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# Green Building Certification System Review – Appendices

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**Pacific Northwest**  
NATIONAL LABORATORY

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# Appendix A: EISA Sections 433 & 436

## Energy Independence and Security Act of 2007, December 13, 2007

SEC. 433. FEDERAL BUILDING ENERGY EFFICIENCY PERFORMANCE STANDARDS.

(a) STANDARDS.—Section 305(a)(3) of the Energy Conservation and Production Act (42 U.S.C. 6834(a)(3)) is amended by adding at the end the following new subparagraph:

(D) Not later than 1 year after the date of enactment of the Energy Independence and Security Act of 2007, the Secretary shall establish, by rule, revised Federal building energy efficiency performance standards that require that: (i) For new Federal buildings and Federal buildings undergoing major renovations, with respect to which the Administrator of General Services is required to transmit a prospectus to Congress under section 3307 of title 40, United States Code, in the case of public buildings (as defined in section 3301 of title 40, United States Code), or of at least \$2,500,000 in costs adjusted annually for inflation for other buildings:

(I) The buildings shall be designed so that the fossil fuel-generated energy consumption of the buildings is reduced, as compared with such energy consumption by a similar building in fiscal year 2003 (as measured by Commercial Buildings Energy Consumption Survey or Residential Energy Consumption Survey data from the Energy Information Agency), by the percentage specified in the following table:

| Fiscal Year Percentage Reduction |      |
|----------------------------------|------|
| 2010 .....                       | 55   |
| 2015 .....                       | 65   |
| 2020 .....                       | 80   |
| 2025 .....                       | 90   |
| 2030 .....                       | 100. |

(II) Upon petition by an agency subject to this subparagraph, the Secretary may adjust the applicable numeric requirement under subclause (I) downward with respect to a specific building, if the head of the agency designing the building certifies in writing that meeting such requirement would be technically impracticable in light of the agency's specified functional needs for that building and the Secretary concurs with the agency's conclusion. This subclause shall not apply to the General Services Administration.

(III) Sustainable design principles shall be applied to the siting, design, and construction of such buildings. Not later than 90 days after the date of enactment of the Energy Independence and Security Act of 2007, the Secretary, after reviewing the findings of the Federal Director under section 436(h) of that Act, in consultation with the Administrator of General Services, and in consultation with the Secretary of Defense for considerations relating to those facilities under the custody and control of the Department of Defense, shall identify a certification system and level for green buildings that the

Secretary determines to be the most likely to encourage a comprehensive and environmentally-sound approach to certification of green buildings. The identification of the certification system and level shall be based on a review of the Federal Director's findings under section 436(h) of the Energy Independence and Security Act of 2007 and the criteria specified in clause (iii), shall identify the highest level the Secretary determines is appropriate above the minimum level required for certification under the system selected, and shall achieve results at least comparable to the system used by and highest level referenced by the General Services Administration as of the date of enactment of the Energy Independence and Security Act of 2007. Within 90 days of the completion of each study required by clause (iv), the Secretary, in consultation with the Administrator of General Services, and in consultation with the Secretary of Defense for considerations relating to those facilities under the custody and control of the Department of Defense, shall review and update the certification system and level, taking into account the conclusions of such study.

(ii) In establishing criteria for identifying major renovations that are subject to the requirements of this subparagraph, the Secretary shall take into account the scope, degree, and types of renovations that are likely to provide significant opportunities for substantial improvements in energy efficiency.

(iii) In identifying the green building certification system and level, the Secretary shall take into consideration—

(I) the ability and availability of assessors and auditors to independently verify the criteria and measurement of metrics at the scale necessary to implement this subparagraph;

(II) the ability of the applicable certification organization to collect and reflect public comment;

(III) the ability of the standard to be developed and revised through a consensus-based process;

(IV) an evaluation of the robustness of the criteria for a high-performance green building, which shall give credit for promoting—

(aa) efficient and sustainable use of water, energy, and other natural resources;

(bb) use of renewable energy sources;

(cc) improved indoor environmental quality through enhanced indoor air quality, thermal comfort, acoustics, day lighting, pollutant source control, and use of low-emission materials and building system controls; and

(dd) such other criteria as the Secretary determines to be appropriate; and

(V) national recognition within the building industry.

(iv) At least once every five years, and in accordance with section 436 of the Energy Independence and Security Act of 2007, the Administrator of General Services shall conduct a study to evaluate and compare available third-party green building certification systems and levels, taking into account the criteria listed in clause (iii).

(v) The Secretary may by rule allow Federal agencies to develop internal certification processes, using certified professionals, in lieu of certification by the certification entity identified under clause

(i)(III). The Secretary shall include in any such rule guidelines to ensure that the certification process results in buildings meeting the applicable certification system and level identified under clause (i)(III). An agency employing an internal certification process must continue to obtain external certification by the certification entity identified under clause (i)(III) for at least 5 percent of the total number of buildings certified annually by the agency.

(vi) With respect to privatized military housing, the Secretary of Defense, after consultation with the Secretary may, through rulemaking, develop alternative criteria to those established by subclauses (I) and (III) of clause (i) that achieve an equivalent result in terms of energy savings, sustainable design, and green building performance.

(vii) In addition to any use of water conservation technologies otherwise required by this section, water conservation technologies shall be applied to the extent that the technologies are life-cycle cost-effective.

(b) DEFINITIONS.—Section 303(6) of the Energy Conservation and Production Act (42 U.S.C. 6832(6)) is amended by striking “which is not legally subject to State or local building codes or similar requirements.” and inserting “Such term shall include buildings built for the purpose of being leased by a Federal agency, and privatized military housing.”

(c) REVISION OF FEDERAL ACQUISITION REGULATION.—Not later than 2 years after the date of the enactment of this Act, the Federal Acquisition Regulation shall be revised to require Federal officers and employees to comply with this section and the amendments made by this section in the acquisition, construction, or major renovation of any facility. The members of the Federal Acquisition Regulatory Council (established under section 25 of the Office of Federal Procurement Policy Act (41 U.S.C. 421)) shall consult with the Federal Director and the Commercial Director before promulgating regulations to carry out this subsection.

(d) GUIDANCE.—Not later than 90 days after the date of promulgation of the revised regulations under subsection (c), the Administrator for Federal Procurement Policy shall issue guidance to all Federal procurement executives providing direction and instructions to renegotiate the design of proposed facilities and major renovations for existing facilities to incorporate improvements that are consistent with this section.

SEC. 436. HIGH-PERFORMANCE GREEN FEDERAL BUILDINGS

(a) ESTABLISHMENT OF OFFICE.—Not later than 60 days after the date of enactment of this Act, the Administrator shall establish within the General Services Administration an Office of Federal High-Performance Green Buildings, and appoint an individual to serve as Federal Director in, a position in the career-reserved Senior Executive service, to—

- (1) establish and manage the Office of Federal High-Performance Green Buildings; and
- (2) carry out other duties as required under this subtitle.

(b) COMPENSATION.—The compensation of the Federal Director shall not exceed the maximum rate of basic pay for the Senior Executive Service under section 5382 of title 5, United States Code, including any applicable locality based comparability payment that may be authorized under section 5304(h)(2)(C) of that title.

(c) DUTIES.—The Federal Director shall—

(1) coordinate the activities of the Office of Federal High-Performance Green Buildings with the activities of the Office of Commercial High-Performance Green Buildings, and the Secretary, in accordance with section 305(a)(3)(D) of the Energy Conservation and Production Act (42 U.S.C. 6834(a)(3)(D));

(2) ensure full coordination of high-performance green building information and activities within the General Services Administration and all relevant agencies, including, at a minimum—

- (A) the Environmental Protection Agency;
- (B) the Office of the Federal Environmental Executive;
- (C) the Office of Federal Procurement Policy;
- (D) the Department of Energy;
- (E) the Department of Health and Human Services;
- (F) the Department of Defense;
- (G) the Department of Transportation;
- (H) the National Institute of Standards and Technology; and
- (I) the Office of Science and Technology Policy;

(3) establish a senior-level Federal Green Building Advisory Committee under section 474, which shall provide advice and recommendations in accordance with that section and subsection (d);

(4) identify and every 5 years reassess improved or higher rating standards recommended by the Advisory Committee;

(5) ensure full coordination, dissemination of information regarding, and promotion of the results of research and development information relating to Federal high-performance green building initiatives;

(6) identify and develop Federal high-performance green building standards for all types of Federal facilities, consistent with the requirements of this subtitle and section 305(a)(3)(D) of the Energy Conservation and Production Act (42 U.S.C. 6834(a)(3)(D));

(7) establish green practices that can be used throughout the life of a Federal facility;

(8) review and analyze current Federal budget practices and life-cycle costing issues, and make recommendations to Congress, in accordance with subsection (d); and

(9) identify opportunities to demonstrate innovative and emerging green building technologies and concepts.

(d) ADDITIONAL DUTIES.—The Federal Director, in consultation with the Commercial Director and the Advisory Committee, and consistent with the requirements of section 305(a)(3)(D) of the Energy Conservation and Production Act (42 U.S.C. 6834(a)(3)(D)) shall—

(1) identify, review, and analyze current budget and contracting practices that affect achievement of high-performance green buildings, including the identification of barriers to high-performance green building life-cycle costing and budgetary issues;

(2) develop guidance and conduct training sessions with budget specialists and contracting personnel from Federal agencies and budget examiners to apply life-cycle cost criteria to actual projects;

(3) identify tools to aid life-cycle cost decisionmaking; and

(4) explore the feasibility of incorporating the benefits of high-performance green buildings, such as security benefits, into a cost-budget analysis to aid in life-cycle costing for budget and decisionmaking processes.

(e) INCENTIVES.—Within 90 days after the date of enactment of this Act, the Federal Director shall identify incentives to encourage the expedited use of high-performance green buildings and related technology in the operations of the Federal Government, in accordance with the requirements of section 305(a)(3)(D) of the Energy Conservation and Production Act (42 U.S.C. 6834(a)(3)(D)), including through—

(1) the provision of recognition awards; and

(2) the maximum feasible retention of financial savings in the annual budgets of Federal agencies for use in reinvesting in future high-performance green building initiatives.

(f) REPORT.—Not later than 2 years after the date of enactment of this Act, and biennially thereafter, the Federal Director, in consultation with the Secretary, shall submit to Congress a report that—



(1) describes the status of compliance with this subtitle, the requirements of section 305(a)(3)(D) of the Energy Conservation and Production Act (42 U.S.C. 6834(a)(3)(D)), and other Federal high-performance green building initiatives in effect as of the date of the report, including—

(A) the extent to which the programs are being carried out in accordance with this subtitle and the requirements of section 305(a)(3)(D) of that Act; and

(B) the status of funding requests and appropriations for those programs;

(2) identifies within the planning, budgeting, and construction process all types of Federal facility procedures that may affect the certification of new and existing Federal facilities as high-performance green buildings under the provisions of section 305(a)(3)(D) of that Act and the criteria established in subsection (h);

(3) identifies inconsistencies, as reported to the Advisory Committee, in Federal law with respect to product acquisition guidelines and high-performance product guidelines;

(4) recommends language for uniform standards for use by Federal agencies in environmentally responsible acquisition;

(5) in coordination with the Office of Management and Budget, reviews the budget process for capital programs with respect to alternatives for—

(A) restructuring of budgets to require the use of complete energy and environmental cost accounting;

(B) using operations expenditures in budget-related decisions while simultaneously incorporating productivity and health measures (as those measures can be quantified by the Office of Federal High-Performance Green Buildings, with the assistance of universities and national laboratories);

(C) streamlining measures for permitting Federal agencies to retain all identified savings accrued as a result of the use of life-cycle costing for future high-performance green building initiatives; and

(D) identifying short-term and long-term cost savings that accrue from high-performance green buildings, including those relating to health and productivity;

(6) identifies green, self-sustaining technologies to address the operational needs of Federal facilities in times of national security emergencies, natural disasters, or other dire emergencies;

(7) summarizes and highlights development, at the State and local level, of high-performance green building initiatives, including executive orders, policies, or laws adopted promoting high-performance green building (including the status of implementation of those initiatives); and

(8) includes, for the 2-year period covered by the report, recommendations to address each of the matters, and a plan for implementation of each recommendation, described in paragraphs (1) through (7).

(g) IMPLEMENTATION.—The Office of Federal High-Performance Green Buildings shall carry out each plan for implementation of recommendations under subsection (f)(8).

(h) IDENTIFICATION OF CERTIFICATION SYSTEM.—

(1) IN GENERAL.—For the purpose of this section, not later than 60 days after the date of enactment of this Act, the Federal Director shall identify and shall provide to the Secretary pursuant to section 305(a)(3)(D) of the Energy Conservation and Production Act (42 U.S.C. 6834(a)(3)(D)), a certification system that the Director determines to be the most likely to encourage a comprehensive and environmentally-sound approach to certification of green buildings.

(2) BASIS.—The system identified under paragraph (1) shall be based on—

(A) a study completed every 5 years and provided to the Secretary pursuant to section 305(a)(3)(D) of that Act, which shall be carried out by the Federal Director to compare and evaluate standards;

(B) the ability and availability of assessors and auditors to independently verify the criteria and measurement of metrics at the scale necessary to implement this subtitle;

(C) the ability of the applicable standard setting organization to collect and reflect public comment;

(D) the ability of the standard to be developed and revised through a consensus-based process;

(E) an evaluation of the robustness of the criteria for a high performance green building, which shall give credit for promoting—

(i) efficient and sustainable use of water, energy, and other natural resources;

(ii) use of renewable energy sources;

(iii) improved indoor environmental quality through enhanced indoor air quality, thermal comfort, acoustics, day lighting, pollutant source control, and use of low-emission materials and building system controls;

(iv) reduced impacts from transportation through building location and site design that promote access by public transportation; and

(v) such other criteria as the Federal Director determines to be appropriate; and

(F) national recognition within the building industry.

# Appendix B: High Performance Sustainable Building Guiding Principles

## HIGH PERFORMANCE and SUSTAINABLE BUILDINGS GUIDANCE Final (12/1/08)

### PURPOSE

The Interagency Sustainability Working Group (ISWG), as a subcommittee of the Steering Committee established by Executive Order (E.O.) 13423, initiated development of the following guidance to assist agencies in meeting the high performance and sustainable buildings goals of E.O. 13423, section 2(f).<sup>1</sup>

E.O. 13423, sec. 2(f) states “In implementing the policy set forth in section 1 of this order, the head of each agency shall: ensure that (i) new construction and major renovations of agency buildings comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings* set forth in the *Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (2006)*,<sup>2</sup> and (ii) 15percent of the existing Federal capital asset building inventory of the agency as of the end of fiscal year 2015 incorporates the sustainable practices in the *Guiding Principles*.”

This guidance accomplishes the following: (1) Updates the *Guiding Principles for Sustainable New Construction and Major Renovations*, (2) establishes a separate *Guiding Principles for Sustainable Existing Buildings*, 3) clarifies reporting guidelines for entering information on Sustainability Data Element #25 in the Federal Real Property Profile (FRPP) database, and (4) explains how to calculate the percentage of buildings/square footage that are compliant with the *Guiding Principles*.

Legislation enacted subsequent to the issuance of E.O. 13423 was considered in drafting both sets of *Guiding Principles* described herein. This guidance shall be reviewed every two years, at a minimum, for potential revisions to keep pace with evolving sustainable building practices and new regulations and/or legislation.

For a set of answers to frequently asked questions (FAQs) on this guidance, please visit: <[www.wbdg.org/references/sustainable\\_eo.php](http://www.wbdg.org/references/sustainable_eo.php)>. These FAQs are based on comments received during the development of this guidance, and will be updated as necessary.

<sup>1</sup> Additional Federal guidance on the sustainability aspects of Executive Order 13423 can be found at: [http://www1.eere.energy.gov/femp/controlledaccess/sustainable\\_E.O.13423.html](http://www1.eere.energy.gov/femp/controlledaccess/sustainable_E.O.13423.html)

Additional Technical Guidance on requirements and strategies for meeting the *Guiding Principles* is available at [www.wbdg.org/sustainableE.O.](http://www.wbdg.org/sustainableE.O.)<sup>2</sup> In 2006, the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding outlined *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. [http://www.wbdg.org/pdfs/sustainable\\_mou.pdf](http://www.wbdg.org/pdfs/sustainable_mou.pdf)

## REPORTING REQUIREMENTS

To ensure accuracy and consistency in reporting across agencies and to leverage existing resources dedicated to agency real property management, data on compliance with E.O. 13423, sec. 2(f), is to be reported to the Federal Real Property Profile (FRPP) database managed by the Federal Real Property Council (FRPC).<sup>3</sup> All Executive agencies are already required to report annual inventory and performance data at the individual asset level on all real property assets: including land, buildings, and structures.

As part of the Fiscal Year 2008 reporting, the FRPC, in consultation with ISWG, established a “sustainability” data element to be reported on all building assets (optional for land assets and structures) to capture agency progress toward meeting the Executive Order goal in section 2(f). The guidance issued by the FRPC reads as follows:

| Sustainability Data Element (#25) | Required Information  |
|-----------------------------------|---|
| Sustainability                    | <p>Reflects whether or not an asset meets the sustainability goals set forth in Section 2 (f) of Executive Order 13423. Options are:</p> <ul style="list-style-type: none"> <li>Yes (1) – asset has been assessed and meets guidelines set forth in Section 2 (f) of Executive Order 13423</li> <li>No (2) – asset has been assessed and does not meet guidelines set forth in Section 2 (f) of Executive Order 13423</li> <li>Not yet evaluated (3) – asset has not yet been evaluated on whether or not it meets guidelines set forth in Section 2 (f) of Executive Order 13423</li> <li>Not applicable (4) – guidelines set forth in Section 2 (f) of Executive Order 13423 do not apply to the asset</li> </ul> |

The FRPC issued the Fiscal Year 2008 reporting instructions on June 23, 2008.<sup>4</sup> All agency data is to be reported to the FRPP database no later than December 15<sup>th</sup> of each year. Reporting of all inventory and performance data is to be coordinated with the agency’s Senior Real Property Officer. The reporting of data for the “sustainability” data element is **optional** for FY 2008 and **required** for FY 2009 and beyond.

<sup>3</sup> The Federal Real Property Council was established under EO 13327, Federal Real Property Asset Managed, issued February 4, 2004.

<sup>4</sup> The FRPC annual guidance and FRPP reporting instructions can be found at: [http://www.whitehouse.gov/omb/financial/fia\\_asset.html](http://www.whitehouse.gov/omb/financial/fia_asset.html)

In order to select “Yes (1)” for a sustainable building, an agency must verify that it meets the sustainability requirements for new, existing, or leased buildings as defined in this document.

The “Not applicable (4)” option is only appropriate for structures and land assets. Information on the “sustainability” data element is required on all buildings reported to the FRPP.

### **CRITERIA FOR DETERMINING COMPLIANCE WITH THE GUIDING PRINCIPLES BASED UPON TYPE OF BUILDING**

**New construction and major renovations** can be considered compliant with the Guiding Principles and reported ‘Yes (1)’ under the sustainability data element when either Option New Construction 1 (NC-1) or Option NC-2 is met:

OPTION NC-1 An agency can demonstrate that a building is compliant with each of the five *Guiding Principles for Sustainable New Construction and Major Renovations* (provided in this document), or

OPTION NC-2 A documented commitment to third-party certification was made (e.g., registering a project) for projects with a design contract that was awarded prior to October 1, 2008 **AND** the building has been third-party certified to meet the requirements of a multi-attribute green building standard or rating system developed by an ANSI-accredited organization.

**Existing buildings** can be considered compliant with the Guiding Principles and reported ‘Yes (1)’ under the sustainability data element when either Option Existing Buildings 1 (EB-1) or Option EB-2 is met:

OPTION EB-1 An agency can demonstrate that a building is compliant with each of the five *Guiding Principles for Sustainable Existing Buildings* (provided in this document), or

OPTION EB-2 A documented commitment to third-party existing building certification was made (e.g., registering a project) prior to October 1, 2008 **AND** the building is third-party certified to meet the requirements of a multi-attribute green building standard or rating system developed by an ANSI-accredited organization.

**Agency-leased buildings** can be considered compliant with the Guiding Principles and reported ‘Yes (1)’ under the sustainability data element when Option Leases 1 (L-1) or Option L-2 is met:

OPTION L-1 An agency can demonstrate that a building is compliant with the appropriate set of *Guiding Principles*, or

OPTION L-2 At any point, the building has been third-party certified to meet the requirements of a multi-attribute green building standard or rating system developed by an ANSI-accredited organization.

### **SUSTAINABLE BUILDING IMPLEMENTATION PLANS**

Progress and status regarding compliance with E.O. 13423, sec. 2(f) shall be documented in the agency's Sustainable Building Implementation Plan (SBIP).

- Agencies should include a discussion of the independent validation and verification (IV&V) process established to ensure compliance with the *Guiding Principles* and accuracy of the data reported to the FRPP.
- If the previous version of the *Guiding Principles* (dated 1/24/06) was used to assess a building, document which version is applicable in the agency's SBIP.
- For sustainable buildings leased by another Federal entity (e.g., General Services Administration) on an agency's behalf, information and characterization of the buildings, or spaces within, may be identified in the annual SBIP of the agency occupying the building, even though it is not included in that Agency's FRPP submission.
- Agencies should describe the strategies (including disposition) and key milestones for evaluating buildings reported to the FRPP as "Not yet evaluated (3)".
- It is recognized that agency-owned and leased facilities have different challenges in meeting the *Guiding Principles*. Therefore, agencies are encouraged to separately analyze its agency-owned and leased buildings portfolio in the SBIP.
- Along with the total number of buildings and total square footage, agencies shall report their capital asset threshold<sup>5</sup>, and the percentage of buildings and square footage above and below the threshold.

#### **CALCULATION OF PERCENTAGE OF EACH AGENCY'S BUILDING INVENTORY THAT COMPLIES WITH THE GUIDING PRINCIPLES**

The percentage of each agency's building inventory meeting the Criteria for Compliance with the *Guiding Principles* shall be calculated in two ways: (1) by square footage of buildings and (2) by number of buildings. All buildings, including those below the agency's capital asset threshold, must be reported in the FRPP.

The equations to calculate the percentage (%) of buildings meeting the *Guiding Principles* based on the entries in the Sustainability Data Element are as follows:

By Square Feet Sustainability % = [(square feet of buildings reporting "Yes (1)") / (square feet of buildings reporting "Yes (1)," "No (2)," and "Not yet evaluated (3)")] x 100

By Number of Buildings Sustainability % = [(number of buildings reporting "Yes (1)") / (number of buildings reporting "Yes (1)," "No (2)," and "Not yet evaluated (3)")] x 100

NOTE: The total square footage of buildings reporting "Yes (1)," "No (2)," and "Not yet evaluated (3)" should be equal to the square footage of all buildings on which an agency reports in their FRPP submission.

<sup>5</sup> OMB Circular A-11 Part 7 Supplemental & EO 13227 define what constitutes the capital asset building inventory.

## GUIDING PRINCIPLES FOR SUSTAINABLE NEW CONSTRUCTION AND MAJOR RENOVATIONS

### I. Employ Integrated Design Principles

**Integrated Design.** Use a collaborative, integrated planning and design process that

- Initiates and maintains an integrated project team as described on the Whole Building Design Guide <[http://www.wbdg.org/design/engage\\_process.php](http://www.wbdg.org/design/engage_process.php)> in all stages of a project's planning and delivery
- Integrates the use of OMB's A-11, Section 7, Exhibit 300: *Capital Asset Plan and Business Case Summary*
- Establishes performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals and ensures incorporation of these goals throughout the design and lifecycle of the building
- Considers all stages of the building's lifecycle, including deconstruction.

**Commissioning.** Employ commissioning practices tailored to the size and complexity of the building and its system components in order to verify performance of building components and systems and help ensure that design requirements are met. This should include an experienced commissioning provider, inclusion of commissioning requirements in construction documents, a commissioning plan, verification of the installation and performance of systems to be commissioned, and a commissioning report.

### II. Optimize Energy Performance

**Energy Efficiency.** Establish a whole building performance target that takes into account the intended use, occupancy, operations, plug loads, other energy demands, and design to earn the ENERGY STAR<sup>®</sup> targets for new construction and major renovation where applicable. For new construction, reduce the energy use by 30 percent compared to the baseline building performance rating per the American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE)/Illuminating Engineering Society of North America (IESNA) Standard 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential. For major renovations, reduce the energy use by 20 percent below pre-renovations 2003 baseline. Laboratory spaces may use the Labs21 Laboratory Modeling Guidelines. Use ENERGY STAR<sup>®</sup> and FEMP-designated Energy Efficient Products, where available.

**On-Site Renewable Energy.** Per the Energy Independence and Security Act (EISA) Section 523, meet at least 30% of the hot water demand through the installation of solar hot water heaters, when lifecycle cost effective.

Per Executive Order 13423, implement renewable energy generation projects on agency property for agency use, when lifecycle cost effective.

**Measurement and Verification.** Per the Energy Policy Act of 2005 (EPAct) Section 103, install building level electricity meters in new major construction and renovation projects to track and continuously optimize performance. Per EISA Section 434, include equivalent meters for natural gas and steam, where natural gas

and steam are used.

**Benchmarking.** Compare actual performance data from the first year of operation with the energy design target, preferably by using ENERGY STAR® Portfolio Manager for building and space types covered by ENERGY STAR®. Verify that the building performance meets or exceeds the design target, or that actual energy use is within 10% of the design energy budget for all other building types. For other building and space types, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings.

### III. Protect and Conserve Water

**Indoor Water.** Employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building, after meeting the EPA Act 1992, Uniform Plumbing Codes 2006, and the International Plumbing Codes 2006 fixture performance requirements. The installation of water meters is encouraged to allow for the management of water use during occupancy. The use of harvested rainwater, treated wastewater, and air conditioner condensate should also be considered and used where feasible for nonpotable use and potable use where allowed.

**Outdoor Water.** Use water efficient landscape and irrigation strategies, such as water reuse, recycling, and the use of harvested rainwater, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities). The installation of water meters for locations with significant outdoor water use is encouraged.

Employ design and construction strategies that reduce storm water runoff and discharges of polluted water offsite. Per EISA Section 438, to the maximum extent technically feasible, maintain or restore the predevelopment hydrology of the site with regard to temperature, rate, volume, and duration of flow using site planning, design, construction, and maintenance strategies.

**Process Water.** Per the Energy Policy Act of 2005 Section 109, when potable water is used to improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures.

**Water-Efficient Products.** Specify EPA's WaterSense-labeled products or other water conserving products, where available. Choose irrigation contractors who are certified through a WaterSense labeled program.

### IV. Enhance Indoor Environmental Quality

**Ventilation and Thermal Comfort.** Meet ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality.

**Moisture Control.** Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture.

**Daylighting.** Achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 75



percent of all space occupied for critical visual tasks. Provide automatic dimming controls or accessible manual lighting controls, and appropriate glare control.

**Low-Emitting Materials.** Specify materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings.

**Protect Indoor Air Quality during Construction.** Follow the recommended approach of the Sheet Metal and Air Conditioning Contractor's National Association Indoor Air Quality Guidelines for Occupied Buildings under Construction, 2007. After construction and prior to occupancy, conduct a minimum 72-hour flush-out with maximum outdoor air consistent with achieving relative humidity no greater than 60 percent. After occupancy, continue flush-out as necessary to minimize exposure to contaminants from new building materials.

**Environmental Tobacco Smoke Control.** Implement a policy and post signage indicating that smoking is prohibited within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes during building occupancy.

## **V. Reduce Environmental Impact of Materials**

**Recycled Content.** Per Section 6002 of the Resource Conservation and Recovery Act (RCRA), for EPA-designated products, specify products meeting or exceeding EPA's recycled content recommendations. For other products, specify materials with recycled content when practicable. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. EPA's recycled content product designations and recycled content recommendations are available on EPA's Comprehensive Procurement Guideline web site at <[www.epa.gov/cpg](http://www.epa.gov/cpg)>.

**Biobased Content.** Per Section 9002 of the Farm Security and Rural Investment Act (FSRIA), for USDA-designated products, specify products with the highest content level per USDA's biobased content recommendations. For other products, specify biobased products made from rapidly renewable resources and certified sustainable wood products. If these designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. USDA's biobased product designations and biobased content recommendations are available on USDA's BioPreferred web site at <[www.usda.gov/biopreferred](http://www.usda.gov/biopreferred)>.

**Environmentally Preferable Products.** Use products that have a lesser or reduced effect on human health and the environment over their lifecycle when compared with competing products or services that serve the same purpose. A number of standards and ecolabels are available in the marketplace to assist specifiers in making environmentally preferable decisions. For recommendations, consult the Federal Green Construction Guide for Specifiers at <[www.wbdg.org/design/greenspec.php](http://www.wbdg.org/design/greenspec.php)>.

**Waste and Materials Management.** Incorporate adequate space, equipment, and transport accommodations for recycling in the building design. During a project's planning stage, identify local recycling and salvage operations that could process site-related construction and demolition materials. During construction, recycle or salvage at least 50 percent of the non-hazardous construction, demolition and land clearing materials, excluding soil, where markets or onsite recycling opportunities exist. Provide salvage, reuse and recycling services for waste generated from major renovations, where markets or onsite recycling opportunities exist.

**Ozone Depleting Compounds.** Eliminate the use of ozone depleting compounds during and after construction where alternative environmentally preferable products are available, consistent with either the Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990, or equivalent overall air quality benefits that take into account lifecycle impacts.

## GUIDING PRINCIPLES FOR SUSTAINABLE EXISTING BUILDINGS

### I. Employ Integrated Assessment, Operation, and Management Principles

**Integrated Assessment, Operation, and Management.** Use an integrated team to develop and implement policy regarding sustainable operations and maintenance.

- Incorporate sustainable operations and maintenance practices within the appropriate Environmental Management System (EMS)
- Assess existing condition and operational procedures of the building and major building systems and identify areas for improvement
- Establish operational performance goals for energy, water, material use and recycling, and indoor environmental quality, and ensure incorporation of these goals throughout the remaining lifecycle of the building
- Incorporate a building management plan to ensure that operating decisions and tenant education are carried out with regard to integrated, sustainable building operations and maintenance
- Augment building operations and maintenance as needed using occupant feedback on work space satisfaction.

**Commissioning.** Employ recommissioning, tailored to the size and complexity of the building and its system components, in order to optimize and verify performance of fundamental building systems. Commissioning must be performed by an experienced commissioning provider. When building commissioning has been performed, the commissioning report, summary of actions taken, and schedule for recommissioning must be documented. In addition, meet the requirements of EISA 2007, Section 432 and associated FEMP guidance.

Building recommissioning must have been performed within four years prior to reporting a building as meeting the *Guiding Principles*.

### II. Optimize Energy Performance

**Energy Efficiency.** Three options can be used to measure energy efficiency performance:

- Option 1: Receive an ENERGY STAR<sup>®</sup> rating of 75 or higher or an equivalent Labs21 Benchmarking Tool score for laboratory buildings,
- Option 2: Reduce measured building energy use by 20% compared to building energy use in 2003 or a year thereafter with quality energy use data, or
- Option 3: Reduce energy use by 20% compared to the ASHRAE 90.1-2007 baseline building design if design information is available.

Use ENERGY STAR<sup>®</sup> and FEMP-designated Energy Efficient Products, where available.

**On-Site Renewable Energy.** Per Executive Order 13423, implement renewable energy generation projects on agency property for agency use, when lifecycle cost effective.

**Measurement and Verification.** Per the Energy Policy Act of 2005 (EPAAct2005) Section 103, install building

level electricity meters to track and continuously optimize performance. Per the Energy Independence and Security Act (EISA) 2007, the utility meters must also include natural gas and steam, where natural gas and steam are used.

**Benchmarking.** Compare annual performance data with previous years' performance data, preferably by entering annual performance data into the ENERGY STAR® Portfolio Manager. For building and space types not available in ENERGY STAR®, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings.

### III. Protect and Conserve Water

**Indoor Water.** Two options can be used to measure indoor potable water use performance:

- Option 1: Reduce potable water use by 20% compared to a water baseline calculated for the building. The water baseline, for buildings with plumbing fixtures installed in 1994 or later, is 120% of the Uniform Plumbing Codes 2006 or the International Plumbing Codes 2006 fixture performance requirements. The water baseline for plumbing fixtures older than 1994 is 160% of the Uniform Plumbing Codes 2006 or the International Plumbing Codes 2006 fixture performance requirements, or
- Option 2: Reduce building measured potable water use by 20% compared to building water use in 2003 or a year thereafter with quality water data.

**Outdoor Water.** Three options can be used to measure outdoor potable water use performance:

- Option 1: Reduce potable irrigation water use by 50% compared to conventional methods, or
- Option 2: Reduce building related potable irrigation water use by 50% compared to measured irrigation water use in 2003 or a year thereafter with quality water data, or
- Option 3: Use no potable irrigation water.

**Measurement of Water Use.** The installation of water meters for building sites with significant indoor and outdoor water use is encouraged. If only one meter is installed, reduce potable water use (indoor and outdoor combined) by at least 20% compared to building water use in 2003 or a year thereafter with quality water data.

Employ strategies that reduce storm water runoff and discharges of polluted water offsite. Per EISA Section 438, where redevelopment affects site hydrology, use site planning, design, construction, and maintenance strategies to maintain hydrologic conditions during development, or to restore hydrologic conditions following development, to the maximum extent that is technically feasible.

**Process Water.** Per EPA Act 2005 Section 109, when potable water is used to improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures.

**Water-Efficient Products.** Where available, use EPA's WaterSense-labeled products or other water conserving products. Choose irrigation contractors who are certified through a WaterSense-labeled program.

#### **IV. Enhance Indoor Environmental Quality**

**Ventilation and Thermal Comfort.** Meet ASHRAE Standard 55-2004 Thermal Environmental Conditions for Human Occupancy and ASHRAE Standard 62.1-2007: Ventilation for Acceptable Indoor Air Quality.

**Moisture Control.** Provide policy and illustrate the use of an appropriate moisture control strategy to prevent building damage, minimize mold contamination, and reduce health risks related to moisture. For façade renovations, Dew Point analysis and a plan for cleanup or infiltration of moisture into building materials are required.

**Daylighting and Lighting Controls.** Automated lighting controls (occupancy/vacancy sensors with manual-off capability) are provided for appropriate spaces including restrooms, conference and meeting rooms, employee lunch and break rooms, training classrooms, and offices. Two options can be used to meet additional daylighting and lighting controls performance expectations:

Option 1: Achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 50 percent of all space occupied for critical visual tasks, or

Option 2: Provide occupant controlled lighting, allowing adjustments to suit individual task needs, for 50% of regularly occupied spaces.

**Low-Emitting Materials.** Use low emitting materials for building modifications, maintenance, and cleaning. In particular, specify the following materials and products to have low pollutant emissions: composite wood products, adhesives, sealants, interior paints and finishes, solvents, carpet systems, janitorial supplies, and furnishings.

**Integrated Pest Management.** Use integrated pest management techniques as appropriate to minimize pesticide usage. Use EPA-registered pesticides only when needed.

**Environmental Tobacco Smoke Control.** Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes.

#### **V. Reduce Environmental Impact of Materials**

**Recycled Content.** Per section 6002 of RCRA, for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use materials with recycled content such that the sum of postconsumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost or weight) of the total value of the materials in the project. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. EPA's recycled content product designations and recycled content recommendations are available on EPA's Comprehensive Procurement Guideline web site at <[www.epa.gov/cpg](http://www.epa.gov/cpg)>.

**Biobased Content.** Per section 9002 of FSRIA, for USDA-designated products, use products with the highest content level per USDA's biobased content recommendations. For other products, use biobased products made from rapidly renewable resources and certified sustainable wood products. If these designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them should be included in all solicitations relevant to construction, operation, maintenance of or use in the building. USDA's biobased product designations and biobased content recommendations are available on USDA's BioPreferred web site at [www.usda.gov/biopREFERRED](http://www.usda.gov/biopREFERRED).

**Environmentally Preferable Products.** Use products that have a lesser or reduced effect on human health and the environment over their lifecycle when compared with competing products or services that serve the same purpose. A number of standards and ecolabels are available in the marketplace to assist specifiers in making environmentally preferable decisions. For recommendations, consult the Federal Green Construction Guide for Specifiers at [www.wbdg.org/design/greenspec.php](http://www.wbdg.org/design/greenspec.php).

**Waste and Materials Management.** Provide reuse and recycling services for building occupants, where markets or on-site recycling exist. Provide salvage, reuse and recycling services for waste generated from building operations, maintenance, repair and minor renovations, and discarded furnishings, equipment and property. This could include such things as beverage containers and paper from building occupants, batteries, toner cartridges, outdated computers from an equipment update, and construction materials from a minor renovation.

**Ozone Depleting Compounds.** Eliminate the use of ozone depleting compounds where alternative environmentally preferable products are available, consistent with either the Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990, or equivalent overall air quality benefits that take into account lifecycle impacts.

## Appendix C: List of Pre-screened Certification Systems

|               |                        |  |  |
|---------------|------------------------|--|--|
| <b>Legend</b> | √ (Meet the criterion) | (NOT meet the criterion for the listed reason) | (No further evaluation because the previous criterion is not met.) |
|---------------|------------------------|--|--|

| Name  | Relevance             | Availability     | Certification |
|---|-----------------------|------------------|---------------|
| Green Building Advisor  | Product               |                  |               |
| Energy Star (Products)  | Product               |                  |               |
| EPLabel   | Building/Energy       |                  |               |
| BSEA 1.0 (Finland)  | Information Not Found |                  |               |
| NEN 2916: 2004 nl (Dutch code for the determination of the energy performance of non-residential buildings) | Building/Energy       |                  |               |
| SIMBAD (Finland)  | Building/Energy       |                  |               |
| EDIP (Environmental Design of Industrial Products, Denmark)   | Product               |                  |               |
| Environmental Classification of Properties (Finland)  | Building/Energy       |                  |               |
| Papoose (Finland)   | Information Not Found |                  |               |
| Invest  | Building/LCA          |                  |               |
| EcoEffect (Sweden)  | Building/LCA          |                  |               |
| ISO 14001   | Building/Management   |                  |               |
| Dutch MRPI (Environmental Relevant Product Information, Netherlands)  | Building/LCA          |                  |               |
| Climate Protection Manual for Cities  | Building/GHG          |                  |               |
| City of Santa Monica Green Building & Construction Guidelines   | Building              | Santa Monica, CA |               |

| Name  | Relevance             | Availability | Certification |
|---|-----------------------|--------------|---------------|
| ECDG – Japan  | Building              | Japan        |               |
| Green Building Program (Austin, TX)   | Building              | Austin, TX   |               |
| National Packages Sustainable Building (Netherlands)                            | Building              | Netherlands  |               |
| NYC High Performance Building Guidelines  | Building              | NYC          |               |
| Seattle Sustainable Building Action Plan and Built Smart (Seattle, WA)          | Building              | Seattle, WA  |               |
| Tokyo Metro Green Building Program  | Building              | Japan        |               |
| Environmental Profiles of construction materials, components and buildings (UK) | Building/LCA          |              |               |
| Quest   | Building/Management   |              |               |
| BM Bau Building Passport (Germany)  | Product               |              |               |
| The Movement for Innovation (M4i)   | Building/Construction |              |               |
| EcoProP   | Building/Management   |              |               |
| Costing Reference Model   | Building/Residential  |              |               |
| Super E House Program (Canada)  | Building/Residential  |              |               |
| AccuRate (Australia)  | Building/Residential  |              |               |
| Alameda County (CA)   | Building/Waste        |              |               |
| BASIX Building Sustainability Index (Australia)                                 | Building/Residential  |              |               |
| BERS (Australia)  | Building/Residential  |              |               |
| Build a Better Clark (Clark County Washington HBA)                              | Building/Residential  |              |               |
| Build A Better Kitsap Home Builder Program (Kitsap, WA HBA)                     | Building/Residential  |              |               |



| Name  | Relevance            | Availability | Certification |
|---|----------------------|--------------|---------------|
| National Association of Home Buildings (NAHB) Green Guidelines                          | Building/Residential |              |               |
| Built Green Alberta (Canada)  | Building/Residential |              |               |
| Built Green™ (MBA of King and Snohomish Counties, WA)                                   | Building/Residential |              |               |
| Built Green™ Colorado (HBA of Metro Denver)   | Building/Residential |              |               |
| Chula Vista (CA) GreenStar Building Incentive Program                                   | Building/Residential |              |               |
| City of Boulder Green Points (CO)   | Building             | Boulder, CO  |               |
| City of Frisco (TX) Green Building Program  | Building             | Frisco, TX   |               |
| “Green” Hotels Association (US)   | Building/Lodging     |              |               |
| Coalition for Environmentally Responsible Economies (CERES) Green Hotel Initiative (US) | Building/Lodging     |              |               |
| Green Globe 21 (US)   | Building/Lodging     |              |               |
| Green Leaf Eco-Rating Program (Canada)  | Building/Lodging     |              |               |
| Green Rating Program (Africa)   | Building/Lodging     |              |               |
| Green Seal Certification (US)   | Product              |              |               |
| HVS International ECOTEL Certification  | Building/Lodging     |              |               |
| Sustainable Ecotourism Rating (Costa Rica)  | Building/Lodging     |              |               |
| Vermont Green Hotels in the Green Mountain State  | Building/Lodging     |              |               |
| Green Rating Initiative (Ethiopia)  | Product              |              |               |
| Green Rating of Indian Industry   | Product              |              |               |
| Sustainable Project Appraisal Routine (SPEAR)   | Product              |              |               |

| Name                                   | Relevance             | Availability | Certification |
|--|-----------------------|--------------|---------------|
| Global Reporting Initiative            | Product               |              |               |
| BEAT 2000 (Denmark)                    | Building/LCA          |              |               |
| BRI LCA (Japan)                        | Building/LCA          |              |               |
| Ecolindicator (Netherlands)            | Building/LCA          |              |               |
| EcolInstall (Netherlands)              | Building/LCA          |              |               |
| EcoPro (Germany)                       | Building/LCA          |              |               |
| EcoQuantum (Netherlands)               | Building/LCA          |              |               |
| LCA-House (Finland)                    | Building/LCA          |              |               |
| LCAiT (Sweden)                         | Building/LCA          |              |               |
| Legoe (Germany)                        | Building/LCA          |              |               |
| OGIP (Switzerland)                     | Building/LCA          |              |               |
| REGENERS (Finland)                     | Building/LCA          |              |               |
| TAKE-LCA (Finland)                     | Building/LCA          |              |               |
| TEAM (Finland)                         | Building/LCA          |              |               |
| Athena Model (Canada)                  | Building/LCA          |              |               |
| BEES (US)                              | Building/LCA          |              |               |
| GaBi 4                                 | Building/LCA          |              |               |
| KCL-ECO                                | Building/LCA          |              |               |
| LISA (LCA in Sustainable Architecture) | Building              | Australia    |               |
| Umberto                                | Building/LCA          |              |               |
| Solution Spaces (Canada)               | Building/LCA          |              |               |
| Equer (France)                         | Building/LCA          |              |               |
| MMG (Netherlands)                      | Information Not Found |              |               |

