the GBCA to engage with the appropriate target users. These include tenants, real estate agents, leasing agents, universities and developers as well as the target users suggested in the Scoping Paper (building owners, facilities managers, portfolio manager and government organisations).

The GBCA appreciates the feedback received on the Scoping Paper. Stakeholders will be kept informed of developments relating to the Green Star – Performance delivery mechanism and associated costs, as the project develops.

More detailed industry feedback, as well as the GBCA's response to this feedback, can be found in the next sections of this document.

1 Introduction

The Green Star - Performance Scoping Paper was prepared as a first step in the development of a Green Star assessment methodology that addresses operational performance of existing buildings. Its purpose was to identify and scope issues associated with the development of the rating tool, to identify matters which should be considered in the next phases of development and to collect feedback from interested stakeholders.

This report is the result of stakeholder feedback collected from 24 formalised submissions in response to the draft Green Star – Performance Scoping Paper released in December 2010. In addition to these formalised submissions, further feedback was provided in other formats; some of the feedback provided through an online questionnaire was provided anonymously. The Green Building Council of Australia (GBCA) has received feedback from stakeholders in various formats, including emails, formalised report submissions and via an online questionnaire.

This feedback report, along with the Green Star - Performance Scoping Paper, will form part of the briefing documents for the Green Star - Performance Technical Working Group. The Technical Working Group will assist the GBCA with the development of the Green Star – Performance rating tool and related items (such as certification processes and education requirements).

The GBCA would like to thank all stakeholders for assisting in the development of Green Star – Performance. Further feedback is welcomed as Green Star – Performance is developed and implemented.

2 General comments

An 'existing building' in the context of the Green Star - Performance Scoping Paper, was defined as any building that has been operating at 75% occupancy or greater for at least 24 months. 'Existing buildings' refer to many building types and uses, not only commercial office buildings.

Extract from Green Star – Performance Scoping Paper, page 4:

The Green Building Council of Australia invites feedback from industry stakeholders on the definition of the term 'existing building'.

Most stakeholders (**71% of the submissions**) agreed with the proposed definition above. However, the following general comments were also submitted for consideration:

Comment 1: I think this is a good baseline. There will often however be buildings where the occupancy has dipped below 75% occupancy during any 24 month period and it would be unfortunate to preclude them from seeking Green Star rating because of this. There may be some more detailed technical allowances within this, e.g. if base building plant has still been running during the period etc. Might relate to metering strategies, utility billing etc. Not my field but in principle there should be a 'CIR path' to allow some flexibility.

Comment 2: It's a good definition, but in a down market where vacancies might increase, could a 10 year old building with an anchor tenant who moves out and leaves it 60% vacant still not count as an existing building? This might be an issue considering today's office market. Also, how would this apply to public buildings like libraries and museums? (Probably not much difference.)

Comment 3: This is the definition from NABERS office, right? I think the [Technical Working Group] (TWG) should test if this definition is workable for other types of buildings. How would this work for schools for example? They are often left empty for a few months in summer, and would technically never be 'existing' as per this definition...

Comment 4: The proposed 75% occupancy and 24 month occupancy may not be effective parameters. Buildings are usually not able to proportion base building operations in direct relation to occupancy for this reason the lesser the occupancy of a building the more difficult it is to achieve higher performance. That is, it is suggested that occupancy naturally regulates performance and need not be considered as an "entry barrier". "Occupancy" may also be further addressed by consideration in specific credit criteria, for example, any measure of emissions could be related to occupancy. NABERS does not require an "occupancy" level for evaluation except for a commitment agreement. The proposed 24 month period may deter buildings from seeking a performance rating. Typically a new building may have undertaken both Green Star "Building Tuning" and NABERS Energy/Water assessment in the first year of operation. There is no sound reason to defer a performance rating for a further 12 months. A 12 month period as an occupied building is suggested.

Comment 5: Why 24 months and not 12 when the DLP (defects liability period) finishes and As Built is eligible etc?

GBCA response

The definition of 'existing buildings' must be broad enough to cover a variety of building types, including offices, universities, schools, hospitals, healthcare centres, shopping centres, industrial buildings and residential housing, recognising that different building types will have different uses.

The GBCA agrees that occupancy alone may not be the best way to define an 'existing building' for the purpose of Green Star – Performance, particularly for building types other than commercial office buildings. The 'occupancy' portion of the definition above needs to be further explored.

The definition of 'existing buildings' should also include a period of operation, to ensure sufficient time to gather the relevant performance data. This operational period should be linked to occupancy, as empty buildings cannot be comparably rated.

The GBCA agrees with comments that 12 months after practical completion should be enough time for a building to be classified as 'existing' for the purpose of a Green Star – Performance rating. This length of time gives building managers enough leeway to collect the information required for a potential Green Star – Performance rating considering, for instance, that a Building Energy Efficiency Certificate (BEEC) requires at least 12 months worth of operational energy data.

However, the GBCA will also explore the interaction with the other Green Star rating tools (Design and As Built) now and into the future, as expiration periods for these rating types are also being explored as part of the Green Star Revolution project.

GBCA staff will work with the Technical Working Group to further refine this definition, considering the feedback provided above and the interaction with other Green Star building rating types.

The following general comments about the Green Star – Performance project do not require a specific response from the GBCA, and are only provided for information.

Comment 6: This tool is an excellent response to market demand for assessment of a building's performance in actual operation, as opposed to the design phase. With the large existing building stock in Australia it will assist in targeting inefficiencies and improve the overall performance of the built environment.

Comment 7: Energy efficiency training programs for facility managers are essential for promoting and achieving energy efficiency in buildings. A recent study conducted under the Low Energy High Rise (LEHR) project run by the Warren Centre concluded that the knowledge and skills held by the facility manager can have an effect on the building NABERS energy rating of up to 1.2 stars. Training and continued professional development of facility managers and maintenance personnel is essential to good building performance.

Comment 8: The proposed process of development for this rating tool – Green Star - Performance is a sound process and I believe is likely to result in a workable pilot rating tool.

3 Major features Feedback

3.1 DEFINITIONS

Green Star - Performance will focus on assessing existing buildings based on operational issues, including performance benchmarking. Feedback was sought on the keys definitions of operations, performance and maintenance.