| Name  | Relevance             | Availability | Certification |
|---|-----------------------|--------------|---------------|
| SIA 493 (Switzerland)   | Information Not Found |              |               |
| County of Santa Barbara Innovative Building Review Program (CA) | Building/Residential  |              |               |
| Earth Advantage Home (US)                                       | Building/Residential  |              |               |
| Earth Advantage Program (Portland General Electric)             | Building/Residential  |              |               |
| EarthCraft House (Greater Atlanta, GA HBA)                      | Building/Residential  |              |               |
| EarthCraft House (US)   | Building/Residential  |              |               |
| EcoHomes (UK)   | Building/Residential  |              |               |
| EnerGuide Houses Program (Canada)                               | Building/Residential  |              |               |
| Energy Rated Homes of Colorado                                  | Building/Residential  |              |               |
| Evergreen Building Guide (Issaquah, WA)                         | Building/Residential  |              |               |
| FirstRate (Australia)   | Building/Residential  |              |               |
| G/Rated (Portland, OR)  | Building              | Portland, OR |               |
| Green Built Home (Wisconsin Environmental Initiative)           | Building/Residential  |              |               |
| Green Built Program (HBA of Greater Grand Rapids, MI)           | Building/Residential  |              |               |
| Green Home Designation (Florida Green Building Coalition)       | Building/Residential  |              |               |
| Hawaii BuiltGreen   | Building/Residential  |              |               |
| Health House Advantage Certification (US)                       | Building/Residential  |              |               |
| HERS (US)   | Building/Residential  |              |               |
| Home Builders Association of Greater Kansas City (MO)           | Building/Residential  |              |               |

| Name   | Relevance             | Availability      | Certification |
|--|-----------------------|-------------------|---------------|
| HomeRun (Canada)   | Building/Residential  |                   |               |
| Hudson Valley HBA Green Building Program (NY)                              | Building/Residential  |                   |               |
| Multifamily Green Building Guidelines (Alameda County, CA)                 | Building/Residential  |                   |               |
| NatHERS (Australia)  | Building/Residential  |                   |               |
| New Mexico Building America Partner Program (HBA of Central New Mexico)    | Building/Residential  |                   |               |
| Novoclimat (Quebec, Canada)  | Building/Residential  |                   |               |
| R-2000 (Canada)  | Building/Residential  |                   |               |
| Schenectady HBA Green Building Program (NY)                                | Building/Residential  |                   |               |
| SeaGreen (Seattle)   | Building/Residential  |                   |               |
| Southern Arizona Green Building Alliance                                   | Information Not Found |                   |               |
| Super Good Cents and Natural Choice Homes                                  | Building/Residential  |                   |               |
| The BREEAM Green Leaf for Multi-Residential Buildings (Canada)             | Information Not Found |                   |               |
| The Green Builder Program (NM)   | Building/Residential  |                   |               |
| Vermont Built Greener  | Building/Residential  |                   |               |
| Western North Carolina Green Building Council                              | Building/Residential  |                   |               |
| BREEAM (Building Research Establishment's Environmental Assessment Method) | Building              | UK                |               |
| BREEAM Canada  | Building              | Canada (Obsolete) |               |
| BREEAM Green Leaf  | Building              | Canada (Obsolete) |               |
| Calabasas LEED   | Information Not Found |                   |               |

| Name   | Relevance             | Availability     | Certification |
|--|-----------------------|------------------|---------------|
| CASBEE (Comprehensive Assessment System for Building Environmental Efficiency) | Building              | Japan            |               |
| CEPAS (Comprehensive Environmental Performance Assessment Scheme)              | Building              | Hong Kong        |               |
| EkoProfile (Norway)  | Building              | Norway           |               |
| ESCALE   | Information Not Found |                  |               |
| GBTTool  | Building              | Obsolete         |               |
| GEM (Global Environmental Method) For Existing Buildings (Green Globes) – UK   | Building              | UK               |               |
| GOBAS (Green Olympic Building Assessment System)                               | Building              | China (Obsolete) |               |
| Green Building Rating System – Korea   | Information Not Found |                  |               |
| Green Globes Canada  | Building              | Canada           |               |
| Green Globes™ US   | Building              | U.S. National    | Third party   |
| Green Leaf Eco-Rating Program  | Building/Lodging      |                  |               |
| Green Star rating tool (Australia)   | Building              | Australia        |               |
| HK BEAM (Hong Kong Building Environmental Assessment Method)                   | Building              | Hong Kong        |               |
| HQE (High Environmental Quality)   | Building              | France           |               |
| iDP (Integrated Design Process)  | Information Not Found |                  |               |
| Labs21   | Building/Laboratory   |                  |               |
| LEED® (Leadership in Energy and Environmental Design)                          | Building              | U.S. National    | Third party   |
| LEED Canada  | Building              | Canada           |               |
| LEED India   | Building              | India            |               |

| Name   | Relevance             | Availability   | Certification   |
|--|-----------------------|----------------|-----------------|
| LEED Mexico  | Building              | Mexico         |                 |
| LEED Italia  | Building              | Italy          |                 |
| NABERS (National Australian Built Environment Rating System)             | Building              | Australia      |                 |
| PromisE  | Information Not Found |                |                 |
| Protocol ITACA   | Building              | Italy          |                 |
| SBAT (Sustainable Buildings Assessment Tool)                             | Building              | South Africa   |                 |
| Scottsdale's Green Building Program                                      | Building              | Scottsdale, AZ |                 |
| SPiRiT (Sustainable Project Rating Tool)                                 | Building              | U.S. National  | Self Compliance |
| TERI Green Rating for Integrated Habitat Assessment                      | Building              | India          |                 |
| TQ Building Assessment System (Total Quality Building Assessment System) | Building              | Germany        |                 |
| Green Star® (Alaska)   | Corporate             |                |                 |
| ecospecifier   | Product               |                |                 |
| Water Sense  | Product               |                |                 |
| SPI Green Firm Certification   | Corporate             |                |                 |
| Living Building Challenge  | Building              | U.S. National  | Third party     |
| SB Tool  | Building              | International  | Third party     |
| Estidama Pearl Rating System   | Building              | Abu Dhabi      |                 |
| Three Star System  | Building              | China          |                 |
| Energy Star Portfolio Manager  | Building/Energy       |                |                 |
| U.S. EnergyGuide Label   | Product               |                |                 |

| Name   | Relevance                 | Availability  | Certification   |
|--|---------------------------|---------------|-----------------|
| Guiding Principles for High Performance and Sustainable Buildings  | Building                  | U.S. National | Self Compliance |
| 10 CFR 433 -- Energy Efficiency Standards for the Design and Construction of New Federal Commercial and Multi-Family High-Rise Residential Buildings | Building                  | U.S. National | Self Compliance |
| Minnesota Sustainable Building Guidelines*   | Building                  | Minnesota     |                 |
| California Green Building Standards Code   | Building                  | California    |                 |
| ASHRAE 189.1 Standard for the Design of High-Performance, Green Buildings  | Building                  | U.S. National | AHJ Review      |
| National Green Building Certification (based on the ICC 700 National Green Building Standard™)   | Building/Residential      |               |                 |
| International Green Construction Code (IGCC)   | Building                  | U.S. National | AHJ Review      |
| Earth Advantage Commercial Program   | Building                  | Not Launched  |                 |
| ASHRAE Building Energy Quotient Program  | Building/Energy           |               |                 |
| STARS (Sustainability Tracking, Assessment & Rating System)  | Building/Higher Education |               |                 |
| GGHC Green Guide for Health Care   | Building/Health Care      |               |                 |
| The Sustainable Sites Initiative: Guidelines and Performance Benchmarks 2009   | Landscape                 |               |                 |
| EcoLogo (Canada)   | Product                   |               |                 |
| Passive House  | Building/Residential      |               |                 |

## Appendix D: Review Criteria

| Source   | Criteria   | Criteria Definition   | Review Questions   |
|--|--|---|--|
| (PUBLIC LAW 110-140—DEC. 19, 2007 121 STAT. 1618-1619)   |  |   |  |
| <b>(B) the ability and availability of assessors and auditors to independently verify the criteria and measurement of metrics at the scale necessary to implement this subtitle;</b> | <b>Independence</b>  | Assessors/auditors have no stake in whether a building receives certification.                    | Is an assessor/auditor independently assigned/selected?  |
|  |  |   | How is an assessor or auditor assigned/selected to evaluate a project?   |
|  |  |   | Is there a documented appeal process?  |
|  |  |   | What is the documented appeal process?   |
|  |  |   | Is there an independent review and verification process?   |
|  |  |   | What is the method for evaluation?   |
|  | <b>Availability</b>  | Assessors/auditors are available to evaluate a building.  | What is the average length of time for a building evaluation from submission to certification?   |
|  |  |   | Is there a documented feedback/comment resolution process?   |
|  |  |   | What is the documented feedback and/or comment resolution process?   |
|  |  |   | Is there a projected evaluation schedule provided online?  |
|  |  |   | How long does it take for a project to receive evaluation feedback at various stages of assessment?                                      |
|  |  |   | Does the user get feed back in time?   |
|  |  |   | What is the average time an auditor/assessor spends on each project?   |
|  | <b>Verification</b>  | A documented standard verification method and process must be followed by assessors and auditors. | How many assessors/auditors are typically involved with a project evaluation? Do larger building have more than one assessor? Expertise? |
|  |  |   | What is the process assessors/auditors use to evaluate a project?  |
|  |  |   | Do the assessors/auditors verify the information onsite?   |
|  |  |   | Are the criteria used by assessors/auditors documented?  |
|  |  |   | What are the evaluation criteria assessors/auditors use when evaluating a project?   |
| <b>(C) the ability of the applicable standard-setting organization to collect and reflect public comment;</b>  | <b>Transparency</b>  | Documented approach for the review and consideration of public comments.                          | What tools are used to evaluate the technical information provided by a project?   |
|  |  |   | Are evaluation needs outside the expertise of the auditor/assessor addressed?  |
|  |  |   | What is the process when evaluation needs are outside an auditor/assessor's expertise?   |
|  | Public comments are collected on a regular base.                                     | Are there methods to collect and address public comments?   |  |
|  |  | What methods are used to collect and address public comments?                                     |  |
|  |  | How frequently are public comments collected?   |  |
|  |  | Are public comments incorporated into the revision process?                                       |  |
| Public comments are reflected in the certification systems.  | How are public comments incorporated into the certification system revision process? |   |  |



|   |   |  |   |  |
|---|---|--|---|--|
|   |   | Development and updating process of the certification system is documented and publicly available.   |   | Are the changes documented and accessible by the public?   |
|   |   |  |   | Where are certification system changes documented?   |
| <b>(D) the ability of the standard to be developed and revised through a consensus-based process;</b>   | <b>Consensus-based</b>  | The certification system contains the attributes of a voluntary consensus standards body defined in OMB Circular A-119: openness, balance of interest, due process, an appeal process, and consensus |   | Who has been involved in the development, funding, and management of the certification system - Government, Private Industry, Non-Governmental Organizations, and others?                  |
|   |   |  |   | What has been the role and commitment in the development, funding, and management of the certification system by Government, Private Industry, Non-Governmental Organizations, and others? |
|   |   |  |   | Was the certification system developed using a consensus-based approach?   |
|   |   |  |   | How are points allocated?  |
|   |   |  |   | Are credits pilot tested before publication  |
|   |   |  |   | How are credits tested?  |
|   |   |  |   | How are different opinions managed?  |
|   |   |  |   | Is there a written procedure for managing different opinions?  |
|   |   |  |   | Are there third-party reviewers/moderators of the process?   |
| <b>(E) an evaluation of the robustness of the criteria for a high-performance green building, which shall give credit for promoting—<br/>(i) efficient and sustainable use of water, energy, and other natural resources;</b> | <b>Robustness</b>   | Water criteria meet Federal requirements, at the minimum, and are a relevant part of the certification   | Indoor Water  | Does the metric help a building meet a current Federal requirement?  |
|   |   |  |   | What is the baseline or point of comparison?   |
|   |   |  |   | What standards or tools are required for the metric?   |
|   |   |  | Process Water   | Does the metric help a building meet a current Federal requirement?  |
|   |   |  |   | What is the baseline or point of comparison?   |
|   |   |  |   | What standards or tools are required for the metric?   |
|   |   |  | Outdoor Water   | Does the metric help a building meet a current Federal requirement?  |
|   |   |  |   | What is the baseline or point of comparison?   |
|   |   |  |   | What standards or tools are required for the metric?   |
|   |   |  | Stormwater  | Does the metric help a building meet a current Federal requirement?  |
|   |   | What is the baseline or point of comparison?   |   |  |
|   |   | What standards or tools are required for the metric?   |   |  |
|   |   | Water-Efficient Products   | Does the metric help a building meet a current Federal requirement? |  |
|   |   |  | What is the baseline or point of comparison?                        |  |
|   |   |  | What standards or tools are required for the metric?                |  |
|   |   | Energy criteria meet Federal requirements, at the minimum, and are a relevant part of the certification  | Energy Efficiency   | Does the metric help a building meet a current Federal requirement?  |
|   |   |  |   | What is the baseline or point of comparison?   |
|   |   |  |   | What standards or tools are required for the metric?   |
|   |   |  | Measurement and Verification  | Does the metric help a building meet a current Federal requirement?  |
|   |   |  |   | What standards or tools are required for the metric?   |
| Benchmarking  | Does the metric help a building meet a current Federal requirement? |  |   |  |
|   | What standards or tools are required for the metric?                |  |   |  |
| Greenhouse Gas  | Does the metric help a building meet a current Federal requirement? |  |   |  |
|   | What is the baseline or point of comparison?                        |  |   |  |

|  |            |  |  |   |   |
|--|------------|--|--|---|---|
|  |            | Material selection criteria meet Federal requirements, at the minimum, and are a relevant part of the        | Recycled Content   | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  | Biobased Content   | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  | Environmentally Preferable Products  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  | Waste and Materials Management   | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  | Ozone Depleting Compounds  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
| (ii) use of renewable energy sources;  | Robustness | Renewable energy criteria meet Federal requirements, at the minimum, and are a relevant part of the          |  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What percentage of the certification system is represented by this metric? |   |
| (iii) improved indoor environmental quality through enhanced indoor air quality, thermal comfort, acoustics, day lighting, pollutant source control, and use of low-emission materials and building system controls; | Robustness | Indoor air quality (ventilation) criteria meet Federal requirements, at the minimum, and are a relevant part |  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  |  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  |  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  | Acoustics criteria meet Federal requirements, at the minimum, and are a relevant part of the certification system. |   | Does the metric help a building meet a current Federal requirement?   |
|  |            |  | Daylighting criteria meet Federal requirements, at the minimum, and are a relevant part of the certification       |   | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison? |
|  |            | Pollutant source control criteria meet Federal requirements, at the minimum, and are a relevant part         | Environmental Tobacco Smoke Control  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  | Moisture Control   | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  | Protect Indoor Air Quality during  | Does the metric help a building meet a current Federal requirement?<br>What is the baseline or point of comparison?<br>What standards or tools are required for the metric?                       |   |
|  |            |  |  | Does the metric help a building meet a current Federal requirement?   |   |
|  |            |  |  | Does the metric help a building meet a current Federal requirement?   |   |
|  |            |  | Does the metric help a building meet a current Federal requirement?  |   |   |
|  |            | Low-emission material criteria meet Federal  |  | Does the metric help a building meet a current Federal requirement?   |   |

|  |   |  |  |   |
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|  |   | requirements, at the minimum, and are a relevant part of the certification system.   |  | What is the baseline or point of comparison?  |
|  |   |  |  | What standards or tools are required for the metric?  |
|  |   | Building system controls criteria meet Federal requirements, at the minimum, and are a relevant part                       | Building System Controls   | Does the metric help a building meet a current Federal requirement?   |
|  |   |  | Commissioning  | Does the metric help a building meet a current Federal requirement?   |
|  |   |  |  | What standards or tools are required for the metric?  |
|  |   | Integrated design criteria meet Federal requirements, at the minimum, and are a relevant part of the certification system. |  | Does the metric help a building meet a current Federal requirement?   |
| (iv) reduced impacts from transportation through building location and site design that promote access by public transportation; and | <b>Robustness</b>   | Siting criteria meet Federal requirements, at the minimum, and are a relevant part of the certification system.            |  | Does the metric help a building meet a current Federal requirement?   |
| (v) such other criteria as the Federal Director determines to be appropriate; and  | <b>System Maturity</b>  | Certification system is effectively linked to latest tools and standards.  |  | How do the tools and standards within the certification system compare to current versions of standards and latest industry tools?  |
|  |   |  |  | How frequently are the certification systems and referenced standards and tools updated?  |
|  |   | Certification system has components to track building performance post-occupancy.  |  | Does the certification system allow for the evaluation of an existing building?   |
|  |   |  | Is there a requirement for post occupancy data collection once a building has been certified?  |   |
|  |   |  | Is there a mechanism to transfer the certification of a new building to an existing building over time?                                |   |
|  | The certification system is used as basis for development of other systems. |  | How many other systems refer to the certification system or the certification organization as its basis for development or comparison? |   |
|  | The certification system has been consistently updated overtime.            |  | When was the certification system developed, first used, first available for public use, and when was most recent revision completed?  |   |
|  |   |  | What is the frequency of changes?  |   |
|  |   | <b>Usability</b>   | Cost of use is affordable.   |   |
|  |   | The certification system organization provides product support.  |  | What is the availability and responsiveness of direct requests for assistance, availability of training, and usability of information available on the website, through case studies, documented inquiries, and frequently asked questions. |
| (V) national recognition within the building industry  | <b>National Recognition</b>   | The certification system is recognized academically.   |  | Is the certification system included in the curriculum of the top 10 architectural schools?   |
|  |   |  |  | How many students are involved? (Attending conferences or training, becoming assessors or green building professionals, etc.)   |
|  |   | The certification system is recognized within the buildings' industry (including real estate and construction industry).   |  | Is the certification system recognized in the building industry?  |
|  |   |  |  | What is the adoption rate at the State level?   |
|  |   |  |  | What is the adoption rate at the County level?  |
|  |   |  |  | What is the adoption rate at the City level?  |
|  |   |  |  | How many buildings have signed up to participate in the certification system?   |
|  |   |  |  | How many buildings have been awarded certification?   |
|  |   |  |  | How many professionals (by category) are involved?  |
|  | How many institutional/group members?                                       |  |  |   |

|  |  |   |  |
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|  |  |   | How many professional associations have recognized the certification system?         |
|  |  | The certification system is recognized within the federal sector. | How many Federal agencies have identified the system as guidance or a requirement?   |
|  |  |   | How many Federal buildings have been certified?                                      |
|  |  |   | Does the system address the majority of Federal building inventory (building types)? |

**NOTE: The following robustness review questions are for existing buildings.**

|   |                   |  |   |   |   |
|---|-------------------|--|---|---|---|
| <b>(E) an evaluation of the robustness of the criteria for a high-performance green building, which shall give credit for promoting—<br/>(i) efficient and sustainable use of water, energy, and other natural resources;</b> | <b>Robustness</b> | Water criteria meet Federal requirements, at the minimum, and are a relevant part of the certification | <b>Indoor Water</b>   | Does the metric help a building meet a current Federal requirement? |   |
|   |                   |  |   | What is the baseline or point of comparison?                        |   |
|   |                   |  |   | What standards or tools are required for the metric?                |   |
|   |                   |  |   | <b>Process Water</b>  | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   |   | What is the baseline or point of comparison?                        |
|   |                   |  |   |   | What standards or tools are required for the metric?                |
|   |                   |  |   | <b>Outdoor Water</b>  | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   |   | What is the baseline or point of comparison?                        |
|   |                   |  |   |   | What standards or tools are required for the metric?                |
|   |                   |  |   | <b>Measurement of Water Use</b>                                     | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   |   | What is the baseline or point of comparison?                        |
|   |                   |  |   |   | What standards or tools are required for the metric?                |
|   |                   |  |   | <b>Storm Water</b>  | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   |   | What is the baseline or point of comparison?                        |
|   |                   |  |   |   | What standards or tools are required for the metric?                |
|   |                   |  |   | <b>Water-Efficient Products</b>                                     | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   |   | What is the baseline or point of comparison?                        |
|   |                   |  |   |   | What standards or tools are required for the metric?                |
|   |                   |  | Energy criteria meet Federal requirements, at the minimum, and are a relevant part of the certification | <b>Energy Efficiency</b>  | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   |   | What is the baseline or point of comparison?                        |
|   |                   |  |   |   | What standards or tools are required for the metric?                |
|   |                   |  |   | <b>Measurement and Verification</b>                                 | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   |   | What standards or tools are required for the metric?                |
|   |                   |  |   | <b>Benchmarking</b>   | Does the metric help a building meet a current Federal requirement? |
|   |                   |  |   | What standards or tools are required for the metric?                |   |
|   |                   |  | <b>Greenhouse Gas</b>   | Does the metric help a building meet a current Federal requirement? |   |
|   |                   |  |   | What is the baseline or point of comparison?                        |   |
|   |                   | Material selection criteria meet Federal requirements, at the minimum, and are a relevant part of the  | <b>Recycled Content</b>   | Does the metric help a building meet a current Federal requirement? |   |
|   |                   |  |   | What is the baseline or point of comparison?                        |   |
|   |                   |  |   | What standards or tools are required for the metric?                |   |

|  |            |  |  |  |   |
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|  |            |  | Biobased Content   | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
|  |            |  | Environmentally Preferable Products  | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
|  |            |  | Waste and Materials Management   | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
|  |            |  | Ozone Depleting Compounds  | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
| (ii) use of renewable energy sources;  | Robustness | Renewable energy criteria meet Federal requirements, at the minimum, and are a relevant part of the          |  | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What percentage of the certification system is represented by this metric? |   |
| (iii) improved indoor environmental quality through enhanced indoor air quality, thermal comfort, acoustics, day lighting, pollutant source control, and use of low-emission materials and building system controls; | Robustness | Indoor air quality (ventilation) criteria meet Federal requirements, at the minimum, and are a relevant part |  | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
|  |            |  | Thermal comfort criteria meet Federal requirements, at the minimum, and are a relevant part of the certification   | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
|  |            |  | Acoustics criteria meet Federal requirements, at the minimum, and are a relevant part of the certification system. | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  | Daylighting criteria meet Federal requirements, at the minimum, and are a relevant part of the certification       | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  | Pollutant source control criteria meet Federal requirements, at the minimum, and are a relevant part               | Integrated Pest Management   | Does the metric help a building meet a current Federal requirement? |
|  |            |  |  |  | What is the baseline or point of comparison?                        |
|  |            |  |  |  | What standards or tools are required for the metric?                |
|  |            |  |  | Environmental Tobacco Smoke Control  | Does the metric help a building meet a current Federal requirement? |
|  |            |  |  |  | What is the baseline or point of comparison?                        |
|  |            |  |  |  | What standards or tools are required for the metric?                |
|  |            |  | Moisture Control   | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
|  |            | Low-emission material criteria meet Federal requirements, at the minimum, and are a relevant part            |  | Does the metric help a building meet a current Federal requirement?        |   |
|  |            |  |  | What is the baseline or point of comparison?                               |   |
|  |            |  |  | What standards or tools are required for the metric?                       |   |
|  |            | Building system controls criteria meet Federal requirements, at the minimum, and are a relevant part         | Building System Controls   | Does the metric help a building meet a current Federal requirement?        |   |

|  |  |  |               |   |
|--|--|--|---------------|---|
|  |  | of the certification system.   | Commissioning | Does the metric help a building meet a current Federal requirement? |
|  |  |  |               | What standards or tools are required for the metric?                |
|  |  | Integrated design criteria meet Federal requirements, at the minimum, and are a relevant part of the |               | Does the metric help a building meet a current Federal requirement? |
|  |  |  |               | What standards or tools are required for the metric?                |

## **Appendix E: Certification System Mapping to Review Criteria**

(all criteria, except “Robustness”)

**Independence**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Review Questions   | Summary  | Green Globes  | Source   | Date Retrieved             | Summary  | LEED   | Source  | Date Retrieved | Summary  | Living Building Challenge   | Source   | Date Retrieved |
|--|--|---|--|----------------------------|--|--|---|----------------|--|---|--|----------------|
| Is an assessor/auditor independently assigned/selected?                | Yes  |   |  |                            | Yes  |  |   |                | Yes  |   |  |                |
| How is an assessor or auditor assigned/selected to evaluate a project? | Assessors are selected based on their experience in different assessment areas.<br><br>Assessors must sign a business agreement with GBI and follow the conflict of interest guidelines. | Third-party assessors are selected based on qualification (experience in design, engineering, energy analysis/management, commissioning, construction, and/or facility management).<br><br>Once an assessor is assigned, contact information for an assessor is then given to the owner by GBI. A Green Globe Assessor cannot provide other services relating to Green Globes, except for the third party assessments. Assessors must sign a business agreement with GBI and adhere to conflict of interest guidelines and disclosure requirements. | <a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a><br><br>Conflict of interest guidelines for assessors can be found at <a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a><br><br>Conflict of interest guidelines are not available at provided address.         | 07/28/11<br><br>08/25/2011 | Projects are randomly assigned through an unbiased pool of qualified assessors (Note: USGBC uses the term "reviewers") based on their availability and expertise.<br><br>Under certain unique circumstances (e.g. buildings on the same campus) project teams can request that the same assessor be assigned to the related projects (subject to capacity).<br><br>Each assessor must confirm the absence of any conflict of interest prior to accepting any project application for review. | Green Building Certification Institute (GBCI), established in 2008 is a separately incorporated entity and is responsible for project registration and certification. GBCI administers the LEED certification program, performing third-party technical reviews and verification of registered projects to determine if they have met the standards set forth by the LEED rating system. Dedicated technical experts ensure building certification meets the highest levels of quality and integrity. Projects are randomly assigned through our unbiased pool of highly qualified reviewers based on their availability and expertise. Under certain unique circumstances (e.g. buildings on the same campus) project teams can request that the same reviewer be assigned to the related projects (subject to capacity). Each reviewer must confirm the absence of any conflict of interest prior to accepting any project application for review. | GBCI Website - <a href="http://www.gbci.org/org-nav/about-gbci/about-gbci.aspx">http://www.gbci.org/org-nav/about-gbci/about-gbci.aspx</a><br><br>Owner | 8/25/2011      | Auditors are selected first by expertise, then by location.<br><br>Auditors must sign a conflict of interest form and they are not introduced to the project team until the site visit is scheduled. | Auditors are selected first by expertise, then by location. As demand grows, additional auditors will be trained in diverse geographical locations. The intent is for the auditor to have an applied knowledge of the climate and culture of the place, allowing for a simplified assessment process. Prior to taking an assignment, the auditor must sign a 'conflict of interest' form, documenting that they have no personal or professional connection to the project and will not benefit from the outcome of the certification ruling. The auditor is not introduced to the project/representative project team member until the site visit is scheduled to maximize the potential for an unbiased review. | Owner  | 8/14/2011      |
| Is there a documented appeal process?                                  | Yes  | Complete appeal policies and procedures can be found in section 6.0 Appeals of The GBI Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5).   | <a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a><br><br>The Green Building Initiative (GBI) Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5). <a href="http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf">www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf</a> | 8/25/2011                  | Yes  |  |   | 8/25/2011      | The documented appeal process is not published yet.  | There is a documented appeal process, included in the certification flow diagram created for online viewing May 27, 2011. See <a href="https://ilbi.org/lbc/certification-process">https://ilbi.org/lbc/certification-process</a> for a simplified account.<br><br>Details for each step in the flow diagram will be published in the upcoming Process book of the Petal Series – a collection of printed companion guides to provide the necessary generalized support information, strategies, rationale, case studies, and context for every Petal and Imperative. This resource will complement the "Dialogue", the online forum where the most up-to-date information is maintained.                         | Owner<br><br><a href="https://ilbi.org/lbc/certification-process">https://ilbi.org/lbc/certification-process</a> | 8/14/2011      |



**Independence**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Review Questions                       | Summary  | Green Globes  | Source  | Date Retrieved | Summary  | LEED   | Source  | Date Retrieved        | Summary  | Living Building Challenge  | Source   | Date Retrieved      |
|--|--|---|---|----------------|--|--|---|-----------------------|--|--|--|---------------------|
| What is the documented appeal process? | A project team (Note: GBI uses the term "A customer") can file a written complaint within 30 days after the date of notification of any action. The Secretariat will respond within 30 days after the receipt of the complaint. An appeal panel may be appointed to conduct a hearing.<br><br>Further appeal may be made directly to ANSI. | A customer may file an appeal with the Green Building Initiative regarding specific discrepancies previously identified and discussed with the Green Globes Assessor but not resolved to the customer's satisfaction. A one-time appeal fee must be paid prior to Green Building Initiative evaluating the merits of the appeal.<br><br>6.0 Appeal<br>6.1 Complaint – Persons who have been or may be affected by any Committee action or inaction shall have the right to appeal such action or inaction. The appellant shall file a written complaint with the Secretariat within 30 days after the date of notification of any action, or at any time with respect to inaction. The complaint shall state the nature of the objection, the procedures or the sections of the Standards that are at issue, the action or inaction at issue, and the specific remedial action(s) that would satisfy the appellant's concerns.<br><br>6.2 Response – Within 30 days after the receipt of the complaint, the Secretariat shall respond in writing to the appellant, specifically addressing each allegation in the complaint to the extent possible. The Secretariat shall attempt to resolve, informally, the complaint of the appellant.<br><br>6.3 Appeals Panel and Hearing – If the Secretariat is unable to informally resolve the complaint, it shall appoint an appeals panel to hold a hearing on a date agreeable to all participants, with at least 15 working days notice. The appeals panel shall consist of three individuals who have not been directly involved in the dispute and who will not be materially affected by any decision made in the dispute. At least two members of the panel shall be acceptable to the appellant and at least two shall be acceptable to the Secretariat.<br><br>6.4 Conduct of the Hearing – The appellant has the responsibility of demonstrating improper procedural action or inaction, the adverse effects therefrom, and the efficacy of the requested remedial action. The Secretariat has the responsibility to demonstrate that the Committee took all actions in question in compliance with these procedures. | http://www.thegbi.org/commercial/about-green-globes/faq.asp<br><br>Rating Discrepancy Resolution and Appeal Guidelines<br>http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf | 7/28/2011      | The project team can file a first level appeal to GBCI prior to formal acceptance of and within 25 business days of the applicable action. The appeals are usually submitted through LEED Online.<br><br>GBCI representatives not previously involved in evaluating the relevant requirement for the Project will review the appeal documentation. GBCI endeavors to deliver a decision on the appeal within 25 business days from the initial filing of the appeal.<br><br>Within 25 business days after receiving notice from GBCI as to the determination of the first level appeal a project team may initiate a final level appeal. The Appeals Board will make a final decision.<br><br>Expedited appeals are available. | First Level Appeal: The project team may initiate a first level appeal to GBCI prior to formal acceptance of and within twenty-five (25) business days of the applicable action or determination by GBCI. (Formal acceptance of a GBCI determination occurs within LEED Online) All appeals must be provided to GBCI via the same platform through which the project application was submitted for review (usually LEED Online). The project team must remit the appeal fee as well as submit the following information to establish the basis for the appeal: 1) supplemental documentation supporting such MPR, prerequisite and/or credit; as well as 2) an explanation addressing the issues in the technical advice provided with the denial of the MPR, prerequisite and/or credit. GBCI will acknowledge filing of the appeal to the project team. GBCI representatives not previously involved in evaluating the relevant requirement for the Project will review the appeal documentation and explanation provided by the project team. GBCI endeavors to deliver a decision on the appeal within twenty-five (25) business days from the initial filing of the appeal. GBCI's appeal decision shall include identification of the technical basis underlying such decision.<br><br>Final Level Appeal: A project team may initiate a final level appeal in order to challenge a denied prerequisite, credit, or first level appeal decision. Final level appeals are restricted to appeals in which the project team disagrees with the denial of a prerequisite, credit, or first level appeal decision, and wishes to argue the validity of the ruling without providing additional clarifications, documentation, or alternative compliance paths. The project team must submit the final level appeal, using LEED Online, within twenty-five (25) business days after receiving notice from GBCI as to the determination of the first level appeal.<br>Whenever a final level appeal is lodged, the GBCI Chair in consultation with the GBCI President shall appoint three persons to serve on the Appeals Board, each of whom shall be qualified by virtue of training and experience to have the appropriate technical knowledge in the relevant LEED Rating System. The Appeals Board shall make a final determination on all determinations pertaining to MPRs, credits and/or prerequisites. No member of the Appeals Board may (a) review any matter in which his or her impartiality might reasonably be questioned or (b) review any matter which presents an actual or apparent conflict of interest relating to the project. | LEED Certification Policy Manual - https://www.leadonline.com/rj/go/km/docs/docume/nt/usgbc/led/config/terms/Legal_Documents_Download/rating_system_doc_june_2011/June2011_Cert_Policy_Manual.pdf | 7/8/2011<br>8/25/2011 | After initiation there are three written instances for providing supplemental/clarifying data, and one verbal opportunity during the site visit. | Project teams can rectify any deficiencies in the submissions and re-apply for missing petals and a new audit. Previously accepted petals are not re-audited unless desired. The details of repeal process are not described in the User's Guide.<br><br>Once a team has initiated the certification process, there are three written instances when they can provide supplemental/clarifying data, and one verbal opportunity during the site visit:<br>1. Institute staff perform a "completeness check" to ensure that sufficient data have been submitted and may request additional written information from the project team.<br>2. During the written documentation review (prior to the site visit), the auditor performs a technical content review of the data and may request written clarification about information provided by the project team.<br>3. During the site visit, the auditor may ask questions and the representative project team member may provide clarifying explanations. Any otherwise undocumented relevant information learned during the site visit is included in the auditor's written report.<br>4. Once the team is informed of the official results and receives a simplified copy of the auditor's written report, they have one opportunity to appeal. The appeal review is based on supplemental written documentation only – there will not be a second site visit. | The Living Building Challenge User's Guide V1.2<br><br>Owner | 7/8/2011<br>8/14/11 |

**Independence**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Review Questions   | Summary   | Green Globes   | Source  | Date Retrieved | Summary  | LEED   | Source   | Date Retrieved        | Summary   | Living Building Challenge   | Source   | Date Retrieved      |
|--|---|--|---|----------------|--|--|--|-----------------------|---|---|--|---------------------|
|  |   | <p>6.5 Decision – The appeals panel shall render its decision in writing within 30 days of the hearing, based upon a preponderance of the evidence, stating its findings of fact and conclusions, with reasons therefore and citing the evidence. The Secretariat shall notify the appellant and the Committee of the decision of the appeals panel, which shall be binding and final on all concerned.</p> <p>6.6 Further appeal – Further appeal may be made directly to ANSI, but only if the above process has been followed to its conclusion. If the appellant gives notice to GBI that such a further appeal to ANSI is intended, all relevant materials, including the decision made by the appeals panel set forth above, shall be submitted to ANSI by GBI.</p>  |   |                |  | <p>GBCI shall notify the project team of the names of those persons serving on the Appeals Board, and the project team shall notify GBCI within ten (10) business days of receipt of such names if the project team questions the impartiality of any member of the Appeals Board. The Chair of GBCI shall determine whether to disqualify any member from serving on the Appeals Board. In the event of disqualification, the Chair of GBCI will designate another individual to serve as an interim member. The GBCI Chair in consultation with the GBCI President shall designate the Chair of the Appeals Board.</p> <p>All final level appeals must be submitted in writing and sent to GBCI by traceable email, mail or delivery service. The appeal must specify a valid basis for the appeal, but may not offer documentation other than that previously proffered to GBCI. GBCI may file a written response to the appeal request. Written briefings may be submitted by the project team and by GBCI within twenty-five (25) business days following submission of the appeal request.</p> <p>The Appeals Board will endeavor to meet within sixty (60) calendar days. It shall render a decision, including a brief description of its reasons, based on the record below and written briefs (if any) without an oral hearing. GBCI will endeavor to (but does not guarantee) deliver the decision on the appeal within ten (10) business days of the meeting of the Appeals Board. Decisions of the Appeals Board shall be by majority vote.</p> <p>The decisions of the Appeals Board shall be final.</p> |  |                       |   |   |  |                     |
| Is there an independent review and verification process? | Assessors must sign a business agreement with GBI and follow the conflict of interest guidelines. |  |   |                | The review and verification are administered by GBCI, a separately incorporated entity.  | Green Building Certification Institute (GBCI), established in 2008 is a separately incorporated entity and is responsible for project registration and certification. GBCI administers the LEED certification program, performing third-party technical reviews and verification of registered projects to determine if they have met the standards set forth by the LEED rating system.   | GBCI Website - <a href="http://www.gbci.org/org-nav/about-gbci/about-gbci.aspx">http://www.gbci.org/org-nav/about-gbci/about-gbci.aspx</a>   | 9/6/2011              | Auditors must sign a conflict of interest form and they are not introduced to the project team until the site visit is scheduled.                   | Prior to taking an assignment, the auditor must sign a 'conflict of interest' form, documenting that they have no personal or professional connection to the project and will not benefit from the outcome of the certification ruling. The auditor is not introduced to the project/representative project team member until the site visit is scheduled to maximize the potential for an unbiased review.   | Owner  | 8/14/2011           |
| What is the method for evaluation?                       | The evaluation process includes document review and on-site walk through.                         | <p>The method for building evaluation includes two stages: paperwork (construction documents, analysis documents, management policies, facility records, support materials, online questionnaire with points confirmed by the third-party assessor), and an on-site walk through.</p> <p>The third party assessment process is different for existing buildings and new construction. Green Globes-CIEB assessment includes an extensive documentation review and an on-site visit with a walk through and interview of facility manager and chief engineer. The New Construction assessment includes two stages of assessment. Stage I is a review of construction documents, working drawings, landscape designs, energy analysis, LCA documentation, commissioning reports, etc. Stage II includes an onsite walk through, review of additional documentation, and interview of key team members.</p> | <a href="http://www.thegbi.org/commercial/about-green-globes/faq.aspx">http://www.thegbi.org/commercial/about-green-globes/faq.aspx</a> | 7/28/2011      | <p>The LEED certification program is a documentation-based verification program.</p> <p>The review process for LEED is conducted in LEED Online and occurs in two phases. In both the preliminary and (optional) final review, all the documentation submitted with the application is reviewed for completeness and compliance with the appropriate LEED rating system.</p> | <p>The review process for LEED occurs in two phases. In both the preliminary and (optional) final review, all the documentation submitted with the application is reviewed for completeness and compliance with the appropriate LEED rating system. Each reviewed prerequisite and credit is designated as anticipated, pending, or denied in the preliminary review and as awarded or denied in the final review. Each designation is accompanied by technical advice as deemed appropriate by the review team. All project information forms are designated as approved or not approved, and are accompanied by technical advice as deemed appropriate by the review team.</p> <p>The LEED certification program is a documentation-based verification program. Each LEED rating system and version thereof consists of unique documentation requirements to complete a LEED certification application. Within the LEED certification application, a series of required documents, attestations, data, or other information must be indicated in order to demonstrate the satisfaction of each MPR, prerequisite, and attempted credit. Specific documentation requirements vary across the different rating systems; though, usually consist of forms, calculations, narratives, maps, drawings, specifications, and other related media (collectively, "documentation").</p>   | <p><a href="http://www.gbci.org/main-nav/building-certification/certification-guide/lead-for-existing-buildings-operations-and-maint/application-review/certification-review.aspx">http://www.gbci.org/main-nav/building-certification/certification-guide/lead-for-existing-buildings-operations-and-maint/application-review/certification-review.aspx</a></p> <p><a href="http://www.gbci.org/main-nav/building-certification/certification-guide/LEED-for-New-Construction/Application-review/split-review.aspx">http://www.gbci.org/main-nav/building-certification/certification-guide/LEED-for-New-Construction/Application-review/split-review.aspx</a></p> <p>LEED Certification Policy Manual: <a href="https://www.leadonline.com/irj/go/km/docs/documents/LEED/config/terms/Legal_Documents_D">https://www.leadonline.com/irj/go/km/docs/documents/LEED/config/terms/Legal_Documents_D</a></p> | 7/7/2011<br>8/25/2011 | The evaluation process includes document review and site visit performed by a single auditor and quality control review performed by the institute. | <p>A project team is required to submit documentation and an independent, third-party technical group will be engaged to review the submittal. Multiple reviewers may review the project and documentation. Once all written documents meet the review requirements, a Living Building Inspector will visit the project site. The audit process will take 2-8 hours. Once the audit is satisfied, the project will receive the certificate. (User's Guide 1.2)</p> <p>Imperatives are evaluated based on written documentation and/or site visit. See <a href="https://lbi.org/lbc/certification-process">https://lbi.org/lbc/certification-process</a> for a simplified account of the certification process.</p> <p>The project team is required to submit documentation and a single independent, third-party auditor will be engaged to review the submittal.</p> <ul style="list-style-type: none"> <li>- Team submits written documentation</li> <li>- Institute performs a 'completion check' of Team's documentation</li> <li>- Auditor performs a content review</li> <li>- Auditor performs a single-day site visit and compiles findings into written report</li> <li>- Institute performs quality control review of the report (to ensure that all elements for each relevant Imperative have been assessed – essentially a 'completeness check' of Auditor's work)</li> <li>- Institute notifies Team of certification results and the team is provided a simplified copy of the report. (User's Guide 2.0)</li> </ul> | The Living Building Challenge User's Guide V1.2<br>Owner <a href="https://lbi.org/lbc/certification-process">https://lbi.org/lbc/certification-process</a> | 7/8/2011<br>8/14/11 |