Extract from Green Star – Performance Scoping Paper, page 7 'Definition of operations'

Operations encompass the processes that take place within the building when in use, whether they are mechanical or human oriented.

The majority of stakeholders (***65% of submissions***) agreed with the proposed definition of 'operations'. However, the following comments were submitted for consideration:

Comment 9

In principle this is ok. The 'human orientated' component would need some clear definitions/controls applied. e.g. the building's maintenance/operational performance can rely heavily on the facilities manager - some are good and some not. What if the FM is good but then moves to another job/building directly after the rated period? Perhaps the 'rating' could clearly state that the rating relies in part on 'Mr. Joe Bloggs the Facilities Manager'.

Comment 10

The word "use" in current definition suggests perhaps during the hours of business activity whereas most buildings are "live" and consuming resources on a 24/7 basis – suggest "use" is not required. The word "mechanical" is too restrictive as it may suggest the exclusion of electrical, hydraulic, etc. Those services are also part of the sustainability impact of buildings. Suggested definition "Operations encompass the dynamics of the building whether they are building services or occupant orientated".

Comment 11

'Operations' should relate to those that take place 'within' and 'of' the building. That is, to distinguish between business operations and facility operations.

Comment 12

Operations and maintenance are interlinked. Metering and monitoring for instance is an important operational activity that may fall under maintenance contracts. Operations should include for strategies that ensure that building performance is understood and addressed in an ongoing way by operational staff.

GBCA RESPONSE

The importance of the human component in operating buildings in general is well understood, particularly in the case of buildings aiming for more sustainable outcomes. The suggestion to link the Green Star – Performance rating to the Facilities Manager operating the building has been noted and will be further explored.

The intention of including the term 'use' when defining 'operations' was to imply that a building must be currently used by people for it to be considered operational. That means that an abandoned or completely vacant building, for instance, would not be in operation. Given that buildings must achieve a percentage of occupancy to be eligible for the rating and the confusion generated by the term 'use', the necessity of including 'use' in the definition will be reviewed.

GBCA staff will work with the Technical Working Group to further refine this definition, considering the feedback provided above and the interaction with other Green Star rating types (Design and As Built).

Extract from Green Star – Performance Scoping Paper, page 7 'Definition of performance'

Performance examines the building's ability to achieve the task for which it was intended, when in use.

The majority of stakeholders (***59% of submissions***) agreed with the proposed definition of 'performance'. However, the following comments were submitted for consideration:

Comment 13:

Agree in principle. 'Task for which it was intended' may change over time, or be very ambiguous. Is the intention to relate this definition to the BCA classification?

Comment 14:

Perhaps there should be something here about the building's ability to 'run' well?

Comment 15:

The Green Star – Performance rating is to address the sustainability performance of a building, not to "examine the building's ability to achieve the task for which it was attended". Suggested definition "Performance examines the sustainability of the operational building compared with a stated sustainability benchmark".

Comment 16:

Performance should be related to the buildings current use, not necessarily the task for which it was originally intended or designed for. Many buildings are changed after initial construction and throughout their working lifetime. It is important that the performance benchmark and assessment is related to current building usage not initial design assumptions or brief.

GBCA response

It is recognised that building use and building performance are very closely related – building use may change over time which in turn will influence operational performance.

It is important to highlight that 'operational performance' relates to the many facets of sustainability in the built environment, rather than being limited to energy efficiency. This differentiation is

reflected in the suggested definition in Comment 15. GBCA staff will work with the Technical Working Group to further refine this definition, considering the feedback provided above and the interaction with other Green Star rating types (Design and As Built).

Extract from Green Star – Performance Scoping Paper, page 7 'Definition of maintenance'

Maintenance is concerned with the level of upkeep required to ensure the building operates and performs to expected levels.

The majority of stakeholders (***59% of submissions***) agreed with the proposed definition of 'maintenance'. However, the following comments were submitted for consideration:

Comment 17:

Define preventative, tuning and regulatory maintenance.

Comment 18:

I generally agree, but it would be good if we could reward buildings that do not need major changes to keep them operating efficiently and achieving good levels of rental flow without significant change or resource / carbon input. The premise being that the longer we use the embodied carbon used to build the building the more efficiently we are using the carbon it took to create them.

Comment 19:

Either "maintenance" or "performance" could encompass a reference to building tuning / re-commissioning.

Comment 20:

"To expected levels" is the "kicker" here. What is expected? Where is this defined? Insert "required".

GBCA response

It is envisioned that Green Star – Performance will reward building owner/managers for operating efficiently with sustainable outcomes in mind; this may not necessarily require major upgrades or refurbishments. The maintenance component of Green Star - Performance will be addressed, as suggested, throughout the various Green Star categories and may encompass minimum, ongoing and preventive, maintenance requirements.

GBCA staff will work with the Technical Working Group to further refine this definition, considering the feedback provided above and the interaction with other Green Star rating types (Design and As Built).

3.2 ASSESSMENT METHODOLOGY OUTPUTS

The proposed outputs of the Green Star – Performance rating tool were presented in the Scoping Paper, as outlined below.

Extract from Green Star – Performance Scoping Paper, page 7:

Individual building assessments:

- Non-certified assessments – as with other Green Star tools, 'self-assessments' will be possible, allowing buildings to set environmental performance targets, inform investment decisions, etc. This would be a non-marketable assessment with no opportunity to use the Green Star trademark.
- Certified assessments (a Green Star rating) - a certified assessment of the environmental performance of existing buildings. Buildings that currently have a Green Star rating (Design and/or As Built) AND buildings that currently do not will both be eligible for a certified assessment.

Portfolio assessments – both self-assessments and certified ratings would be outputs of the assessment methodology, but only following the individual assessment of buildings within a portfolio.

No specific comments were submitted in regard to non-certified or certified individual building assessments. However, there were many comments submitted regarding 'portfolio assessments'. While the majority of stakeholders supported the idea of 'portfolio assessments', the following comments were submitted as feedback for consideration:

Comment 21:

[Portfolio assessments should allow for] some sort of aggregation mechanism, so I can report on all certified buildings at once.

Comment 22:

If each building within a portfolio must still be individually assessed then the 'portfolio' component isn't really a GBCA concern, it can be up to the stakeholder as to how they communicate this. I can't see a way to 'globally' assess a portfolio (e.g. 'multiple buildings' path for other Green Star tools) given the building-specific issues (locations, FM, age of building etc). Perhaps a value-add from GBCA is to 'certify' the portfolio's improvement strategy developed as a result of the individual building assessments?

Comment 23:

The portfolio certification sounds good, but very limited details are provided in the scoping paper. What does this actually mean? Does it mean you will certify a company's entire portfolio? How would the results be communicated? Will it be an average for the company's portfolio? More research of what the companies would like is needed - and that is exactly what you're asking for here, so good...

Comment 24:

I think all buildings still would need to be assessed individually. The owners or managers could work out their overall or average performance. Maybe the GBCA could recommend on how the system could be averaged accommodating portfolio reporting. I would hope that it would highlight performance in all 9 categories and not simply an overall star rating - this can be very misleading and can hide poor performance in key categories such as IEQ.

Comment 25:

Presumably the intent of a "portfolio assessment" is either to indicate quality (provide a marketing statement) and/or provide a cost benefit to the portfolio manager. In terms of a quality indicator the star rating provides some natural banding or quality indication. It may also be suitable to offer say two bands - a "Premium" portfolio consisting of 5 and 6 Star rated building and a "Standard" portfolio for all other Star rated buildings. In terms of cost benefit a simple volume discount may be suitable but perhaps should be geographically based (that is 10% discount for more than 5 rated buildings in Sydney).

Comment 26:

What is the intent? To "equalise" across buildings to get a better average? Or to recognise sponsors who happen to own a number of buildings? Portfolio ratings are a consequence of rating ALL the buildings you own?

Comment 27:

Portfolio assessment should include Energy water and IEQ on a building by building basis. They should also incorporate Tenant productivity somehow as this ultimately [affects] the performance.

GBCA response

It is recognised that an aggregation mechanism would be a desired feature of a certified 'portfolio rating'. This would allow a building owner / manager to officially report its average Green Star – Performance portfolio rating, accounting for all individually rated Green Star – Performance buildings. Another desired 'portfolio rating' feature to be developed is a volume or discounted certification process, which would give building owners / managers an extra cost benefit when certifying various buildings at the same time (or during the same performance period).

The portfolio rating would be used as a reporting mechanism, enabling stakeholders to manage and compare all buildings within a Green Star – Performance portfolio. All buildings within a portfolio would need to have an individual rating to achieve a portfolio rating. Recognising that this may not always be possible, non rated buildings would be assigned a 0-Star Green Star rating. .

GBCA staff, in consultation with the Technical Working Group, will work on the details around 'portfolio ratings' further, taking the comments above into consideration. These details will include how the individual Green Star categories will be accounted for in a portfolio rating and how the validity of individual Green Star - Performance certified ratings will be addressed at portfolio rating level.

3.3 PROPOSED PERIOD OF VALIDITY

It was proposed in the Scoping Paper that certified ratings be valid for 3 years, allowing re-certification to be sought at the end of the 3 year period. Annual 'desktop audits' have been suggested as a possible method to keep the certified assessment current during years 2 and 3, perhaps by verifying the ongoing performance of 'big ticket items'. This may be done with a NABERS Energy certificate, a NABERS Water certificate and some occupant satisfaction proxy.

Extract from Green Star – Performance Scoping Paper, page 8:

The Green Building Council of Australia invites feedback from industry stakeholders on the length of certification validity of 3 years and related processes.

Most stakeholders (***78% of submissions***) agreed with the proposed 3 year validity of Green Star – Performance certified ratings. However, the following comments were submitted for consideration:

Comment 28:

I agree but I think it might be a function of cost as well as performance. 3 years sounds reasonable as long as cost of recertification is not seen as prohibitive.

Comment 29:

I believe 3 years is too long, and if NABERS ratings are used then these will need to be renewed annually.

Comment 30:

The average upgrade cycle is closer to 7. The idea of a satisfaction proxy is a minefield.

Comment 31:

Generally agree however 2 years may be a better rating period as three years is a long time in the life of a building – significant changes can occur with respect to use, occupancy and performance additionally if a building does not get a "big ticket item" performance criteria management of any reduced status may be more effective over a shorter period.

Comment 32:

Ultimately the validity period is going to be dictated/influenced by the method/cost of assessment/auditing/re-certification. NABERS is annually however is simpler to assess. 3 years seems about right but would need to be controlled by a robust auditing (random?) regime in order to keep people honest. Perhaps there could be a component related to Mandatory Disclosure, e.g. if the building is to be sold during the 3 year period and the Green Star Performance rating is going to be used in that marketing/sale, then a full audit is required? The certification/audit process needs to control misuse and 'post-certification alterations' that are currently undermining the tenant market for Green Star.

Comment 33:

A certified NABERS Energy and Water rating should be performed on an annual basis. These should be fed into the Green Star rating. I'm not sure how a portfolio rating would be applied, considering the diverse range of building types that could make up any given portfolio.

Comment 34:

The performance of a building should be encouraged to be at its highest standard all the time. To only have to re-certify every 3 years takes away the edge and the credibility of what is trying to be achieved.

Comment 35:

I think there could be a standard audit where the building is reviewed in its current state to see how it is performing against the points it achieved through the design and more importantly its As-Built rating. Bring on Green Star - In Use reporting. This would be brilliant during due diligence on Green Star rated buildings and I believe would really add value to the Green Star rated buildings that are run as they were designed.

Comment 36:

NABERS energy and water are straight forward enough. The "proxy" element is the worry though! Definition could end up more of a problem than leaving out!

GBCA response

Building owners and operators, particularly in the office market, are currently undergoing an adaptation period with energy efficiency legislation requiring a Building Energy Efficiency Certificate (BEEC) to be presented at the point of lease or sale (which effectively means BEECs would become an annual process). Green Star – Performance will be developed to keep the amount of documentation for certification to a minimum, giving preference to information and data that can be easily accessible and verified such as a BEEC or a NABERS Energy rating.