**Availability**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Q # | Review Questions | Summary  | Green Globes  | Source   | Date Retrieved  | Summary   | LEED   | Source  | Date Retrieved  | Summary   | Living Building Challenge   | Source   | Date Retrieved |            |
|-----|------------------|--|---|--|---|-----------|--|---|---|-----------|---|--|----------------|------------|
| A1  | b                | What is the average length of time for a building evaluation from submission to certification? | 3 months  | In general, a building can be Green Globes certified from start to finish in about 3 months. Once users have completed the online evaluation and ordered/paid for a third party assessment, they should plan for at least 5 weeks lead time and allow a 1-2 week scheduling window of dates before the third party on-site assessment can be performed. For New Construction, the Stage 1 assessment will take approximately 1 week for review of the construction documents and an additional 2 weeks to generate the assessment report. The NC State 2 as well as the Continual Improvement of Existing Buildings assessment will generally take 1/2 days for the on-site visit followed by 3 weeks for generating the assessment report.  | http://www.thegbi.org/faq.asp   | 7/7/2011  | 3-4 months   | Altogether, the process can take 3-4 months: 25 business days for the initial review followed by 25 business days for the project team to prepare their clarifications, followed by 15 business days for the final review. In instances where an appeal is necessary, this adds an additional 25 business days from when the appeal documentation is submitted for review. Subject to capacity, GBCI is able to provide an expedited review process for a higher fee, and this reduces the review time by approximately 50%.  | LEED Certification Policy Manual - https://www.leadonline.com/irj/go/km/docs/documents/usgbc/lead/config/terms/Legal_Downloads/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf | 8/25/2011 | 1-3 months  | 4-12 weeks, depending on the complexity of the project and the availability of the representative team member to schedule the site visit.  | Owner          | 8/14/2011  |
|     | a                | Is there a documented feedback/comment resolution process?                                     | Yes   |  |   | Yes       |  |   |   | Yes       |   |  |                |            |
| A2  | b                | What is the documented feedback and/or comment resolution process?                             | The reviewer provides a preliminary report, score, and rating to the project team (called "client" by GBI). The preliminary report becomes final if the project team accept the evaluation results. | Generally, the client receives a preliminary report, score, and rating. If the preliminary report, score and rating are accepted and no appeals are anticipated, the report and rating will become final within two weeks after issuance of the report. If there are disputed items, the client must notify GBI within two weeks from when the report was received. Supporting information must be provided to GBI. If an update to the report is deemed necessary by the assessor, he/she will amend the report, score, and rating and final report will be forwarded within 4 weeks. If it is not deemed warranted, the client notifies GBI of an ongoing dispute and pays a one-time appeal fee. Appeals are reviewed by GBI staff and/or Green Globes auditing assessors and are generally granted or denied within 4 weeks. If the appeal was caused by GBI or assessor error, the appeal fee is rebated. | http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf | 8/25/2011 | The reviewer provides detailed feedback to the project team. Project teams are able to contact GBCI technical staff, via the Contact Us Form on the GBCI website, should they have any follow-up questions | The LEED certification process includes a preliminary and a final review. The reviewer provides detailed feedback to the project team during the preliminary review and guidance on the outstanding submittal information that is required before credit/prerequisite compliance can be confirmed. In addition, all project teams are able to contact GBCI technical staff, via the Contact Us Form on the GBCI website, should they have any follow-up questions about their preliminary review comments or other questions about the technical requirements of LEED. GBCI staff are available for conference calls with project teams should they need to discuss complex or unique situations where the project team may be facing challenges evaluating whether their project with comply with the LEED rating system requirements. | LEED Certification Policy Manual - https://www.leadonline.com/irj/go/km/docs/documents/usgbc/lead/config/terms/Legal_Downloads/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf | 8/25/2011 | There are three written instances for supplemental/clarifying data, and one verbal opportunity during the site visit. | Once a team has initiated the certification process, there are three written instances when they can provide supplemental/clarifying data, and one verbal opportunity during the site visit. All data must be provided in writing to the Institute:<br>1. Institute staff perform a "completeness check" to ensure that sufficient data have been submitted and may request additional written information from the project team.<br>2. During the written documentation review (prior to the site visit), the auditor performs a technical content review of the data and may request written clarification about information provided by the project team.<br>3. During the site visit, the auditor may ask questions and the representative project team member may provide clarifying explanations. Any otherwise undocumented relevant information learned during the site visit is included in the auditor's written report.<br>4. Once the team is informed of the official results and receives a simplified copy of the auditor's written report, they have one opportunity to appeal. The appeal review is based on supplemental written documentation only that is provided by the project team – there will not be a second site visit.<br>The Institute is in the process of building an on-line Project Portal, to be complete in 2011, where all written documentation is uploaded and Dialogue activity is tracked. Once complete, teams will have access to the Project Portal from the time of registration and for the duration of the project. | Owner          | 08/14/2011 |
| A3  | a                | Is there a projected evaluation schedule provided online?                                      | Yes   |  |   | Yes       |  |   |   | Yes       |   |  |                |            |

|    |   |  |   |  |  |           |   |  |   |                        |   |   |  |                       |
|----|---|--|---|--|--|-----------|---|--|---|------------------------|---|---|--|-----------------------|
| A4 | b | <b>How long does it take for a project to receive evaluation feedback at various stages of assessment?</b>                                       | 5 weeks of lead time<br>Stage 1 assessment (document review): 3 weeks<br>Stage 2 assessment (site visit): 4-5 weeks | <p>In general, a building can be Green Globes certified from start to finish in about 3 months. Once users have completed the online evaluation and ordered/paid for a third party assessment, they should plan for at least 5 weeks lead time and allow a 1-2 week scheduling window of dates before the third party on-site assessment can be performed. For New Construction, the Stage 1 assessment will take approximately 1 week for review of the construction documents and an additional 2 weeks to generate the assessment report. The NC State 2 as well as the Continual Improvement of Existing Buildings assessment will generally take 1/2 days for the on-site visit followed by 3 weeks for generating the assessment report.</p> <p>Generally, the client receives a preliminary report, score, and rating. If the preliminary report, score and rating are accepted and no appeals are anticipated, the report and rating will become final within two weeks after issuance of the report. If there are disputed items, the client must notify GBI within two weeks from when the report was received. Supporting information must be provided to GBI. If an update to the report is deemed necessary by the assessor, he/she will amend the report, score, and rating and final report will be forwarded within 4 weeks. If it is not deemed warranted, the client notifies GBI of an ongoing dispute and pays a one-time appeal fee. Appeals are reviewed by GBI staff and/or Green Globes auditing assessors and are generally granted or denied within 4 weeks. If the appeal was caused by GBI or assessor error, the appeal fee is rebated.</p> | <a href="http://www.thegbi.org/faq.asp">http://www.thegbi.org/faq.asp</a><br><br><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf</a>   | 8/25/2011 | Preliminary review: 25 business days/15 business days for expedited reviews<br><br>Opportunity for project to respond to request for clarifications: 25 business days<br><br>Final review: 15 business days/7 business days for expedited reviews | Preliminary review (25 business days) (15 business days for expedited reviews)<br><br>Opportunity for project to respond to request for clarifications (25 business days)<br><br>Final review (15 business days) (7 business days for expedited reviews)<br><br>Altogether, the process can take 3-4 months: 25 business days for the initial review followed by 25 business days for the project team to prepare their clarifications, followed by 15 business days for the final review. In instances where an appeal is necessary, this adds an additional 25 business days from when the appeal documentation is submitted for review. Subject to capacity, GBCI is able to provide an expedited review process for a higher fee, and this reduces the review time by approximately 50%. | <a href="https://www.usgbc.org/FAQConsolidation/FAQ_Detail.aspx?id=Q50140000009vbmAAA">https://www.usgbc.org/FAQConsolidation/FAQ_Detail.aspx?id=Q50140000009vbmAAA</a><br><br>LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documentation/Download/Download/June_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documentation/Download/Download/June_20_2011/June2011_Cert_Policy_Manual.pdf</a> | 7/8/2011<br>08/25/2011 | Feed back is provided real time related to the evaluation schedule.<br><br>Institute 'completion check': up to 2 weeks<br><br>Auditor content review: up to 4 weeks<br><br>Auditor single-day site visit: up to 2 weeks<br><br>Auditor completes written report: up to 2 weeks<br><br>Institute quality control review of the report: up to 2 weeks | The evaluation schedule is published in the certification flow diagram. See <a href="https://ilbi.org/lbc/certification-process-for-a-simplified-account">https://ilbi.org/lbc/certification-process-for-a-simplified-account</a> . [Refer to the Appendix for a soft copy.]<br>- Institute 'completion check': up to 2 weeks<br>- Auditor content review: up to 4 weeks<br>- Auditor single-day site visit: up to 2 weeks<br>- Auditor completes written report: up to 2 weeks<br>- Institute quality control review of the report: up to 2 weeks<br><br>If additional information is required from the project team during the certification process [i.e. instances summarized in Comment 6 – A2], the schedule may be delayed. The team has up to 2 weeks to reply to requests made as a result of the Institute's completeness check; up to 2 weeks to reply to requests made as a result of the auditor's content review; and up to 4 weeks to provide all necessary data required for an appeal. The team must file an intent to appeal the certification results within 2 weeks of notification.<br><br>The project team receives feedback in real time related to the evaluation schedule. The upcoming Project Portal will include an administrative area with a calendar that provides an up-to-date account of the position of the project in the certification process and anticipated timeline/end date for each phase. | Owner  | 8/14/2011             |
| A5 | a | <b>Does the user get feedback in time?</b>   |   |  |  |           |   |  |   |                        |   |   |  |                       |
| A5 | b | <b>What is the average time an auditor/assessor spends on each project?</b>  | 8-32 hours of work  | 8-32 hours   | <a href="http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf">http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf</a>  | 8/25/2011 | 40 hours (range 30-120+ hrs)  | This depends largely on the size and complexity or innovative strategies presented by a project. On average, LEED technical reviewers will spend approximately 40 hours (range 30-120+ hrs) reviewing submitted documentation, spread over the preliminary and final review. Time spent to assess Appeal documentation for compliance would be additional.   | Owner   | 8/25/2011              | 40-80 hours   | The onsite audit process will take between 2-8 hours depending upon the size and complexity of the building and the number of petals being pursued.<br><br>The Auditor may be connected to a single project for up to 8 weeks. Actual dedicated hours during this time likely range from 40-80, depending on the project's complexity, whether additional clarification is necessary, and availability of representative team member. (Hours noted include technical content review; site visit scheduling, walk through and associated travel; and composing report.)  | The Living Building Challenge User's Guide V1.2<br><br>Owner | 7/8/2011<br>8/14/2011 |
| A6 | c | <b>How many assessors/auditors are typically involved with a project evaluation? Do larger buildings have more than one assessor? Expertise?</b> | One assessor is assigned to each project unless the project has specific needs.                                     | Typically, only one assessor is involved. However, if a specialized energy audit is required or an appeal is filed, one additional assessor/auditor will be utilized.  | <a href="http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf">http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf</a><br><br><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf</a> | 8/25/2011 | Assessors (called "reviewers" by GBCI) are assigned to each project.  | In general, three LEED reviewers are assigned to each project: a generalist reviewer, HVAC/energy reviewer and a QC reviewer.  | Owner   | 8/25/2011              | One assessor is assigned for each project.  | One auditor is assigned per project. One Institute staff member will perform the completeness check for the initial submittal and the auditor's written report.   | Owner  | 8/14/2011             |



**Verification**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Q #  | Review Questions  | Summary   | Green Globes   | Source  | Date Retrieved          | Summary  | LEED  | Source  | Date Retrieved | Summary   | Living Building Challenge   | Source  | Date Retrieved         |
|------|---|---|--|---|-------------------------|--|---|---|----------------|---|---|---|------------------------|
| V1 b | What is the process assessors/auditors use to evaluate a project? | Review process for GG include document review and on-site walk through. | The method for building evaluation includes two stages: paperwork (construction documents, analysis documents, management policies, facility records, support materials, online questionnaire with points confirmed by the third-party assessor) and an on-site walk through.<br><br>Building projects that have completed either the NC or CIEB assessments, and scored a minimum threshold of 35% of the 1,000 available points, are then eligible to schedule a thorough third-party review of documentation and an on-site walk-through that will then lead to a formal Green Globes rating/certification. The third party assessment process is different for existing buildings and new construction. Green Globes-CIEB assessment includes an extensive documentation review and an on-site visit with a walk through and interview of facility manager and chief engineer. The New Construction assessment includes two stages of assessment. Stage I is a review of construction documents, working drawings, landscape designs, energy analysis, LCA documentation, commissioning reports, etc. Stage II includes an onsite walk through, review of additional documentation, and interview of key team members. Green Globes-CIEB includes an extensive documentation review and an on-site visit with walk through and interview of facility manager and chief engineer. | <a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a> | 7/28/2011               | The LEED review process has the option for two phases, preliminary and final review. | The review process for LEED occurs in two phases. In both the preliminary and (optional) final review, all the documentation submitted with the application is reviewed for completeness and compliance with the appropriate LEED rating system. Each reviewed prerequisite and credit is designated as anticipated, pending, or denied in the preliminary review and as awarded or denied in the final review. Each designation is accompanied by technical advice as deemed appropriate by the review team. All project information forms are designated as approved or not approved, and are accompanied by technical advice as deemed appropriate by the review team. | <a href="http://www.gbci.org/main/building-certification/certification-guide/leed-for-existing-buildings-operations-and-maint/application-review/certification-review.aspx">http://www.gbci.org/main/building-certification/certification-guide/leed-for-existing-buildings-operations-and-maint/application-review/certification-review.aspx</a>               | 7/7/2011       | Review process for LBC includes review of written documentation, site visit and quality control review. | A project team is required to submit documentation and an independent, third-party technical group will be engaged to review the submittal. Multiple reviewers may review the project and documentation. Once all written documents meet the review requirements, a Living Building Inspector will visit the project site. The audit proves will take 2-8 hours. Once the audit is satisfied, the project will receive the certificate.<br><br><i>Once the team submits written documentation and the Institute performs a completeness check, the auditor receives access to project data. The site visit is scheduled and the auditor reviews the written documentation. If applicable, the auditor maintains a list of clarifications, which are submitted to the team in one exchange. The auditor reviews any data submitted as a result of the clarification request prior to traveling to the project site. The auditor may add items to the site review checklist template, as necessary, based on the content review. (The documentation requirements for each Imperative indicate whether assessment is based on written documentation, site visit or a combination of both.) The auditor performs a site visit, then completes the written report summarizing findings about each Imperative, and submits the report to the Institute.</i> | The Living Building Challenge User's Guide V1.2<br><br><i>Owner</i> | 7/8/11<br><br>08/14/11 |
| V2 a | Do the assessors/auditors verify the information onsite?          | Yes   | Yes. GBI assessors make a site visit to walk through the building, review additional documentation, and interview relevant staff.<br><br><i>Evaluation criteria are detailed within the rating systems and third-party assessors use relevant documentation provided by the client to assess the accuracy of client compliance/adherence.</i>  | <a href="http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp">http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp</a>   | 7/28/11<br><br>08/25/11 | No   | <i>For LEED certification, the review team does NOT verify the information onsite.</i>  | <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documentations_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documentations_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a> | 08/25/11       | The information is verified during the site visit or through document review.                           | Yes. There are three ways that an imperative is verified:<br><br>1. Verified at site visit, documentation used as reference;<br>2. Partially-Verified at site visit as well as documentation review;<br>3. Not Verified at site visit – verified solely through documentation.<br><br>The Petal Series (documentation requirements) provides information on the verification method for each petal.   | The Living Building Challenge User's Guide V1.2                     | 7/8/11<br><br>08/14/11 |
| a    | Are the criteria used by assessors/auditors documented?           | Yes   |  |   |                         | Yes  |   |   |                | Yes   |   |   |                        |

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| V3 b | <p><b>What are the evaluation criteria assessors/auditors use when evaluating a project?</b></p> | <p>For new construction, the Green Building Assessment Protocol specifies evaluation criteria.</p> | <p>Documentation requirements used in evaluations vary depending on the rating system being used. The New Construction assessment includes two stages of assessment. Stage I is a review of construction documents, working drawings, landscape designs, energy analysis, LCA documentation, commissioning reports, etc. Stage II includes an onsite walk through, review of additional documentation, and interview of key team members. Green Globes CIEB includes an extensive documentation review and an on-site visit with walk through and interview of facility manager and chief engineer.</p> | <p><a href="http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp">http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp</a></p> <p>Detailed information on documentation typically requested as part of a third-party assessment is listed in the documents called "Pre-3rd Party Assessment Checklist."</p> <p>Green Globes NC <a href="http://www.thegbi.org/assets/pdfs/Green-Globes-NC-Pre-3rdParty-Assessment-Checklist-031809.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-NC-Pre-3rdParty-Assessment-Checklist-031809.pdf</a></p> | 8/25/2011 | <p>Project documentation for compliance with the published, balloted LEED rating system requirements, Minimum Program Requirements, and individual credit/prerequisite requirements, LEED Online Forms, published Addenda &amp; LEED Interpretations and other LEED guidance documents published by USGB.</p> | <p>LEED reviewers assess project documentation for compliance with the published, balloted LEED rating system requirements, Minimum Program Requirements, and individual credit/prerequisite requirements, LEED Online Forms, published Addenda &amp; LEED Interpretations and other LEED guidance documents published by USGBC (e.g. District and Campus Thermal Energy Treatment)</p> | <p>LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a></p> | 8/25/2011 | <p>Documentation Requirements provides verification method and guidelines.</p> | <p>Evaluation criteria are summarized in "Documentation Requirements". [Most recent update to Documentation Requirements was December 03, 2010 and is posted within the online Living Building Community (a subscription is required): <a href="https://ilbi.org/action/community/users-guide">https://ilbi.org/action/community/users-guide</a>.</p> <p>Documentation requirements will also be present with assigned form fields in the online Project Portal.]</p> <p>In summary, each project team is expected to share the following:</p> <ul style="list-style-type: none"> <li>- 'For Construction' Drawing Set</li> <li>- A site plan with the project area clearly noted</li> <li>- Project Manual (specifications)</li> <li>- At least ten photographs or digital color 3D renderings</li> <li>- Additional information specific to each Imperative (in most cases)</li> </ul> | <p><a href="https://ilbi.org/action/community/users-guide">https://ilbi.org/action/community/users-guide</a></p> <p>Owner</p> | 8/25/2011 |
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| V4 b | <b>What tools are used to evaluate the technical information provided by a project?</b> | Information was not found on how the tool would be used by assessors.<br><br>The Pre-Assessment and Assessment Checklist is for the project team. | Documentation requirements used in evaluations vary depending on the rating system being used. The New Construction assessment includes two stages of assessment. Stage I is a review of construction documents, working drawings, landscape designs, energy analysis, LCA documentation, commissioning reports, etc. Stage II includes an onsite walk through, review of additional documentation, and interview of key team members. Green Globes CIEB includes an extensive documentation review and an on-site visit with walk through and interview of facility manager and chief engineer. | <a href="http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp">http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp</a><br><br>Detailed information on documentation typically requested as part of a third-party assessment is listed in the documents called "Pre-3rd Party Assessment Checklist."<br><br>Green Globes NC<br><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-NC-Pre-3rdParty-Assessment-Checklist-031809.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-NC-Pre-3rdParty-Assessment-Checklist-031809.pdf</a> | 8/25/2011 | LEED Online assessment tool. | LEED project reviews are performed using the LEED Online assessment tool.<br><br>Information was not found on how the tool would be used by assessors.<br><br>Note: LEED-Online is used by project teams with registered projects to manage the LEED certification process. | LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documentation/Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documentation/Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a> | 8/25/2011 | The auditor is provided guidelines/checklists and a report template with prompts for each Imperative. | The auditor is provided guidelines/checklists to aid in the content review and site visit portion of a project evaluation. To maximize the potential for a thorough review, the Institute also provides a report template with prompts for each Imperative. | Owner | 8/14/2011 |
| a    | <b>Are evaluation needs outside the expertise of the auditor/assessor addressed?</b>    | Yes   |  |  |           | Yes                          |   |  |           | Yes   |   |       |           |

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| V5 b | <p><b>What is the process when evaluation needs are outside an auditor/assessor's expertise?</b></p> | <p>A senior assessor or member of the technical committee may help address special evaluation needs.</p> | <p>Such a scenario is unlikely because assessors are recruited and selected for a project based on their experience and area of expertise. However, if evaluation needs are outside an assessor's expertise, GBI may contract the assistance of a senior assessor or member of the technical committee.</p> | <p><a href="http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf">http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf</a></p> <p>Owner</p> | 8/25/2011 | <p>Standard developer (USGBC) and its technical committee structure may be used to address unique or complex evaluation needs.</p> | <p>GBCI employs highly qualified, professionally licensed, technical staff who have a wide breadth of experience. In instances where a particularly unique or complex project presents evaluation needs outside an assessors expertise, GBCI may pose technical questions to the standard developer (USGBC) and its robust technical committee structure.</p> | Owner | 8/25/2011 | <p>There are two possible pathways:<br/> - Programmatic assistance is provided by Institute staff to clarify the intent of an Imperative.<br/> - Content assistance is provided by the associated Petal Committee to clarify the project's applied solution.</p> | <p>Every effort is made to pair a project with an auditor that has broad and deep direct experience applying the technical requirements of the Living Building Challenge to its Typology (e.g. renovation, landscape, infrastructure, building, or neighborhood) and within its Living Transect (e.g. Natural Habitat Preserve, Rural Agriculture Zone, Village or Campus Zone, General Urban Zone, Urban Center Zone, or Urban Core Zone).<br/> There are two possible pathways for dealing with an issue that is outside the auditor's expertise:<br/> - Programmatic assistance is provided by Institute staff to clarify the intent of an Imperative.<br/> - Content assistance is provided by the associated Petal Committee to clarify the project's applied solution.<br/> Petal Committees are comprised of national and/or international experts within a given field that share a strong philosophical alignment with the goals of the Living Building Challenge. Positions on a Petal Committee are voluntary and individuals serve at the discretion of the Institute for as long as they are able to provide expert guidance to the certification system and remain free of any significant conflicts of interest. For example, Petal Committee advisors may not be working on an active Living Building Challenge project while sitting on a Petal Committee, nor work for a building product manufacturer or a trade association. There is a minimum of five seats on each Petal Committee, one of which must be held by senior Institute staff to ensure continuity. Committees must be odd in number and may have as many as nine seats.</p> | Owner | 8/14/2011 |
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**Transparency**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Q # | Review Questions | Green Globes  |  |   |  | LEED                |   |  |   | Living Building Challenge  |   |   |   |           |
|-----|------------------|---|--|---|--|---------------------|---|--|---|--|---|---|---|-----------|
|     |                  | Summary   | Source   | Date Retrieved  |  | Summary             | Source  | Date Retrieved   |   | Summary  | Source  | Date Retrieved  |   |           |
|     | a                | Are there methods to collect and address public comments?     | Yes  |   |  |                     |   |  |   | Yes, but only those who subscribe for the LBC community can have access to the Forum and feedback form |   |   |   |           |
| T1  | b                | What methods are used to collect and address public comments? | Comments were collected through public comment forums. | GBI became an ANSI accredited Standards Developing Organization (or SDO) in 2005, breaking new ground for the industry by also becoming the first green building organization to commit to taking a commercial building rating system (Green Globes™) through an ANSI consensus process. The assessment protocol—or rating system—contained within GBI's proposed standard will be available to the public for use during the design, construction, operations, and maintenance of commercial buildings. In addition, it will also be the basis of the next version of the Green Globes™ online tools. GBI's standard was developed by a technical committee—or consensus body—formed in 2006 which follows GBI's ANSI-approved procedures for developing consensus documents and involves a balanced committee of users, producers, and interested parties with required public comment periods and full committee ballot voting. The committee is comprised of 30 individuals, balanced equally between users (10), generally interested parties (10), and producers (10). It is supported by technical experts from across the country through working subcommittees. Additionally, the public plays an important role in developing ANSI standards by participating in periodic public comment forums. Many hundreds of individuals and organizations lent their expertise to the development of ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings before it was finalized. | <a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a>  | 8/25/2011           | After changes are reviewed by USGBC the new rating systems/revisions are opened for public review and comment, for at least 45 days, via online form displayed on the USGBC website or the Pilot Credit Library process | LEED is developed through a process in which proposed new rating systems or significant revisions to existing ones are reviewed by USGBC, the Technical Advisory Group, USGBC's Board of Directors, and finally, the LEED Steering Committee. Once these reviews are completed, the new rating systems or revisions are opened for public review and comment. In accordance with USGBC policies, the first comment period is open to the public for at least 45 days. After the comment period closes, comments are incorporated into the draft, an outline of the changes are posted, and a second public comment period is held, during which the public can comment on any changes made since the first comment period. The final draft is delivered to USGBC members for balloting.<br><br>Web-based comments will be accepted within a 45 day public comment period through an online form displayed on the USGBC website. The comment form will require respondents to reference specific paragraphs or sections of the draft and will include provisions for submitting substantive and procedural comments<br><br>Only comments submitted through either the public comment forum or the Pilot Credit Library process will be accepted. Hard copy letters, faxes, email comments, etc. will not be responded to. | <a href="http://www.usgbc.org/leed/drafts/ratings/systemversion/s.aspx">http://www.usgbc.org/leed/drafts/ratings/systemversion/s.aspx</a><br><br><b>Foundations of LEED (July 17, 2009) VII. Appendix 2: Balloting</b><br><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a> | 3/24/11  | Comments are collected online through the Dialogue Forum and the Feedback Form. | Comments are officially collected in one of two ways:<br>- The Dialogue: an online forum where project teams are encouraged to ask clarifications about the intent of the Imperative – generally or specific to their project, and share information that may influence the evolution of an Imperative or Petal. The individual who posted the entry is noted, and there is a visual indicator that demarcates any post that has been officially adopted into the Living Building Challenge.<br>- The Feedback Form: an online form that individuals may use to share ideas or suggestions for the evolution of a particular Imperative, Petal, or Living Building Challenge generally. | <b>Dialogue</b><br><a href="https://lbi.org/action/community/dialogue">https://lbi.org/action/community/dialogue</a><br><br><b>Feedback Form</b><br><a href="https://lbi.org/action/community/feedback-form">https://lbi.org/action/community/feedback-form</a> | 8/14/2011 |
| T2  | c                | How frequently are public comments collected?                 | During the development of the ANSI/GBI Standard        | Public comments were collected during the development of the ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings. For the current ANSI approved version of the Standard, public comments were solicited and reviewed by the technical committee on multiple occasions. These comments are available on the "Development Archive" page of the GBI website at <a href="http://www.thegbi.org/commercial/standards">www.thegbi.org/commercial/standards</a> .  | <a href="http://www.thegbi.org/commercial/about-green-globes/faq.aspx">http://www.thegbi.org/commercial/about-green-globes/faq.aspx</a><br><br><a href="http://www.thegbi.org/commercial/standards">http://www.thegbi.org/commercial/standards</a> | 7/28/11<br>08/25/11 | When substantive changes to LEED are made   | Public comments are collected when substantive changes to LEED including the addition, deletion, or substantive revision of prerequisites, credits or credit point values are made.  | <b>Foundations of LEED (July 17, 2009) VII. Appendix 2: Balloting</b><br><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a>  | 3/24/11  | In real time  | Comments are collected in real time.  | Owner   | 8/14/2011 |
|     | a                | Are public comments incorporated into the revision process?   | Yes  |   |  |                     | Yes   |  |   |  |   | Yes   |   |           |

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| T3 b | <b>How are public comments incorporated into the certification system revision process?</b> | Public comments and committee responses are posted at GBI's website. | <p>GBI became an ANSI accredited Standards Developing Organization (SDO) in 2005, breaking new ground for the industry by also becoming the first green building organization to commit to taking a commercial building rating system (Green Globes™) through an ANSI consensus process. The assessment protocol—or rating system—contained within GBI's proposed standard will be available to the public for use during the design, construction, operations, and maintenance of commercial buildings. In addition, it will also be the basis of the next version of the Green Globes™ online tools.</p> <p>GBI's Standard was developed by a technical committee—or consensus body—formed in 2006 which follows GBI's ANSI-approved procedures for developing consensus documents and involves a balanced committee of users, producers, and interested parties with required public comment periods and full committee ballot voting. The committee is comprised of 30 individuals, balanced equally between users (10), generally interested parties (10), and producers (10). It is supported by technical experts from across the country through working subcommittees. Additionally, the public plays an important role in developing ANSI standards by participating in periodic public comment forums. Many hundreds of individuals and organizations lent their expertise to the development of ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings before it was finalized.</p> | <a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a><br><br><a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a> | 7/28/11<br><br>08/25/11 | Comments submitted through either the public comment forum or the Pilot Credit Library process are accepted. Consideration will be given to expressed objections made by commenters and evaluation will be done as to whether to make revisions to the credits based on the comments. The comments received will be posted on the USGBC website along with a response to each comment and all changes to the draft as approved by LSC. | Web-based comments will be accepted within a 45 day public comment period through an online form displayed on the USGBC website. The comment form will require respondents to reference specific paragraphs or sections of the draft and will include provisions for submitting substantive and procedural comments. Project team feedback gathered during the course of testing of credits and prerequisites in the Pilot Credit Library is considered, by its nature, to be equal to a comment submitted via the online USGBC website form. Comments that are outside of the scope of the proposed changes in the draft will not be considered. Only comments submitted through either the public comment forum or the Pilot Credit Library process will be accepted. Hard copy letters, faxes, email comments, etc. will not be responded to. Comments will be collated and reviewed. Consideration will be given to expressed objections made by commenters and evaluation will be done as to whether to make revisions to the credits based on the comments. The comments received, without commenter name or organization will be posted on the USGBC website along with a response to each comment and all changes to the draft as approved by LSC. | <b>Foundations of LEED (July 17, 2009) VII. Appendix 2: Balloting</b><br><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a>  | 3/24/11 | As part of the process for updating the Living Building Challenge, the Dialogue activity and completed Feedback Forms are reviewed and comments integrated as appropriate after additional research is completed. | <p>As part of the process for updating the Living Building Challenge, the Dialogue activity and completed Feedback Forms are reviewed. These comments are then integrated into the certification system by Institute staff as appropriate after additional research is completed. Depending on the complexity and potential impact of a comment, the associated Petal Committee may be involved.</p> <p>- Step One – Registered Team Posting<br/>Someone who has subscribed to the Community may at any time post to the Dialogue seeking clarification as to how their particular project may meet a given Imperative. The project team may simply be seeking confirmation that their proposal is in alignment with the intent of the Imperative, or they may be proposing a temporary exception due to some unique characteristic of their project. Either way, all project team communication is done in full view of all other registered projects so that transparency and equitability is achieved.</p> <p>- Step Two – Query Identification<br/>The Institute staff then review the Dialogue post and determine the best course of action. Postings typically fall into one of the following categories:<br/>A) Simple clarifications that have been previously addressed<br/>B) Simple clarifications that have not yet been addressed<br/>C) Substantive clarification/idea that needs deliberation at the 'exception' level<br/>D) Substantive clarification/idea that needs deliberation at the Imperative level</p> <p>- Step Three – Addressing the Query<br/>Postings that fall into category A) are simply and quickly answered: Institute staff post a response to the Dialogue that refers the project team to a previous ruling. This posting is made visible to all Community subscribers so transparency and equitability is achieved.<br/>Postings that fall into category B) are also simply and quickly answered: Institute staff endeavor to respond to these inquiries within two weeks and post a response to</p> | Owner   | 8/14/2011 |
| T4 a | <b>Are the changes documented and accessible by the public?</b>                             | Yes  |  |  |                         | Yes  |  |   |         | Yes, but only those who subscribe for the LBC community can have access to the Dialogue Forum.  |   |   |           |
| T4 b | <b>Where are certification system changes documented?</b>                                   | Meeting minutes of the Consensus Body are posted on GBI's website.   | <p>Certification system changes are documented and can be accessed by the public on the GBI website.</p> <p>This standard, officially named ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings, was derived from the Green Globes environmental design and assessment rating system for New Construction and was formally approved on March 24, 2010.</p> <p>The standard was developed following ANSI's highly regarded consensus-based guidelines, which are among the world's most respected for the development of consensus standards and ensure a balanced, transparent and inclusive process. A variety of stakeholders including sustainability experts, architects, engineers, ENGO's, and industry groups participated in its development.</p> <p>For those interested in learning more about the development of the ANSI/GBI Standard, including information on the procedures, technical committee members, subcommittees, public comments, and meeting minutes, please contact info@thegbi.org or review the "ANSI/GBI 01-2010 Development Archive" page on the GBI website.</p>   | <a href="http://www.thegbi.org/commercial/standards">http://www.thegbi.org/commercial/standards</a><br><br><a href="http://www.thegbi.org/green-globes/ansi-gbi-standard.asp">http://www.thegbi.org/green-globes/ansi-gbi-standard.asp</a>         | 8/25/2011               | Summary of changes and committee meeting minutes are posted on USGBC's website.  | <p>LEED Steering Committee, Subcommittees, and Technical Advisory Groups' meeting minutes are available for public download.</p> <p>News for seeking public comments is posted on USGBC's website.</p> <p>The comments received, without commenter name or organization will be posted on the USGBC website along with a response to each comment and all changes to the draft as approved by LSC.</p>   | <b>Summary of Changes</b><br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2521">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2521</a><br><br><b>LEED Steering Committee Minutes</b><br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1637">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1637</a><br><br><b>LEED Technical Advisory Groups Minutes</b><br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1637">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1637</a><br><br><b>LEED Technical Committee Minutes</b><br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2185">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2185</a> | 3/24/11 | Changes can be viewed online through the Dialogue Forum .   | Major certification system changes are noted in the current version of the Living Building Challenge. Changes stemming from project team comments are viewable in the Dialogue.   | Dialogue<br><a href="https://ilbi.org/action/community/dialogue">https://ilbi.org/action/community/dialogue</a> | 8/14/2011 |

**Consensus**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Q  | Review Questions | Summary  | Green Globes  | Source   | Date Retrieved   | Summary                 | LEED  | Source  | Date Retrieved  | Summary  | Living Building Challenge  | Source | Date Retrieved |
|----|------------------|--|---|--|--|-------------------------|---|---|---|--|--|--------|----------------|
| C1 | b                | Who has been involved in the development, funding and management of the certification system - Government, Private Industry, Non-Governmental Organizations, and others?                   | GBI is governed by a group of stakeholders representing construction companies, industry, architectural firms, and academic institutions.   | The Green Building Initiative was initially intended to present green building practices modeled after the NAHB green programs to local home builder associations. In 2004, while negotiating a partnership with NAHB, GBI agreed to introduce a Canadian assessment and rating tool into the U.S market. GBI is supported by a core group of industries, including organizations like Wood Promotion Network, financial services, wholesalers, retailers, appliance manufacturers and other building material providers. GBI continues to find new support from other organizations and companies with similar interests. GBI is governed by a group of stakeholders representing construction companies, industry, architectural firms, and academic institutions. | Origin & Non-Profit Status<br><a href="http://www.thegbi.org/about-gbi/">http://www.thegbi.org/about-gbi/</a>  | 7/28/2011               | USGBC is organized around volunteered committees. The committee members come from various types of organizations.   | USGBC is organized around three strategic committees: the LEED Steering Committee, the Education Steering Committee and the Chapter Steering Committee. These steering committees ensure there is volunteer involvement in the development of LEED. Volunteer opportunities are posted on USGBC's website.  | <p><b>About Committees</b><br/><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1742">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1742</a></p> <p><b>Volunteer Opportunity</b><br/><a href="https://www.usgbc.org/myUSGBC/Nomination/VolunteerOpportunityList.aspx">https://www.usgbc.org/myUSGBC/Nomination/VolunteerOpportunityList.aspx</a></p> <p><b>USGBC National Committee Structure</b><br/><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a></p> | LBC was developed and managed by the Living Building Institute.  | The Institute, a 501c3 non-profit organization, is responsible for the development and management of the certification system. Individuals representing government agencies, private industry, non-governmental organizations, and others have submitted comments that have helped to shape the evolution of the program.                          | Owner  | 8/14/2011      |
|    |                  |  |   |  |  |                         | LEED Committees have primary responsibility for the development, implementation and revisions of LEED®. The LEED committee structure includes committees and Technical Advisory Groups (TAGs) which focus on the project implementation process, market responsiveness, and technical rigor of LEED. LEED committees and subcommittees must adhere to the policies and procedures set forth by the Board of Directors in the USGBC Policies and Procedures for Committees and Working Groups.<br>--The LEED Steering Committee (LSC) is a standing committee of the USGBC Board of Directors, consistent with Article XI of the USGBC Bylaws. The work of the Committee is governed by this Charter, as approved by the USGBC Board. The LSC may establish subcommittees and workgroups to focus on specific LEED content areas.<br>--Subcommittees are 'standing committees' of the LSC or of an established subcommittee that perform subject-based work. These subcommittees may propose working groups to work on specific credits, prerequisites, or issues within the LEED rating system as part of LEED Continuous Improvement. Subcommittees shall address the technical, market, and implementation issues of LEED.<br>--Working Groups are groups that come together for the completion of a specific task with a clearly defined scope to be accomplished in a set period of time. Working groups are established by the LSC or a subcommittee and must adhere to all parameters set by the LSC. | <p><b>Foundations of LEED (July 17, 2009)</b><br/><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a></p> <p><b>USGBC Policies and Procedures for Committees and Working Groups (Amended on Nov 8, 2009)</b><br/><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=1905">http://www.usgbc.org/ShowFile.aspx?DocumentID=1905</a></p> <p><b>USGBC Bylaws</b><br/><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=4875">http://www.usgbc.org/ShowFile.aspx?DocumentID=4875</a></p> <p><b>LEED Committees</b><br/><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1750">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1750</a></p> |   |  |  |        |                |
| C2 | b                | What has been the role and commitment in the development, funding, and management of the certification system by Government, Private Industry, Non-Governmental Organizations, and others? | Green Building Initiative is responsible for development, management, and funding.<br><br>The Green Building Initiative was accredited as a Standards Developing Organization (SDO) by the American National Standards Institute (ANSI) in September of 2005. | The original Green Globes System (BREEAM) was brought to Canada in 1996 in cooperation with ECD Energy and Environment. In 2005, the Green Building Initiative became the first green building organization to be accredited as a standards developer by the American National Standards Institute.  | <a href="http://www.thegbi.org/commercial/about-green-globes/">http://www.thegbi.org/commercial/about-green-globes/</a><br><br><a href="http://www.thegbi.org/commercial/standards/ansi-faq.asp">http://www.thegbi.org/commercial/standards/ansi-faq.asp</a> | 7/28/11<br><br>10/10/11 | Multiple LEED committees play different roles in development and management.<br><br>USGBC was accredited as ANSI Standards Developer in 2006.   | The LEED Implementation Advisory Committee is a committee of the LSC charged with assessing and recommending solutions to the LSC for review and approval. Its purpose is to advise on the scope, content and rigor of technical resources and tools supporting LEED programs, with the goal of maintaining LEED's integrity while also providing an effective, predictable and satisfying LEED customer engagement.  | <p><b>LEED Implementation Advisory Committee</b><br/><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1785">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1785</a></p> <p><b>Announcement: USGBC Accredited as ANSI Standards Developer</b><br/><a href="http://www.usgbc.org/News/PressReleaseDetails.aspx?ID=2264">http://www.usgbc.org/News/PressReleaseDetails.aspx?ID=2264</a></p>   | The Institute is responsible for management, development, and funding. The Government Agencies and Private Organizations participate in rating system development. | Government Agencies and Private Industry have participated in research efforts to substantiate the principles of the Living Building Challenge; and have offered suggestions for the evolution of the certification system via the online Dialogue. Parties other than the Institute do not oversee management, development or funding strategies. | Owner  | 8/14/2011      |

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| <p>The <b>LEED Market Advisory Committee</b> is a committee of the LSC charged with advising staff and LSC on market-related issues. Its purpose is to advise on market transformation aspects of LEED in collaboration with USGBC staff, to ensure that LEED maintains leadership and continues to respond to the markets. The committee will apply its market experience and expertise to ensure that all LEED systems are feasible and flexible and <b>represent leadership in the market.</b></p>   | <p><b>LEED Market Advisory Committee</b><br/> <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1787">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1787</a></p>       | <p>3/25/11</p> |
| <p>The <b>LEED Technical Committee</b> is a committee of the LSC charged with assessing and recommending solutions to the LSC for review and approval. Its purpose is to optimize LEED's technical effectiveness and scientific validity across LEED credit categories. The Committee works to enhance the natural environment and human well-being.</p>  | <p><b>LEED Technical Committee</b><br/> <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1792">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1792</a></p>             | <p>3/25/11</p> |
| <p><b>Administrative-Management Committee</b> is a committee of the LSC charged with assisting the full LSC in handling of administrative tasks, process-related decisions, and approvals of selected appointments. The work of this committee is governed by the USGBC Policies and Procedures for Committees and this Charge, as approved by the LEED Steering Committee (LSC).</p>   | <p><b>Administrative-Management Committee</b><br/> <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2211">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2211</a></p>  | <p>3/25/11</p> |
| <p>The <b>Technical Advisory Groups (TAGs)</b> are charged with providing a consistent source of technical advice to LEED committees and working groups with respect to credit and prerequisite improvement and supporting tool development; the TAGs ensure that the integrity of LEED is grounded on technical and scientific considerations of the highest quality. These committees also work on credit and prerequisite development based on their specific areas of expertise. The Technical Advisory Groups are structured to include commercial, residential and neighborhood development expertise for specific technical issues within the LEED rating systems: Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Location &amp; Planning.</p> | <p><b>LEED Technical Advisory Groups</b><br/> <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1795#ss">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1795#ss</a></p> | <p>3/25/11</p> |
| <p>The <b>LEED Rating System Committees</b> have primary responsibility for the development and implementation of LEED credits for a specific building type or market sector. Once a pilot program has been completed and the rating system has been approved by USGBC membership, the committee is disbanded.</p>  | <p><b>LEED Rating System Committees</b><br/> <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1786">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1786</a></p>        | <p>3/25/11</p> |

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| C3 a | Was the certification system developed using a consensus-based approach? | Consensus-based approach  | In 2005, GBI was accredited as a standards developer by the American National Standards Institute (ANSI). The GBI ANSI technical committee was formed in early 2006 and follows GBI's ANSI-approved procedures for developing consensus documents. The committee involves an equal balance of users, producers, and interested parties in required public comment periods and full committee ballot voting and is supported by technical experts from across the country through working subcommittees. Additionally, many hundreds of individuals and organizations lent their expertise to the development of ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings before it was finalized. The official Green Globes ANSI standard was published in 2010, and Green Globes NC meets the ANSI consensus standard. | <a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a>   | 8/25/2011 | Consensus-based approach  | <p>Notice will be provided to USGBC members that a consensus body is being formed. Employees of USGBC member organizations in good standing will be allowed to sign up to become part of the consensus body for a period of 30 days preceding the ballot period. The consensus body will be reviewed to ensure it is balanced; no single interest category (producer, user, general interest as defined by the Board of Directors) shall make up a majority of the consensus body. If necessary, the LSC shall appoint voters from and among USGBC member organizations which have not already elected to become part of the consensus body so as to balance the consensus body.</p> <p>Upon approval by the LEED Steering Committee the proposed draft will be submitted to the consensus body for an online vote which shall remain open for 30 days. The ballot shall utilize proportional voting, by which an employee of a USGBC member organization in good standing who has signed up for the consensus body and has a site-user account on the USGBC website linked to the member organization may cast a proportional share of the vote for that member organization. Each USGBC member organization is allowed one vote.</p> <p>All negative votes without reason or with reason not related to the draft shall count toward quorum but shall not be factored into the numerical requirements for consensus. All comments submitted with ballots will be reviewed by the LSC. A ballot is approved by the consensus body if:</p> <p>a. A majority (more than 50%) of the members of the consensus body casts a vote, including abstentions; and<br/> b. A minimum of two-thirds of votes cast are affirmative votes; and<br/> c. A majority of votes cast by members of the consensus body in each interest category (producer, user, general interest) are affirmative votes.</p> | Foundations of LEED (July 17, 2009) VII. Appendix 2: Balloting <a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a> | 3/24/11 | Expert opinion approach                                      | <p>The certification system was created using an expert opinion approach and has developed with input from the Living Building Community.</p> <p>Because transparency is fundamental to achieving the goals of the Living Building Challenge, the Institute avoids the notion of a 'consensus-based approach' -- Ironically, in the end, consensus decision-making still entrusts someone or some group with the final say. While there is a veil of transparency present, ultimately it is not achieved, which makes the consensus process disingenuous.</p>  | Owner   | 8/14/2011 |
| C4 b | How are points allocated?  | No documentation was found regarding the mechanism being used for weighting of each area. | In accordance with the Standard, buildings will be comprehensively and thoroughly evaluated across multiple assessment areas that are relevant to sustainability and environmental impact. The seven areas of assessment for the ANSI/GBI Standard include Energy, Indoor Environment, Resources/Materials, Water, Site, Project Management, and Emissions. The total points available for each assessment area are as follows:<br><ul style="list-style-type: none"> <li>• Energy 300</li> <li>• Indoor Environment 160</li> <li>• Resources/Materials 145</li> <li>• Water 130</li> <li>• Site 120</li> <li>• Project Management 100</li> <li>• Emissions 45</li> </ul>  | <a href="http://www.thegbi.org/assess/pdfs/ANSI-GBI-Assessment-Areas-Point-Allocation-Achievement-Levels.pdf">http://www.thegbi.org/assess/pdfs/ANSI-GBI-Assessment-Areas-Point-Allocation-Achievement-Levels.pdf</a> | 8/25/2011 | The allocation of points is split between direct human benefit and direct environmental benefit. The types of impacts are quantified and the resulting allocation of points among credits is called credit weighting. | In LEED, the allocation of points is split between direct human benefit and direct environmental benefit. These benefits are based on the potential effect of each credit with respect to a set of impact categories. Examples of these categories include global warming, greenhouse gas emissions, fossil fuel use, toxins and carcinogens, air and water pollutants, and indoor quality. The types of impacts are quantified and the resulting allocation of points among credits is referred to as credit weighting. Credits that most directly address the prioritized impacts are given the greatest weight. Credit weights also reflect a decision by LEED to recognize the market implications of point allocation. The credit weightings process will be reevaluated for each new version to incorporate changes in values ascribed to different building and neighborhood impacts and types, based on both market reality and evolving scientific knowledge related to development.  | Foundations of LEED (July 17, 2009) <a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a>                            | 3/24/11 | Living Building Challenge does not use a point-based system. | Living Building Challenge does not have a points-based system. There are performance-based metrics assigned to each of the 20 Imperatives within the certification system. There are two types of certification: Projects earn "Living" status when all Imperatives assigned to its Typology are met, and earn "Petal Recognition" when projects satisfy the requirements in three or more categories, and at least one is Water, Energy or Materials. In addition, projects that earn Petal Recognition must comply with Imperative 01 (no development on greenfields, on/adjacent to sensitive ecosystems, prime farmland, or within the 100-yr floodplain) and Imperative 20 (inspiration + education). The Institute also offers a specialized version of Petal Recognition called Zero Energy Building Certification. This process certifies projects that meet or exceed net-zero energy and are operationally carbon neutral.   | <a href="http://zeb.livingbuildingchallenge.org">http://zeb.livingbuildingchallenge.org</a> | 8/14/2011 |
| C5 a | Are credits pilot tested before publication                              | GBI is undertaking a limited pilot assessment and certification program.                  |  |   |           | Yes   |  |  |         | No   |  |   |           |
| C5 b | How are credits tested?  | GBI is undertaking a limited pilot assessment and certification program.                  | GBI is undertaking a limited pilot assessment and certification program. "To accommodate the various needs of different clients in the pilot program, GBI provides options for clients to pursue just self-evaluation, design/documentation review by a skilled 3rd party assessor, or the complete 3rd party assessment and certification process; however, those projects seeking certification to the standard must complete all of the steps in the process. As part of the evolution and improvement of the building assessment and certification process, GBI has included post-certification performance evaluation (at no additional cost) for those buildings that are certified to the ANSI/GBI 01-2010 standard."   | <a href="http://www.thegbi.org/green-globes/ansi-gbi-standard.asp">http://www.thegbi.org/green-globes/ansi-gbi-standard.asp</a>   | 7/28/2011 | LEED Pilot Credit Library is used to test proposed or revised LEED credits.   | The LEED Pilot Credit Library is a rating system development tool established to encourage testing of proposed and revised LEED prerequisite credit language, alternative compliance paths, and new and innovative green building technologies and concepts. The LSC, with recommendations from the Pilot Credit Library Working Group, will determine which proposed prerequisites and credits, including versions of future LEED credits, must be pilot tested, and shall approve final language before proposed credits or prerequisites are placed in the Pilot Credit Library.  | Foundations of LEED (July 17, 2009) <a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a>                            | 3/24/11 |  | Each Imperative is created by identifying the ideal 'end game' for its area of influence and then stepping back to recognize the limits of our collective knowledge and current market realities; Thresholds for performance are established in part by looking to successful built examples. In this way, decisions are steered by restorative principles instead of code-minimum solutions. These also serve as ever-present reminders of the objectives we are working to achieve. Because Living Building Challenge is performance-based, "the specific methodology used to meet the expectations of the Living Building Challenge is relegated to the genius of the design teams, who are expected to make informed decisions appropriate to the project and bioregion." [See page 5 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard/Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard/Documents/LBC2-0.pdf</a> ] Therefore, there are myriad options for teams to explore and implement to be successful. | Owner   | 8/14/2011 |