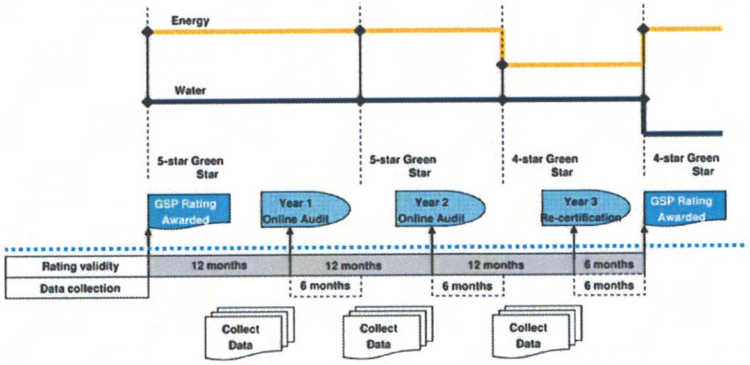
The suggestion of designing a standard auditing mechanism into the Green Star – Performance certification and recertification processes seems to be well accepted amongst stakeholders and it will be further developed.

The proposed certification process would see a certified Green Star – Performance rating remaining valid for 3 years. There would be interim checks at years 1 and 2, preferably using an online system. Energy and water performance data would be submitted to verify that the level of operational performance has been maintained over the proceeding 12 months. A six month 'grace period' for data submission would allow certified ratings to remain current.

Recertification would be required at the end of year 3; however it would be also available sooner if desired.

The figure below illustrates the proposed 3 year certification cycle, including the interim checks at the end of years 1 and 2 and the energy and water data provided at these milestones.

Figure 1: Propose Green Star – Performance certification timeline



GBCA staff will work with the Technical Working Group to further develop this concept, considering the feedback provided above and the interaction with other Green Star rating types (Design and As Built).

3.4 STAR LEVELS

It was proposed in the Green Star – Performance Scoping Paper that certified ratings would be available for all star levels, from 1 to 6 stars.

> Extract from Green Star – Performance Scoping Paper, page 8:
>
> The Green Building Council of Australia invites feedback from industry stakeholders on the availability of Green Star certification for all levels, from 1 to 6 stars, within the operational performance methodology.

Most stakeholders (***88% of submissions***) agreed with the proposal of making Green Star – Performance certified ratings available for all star levels. However, the following comments were submitted for consideration:

Comment 37:

Definitely. And this should be rolled into all other Green Star tools - I think this is the best way to make '4 star sexy' and encourage the next tier of owners to adopt Green Star. Certification/assessment fees should also be scaled to suit the stars (obviously a 2 star assessment is going to be much faster than a 6 star). Conditional Requirements should however be expanded to ensure that even a 1 star rating is still going to have some value to the market (e.g. Energy-1, Eco-1, Mat-1? VOCs?)

Comment 38:

From the start I think it would be a good idea. Everyone will likely get a 'rating' and then over time after the tool gets a bit of traction, you could phase out some of the lower levels of performance and raise the bar so to speak.

Comment 39:

Don't understand why you want to advertise that your building is performing really bad or why GBCA should award mediocrity. I think buildings could be assessed and get a 2 or 3 star assessment results, but the GBCA should only give out diplomas and plaques for 4, 5 and 6 star buildings.

Comment 40:

I'm not sure if companies would pay for a 1-3 star rating. If this assessment costs anywhere near as much as a design or as-built rating, then it is unlikely that a 1-3 star rating would be used. It is possible that these ratings could be used to identify areas of improvement, although it is unlikely that a company will pay to receive this rating.

Comment 41:

If this is to occur, 1-3 stars need to be provided with agreed terms equivalent to the existing 'Best Practice', Australian Excellence' and 'World Leadership' for 4, 5 and 6 stars respectively. These should demonstrate that a 1 star Green Star rating is, in fact, not very good.

GBCA response

The intention of having Green Star – Performance certified ratings from 1 to 6 stars would be to allow building owners / managers to demonstrate operational improvements of their buildings over time. This way, for instance, a building would be allowed to be awarded a 3-star Green Star – Performance rating the first time it goes through the certification process. Over the next 3 years, the building operators may be able to improve their building operational performance in a certain category or concentrate on addressing another category that was previously neglected. At the time of recertification, this building could then go for a higher certification level clearly demonstrating improvements to their tenants and / or occupiers.

The GBCA currently labels a 1 star Green Star rating as 'Minimum Practice', 2 stars as 'Average Practice' and 3 stars 'Good Practice'. However these star levels are not available for certification, since Green Star currently only recognises best practice in new building design and construction (or major refurbishments). As Green Star – Performance will address the existing building market, it is recognised that some existing buildings may start their Green Star path at a lower performance level. The existing Green Star labels for 1, 2 and 3 Star Green Star would remain in Green Star - Performance.

Another Star level, 0 Stars, would be created to designate buildings that are either not currently rated with Green Star – Performance, or buildings that do not meet the minimum requirements for certification, As mentioned earlier, this would be important for the implementation of portfolio ratings, where ALL buildings within a portfolio would need to have an individual rating for a portfolio rating to be possible.

3.5 ENVIRONMENTAL CRITERIA AND IMPACTS

It was proposed in the Scoping Paper that all the current Green Star categories were to be addressed in Green Star – Performance. These categories are: Management, Indoor Environment Quality, Energy, Transport, Water, Materials, Land Use & Ecology and Emissions (point source pollution). It was also suggested that the Innovation category be kept, rewarding innovative operational performance.

Extract from Green Star – Performance Scoping Paper, page 8:

The Green Building Council of Australia invites feedback from industry stakeholders on the range of impact categories proposed for inclusion in the Green Star – Performance rating tool and details of particular credits that should be considered.

Most stakeholders (***72% of submissions***) agreed with the proposal of keeping all the current Green Star categories in Green Star - Performance. However, the following comments were submitted for consideration:

Comment 42:

Definitely. Anything else is going to cause confusion and doubt. The place for variation is within the credits themselves.

Comment 43:

Good luck developing all the metrics! Learning from the previous Green Star tool for existing building it seems that being restricted to the Green Star framework caused us quite a few problems. I don't think we should be held to the eight categories, it is not possible to create criteria for some of them, and it may be that we want some other category. I don't think the eight Green Star categories are at all perfect. Most of them are for example not environmental impacts (e.g. transport, management, materials)

Comment 44:

I'm not sure that credit categories such as Transport, Land Use & Ecology and Emissions would be useful in the rating tool as once these are evaluated they are unlikely to change unless significant modifications are made to the building / landscaping.

Comment 45:

Some of these are stagnant, will change little in the course of the rating period, or the building manager has no control over. eg transport and land use. Criteria should focus on IEQ, Energy, Water, and Innovation.

Comment 46:

No we must include a reward for using the embodied energy that the building took to make. The longer we use it the more efficiently we use it. This is critical and should be well rewarded.

Comment 47:

All "standard" Green Star categories may be relevant. However "materials" would seem relevant only if materials were introduced or deleted during an operational period – that is a change in sustainability due to variation in materials. It may also be the case that information on already incorporated materials is difficult to obtain post occupancy. Similarly Land Use and Ecology may have limited relevance. Innovation was not mentioned in the scoping paper but it would seem that it too is relevant to recognise any significant operational innovations introduced into building operations. Embodied energy by definition is not an operational quality. It is a static quantity of energy forfeited by the construction of the building; it is not relevant to a performance rating. Embodied energy is clearly relevant to existing "Design" and "As-Built" tools which would benefit from further incorporation of Embodied Energy.

Comment 48:

No. materials and ecology should not be included as they would not feature greatly in the operations unless it incorporates fitouts.

Comment 49:

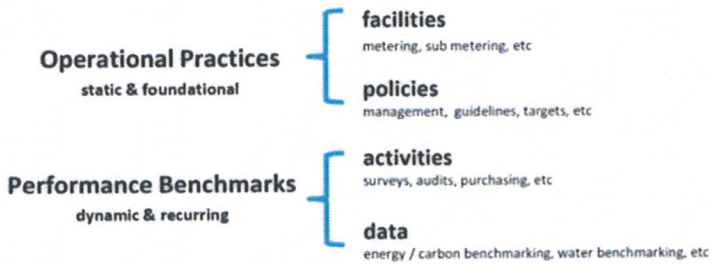
Education, training and continual professional development should also be integrated.

GBCA response

Green Star – Performance will address operational practices and operational impacts of buildings, including but not limited to, performance benchmarking. The now discontinued 'Green Star Existing Building EXTENDED PILOT' had a completely different approach to Green Star – Performance, as it focused solely on design attributes of existing buildings.

It is recognised that some Green Star categories (such as Energy) may be more fluid than others (such as Land Use & Ecology) when it comes to building operations. However, feedback from stakeholders has supported the view that maintaining consistency between the Design/As Built tools and the Performance rating tool is highly desirable. Keeping all the Green Star categories also assists in maintaining the credibility associated with the other Green Star tools.

Having said that, it is expected that some credit criteria may be more 'static' in nature than others. The diagram below illustrates the types of issues Green Star – Performance credits will address:



'Operational practices' criteria will address foundational or static requirements that allow a building to successfully implement Green Star – Performance and plan its upgrade targets. These criteria may not change very much after initial implementation, but may be revised or updated over time. 'Performance benchmarks' criteria will address dynamic indicators of a building's performance over time. They can be either recurring activities like a 'satisfaction survey' or ongoing tracking such as monitoring of energy and water consumption. Category weightings may be used to focus attention onto the more dynamic categories such as if so required.

As Green Star – Performance is further developed the definitions of Green Star categories in an operational sense will need to be widely communicated. For instance, the Materials category in Green Star – Performance will cover materials that go into - or come out of - a building, allowing it to be operated as required, not the materials of which the building is made. Areas such as sustainable procurement and purchasing (materials in) and operational waste benchmarking (materials out) may also be covered by the Materials category.

Although embodied energy and embodied carbon are important issues, they are not operational issues and as such will not be addressed directly in Green Star – Performance. Embodied energy and embodied carbon will be considered by another Green Star project currently being carried out – the Life Cycle Assessment (LCA) methodology project, which will be used in the Design and As Built rating tools in the future.

3.6 CREDITS TO BE CONSIDERED

The following comments were submitted in response to the second part of the request for feedback above, dealing with *'details of particular credits that should be considered.'*

Comment 50:

Without going into detail (big task); all existing credits relating to outdoor air supply, air change effectiveness, VOCs, daylight and lighting, BMS controls, Mat-1, Eco-3 (OIv1.1), air supply ductwork, maintainability (adapted to suit ongoing operation), (reduce value of Transport credits), water (increase value of plant-related potable water consumption, e.g. cooling towers), indoor plants (not sure how to address in base building?)

Comment 51:

I think there needs to be a procurement credit. I think there needs to be some mechanism to engage or include the tenants and its activities in the assessment.

Comment 52:

Maybe the operation and maintenance manual and training checklist.

Comment 53:

Weighting should be given to IEQ, Energy, Water, Innovation. Consideration to Materials and Management.

Comment 54:

Embodied energy, not just in the materials used in the building, but the embodied energy contained in the building itself. While writing, as there is no other space. I do not think that the current design accommodates the really large buildings that are continuously being upgraded and will never stop being upgraded. We need a system that can rate the base building, ie with management systems and good NABERS ratings and then have a system whereby the floors are upgraded to Green Star when they are available. If you cannot get to some floors because they are occupied that does not matter. The way to manage that would be for the owner to commit, as part of the overall rating, that when floors become available they will upgrade them to certain GS ratings. It might be that as a minimum they would be to GS D & AB 2012. It would not be wise to commit to future standards, but the market would keep pushing the standards and no doubt when the standards changed they would assess them and make a call, and then probably go to the next standard. Hope you like the idea - you have probably heard it before. Best wishes - good initiative.

Comment 55:

Cleaning and cleanliness as relates occupant health and longevity to reduce land fill disposal (of old carpets for eg). Availability of service and comfort across the year. Toxicity. Responsiveness and quality of communication for FM team. Building Use Studies protocols could inform credits to be considered from the survey and assessment of the building performance.

Comment 56:

Management - ongoing commissioning Facilities management Energy - ENE1 and ENE2 IEQ - thermal comfort, air quality Water efficiency and emissions refrigerant replacement and maintenance.