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|------|--|--|--|---|-----------|---|---|---|-----------|---|---|-------|-----------|
| C6 b | <b>How are different opinions managed?</b>                           | Differing opinions are managed by the technical committee and in accordance with the GBI Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5) | Differing opinions are managed by the technical committee and in accordance with the GBI Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5). When addressing Public Review Comments without objections "The Standards Committee shall be made aware of all public review comments." Public Review Comments Containing Objections - "shall be referred to the Standards Committee Chair or the Subcommittee responsible for the part of the standard in question to attempt resolution. The Committee may request the Secretariat to obtain further information from the commentator or attempt to correspond with the commenter directly and reach resolution. Each unresolved objection and attempts at resolution shall be referred to the Standards Committee. If substantial changes to the standard are required then the changes are subject to letter ballot, and a new public review period. If changes are not made to the standard, then the response to the negative comment is subject to approval by vote of the Standards Committee and the commenter is informed in writing of the response. In addition, the commenter shall be informed of the appeals process (section 6.0)." | <a href="http://www.thegbi.org/commercial/standards/GBIPrceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIPrceduresFebruary2008.pdf</a> | 8/25/2011 | Any party may appeal to the USGBC Executive Committee of the Board and within 30 calendar days of the action. | "Any party with a direct and material interest, who may be adversely affected by actions or inactions inconsistent with the USGBC procedures with regard to the development, approval, revision, reaffirmation, or withdrawal of a LEED Green Building Rating System, may appeal to the USGBC Executive Committee of the Board. Only appeals of a procedural nature shall be considered by the Executive Committee of the Board. Such appeals shall not be based on the merits of substantive comments regarding the technical content of the rating system. The appellant has the burden of proof of showing that proper procedures were not followed. All appeals must be initiated within 30 calendar days of the action or at any time with respect to an inaction alleged to be inconsistent with these procedures. Requests for appeal must be in writing and shall state the nature of the objection(s) with supporting evidence and proposed remedial actions." | <b>Foundations of LEED (July 17, 2009) IX. Appendix 4: Appeals</b><br><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a> | 3/24/11   | The online Dialogue activity and completed Feedback Forms are used to manage and document opinion discussion. | When there are differing opinions, the Petal Committees are brought into the conversation and provide expertise and recommendations. The process uses the online Dialogue activity and completed Feedback Forms.  | Owner | 8/14/2011 |
| C7 a | <b>Is there a written procedure for managing different opinions?</b> | Yes  | The GBI Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5) contain procedures for managing differing opinions. Specifically, sections 4.10 and 4.11 address Public Comments, and section 6.0 provides details of the appeals process.   | <a href="http://www.thegbi.org/commercial/standards/GBIPrceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIPrceduresFebruary2008.pdf</a> | 8/25/2011 | Yes   | "As promptly as possible and no later than 30 calendar days after receipt of the written request for appeal, the Executive Committee shall respond in writing to the appellant, acknowledging the appeal, and identifying any actions which will be undertaken to resolve the appeal. If the appellant is not satisfied with the Executive Committee's attempt to resolve the appeal without a hearing, the appellant may request a hearing within 15 business days of receiving the written response."   | <b>Foundations of LEED (July 17, 2009) IX. Appendix 4: Appeals</b><br><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a> | 3/24/11   | Yes   | This information is included in a document about how the Living Building Challenge is changed that was published within the Community in March 2010. The contents are being integrated into the upcoming Process book of the Petal Series.  | Owner | 8/14/2011 |
| C8 a | <b>Are there third-party reviewers/moderators of the process?</b>    | If the Secretariat cannot resolve the complaint, an independent appeal panel is appointed to conduct hearing.  | The GBI Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5) outline in section 6.0 Appeals the requirements to ensure there are third-party reviewers of the process when appropriate. Specifically, "If the Secretariat is unable to informally resolve the complaint, it shall appoint an appeals panel to hold a hearing on a date agreeable to all participants, with at least 15 working days' notice. The appeals panel shall consist of three individuals who have not been directly involved in the dispute and who will not be materially affected by any decision made in the dispute. At least two members of the panel shall be acceptable to the appellant and at least two shall be acceptable to the Secretariat."  | <a href="http://www.thegbi.org/commercial/standards/GBIPrceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIPrceduresFebruary2008.pdf</a> | 8/25/2011 | Independent technical experts perform the review.   | USGBC conducts a Zone of Reasonableness Review prior to any item going to member ballot. For each rating system, independent technical experts who understand the content, but were not involved in developing content, perform a review to make sure that LEED is reasonable from a technical perspective. The results are presented to the LEED Steering Committee for review and determining how to address any issues brought about by the review.  | Owner   | 8/25/2011 | No  | Petal Committees are comprised of national and/or international experts within a given field that share a strong philosophical alignment with the goals of the Living Building Challenge.<br><br>Positions on a Petal Committee are voluntary and individuals serve at the discretion of the Institute for as long as they are able to provide expert guidance to the certification system and remain free of any significant conflicts of interest. For example, Petal Committee advisors may not be working on an active Living Building Challenge project while sitting on a Petal Committee, nor work for a building product manufacturer or a trade association. | Owner | 8/14/2011 |

**Maturity**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Q # | Review Questions | Summary  | Green Globes  | Source   | Date Retrieved   | Summary                | LEED  | Source  | Date Retrieved  | Summary                   | Living Building Challenge  | Source   | Date Retrieved   |           |
|-----|------------------|--|---|--|--|------------------------|---|---|---|---------------------------|--|--|--|-----------|
| M1  | b                | How do the tools and standards within the certification system compare to current versions of standards and latest industry tools? | Efforts were made during the development process to ensure that the standards were compatible wherever possible.                            | ANSI/GBI 01-2010 was developed with representatives of ASHRAE, AIA, and ICC participating in the process. Many of the individuals selected to participate on GBI's consensus body also participated in the development of ASHRAE 189.1 and IGCC. Efforts were made throughout the process to ensure that the standards were compatible wherever possible. ANSI/GBI-01-2010 is complementary to ASHRAE 189.1, which provides a minimum performance standard versus ANSI/GBI-01-2010, which incentivizes higher levels of performance.<br><br>ASHRAE also deserves credit for their work to develop a minimum performance standard for high performance buildings through an ANSI process. Whereas GBI's standard is a rating system incentivizing users toward multiple higher levels of performance, the ASHRAE standard was written in mandatory language for adoption into building codes. | <a href="http://www.thegbi.org/commercial/standards/technical-committee.asp">http://www.thegbi.org/commercial/standards/technical-committee.asp</a><br><br><a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a><br><br><a href="http://www.thegbi.org/assets/pdfs/House_Testimony_5.14.08.pdf">http://www.thegbi.org/assets/pdfs/House_Testimony_5.14.08.pdf</a><br><br>ANSI/GBI 01-2010 Green Building Assessment Protocol for Commercial Buildings, April 1, 2010 | 08/25/11               | LEED adopts the recent versions of codes and standards as part of its scheduled updates.  | In general, as LEED evolves it adopts the latest versions of codes and standards, often requiring a percent improvement beyond the stated code or standard, when that can be quantified.<br><br>Due to several standards being included in the LEED guides, a change to one of the standards will not spur an immediate revision to LEED.   | Owner   | 8/25/2011                 | Tools and standards used for LBC look beyond the current standards.                      | The tools and standards within the certification system are advanced compared to current standards and latest industry tools. Living Building Challenge and its support tools function on several levels to assist project teams and others in the industry (e.g. manufacturers, regulatory officials). Fundamentally, there is a shifted mindset when using in a performance-based system as opposed to a prescriptive system. As such, Living Building Challenge is designed to function as a philosophy, advocacy platform, and certification program.  | <a href="https://ilbi.org/about/handouts">https://ilbi.org/about/handouts</a><br><br>Owner                                     | 8/14/2011 |
| M2  | b                | How frequently are the certification systems and referenced standards and tools updated?   | Every 5 years   | The GBI has committed to continually refining the system to ensure that it reflects changing opinions and ongoing advances in research and technology, and, in so doing, to involve multiple stakeholders in an open and transparent process.<br><br>"Standards Maintenance – All standards shall be reaffirmed, revised, or withdrawn within 5 years from the original standard approval date, and every five years thereafter."  | <a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a><br><br><a href="http://www.thegbi.org/commercial/about-green-globes/">http://www.thegbi.org/commercial/about-green-globes/</a><br><br><a href="http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf</a>  | 7/8/11<br><br>08/25/11 | Updates occurred in 2000, 2002, 2005, and 2009.   | Due to several standards being included in the LEED guides, a change to one of the standards will not spur an immediate revision to LEED. Instead, LEED is updated at regular intervals and at the time of revision, all referenced standards are updated to the most appropriated version as necessary. Currently LEED 2009 references ANSI/ASHRAE/IESNA Standard 90.1-2007.<br><br><b>Update Process:</b><br>LEED is updated through continuous improvement, which involves a regular development cycle for revisions to the rating system and a Pilot Credit Library where proposed credits are tested and evaluated before they can be considered for incorporation into the LEED consensus process for approval by USGBC membership.<br><br>There are three basic types of LEED development:<br>1. Implementation and Maintenance of Current Version includes the improvement of LEED through the correction and clarification of credit language. It also includes fixing more substantive inaccuracies and omissions which require a more rigorous review and approval process.<br>2. Adaptations to the existing version include the ability for both specific space types and international projects to be addressed through the creation of credit adaptations. This allows new paths to be introduced in existing credits to meet the needs of projects that would otherwise be unable to utilize the requirements in LEED.<br>3. Next Version is the comprehensive improvement phase of LEED development through a periodic evaluation and revision process. This phase includes multiple avenues for stakeholder input and final approval by USGBC membership. The ideas generated during the development of next version LEED credits are often pilot | Foundations of LEED (July 17, 2009)<br><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a>  | 7/28/2011                 | Updates occurred in 2006, 2008, and 2009.  | There have been two notable updates since the certification system was officially launched in November 2006: version 1.3 in August 2008, and version 2.0 in November 2009. The updates in version 1.3 primarily served to provide additional information about the system, whereas the release of version 2.0 included structural modifications.<br><br>Tools are continually created and are updated as necessary to maximize the ability to support project teams. Project teams are also encouraged to share with others the tools that they create on the Brain Trust, an online area in the Living Building Community where subscribers (students, professionals and Institute staff) post and reference strategies, tools and research to further our collective knowledge base. | <a href="https://ilbi.org/lbc/StandardDocuments/LBC2-0.pdf">https://ilbi.org/lbc/StandardDocuments/LBC2-0.pdf</a><br><br>Owner | 8/14/2011 |
| M3  | a                | Does the certification system allow for the evaluation of an existing building?  | Yes. Green Globes CIEB evaluates existing buildings.  |  |  |                        | Yes, LEED EB evaluates existing buildings.  |   |   |                           | Living Building Challenge can be used for both new construction and existing buildings.  |  |  |           |
| M4  | a                | Is there a requirement for post occupancy data collection once a building has been certified?                                      | GG NC Energy performance path requires post occupancy data through Energy Star. The prescriptive path does not require post occupancy data. | Green Globes CIEB requires 12 months of energy and water data.<br><br>"A Meter Data Management System was installed to electronically store water meter and sub-meter data and create user reports showing calculated hourly, daily, monthly and annual water consumption for each meter or submeter."<br><br>Green Globes uses performance criteria to evaluate the energy consumption of a building. Green Globes compares against data generated by the EPA's Energy Star tools; specifically these are better performing buildings in the Energy Star database.  | ANSI/GBI 01-2010 Green Building Assessment Protocol for Commercial Buildings, April 1, 2010.<br><br><a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a>  | 7/8/11<br><br>08/25/11 | LEED 2009 requires projects to commit to supplying all available whole-project energy and water usage data for a period of at least 5 years post-certification. | LEED EB refers to Energy Star, which requires 12 months of energy data.<br><br>Meters must measure potable water use, but gray or reclaimed water use may also be measures to meet the requirements of this credit (WE Credit 1). Metering must be continuous and data logged to allow for an analysis of time trends. The project must compile monthly and annual summaries of results for each subsystem metered. However, this is an optional set of points unlike the energy performance which is linked to a prerequisite.<br><br>Minimum Program Requirement #6 requires projects to commit to supplying all available whole-project energy and water usage data for a period of at least 5 years post certification. The MPRs, introduced with LEED 2009, require projects to meet certain criteria to be eligible for LEED certification.   | LEED 2009 New Construction and Major Renovations Rating System<br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220</a><br><br>The MPRs:<br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2102">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2102</a> | 7/28/2011<br><br>08/25/11 | Yes - Living Building Challenge certification is based on measured energy and water use. | Living Building Challenge certification is based on actual performance. Therefore, projects must be operational for at least twelve consecutive months prior to evaluation. Verification of claims via an onsite audit takes place after a project is fully completed and operational for at least twelve consecutive months.  | LIVING BUILDING CHALLENGE 2.0  | 7/7/11    |

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|----|---|--|---|---|---|--------------------|--|---|---|-----------|---|---|--|-----------|
| M5 | a | Is there a mechanism to transfer the certification of a new building to an existing building over time?                                | No  | <p>GBI recognizes the New Construction and Existing Building evaluations as separate tools.</p> <p>The New Construction is an assessment and certification of the building as it pertains to design and construction. The CIEB is an assessment of the building for operations and management of the building. Accordingly, the certifications are different.</p> <p>Green Globes is designed to offer opportunities for improvement throughout the continuum of the building. After a building achieves certification under NC, GBI encourages building owners to certify buildings under CIEB after 14-18 months following occupation of the building. Recertification every three years is also encouraged.</p> <p>Certification criteria for each system are complimentary in that they reinforce the measuring, meeting, and exceeding of performance goals.</p>   | Owner   | 8/25/2011          | No   | LEED EB awards points to buildings that have been certified LEED NC under SS Credit 1: LEED Design and Construction. The building will still need to fulfill the remainder of the LEED EB certification process to become certified LEED EB.  | LEED 2009 New Construction and Major Renovations Rating System<br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=220</a> | 7/28/2011 | There is no separate certification for new construction and existing building.                                | Living Building Challenge certifies a building based on measured performance over at least 12 months. There is no separate certification for new construction and existing building.  | LIVING BUILDING CHALLENGE 2.0  | 7/7/11    |
| M6 | b | How many other systems refer to the certification system or the certification organization as its basis for development or comparison? | None  | <p>Green Globes Certification is recognized as a tool to help clients achieve insurance discounts through at least four major insurance providers: Travelers, AON, Fireman's Fund Insurance Company, and Liberty Mutual.</p> <p>"The financial sector has also implemented financial incentives for certifying to Green Globes. Fireman's Fund was the first to offer a discount tied to green building certification. In 2006, Fireman's Fund began offering 5% premium discounts on various products tied to Green Globes™ certification. Liberty Mutual, AON and Travelers Insurance also offer products tied to Green Globes and building rating system certifications."</p> <p>Green Globes is recognized in public law in more than 22 states:<br/>Arkansas, Connecticut, Delaware, Florida, Hawaii, Illinois, Kentucky, Missouri, Massachusetts, Minnesota, Nevada, New Jersey<br/>New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Virginia, Wisconsin</p>  | <a href="http://www.thegbi.org/green-globes/green-globes-private-sector-recognition.asp">http://www.thegbi.org/green-globes/green-globes-private-sector-recognition.asp</a><br><br><a href="http://www.thegbi.org/g/commercial/about-green-globes/faq.asp">http://www.thegbi.org/g/commercial/about-green-globes/faq.asp</a><br><br><a href="http://www.thegbi.org/green-globes/green-globes-state-acceptance-map.asp">http://www.thegbi.org/green-globes/green-globes-state-acceptance-map.asp</a> | 8/25/2011          | 10   | <p>The following 10 rating systems are developed based on LEED:</p> <p>Calabasas LEED<br/>Comprehensive Environmental Performance Assessment Scheme (CEPAS)<br/>Green Olympic Building Assessment System (GOBAS)<br/>Green Building Rating System - Korea<br/>Green Star Australia<br/>LEED Canada<br/>LEED Italia<br/>LEED Mexico<br/>The State of Minnesota Sustainable Building Guidelines (MSBG)<br/>Sustainable Project Rating Tool (SPIRIT)</p>   | Fowler, KM & Rauch, EM, 2006. Sustainable Building Rating Systems Summary, PNNL<br><br>Owner  | 8/25/2011 | 6   | <p>Several new and overseas systems and organizations' guiding documents have been informed by the Living Building Challenge, such as: Eco-District Initiative (a regional framework championed by the Portland Sustainability Institute for the City of Portland); Estidama Pearl (a regional rating system for Abu Dhabi run by the Abu Dhabi Urban Planning Council); LENSES (a national academic framework championed by the Institute for the Built Environment at Colorado State University); International Ecocity Standard (an international rating system championed by Ecocity Builders, Inc.); and the update to Standard 5281 (the national green building code for the State of Israel published by the Standards Institution of Israel). There are also several new or expanded credits/prerequisites in the most recent version of LEED® (LEED 2012, now open for public comment) that were influenced by the Living Building Challenge. The Institute was informed of this influence by members of LEED technical committees.</p> | Owner  | 8/14/2011 |
| M7 | b | When was the certification system developed, first used, first available for public use, and when was most recent revision completed?  | In 2004 GBI acquired rights to distribute Green Globes in US. US Green Globes version 1 (for new construction) was introduced in 2006 and approved as an ANSI standard in 2010. | <p>The Green Globes Canada was based on Building Research Establishment's Environmental Assessment Method (BREEAM), which was brought to Canada in 1996 in cooperation with ECD Energy and Environment. That year, the Canadian Standards Association published BREEAM Canada for Existing Buildings. In 2004, Green Globes for Existing Buildings was adopted by the Building Owners and Managers Association of Canada (BOMA) under the name Go Green Comprehensive (a.k.a. Go Green Plus) and the Green Building Initiative acquired the rights to distribute Green Globes in the United States. In 2005, GBI became the first green building organization to be accredited as a standards developer by the American National Standards Institute (ANSI) and began the process of establishing Green Globes as an official ANSI standard. The GBI ANSI technical committee was formed in early 2006 and Green Globes Rating System v.1 was introduced in the United States.</p> <p>GBI formed a consensus body that delivered the industry's first commercial building rating system to become an ANSI Standard. This standard, ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings, was derived from the Green Globes environmental design and assessment rating system for new construction and was approved on March 24, 2010.</p> <p>The standard was developed following ANSI's consensus based guidelines. A variety of stakeholders including sustainability experts, architects, engineers, ENGO's, and industry groups participated in its development.</p> | <a href="http://www.thegbi.org/g/commercial/about-green-globes/">http://www.thegbi.org/g/commercial/about-green-globes/</a><br><br><a href="http://www.thegbi.org/g/commercial/standards">http://www.thegbi.org/g/commercial/standards</a><br><br><a href="http://www.thegbi.org/green-globes/ansi-gbi-standard.asp">http://www.thegbi.org/green-globes/ansi-gbi-standard.asp</a>   | 7/7/11<br>08/25/11 | The first version for new construction was developed and launched in 1998. The most current version was completed in 2009. | <p>The first LEED Pilot Project Program, also referred to as LEED Version 1.0, was launched at the USGBC Membership Summit in August 1998. After extensive modifications, LEED Green Building Rating System Version 2.0 was released in March 2000, with LEED Version 2.1 following in 2002 and LEED Version 2.2v following in 2005.</p> <p>The most recent version is LEED v3, which was launched on April 27, 2009.</p> <p>The revision cycle is similar for the existing buildings system.</p> | Foundations of LEED (July 17, 2009)<br><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a>                              | 7/28/2011 | The first version was developed in 2005 and launched in 2006. The most current version was completed in 2009. | <p>The idea for the Living Building first emerged in the mid-1990s during the creation of the NIST-funded EpiCenter project in Bozeman, Montana. The goal of this project, led by Bob Berkebile and Kath Williams was to produce the most advanced sustainable design project in the world. Jason F. McLennan guided the research and technology efforts on the project, and began developing the requirements for what is now known as 'Living Building'. In 2005, McLennan began to turn the conceptual idea of a 'living' building into a codified standard that became the Living Building Challenge version 1.0. He presented this standard to Cascadia in August 2006, and three months later, the Challenge was launched.</p> <p>The latest version of the Living Building Challenge (version 2.0) was introduced in November 2009.</p>  | <a href="https://lbi.org/stuff/brief_history">https://lbi.org/stuff/brief_history</a><br><br><a href="https://lbi.org/lbc/StandardDocuments/LBC2-0.pdf">https://lbi.org/lbc/StandardDocuments/LBC2-0.pdf</a> | 7/7/11    |



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|------|-----------------------------------|---------------|--|---|--------------------|---------------|---|--|---------------------|--------------------------------------|--|---|----------|
| M8 b | What is the frequency of changes? | Every 5 years | <p>The rights to distribute the Green Globes system in the US were acquired by GBI in 2004. Green Globes was adapted from a Canadian protocol of the same name, which evolved through an iterative process from BREEAM Canada. The GBI continues to refine the system using its ANSI-approved procedures.</p> <p>There have been two major changes to the Green Globes system since its introduction into the United States. One was developing the ANSI-GBI 01-2010 standard and the other was introducing a Green Globes-CIEB version for health care. Over 170 Veterans Affairs hospitals and long term care facilities have completed online surveys with the new tool, enabling portfolio-wide comparison and ranking of individual building environmental performance.</p> | <a href="http://www.thegbi.org/commercial/about-green-globes/">http://www.thegbi.org/commercial/about-green-globes/</a><br><a href="http://www.thegbi.org/commercial/standards">http://www.thegbi.org/commercial/standards</a><br><a href="http://www.thegbi.org/news/news/2011/news_201106_Green-Globes-Healthcare-Building.shtml">http://www.thegbi.org/news/news/2011/news_201106_Green-Globes-Healthcare-Building.shtml</a><br><a href="http://www.thegbi.org/commercial/healthcare/">http://www.thegbi.org/commercial/healthcare/</a><br><a href="http://www.thegbi.org/commercial/healthcare/green-building-certification.shtml">http://www.thegbi.org/commercial/healthcare/green-building-certification.shtml</a> | 7/8/11<br>08/25/11 | Every 3 years | <p>LEED has evolved since its original inception in 1998 to more accurately represent and incorporate emerging green building technologies. LEED NCv1.0 was a pilot version. These projects helped inform the USGBC of the requirements for such a rating system, and this knowledge was incorporated into LEED NCv2.0. LEED NCv2.2 was released in 2005, and v3 in 2009.</p> <p>The system is changed slightly each revision. In the 2005 version had a total of 69 points possible, the current 2009 version has a total of 100 points possible.</p> <p>The LEED rating system is on a predictable 3 year development cycle. The next version of LEED, LEED 2012 is now open for second public comment.</p> | <p>Major Changes from LEED - NC v2.2 to LEED 2009 NC (February 12 2010)<br/> <a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a><br/> <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2360">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2360</a><br/> Owner</p> | 7/28/11<br>08/25/11 | No development cycle was identified. | <p>Living Building Challenge has been updated twice. V1.0 was released in November 2006. V1.3 was released in August 2009. V2.0 was released in November 2009.</p> | <a href="https://lbc.v1-3">https://lbc.v1-3</a> | 7/8/2011 |
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**Usability**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Review Questions   | Summary  | Green Globes   | Source   | Date Retrieved          | Summary   | LEED   | Source   | Date Retrieved          | Summary   | Living Building Challenge  | Source   | Date Retrieved |
|--|--|--|--|-------------------------|---|--|--|-------------------------|---|--|--|----------------|
| <b>What are the direct costs of using the certification system, including materials, registration, and certification fees?</b>   | <p>Certification fee: \$2,500-22,500<br/>                     Assessor travel expenses: \$1,500<br/>                     Potential additional analysis fees: \$1,000-3,500 per analysis type<br/>                     Software subscription: \$500-2,000<br/>                     Appeals: \$1,000/time<br/>                     Expedite fee: \$2,500</p>                             | <p>Certification fee</p> <ul style="list-style-type: none"> <li>* NC: \$3,000 - \$22,500 (depending on building size)</li> <li>* CIEB: \$2,500 - \$10,000 (depending on building size)</li> <li>* Expedited Fee: \$2,500</li> </ul> <p>Assessor Travel Expenses: \$1,500 (or actual expenses+20% overhead)</p> <p>Multiple Space Types/Complexity: \$1,000 - \$3,500</p> <p>Custom Energy Analysis: \$1,000 - \$3,500</p> <p>Appeals: \$1,000/time</p> <p>Software subscriptions:</p> <ul style="list-style-type: none"> <li>* NC: \$500/building</li> <li>* CIEB: \$1000/building</li> <li>* CIEB Healthcare: \$2000/building</li> </ul>  | <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Price-List-Building-Certifications.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Price-List-Building-Certifications.pdf</a></p>   | 7/28/11                 | <p>Registration fee: \$1,200-1,500<br/>                     Certification fee: \$1,500-27,500<br/>                     Reference Guide: \$195<br/>                     Appeals \$500/credit<br/>                     Expedite fee: \$10,000</p>   | <p>Registration fee</p> <ul style="list-style-type: none"> <li>* \$900/\$1,200 (Member/Non-Member)</li> <li>* LEED for Neighborhood Development Project: \$1,500</li> </ul> <p>Certification fee</p> <ul style="list-style-type: none"> <li>* NC: \$2,250 - \$27,500 (depending on building size)</li> <li>* EB: \$1,500 - \$20,000 (depending on building size)</li> <li>* Expedited Fee: \$10,000</li> </ul> <p>Appeals: \$500/credit</p> <p>Reference Guide: \$160/\$195 (Member/Non-Member)</p>  | <p><b>Registration fee</b><br/> <a href="http://www.gbci.org/certification/resources/project-registration-fees.aspx">http://www.gbci.org/certification/resources/project-registration-fees.aspx</a></p> <p><b>Certification fee</b><br/> <a href="http://www.gbci.org/main-nav/building-certification/resources/fees/current.aspx">http://www.gbci.org/main-nav/building-certification/resources/fees/current.aspx</a></p> <p><b>Publications</b><br/> <a href="http://www.usgbc.org/Store/PublicationsList_New.aspx?CMSPageID=1518">http://www.usgbc.org/Store/PublicationsList_New.aspx?CMSPageID=1518</a></p> | 07/06/11                | <p>Registration fee: \$250-1,000<br/>                     Certification fee: \$1,500-25,000<br/>                     Subscription fee: \$45-3,500</p>   | <p>Project registration fees were increased on August 1, 2011 after increased functionality was introduced to the Living Building Community.</p> <p>At least one person per team must maintain a current account in the Living Building Community from registration to certification. An individual subscription costs \$125/yr; there are volume discounts for company, institution or agency subscription, which allows for unlimited number of individual accounts within a single office location and range in cost from \$300-\$3500/yr. A discounted rate is extended to Students and Elders, with a subscription fee of \$45/yr.</p> <p>Project Registration Fees are:<br/>                     \$250 – Renovation<br/>                     \$500 – Landscape, Infrastructure, Building<br/>                     \$1000 – Neighborhood</p> <p>Project Certification Fees are paid prior to audit and are tiered based on project size, ranging from \$1500 to \$25,000.</p> | <p><a href="https://secure.ilbi.org/community/registration">https://secure.ilbi.org/community/registration</a> page</p> <p><a href="https://ilbi.org/lbc/register-a-project">https://ilbi.org/lbc/register-a-project</a></p>   | 8/14/11        |
| <b>What is the availability and responsiveness of direct requests for assistance, availability of training, and usability of information available on the website, through case studies, documented inquiries, and frequently asked questions.</b> | <p>GBI offers several resources for customers including: an online system, which allows customers to keep up-to-date entries, as well as provides instant feedback.</p> <p>There is an FAQ page, case studies, a virtual tour of the software, and a "contact us" page on the website.</p> <p>GBI provides live web seminar events on specific topics and personnel certification.</p> | <p>GBI offers several resources for customers including an online system, which allows customers to keep up-to-date entries and provides user feedback. The online system walks users through a series of questions regarding the building. "Tool Tips" offer additional information associated with the questions.</p> <p>There is an FAQ page, case studies, and a virtual tour of the software. A "contact us" feature is offered for additional questions.</p> <p>GBI provides live web seminar events on specific topics that enable industry professionals to learn about Green Globes, pose questions to GBI staff and technical experts, and to collaborate on ways to enhance the sustainability of new or existing buildings.</p> <p>GBI also offers personnel certification for those interested in pursuing a Green Globes Professional (GPP) designation, for which nine-hours of fee-based training are available. There are GPPs registered in 30 states (incl. DC) and two provinces (QC, MB). There are 32 states (incl. DC) that have achieved certified buildings.<br/>                     59% of states (incl. DC) have GPPs<br/>                     62% of states (incl. DC) have certified buildings</p> | <p><a href="http://www.greenglobes.com/about-faq.asp">http://www.greenglobes.com/about-faq.asp</a></p> <p><a href="http://www.greenglobes.com/casestudies.asp">http://www.greenglobes.com/casestudies.asp</a></p> <p><a href="http://www.greenglobes.com/contact.asp">http://www.greenglobes.com/contact.asp</a></p> <p><a href="http://www.thegbi.org/live-webseminars/">http://www.thegbi.org/live-webseminars/</a></p> <p><a href="http://www.thegbi.org/greenglobes/personnel-certifications/">http://www.thegbi.org/greenglobes/personnel-certifications/</a></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Personnel-Certifications-Professional-Training-Overview.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Personnel-Certifications-Professional-Training-Overview.pdf</a></p> <p><a href="http://www.thegbi.org/greenglobes/personnel-certifications/certified-">http://www.thegbi.org/greenglobes/personnel-certifications/certified-</a></p> | 7/28/11<br><br>08/25/11 | <p>USGBC develops and maintains tools to support the LEED rating system, including reference guides, LEED Online, and workshops and educational courses. These supporting tools are regularly updated to reflect the improvements made to LEED through the development cycle.</p> <p>The various market sectors that use LEED have individual resource pages to assist those market sectors with their use of the LEED rating system as well as the general LEED resources.</p> | <p>USGBC develops and maintains tools to support the LEED rating system, including reference guides, LEED Online, and workshops and educational courses. These supporting tools are regularly updated to reflect the improvements made to LEED through the development cycle.</p> <p>--The LEED Reference Guides include detailed information on the process for achieving LEED certification, detailed credit and prerequisite information, resources, and standards for the LEED rating systems. For each credit or prerequisite, the guide provides: intent, requirements, point values, environmental and economic issues, related credits, summary of reference standards, credit implementation discussion, timeline and team recommendations, calculation methods and formulas, documentation guidance, examples, operations and maintenance considerations, regional variations, resources, and definitions.</p> <p>--LEED Online is the primary resource for managing the LEED documentation process. Through LEED Online, project teams can manage project details, complete documentation requirements for LEED credits and prerequisites, upload supporting files, submit applications for review, receive reviewer feedback, and ultimately earn LEED certification.</p> <p>--USGBC offers workshops and educational programs to educate members and project teams about LEED.</p> <p>--LEED Resources webpage provides information on green building research, project profiles, case studies, presentations, and other resources.</p> <p>The various market sectors that use LEED have individual resource pages to assist those market sectors with their use of the LEED rating system as well as the general LEED resources.</p> | <p><b>Foundations of LEED (July 17, 2009)</b><br/> <a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a></p> <p><b>LEED Resources webpage</b><br/> <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1602">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1602</a></p> <p><a href="http://www.usgbc.org/government">www.usgbc.org/government</a></p>   | 3/24/11<br><br>08/25/11 | <p>LBC offers several effective resources for project groups. Case studies are available on the website. Educational programs and resources, including public and in-house workshops, technical assistance, and the ability to request a speaker are available. Users can access the Contact webpage for assistance with specific questions.</p> <p>The Dialogue is a primary way for project teams to receive direct programmatic guidance from Institute staff. Individuals may post questions to the Dialogue at any time.</p> | <p>The Living Building Challenge website offers case studies (free of charge) and a Contact page for assistance on specific questions. LBC also offers educational programs and resources, including public and in-house workshops, technical assistance, and the ability to request a speaker. Workshop options include a "kick-off" workshop, where projects groups can outline strategic goals. Another workshop option can help to improve a project's potential to comply with the LBC requirements.</p> <p>The Dialogue is a primary way for project teams to receive direct programmatic guidance from Institute staff. Individuals may post questions to the Dialogue at any time.</p>   | <p><a href="https://ilbi.org/lbc/casestudies">https://ilbi.org/lbc/casestudies</a></p> <p><a href="https://ilbi.org/education/workshops-consultation/tech-assist">https://ilbi.org/education/workshops-consultation/tech-assist</a></p> <p><a href="https://ilbi.org/about/contact">https://ilbi.org/about/contact</a></p> | 7/7/11         |

**Recognition**

Black is the information collected by the PNNL team.

Blue is the verified information provided by owners.

Orange is the unverified information provided by owners.

| Q# | Review Questions | Summary   | Green Globes  | Source  | Date Retrieved | Summary   | LEED  | Source  | Date Retrieved   | Summary  | Living Building Challenge  | Source   | Date Retrieved |           |
|----|------------------|---|---|---|----------------|-----------|---|---|--|----------|--|--|----------------|-----------|
| N1 | b                | Is the certification system included in the curriculum of the top 10 architectural schools? | Curriculum in at least one of the AIA top architecture schools have coursework that identify the Green Globes certification system. | GBI allowed professors to develop green building curriculum using Green Globes in architecture classes and encouraged student collaboration projects previously with Clemson, Cal Poly, Poloma, Stanford, Cooper Union, Arizona State University, University of Arkansas and University of Florida. | Owner          | 8/25/2011 | Curriculum in at least 4 of the AIA top architecture schools have coursework that identify the LEED certification system. | Examining the curriculum of the top ten AIA graduate and undergraduate universities uncovered that LEED is included in courses at Cornell, Syracuse, University of Texas, and University of Oregon. | <a href="http://aap.cornell.edu/arch/programs/upload/spring2011_ellective_packet2.pdf">http://aap.cornell.edu/arch/programs/upload/spring2011_ellective_packet2.pdf</a><br><a href="http://www.ecs.syr.edu/faculty/johnson/CQIForms/CIE_331_CQI_2009.pdf">http://www.ecs.syr.edu/faculty/johnson/CQIForms/CIE_331_CQI_2009.pdf</a><br><a href="http://www.cae.utexas.edu/prof/novoselac/Courses/ARE383/SyllabusARE383_Fall2010.pdf">http://www.cae.utexas.edu/prof/novoselac/Courses/ARE383/SyllabusARE383_Fall2010.pdf</a><br><a href="http://architecture.uoregon.edu/sites/architecture.uoregon.edu/files/downloads/ARCH4%3A510-Craig%20Davis.pdf">http://architecture.uoregon.edu/sites/architecture.uoregon.edu/files/downloads/ARCH4%3A510-Craig%20Davis.pdf</a> | 7/6/2011 | Curriculum in at least 7 of the AIA top architecture schools have coursework that identify the Living Building Challenge certification system. | Living Building Challenge is being used in the curriculum at K-12 institutions as well as in college courses at the undergraduate and graduate levels. Though most frequently used in the school of architecture, it has also been taught in other focus areas such as: real estate, business, interior design, construction management, engineering (mechanical, electrical, plumbing).<br>Of the top US Architecture Schools, the following are known to have lectures and/or course curriculum based on the Living Building Challenge (listed in no particular order):<br><ul style="list-style-type: none"> <li>- Kansas State University</li> <li>- University of California at Berkeley</li> <li>- Carnegie Mellon University</li> <li>- University of Southern California</li> <li>- University of Oregon</li> <li>- University of Texas at Austin</li> <li>- Washington University in St Louis</li> <li>- Syracuse University</li> <li>- University of Pennsylvania</li> <li>- Harvard</li> <li>- University of Minnesota</li> <li>- Southern California Institute of Architecture</li> <li>- University of California, Los Angeles</li> </ul> | Owner          | 8/14/2011 |

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| N2 | b | How many students are involved? (Attending conferences or training, becoming assessors or green building professionals, etc.) | GBI participates in an annual EPA higher education building competition. | GBI participated in the EPA P3 events held in Washington, DC, where higher education students competed for recognition in sustainability projects. Buildings was one of the categories, and GBI sponsored a \$ 1000 special award for the highest rated project specifically related to commercial buildings (for 3 years).<br><br>Green Globes is also incorporated into Dr. Charles J. Kibert's (Univ. of FL), well-regarded book, "Sustainable Construction: Green Building Design and Delivery," Second Edition, copyright 2008, edited by John Wiley & Sons.<br><br>Green Globes is incorporated into American Society for Civil Engineer's premier book on sustainability: "Sustainability Guidelines for the Structural Engineer," Edited by Dirk Kestner, PE, Jennifer Goupil, PE, and Emily Lorenz, PE. | Owner<br><a href="http://www.hegbi.org/news/news/archive_2007/news-040207-arkansas.asp">http://www.hegbi.org/news/news/archive_2007/news-040207-arkansas.asp</a><br><br><a href="http://www.hegbi.org/news/news/archive_2006/news_110106_yearreview.asp">http://www.hegbi.org/news/news/archive_2006/news_110106_yearreview.asp</a><br><br><a href="http://www.hegbi.org/news/gbi-insight/2007_04_27/">http://www.hegbi.org/news/gbi-insight/2007_04_27/</a><br><br>See Chapter 3: Green Building Assessment; Chapter 6-8; and Appendix E <a href="http://books.google.com/books?hl=en&amp;lr=&amp;id=xPpB4bntJLAC&amp;oi=f">http://books.google.com/books?hl=en&amp;lr=&amp;id=xPpB4bntJLAC&amp;oi=f</a> | 8/25/2011                   | Approximately 1250 students attend the USGBC Greenbuild.<br><br>USGBC has a network of 70 student groups representing 1600 students.<br><br>From May 2009-August 2011, over 1400 students became LEED professionals. | Every year, USGBC's Greenbuild conference coordinates 800 student volunteers who are able to attend the conference in exchange for working part of the week supporting the event. An additional 450 students pay a student rate to attend the conference.<br><br>Additionally, USGBC currently has a network of 70 USGBC Students groups representing 1600 students as of August 2011. There are 60 trained, mid-career professionals who are committed to building the program locally, which will be ramping up through the fall of 2011 and into 2012. Each student group has a faculty advisor as well.<br><br>From May 2009-August 2011, over 1400 students became LEED professionals (LEED AP with specialty or LEED Green Associate). | Owner   | 8/25/2011 | 60 student subscribers.<br><br>11 student groups entered the Living City Design Competition.<br><br>80 students participated in 2010 conference. | The Institute is aware of curriculum based on the Living Building Challenge in more than 100 colleges and universities.<br>- To supplement their studies, more than 60 students have subscribed to the Living Building Community on an individual level, and 3 professors have subscribed for a group account for one or more classes.<br>- Out of 81 total entries, 11 student groups entered the Living City Design Competition <a href="http://www.ilbi.org/lcdc">www.ilbi.org/lcdc</a> and one student team was recognized among the winners: <a href="https://ilbi.org/lcdc-winners">https://ilbi.org/lcdc-winners</a> .<br>- Each year, the Institute offers reduced rates for students and recent graduates to attend the Living Future unConference, an annual event with approximately 800 attendees. In 2011, students attended the conference in Vancouver, BC; in 2010, approximately 80 students attended the conference in Seattle, WA. In 2012, the conference will be held in Portland, OR.<br>- The volunteer facilitator option in the Ambassador Network originally was created with a student focus, and dozens of students have received training in the Living Building Challenge, group leadership dynamics and methods for fostering an inclusive environment.     | Owner | 8/14/2011 |
| N3 | a | Is the certification system recognized in the building industry?  | Yes  |  |   |                             | Yes  |  |   | Yes       |  |  |       |           |
| N3 | b | What is the adoption rate at the State level?   | 23 states  | Recognized in public law in 23 states<br><br>AK, CO, DE, FL, HI, IL, KY, MI, MA, MN, NV, NJ, NW, NY, NC, OK, PA, RI, SC, SD, TN, VA, WI<br><br>Also, the Council of State Government recognized Green Globes in its Resolution on Energy Efficiency Measures in Buildings (Nov. 2006)  | Green Globes, A Nationally Recognized Alternative to LEED<br><a href="http://www.hegbi.org/green-resource-library/pdf/GBI_LEED_Flyer.pdf">http://www.hegbi.org/green-resource-library/pdf/GBI_LEED_Flyer.pdf</a><br><br><a href="http://www.hegbi.org/news/gbi-insight/2011_07/commercial.shtml">http://www.hegbi.org/news/gbi-insight/2011_07/commercial.shtml</a><br><br><a href="http://www.dnr.state.md.us/ed/CS/Gresfinal.pdf">http://www.dnr.state.md.us/ed/CS/Gresfinal.pdf</a>  | 7/28/2011<br><br>08/25/2011 | 35 states  | 35 state governments (Latest as of: 09/24/10)<br><br>AL, AK, AZ, AR, CA, CO, CT, DE, DC, FL, GA, HI, ID, IL, IN, IA, KS, KY, LA, ME, MD, MA, MI, MN, MS, MO, MT, NE, NV, NH, NJ, NM, NY, NC, ND, OH, OK, OR, PA, PR, RI, SC, SD, TN, TX, UT, VT, VA, WA, WV, WI, WY  | Public Policies Adopting or Referencing LEED<br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL</a> | 3/28/11   | 0 states   | State of Oregon Legislature passed House Bill 2080, which legalizes graywater and rainwater use in residential and commercial buildings throughout the state. Living Building Challenge and Institute staff were instrumental to this Bill's development and adoption.<br>State of Oregon Department of Environmental Quality refers to Living Building Challenge as a standard and resource for Life Cycle Approaches to Prioritizing Methods of Preventing Waste from the Residential Construction.<br>State of California refers to the Living Building Challenge as a potential national partner in its 2010-2012 Energy Efficiency Strategic Plan. Several departments within the State of California refer to Living Building Challenge as a resource that "does take a very different approach through (Imperatives) rather than "trade offs" found in most existing green rating systems."<br>New Hampshire Department of Environmental Services refers to Living Building Challenge as a resource and innovative program for its "Innovative Land Development Technical Assistance and Coordinated Permitting Initiative"<br>State of Washington Department of Ecology refers to Living Building Challenge as a certification program and resource for residential and commercial | Owner | 8/14/2011 |