Comment 57:

Education, training and professional development are critical. As is competency standards for those responsible for building operations, that is, facility managers.

GBCA response

Green Star – Performance will address operational practices and operational impacts of buildings, including but not limited to, performance benchmarking. There will be issues that have not been previously addressed by Green Star Design and As Built ratings which will be addressed in Green Star - Performance. These issues include procurement, cleaning and cleanliness, ongoing operation and maintenance, ongoing commissioning and monitoring of user/ occupant satisfaction, as suggested by some stakeholders.

Although embodied energy and embodied carbon are important issues, they are not operational issues and as such will not be addressed directly in Green Star – Performance, as mentioned earlier.

It is anticipated that Green Star – Performance will be flexible enough to be applied to existing buildings of many sizes, allowing large iconic CBD buildings to start their Green Star path at the appropriate operational performance level. As with other Green Star rating tools, it is not envisioned that parts or portions of buildings will be available for Green Star – Performance accreditation.

Education and training are important parts of the Green Star – Performance project and the GBCA will be developing content to support rating tool training as well as general building operations courses. It is envisioned that, as with other Green Star tools, some of this education and training will be delivered in association with industry.

3.7 NABERS ENERGY AND NABERS WATER CERTIFICATES

It was suggested in the Scoping Paper that reporting standards such as NABERS should be referenced into the proposed Green Star – Performance assessment methodology whenever possible and the feedback below was requested.

Extract from Green Star – Performance Scoping Paper, page 9:

The Green Building Council of Australia invites feedback from industry stakeholders on the adoption of NABERS Energy, NABERS Water, NABERS Indoor Environment and NABERS Waste as industry practice in the real estate market.

All respondents (***100% of submissions***) suggested that *NABERS Energy* be referenced in the *Green Star – Performance* rating tool, since it is widely used by industry and it has been written into legislation for the commercial office sector, as part of the national Commercial Building

Disclosure program. Similarly, most stakeholders (***86% of submissions***) agreed that it would be beneficial to reference *NABERS Water* in the *Green Star – Performance* rating tool.

GBCA response

According to figures provided by the NABERS national administrators, over 1000 office buildings have been awarded *NABERS Energy* certificates in FY 2010/2011, while 425 office buildings have been awarded *NABERS Water* certificates in this same period. In the retail sector (shopping centres) 31 buildings have been awarded *NABERS Energy* certificates, while 34 buildings have been awarded *NABERS Water* certificates.

At this point in time, it is likely that *NABERS Energy* and *NABERS Water* certificates will become mandatory requirements for *Green Star – Performance* certified ratings. These certificates and the data provided with them will be used as a way to comply with minimum requirements and 'claim credits' in the Energy and Water categories in the *Green Star – Performance* rating tool.

For those building uses not currently covered by *NABERS Energy* and *NABERS Water*, the GBCA will develop interim operational performance benchmarks for the appropriate Energy and Water categories in the *Green Star – Performance* rating tool. Where possible this development will take place in partnership with the NABERS national administrators (NSW Office of Environment and Heritage). These interim energy and water benchmarks will be used in the *Green Star – Performance* rating tool until NABERS benchmarks for other building uses have been developed. To facilitate an ongoing close alignment between Green Star and NABERS, the GBCA will provide recommendations to the NABERS national steering committee on the preferred priorities for development of new NABERS benchmarks.

The GBCA aims to collaborate with the NABERS national administrators and industry stakeholders to assist in collecting the necessary data to develop energy and water benchmarks for other building uses.

The GBCA is committed to ensuring that Green Star – Performance ratings maintain transparency. To this end, the method of communicating and reporting the individual achievement in each Green Star category and the contributing NABERS certificates will be investigated with stakeholders, including the NABERS national administrators.

3.8 NABERS WASTE CERTIFICATES

Extract from Green Star – Performance Scoping Paper, page 9:

The Green Building Council of Australia invites feedback from industry stakeholders on the adoption of NABERS Energy, NABERS Water, NABERS Indoor Environment and NABERS Waste as industry practice in the real estate market.

About one third of stakeholders (***38% of submissions***) suggested that *NABERS Waste* could be referenced as industry practice. The following comments were submitted for consideration:

> Comment 58:
>
> Perhaps the benchmarks should be considered, not the process; again offices only.
>
> Comment 59:
>
> Very few bother with NABERS Waste – too prescriptive.

Comment 60:

In general yes to the benchmarks. This measures the % of waste overall that is diverted from landfill which makes sense.

Comment 61:

Perhaps only as one component of the category.

GBCA response

The feedback received suggests that the *NABERS Waste* rating process has not yet been widely adopted as industry practice in the real estate market, although there was greater support for the rating benchmarks. Figures provided by the NABERS national administrators also indicate that the *NABERS Waste* methodology has not been widely used by the real estate industry. In FY 2010/2011, only two (2) office buildings in Australia were awarded *NABERS Waste* certificates. It has also been pointed out that *NABERS Waste* only addresses the commercial office market.

At this point in time, it is unlikely that *NABERS Waste* certificates will become a mandatory requirement of *Green Star – Performance* ratings. However, the GBCA would like benchmarks used in NABERS Waste to be used to measure waste-related performance in *Green Star – Performance* if the issues raised by stakeholders can be addressed

GBCA staff will work with the Technical Working Group during the tool development phase of the project, considering the feedback provided above and the interaction with other Green Star rating types (Design and As Built) to address waste management credits in *Green Star – Performance*. The GBCA and the NABERS national administrators will work together to identify and address any stakeholder concerns in the NABERS Waste methodology rather than create a competing benchmark to measure operational performance. If the issues raise by stakeholders are addressed, NABERS Waste may become a mandatory requirement of Green Star – Performance in the future.

3.9 NABERS INDOOR ENVIRONMENT CERTIFICATES

Approximately a quarter of stakeholders (***26% of submissions***) indicated that *NABERS Indoor Environment* is currently considered industry practice in the real estate industry. The following comments were submitted for consideration:

Comment 62:

Some NABERS tools may require some modification, such as NABERS indoor Environment. This currently uses a 1 day snapshot of measured parameters to assess the air quality component, for the whole year! No additional credit is given for continuous monitoring. It also includes parameters, such as airborne microbial assessment, that are not appropriate for building ratings. Microbial assessment is appropriate for specific response to water/mould contamination within a building…but not for when rating one building with another around Australia.

Comment 63:

The NABERS Indoor Environment Quality tool varies somewhat to Green Star and may require further examination as to the adaptability of the two tools.

Comment 64:

Maybe as above (benchmarks only) however it's still of value to include 'Green Star-type' credits that provide users with some suggestions on how to achieve the IEQ rating. The NABERS IEQ requires on-site testing which is going to lead to costs/delays etc - would be preferable to perhaps offer alternative/DTS pathway also.

Comment 65:

Only available for offices; too complex on its own.

Comment 66:

May not have quite hit the target as an assessment tool.

GBCA response

The feedback received by the GBCA also indicates that *NABERS Indoor Environment* for offices has not been widely accepted as industry practice in the real estate market. According to figures provided by the NABERS national administrators, ten (10) office buildings in Australia were awarded *NABERS Indoor Environment* certificates in FY 2010/2011.

Stakeholder feedback suggests that the suitability and frequency of on-site monitoring as well as some of the parameters measured by *NABERS Indoor Environment* for offices may not be ideal. It has also been pointed out that there are no *NABERS Indoor Environment* parameters for other buildings uses besides offices.

At this point in time, it is unlikely that *NABERS Indoor Environment* certificates will become a mandatory requirement of *Green Star – Performance* ratings. However, the GBCA would like the indoor environment benchmarks used in NABERS Indoor Environment to be used to measure indoor environment performance in *Green Star – Performance* if the issues raised by stakeholders can be addressed. .

There have been substantial developments in operational performance measurement metrics over the past two years, particularly in the field of operations-related indoor environment. One example of such developments, is the 'Performance Metric Protocols' publication release in 2010 and co-authored by the U.S. Green Building Council (USGBC), the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) and the Chartered Institution of Building Services Engineers (CIBSE).

These 'Performance Metric Protocols' identify what to measure, how it is to be measured and how often it is to be measured for inclusion in a building's operations and maintenance plan. This operations-based approach relies on three levels of indoor environment performance – Basic, Intermediate and Advanced – providing choices for consistent performance characterisation of buildings and comparison to benchmarks.

GBCA staff will work with a Technical Working Group during the tool development phase of the project, considering the feedback provided above and the interaction with other Green Star rating types (Design and As Built) to address Indoor Environment Quality credits in *Green Star – Performance*. The GBCA and the NABERS national administrators will work together to identify and address any stakeholder concerns in the NABERS Indoor Environment rating tool rather than create a competing benchmark to measure Indoor Environment operational performance. If the issues raised by stakeholders are addressed NABERS Indoor Environment may become a mandatory component of Green Star – Performance in the future.

3.10 TARGET BUILDING TYPES

The GBCA's intention is for Green Star – Performance to address all building types and uses which are currently covered by the Design and As Built rating tools. These include education facilities, healthcare facilities, industrial buildings, commercial office buildings, retail centres, public buildings and the multi-unit residential market. However, the following question was raised in the Scoping Paper:

> Extract from Green Star – Performance Scoping Paper, page 9:
>
> The Green Building Council of Australia invites feedback from industry stakeholders on the need for a Green Star assessment methodology for existing buildings in the multi-unit residential market.

Slightly more than half of stakeholders (***53% of submissions***) indicated that it would be beneficial to have a Green Star – Performance rating tool available for the multi-unit residential market. The following comments were submitted for consideration:

Comment 67:

Go for it. Part of this is about educating the masses, and if their 'Green Star apartment' leads to them becoming slightly greener in their everyday living then some good has been achieved. The BASIX tool (amongst others) isn't robust enough to deliver the best outcomes so a Green Star tool would be valuable.

Comment 68:

While the concept of a performance rating for all building types is endorsed it may be that the performance of a multi-unit residential building would be very difficult to determine unless performance indicators (such as occupancy, energy and water) could be determined for all units.

Comment 69:

Not yet, in the current elevated house price market the buyer is not prepared to pay for additional costs unless mandated.

Comment 70:

Yes, but this could be considered in future versions of the tool as this section of the market is under-developed compared to commercial office, education, etc.

GBCA response

Feedback from the Stakeholder Reference Group and other stakeholders indicates that Green Star – Performance should address all building types and uses which are currently addressed by Green Star Design and As Built tools. These include – commercial office buildings, industrial buildings, retail centres, education facilities, healthcare facilities, public buildings and multi-unit residential.

However, it is likely that the first version of Green Star – Performance will be developed to address commercial office buildings and shopping centres or industrial buildings. Other space uses and

building types will be able to be addressed by Green Star – Performance in subsequent releases of the rating tool.

While there is general support for the application of the Green Star - Performance tool in the multi-unit residential market, stakeholders have suggested that this could be included in a future release of the tool, rather than within the initial tool development phase.

3.11 OCCUPANT INVOLVEMENT

Green Star – Performance is to address 'base building' and 'whole building' holistic operational performance, depending on the particular industry practice. However, initial feedback from stakeholders indicated that tenant or occupier involvement in a performance rating should also be explored. This issue was raised in the Scoping Paper, as described below.

Extract from Green Star – Performance Scoping Paper, page 9:

The Green Building Council of Australia invites feedback from industry stakeholders on the need for a Green Star assessment methodology for existing building occupiers or 'tenancies'.

The majority of stakeholders (***65% of submissions***) thought it would be desirable for tenants / occupants to be involved in Green Star – Performance, either through an independent rating or as an integral part of a 'whole building' rating. The following comments were submitted for consideration:

Comment 71:

Valuable. A reluctant/unwilling landlord shouldn't prevent a tenant from being proactive and reducing their environmental impact. This should be relatively straightforward [in association with] the Interiors tool.

Comment 72:

I think it's fairly important to distinguish between tenancies. A trading floor in an office will use far more energy than a law firm of similar size in the same building or a call center.

Comment 73:

Yes the base Building should be the main measure because in some instances you have no control over tenants.

Comment 74:

It may be useful, perhaps in association with a 'base building' rating.

Comment 75:

I think both options should be made available, as in some cases not all tenants of a building are going to be interested in getting a rating, which means they will negatively impact on the other tenant's results.