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| N4 b | What is the adoption rate at the County level? | 15 counties | <p>It is difficult to track all activities at county and city levels. The following is a representative sample demonstrating Green Globes acceptance at county levels.</p> <ul style="list-style-type: none"> <li>-Carroll County, Maryland tax credits for two Green Globes</li> <li>-Mecklenburg County, NC rebates for Green Globes</li> <li>-Alchua County, allows choice of Green Globes</li> <li>-Summit Count, CO uses Green Globes</li> <li>-County of El Paso uses Green Globes</li> <li>-Volusia County, FL fast-track permitting program allows use of Green Globes for third-party certification</li> <li>-Charlotte County references Green Globes in its green building code</li> <li>-Montgomery County, Maryland pursuing Green Globes equivalency to meet green building requirements</li> <li>-Desoto County, California uses Green Globes</li> <li>-Chatam County, NC recognizes Green Globes</li> <li>-Fairfax County, VA uses Green Globes</li> <li>-Bucks County, PA uses Green Globes</li> <li>-Ulster County, NY recognizes Green Globes</li> <li>-Sarasota County, FL recognizes Green Globes</li> <li>-Counties in Hawaii required to recognize Green Globes</li> </ul> | <p>Carroll County, Maryland tax credits for two Green Globes<br/> <a href="http://webcache.googleusercontent.com/search?q=cach e:iUPd0aDPOdUJ:ww w.dsireusa.org/incentiv es/incentiv e.cfm%3FI ncentive_C ode%3DM D65F%26r e%3D1%26 ee%3D1+c ounty+%22 green+glob es%22&amp;cd =1&amp;hl=en&amp; ct=clnk&amp;gl= us&amp;source =www.goog le.com">http://webcache.googleusercontent.com/search?q=cach e:iUPd0aDPOdUJ:ww w.dsireusa.org/incentiv es/incentiv e.cfm%3FI ncentive_C ode%3DM D65F%26r e%3D1%26 ee%3D1+c ounty+%22 green+glob es%22&amp;cd =1&amp;hl=en&amp; ct=clnk&amp;gl= us&amp;source =www.goog le.com</a></p> <p>Mecklenbur g County, NC rebates for Green Globes<br/> <a href="http://www.doe.gov/sa">http://www.doe.gov/sa</a></p> | 8/25/2011 | 58 counties | 58 counties (Latest as of: 09/24/10) | Public Policies Adopting or Referencing LEED<br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL</a> | 3/28/11 | 1 counties | Clark County and City of Vancouver, WA created the Sustainable Communities Pilot Program: departs from code requirements that may discourage or prevent Living Building Challenge Imperatives | Owner | 8/14/2011 |
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| N5 | b | What is the adoption rate at the City level?                                  | 3 cities | <p>Chamblee, GA recognizes Green Globes in its ordinance.</p> <p>Sustainable Cities Institute recognizes Green Globes to help achieve sustainability goals.</p> <p>City of Austin, TX references Green Globes "Using sustainability/green building rating tools specifically developed for Austin, along with the LEED and Green Globes national rating tools, Green Building's staff assist design teams in establishing green building or sustainability goals for the construction of a building, review plans and specifications, make recommendations for improvements, and rate the final product on its impact to the environment and community."</p> | <p>ordinance: <a href="https://www.usgbc.org/ShowFile.aspx?DocumentID=4081">https://www.usgbc.org/ShowFile.aspx?DocumentID=4081</a></p> <p>Sustainable Cities Institute: <a href="http://www.sustainablecitiesinstitute.org/view/page.basic/class/feature.class/Lesson_Green_Globes_System">http://www.sustainablecitiesinstitute.org/view/page.basic/class/feature.class/Lesson_Green_Globes_System</a></p> <p>City of Austin: <a href="http://webcache.googleusercontent.com/search?q=cache:DVa2BigoHkMJ:www.c40cities.org/bestpractices/buildings/austin_standards.jsp+city+of+austin+green+globes&amp;cd=1&amp;hl=en">http://webcache.googleusercontent.com/search?q=cache:DVa2BigoHkMJ:www.c40cities.org/bestpractices/buildings/austin_standards.jsp+city+of+austin+green+globes&amp;cd=1&amp;hl=en</a></p> | 8/25/2011 | 384 cities | 384 cities/towns (Latest as of: 09/24/10)  | Public Policies Adopting or Referencing LEED <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL</a> | 3/28/11             | 0 cities | <p>Living Building Challenge is referenced by dozens of Cities directly as a certification system, or indirectly by posting findings from the Institute's various research reports as resources for their constituents. Several instances of regulatory reform cite the Living Building Challenge. The following is a list of focused efforts in the Pacific Northwest; Living Building Challenge project teams all over the world are presenting viable alternatives to existing codes in order to create Living Buildings, Sites and Communities (The Institute is collecting these examples of reform in the documentation provided by project teams for certification and will publicize this information on the program website).</p> <ul style="list-style-type: none"> <li>- Bainbridge Island, WA. Ordinance 2009-06: offers flexible development + density incentives for housing projects</li> <li>- Seattle, WA. Living Building Pilot: additional flexibility + gives special assistance for Living Building Challenge projects</li> <li>- Seattle, WA. Priority Green (formerly Green Q): provides expedited appointments + individual assistance for permit review, public recognition for effort</li> <li>- Clark County and City of Vancouver, WA. Sustainable Communities Pilot Program: departs from code requirements that may discourage or prevent Living Building Challenge Imperatives</li> <li>- Portland, OR. Green Building Policy (proposed): rebates up to \$17.30/ft2 for projects pursuing Living Building Challenge</li> <li>- Eugene, OR. Guide 2 Green: grants prioritized plan reviews and inspections, one-day permits and reduced system development charges</li> </ul> <p>The Institute has provided consulting or served as an advisor to more than 20 cities to inform their sustainability goals.</p> <p>There are active Living Building Challenge Collaborative in 11 cities, and training is in-progress</p> | <a href="https://ilbi.org/education/regreform">https://ilbi.org/education/regreform</a> | Owner     | 8/14/2011 |
| N6 | b | How many buildings have signed up to participate in the certification system? | 2,671    | 1647 NC 1024 CIEB Information from internal sources not publicly available.  | Owner   | 8/25/2011 | 31,696     | 26,169 registered buildings (Latest as of: 1/21/2011, Numbers do not include LEED for HOMES or LEED for Neighborhood Development projects) | <a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=7744">http://www.usgbc.org/ShowFile.aspx?DocumentID=7744</a>  | 3/28/11<br>08/25/11 | 87       | <p>There are currently 87 active registered projects, and the Institute is aware of an additional 30+ that have not yet formally registered. There are also approximately 20 registered projects not included in the count above that have been archived due to undefined hold or discontinuation, mostly due to shifted economic influences in 2008 and 2009.</p>  | Owner   | 8/14/2011 |           |
| N7 | b | How many buildings have been awarded certification?                           | 176      | <p>94 CIEB Certified Building Projects and 82 NC Certified Building Projects (as of 8/25/11)</p> <p>See the following included documents: GG Certified Buildings NC 8/25/11 and GG Certified Buildings CIEB 8/25/11.</p> <p>Website updated quarterly.</p>   | <p>Website updated quarterly at <a href="http://www.theadgebi.org/assets/case_study/Green-Globes-NC-Certified-Buildings.pdf">http://www.theadgebi.org/assets/case_study/Green-Globes-NC-Certified-Buildings.pdf</a></p> <p><a href="http://www.theadgebi.org/assets/case_study/Green-Globes-CEIB-Certified-Buildings.pdf">http://www.theadgebi.org/assets/case_study/Green-Globes-CEIB-Certified-Buildings.pdf</a></p>  | 8/25/11   | 10,000     | 7,137 certified buildings (Latest as of: 1/21/2011, Numbers do not include LEED for HOMES or LEED for Neighborhood Development projects)   | <a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=7744">http://www.usgbc.org/ShowFile.aspx?DocumentID=7744</a>  | 3/28/11<br>08/25/11 | 4        | 4 certified buildings   | <a href="https://ilbi.org/lbc/casestudies">https://ilbi.org/lbc/casestudies</a>         | 7/6/11    |           |

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| N8 b | How many professionals (by category) are involved? | 173                                | There are 173 certified Green Globes Professionals.  | <a href="http://www.thegbi.org/greenglobes/personnel-certification/certifiedpersonnel-listing/index.pl">http://www.thegbi.org/greenglobes/personnel-certification/certifiedpersonnel-listing/index.pl</a>  | 08/25/11  | 162,456                 | Appraisal (30); <b>Architecture (46394)</b> ; Assistant Project Manager (217); Brokerage (70); <b>Builder (4572)</b> ; <b>Building Engineer (2191)</b> ; Building Owner (341); Building Products (809); <b>Civil Engineering (6709)</b> ; Cleaning Product Supply (54); Code Official (198); <b>Commissioning (1353)</b> ; <b>Construction Management (14846)</b> ; <b>Consulting (9693)</b> ; Custodial/Maintenance (92); Design Build (782); <b>Developer (1788)</b> ; Director (172); Educator (575); <b>Electrical Engineering (3569)</b> ; <b>Environmental (1214)</b> ; Estimating Department (376); <b>Facility Management (1733)</b> ; Finance (127); Furniture Sales (335); <b>General Contracting (7188)</b> ; Healthcare and Education (161); Human Resources (19); <b>Interior Design (9483)</b> ; <b>Landscape Architecture (3534)</b> ; Legal (1124); Lighting Engineers (138); Manufacturing (1452); Marketing (1205); <b>Mechanical Engineering (9966)</b> ; Non-Profit (652); Other (3894); <b>Planner (2787)</b> ; Plumbing Engineer (616); Press (39); Project Leader (209); Project Management (11315); <b>Property Management (1233)</b> ; <b>Real Estate (1960)</b> ; Research (364); Retail (149); Service Branch Manager (47); Specifications Writer (273); <b>Structural Engineer (2661)</b> ; <b>Student (1809)</b> ; Subcontractor (1854); Urban Design Consulting (84); TOTAL (162,456) | <a href="https://ssl27.cyzap.net/gbicertonline/online/directory/">https://ssl27.cyzap.net/gbicertonline/online/directory/</a>     | 07/06/11 | Thousands of building industry professionals are involved. | Thousands of building industry professionals are involved with the Living Building Challenge (both nationally and internationally) such as designers, engineers, contractors, product manufacturers, developers, sustainability consultants, regulatory officials, etc. Individuals have participated as members of project teams, volunteer Ambassadors, or attendees to conferences and/or workshops offered by the Institute. | Owner  | 8/14/2011            |
| N9 b | How many institutional/group members?              | 9 affiliates, 13 associate members | <p>Affiliates with MOUs include:<br/> American Council for Energy-Efficient Economy<br/> ASHRAE<br/> Association of Facilities Engineers<br/> Association of Energy Engineers<br/> BOMA<br/> EPA Energy Star (GBI is an Energy Star Partner)<br/> AIA<br/> National Association of Home Builders<br/> Energy Solutions Center</p> <p>GBI association members include:<br/> Alliance to Save Energy<br/> American Gas Association<br/> American Chemistry Council<br/> American Wood Council<br/> Plastic Pipe &amp; Fittings Association<br/> Resilient Floor Coverings Institute<br/> Carpet &amp; Rug Institute<br/> SMACNA<br/> Chemical Fabrics and Films Association<br/> Steel Recycling Institute<br/> The Vinyl Institute<br/> Irrigation Association<br/> International Association of Plumbing and Mechanical Officials</p> <p>Major Insurance Carriers providing discounts for Green Globes Certified Buildings are:<br/> AON<br/> Fireman's Fund<br/> Traveler's<br/> Liberty Mutual</p> | <p>ASHRAE:<br/> <a href="http://www.thehgi.org/news/news/2009/news_200902_ASHRAE.asp">http://www.thehgi.org/news/news/2009/news_200902_ASHRAE.asp</a><br/> <a href="http://www.thehgi.org/news/news/2011/news_201107_GBI-Energy-Solutions-Center.html">http://www.thehgi.org/news/news/2011/news_201107_GBI-Energy-Solutions-Center.html</a><br/> <a href="http://www.thehgi.org/about-gbi/who-we-are/members-and-supporters.asp">http://www.thehgi.org/about-gbi/who-we-are/members-and-supporters.asp</a><br/> <a href="http://www.thehgi.org/join/industryAffiliates.asp">http://www.thehgi.org/join/industryAffiliates.asp</a></p> | 8/25/2011 | More than 5,000 members | The online member directory does not provide an overall counts. Leaving all search fields blank returns the first 5000 members.   | <a href="http://www.usgbc.org/myUSGBC/Members/MemberDirectory.aspx">http://www.usgbc.org/myUSGBC/Members/MemberDirectory.aspx</a> | 07/06/11 | More than 150 sponsors                                     | Living Building Challenge does not have a membership model. It has sponsors and a paid membership community. There are at least 150 sponsors.  | Owner<br><a href="https://ilbi.org/about/sponsor">https://ilbi.org/about/sponsor</a> | 8/14/2011<br>11/9/11 |



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| N10 b | How many professional associations have recognized the certification system? | 9 affiliates, 13 associate members | <p>Affiliates with MOUs include:<br/> American Council for Energy-Efficient Economy<br/> ASHRAE<br/> Association of Facilities Engineers<br/> Association of Energy Engineers<br/> BOMA<br/> EPA Energy Star (GBI is an Energy Star Partner)<br/> AIA<br/> National Association of Home Builders<br/> Energy Solutions Center</p> <p>GBI association members include:<br/> Alliance to Save Energy<br/> American Gas Association<br/> American Chemistry Council<br/> American Wood Council<br/> Plastic Pipe &amp; Fittings Association<br/> Resilient Floor Coverings Institute<br/> Carpet &amp; Rug Institute<br/> SMACNA<br/> Chemical Fabrics and Films Association<br/> Steel Recycling Institute<br/> The Vinyl Institute<br/> Irrigation Association<br/> International Association of Plumbing and Mechanical Officials</p> <p>Major Insurance Carriers providing discounts for Green Globes Certified Buildings are:<br/> AON<br/> Fireman's Fund<br/> Traveler's<br/> Liberty Mutual</p> | <p>ASHRAE:<br/> <a href="http://www.t hegbi.org/news/news/2009/news_200902_AS HRAE.asp">http://www.t hegbi.org/news/news/2009/news_200902_AS HRAE.asp</a><br/> Energy Solutions Center:<br/> <a href="http://www.t hegbi.org/news/news/2011/news_201107_G BI-Energy-Solutions-Center-green-building-assessmen t-tools-to-gas-companies.shtml">http://www.t hegbi.org/news/news/2011/news_201107_G BI-Energy-Solutions-Center-green-building-assessmen t-tools-to-gas-companies.shtml</a><br/> <a href="http://www.t hegbi.org/about-who-we-are/members-and-supporters.asp">http://www.t hegbi.org/about-who-we-are/members-and-supporters.asp</a><br/> <a href="http://www.t hegbi.org/join/industryAffiliates.asp">http://www.t hegbi.org/join/industryAffiliates.asp</a></p> | <p>7/28/11<br/> 08/25/11</p> | Information not found. |  |  |  |  |  | 2 | <p>Among other, smaller associations, two of the most relevant organizations to green building both have recognized and supported the Living Building Challenge:<br/> - American Institute of Architects, Living Building Challenge was the reference standard for the AIA Committee on Design "Ideas Competition" in 2009 and 2010<br/> - The US Green Building Council has publicly endorsed the Living Building Challenge</p> | <p><a href="http://www.aia.org/advocacy/local/AIAS076929?dvid=&amp;re cspec=AIAS076929">http://www.aia.org/advocacy/local/AIAS076929?dvid=&amp;re cspec=AIAS076929</a><br/> Owner</p> | 8/14/2011 |
|-------|--|------------------------------------|--|--|------------------------------|------------------------|--|--|--|--|--|---|--|---|-----------|



|       |  |                      |  |   |                      |                       |   |  |          |                        |  |   |           |
|-------|--|----------------------|--|---|----------------------|-----------------------|---|--|----------|------------------------|--|---|-----------|
| N11 a | How many Federal agencies have identified the system as guidance or a requirement?   | 9                    | <p>Department of Veterans Affairs – 21 certified with commitment for online, green building self-evaluations of 173 hospital facilities using Green Globes CIEB</p> <p>Army Corps of Engineers – accepts Green Globes as alternative for some projects.</p> <p>Department of Education – recognizes Green Globes for use at the state level by schools that receive their funding</p> <p>General Service Administration regional offices - 5 buildings as of 8/25/11</p> <p>Dept. of State – 9 buildings as of 8/25/11</p> <p>U.S. Forest Service – recognizes Green Globes for new structures 10,000 sq. ft. or more</p> <p>--Department of Health and Human Services (new buildings with at least \$3 million of Federal funds to earn LEED certification, Green Globes certification, or certification by another nationally recognized green building standard)</p> <p>-- Department of Interior (new construction with gross construction costs greater than \$2,000,000 achieve LEED Certified or one Green Globe)</p> | <p>Department of Veterans Affairs: <a href="http://www.va.gov/GRREENROUTINE/press_releases/news20101112vanguard.asp">http://www.va.gov/GRREENROUTINE/press_releases/news20101112vanguard.asp</a></p> <p><a href="http://www.marketwire.com/press-release/veterans-administration-awards-contract-green-building-initiative-green-globes-online-1392507.htm">http://www.marketwire.com/press-release/veterans-administration-awards-contract-green-building-initiative-green-globes-online-1392507.htm</a></p> <p>Department of Education: <a href="http://www2.ed.gov/policy/gen/leg/recovery/guidance/impactaid.pdf">http://www2.ed.gov/policy/gen/leg/recovery/guidance/impactaid.pdf</a></p> <p>Dept. of</p> | 8/25/2011<br>3/24/11 | 14                    | <p>(Latest as of: 09/24/10)</p> <p>--Department of Agriculture &amp; Forest Service (new construction to earn LEED Silver)</p> <p>--Department of Energy (new buildings of \$5M or greater to earn LEED Gold)</p> <p>--Department of Health and Human Services (new buildings with at least \$3 million of Federal funds to earn LEED certification, Green Globes certification, or certification by another nationally recognized green building standard)</p> <p>-- Department of Interior (new construction with gross construction costs greater than \$2,000,000 achieve LEED Certified or one Green Globe)</p> <p>--Environmental Protection Agency (new construction to achieve LEED Gold certification, with a minimum requirement of LEED Silver certification)</p> <p>--General Services Administration (earn LEED Certified, with a target of LEED Silver)</p> <p>--National Aeronautics and Space Administration (to meet LEED Silver certification, and strive for LEED Gold)</p> <p>--Smithsonian Institution (all new buildings and renovation work to aim for a minimum of LEED certification)</p> <p>--U. S. Army (new construction to achieve LEED Silver certification)</p> <p>--U.S. Navy (all applicable projects to be registered with USGBC for LEED certification AND achieve a minimum LEED Silver-level rating)</p> <p>Guidance only:</p> <p>--Department of State</p> <p>--Department of Veterans Affairs</p> <p>--U. S. Air Force</p> | Public Policies Adopting or Referencing LEED <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1852#AL</a> | 7/6/11   | 3                      | <p>EPA, Region 9, Green Building: Green Building and Energy Codes, Office of Brownfields and Land Revitalization</p> <p>General Services Administration, Strategic Sustainability Performance Plan</p> <p>National Parks Service</p> <p>National Institute of Building Sciences, Whole Building Design Guide</p> | <p><a href="http://www.wbdg.org/resources/livingbuildings.php">http://www.wbdg.org/resources/livingbuildings.php</a></p> <p><a href="http://www.epa.gov/region9/greenbuilding/building-codes.html">http://www.epa.gov/region9/greenbuilding/building-codes.html</a></p> <p><a href="http://www.gsa.gov/portal/content/186749">http://www.gsa.gov/portal/content/186749</a></p> <p>Owner</p> | 8/14/2011 |
| N12 b | How many Federal buildings have been certified?                                      | 40 Federal buildings | 40 federal buildings have been certified (as of 8/25/11) <a href="#">38 CIEB, 2 NC</a>   | Owner   | 7/28/11              | 519 Federal buildings | 519 federal buildings are certified under LEED and 3,809 federal projects are registered and pursuing certification.  | <a href="http://www.usgbc.org/government">www.usgbc.org/government</a>   | 08/25/11 | Zero Federal buildings | There are no certified Federal buildings, but there are two Federal projects that have been registered by the National Parks Service.  | Owner   | 8/14/2011 |
| N13 a | Does the system address the majority of Federal building inventory (building types)? | Yes                  | <p>New Construction and Existing Buildings.</p> <p>Building types include offices, multi-family, health care, schools, universities, labs, industrials, retail, etc.</p>   | <p><a href="http://www.thegeb.org/assets/pdfs/GBI_Project_Single_Building_Summary_Sheet.pdf">http://www.thegeb.org/assets/pdfs/GBI_Project_Single_Building_Summary_Sheet.pdf</a></p> <p>campuses: <a href="http://www.thegeb.org/assets/pdfs/GBI_Campus_and_Portfolio_Summary_Sheet.pdf">http://www.thegeb.org/assets/pdfs/GBI_Campus_and_Portfolio_Summary_Sheet.pdf</a></p>   | 7/28/2011            | Yes                   | Core & Shell, New Construction, Schools, Existing Buildings: Operations & Maintenance, Neighborhood Development, Retail, Healthcare, Homes, and Commercial Interiors.   | <p>Foundations of LEED (July 17, 2009)</p> <p><a href="http://www.usgbc.org/ShowFile.aspx?DocumentID=6103">http://www.usgbc.org/ShowFile.aspx?DocumentID=6103</a></p>      | 3/24/11  | Yes                    | Neighborhood, Building, Landscape+Infrastructure, Renovation   | <a href="https://libi.org/lbc/v2-0">https://libi.org/lbc/v2-0</a>   | 7/6/11    |

## **Appendix F: Certification System Mapping to Robustness for New Construction Review Criteria**

The review criteria and review questions listed in Appendix D were applied equally across all three certification systems. In the Robustness criterion, the key question that was answered for each was: Does the metric help a building meet a current Federal requirement? Additional questions regarding the baseline or point of comparison and the standards or tools used to achieve the metric were used when appropriate. The certification system owners had an opportunity to respond to these criteria and their responses can be found in Appendices H through J.

**Robustness**

|                          | Review Questions   | Guiding Principles NC  | Green Globes NC  | LEED NC   | Living Building Challenge  |
|--------------------------|--|--|--|---|--|
| <b>Integrated Design</b> | <b>Integrated Design</b>   |  |  |   |  |
|                          | <b>Does the metric help a building meet a current Federal requirement?</b>                     | <p>Integrated Design. Use a collaborative, integrated planning and design process that</p> <ul style="list-style-type: none"> <li>• Initiates and maintains an integrated project team as described on the Whole Building Design Guide &lt;<a href="http://www.wbdg.org/design/engage_process.php">http://www.wbdg.org/design/engage_process.php</a>&gt; in all stages of a project's planning and delivery</li> <li>• Integrates the use of OMB's A-11, Section 7, Exhibit 300: Capital Asset Plan and Business Case Summary</li> <li>• Establishes performance goals for siting, energy, water, materials, and indoor environmental quality along with other comprehensive design goals and ensures incorporation of these goals throughout the design and lifecycle of the building</li> <li>• Considers all stages of the building lifecycle, including deconstruction.</li> </ul> | <p>Green Globes NC refers to the Whole Systems Integrated Process Guide. If the points are achieved, life cycle impacts as specified in the Resources/Materials section must be met.</p> <p>Relevant sections:</p> <p>6.1.1 GDDC (Green Design and Delivery Coordination) Pre-Design Green Design Meetings (4 points)</p> <p>6.1.2 GDDC Performance Goals (10 points)</p> <p>6.1.3 GDDC Progress Meetings for Design (6 points)</p> <p>6.4 Environmental Management - Post Construction (14 points)</p> <p>10.1.1 Assemblies--Performance Path (33 points)</p> <p>10.2.1 Furnishing, Finishes, and Fit-outs--Life Cycle Assessment (4 points)</p> <p>10.6.1 Building Life Service Plan</p> | <p>Integrated Design is not addressed in LEED NC.</p> <p>While LEED NC does not specifically mention that an integrated planning and design process is required, integrated design is encouraged. The USGBC website states that "the most successful LEED project teams report an integrated design process." (USGBC LEED Frequently Asked Questions - see References for website)</p> <p>The LEED for Healthcare rating system is a supplement to the Green Building Design and Construction rating systems and has a prerequisite for integrated project planning and design The LEED for Healthcare rating system also offers a credit for integrated project planning and design in the innovations in design section of the rating system.</p> | <p>The LBC refers to an integrated design approach being required to meet the technical standard.</p> <p>"The Living Building Challenge does not dwell on basic best practice issues so it can instead focus on fewer, high level needs. It is assumed that to achieve this progressive standard, typical best practices are being met. The implementation of this standard requires leading-edge technical knowledge, an integrated design approach, and design and construction teams well versed in advanced practices related to 'green building'." (Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>)</p> <p>The Institute offers an optional service to project teams that includes the facilitation of a 1-, 2- or 3-day charrette, or kick-off meeting. The Living Building Challenge establishes performance goals for site, water, energy, indoor environmental quality (health), materials, social equity and beauty – because certification is performance-based, these goals must be incorporated throughout the design and lifecycle of the building.</p> |
|                          | <b>Does the certification system help users achieve cost saving through integrated design?</b> | n/a  | <p>Cost saving through integrated design is not mentioned.</p> <p>Integrated Design and Delivery inherently encompasses cost savings since the process involves all key project personnel from the planning stage forward, allowing sustainable design opportunities to be implemented and integrated as the design evolves, versus the more expensive approach of 'cobbling together' the different design elements (disciplines) late in the design process.</p>   | <p>The USGBC website states that "The most successful LEED project teams report an integrated design process, with LEED in mind from the project's inception." No requirement, credit, or method for integrated design. (<a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1819">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1819</a>)</p>   | <p>The Institute helps users achieve cost savings through integrated design.</p>   |
| <b>Commissioning</b>     |  |  |  |   |  |
| <b>Commissioning</b>     | <b>Does the metric help a building meet a current Federal requirement?</b>                     | <p>Employ commissioning practices tailored to the size and complexity of the building and its system components in order to verify performance of building components and systems and help ensure that design requirements are met. This should include an experienced commissioning provider, inclusion of commissioning requirements in construction documents, a commissioning plan, verification of the installation and performance of systems to be commissioned, and a commissioning report.</p>  | <p>ASHRAE is required. ASHRAE meets the intent of the Guidelines. ASHRAE and ASHRAE/NIBS Guideline 0-05 – Commissioning – are cited throughout Section 6.3 Whole Building Commissioning, such that the entire criteria is based on the ASHRAE standard for commissioning.</p> <p>6.3 Whole Building Commissioning</p>  | <p>LEED NC meets the intent of the Guidelines.</p> <p>EA Prerequisite 1: Fundamental Commissioning of Building Energy Systems</p>   | <p>The Living Building Challenge does not directly address commissioning.</p> <p>Living Building Challenge cites Commissioning as a key strategy for success in achieving the requirements for Imperative 07: Net Zero Energy, though as a rule, the Institute avoids prescriptive paths to certification. The Institute explicitly notes that a "copy of commissioning reports or other design or construction documents identifying corrections and/or improvements made to the system(s) or envelope throughout the 12-month occupancy period" may be included with the project team's documentation.</p>   |
|                          | <b>What standards or tools are required for the metric?</b>                                    | n/a  | ASHRAE and ASHRAE/NIBS Guideline 0-05  | n/a   | n/a  |

Water

| Review Questions  | Guiding Principles NC   | Green Globes NC  | LEED NC  | Living Building Challenge  |
|---|---|--|--|--|
| <b>Indoor Water</b>   |   |  |  |  |
| Does the metric help a building meet a current Federal requirement? | Employ strategies that in aggregate use a minimum of 20 percent less potable water than the indoor water use baseline calculated for the building, after meeting the EPAAct 1992, Uniform Plumbing Codes 2006, and the International Plumbing Codes 2006 fixture performance requirements. The installation of water meters is encouraged to allow for the management of water use during occupancy. The use of harvested rainwater, treated wastewater, and air conditioner condensate should also be considered and used where feasible for no potable use and potable use where allowed. | If the Green Globes NC points for water reduction and metering are achieved the GP are met.<br><br>9.2.1 Plumbing Fixtures and Fittings, Appliances and Equipment<br>9.8.1 Special Water Features<br>9.10.1 Alternate Sources of Water   | LEED meets the intent of the GP for water reduction and alternative technologies.<br><br>No mention in LEED NC of water consumption measurement.<br><br>WE Prerequisite 1: Water Use Reduction<br>WE Credit 2: Innovative Wastewater Technologies<br>WE Credit 3: Water Use Reduction                                      | If the LBC challenge is accomplished, no outside potable water is used and the GP are exceeded.<br><br>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.<br>There is an exception for water that must be from potable sources due to local health regulations, including sinks, faucets and showers but excluding irrigation, toilet flushing, janitorial uses and equipment uses. However, due diligence to comply with this Imperative must be demonstrated by filing an appeal(s) with the appropriate agency (or agencies).<br>An exception is made for an initial water purchase to get cisterns topped off. A Living Building Challenge project only buys water once.<br><br>05 Net Zero Water  |
| What is the baseline or point of comparison?                        | EPAAct 1992 and 2005, UPC/IPC 2006  | EPAAct 1992 and 2005   | EPAAct 1992 and 2005, UPC/IPC 2006   | n/a  |
| What is the range of requirements to achieve the metric?            | 20%   | Water Use Reduction 25%-40% (6-24 pts)   | Waste Water Reduction 50% (2 pts)<br>Water Use Reduction 30%, 35%, 40% (2-4 pts)   | n/a  |
| What standards or tools are required for the metric?                | EPAAct 1992 and 2005, UPC/IPC 2006  | GBI Water Consumption Calculator, V1.3   | EPAAct 1992 and 2005, UPC/IPC 2006   | n/a  |
| <b>Process Water</b>  |   |  |  |  |
| Does the metric help a building meet a current Federal requirement? | Per the Energy Policy Act of 2005 Section 109, when potable water is used to improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures.   | 6.1.2 GDDC Performance Goals: Water efficiency, conservation and performance would necessarily include life cycle cost measures for process water.<br><br>9.3.1 Cooling Towers<br>9.4.1 Boilers and Water Heaters<br>9.5.1 Commercial Food Service Equipment<br>9.6.1 Medical/Dental and Laboratory Equipment<br>9.10 Alternate Sources of Water | LEED NC has no process water requirement.<br><br>The LEED for Healthcare rating system Water Efficiency prerequisite 1 requires that projects employ strategies that, in aggregate, use 20% less process water than the process water use baseline calculated for equipment performance requirements listed in the credit. | If the LBC challenge is accomplished, no outside potable water is used and the GP is exceeded.<br><br>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.<br>There is an exception for water that must be from potable sources due to local health regulations, including sinks, faucets and showers but excluding irrigation, toilet flushing, janitorial uses and equipment uses. However, due diligence to comply with this Imperative must be demonstrated by filing an appeal(s) with the appropriate agency (or agencies).<br>An exception is made for an initial water purchase to get cisterns topped off. A Living Building Challenge project only buys water once.<br><br>05 Net Zero Water   |
| <b>Outdoor Water</b>  |   |  |  |  |
| Does the metric help a building meet a current Federal requirement? | Use water efficient landscape and irrigation strategies, such as water reuse, recycling, and the use of harvested rainwater, to reduce outdoor potable water consumption by a minimum of 50 percent over that consumed by conventional means (plant species and plant densities). The installation of water meters for locations with significant outdoor water use is encouraged.  | For Green Globes NC, exterior water use is measured using the percentage of the exterior vegetated space instead of calculating a baseline for outdoor water consumption and reducing accordingly.<br>7.4.1.2 No irrigated exterior vegetated space corresponds with GP criteria - Option 3.<br><br>7.4.1 Landscape and Irrigation               | If LEED NC points are achieved the GP will be met.<br><br>WE Credit 1: Water Efficient Landscaping   | If the LBC challenge is accomplished, no outside potable water is used and the GP is exceeded.<br><br>05 Net Zero Water<br>Imperative 06: Ecological Water Flow<br><br>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.<br>There is an exception for water that must be from potable sources due to local health regulations, including sinks, faucets and showers but excluding irrigation, toilet flushing, janitorial uses and equipment uses. However, due diligence to comply with this Imperative must be demonstrated by filing an appeal(s) with the appropriate agency (or agencies).<br>An exception is made for an initial water purchase to get cisterns topped off. A Living Building Challenge project only buys water once. |
| What is the baseline or point of comparison?                        | water use by conventional means   | Exterior vegetated space   | Midsummer baseline case  | n/a  |
| What is the range of requirements to achieve the metric?            | 50%   | 25%-100% space not irrigated   | 50% (2 pt), 100% (4 pts)   | n/a  |

Water

|  |   |   |  |   |
|--|---|---|--|---|
| <b>What standards or tools are required for the metric?</b>                | n/a   | Irrigation Association's "Turf and Landscape Irrigation Best Management Practices 2005", section 2.3.   | n/a  | n/a   |
| <b>Storm Water</b>   |   |   |  |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Employ design and construction strategies that reduce storm water runoff and discharge polluted water offsite. Per EISA Section 438, to the maximum extent technically feasible, maintain or restore the predevelopment hydrology of the site with regard to temperature, rate, volume, and duration of flow using site planning, design, construction, and maintenance strategies. | If the Green Globes NC points are achieved, the GP will be met.<br><br>7.3.1 Storm Water Management   | If the LEED NC points are achieved, the GP will be met.<br><br>SS Credit 6.1: Stormwater Design - Quantity Control<br>SS Credit 6.2: Stormwater Design - Quality Control | If the LBC challenge is accomplished, no storm water is discharged and the GP is exceeded.<br><br>Imperative 01: Limits to Growth (partial)<br>06 Ecological Water Flow<br><br>Municipal storm sewer solutions do not qualify as acceptable onsite storm water management practices. For Building projects that have a F.A.R. equal to or greater than 1.5 in Transects L5 or L6, a conditional exception may apply, which allows some water to leave the site at a reduced rate and depends on site and soil conditions and the surrounding development context. Greater flexibility is given to projects with higher densities. |
| <b>What is the baseline or point of comparison?</b>                        | n/a   | Total storm water runoff<br>24-hour storm<br>Roof square footage  | 1- and 2-year 24-hour design storm<br>Predevelopment peak discharge rate and quantity<br>Average annual rainfall   | n/a   |
| <b>What is the range of requirements to achieve the metric?</b>            | n/a   | 1% -100% roof space   | 25% storm run-off<br>90% stormwater from average annual rainfall   | n/a   |
| <b>What standards or tools are required for the metric?</b>                | EISA Section 438  | Percolation test  | n/a  | n/a   |
| <b>Water-Efficient Products</b>  |   |   |  |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Specify EPA's WaterSense-labeled products or other water conserving products, where available. Choose irrigation contractors who are certified through a WaterSense labeled program.  | If the Green Globes NC points are achieved the GP will be met, except there is no mention of certified irrigation contractors.<br><br>7.4.1.8 Landscaping<br>7.4.1.9 Irrigation | LEED NC meets the intent of the GP for WaterSense but does not mention certified irrigation contractors.<br><br>WE Prerequisite 1: Water Use Reduction                   | LBC does not specify water-efficient products requirements. The Institute avoids prescriptive paths to certification, and as such does not provide a list of products to use. However, the performance-based requirements of Imperative 05: Net Zero Water necessitate that project teams strictly evaluate products based on their water conservation potential.   |
| <b>What standards or tools are required for the metric?</b>                | EPA WaterSense  | Irrigation Association's "Turf and Landscape Irrigation Best Management Practices 2005", section 2.3<br>EPA's WaterSense Program  | n/a  | n/a   |

Energy

| Review Questions   | Guiding Principles NC   | Green Globes NC   | LEED NC   | Living Building Challenge  |
|--|---|---|---|--|
| <b>Energy Efficiency</b>   |   |   |   |  |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Establish a whole building performance target that takes into account the intended use, occupancy, operations, plug loads, other energy demands, and design to earn the ENERGY STAR® targets for new construction and major renovation where applicable. For new construction, reduce the energy use by 30 percent compared to the baseline building performance rating per the ANSI/ASHRAE/IESNA Standard 90.1-2007. For major renovations, reduce the energy use by 20 percent below pre-renovations 2003 baseline. | <p>ASHRAE 91 – 2007 is specified first, implying that the local code applies if more stringent.</p> <p>In Path A, the EUI of the baseline building is determined using ENERGY STAR Target Finder (50% better than the Energy Performance Rating score of 50) instead of ASHRAE 90.1-2007. Requirement of 50% reduction in CO2 emissions may or may not equal 30% in energy reduction as required by the Guidelines. Path B is a prescriptive option with no performance requirements compared to ASHRAE 2004. Path B references ASHRAE 90.1-2007 of IECC 2009.</p> <p>8. Energy<br/>             8.1 Building CO2e Emissions -- Path A<br/>             8.2 Demand -- Path A<br/>             8.4 - 8.9 Prescriptive Design Option -- Path B<br/>             8.4 Building Opaque Envelope<br/>             8.5 Day lighting<br/>             8.6 HVAC Systems and Controls<br/>             8.7 Lighting Systems and Controls<br/>             8.8 Elevator and Conveyance Systems<br/>             8.9 Renewable Energy</p> | <p>For new buildings, LEED NC prerequisite ensures a 10% reduction; Guidelines require 30% reduction. For renovations, LEED NC prerequisite ensures a 5% reduction and the baseline is ASHRAE 90.1-2007; Guidelines require 20% reduction from pre-renovations 2003 baseline. LEED give more points to better energy performance.</p> <p>EA Overview. The design of new facilities must be based on the designated mandatory and prescriptive requirements in ASHRAE 90.1-2007 or USGBC-approved code, whichever is more stringent.</p> <p>EA Prerequisite 2: Minimum Energy Performance<br/>             EA Prerequisite 2: Minimum Energy Performance<br/>             EA Credit 1: Optimize Energy Performance</p> | <p>LBC requires Net Zero but does not have specific energy use requirement.</p> <p>07 Net Zero Energy</p> <p>Living Building Challenge frames energy efficiency in the context of the carrying capacity of the site, and as such, requires that the project performs within this parameter. When the Scale Jumping overlay is used by project teams to achieve Net Zero Energy, they are required to demonstrate that a project's demand does not exceed the proportional amount of energy available. The Institute emphasizes the primary strategy of optimizing energy efficiencies prior to installing renewable energy systems.</p> <p>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale. This must include all electricity, heating and cooling requirements. Back-up generators are excluded. System may be grid-tied or off the grid. Renewable energy is defined as passive solar, photovoltaics, solar thermal, wind turbines, water-powered microturbines, direct geothermal or fuel cells powered by hydrogen generated from renewably powered electrolysis – nuclear energy is not an acceptable option. No combustion of any kind is allowed.</p> |
| <b>What is the baseline or point of comparison?</b>                        | ASHRAE 90.1-2007; Energy use in 2003  | Energy Star Target Finder score of 50   | ASHRAE 90.1-2007  | n/a  |
| <b>What is the range of requirements to achieve the metric?</b>            | 30%; 20%  | 50%-100% (150 - 250 pts)  | 12%-48% for New Buildings (1-19 pts)<br>8%-44% for Existing Building Renovations (1-19 pts)   | n/a  |
| <b>What standards or tools are required for the metric?</b>                | ASHRAE 90.1-2007  | ASHRAE 90.1-2007 or 2009 IECC   | ASHRAE 90.1-2007 Appendix G (ASHRAE AEDG or NBI ABCP)   | n/a  |
| <b>On-Site Renewable Energy</b>  |   |   |   |  |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Per the Energy Independence and Security Act (EISA) Section 523, meet at least 30% of the hot water demand through the installation of solar hot water heaters, when lifecycle cost effective.  | <p>8.9.2 On-Site Renewable Energy includes on-site thermal, which could include solar hot water. Optional points are awarded for on-site renewable energy, calculated in use, and green power and RECs.</p> <p>8.9 Renewable Energy -- Path B<br/>             8.9.1 Off-Site Renewable Energy<br/>             8.9.2 On-Site Renewable Energy</p>  | <p>Solar hot water is not specified in LEED NC. Optional points are awarded for on-site renewable energy, calculated in cost, and green power.</p> <p>EA Credit 2: On-site Renewable Energy<br/>             EA Credit 6: Green Power</p>   | <p>To meet the requirements of the Living Building Challenge, 100% of all water heating systems must be powered with renewable energy systems.</p> <p>07 Net Zero Energy</p> <p>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale. This must include all electricity, heating and cooling requirements. Back-up generators are excluded. System may be grid-tied or off the grid. Renewable energy is defined as passive solar, photovoltaics, solar thermal, wind turbines, water-powered microturbines, direct geothermal or fuel cells powered by hydrogen generated from renewably powered electrolysis – nuclear energy is not an acceptable option. No combustion of any kind is allowed.</p>  |
| <b>What is the baseline or point of comparison?</b>                        | total hot water demand  | Total thermal and electrical consumption  | Annual energy cost  | n/a  |
| <b>What is the range of requirements to achieve the metric?</b>            | 30%   | On-Site Renewable 1%-25% (50 pts)<br>Off-Site Renewable 1%-100% (50 pts)  | On-Site Renewable 1%-13% (1-7 pts)<br>Green Power 35% (2 pts)   | n/a  |