Comment 76:

Agree with reservations. Under current NABERS methodology it is far too easy for a tenant to "Off Load" onto base building. Demarcation lines need to be clearly defined, and they need to deal with variables such as tenants with people that come to work early, or outside leasing hours.

Comment 77:

Agree strongly that individual tenancies need to be addressed. This will allow engagement of specific occupiers around how they use their space and how it is fitted out.

Comment 78:

No I do not agree, there is a third part to this and that is the Landlord's preparation of the space the tenancy will occupy. The landlord cannot be responsible for the way the tenant treats the tenancy, but he can be responsible for the base building and the way he prepares the tenancy before the tenant takes occupation. Please do not confuse these areas.

Comment 79:

Clearly the two are inextricably linked! Good luck separating them but clearly a methodology must be agreed that is credible to manage. May need to reference the lease arrangements too and extent of influence.

Comment 80:

It is reasonable that tenancies are also able to demonstrate sustainable performance. Alignment with NABERS methodology would also be beneficial – anything other than such an alignment would cause confusion and add to complexity and cost if both ratings were pursued.

Comment 81:

In order to assess the building's 'performance' the level of productivity is required from the tenancy's within therefore there needs to be feedback from these tenants.

GBCA response

The feedback provided above supports the view that building occupiers should be involved in the Green Star – Performance rating process. Green Star – Performance will be used to certify the ongoing operations of existing buildings, by providing the market with a holistic approach to building performance. Its aim is to encourage owners and operators of existing buildings to implement sustainable practices and reduce the environmental impact of their buildings over their life cycles.

It is envisioned that Green Star – Performance will be a whole of building rating tool, allowing 'base building' ratings to take place while encouraging interactions between owner/operators and occupiers. The GBCA recognises the 'symbiotic relationship' that exists between base building and occupiers and will design Green Star – Performance to recognise this relationship. This approach could be used for all building types.

The 'World Leadership' rating (6 Stars) would be designed to include occupant involvement. It has been suggested that one should not be able to claim world leadership in building operations without interacting and engaging with building occupants.

It is not envisioned that individual tenant spaces will be eligible for a Green Star – Performance rating on their own; rather occupiers will contribute to a building's rating, either through a 'green lease' approach of through specific credits aimed at occupants, by providing operational

performance information to building owners / operators. Building owners/operators would retain control of base building operations. It has also been suggested that occupiers be recognised for their contributions to overall building sustainability by being individually named as participating organisations on the Green Star – Performance rating certificate awarded to a particular building.

There is also the opportunity to build operational performance requirement credits into the Green Star – Interiors rating tool in the future, allowing occupiers to contribute to a building's Green Star – Performance rating in a more formalised way.

GBCA staff will work with the Technical Working Group during the tool development phase of the project, considering the feedback provided above and the interaction with other Green Star rating types (Design, As Built and Interiors).

3.12 TARGET USERS

It is believed that Green Star - Performance would be of interest to a large stakeholder audience, such as institutional investors, building tenants and consultants; however the main target users of the assessment methodology are believed to be:

- Building owners
- Facilities managers, including maintenance professionals
- Portfolio managers
- Government organisations

Extract from Green Star – Performance Scoping Paper, page 10:

The Green Building Council of Australia invites feedback from industry stakeholders on other uses of the Green Star assessment methodology for existing buildings and how users might interact with the rating tool.

The following comments were submitted for consideration:

Comment 82:

Tenants. Real estate agents (however they've a long way to go before they realise the benefits of this tool).

Comment 83:

I think tenants will be a key stakeholder, especially to generate demand. Government tenants were key for the current green star tools. We need to engage with leasing agents and tenant advisors to pick up the tenants.

Comment 84:

A data base for performance by use by engineers and real estate agents.

Comment 85:

Universities - studies on building energy consumption - Real estate agents - marketing buildings

Comment 86:

Tenants' representatives could use ratings to guide prospective tenants.

Comment 87:

As a critical part of Technical Due Diligence, it would provide a highly valuable audit tool.

Comment 88:

Tenants looking for a new building to move into would find this information valuable especially if it had real productivity figures associated.

Comment 89:

Developers would seem to be a further significant "user" of the performance tool. It is not unusual for developers, aware that a "guaranteed" rating for NABERS or Green Star will require the Head Contractor to achieve such a rating in order to enhance the sales potential of the building, a "Performance" rating could be similarly required.

Comment 90:

Don't miss the PPP delivered buildings.

Comment 91:

Could potentially act as a data gathering tool under programs such as Commercial Building Disclosure.

GBCA response

It is the intention of the GBCA to engage with the appropriate target users. Based on the feedback provided, these include tenants, real estate agents, leasing agents, universities and developers as well as the target users suggested in the Scoping Paper (building owners, facilities managers, portfolio managers and government organisations).

3.13 DELIVERY MECHANISM AND COSTS

Stakeholder feedback has identified the need for Green Star - Performance to be user-friendly, cost effective and easy to update and upgrade. It was therefore proposed that the Green Star – Performance be delivered fully online, including the rating tool itself, the certification and re-certification process and related educational resources.

Further work and research is required around the actual costs associated with delivering a Green Star - Performance certified rating. However, as part of this research, the following was requested in the Scoping Paper:

Extract from Green Star – Performance Scoping Paper, page 10:

The Green Building Council of Australia invites feedback from industry stakeholders on the costs associated with building operations, such as 'annual operational budgets' or 'upgrade budgets'. Metrics based on area of buildings would be of most use.

The following comments were submitted in response to the feedback request above.

Comment 92:

Note that the mandatory disclosure tenants lighting assessment is predicted to cost $1500.

Comment 93:

Not enough room here for a detailed explanation. Current R&M budget for a 45000m2 building is $112 per square meter.

Comment 94:

The only comment here is that provision of facilities management services often occurs at very tight financial margins (eg 5-7%), so any costs need to reflect this.

GBCA response

The GBCA appreciates the feedback provided above. Stakeholders will be kept informed of developments relating to the Green Star – Performance delivery mechanism and associated costs, as the project develops.

4 Contact information

Stakeholders are encouraged to contact the Green Building Council of Australia for further information and to provide comments.

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