Energy



|   |  |   |  |  |
|---|--|---|--|--|
| Is on-site generation and purchases of green power treated differently? | Green power is not mentioned.  | Yes - for every 1% of onsite consumption 2 points are assigned. For offsite 2% of consumptions earns 1 point.   | Yes  | Yes - purchase of green power not allowed to meet the LBC.   |
| <b>Measurement and Verification</b>                                     |  |   |  |  |
| Does the metric help a building meet a current Federal requirement?     | Per the Energy Policy Act of 2005 (EPAct) Section 103, install building level electricity meters in new major construction and renovation projects to track and continuously optimize performance. Per EISA Section 434, include equivalent meters for natural gas and steam, where natural gas and steam are used.  | If Green Globes points are achieved, GP will be met.<br>8.3 Measurement and Verification -- Path A  | If LEED NC points are achieved, GP will be met.<br>EA Credit 5: Measurement and Verification | Measurement and verification is fundamental to the documentation for the Energy and Water Petal requirements in the Living Building Challenge.<br>- Imperative 05: Net Zero Water - Monthly readings throughout the 12-month occupancy period from meter(s) or other onsite tracking systems that clearly record the amount of water received by the project from every source (including cisterns).<br>- Imperative 07: Net Zero Energy - Monthly readings throughout the 12-month occupancy period from meter(s), other onsite tracking systems or web-link to online mechanism that clearly records energy produced and consumed. |
| What standards or tools are required for the metric?                    | EPAct 2005 Section 103; EISA Section 434   | IPMVP Volume III (2003), Option D   | IPMVP Volume III (2003), Option B or D   | n/a  |
| <b>Benchmarking</b>   |  |   |  |  |
| Does the metric help a building meet a current Federal requirement?     | Compare actual performance data from the first year of operation with the energy design target, preferably by using ENERGY STAR® Portfolio Manager for building and space types covered by ENERGY STAR®. Verify that the building performance meets or exceeds the design target, or that actual energy use is within 10% of the design energy budget for all other building types. For other building and space types, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings. | The GBI ANSI Standard benchmarks against actual regional energy performance by building type by using the Target Finder Energy Star program. One of Target Finder's features is a tool that predicts future energy performance based on a benchmarking methodology. | LEED NC does not address Benchmarking.   | Benchmarking is part of the documentation process for the Energy and Water Petal requirements in the Living Building Challenge. Project teams are required to provide the simulated/design water and energy demand, as well as list any/all tools used for the calculations. This information is then compared to the actual performance data provided, and published in the public Case Studies online.   |
| What standards or tools are required for the metric?                    | ENERGY STAR  | n/a   | n/a  | n/a  |

Materials

| Review Questions  | Guiding Principles NC  | Green Globes NC   | LEED NC  | Living Building Challenge   |
|---|--|---|--|---|
| <b>Recycled Content</b>   |  |   |  |   |
| Does the metric help a building meet a current Federal requirement? | Per Section 6002 of the Resource Conservation and Recovery Act (RCRA), for EPA-designated products, specify products meeting or exceeding EPA's recycled content recommendations. For other products, specify materials with recycled content when practicable. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. EPA's recycled content product designations and recycled content recommendations are available on EPA's Comprehensive Procurement Guideline web site at <www.epa.gov/cpg>.  | GP uses the EPA's guideline, which is specific to the different types of construction materials. So it is difficult to compare with GG NC.<br><br>10.1 Assemblies<br>10.2 Furnishing, Finishes and Fit-outs<br>10.3 Other Material Properties<br>10.4 Reuse of Existing Structures<br>10.5 Reduction, Re-use and Recycling of Waste | GP uses the EPA's guideline, which is specific to the different types of construction materials. So it is difficult to compare with LEED NC.<br><br>MR Credit 4: Recycled Content  | LBC does not address recycled content of purchased goods.                                       |
| What is the baseline or point of comparison?                        | n/a  | Total cost or weight of project materials (assemblies, furnishings, finishes, fit-outs, facade, structured systems, non-structured elements)  | Total value of materials on the project  | n/a   |
| What is the range of requirements to achieve the metric?            | n/a  | 1% - 20%+ of building materials for assemblies<br>1% - 17%+ furnishings, finishes, fit-outs<br>1% - 9%+ of building materials for salvaged<br>10% - 75%+ building façade<br>10% - 95%+ structural systems<br>10% - 95% non-structural elements  | 10%, 20%+  | n/a   |
| What standards or tools are required for the metric?                | EPA's Comprehensive Procurement Guideline  | n/a   | n/a  | n/a   |
| <b>Biobased Content</b>   |  |   |  |   |
| Does the metric help a building meet a current Federal requirement? | Per Section 9002 of the Farm Security and Rural Investment Act (FSRIA), for USDA-designated products, specify products with the highest content level per USDA's biobased content recommendations. For other products, specify biobased products made from rapidly renewable resources and certified sustainable wood products. If these designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. USDA's biobased product designations and biobased content recommendations are available on USDA's BioPreferred web site at <www.usda.gov/biopreferred>. | GP uses the USDA's guideline, which is specific to the different types of construction materials. <a href="#">GBI ANSI Standard references USDA bio-based guideline.</a><br><br>10.1 Assemblies<br>10.2 Furnishing, Finishes and Fit-outs<br>10.3 Other Material Properties   | GP uses the USDA's guideline, which is specific to the different types of construction materials. So it is difficult to compare with LEED NC.<br><br>MR Credit 6: Rapidly Renewable Materials<br>MR Credit 7: Certified Wood | If the LBC challenge is accomplished the Guidelines will be met.<br><br>13 Responsible Industry |
| What is the baseline or point of comparison?                        | n/a  | Total cost or weight of project materials (assemblies, furnishings, finishes, fit-outs, facade, structured systems, non-structured elements)  | Total value of materials and products based on cost<br>Total wood-based material based on cost   | n/a   |
| What is the range of requirements to achieve the metric?            | n/a  | 1% - 20%+ of building materials for assemblies<br>1% - 16%+ furnishings, finishes, fit-outs<br>1% - 60%+ of wood-based building materials   | Rapidly renewable = 2.5%<br>Certified wood = 50%   | n/a   |
| What standards or tools are required for the metric?                | USDA's Bio Preferred website   | n/a   | n/a  | n/a   |
| <b>Environmentally Preferable Products</b>                          |  |   |  |   |

Resources



|   |  |  |   |  |
|---|--|--|---|--|
| Does the metric help a building meet a current Federal requirement? | Use products that have a lesser or reduced effect on human health and the environment over their lifecycle when compared with competing products or services that serve the same purpose. A number of standards and ecolabels are available in the marketplace to assist specifiers in making environmentally preferable decisions. For recommendations, consult the Federal Green Construction Guide for Specifiers at <www.wbdg.org/design/greenspec.php>.   | Green Globes NC does not specifically call out EPP products but does have points for using regional materials.<br><br>10.1 Assemblies<br>10.2 Furnishing, Finishes and Fit-outs  | LEED NC does not specifically call out EPP products but does have points for using regional materials.<br><br>MR Credit 7: Regional Materials   | The Living Building Challenge envisions a future where all materials in the built environment are replenishable and have no negative impact on human and ecosystem health.<br><br><a href="#">Imperative 09: Healthy Air</a><br><a href="#">Imperative 10: Biophilia</a><br><a href="#">Imperative 11: Red List</a><br><a href="#">Imperative 13: Responsible Industry</a><br><a href="#">Imperative 14: Appropriate Sourcing</a><br><a href="#">Imperative 15: Conservation + Reuse</a> |
| What is the baseline or point of comparison?                        | n/a  | Total cost or weight of project materials (assemblies, furnishings, finishes, fit-outs)  | Total value of materials on the project   | n/a  |
| What is the range of requirements to achieve the metric?            | n/a  | 1% - 20%   | 10%, 20%  | n/a  |
| What standards or tools are required for the metric?                | Federal Green Construction Guide for Specifiers  | n/a  | n/a   | US EPA Design for the Environment (DfE) is referenced as a resource for understanding thresholds for disclosure of ingredients for <a href="#">Imperative 11: Red List</a> .   |
| <b>Waste and Materials Management</b>                               |  |  |   |  |
| Does the metric help a building meet a current Federal requirement? | Incorporate adequate space, equipment, and transport accommodations for recycling in the building design. During a project's planning stage, identify local recycling and salvage operations that could process site-related construction and demolition materials. During construction, recycle or salvage at least 50 percent of the non-hazardous construction, demolition and land clearing materials, excluding soil, where markets or onsite recycling opportunities exist. Provide salvage, reuse and recycling services for waste generated from major renovations, where markets or onsite recycling opportunities exist. | If the Green Globes NC points are achieved for operational waste and re-use that portion of the GPs are met. If at least 4 Green Globes NC points are achieved on the demolition and construction waste criteria the GP will be met.<br><br>10.5 Reduction, Re-use and Recycling of Waste<br>10.5.1 Demolition and Construction Waste<br>10.5.3 Operational Waste  | If LEED NC points are achieved the GP will be met.<br><br>MR Prerequisite 1: Storage and Collection of Recyclables<br>MR Credit 2: Construction Waste Management<br>MR Credit 3: Materials Reuse  | If the LBC challenge is accomplished the GP will be met.<br><br>15 Conservation + Reuse  |
| What is the baseline or point of comparison?                        | Total non-hazardous construction, demolition and land clearing materials   | Total weight of demolition and construction waste  | Non hazardous C&D debris total<br>Total value of materials on the project   | Total weight of wasted material  |
| What is the range of requirements to achieve the metric?            | n/a  | 25% - 75%+   | C&D = 50%, 75%<br>Re-use = 5%, 10%  | n/a  |
| <b>Ozone Depleting Compounds</b>                                    |  |  |   |  |
| Does the metric help a building meet a current Federal requirement? | Eliminate the use of ozone depleting compounds during and after construction where alternative environmentally preferable products are available, consistent with either the Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990, or equivalent overall air quality benefits that take into account lifecycle impacts.  | Refrigerants with zero or near-zero ozone-depletion potential are specified, which could allow use of HCFC instead of CFCs. According to the EPA, "HCFCs have ozone depletion potentials (ODPs) ranging from 0.01 to 0.1. Production of HCFCs with the highest ODPs are being phased out first, followed by other HCFCs." If the intent of the GPs is to replace all CFCs and HCFCs with HFCs or other refrigerant substitutes, then the Green Globes point does not meet this criteria.<br><br>11.2.1 Ozone-Depleting Potential | LEED NC requires zero use of CFC based refrigerants but does not specify other ozone depleting substances.<br><br>EA Prerequisite 3: Fundamental Refrigerant Management   | If the LBC challenge is accomplished the GP will be met.<br><br>11 Red List  |
| What is the baseline or point of comparison?                        | n/a  | ODP of refrigerant<br>GWP of refrigerant   | n/a   | n/a  |
| What is the range of requirements to achieve the metric?            | n/a  | ≤.035 - ≤.005 ODP<br>≤1500 - ≤300 GWP  | n/a   | n/a  |
| What standards or tools are required for the metric?                | Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990   | n/a  | n/a   | n/a  |
| <b>Low-Emitting Material</b>  |  |  |   |  |
| Does the metric help a building meet a current Federal requirement? | Low-Emitting Materials. Specify materials and products with low pollutant emissions, including composite wood products, adhesives, sealants, interior paints and finishes, carpet systems, and furnishings.  | If the Green Globes NC points are achieved, the GP will be met.<br><br>12.2.1 Volatile Organic Compounds   | If the LEED NC points are achieved, relevant standards (e.g., South Coast Air Quality Management District (SCAQMD), Green Seal Standards) that define emissions limits must be complied with and the intent of the GP is met.<br><br>IEQ Credit 4.1-4.5: Low-emitting Materials | If the LBC challenge is accomplished the GP will be met.<br><br><a href="#">Imperative 09: Healthy Air</a><br>11 Red List  |

low-emi:

|  |     |   |     |     |
|--|-----|---|-----|-----|
| What is the baseline or point of comparison?             | n/a | Weight or quantity the listed materials | n/a | n/a |
| What is the range of requirements to achieve the metric? | n/a | 0% - 100%                               | n/a | n/a |

**Indoor Environment**

| Review Questions   | Guiding Principles NC   | Green Globes NC   | LEED NC  | Living Building Challenge   |
|--|---|---|--|---|
| <b>Ventilation</b>   |   |   |  |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Meet ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality. | Green Globes NC does not specify that if the local code is used, it must be more stringent than the ASHRAE standard. If points are achieved using local code, the GP may or may not be achieved.<br><i>Since local codes and standards are listed last, the intent implied is that ventilation requirements defer to them only if more stringent than the national codes and standards.</i><br><br>12.1.1 Ventilation Air Quantity<br>12.1.2 Air Exchange<br>12.1.3 Ventilation Intakes and Exhausts<br>12.1.4 CO2 Sensing and Ventilation Control Equipment<br>12.1.5 Air Handling Equipment | LEED has the same requirements as GP.<br><br>IEQ Prerequisite 1: Minimum Indoor Air Quality Performance  | If the LBC challenge is accomplished the GP will be met.<br><br>09 Healthy Air  |
| <b>What standards or tools are required for the metric?</b>                | ASHRAE Standard 62.1-2007   | ASHRAE Standard 62.1-07<br>ICC 2009 International Mechanical Code<br>IAPMO 2009 Uniform Mechanical Code<br>Local codes or standards   | ASHRAE Standard 62.1-2007  | ASHRAE Standard 62  |
| <b>Thermal Comfort</b>   |   |   |  |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Meet ASHRAE Standard 55-2004, Thermal Environmental Conditions for Human Occupancy, including continuous humidity control within established ranges per climate zone, and ASHRAE Standard 62.1-2007, Ventilation for Acceptable Indoor Air Quality. | Green Globes NC does not specify that if the local code is used, it must be more stringent than the ASHRAE standard. If points are achieved using local code, the Guidelines may or may not be achieved.<br><i>Since local codes and standards are listed last, the intent implied is that thermal comfort requirements defer to them only if more stringent than the national codes and standards.</i><br><br>12.5.2 Thermal Comfort Design  | If points are achieved, GP will be met.<br><br>IEQ Credit 6.2: Controllability of Systems - Thermal Comfort  | The LBC challenge does not specifically call out the thermal comfort requirements of AHRAE 55-04.<br><br><i>Living Building Challenge includes requirements for compliance with ASHRAE 62 and required testing throughout the project for temperature and relative humidity.</i><br><br><i>Imperative 08: Civilized Environment</i> |
| <b>What is the baseline or point of comparison?</b>                        | n/a   | n/a   | Number of building occupants   | n/a   |
| <b>What is the range of requirements to achieve the metric?</b>            | n/a   | n/a   | 50%  | n/a   |
| <b>What standards or tools are required for the metric?</b>                | ASHRAE Standard 55-2004   | ANSI/ASHRAE Standard 55-04<br>Local codes or standards  | ASHRAE Standard 55-2004  | n/a   |
| <b>Daylighting</b>   |   |   |  |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Achieve a minimum daylight factor of 2% in 75% of all space occupied for critical visual tasks.   | Daylighting is addressed in two areas: Energy (Prescriptive Path) and Indoor Environment. The daylighting specifications use opening size and indoor lighting levels and ASHRAE Advanced Engineering Design Guides are referenced.<br><br>Primary occupied spaces are designed to receive indirect minimum daylight illumination levels of 25 fc.<br><br>8.5.1 Daylighting<br>12.4.1 Daylighting<br>12.4.2 Lighting Design  | The daylighting specifications use opening size and indoor lighting levels, which are not comparable to the Guidelines daylighting factor metrics.<br><br>IEQ Credit 8.1: Daylight and Views - Daylight<br>IEQ Credit 6.1: Controllability of Systems - Lighting | If the LBC challenge is accomplished the GPs will be met.<br><br>08 Civilized Environment   |
| <b>What is the baseline or point of comparison?</b>                        | All space occupied for critical visual tasks  | Net building area<br>Primary occupied space   | Regularly occupied areas   | n/a   |
| <b>What is the range of requirements to achieve the metric?</b>            | 75%   | 10% - 50%+ net building area<br>10% - 60%+ occupied area  | 75% (1 pt)   | n/a   |
| <b>Environmental Tobacco</b>   |   |   |  |   |

Pollution Source Control

|   |  |   |   |  |
|---|--|---|---|--|
| <p><b>Does the metric help a building meet a current Federal requirement?</b></p> | <p>Implement a policy and post signage indicating that smoking is prohibited within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes during building occupancy.</p>   | <p>Smoking is not prohibited in Green Globes NC and there is no distance requirement, but smoking areas are considered specialized activity areas. The GP is not met. <a href="#">Smoking is primarily a building management issue and is most appropriately addressed in an Existing Buildings (CIEB) program.</a></p> <p>12.2.8 Ventilation and Physical Isolation for Specialized Activities</p> | <p>LEED NC requirements meet the GP.</p> <p>IEQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control</p>   | <p>If the LBC challenge is accomplished the GP will be met.</p> <p>09 Healthy Air</p>  |
| <p><b>Moisture Control</b></p>  |  |   |   |  |
| <p><b>Does the metric help a building meet a current Federal requirement?</b></p> | <p>Establish and implement a moisture control strategy for controlling moisture flows and condensation to prevent building damage, minimize mold contamination, and reduce health risks related to moisture.</p>   | <p>If the Green Globes NC points are achieved the GP will be met.</p> <p>10.9 Vapor Retarders<br/>12.2.2 Leakage, Condensation and Humidity<br/>12.2.7 Humidification and Dehumidification Systems</p>  | <p>LEED NC does not specify moisture control requirements, except during construction.</p> <p>IEQ Credit 3.1: Construction Indoor Air Quality Management Plan - During Construction</p>   | <p>The LBC challenge does not specify specific moisture control strategies beyond ventilation.</p> <p>09 Healthy Air</p>   |
| <p><b>Protect Indoor Air Quality during Construction</b></p>                      |  |   |   |  |
| <p><b>Does the metric help a building meet a current Federal requirement?</b></p> | <p>Follow the recommended approach of the Sheet Metal and Air Conditioning Contractor's National Association Indoor Air Quality Guidelines for Occupied Buildings under Construction, 2007. After construction and prior to occupancy, conduct a minimum 72-hour flush-out with maximum outdoor air consistent with achieving relative humidity no greater than 60 percent. After occupancy, continue flush-out as necessary to minimize exposure to contaminants from new building materials.</p> | <p>Green Globes NC does address SMACNA and does have flush out requirements with a time frame longer than the GP, however it does not specify the humidity level; therefore the GP is only partially met.</p> <p>6.2.1 Environmental Management<br/>6.2.4 Indoor Air Quality</p>  | <p>If the LEED NC points are achieved, the minimum volumetric flush-out requirements OR maximum contaminant concentrations must be met, however there is no specific call out of a length of time that the flush out must occur. Therefore, the GP is only partially met.</p> <p>IEQ Credit 3.1: Construction Indoor Air Quality Management Plan - During Construction<br/>IEQ Credit 3.2: Construction Indoor Air Quality Management Plan - Before Occupancy</p> | <p>The LBC challenge does not specify flush out or the SMACNA IAG Criteria.</p> <p><a href="#">Living Building Challenge reduces the potential for exposure and by requiring that project teams focus on specifying products that do not compromise human and ecological health.</a></p> <p>09 Healthy Air<br/><a href="#">Imperative 11: Red List</a></p> |
| <p><b>What standards or tools are required for the metric?</b></p>                | <p>n/a</p>   | <p>Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines For Occupied Buildings Under Construction</p>  | <p>Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines For Occupied Buildings Under Construction</p>  | <p>n/a</p>   |

**Not in Guiding Principles**

| Review Questions |   | Guiding Principles NC      | Green Globes (NC)  | LEED (NC)   | Living Building Challenge  |
|------------------|---|----------------------------|--|---|--|
| Acoustic         | <b>Acoustic (Not in GP)</b>   |                            |  |   |  |
|                  | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | 12.6.1 Acoustic Comfort (22 points)<br>12.6.1 Acoustic Comfort Design (12 points)<br>12.6.2 Mechanical, Plumbing and Electrical Systems (12 points)  | —   | —  |
| BAS              | <b>Building System Controls (Not in GP)</b>                         |                            |  |   |  |
|                  | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | n/a  | n/a   | n/a  |
| Siting           | <b>Siting (Not in GP)</b>   |                            |  |   |  |
|                  | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | 7.1 Site Development   | SS Credit 1: Site Selection<br>SS Credit 2: Development Density and Community Connectivity<br>SS Credit 3: Brownfield Redevelopment<br>SS Credit 4.1: Alternative Transportation - Public Transportation Access<br>SS Credit 5.1: Site Development - Protect or Restore Habitat | 01 Limits to Growth<br>02 Urban Agriculture<br>03 Habitat Exchange<br>04 Car Free Living<br>Imperative 16: Human Scale and Humane Places<br>Imperative 17: Democracy + Social Justice<br>Imperative 18: Rights to Nature   |
| Greenhouse Gas   | <b>Greenhouse Gas (Not in GP)</b>                                   |                            |  |   |  |
|                  | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | In Path A of Energy, Green Globes requires 50%-100 reduction in CO2 emissions.<br><br>8. Energy<br>8.1 Building CO2e Emissions -- Path A<br>11.1 Heating Equipment<br>11.2 Cooling Equipment | LEED NC does not address Greenhouse Gases directly.   | Living Building Challenge requires that project teams calculate the project's total embodied carbon footprint (tCO2e), and purchase Certified Emission Reduction credits or Verified Emission Reduction credits from qualifying renewable energy projects.<br><br>Imperative 12: Embodies Carbon Footprint |
|                  | What is the baseline or point of comparison?                        |                            | Energy Performance Rating (Target Finder) score of 50.   | n/a   | n/a  |

## **Appendix G: Certification System Mapping to Robustness for Existing Buildings Review Criteria**

**Robustness**

| Review Questions   | Guiding Principles (EB)  | Green Globes (CIEB)  | LEED (EB)   | Living Building Challenge (Renovation)  |
|--|--|--|---|---|
| <b>Integrated Assessment, Operation and Management</b>                     |  |  |   |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | <p>Integrated Assessment, Operation, and Management. Use an integrated team to develop and implement policy regarding sustainable operations and maintenance.</p> <ul style="list-style-type: none"> <li>• Incorporate sustainable operations and maintenance practices within the appropriate Environmental Management System (EMS)</li> <li>• Assess existing condition and operational procedures of the building and major building systems and identify areas for improvement</li> <li>• Establish operational performance goals for energy, water, material use and recycling, and indoor environmental quality, and ensure incorporation of these goals throughout the remaining lifecycle of the building</li> <li>• Incorporate a building management plan to ensure that operating decisions and tenant education are carried out with regard to integrated, sustainable building operations and maintenance</li> <li>• Augment building operations and maintenance as needed using occupant feedback on work space satisfaction.</li> </ul> | <p>The use of an integrated team to implement the elements specified in the GP is not specifically addressed in GG CIEB, but it is implied with EMS documentation.</p> <p>6.1 Environmental Management System (EMS) Documentation<br/>6.2 Environmental Purchasing<br/>6.3 Emergency Response<br/>6.4 Tenant Awareness</p> | <p>The use of an integrated team to implement the elements specified in the GP is not addressed in LEED EB. The elements are discussed as separate units as documented in other Robustness categories.</p> <p>SS Credit 3: Integrated Pest Management, Erosion Control and Landscape Management Plan<br/>IE Q Credit 2.1: Occupant Comfort—Occupant Survey</p>              | <p>The use of an integrated team to implement the elements specified in the LBC is not specifically addressed.</p> <p>"The Living Building Challenge does not dwell on basic best practice issues so it can instead focus on fewer, high level needs. It is assumed that to achieve this progressive standard, typical best practices are being met. The implementation of this standard requires leading-edge technical knowledge, an integrated design approach, and design and construction teams well versed in advanced practices related to 'green building'."</p> <p>Project teams tend to include a more diverse range of practitioners, drawing expertise from less conventional areas of influence and allowing for a deeply integrated design process. [To view a testimonial from a project team about integrated design in the Living Building Challenge, see this video: Integrative Design: Phipps – A Case Study, created without Institute involvement.</p> <p>This topic is also discussed on the Dialogue, as in this excerpted response to a project team's query about the use of certain structural materials:<br/>"There are certainly trade-offs for most material decisions and the early stages of a project are ideal to investigate available structural materials that do not contain Red List materials or have the potential to compromise Responsible Industry. Ideally, an integrated design</p> |
| <b>Commissioning</b>   |  |  |   |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | <p>Employ recommissioning, tailored to the size and complexity of the building and its system components, in order to optimize and verify performance of fundamental building systems. Commissioning must be performed by an experienced commissioning provider. When building commissioning has been performed, the commissioning report, summary of actions taken, and schedule for recommissioning must be documented. In addition, meet the requirements of EISA 2007, Section 432 and associated FEMP guidance.</p> <p>Building recommissioning must have been performed within four years prior to reporting a building as meeting the Guiding Principles.</p>   | <p>Commissioning is not addressed in Green Globes CIEB.</p>  | <p>LEED EB does not require an experienced commissioning provider be used. In addition, there is no specified re-commissioning time frames.</p> <p>EA Credit 2.1: Existing Building Commissioning—Investigation and Analysis<br/>EA Credit 2.2: Existing Building Commissioning—Implementation<br/>EA Credit 2.3: Existing Building Commissioning—Ongoing Commissioning</p> | <p>The LBC does not address commissioning.</p> <p>Living Building Challenge cites Commissioning as a key strategy for success in achieving the requirements for Imperative 07: Net Zero Energy, though as a rule, the Institute avoids prescriptive paths to certification. The Institute explicitly notes that a "copy of commissioning reports or other design or construction documents identifying corrections and/or improvements made to the system(s) or envelope throughout the 12-month occupancy period" may be included with the project team's documentation.</p>   |
| <b>What standards or tools are required for the metric?</b>                | EISA 2007 Section 432  | n/a  | n/a   | n/a   |

Management Principles

Water

| Review Questions  | Guiding Principles (EB)  | Green Globes (CIEB)  | LEED (EB)   | Living Building Challenge (Renovation)   |
|---|--|--|---|--|
| <b>Indoor Water</b>   |  |  |   |  |
| Does the metric help a building meet a current Federal requirement? | Two options can be used to measure indoor potable water use performance:<br>• Option 1: Reduce potable water use by 20% compared to a water baseline calculated for the building. The water baseline, for buildings with plumbing fixtures installed in 1994 or later, is 120% of the Uniform Plumbing Codes 2006 or the International Plumbing Codes 2006 fixture performance requirements. The water baseline for plumbing fixtures older than 1994 is 160% of the Uniform Plumbing Codes 2006 or the International Plumbing Codes 2006 fixture performance requirements, or<br>• Option 2: Reduce building measured potable water use by 20% compared to building water use in 2003 or a year thereafter with quality water data. | For office buildings, GG CIEB uses utility bills to evaluate water performance. For other than office buildings, the client may utilize the GBI Water Calculator, which sets up baseline consumption for the building and then allows for benchmarking based on percent over baseline.<br><br>2.1 Water Consumption<br>2.3 Water Management  | Meeting the LEED EB pre-requisite and achieving 5 points in WE Credit 2 would exceed the GP.<br><br>WE Prerequisite 1: Minimum Indoor Plumbing Fixture and Fitting Efficiency<br>WE Credit 2: Additional Indoor Plumbing Fixture and Fitting Efficiency | If the LBC challenge is accomplished, no outside potable water is used and the GP is exceeded.<br><br>05 Net Zero Water  |
| What is the baseline or point of comparison?                        | 120% or 160% of UPC/IPC 2006; 100% of water use in 2003  | GBI Water Calculator sets up a baseline requires accurate inventory of water consuming equipment. Use actual water consumption data from 12 consecutive months for benchmarking and determining percent water efficiency.  | 100% of 2006 UPC/IPC  | n/a  |
| What is the range of requirements to achieve the metric?            | 20%  | unknown  | 10% - 30%   | n/a  |
| What standards or tools are required for the metric?                | Uniform Plumbing Code (UPC) or International Plumbing Code (IPC)   | GBI Water Calculator   | Uniform Plumbing Code (UPC) or International Plumbing Code (IPC)  | n/a  |
| <b>Process Water</b>  |  |  |   |  |
| Does the metric help a building meet a current Federal requirement? | Per EPA Act 2005 Section 109, when potable water is used to improve a building's energy efficiency, deploy lifecycle cost effective water conservation measures.   | GG credit for NOT having once through cooling.<br><br>2.2 Water Conserving Features  | GP does not have quantitative requirement.<br><br>WE Credits 4.1-4.2: Cooling Tower Water Management<br>WE Credit 4.1: Chemical Management<br>WE Credit 4.2: Nonpotable Water Source Use  | If the LBC challenge is accomplished, no outside potable water is used and the GP is exceeded.<br><br>05 Net Zero Water  |
| What is the baseline or point of comparison?                        | n/a  | n/a  | Total makeup water use  | n/a  |
| What is the range of requirements to achieve the metric?            | n/a  | n/a  | 50%   | n/a  |
| What standards or tools are required for the metric?                | EPA Act 2005 Section 109   | n/a  | n/a   | n/a  |
| <b>Outdoor Water</b>  |  |  |   |  |
| Does the metric help a building meet a current Federal requirement? | Three options can be used to measure outdoor potable water use performance:<br>• Option 1: Reduce potable irrigation water use by 50% compared to conventional methods, or<br>• Option 2: Reduce building related potable irrigation water use by 50% compared to measured irrigation water use in 2003 or a year thereafter with quality water data, or<br>• Option 3: Use no potable irrigation water.   | GG CIEB does not require 50% reduction.<br><br>2.2 Water Conserving Features   | If the minimum points are achieved the GP will be met.<br><br>WE Credit 3: Water Efficient Landscaping  | If the LBC challenge is accomplished, no outside potable water is used and the GP are exceeded.<br><br>05 Net Zero Water |
| What is the baseline or point of comparison?                        | Conventional water use or measured use in 2003   | n/a  | Mid-summer baseline irrigation water use  | n/a  |
| What is the range of requirements to achieve the metric?            | 50%  | n/a  | 50%-100%  | n/a  |
| What standards or tools are required for the metric?                | n/a  | n/a  | LEED Reference Guide for Green Building Operations & Maintenance, 2009 edition  | n/a  |
| <b>Measurement of Water Use</b>                                     |  |  |   |  |
| Does the metric help a building meet a current Federal requirement? | The installation of water meters for building sites with significant indoor and outdoor water use is encouraged. If only one meter is installed, reduce potable water use (indoor and outdoor combined) by at least 20% compared to building water use in 2003 or a year thereafter with quality water data.   | GG CIEB requires the water management but there is no associated water reduction requirements based on the measured water use.<br><br>Water consumption is quantitative based on 12 consecutive months of consumption. Office category based on BOMA histogram. GBI Water Calculator utilized on other occupancy types per above.<br><br>2.1 Water Consumption<br>2.3 Water Management | LEED EB requires the measurement of total potable water use but there is no associated water reduction requirements based on the measured water use.<br><br>WE Credit 1: Water Performance Measurement  | LBC does not specify water use measurement requirements.   |

Water



|   |   |   |   |   |
|---|---|---|---|---|
| What is the baseline or point of comparison?                        | water use in 2003   | n/a   | n/a   | n/a   |
| What is the range of requirements to achieve the metric?            | 20%   | n/a   | n/a   | n/a   |
| <b>Stormwater</b>   |   |   |   |   |
| Does the metric help a building meet a current Federal requirement? | Employ strategies that reduce storm water runoff and discharges of polluted water offsite. Per EISA Section 438, where redevelopment affects site hydrology, use site planning, design, construction, and maintenance strategies to maintain hydrologic conditions during development, or to restore hydrologic conditions following development, to the maximum extent that is technically feasible. | If the points are achieved the GP will be met.<br>4.5 Waste Water Effluents   | If the points are achieved the GP will be met.<br>SS Credit 3: Integrated Pest Management, Erosion Control and Landscape Management Plan<br>SS Credit 6: Stormwater Quantity Control  | LBC Renovation does not have storm water requirement.   |
| What is the baseline or point of comparison?                        | n/a   | n/a   | Average weather year and 2-year, 24-hour design storm   | n/a   |
| What is the range of requirements to achieve the metric?            | n/a   | n/a   | 15% precipitation   | n/a   |
| What standards or tools are required for the metric?                | EISA Section 438  | n/a   | n/a   | n/a   |
| <b>Water-Efficient Products</b>                                     |   |   |   |   |
| Does the metric help a building meet a current Federal requirement? | Where available, use EPA's WaterSense-labeled products or other water conserving products. Choose irrigation contractors who are certified through a WaterSense-labeled program.  | The GP are partially met. Although water conserving products are specified there is no mention of certified contractors.<br>2.2 Water Conserving Features | As part of fulfilling water prerequisite, water conserving indoor plumbing fixtures will be required. Although WaterSense-labeled products are not explicitly called out, equivalent fixtures will be necessary to meet the necessary water reductions. However, there is no mention of certified contractors.<br><br>WE Prerequisite 1: Minimum Indoor Plumbing Fixture and Fitting Efficiency<br>WE Credit 2: Additional Indoor Plumbing Fixture and Fitting Efficiency | LBC does not specify water-efficient products requirements.<br><br>The Institute avoids prescriptive paths to certification, and as such does not provide a list of products to use. However, the performance-based requirements of Imperative 05: New Zero Water necessitate that project teams strictly evaluate products based on their water conservation potential.<br><br>EPA's WaterSense listings are noted as a resource for project teams in the Dialogue, and in the Water book of the Petal Series (currently in pre-published draft form). |
| What is the baseline or point of comparison?                        | n/a   | n/a   | Calculated baseline in WE Prerequisite 1: Minimum Indoor Plumbing Fixture and Fitting Efficiency  | n/a   |
| What is the range of requirements to achieve the metric?            | n/a   | n/a   | 10% - 30%   | n/a   |
| What standards or tools are required for the metric?                | EPA's WaterSense  | n/a   | Uniform Plumbing Code (UPC) or International Plumbing Code (IPC)  | n/a   |

## Energy

| Review Questions  | Guiding Principles (EB)  | Green Globes (CIEB)   | LEED (EB)   | Living Building Challenge (Renovation)  |
|---|--|---|---|---|
| <b>Energy Efficiency</b>  |  |   |   |   |
| Does the metric help a building meet a current Federal requirement?     | Three options can be used to measure energy efficiency performance:<br><ul style="list-style-type: none"> <li>Option 1: Receive an ENERGY STAR® rating of 75 or higher or an equivalent Labs21 Benchmarking Tool score for laboratory buildings,</li> <li>Option 2: Reduce measured building energy use by 20% compared to building energy use in 2003 or a year thereafter with quality energy use data, or</li> <li>Option 3: Reduce energy use by 20% compared to the ASHRAE 90.1-2007 baseline building design if design information is available.</li> </ul> Use ENERGY STAR® and FEMP-designated Energy Efficient Products, where available. | The Energy Performance Criteria in Green Globes is performance based. Credit is directly derived from ENERGY STAR benchmarking protocol and uses the credit earning threshold of 75 percentile, the same threshold that ENERGY STAR uses to award an ENERGY STAR label.<br><br>1.1 Energy Performance<br>1.2 Lighting<br>1.3 Boilers<br>1.4 Controls<br>1.5 Hot Water<br>1.6 Other Energy Efficiency Features   | LEED requires a minimum ENERGY STAR score of 69, which is less stringent than GP. LEED gives more points for better performance.<br><br>EA Prerequisite 2: Minimum Energy Efficiency Performance<br>EA Credit 1: Optimize Energy Efficiency Performance | LBC requires Net Zero but does not have specific energy use requirement.<br>Living Building Challenge frames energy efficiency in the context of the carrying capacity of the site, and as such, requires that the project performs within this parameter. When the Scale Jumping overlay is used by project teams to achieve Net Zero Energy, they are required to demonstrate that a project's demand does not exceed the proportional amount of energy available.<br>The Institute emphasizes the primary strategy of optimizing energy efficiencies prior to installing renewable energy systems.<br><br>07 Net Zero Energy |
| What is the baseline or point of comparison?                            | ENERGY STAR; energy use in 2003; ASHRAE 90.1-2007  | ENERGY STAR   | ENERGY STAR   | n/a   |
| What is the range of requirements to achieve the metric?                | Score of 75 or 20% reduction   | 80 points spread over ENERGY STAR scores of 75 – 100 percentile   | 69-95%  | n/a   |
| What standards or tools are required for the metric?                    | ENERGY STAR; ASHRAE 90.1-2007  | ENERGY STAR Portfolio Manager   | EnergyStar Portfolio Manager  | n/a   |
| <b>On-Site Renewable Energy</b>   |  |   |   |   |
| Does the metric help a building meet a current Federal requirement?     | Per Executive Order 13423, implement renewable energy generation projects on agency property for agency use, when lifecycle cost effective.  | If the GG CIEB points are achieved the GP will be met.<br><br>1.7 Green Energy  | If the LEED EB points are achieved the GP will be met.<br><br>EA Credit 4: On-site and Off-site Renewable Energy  | To achieve Net Zero, onsite renewable is necessary.<br><br>07 Net Zero Energy   |
| What is the baseline or point of comparison?                            | n/a  | Building total energy use   | Buildings total energy use  | n/a   |
| What is the range of requirements to achieve the metric?                | n/a  | >0% to >10%   | 3%-12% renewables<br>25%-100% certificates  | n/a   |
| Is on-site generation and purchases of green power treated differently? | Green power is not mentioned.  | No - equal points are awarded for offsite generated electricity.  | Yes   | Yes - purchase of green power not allowed to meet the LBC.  |
| <b>Measurement and Verification</b>                                     |  |   |   |   |
| Does the metric help a building meet a current Federal requirement?     | Per the Energy Policy Act of 2005 (EPAAct2005) Section 103, install building level electricity meters to track and continuously optimize performance. Per the Energy Independence and Security Act (EISA) 2007, the utility meters must also include natural gas and steam, where natural gas and steam are used.  | Although energy monitoring is included in Green Globes EB it does not specifically address actual metering, nor does it include all utilities.<br><br>1.1 Energy Performance<br>1.11 Energy Management, Monitoring, and Targeting<br>1.14 Sub-metering<br><br>Energy Use cannot be monitored without metering. Therefore, metering is necessarily implied in section 1.11 Energy Management, Monitoring and Targeting. There is also sub-metering in section 1.14 Sub-metering. | LEED EB meets the GP for energy meters.<br><br>EA Prerequisite 2: Minimum Energy Efficiency Performance<br>EA Credit 1: Optimize Energy Efficiency Performance  | Measurement and verification is fundamental to the documentation for the Energy and Water Petal requirements in the Living Building Challenge.  |
| What standards or tools are required for the metric?                    | EPAAct 2005; EISA 2007   | n/a   | n/a   | n/a   |
| <b>Benchmarking</b>   |  |   |   |   |

|  |   |  |   |  |
|--|---|--|---|--|
| <b>Does the metric help a building meet a current Federal requirement?</b> | Compare annual performance data with previous years' performance data, preferably by entering annual performance data into the ENERGY STAR® Portfolio Manager. For building and space types not available in ENERGY STAR®, use an equivalent benchmarking tool such as the Labs21 benchmarking tool for laboratory buildings. | GG CIEB uses ENERGY STAR as benchmark. | LEED EB uses ENERGY STAR as benchmark. If LEED EB energy efficiency pre-requisite 2, case 1, is met the GP will be met. | LBC does not use ENERGY STAR, but the net zero target exceeds ENERGY STAR requirement.<br><br>Benchmarking is part of the documentation process for the Energy and Water Petal requirements in the Living Building Challenge. Project teams are required to provide the simulated/design water and energy demand, as well as list any/all tools used for the calculations. This information is then compared to the actual performance data provided, and published in the public Case Studies online. |
| <b>What standards or tools are required for the metric?</b>                | ENERGY STAR; Labs21   | ENERGY STAR Portfolio Manger           | ENERGY STAR Portfolio Manger  | Annual generation = Annual use   |

**Materials**

| Review Questions   | Guiding Principles (EB)  | Green Globes (CIEB)   | LEED (EB)   | Living Building Challenge (Renovation)   |
|--|--|---|---|--|
| <b>Recycled Content</b>  |  |   |   |  |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Per section 6002 of RCRA, for EPA-designated products, use products meeting or exceeding EPA's recycled content recommendations for building modifications, maintenance, and cleaning. For other products, use materials with recycled content such that the sum of postconsumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost or weight) of the total value of the materials in the project. If EPA-designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them shall be included in all solicitations relevant to construction, operation, maintenance of or use in the building. EPA's recycled content product designations and recycled content recommendations are available on EPA's Comprehensive Procurement Guideline web site at <www.epa.gov/cpg>. | Green Globes EB does not specifically address recycled content of purchased goods.  | If the LEED EB points are achieved the Guidelines will be met.<br><br>MR Credit 1: Sustainable Purchasing—Ongoing Consumables<br>MR Credits 2.1: Sustainable Purchasing<br>MR Credit 2.2: Furniture<br>MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions<br>IEQ Credit 3.3: Green Cleaning—Purchase of Sustainable Cleaning Products and Materials | LBC does not address recycled content of purchased goods.                            |
| <b>What is the baseline or point of comparison?</b>                        | Total value of material  | n/a   | Total annual purchase in each category  | n/a  |
| <b>What is the range of requirements to achieve the metric?</b>            | 10%  | n/a   | On going consumables = 60%<br>Durable goods = 40%<br>Alterations = 50%<br>Cleaning = 30%  | n/a  |
| <b>What standards or tools are required for the metric?</b>                | EPA's Comprehensive Procurement Guideline  | n/a   | Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners, Green Seal GS-09, Green Seal GS-01, Environmental Choice CCD-082, Environmental Choice CCD-086.   | n/a  |
| <b>Biobased Content</b>  |  |   |   |  |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Per section 9002 of FSRIA, for USDA-designated products, use products with the highest content level per USDA's biobased content recommendations. For other products, use biobased products made from rapidly renewable resources and certified sustainable wood products. If these designated products meet performance requirements and are available at a reasonable cost, a preference for purchasing them should be included in all solicitations relevant to construction, operation, maintenance of or use in the building. USDA's biobased product designations and biobased content recommendations are available on USDA's BioPreferred web site at <www.usda.gov/biopreferred>.   | Green Globes EB does not specifically address bio-based content of purchased goods. | If the LEED EB points are achieved the GP will be met.<br><br>MR Credit 1: Sustainable Purchasing—Ongoing Consumables<br>MR Credit 2.2: Furniture<br>MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions<br>IEQ Credit 3.3: Green Cleaning—Purchase of Sustainable Cleaning Products and Materials   | LBC does not specify bio-based material requirements.<br><br>13 Responsible Industry |
| <b>What is the baseline or point of comparison?</b>                        | n/a  | n/a   | Total annual purchase in each category  | n/a  |
| <b>What is the range of requirements to achieve the metric?</b>            | n/a  | n/a   | On going consumables = 60%<br>Durable goods = 40%<br>Alterations = 50%<br>Cleaning = 30%  | n/a  |
| <b>What standards or tools are required for the metric?</b>                | USDA's BioPreferred web site   | n/a   | Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners, Green Seal GS-09, Green Seal GS-01, Environmental Choice CCD-082, Environmental Choice CCD-086.   | n/a  |
| <b>Environmentally Preferable Products</b>                                 |  |   |   |  |

Environmental Impact of Materials

|   |   |  |  |  |
|---|---|--|--|--|
| Does the metric help a building meet a current Federal requirement? | Use products that have a lesser or reduced effect on human health and the environment over their lifecycle when compared with competing products or services that serve the same purpose. A number of standards and ecolabels are available in the marketplace to assist specifiers in making environmentally preferable decisions. For recommendations, consult the Federal Green Construction Guide for Specifiers at <www.wbdg.org/design/greenspec.php>.  | If the GG CIEB points are achieved the Guidelines will be met.<br>5.6 Control of Pollutants at Source<br>6.2 Environmental Purchasing  | If the LEED EB points are achieved the GP will be met.<br>MR Prerequisite 1: Sustainable Purchasing Policy<br>MR Credit 1: Sustainable Purchasing—Ongoing Consumables<br>MR Credits 2.1–2.2: Sustainable Purchasing<br>MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions<br>MR Credit 4: Sustainable Purchasing—Reduced Mercury in Lamps<br>MR Credit 5: Sustainable Purchasing—Food<br>IEQ Credit 3.4: Green Cleaning—Sustainable Cleaning Equipment | If the LBC challenge is accomplished the GP will be met.<br>Imperative 11: Red List<br>Imperative 13: Responsible Industry<br>Imperative 14: Appropriate Sourcing<br>Imperative 15: Conservation + Reuse |
| What standards or tools are required for the metric?                | Federal Green Construction Guide  | n/a  | n/a  | US EPA Design for the Environment (DfE) is referenced as a resource for understanding thresholds for disclosure of ingredients for Imperative 11:Red List.   |
| <b>Waste and Materials Management</b>                               |   |  |  |  |
| Does the metric help a building meet a current Federal requirement? | Provide reuse and recycling services for building occupants, where markets or on-site recycling exist. Provide salvage, reuse and recycling services for waste generated from building operations, maintenance, repair and minor renovations, and discarded furnishings, equipment and property. This could include such things as beverage containers and paper from building occupants, batteries, toner cartridges, outdated computers from an equipment update, and construction materials from a minor renovation. | If the Green Globes EB points are achieved the GP will be met.<br>3.1 Facilities for Storing and Handling Recyclable Materials<br>3.2 Waste Reduction Workplan   | If the LEED EB points are achieved the GP will be met.<br>MR Credit 7: Solid Waste Management—Ongoing Consumables<br>MR Credit 8: Solid Waste Management—Durable Goods<br>MR Credit 9: Solid Waste Management—Facility Alterations and Additions   | If the LBC challenge is accomplished the Guidelines will be met.<br>15 Conservation + Reuse  |
| What is the baseline or point of comparison?                        | n/a   | Current waste stream   | Ongoing waste stream in each area  | Total weight of waste material   |
| What is the range of requirements to achieve the metric?            | n/a   | 85% diversion  | 50% consumables by weight or volume<br>75% durable goods by weight, volume or replacement value<br>70% alterations by volume   | n/a  |
| <b>Ozone Depleting Compounds</b>                                    |   |  |  |  |
| Does the metric help a building meet a current Federal requirement? | Eliminate the use of ozone depleting compounds where alternative environmentally preferable products are available, consistent with either the Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990, or equivalent overall air quality benefits that take into account lifecycle impacts.   | A phase out plan is the only practical path to zero use of refrigerants. The first criteria in this section, 4.2 Refrigerants allows for an N/A if no ODP refrigerants are used and credit for non-ODP refrigerants. In both cases, the rating system avoids penalizing the user. Therefore, GG does award credit to zero ODP refrigerant use.<br>4.2 Refrigerants<br>4.3 Management of Ozone Depleting Refrigerants | If the LEED EB points are achieved the GP will be met.<br>EA Prerequisite 3: Fundamental Refrigerant Management<br>EA Credit 5: Enhanced Refrigerant Management  | If the LBC challenge is accomplished the Guidelines will be met.<br>11 Red List  |
| What standards or tools are required for the metric?                | Montreal Protocol and Title VI of the Clean Air Act Amendments of 1990  | n/a  | LEED Reference Guide for Green Building Operations & Maintenance   | n/a  |

**Indoor Environment**

| Review Questions  | Guiding Principles (EB)   | Green Globes (CIEB)   | LEED (EB)   | Living Building Challenge (Renovation)  |
|---|---|---|---|---|
| <b>Ventilation</b>  |   |   |   |   |
| Does the metric help a building meet a current Federal requirement? | Meet ASHRAE Standard 55-2004 Thermal Environmental Conditions for Human Occupancy and ASHRAE Standard 62.1-2007: Ventilation for Acceptable Indoor Air Quality.   | GG CIEB has ventilation requirements, however, meeting ASHRAE 55-2004 standard is not specifically requirement.<br><br>5.1 Ventilation System<br>5.2 Filtration System<br>5.4 Cooling Towers<br>5.5 Parking and Receiving | Minimum indoor air quality performance is required by LEED EB. GP is met.<br><br>IEQ Prerequisite 1: Minimum Indoor Air Quality Performance   | LBC meets the GP requirement.<br><br>09 Healthy Air   |
| What standards or tools are required for the metric?                | ASHRAE Standard 62.1–2007   | ASHRAE Standard 55-2004   | ASHRAE Standard 62.1–2007   | ASHRAE Standard 62  |
| <b>Thermal Comfort</b>  |   |   |   |   |
| Does the metric help a building meet a current Federal requirement? | Meet ASHRAE Standard 55-2004 Thermal Environmental Conditions for Human Occupancy and ASHRAE Standard 62.1-2007: Ventilation for Acceptable Indoor Air Quality.   | If the GG CIEB points are achieved the GP will be met.<br><br>5.7 IAQ Management  | If the LEED EB points are achieved the GP will be met.<br><br>IEQ Credit 1.3: Indoor Air Quality Best Management Practices - Increased Ventilation<br>IEQ Credit 2.1: Occupant Comfort—Occupant Survey<br>IEQ Credit 2.3: Occupant Comfort—Thermal Comfort Monitoring | LBC does not specify meeting ASHRAE 55-2004. <a href="#">Living Building Challenge includes requirements for compliance with ASHRAE 62 and required testing throughout the project for temperature and relative humidity.</a><br><br>09 Healthy Air |
| What standards or tools are required for the metric?                | ASHRAE Standard 55-2004   | ASHRAE Standard 55-2004   | ASHRAE Standard 55-2004   | n/a   |
| <b>Integrated Pest Management</b>                                   |   |   |   |   |
| Does the metric help a building meet a current Federal requirement? | Use integrated pest management techniques as appropriate to minimize pesticide usage. Use EPA-registered pesticides only when needed.   | GG CIEB does include points for integrated pest management but does not specify EPA-registered pesticides.<br><br>4.13 Pesticides   | LEED EB does include points for integrated pest management but does not specify EPA-registered pesticides.<br><br>IEQ Credit 3.6: Green Cleaning—Indoor Integrated Pest Management  | LBC does not have specific requirements for pest management and pesticides selections.  |
| <b>Daylighting</b>  |   |   |   |   |
| Does the metric help a building meet a current Federal requirement? | Automated lighting controls (occupancy/vacancy sensors with manual-off capability) are provided for appropriate spaces including restrooms, conference and meeting rooms, employee lunch and break rooms, training classrooms, and offices. Two options can be used to meet additional daylighting and lighting controls performance expectations:<br>• Option 1: Achieve a minimum daylight factor of 2 percent (excluding all direct sunlight penetration) in 50 percent of all space occupied for critical visual tasks, or<br>• Option 2: Provide occupant controlled lighting, allowing adjustments to suit individual task needs, for 50% of regularly occupied spaces. | GP uses daylight factor and it cannot be directly compared to GG daylighting calculations.<br><br>5.8 Lighting Features<br>5.9 Lighting Management  | GP uses daylight factor and it cannot be directly compared to LEED daylighting calculations.<br><br>IEQ Credit 2.4: Daylight and Views<br>IEQ Credit 2.2: Controllability of Systems—Lighting   | LBC does not have quantitative daylighting requirements.<br><br>08 Civilized Environment  |
| What is the baseline or point of comparison?                        | All space occupied for critical visual task   | Typical working area  | Regularly occupied spaces/work stations   | n/a   |
| What is the range of requirements to achieve the metric?            | 50%   | 80.00%  | 50%   | n/a   |
| <b>Environmental Tobacco</b>  |   |   |   |   |
| Does the metric help a building meet a current Federal requirement? | Prohibit smoking within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes.  | Green Globes EB does not specifically prohibit smoking within the building so the GP is only partially met.<br><br>5.6 Control of Pollutants at Source  | If the LEED EB Option 1 is chosen then the GP is met.<br><br>IEQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control  | If the LBC challenge is accomplished the Guidelines will be met.<br><br>09 Healthy Air  |
| <b>Moisture Control</b>   |   |   |   |   |

Indoor Environment

|  |   |   |   |   |
|--|---|---|---|---|
| <b>Does the metric help a building meet a current Federal requirement?</b> | Provide policy and illustrate the use of an appropriate moisture control strategy to prevent building damage, minimize mold contamination, and reduce health risks related to moisture. For façade renovations, Dew Point analysis and a plan for cleanup or infiltration of moisture into building materials are required. | Green Globes EB only partially meets the Guidelines - no discussion of formal moisture control program is included.<br>5.6 Control of Pollution at Source<br>5.7 IAQ Management | If the points are achieved the intent of the requirement will be met.<br>IEQ Credit 1.5: Indoor Air Quality Best Management Practices—Indoor Air Quality  | LBC does not have specific requirement for moisture control.<br>09 Healthy Air  |
| <b>Low-Emitting Material</b>   |   |   |   |   |
| <b>Does the metric help a building meet a current Federal requirement?</b> | Use low emitting materials for building modifications, maintenance, and cleaning. In particular, specify the following materials and products to have low pollutant emissions: composite wood products, adhesives, sealants, interior paints and finishes, solvents, carpet systems, janitorial supplies, and furnishings.  | Green Globes EB does not address low-emitting materials.  | The LEED points only partially meet the intent of the Guidelines. Furnishings and solvent are not specifically mentioned in LEED as requiring low emission options.<br><br>MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions<br>IEQ Credit 3.3: Green Cleaning—Purchase of Sustainable Cleaning Products and Materials | If the LBC challenge is accomplished the Guidelines will be met.<br><br><a href="#">Imperative 09: Healthy Air</a>  |
| <b>What standards or tools are required for the metric?</b>                | n/a   | n/a   | South Coast Air Quality Management District (SCAQMD) Rule #1168, Bay Area Air Quality Management District Regulation 8, Rule 51, Green Seal's Standard GS-11, FloorScore, CRI Green Label Plus Carpet Testing Program.  | <a href="#">US EPA Design for the Environment (DfE)</a> is referenced as a resource for understanding thresholds for disclosure of ingredients for <a href="#">Imperative 11:Red List</a> . |



**Not in Guiding Principles**

|                | Review Questions  | Guiding Principles (NC)    | Green Globes (EB)    | LEED (EB)   | Living Building Challenge (Renovation)  |
|----------------|---|----------------------------|----------------------|---|---|
| Acoustic       | <b>Acoustic (Not in GP)</b>   |                            |                      |   |   |
|                | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | 5.10 Noise           | IE Q Credit 2.1: Occupant Comfort—Occupant Survey                 | —   |
| BAS            | <b>Building System Controls (Not in GP)</b>                         |                            |                      |   |   |
|                | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | —                    | EA Credit 3.1: Performance Measurement—Building Automation System | —   |
| Siting         | <b>Siting (Not in GP)</b>   |                            |                      |   |   |
|                | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | —                    | SS Credit 4: Alternative Commuting Transportation                 | 01 Limits to Growth<br>04 Car Free Living<br>Imperative 16: Human Scale and Humane Places<br>Imperative 17: Democracy + Social Justice  |
| Greenhouse Gas | <b>Greenhouse Gas (Not in GP)</b>                                   |                            |                      |   |   |
|                | Does the metric help a building meet a current Federal requirement? | No requirements in the GP. | 4.1 Boiler Emissions | LEED does not address Greenhouse Gas.                             | Living Building Challenge requires that project teams calculate the project's total embodied carbon footprint (tCO <sub>2</sub> e), and purchase Certified Emission Reduction credits or Verified Emission Reduction credits from qualifying renewable energy projects.<br><br>Imperative 12: Embodies Carbon Footprint |



## Appendix H: Certification System Owner Input – Green Globes

| Comment # | Section # | Section      | Reviewer                          | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|--------------|-----------------------------------|--|---------|-------------|--|
| 1         | a         | Independence | Vicki Worden<br>&<br>Kevin Stover | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | I1          | Third-party assessors are selected based on qualification (experience in design, engineering, energy analysis/management, commissioning, construction, and/or facility management).<br><br><del>There is no information on how assessors are chosen for individual projects.</del> Once an assessor is assigned, contact information for an assessor is then given to the owner by GBI.<br><br><u>Conflict of interest guidelines for assessors can be found at <a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a></u>  |
| 2         | a         | Independence | VS & KS                           | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | I2          | <u>A customer may file an appeal with the Green Building Initiative regarding specific discrepancies previously identified and discussed with the Green Globes Assessor but not resolved to the customer's satisfaction. A one-time appeal fee must be paid prior to Green Building Initiative evaluating the merits of the appeal. Complete appeal policies and procedures can be found in section 6.0 Appeals of <i>The GBI Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5)</i>.</u><br><br><u><a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a></u> |
| 3         | a         | Independence | VS & KS                           | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | I3          | <i>Misspelled word should be "customer" not "costumer" or "costomer" (appears incorrectly twice).</i>  |
| 4         | a         | Independence | VS & KS                           | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | I4          | <i>Delete the following sentence as it is repetitive: <del>Green Globes CIEB includes an extensive documentation review and an onsite visit with walk through and interview of facility manager and chief engineer.</del></i>  |
| 5         | b         | Availability | VS & KS                           | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a>   | 8/25/11 | A1          | <i>Misspelled word should be "Stage 2" not "state".</i>  |

| Comment # | Section # | Section      | Reviewer | Contact Information  | Date    | Question ID | Comments  |
|-----------|-----------|--------------|----------|--|---------|-------------|---|
|           |           |              |          | <a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a>   |         |             |   |
| 6         | b         | Availability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | A2          | <p><u>Generally, the client receives a preliminary report, score, and rating. If the preliminary report, score and rating are accepted and no appeals are anticipated, the report and rating will become final within two weeks after issuance of the report. If there are disputed items, the client must notify GBI within two weeks from when the report was received. Supporting information must be provided to GBI. If an update to the report is deemed necessary by the assessor, he/she will amend the report, score, and rating and final report will be forwarded within 4 weeks. If it is not deemed warranted, the client notifies GBI of an ongoing dispute and pays a one-time appeal fee. Appeals are reviewed by GBI staff and/or Green Globes auditing assessors and are generally granted or denied within 4 weeks. If the appeal was caused by GBI or assessor error, the appeal fee is rebated.</u></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf</a></p> |
| 7         | b         | Availability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | A3          | <p><u>Yes</u></p> <p><a href="http://www.thegbi.org/faq.asp">http://www.thegbi.org/faq.asp</a></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf</a></p>   |
| 8         | b         | Availability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | A4          | <p><u>See A1 and A2</u></p> <p><a href="http://www.thegbi.org/faq.asp">http://www.thegbi.org/faq.asp</a></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf</a></p>   |

| Comment # | Section # | Section      | Reviewer | Contact Information  | Date    | Question ID | Comments  |
|-----------|-----------|--------------|----------|--|---------|-------------|---|
|           |           |              |          |  |         |             | <a href="#">Guidelines.pdf</a>  |
| 9         | b         | Availability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | A5          | 8-32 hours of work<br><br><a href="http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf">http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf</a>   |
| 10        | b         | Availability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | A6          | <u>Typically, only one assessor is involved. However, if a specialized energy audit is required or an appeal is filed, one additional assessor/auditor will be utilized.</u><br><br><a href="http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf">http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf</a><br><br><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Rating-Appeal-Guidelines.pdf</a>  |
| 11        | c         | Verification | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | V2          | <u>Evaluation criteria are detailed within the rating systems and third-party assessors use relevant documentation provided by the client to assess the accuracy of client compliance/adherence.</u><br><br><a href="http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp">http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp</a>   |
| 12        | c         | Verification | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | V3          | <u>Documentation requirements used in evaluations vary depending on the rating system being used. The New Construction assessment includes two stages of assessment. Stage I is a review of construction documents, working drawings, landscape designs, energy analysis, LCA documentation, commissioning reports, etc. Stage II includes an onsite walk through, review of additional documentation, and interview of key team members. Green Globes CIEB includes an extensive documentation review and an on-site visit with walk through and interview of facility manager and chief</u> |

| Comment # | Section # | Section      | Reviewer | Contact Information  | Date    | Question ID | Comments  |
|-----------|-----------|--------------|----------|--|---------|-------------|---|
|           |           |              |          |  |         |             | <p><u>engineer.</u></p> <p><a href="http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp">http://www.thegbi.org/commercial/aboutgreen-globes/faq.asp</a></p> <p><u>Detailed information on documentation typically requested as part of a third-party assessment is listed in the documents called "Pre-3<sup>rd</sup> Party Assessment Checklist."</u></p> <p><u>Green Globes NC</u></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-NC-Pre-3rdParty-Assessment-Checklist-031809.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-NC-Pre-3rdParty-Assessment-Checklist-031809.pdf</a></p> <p><u>see also Suggested Documentation incorporated into ANSI/GBI 01-2010</u></p> <p><u>Green Globes CIEB</u></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-CIEB-Pre-3rdParty-Assessment-Checklist-031809.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-CIEB-Pre-3rdParty-Assessment-Checklist-031809.pdf</a></p> |
| 13        | c         | Verification | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | V4          | <u>See V3</u>   |
| 14        | c         | Verification | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | V5          | <u>Such a scenario is unlikely because assessors are recruited and selected for a project based on their experience and area of expertise. However, if evaluation needs are outside an assessor's expertise, GBI may contract the assistance of a senior assessor or member of the technical committee.</u>   |

| Comment # | Section # | Section      | Reviewer | Contact Information  | Date    | Question ID | Comments  |
|-----------|-----------|--------------|----------|--|---------|-------------|---|
|           |           |              |          |  |         |             | <a href="http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf">http://www.thegbi.org/about-gbi/career/Green-Globes-Assessor-GBI-Contractor.pdf</a>   |
| 15        | d         | Transparency | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | T1          | <p>GBI follows ANSI standard, but does not provide detailed information on how to collect public comments.</p> <p>"GBI also sought and received accreditation in 2005 as a standards developer by the American National Standards Institute (ANSI), and has begun the process to establish Green Globes as an official ANSI standard. The GBI-ANSI approved process is consensus-based and involves a balanced committee of users, producers, and interested parties with required public comment periods and full committee ballot voting." This committee is conducting its review of the GBI Proposed American National Standard 01-200XP: "Green Building Assessment Protocol for Commercial Buildings" through an open and transparent process. The final standard will be <u>has been</u> incorporated into the next version of the Green Globes for New Construction tools."</p> <p><u>GBI became an ANSI accredited Standards Developing Organization (or SDO) in 2005, breaking new ground for the industry by also becoming the first green building organization to commit to taking a commercial building rating system (Green Globes™) through an ANSI consensus process. The assessment protocol—or rating system—contained within GBI's proposed standard will be available to the public for use during the design, construction, operations, and maintenance of commercial buildings. In addition, it will also be the basis of the next version of the Green Globes™ online tools.</u></p> <p><u>GBI's standard was developed by a technical committee—or consensus body—formed in 2006 which follows GBI's ANSI-approved procedures for developing consensus documents and involves a balanced committee of users, producers, and interested parties with required public comment periods and full committee</u></p> |

| Comment # | Section # | Section      | Reviewer | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|--------------|----------|--|---------|-------------|--|
|           |           |              |          |  |         |             | <p><u>ballot voting. The committee is comprised of 30 individuals, balanced equally between users (10), generally interested parties (10), and producers (10). It is supported by technical experts from across the country through working subcommittees. Additionally, the public plays an important role in developing ANSI standards by participating in periodic public comment forums. Many hundreds of individuals and organizations lent their expertise to the development of ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings before it was finalized.</u></p> <p><a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a></p>   |
| 16        | d         | Transparency | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | T2          | <p>Public comments were collected during the development of the GBI Proposed American National Standard 01-200XP: "Green Building Assessment Protocol for Commercial Buildings ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings. For the current ANSI-approved version of the Standard, public comments were solicited and reviewed by the technical committee on multiple occasions. These comments are available on the "Development Archive" page of the GBI website at <a href="http://www.thegbi.org/commercial/standards">www.thegbi.org/commercial/standards</a>.</p> <p><a href="http://www.thegbi.org/commercial/standards">http://www.thegbi.org/commercial/standards</a></p> |
| 17        | d         | Transparency | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | T3          | <p><del>GBI follows ANSI standard, but does not provide detailed information on how to incorporate public comments.</del></p> <p>"GBI also sought and received accreditation in 2005 as a standards developer by the American National Standards Institute (ANSI), and has begun the process to establish Green Globes as an official ANSI standard. The GBI ANSI-approved process is consensus-based and involves a balanced committee of users, producers, and interested parties with required public comment periods and full committee ballot voting. This committee is conducting its review of</p>  |

| Comment # | Section # | Section      | Reviewer | Contact Information                                    | Date    | Question ID | Comments   |
|-----------|-----------|--------------|----------|--|---------|-------------|--|
|           |           |              |          |  |         |             | <p>the GBI Proposed American National Standard 01-200XP: "Green Building Assessment Protocol for Commercial Buildings" through an open and transparent process. The final standard will be incorporated into the next version of the Green Globes for New Construction tools."</p> <p><u>GBI became an ANSI accredited Standards Developing Organization (SDO) in 2005, breaking new ground for the industry by also becoming the first green building organization to commit to taking a commercial building rating system (Green Globes™) through an ANSI consensus process. The assessment protocol—or rating system—contained within GBI's proposed standard will be available to the public for use during the design, construction, operations, and maintenance of commercial buildings. In addition, it will also be the basis of the next version of the Green Globes™ online tools.</u></p> <p><u>GBI's Standard was developed by a technical committee—or consensus body—formed in 2006 which follows GBI's ANSI-approved procedures for developing consensus documents and involves a balanced committee of users, producers, and interested parties with required public comment periods and full committee ballot voting. The committee is comprised of 30 individuals, balanced equally between users (10), generally interested parties (10), and producers (10). It is supported by technical experts from across the country through working subcommittees. Additionally, the public plays an important role in developing ANSI standards by participating in periodic public comment forums. Many hundreds of individuals and organizations lent their expertise to the development of ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings before it was finalized.</u></p> <p><a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a></p> |
| 18        | d         | Transparency | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a> | 8/25/11 | T4          | Certification system changes are documented and can be accessed by the public on the GBI website. The following is an excerpt from   |

| Comment # | Section # | Section | Reviewer | Contact Information                                    | Date | Question ID | Comments   |
|-----------|-----------|---------|----------|--|------|-------------|--|
|           |           |         |          | <a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> |      |             | <p><a href="http://www.thegbi.org/green-globes/ansi-gbi-standard.asp">www.thegbi.org/green-globes/ansi-gbi-standard.asp</a>.</p> <p><u>This standard, officially named <i>ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings</i>, was derived from the Green Globes environmental design and assessment rating system for New Construction and was formally approved on March 24, 2010.</u></p> <p><u>The standard was developed following ANSI's highly regarded consensus-based guidelines, which are among the world's most respected for the development of consensus standards and ensure a balanced, transparent and inclusive process. A variety of stakeholders including sustainability experts, architects, engineers, ENGO's, and industry groups participated in its development.</u></p> <p><u>For those interested in learning more about the development of the ANSI/GBI Standard, including information on the procedures, technical committee members, subcommittees, public comments, and meeting minutes, please" contact <a href="mailto:info@thegbi.org">info@thegbi.org</a> or review the "ANSI/GBI 01-2010 Development Archive" page on the GBI website.</u></p> <p><a href="http://www.thegbi.org/commercial/standards">http://www.thegbi.org/commercial/standards</a> and <a href="http://www.thegbi.org/green-globes/ansi-gbi-standard.asp">http://www.thegbi.org/green-globes/ansi-gbi-standard.asp</a></p> |



| Comment # | Section # | Section         | Reviewer | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|-----------------|----------|--|---------|-------------|--|
| 19        | e         | Consensus-based | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | C3          | <p>In 2005, GBI was accredited as a standards developer by the American National Standards Institute (ANSI). The GBI ANSI technical committee was formed in early 2006 and follows GBI's ANSI-approved procedures for developing consensus documents. <u>The committee involves an equal balance of users, producers, and interested parties in required public comment periods and full committee ballot voting and is supported by technical experts from across the country through working subcommittees. Additionally, many hundreds of individuals and organizations lent their expertise to the development of ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings before it was finalized.</u> <del>and</del> The official Green Globes ANSI standard was published in 2010, and Green Globes NC meets the ANSI consensus standard.</p> <p><a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a></p> |
| 20        | e         | Consensus-based | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | C4          | <p>In accordance with the Standard, buildings will be comprehensively <u>and thoroughly evaluated across multiple assessment areas that are relevant to sustainability and environmental impact. The seven areas of assessment for the ANSI/GBI Standard include Energy, Indoor Environment, Resources/Materials, Water, Site, Project Management, and Emissions. The total points available for each assessment area are as follows:</u></p> <ul style="list-style-type: none"> <li>• <u>Energy 300</u></li> <li>• <u>Indoor Environment 160</u></li> <li>• <u>Resources/Materials 145</u></li> <li>• <u>Water 130</u></li> <li>• <u>Site 120</u></li> <li>• <u>Project Management 100</u></li> <li>• <u>Emissions 45</u></li> </ul> <p><a href="http://www.thegbi.org/assets/pdfs/ANSI-GBI-Assessment-Areas-Point-Allocation-Achievement-Levels.pdf">http://www.thegbi.org/assets/pdfs/ANSI-GBI-Assessment-Areas-Point-Allocation-Achievement-Levels.pdf</a></p>                     |

| Comment # | Section # | Section         | Reviewer | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|-----------------|----------|--|---------|-------------|--|
| 21        | e         | Consensus-based | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | C6          | <p><u>Differing opinions are managed by the technical committee and in accordance with the <i>GBI Procedures for the Development and Maintenance of Green Building Standards</i> (GBI-PRO 2005-5). When addressing Public Review Comments without objections "The Standards Committee shall be made aware of all public review comments." Public Review Comments Containing Objections - "shall be referred to the Standards Committee Chair or the Subcommittee responsible for the part of the standard in question to attempt resolution. The Committee may request the Secretariat to obtain further information from the commentator or attempt to correspond with the commenter directly and reach resolution. Each unresolved objection and attempts at resolution shall be referred to the Standards Committee. If substantial changes to the standard are required then the changes are subject to letter ballot, and a new public review period. If changes are not made to the standard, then the response to the negative comment is subject to approval by vote of the Standards Committee and the commenter is informed in writing of the response. In addition, the commenter shall be informed of the appeals process (section 6.0)."</u></p> <p><a href="http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf</a></p> |
| 22        | e         | Consensus-based | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | C7          | <p><u>The <i>GBI Procedures for the Development and Maintenance of Green Building Standards</i> (GBI-PRO 2005-5) contain procedures for managing differing opinions. Specifically, sections 4.10 and 4.11 address Public Comments, and section 6.0 provides details of the appeals process.</u></p> <p><a href="http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf</a></p>   |

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|-----------|-----------|-----------------|----------|--|---------|-------------|--|
| 23        | e         | Consensus-based | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | C8          | <p><u><i>The GBI Procedures for the Development and Maintenance of Green Building Standards (GBI-PRO 2005-5)</i></u> outline in section 6.0 Appeals the requirements to ensure there are third-party reviewers of the process when appropriate. Specifically, "If the Secretariat is unable to informally resolve the complaint, it shall appoint an appeals panel to hold a hearing on a date agreeable to all participants, with at least 15 working days' notice. The appeals panel shall consist of three individuals who have not been directly involved in the dispute and who will not be materially affected by any decision made in the dispute. At least two members of the panel shall be acceptable to the appellant and at least two shall be acceptable to the Secretariat."</p> <p><a href="http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf</a></p>  |
| 24        | f         | System Maturity | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | M1          | <p><u>ANSI/GBI 01-2010</u> was developed with representatives of ASHRAE, AIA, and ICC participating in the process. Many of the individuals selected to participate on GBI's consensus body also participated in the development of ASHRAE 189.1 and IGCC. Efforts were made throughout the process to ensure that the standards were compatible wherever possible. ANSI/GBI-01-2010 is complementary to ASHRAE 189.1, which provides a minimum performance standard versus ANSI/GBI-01-2010, which incentivizes higher levels of performance.</p> <p><a href="http://www.thegbi.org/commercial/standards/technical-committee.asp">http://www.thegbi.org/commercial/standards/technical-committee.asp</a></p> <p><a href="http://www.thegbi.org/commercial/standards/">http://www.thegbi.org/commercial/standards/</a></p> <p><u>"ASHRAE also deserves credit for their work to develop a minimum performance standard for high performance buildings through an ANSI process. Whereas GBI's standard is a rating system incentivizing users toward multiple higher levels of performance, the</u></p> |

| Comment # | Section # | Section         | Reviewer | Contact Information   | Date    | Question ID | Comments  |
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|           |           |                 |          |   |         |             | <p><u>ASHRAE standard was written in mandatory language for adoption into building codes.</u></p> <p><a href="http://www.thegbi.org/assets/pdfs/House_Testimony_5.14.08.pdf">http://www.thegbi.org/assets/pdfs/House_Testimony_5.14.08.pdf</a></p> <p><u>ANSI/GBI 01-2010 Green Building Assessment Protocol for Commercial Buildings, April 1, 2010</u></p>  |
| 25        | f         | System Maturity | VS & KS  | <p><a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a></p> <p><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a></p> | 8/25/11 | M2          | <p>The GBI has committed to continually refining the system to ensure that it reflects changing opinions and ongoing advances in research and technology, and, in so doing, to involve multiple stakeholders in an open and transparent process.</p> <p><a href="http://www.thegbi.org/commercial/about-green-globes/">http://www.thegbi.org/commercial/about-green-globes/</a></p> <p><u><b>“Standards Maintenance – All standards shall be reaffirmed, revised, or withdrawn within 5 years from the original standard approval date, and every five years thereafter.”</b></u></p> <p><a href="http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf">http://www.thegbi.org/commercial/standards/GBIProceduresFebruary2008.pdf</a></p> <p><del>NEED INFORMATION – ONLY FOUND THE BELOW</del></p> <p><del>"GBI's standard is being developed by a technical committee—or consensus body formed in 2006 which follows GBI's ANSI-approved procedures for developing consensus documents. The committee is comprised of 30 individuals, balanced equally between users (10),</del></p> |

| Comment # | Section # | Section         | Reviewer | Contact Information  | Date    | Question ID | Comments  |
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|           |           |                 |          |  |         |             | generally interested parties (10), and producers (10). It is supported by technical experts from across the country through working subcommittees. Additionally, the public plays an important role in developing ANSI standards by participating in periodic public comment periods. Many hundreds of individuals and organizations will have lent their expertise to the development of GBI 01-200XP: Green Building Assessment Protocol for Commercial Buildings before it is finalized."  |
| 26        | f         | System Maturity | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | M3          | <i>Misspelled the acronym. Should be CIEB (not CEIB).</i>   |
| 27        | f         | System Maturity | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | M4          | <p>Green Globes CIEB requires 12 <del>months</del> <u>months</u> of energy and water data.</p> <p>"A Meter Data Management System was installed to electronically store water meter and sub-meter data and create user reports showing calculated hourly, daily, monthly and annual water consumption for each meter or submeter."</p> <p><u>Green Globes uses performance criteria to evaluate the energy consumption of a building. Green Globes compares against data generated by the EPA's Energy Star tools; specifically these are better performing buildings in the Energy Star database.</u></p> <p><a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a></p> |
| 28        | f         | System Maturity | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | M5          | <u>GBI recognizes the New Construction and Existing Building evaluations as separate tools.</u>   |

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|           |           |                 |          |  |         |             | <p><u>The New Construction is an assessment and certification of the building as it pertains to design and construction. The CIEB is an assessment of the building for operations and management of the building. Accordingly, the certifications are different.</u></p> <p><u>Green Globes is designed to offer opportunities for improvement throughout the continuum of the building. After a building achieves certification under NC, GBI encourages building owners to certify buildings under CIEB after 14-18 months following occupation of the building. Recertification every three years is also encouraged.</u></p> <p><u>Certification criteria for each system are complimentary in that they reinforce the measuring, meeting, and exceeding of performance goals.</u></p>  |
| 29        | f         | System Maturity | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | M6          | <p>None</p> <p><u>Green Globes Certification is recognized as a tool to help clients achieve insurance discounts through at least four major insurance providers: Travelers, AON, Fireman's Fund Insurance Company, and Liberty Mutual.</u></p> <p><u>"The financial sector has also implemented financial incentives for certifying to Green Globes. Fireman's Fund was the first to offer a discount tied to green building certification. In 2006, Fireman's Fund began offering 5% premium discounts on various products tied to Green Globes™ certification. Liberty Mutual, AON and Travelers Insurance also offer products tied to Green Globes and building rating system certifications."</u></p> <p><a href="http://www.thegbi.org/green-globes/green-globes-private-sector-">http://www.thegbi.org/green-globes/green-globes-private-sector-</a></p> |

| Comment # | Section # | Section         | Reviewer | Contact Information   | Date    | Question ID | Comments  |
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|           |           |                 |          |   |         |             | <p><a href="#">recognition.asp</a></p> <p><a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a></p> <p>Green Globes is recognized in public law in more than 22 states:</p> <p><u>Arkansas, Connecticut, Delaware, Florida, Hawaii, Illinois, Kentucky, Missouri, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Virginia, Wisconsin</u></p> <p><a href="http://www.thegbi.org/green-globes/green-globes-state-acceptance-map.asp">http://www.thegbi.org/green-globes/green-globes-state-acceptance-map.asp</a></p>   |
| 30        | f         | System Maturity | VS & KS  | <p><a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a></p> <p><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a></p> | 8/25/11 | M7          | <p>The current GG system was <u>based on</u> the Building Research Establishment's Environmental Assessment Method (BREEAM), which was brought to Canada in 1996 in cooperation with ECD Energy and <u>Environment</u>. That year, the Canadian Standards Association published BREEAM Canada for Existing Buildings. In 2004, after several years of development, Green Globes for Existing Buildings was adopted by the Building Owners and Managers Association of Canada (BOMA) under the name Go Green Comprehensive (a.k.a. Go Green Plus). The same year, the Green Building Initiative acquired the rights to distribute Green Globes in the United States. To that end, in 2005, GBI became the first green building organization to be accredited as a standards developer by the American National <u>Standards</u> Institute (ANSI) and began the process of establishing Green Globes as an official ANSI standard. The GBI ANSI technical committee was formed in early 2006. Also in 2006, the latest version of the Green Globes Rating System v.1 was introduced in the United States.</p> <p><u>GBI went on to form a consensus body and delivered the industry's</u></p> |

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|           |           |                 |          |  |         |             | <p><u>first commercial building rating system to become an ANSI Standard. This standard, officially named <i>ANSI/GBI 01-2010: Green Building Assessment Protocol for Commercial Buildings</i> was derived from the Green Globes environmental design and assessment rating system for New Construction and was formally approved on March 24, 2010.</u></p> <p><u>The standard was developed following ANSI's highly regarded consensus-based guidelines, which are among the world's most respected for the development of consensus standards and ensure a balanced, transparent and inclusive process. A variety of stakeholders including sustainability experts, architects, engineers, ENGO's, and industry groups participated in its development.</u></p> <p><a href="http://www.thegbi.org/commercial/about-green-globes/">http://www.thegbi.org/commercial/about-green-globes/</a></p> <p><a href="http://www.thegbi.org/commercial/standards">http://www.thegbi.org/commercial/standards</a></p> <p><a href="http://www.thegbi.org/green-globes/ansi-gbi-standard.asp">http://www.thegbi.org/green-globes/ansi-gbi-standard.asp</a></p> |
| 31        | f         | System Maturity | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | M8          | <p><u>There have been two major changes to the Green Globes system since its introduction into the United States. One was developing the ANSI-GBI 01-2010 standard and the other was introducing a Green Globes-CIEB version for health care. Over 170 Veterans Affairs hospitals and long term care facilities have completed online surveys with the new tool, enabling portfolio-wide comparison and ranking of individual building environmental performance.</u></p> <p><a href="http://www.thegbi.org/commercial/standards">http://www.thegbi.org/commercial/standards</a></p> <p><a href="http://www.thegbi.org/news/news/2011/news_201106_Green-Globes-Healthcare-Building.shtml">http://www.thegbi.org/news/news/2011/news_201106_Green-Globes-Healthcare-Building.shtml</a></p> <p><a href="http://www.thegbi.org/commercial/healthcare/">http://www.thegbi.org/commercial/healthcare/</a></p> <p><a href="http://www.thegbi.org/commercial/healthcare/green-building-certification.shtml">http://www.thegbi.org/commercial/healthcare/green-building-certification.shtml</a></p>   |



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|-----------|-----------|-----------|----------|--|---------|-------------|--|
| 32        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | U1          | <i>CIEB is misspelled (not EBCI).</i>  |
| 33        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | U2          | <p>There is significant anecdotal evidence demonstrating that Green Globes' "soft" labor costs are significantly less than with LEED. The Renschler Company (Wisconsin) has significant experience with both systems and publishes its approximate prices for LEED as \$60,000 minimum and Green Globes as \$8,000 maximum. Other quotes that appear in the testimonial section indicate that GBI clients save money on documentation preparation because GBI assessors are highly qualified architects and engineers that review actual paperwork that is already part of the design/operation process. Lastly, the VHA has documented that they saved more than \$100,000 by not hiring an outside consultant to prepare existing building assessments for one of their campuses. (See testimonials)</p> <p><u>GBI states that Green Globes documentation costs are ¼ that of LEED and that certification costs are 1/3 of LEED certification costs.</u></p> <p><a href="http://www.thegbi.org/green-globes/green-globes-leed-green-building-certification.shtml">http://www.thegbi.org/green-globes/green-globes-leed-green-building-certification.shtml</a></p> <p>See also U8 Rick Hart testimonial (\$100,000 saved).</p> <p>See included document <i>Green Building Certification Programs Comparison</i></p> |
| 34        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | U3          | <u>Green Globes NC encourages integrated design and incentivizes use of leading edge sustainability techniques, energy modeling (for reduction of CO2e), and minimization of occupant exposure to indoor environmental issues. Trained and licensed professionals are essential to proper design outcomes. Green Globes-NC incorporates Life Cycle Assessment and provides customized tools</u>  |

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|           |           |         |          |                     |      |             | <p><u>to facilitate design team understanding of environmental attributes of building materials.</u></p> <p><u>Green Globes CIEB is written for use by facility managers and engineers. The strength of both systems is reflected in the statements below.</u></p> <p><u>The strength of the Green Globes® system is that it is written in a clear and concise manner that allows beginners as well as experienced practitioners to be fully engaged in using the system in minutes. While there is no substitute for having highly qualified and appropriately licensed team members, the Green Globes system is questionnaire-driven. Users are walked through a logical sequence of questions that guide their steps, as well as providing tips for integrating important elements of sustainability. Answers consist of a combination of yes/no, multiple choice, data insertion, or non-applicable. Questionnaires become more detailed as the process progresses. Once the appropriate questionnaire is complete, the system automatically generates a report written in lay terms with suggestions for improvement and helpful links for supplementary information.</u></p> <p><u>Users can increase their comfort level with the Green Globes tool by participating in online training available on GBI's website. In-person training can be arranged for a separate fee. On-line live demonstrations will be conducted in Webex throughout the year.</u></p> <p><u>Even though there are similarities regarding what constitutes the best energy and environmental practices among the major green building rating systems—such as Green Globes, BREEAM, LEED, and the GBC tool— the Green Globes system does have a number of distinct attributes. In addition to being easy to use and affordable, Green Globes encourages designers and building operators to</u></p> |

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|           |           |           |          |  |         |             | <p><u>consider the elements of sustainability early in the evaluation process. Green Globes tools generate a written report that can promote interaction between team members and owners. Among other attributes, it:</u></p> <ul style="list-style-type: none"> <li>• <u>Encourages the use of the EPA's Energy Star tools for developing building energy benchmarks. (EPA's Energy Star program provides the most consistent source for building energy performance benchmarks because it's based on actual performance data.)</u></li> <li>• <u>Introduces users to the idea of incorporating LCA into the decision making process for resource and material selection.</u></li> <li>• <u>Gives points for using an integrated design process and environmental management systems, addressing acoustical comfort, minimizing opportunities for pest intrusion, and reducing emissions and effluents.</u></li> </ul> <p><u>Because it's online and interactive, the Green Globes system provides a convenient method to input, edit, and securely store building assessment data. Complex paper applications and forms are eliminated with the online assessment. Building data entered and submitted online directly updates the scoring and reports so that users have immediate feedback regarding the performance of their building and expected rating. The final certification and rating process is also expedited by enabling the third party assessors to quickly view building data and update ratings based on the on-site assessment results.</u></p> <p><a href="http://www.thegbi.org/commercial/about-green-globes/faq.asp">http://www.thegbi.org/commercial/about-green-globes/faq.asp</a></p> |
| 35        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | U4          | <u>See V3</u>   |
| 36        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a>   | 8/25/11 | U5          | CIEB: Energy, Outdoor Water   |

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|           |           |           |          | <a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a>   |         |             | <u>ANSI/GBI 01-2010 has performance paths for several of the 7 assessment areas and is the only commercial building rating system to include performance criteria for LCA construction materials. Life Cycle Assessment (LCA) inherently incorporates a performance approach in evaluating construction materials. Other criteria with a performance based path are Energy Performance and Water Performance . The Green Globes CIEB tool has performance based criteria for Energy Performance (Energy Star), Water Performance, and Waste Management (Diversion Rate) See robustness analysis.</u>  |
| 37        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | U6          | <p><del>Green Globes</del> GBI offers several resources for customers. First, they offer an online system, which allows customers to keep up-to-date entries as well as provides instant feedback. Users are walked through a series of questions regarding the building <u>and are assisted by "Tool Tips" that provide additional information about questions containing detailed technical language.</u></p> <p>They offer an FAQ page as well as case studies and a virtual tour of the software.</p> <p>If customers have further questions, they can visit the "contact us" page on the website.</p> <p><del>Green Globes</del> GBI provides live web seminar events on specific topics that enable industry professionals to learn about Green Globes, pose questions to GBI staff and technical experts, and to collaborate on ways to enhance the sustainability of new or existing buildings.</p> <p><u>GBI also offers personnel certification for those interested in</u></p> |

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|-----------|-----------|-----------|----------|--|---------|-------------|--|
|           |           |           |          |  |         |             | <p><u>pursuing a Green Globes Professional designation, for which nine-hours of fee-based training are available. There are GGPs registered in 30 states (incl. DC) and two provinces (QC, MB). There are 32 states (incl. DC) that have achieved certified buildings.</u></p> <p><u>59% of states (incl. DC) have GGPs</u></p> <p><u>62% of states (incl. DC) have certified buildings</u></p> <p><a href="http://www.thegbi.org/green-globes/personnel-certifications/">http://www.thegbi.org/green-globes/personnel-certifications/</a></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Personnel-Certifications-Professional-Training-Overview.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Personnel-Certifications-Professional-Training-Overview.pdf</a></p> <p><a href="http://www.thegbi.org/green-globes/personnel-certifications/certified-personnel-listing/index.pl">http://www.thegbi.org/green-globes/personnel-certifications/certified-personnel-listing/index.pl</a></p> |
| 38        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | U7          | <p><u>The NC module is designed to be used in an integrated design process with all relevant licensed professionals and expertise that would be expected to achieve high performance green buildings.</u></p> <p><u>The CIEB module is designed to be used by facility managers and engineers without the need for consultants.</u></p> <p><u>In both cases, the online tool facilitates ease of use with built in "Tool Tips" and other supplementary information available. GBI also employs customer service and technical support professionals.</u></p> <p><a href="http://www.thegbi.org/about-gbi/who-we-are/staff.asp">http://www.thegbi.org/about-gbi/who-we-are/staff.asp</a></p> <p><u>Each project pursuing certification is assigned one Green Globes Assessor who provides personal interaction during the certification process. There are Green Globes Professionals registered in 30 states (incl. DC) and two provinces (QC, MB). There are 32 states</u></p>                                  |

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|-----------|-----------|-----------|----------|--|---------|-------------|---|
|           |           |           |          |  |         |             | <p><u>(incl. DC) that have achieved certified buildings.</u></p> <p><u>59% of states (incl. DC) have GGPs</u></p> <p><u>62% of states (incl. DC) have certified buildings</u></p> <p><a href="http://www.thegbi.org/green-globes/personnel-certifications/">http://www.thegbi.org/green-globes/personnel-certifications/</a></p> <p><a href="http://www.thegbi.org/assets/pdfs/Green-Globes-Personnel-Certifications-Professional-Training-Overview.pdf">http://www.thegbi.org/assets/pdfs/Green-Globes-Personnel-Certifications-Professional-Training-Overview.pdf</a></p> <p><a href="http://www.thegbi.org/green-globes/personnel-certifications/certified-personnel-listing/index.pl">http://www.thegbi.org/green-globes/personnel-certifications/certified-personnel-listing/index.pl</a></p> <p><a href="http://www.thegbi.org/green-globes/">http://www.thegbi.org/green-globes/</a></p>   |
| 39        | g         | Usability | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | U8          | <p><u>"I am a big proponent of Green Globes, even though I was what some might call a 'LEED snob'. I helped the Veterans Health Administration assess and certify 4 campuses—about 150 buildings—using Green Globes-CIEB. The beauty of the Green Globes system is that as Energy Manager, I could use the system to pull together and put in place policy, teams and experts already at hand. Each person learns as they progress through the assessment because Green Globes provides instant feedback, preliminary ratings, and justification for each question it asks. At first, one of our networks felt as if they would need to hire a consultant for an additional \$100,000 to complete the CIEB assessments on their campus. Instead, we worked together using VHA staff and completed the process ourselves. Everyone is so used to LEED they assume that it is going to be complex and time consuming. However, Green Globes achieves the same results without the complication. Additionally, the value-added of the learning process while completing the online assessment is a bonus. In the federal government, we have the policies and programs already in place for the most part. Green Globes just give you the vehicle for bringing it all together and showing you how it all can be used to operate and improve the green attributes of any building."</u> (2011)</p> <p><u>Rick Hart CEM</u></p> |

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|           |           |         |          |                     |      |             | <p><u>Former Energy Manager, North Texas Health Care System</u></p> <p><u>Veterans Health Administration</u></p> <p><u>Current Director of Energy Services</u></p> <p><u>Advanced Safety and Energy, Inc.</u></p> <p><u>Dallas Regional Office</u></p> <p><u>214 927-4655</u></p> <p><i>"The Green Globes Environmental Assessment for New Buildings enabled the Lane Dermatology and Dermatologic Surgery project in Columbus, GA to achieve the owner's goal of documenting the sustainable design features of their building. The assessment process was straightforward and the Green Globes reviewer was very professional and knowledgeable". We would definitely recommend that owners consider the Green Globes Building Assessment and Rating System for their projects".</i></p> <p><i>Steven D. Barthlow, AIA</i></p> <p><i>Lyman Davidson Dooley, Inc.</i></p> <p><i>Ph: 770.850.8494</i></p> <p><u><i>BarthlowS@liddi-atl.com</i></u></p> <p><u><i>liddi-architects.com</i></u></p> |

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|           |           |         |          |                     |      |             | <p>The U. S. Department of State has utilized several international certifying organizations for energy efficiency and environmental sustainability to assess the design, construction and operation of its real estate portfolio (~8.5Mft<sup>2</sup> in the U.S.). We have found the Green Building Initiative's (GBI) Green Globes process for continual improvement for existing buildings (CIEB) to be a logical, technical rigorous approach to benchmarking one's portfolio. The on-site inspection/verification process is a distinct advantage since it field-validates the submitter's claims made during the application process. The Department has found GBI staff to be knowledgeable and responsive and plans to continue using GBI in evaluating its sustainability efforts.</p> <p>Harry Mahar<br/>US Department of State</p> <p><u>"We prepared a lecture that we present to various AIA and yes, USGBC groups that compares and contrasts to the two systems. By developing this seminar and devoting quite a bit of study to the details, I have concluded that Green Globes will become the predominant rating system. It is only a matter of time and market exposure. The advantages: lower cost, speed of certification, lack of prerequisites, lack of owner-paid specialty consultants, known outcomes, collaborative relationship with the assessor, a web site that is not arduous, and an approach that rewards any and all sustainable features as opposed to a policy that favors certain sustainable features to the exclusion of others."</u></p> <p><u>Michael O'Brien, PE</u></p> |



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|           |           |         |          |                     |      |             | <p><u>Sr. Engineer, Energy Ace, Inc.</u></p> <p><u>Atlanta, GA</u></p> <p>Excerpt from Vail Daily, March 21, 2006:</p> <p><u>Carly Weir, director of the Recycling Project and its umbrella organization, the High Country Conservation Center, said the initial plan for its new facility near the Keystone landfill was to get it LEED certified. But as the county cropped the budget, that was one of the first things on the chopping block.</u></p> <p><u>That's when they found out about Green Globes.</u></p> <p><u>"We looked at it, and it's definitely more user-friendly and not as cost-prohibitive as LEED," Weir said.</u></p> <p><u>In addition to the ease of use and lower price, Weir said another advantage of Green Globes over LEED is the ability to exclude parameters that aren't relevant to the project. In LEED, for example, there might be a consideration for an efficient cooling system - not something a commercial building in the mountains is likely to have. And those are points you can't get in LEED or make up in another area.</u></p> <p><u>Auden Schendler, the environmental manager for Aspen Skiing Corporation who's had a fair amount of experience with LEED, said the difference makes Green Globes appealing.</u></p> <p><u>"I think they're worth competition to LEED," he said. "With LEED, you get a credit based on the number of points you have, whereas with Green Globes it's a percentage."</u></p> <p><a href="http://webcache.googleusercontent.com/search?q=cache:Nr8qAoj3O5AJ:">http://webcache.googleusercontent.com/search?q=cache:Nr8qAoj3O5AJ:</a></p> |

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|           |           |         |          |                     |      |             | <p><a href="http://www.vaildaily.com/article/20060321/NEWS/103210031+county+%22Green+Globes%22&amp;cd=51&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com">www.vaildaily.com/article/20060321/NEWS/103210031+county+%22Green+Globes%22&amp;cd=51&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com</a></p> <p>Excerpt from Philadelphia Business Journal Aug 20, 2007:</p> <p><i>The researchers praised Green Globes' online assessments as being cheaper and more efficient and providing more immediate feedback not available from primarily paper-based systems.</i></p> <p><i>Green Globes also eliminates additional documentation requirements for the architect. "Green Globes doesn't require a new paper trail," Bink said. "You can use the papers you normally use as architects, which are voluminous. Why add another layer of paperwork documentation to the process?"</i></p> <p><a href="http://docs.google.com/viewer?a=v&amp;q=cache:VcRy9m2KjpYJ:www.stand.org/Document.Doc%3Fid%3D1056+county+%22Green+Globes%22&amp;hl=en&amp;gl=us&amp;pid=bl&amp;srcid=ADGEESjWtXE2wPO3PtHFKk1vJ7MdD_MkpymSDx-fXoi4WPbO69t7-Z1ut5VVgR2Zk1bVAHPCffXenH-LT_ni3iESvUP4NtayM8rcO8ia3wEL1ZW-sHCKsbShgrRF136EKfzd6tNCEf_g&amp;sig=AHIEtbSKzb9D6r8DVl9vtxix28J_Pw2aKQ">http://docs.google.com/viewer?a=v&amp;q=cache:VcRy9m2KjpYJ:www.stand.org/Document.Doc%3Fid%3D1056+county+%22Green+Globes%22&amp;hl=en&amp;gl=us&amp;pid=bl&amp;srcid=ADGEESjWtXE2wPO3PtHFKk1vJ7MdD_MkpymSDx-fXoi4WPbO69t7-Z1ut5VVgR2Zk1bVAHPCffXenH-LT_ni3iESvUP4NtayM8rcO8ia3wEL1ZW-sHCKsbShgrRF136EKfzd6tNCEf_g&amp;sig=AHIEtbSKzb9D6r8DVl9vtxix28J_Pw2aKQ</a></p> <p>"CSHQA Architecture has had the opportunity to use the GBI Green Globes rating system and found it to be streamlined, user friendly and cost effective. It is our opinion that the Green Globes system does a great job of rewarding building owners for responsible design and practices. We have and will continue to recommend the GBI Green Globes process to our clients."</p> |

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|           |           |         |          |                     |      |             | <p><u>Tim Sievers, Architecture</u></p> <p><u>CSHQA a design collaboration</u></p> <p><u>Whole Foods Architect Rocky Mountain Region</u></p> <p><u>"I've been impressed with the system's ability to provide both education and on-site third-party assessment. It's a flexible yet comprehensive tool that encourages users to learn more about green while working toward specific performance goals."</u></p> <p><u>Eric Truelove, P.E.</u></p> <p><u>Director, Sustainable Design, Renschler, Inc., Wisconsin</u></p> <p><u><i>We have become the first supermarket company to be certified under the Green Building Initiative's Green Globes program, which is an alternative to LEED. We will be building all new stores to meet either LEED or Green Globes certification, and we also are pursuing Green Globes certification for existing stores.</i></u></p> <p><u>Whole Foods interview with EarthTechling <i>When Whole Foods &amp; Green Tech Collide</i></u></p> <p><u>"We are particularly proud that the State Department has earned the first Green Globes designation for a building in Washington D.C. It is the fourth State Department facility to achieve Green Globes certification which we believe is helping us to accelerate our pace in improving our existing buildings and achieving the Secretary's Greening Diplomacy Initiative."</u></p> <p><u>Assistant Secretary Rodriguez</u></p> |

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|           |           |                   |          |  |         |             | <p><u>U.S. State Department</u></p> <p><a href="http://www.thegbi.org/news/news/2010/news_201011_US-State-Department-Building-Green-Globes.asp">http://www.thegbi.org/news/news/2010/news_201011_US-State-Department-Building-Green-Globes.asp</a></p> <p>Excerpt from "Federal Agency Adopts Green Globes Certification" article from <a href="http://www.GreenBuildingLawUpdate.com">GreenBuildingLawUpdate.com</a>:</p> <p><i>In describing the U.S. Department of Veterans Affairs' Green Globes buildings, Rob Watson, the Father of LEED, argued that <a href="#">Green Globes was continuing to "penetrate its mid-market target."</a></i></p> <p><a href="http://www.greenbuildinglawupdate.com/2010/03/articles/codes-and-regulations/federal-agency-adopts-green-globes-certification/">http://www.greenbuildinglawupdate.com/2010/03/articles/codes-and-regulations/federal-agency-adopts-green-globes-certification/</a></p> <p><i>"What is wonderful about Green Globes? Through the completion of over 20 VA Hospital assessments, I have had the pleasure of seeing "ah-ha" moments for creative VA staff when a recommendation from the program allows them to successfully continue on their sustainable journey. Green Globes allows for the necessary benchmarking, but more importantly supports continual sustainable processes, ideas, and outreach. I work with Energy Managers and GEMS Coordinators from the VA Hospital System, and the comments I often hear include, <i>Green Globes is so facility friendly; The electronic survey provides immediate feedback; Green Globes provides a framework to advance our sustainable goals; and The Green Globes process relies on the people who work here every day, who know our buildings and process; which builds sustainable commitment within our organization.</i>"</i></p> <p><u>Jane M. Rohde, AIA, FIIDA, ACHA, AAHID</u></p> <p><u>JSR Associates, Inc.</u></p> |
| 40        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a> | 8/25/11 | N1          | <p>GBI allowed professors to develop green building curriculum using Green Globes in architecture classes and encouraged student</p>  |

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|           |           |         |          | <a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> |      |             | <p><u>collaboration projects previously with Clemson, Cal Poly, Poloma, Stanford, Cooper Union, Arizona State University, University of Arkansas and University of Florida.</u></p> <p><u>GBI also participated in the EPA P3 events held in Washington, DC, where higher education students competed for recognition in sustainability projects. Buildings was one of the categories, and GBI sponsored a \$ 1000 special award for the highest rated project specifically related to commercial buildings (for 3 years).</u></p> <p><a href="http://www.thegbi.org/news/news/archive_2007/news-040207-arkansas.asp">http://www.thegbi.org/news/news/archive_2007/news-040207-arkansas.asp</a></p> <p><a href="http://www.thegbi.org/news/news/archive_2006/news_110106_yearreview.asp">http://www.thegbi.org/news/news/archive_2006/news_110106_yearreview.asp</a></p> <p><a href="http://www.thegbi.org/news/gbi-insight/2007_04_27/">http://www.thegbi.org/news/gbi-insight/2007_04_27/</a></p> <p><u>Green Globes is also incorporated into Dr. Charles J. Kibert's (Univ. of FL), well-regarded book, "Sustainable Construction: Green Building Design and Delivery," Second Edition, copyright 2008, edited by John Wiley &amp; Sons.</u></p> <p><u>See Chapter 3: Green Building Assessment; Chapter 6-8; and Appendix E</u></p> <p><a href="http://books.google.com/books?hl=en&amp;lr=&amp;id=xPpB4bntJLAC&amp;oi=fnd&amp;pg=PR13&amp;dq=kibert+sustainable+construction&amp;ots=mwaDOgWx9e&amp;sig=b_OBvQxmYSeC2uMXyr9QdE0_Ic#v=onepage&amp;q&amp;f=false">http://books.google.com/books?hl=en&amp;lr=&amp;id=xPpB4bntJLAC&amp;oi=fnd&amp;pg=PR13&amp;dq=kibert+sustainable+construction&amp;ots=mwaDOgWx9e&amp;sig=b_OBvQxmYSeC2uMXyr9QdE0_Ic#v=onepage&amp;q&amp;f=false</a></p> |

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|           |           |                   |          |  |         |             | <p><u>Green Globes is incorporated into American Society for Civil Engineer's premier book on sustainability: "Sustainability Guidelines for the Structural Engineer," Edited by Dirk Kestner, PE, Jennifer Goupil, PE, and Emily Lorenz, PE.</u></p> <p><u>See p. 23 etc.</u></p> <p><u>http://cms.asce.org/Books-and-Journals/Books---Personify/Committee-Reports-(PCR)/Sustainability-Guidelines-for-the-Structural-Engineer/</u></p>   |
| 41        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N2          | <u>See N1</u>  |
| 42        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N3          | <p>Recognized in <del>legislation</del> <u>public law</u> in 23 states</p> <p>AK, CO, DE, FL, HI, IL, KY, MI, MA, MN, NV, NJ, NY, NC, OK, <u>OR</u>, PA, RI, SC, SD, TN, VA, WI</p> <p><a href="http://www.thegbi.org/news/gbi-insight/2011_07/commercial.shtml">http://www.thegbi.org/news/gbi-insight/2011_07/commercial.shtml</a></p> <p><u>Also, the Council of State Government recognized Green Globes in its Resolution on Energy Efficiency Measures in Buildings (Nov. 2006)</u></p> <p><a href="http://www.dnr.state.md.us/ed/CSGresfinal.pdf">http://www.dnr.state.md.us/ed/CSGresfinal.pdf</a></p> |
| 43        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a>   | 8/25/11 | N4          | <u>It is difficult to track all activities at county and city levels. The following is a representative sample demonstrating Green Globes</u>  |

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|           |           |         |          | <a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> |      |             | <p><u>acceptance at county levels.</u></p> <p><u>Carroll County, Maryland tax credits for two Green Globes</u></p> <p><a href="http://webcache.googleusercontent.com/search?q=cache:iUPd0aDPOdUJ:www.dsireusa.org/incentives/incentive.cfm%3Fincentive_Code%3DMD65F%26re%3D1%26ee%3D1+county+%22green+globes%22&amp;cd=1&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com">http://webcache.googleusercontent.com/search?q=cache:iUPd0aDPOdUJ:www.dsireusa.org/incentives/incentive.cfm%3Fincentive_Code%3DMD65F%26re%3D1%26ee%3D1+county+%22green+globes%22&amp;cd=1&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com</a></p> <p><u>Mecklenburg County, NC rebates for Green Globes</u></p> <p><a href="http://www.doe.gov/savings/mecklenburg-county-green-permit-rebate-program">http://www.doe.gov/savings/mecklenburg-county-green-permit-rebate-program</a></p> <p><u>Alchua County, allows choice of Green Globes</u></p> <p><a href="http://meetingdocs.alachuacounty.us/documents/bocc/agendas/2011-1-11/fa56d784-9ea4-4e24-9f56-7b49bf782e6b.pdf">http://meetingdocs.alachuacounty.us/documents/bocc/agendas/2011-1-11/fa56d784-9ea4-4e24-9f56-7b49bf782e6b.pdf</a></p> <p><u>Summit Count, CO uses Green Globes</u></p> <p><a href="http://www.buildinggreentv.com/739">http://www.buildinggreentv.com/739</a></p> <p><u>County of El Paso uses Green Globes</u></p> <p><a href="http://www.wrightdalbin.com/projects/Government/Annex.html">http://www.wrightdalbin.com/projects/Government/Annex.html</a></p> <p><u>Volousia County, FL fast-track permitting program allows use of</u></p> |

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|           |           |         |          |                     |      |             | <p><u>Green Globes for third-party certification</u></p> <p><a href="http://webcache.googleusercontent.com/search?q=cache:nWeXH4gS99cJ:energy.gov/savings/volusia-county-green-building-program+county+%22green+globes%22&amp;cd=7&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com">http://webcache.googleusercontent.com/search?q=cache:nWeXH4gS99cJ:energy.gov/savings/volusia-county-green-building-program+county+%22green+globes%22&amp;cd=7&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com</a></p> <p><u>Charlotte County references Green Globes in its green building code</u></p> <p><a href="http://charlottecountyfl.com/BCS/GreenBuilding/pdfs/GrnBldOrd.pdf">http://charlottecountyfl.com/BCS/GreenBuilding/pdfs/GrnBldOrd.pdf</a></p> <p><u>Montgomery County, Maryland pursuing Green Globes equivalency to meet green building requirements</u></p> <p><a href="http://webcache.googleusercontent.com/search?q=cache:zWB7OpErmxMJ:www.stuartkaplow.com/library3.cfm%3Farticle_id%3D150+county+%22green+globes%22&amp;cd=24&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com">http://webcache.googleusercontent.com/search?q=cache:zWB7OpErmxMJ:www.stuartkaplow.com/library3.cfm%3Farticle_id%3D150+county+%22green+globes%22&amp;cd=24&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com</a></p> <p><u>Desoto County, California uses Green Globes</u></p> <p><a href="http://webcache.googleusercontent.com/search?q=cache:qQMFCPxtsNwJ:www.commercialappeal.com/news/2011/jul/19/county-switches-trash-collection/%3Fprint%3D1+county+%22green+globes%22&amp;cd=37&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com">http://webcache.googleusercontent.com/search?q=cache:qQMFCPxtsNwJ:www.commercialappeal.com/news/2011/jul/19/county-switches-trash-collection/%3Fprint%3D1+county+%22green+globes%22&amp;cd=37&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com</a></p> <p><u>Chatam County, NC recognizes Green Globes</u></p> <p><a href="http://www.chathamjournal.com/weekly/news/government/green-">http://www.chathamjournal.com/weekly/news/government/green-</a></p> |



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|           |           |         |          |                     |      |             | <p><a href="#">building-task-force-70618.shtml</a></p> <p><u>Fairfax County, VA uses Green Globes</u></p> <p><a href="http://webcache.googleusercontent.com/search?q=cache:qp5zuCcifwEJ:www.eco-structure.com/homeless-housing/give-me-shelter.aspx+county+%22Green+Globes%22&amp;cd=43&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com">http://webcache.googleusercontent.com/search?q=cache:qp5zuCcifwEJ:www.eco-structure.com/homeless-housing/give-me-shelter.aspx+county+%22Green+Globes%22&amp;cd=43&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com</a></p> <p><u>Bucks County, PA uses Green Globes</u></p> <p><a href="http://docs.google.com/viewer?a=v&amp;q=cache:VcRy9m2KjpYJ:www.stand.org/Document.Doc%3Fid%3D1056+county+%22Green+Globes%22&amp;hl=en&amp;gl=us&amp;pid=bl&amp;srcid=ADGEESjWtXE2wPO3PtHFKk1vJ7MdD_MkpymSDx-fXoi4WPbO69t7-Z1ut5VVgR2Zk1bVAHPcFfXenH-LT_ni3iESvUP4NtayM8rcO8ia3wEL1ZW-sHCKsbShgrRF136EKFzd6tNCEf_g&amp;sig=AHIEtbSKzb9D6r8DVI9vtix28J_Pw2aKQ">http://docs.google.com/viewer?a=v&amp;q=cache:VcRy9m2KjpYJ:www.stand.org/Document.Doc%3Fid%3D1056+county+%22Green+Globes%22&amp;hl=en&amp;gl=us&amp;pid=bl&amp;srcid=ADGEESjWtXE2wPO3PtHFKk1vJ7MdD_MkpymSDx-fXoi4WPbO69t7-Z1ut5VVgR2Zk1bVAHPcFfXenH-LT_ni3iESvUP4NtayM8rcO8ia3wEL1ZW-sHCKsbShgrRF136EKFzd6tNCEf_g&amp;sig=AHIEtbSKzb9D6r8DVI9vtix28J_Pw2aKQ</a></p> <p><u>Ulster County, NY recognizes Green Globes</u></p> <p><a href="http://www.co.ulster.ny.us/downloads/UC%20Energy%20Policy.pdf">http://www.co.ulster.ny.us/downloads/UC%20Energy%20Policy.pdf</a></p> <p><u>Sarasota County, FL recognizes Green Globes</u></p> <p><a href="http://www.scgov.net/environmentalservices/SolidWaste/Commercial/CDEconomicBenefits.asp">http://www.scgov.net/environmentalservices/SolidWaste/Commercial/CDEconomicBenefits.asp</a></p> |

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|-----------|-----------|-------------------|----------|---|---------|-------------|--|
|           |           |                   |          |   |         |             | <p><u>Counties in Hawaii required to recognize Green Globes</u></p> <p><a href="http://www.doe.gov/savings/priority-permit-processing-green-buildings">http://www.doe.gov/savings/priority-permit-processing-green-buildings</a></p>   |
| 44        | h         | Nat'l Recognition | VS & KS  | <p><a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a></p> <p><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a></p> | 8/25/11 | N5          | <p><u>Chamblee, GA recognizes Green Globes in its ordinance</u></p> <p><a href="https://www.usgbc.org/ShowFile.aspx?DocumentID=4081">https://www.usgbc.org/ShowFile.aspx?DocumentID=4081</a></p> <p><u>Sustainable Cities Institute recognizes Green Globes to help achieve sustainability goals</u></p> <p><a href="http://www.sustainablecitiesinstitute.org/view/page.basic/class/feature.class/Lesson_Green_Globes_System">http://www.sustainablecitiesinstitute.org/view/page.basic/class/feature.class/Lesson_Green_Globes_System</a></p> <p><u>City of Austin, TX references Green Globes</u></p> <p><u>"Using sustainability/green building rating tools specifically developed for Austin, along with the LEED and Green Globes national rating tools, Green Building's staff assist design teams in establishing green building or sustainability goals for the construction of a building, review plans and specifications, make recommendations for improvements, and rate the final product on its impact to the environment and community."</u></p> <p><a href="http://webcache.googleusercontent.com/search?q=cache:DVa2BigoHKMJ:www.c40cities.org/bestpractices/buildings/austin_standards.jsp+city+of+austin+green+globes&amp;cd=1&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com">http://webcache.googleusercontent.com/search?q=cache:DVa2BigoHKMJ:www.c40cities.org/bestpractices/buildings/austin_standards.jsp+city+of+austin+green+globes&amp;cd=1&amp;hl=en&amp;ct=clnk&amp;gl=us&amp;source=www.google.com</a></p> |
| 45        | h         | Nat'l Recognition | VS & KS  | <p><a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a></p> <p><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a></p> | 8/25/11 | N6          | <p><u>1647 NC</u></p> <p><u>1024 CIEB</u></p> <p><u>Information from internal sources not publicly available.</u></p>  |

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| 46        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N7          | <p>156 certified buildings (Lastest as of: 05/24/2010)</p> <p>74 NC Certified Building Projects, 92 CIEB Certified Building Projects</p> <p>94 CIEB Certified Building Projects and 82 NC Certified Building Projects (as of 8/25/11)</p> <p>See the following included documents: <i>GG Certified Buildings NC 8/25/11</i> and <i>GG Certified Buildings CIEB 8/25/11</i>.</p> <p>Website updated quarterly at<br/><a href="http://www.thegbi.org/assets/case_study/Green-Globes-NC-Certified-Buildings.pdf">http://www.thegbi.org/assets/case_study/Green-Globes-NC-Certified-Buildings.pdf</a> and<br/><a href="http://www.thegbi.org/assets/case_study/Green-Globes-CEIB-Certified-Buildings.pdf">http://www.thegbi.org/assets/case_study/Green-Globes-CEIB-Certified-Buildings.pdf</a></p> |
| 47        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N8          | <p>167 Green Globes Professionals (online directory does not provide area of practice). <a href="http://www.thegbi.org/greenglobes/">http://www.thegbi.org/greenglobes/</a></p> <p>There are 173 certified Green Globes Professionals.<br/><a href="http://www.thegbi.org/greenglobes/personnel-certifications/certifiedpersonnel-listing/index.pl">http://www.thegbi.org/greenglobes/personnel-certifications/certifiedpersonnel-listing/index.pl</a></p>  |
| 48        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N9          | <p>Affiliates with MOUs include:</p> <p>American Council for Energy-Efficient Economy</p> <p>ASHRAE<br/>(<a href="http://www.thegbi.org/news/news/2009/news_200902_ASHRAE.as">http://www.thegbi.org/news/news/2009/news_200902_ASHRAE.as</a>)</p>   |

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|           |           |         |          |                     |      |             | <p><u>p)</u></p> <p><u>Association of Facilities Engineers</u></p> <p><u>Association of Energy Engineers</u></p> <p><u>BOMA</u></p> <p><u>EPA Energy Star (GBI is an Energy Star Partner)</u></p> <p><u>AIA</u></p> <p><u>National Association of Home Builders</u></p> <p><u>Energy Solutions Center</u><br/> <u>(<a href="http://www.thegbi.org/news/news/2011/news_201107_GBI-Energy-Solutions-Center-green-building-assessment-tools-to-gas-companies.shtml">http://www.thegbi.org/news/news/2011/news_201107_GBI-Energy-Solutions-Center-green-building-assessment-tools-to-gas-companies.shtml</a>)</u></p> <p><u>GBI association members include:</u></p> <p><u>Alliance to Save Energy</u></p> <p><u>American Gas Association</u></p> <p><u>American Chemistry Council</u></p> <p><u>American Wood Council</u></p> <p><u>Plastic Pipe &amp; Fittings Association</u></p> <p><u>Resilient Floor Coverings Institute</u></p> <p><u>Carpet &amp; Rug Institute</u></p> <p><u>SMACNA</u></p> |

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|           |           |                   |          |  |         |             | <u>Chemical Fabrics and Films Association</u><br><u>Steel Recycling Institute</u><br><u>The Vinyl Institute</u><br><u>Irrigation Association</u><br><u>International Association of Plumbing and Mechanical Officials</u><br><br><u>Major Insurance Carriers providing discounts for Green Globes Certified Buildings are:</u><br><br><u>AON</u><br><u>Fireman's Fund</u><br><u>Traveler's</u><br><u>Liberty Mutual</u><br><br><a href="http://www.thegbi.org/about-gbi/who-we-are/members-and-supporters.asp">http://www.thegbi.org/about-gbi/who-we-are/members-and-supporters.asp</a><br><br><a href="http://www.thegbi.org/join/industryAffiliates.asp">http://www.thegbi.org/join/industryAffiliates.asp</a><br><br><a href="http://www.thegbi.org/green-globes/green-globes-private-sector-recognition.asp">http://www.thegbi.org/green-globes/green-globes-private-sector-recognition.asp</a> |
| 49        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N10         | <del>Recognized by four commercial insurance companies.</del><br><br><u>Same as N9</u>   |

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| 50        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N11         | <p>None</p> <p><b><u>DHHS – accepts Green Globes</u></b></p> <p><u>Department of Health and Human Services new buildings with at least \$3 million of Federal funds to earn LEED certification, Green Globes certification, or certification by another nationally recognized green building standard. NIH in building in MD is Green Globes Certified.</u></p> <p><b><u>Dept. of Interior – accepts Green Globes</u></b></p> <p><u>Department of Interior new construction with gross construction costs greater than \$2,000,000 achieve LEED Certified or one Green Globe</u></p> <p><b><u>Army Corps of Engineers – accepts Green Globes as alternative for some projects.</u></b></p> <p><u>Projects not falling within the scope of the LEED program will be designed and built to incorporate the maximum LEED components or equivalent sustainable design features available as allowed by project scope. If such a project is of a significant size or has high visibility or public interest, the use of alternative standards and certification systems available to the project is encouraged, such as Green Globes or Host Nation programs. See included document <i>ECB 2011-1 Army Corps - High Performance Energy and Sustainability Policy</i></u></p> <p><b><u>Department of Veterans Affairs – uses Green Globes</u></b></p> <p><u>VA is greening its buildings, both new and existing, with the goal of reaching a 15% sustainable inventory by 2015. Currently, 25 facilities have received independent, third-party certification as</u></p> |

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|           |           |         |          |                     |      |             | <p><u>green—four through the Leadership in Energy and Environmental Design program and 21 through the Green Globes program.</u></p> <p><a href="http://www.va.gov/GREENROUTINE/pressreleases/news20101112vanguard.asp">http://www.va.gov/GREENROUTINE/pressreleases/news20101112vanguard.asp</a></p> <p><u>GBI, a nonprofit organization dedicated to the acceleration of sustainable building practices, was recently awarded a contract with the U.S. Department of Veterans Affairs to provide online, green building self-evaluations for 173 hospital facilities using Green Globes® Continual Improvement of Existing Buildings environmental rating and assessment tool. As part of the contract, GBI will provide training for VA facilities management personnel who will be performing the web-enabled assessments. This recent award follows a 2009 pilot project by the VA in which 21 hospitals across the US were assessed and certified using the Green Globes system.</u></p> <p><a href="http://www.marketwire.com/press-release/veterans-administration-awards-contract-green-building-initiative-green-globes-online-1392507.htm">http://www.marketwire.com/press-release/veterans-administration-awards-contract-green-building-initiative-green-globes-online-1392507.htm</a></p> <p><b><u>General Service Administration regional offices - use Green Globes</u></b></p> <p><u>5 buildings as of 8/25/11 – see GBI list of certified federal buildings</u></p> <p><b><u>Department of Education – recognizes Green Globes for use at the state level by schools that receive their funding</u></b></p> <p><a href="http://www2.ed.gov/policy/gen/leg/recovery/guidance/impactaid.pdf">http://www2.ed.gov/policy/gen/leg/recovery/guidance/impactaid.pdf</a></p> |

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|           |           |                   |          |  |         |             | <p><b>Dept. of State</b> – uses Green Globes</p> <p>9 buildings as of 8/25/11</p> <p><a href="http://www.marketwire.com/press-release/us-state-department-building-achieves-dcs-first-green-globes-rating-sustainability-1354785.htm">http://www.marketwire.com/press-release/us-state-department-building-achieves-dcs-first-green-globes-rating-sustainability-1354785.htm</a></p> <p><b>U.S. Forest Service</b> – recognizes Green Globes for new structures 10,000 sq. ft. or more</p> <p><a href="http://www.usda.gov/wps/portal/usda!/ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os_gAC9-wMJ8QY0MDpxBDA09nXw9DFxcXQ-cAA_1wkA5kFaGuQBXeASbmn4uBqbe5hB5AxA0UDfzyM_N1W_IDs7zdFRUREAZXAypA!!/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfUDhNVIZMVDmXMEJUMTBjq01IMURERDFDUDA!/?contentidonly=true&amp;contentid=2011%2F03%2F0143.xml">http://www.usda.gov/wps/portal/usda!/ut/p/c5/04_SB8K8xLLM9MSSzPy8xBz9CP0os_gAC9-wMJ8QY0MDpxBDA09nXw9DFxcXQ-cAA_1wkA5kFaGuQBXeASbmn4uBqbe5hB5AxA0UDfzyM_N1W_IDs7zdFRUREAZXAypA!!/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfUDhNVIZMVDmXMEJUMTBjq01IMURERDFDUDA!/?contentidonly=true&amp;contentid=2011%2F03%2F0143.xml</a></p> <p>see additional included documents:</p> <p><i>DoD Sustainable Buildings Policy Oct 2010 Memo</i></p> <p><i>ECB 2011-01 NAVFAC - Navy Shore Energy Building Standard</i></p> <p><i>Military Construction - Appropriation Bill 2012</i></p> |
| 51        | h         | Nat'l Recognition | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | N12         | <p>2 federal agencies or departments (Latest as of: 09/24/10)</p> <p>Department of Health and Human Services (new buildings with at least \$3 million of Federal funds to earn LEED certification, Green Globes certification, or certification by another nationally recognized green building standard)</p> <p>Department of Interior (new construction with gross construction costs greater than \$2,000,000 achieve LEED Certified or one Green</p>  |



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|           |           |                   |          |   |         |             | <p>Globe)</p> <p><u>Same as N11</u></p>  |
| 52        | h         | Nat'l Recognition | VS & KS  | <p><a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a></p> <p><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a></p> | 8/25/11 | N13         | <p><del>16 federal building has been certified.</del></p> <p><del>Department of State (SA-1 Columbia Plaza, D.C.)</del></p> <p><del>Department of Veterans Affairs (15 Veterans Affairs Medical Centers in 10 states)</del></p> <p><u>40 federal buildings have been certified (as of 8/25/11)</u></p> <p><u>38 CIEB, 2 NC</u></p> <p><u>See the following included document: GG Certified Buildings 8/25/11</u></p>   |
| 53        | h         | Nat'l Recognition | VS & KS  | <p><a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a></p> <p><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a></p> | 8/25/11 | N14         | <p><del>New Construction and Existing Buildings</del></p> <p><u>Yes</u></p> <p><u>See project summary sheet</u></p> <p><a href="http://www.thegbi.org/assets/pdfs/GBI Project Single Building Summary Sheet.pdf">http://www.thegbi.org/assets/pdfs/GBI Project Single Building Summary Sheet.pdf</a></p> <p><u>GBI also allows for campuses</u></p> <p><a href="http://www.thegbi.org/assets/pdfs/GBI Campus and Portfolio Summary Sheet.pdf">http://www.thegbi.org/assets/pdfs/GBI Campus and Portfolio Summary Sheet.pdf</a></p> |

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|           |           |                 |          |  |         |             | <a href="#">y Sheet.pdf</a>   |
| 54        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC136      | <b>10.6.1 Building Life Service Plan</b><br><br><u>10.6.1.1 The underlying premise of the building life service plan is design &amp; planning the whole building life cycle.</u>  |
| 55        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC137      | <u>Integrated Design and Delivery inherently encompasses cost savings since the process involves all key project personnel from the planning stage forward, allowing sustainable design opportunities to be implemented and integrated as the design evolves, versus the more expensive approach of 'cobbling together' the different design elements (disciplines) late in the design process.</u> |
| 56        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC138      | <del>If the Green Globes NC pre-commissioning points are achieved,</del> <u>documentation in accordance with ASHRAE is required. ASHRAE meets the intent of the Guidelines. ASHRAE and ASHRAE/NIBS Guideline 0-05 – Commissioning – are cited throughout Section 6.3 Whole Building Commissioning, such that the entire criteria is based on the ASHRAE standard for commissioning.</u>             |
| 57        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC140      | ASHRAE and ASHRAE/NIBS Guideline 05-5   |

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| 58        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC3        | <p>If the <del>Green Globes</del> <u>GBI ANSI Standard</u> points for water reduction and metering are achieved the GP are met.</p> <p><del>Water reuse is not mentioned in Green Globes NC.</del></p> <p><u>9.8.1.1 Special water features filter and re-circulate water for reuse within the system.</u></p> <p><u>9.10.1 Alternate Sources of Water: Includes reuse of water, including gray water.</u></p> |
| 59        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC7        | <del>Green Globes</del> <u>GBI Water Consumption Calculator, V1.3</u>  |
| 60        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC8        | <p>0.4% - 4.4%</p> <p><u>Total Maximum Water points – GBI ANSI Standard: 13% of Certification System</u></p>   |
| 61        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC9        | <p><del>Green Globes NC does not specify life-cycle cost effective measures for process water.</del></p> <p><u>6.1.2 GDDC Performance Goals: Water efficiency, conservation and performance would necessarily include life cycle cost measures for process water.</u></p>  |
| 62        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC10       | <p><b><u>9.4.1 Boilers and Water Heaters (n/a-3 points)</u></b></p> <p><u>9.4.1.1 Boilers and/or water heaters were installed with the following features:</u></p> <p><u>Boilers and water heating systems of 50 bhp and above were installed with a boiler feed makeup meter</u></p>  |

| Comment # | Section # | Section | Reviewer | Contact Information | Date | Question ID | Comments  |
|-----------|-----------|---------|----------|---------------------|------|-------------|---|
|           |           |         |          |                     |      |             | <p><u>Boiler systems with over 50 bhp were installed with condensate return systems</u></p> <p><u>Boilers were fitted with conductivity controllers</u></p> <p><u>Steam boilers were installed with conductivity meters</u></p> <p><b><u>9.5.1 Commercial Food Service Equipment (n/a-12 points)</u></b></p> <p><u>9.5.1.1 Once-through water-cooled equipment was not installed (n/a or 3 points)</u></p> <p><u>9.5.1.2 Water-fed garbage disposals were not installed (n/a or 2 points)</u></p> <p><u>9.5.1.3 Installed ice machines met Energy Star requirements (n/a or 2 points)</u></p> <p><u>9.5.1.4 Installed combination ovens used no more than 15 L or 38 L (4 or 10 gal.) of water per hour (n/a-2 points)</u></p> <p><u>9.5.1.5 Pre-rinse spray valves met or exceeded the requirements of the US Energy Policy Act of 2005 (and subsequent revisions and additions up to 2005) (n/a or 1 point)</u></p> <p><u>9.5.1.6 All boilerless/connectionless food steamers use no more than 7.5 liters (2.0 gallons) per hour (n/a or 1 point)</u></p> <p><u>9.5.1.7 Installed dishwashers met Energy Star requirements at a minimum (n/a/ or 1 point)</u></p> <p><b><u>9.6.1 Medical/Dental and Laboratory Equipment (n/a-11 points)</u></b></p> <p><u>9.6.1.1 Steam sterilizers were equipped with:</u></p> <ul style="list-style-type: none"> <li><u>Mechanical vacuum equipment (n/a or 2 points)</u></li> </ul> |

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|           |           |                 |          |  |         |             | <ul style="list-style-type: none"> <li><u>Water tempering devices that allow water to flow when the discharge of condensate or hot water from the sterilizer exceeds 60°C (140°F) (n/a or 2 points)</u></li> </ul> <p><u>9.6.1.2 Laboratory or medical equipment used non-potable water for once through cooling (3 points)</u></p> <p><u>9.6.1.5 Installed wet scrubbers were equipped with water recirculation systems (n/a or 1 point)</u></p>   |
| 63        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC 15      | <u>7.4.1.2 No irrigated exterior vegetated space corresponds with GP criteria - Option 3</u>  |
| 64        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC21       | If the <del>Green Globes NC</del> <u>GBI ANSI Standard</u> points are achieved, the GP will be met.   |
| 65        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC33       | <del>Green Globes NC does not specify the stringency requirements of the local code used; it is unknown if the code must be at least as stringent as ASHRAE 90.1-2007. ASHRAE 91 – 2007 is specified first, implying that the local code applies if more stringent.</del>   |
| 66        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC39       | <del>Solar hot water is not specified in Green Globes NC.</del><br><br><b><u>8.9.2 On-Site Renewable Energy</u></b> includes on-site thermal, which would include solar hot water.  |
| 67        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC49       | <del>Green Globes NC does not address Benchmarking.</del><br><br><u>The GBI ANSI Standard benchmarks against actual regional energy performance by building type by using the Target Finder Energy Star program. One of Target Finder's features is a tool that predicts future energy performance based on a benchmarking methodology. Green Globes CIEB (Existing Buildings) incorporates actual building energy performance at least one year after occupancy. GBI promotes the new and existing green building rating tools as a continuum.</u> |

| Comment # | Section # | Section         | Reviewer | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|-----------------|----------|--|---------|-------------|--|
| 68        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC59       | GP uses USDA's guideline, which is specific to the different types of construction materials. <del>So it is hard to compare with GC-NC.</del> <u>GBI ANSI Standard references USDA bio-based guideline.</u>  |
| 69        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC89       | <del>Green Globes NC does not specify that if the local code is used, it must be more stringent than the ASHRAE standard. If points are achieved using local code, the GP may or may not be achieved. Since local codes and standards are listed last, the intent implied is that ventilation requirements defer to them only if more stringent than the national codes and standards.</del>     |
| 70        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC95       | <del>Green Globes NC does not specify that if the local code is used, it must be more stringent than the ASHRAE standard. If points are achieved using local code, the GP may or may not be achieved. Since local codes and standards are listed last, the intent implied is that thermal comfort requirements defer to them only if more stringent than the national codes and standards.</del> |
| 71        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC101      | Daylighting is addressed in two areas: Energy (Prescriptive Path) and Indoor Environment. The daylighting specifications use opening size and indoor light levels, <del>which are not comparable to the Guidelines daylighting factor metrics.</del> and ASHRAE Advanced Engineering Design Guides are referenced.   |
| 72        | i         | Robustness (NC) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | RNC106      | <del>Smoking is not prohibited in Green Globes NC and there is no distance requirement, but smoking areas are considered specialized activity areas. The GP is not met.</del><br><br><u>Smoking is primarily a building management issue and is most appropriately addressed in an Existing Buildings (CIEB) program.</u>  |

| Comment # | Section # | Section         | Reviewer | Contact Information  | Date    | Question ID | Comments  |
|-----------|-----------|-----------------|----------|--|---------|-------------|---|
| 73        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB133      | <p>The use of an integrated team to implement the elements specified in the GP is not addressed in GC CIEB. The elements are discussed as separate units as documented in other Robustness categories.</p> <p><u>Environmental Management System (EMS) is a major topical heading in GG CIEB. A comprehensive fully functioning EMS encompasses the integrated team approach.</u></p> |
| 74        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB3        | <p><del>GC CIEB uses utility bills to evaluate water performance. This is different from the calculation method used in GP.</del></p> <p><u>For other than office buildings, the client may utilize the GBI Water Calculator, which sets up baseline consumption for the building and then allows for benchmarking based on percent over baseline.</u></p>                            |
| 75        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB5        | <p><del>Existing Buildings Green Building Initiative</del></p> <p><u>GBI Water Calculator (see above)</u></p>   |
| 76        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB6        | <p><del>Unknown</del></p> <p><u>Setting up a baseline requires accurate inventory of water consuming equipment. Use actual water consumption data from 12 consecutive months for benchmarking and determining percent water efficiency.</u></p>   |
| 77        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB7        | <p><del>Existing Buildings Green Building Initiative</del></p> <p>GBI Water Calculator</p>  |
| 78        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB10:      | <p>Evidence of Intent</p> <p><u>GG credit for NOT having once through cooling.</u></p>  |

| Comment # | Section # | Section         | Reviewer | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|-----------------|----------|--|---------|-------------|--|
| 79        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB22       | <p><b>Performance</b></p> <p><u>Water consumption is quantitative based on 12 consecutive months of consumption. Office category based on BOMA histogram. GBI Water Calculator utilized on other occupancy types per above.</u></p> <p><b><u>2.3 Water Management</u></b></p> <p><u>Is there a written policy intended to minimize water use and encourage water conservation?</u></p> <p><u>Is water consumption being monitored?</u></p> <p><u>Has a water audit been done within the last three years?</u></p> <p><u>Are there water-reduction targets?</u></p> <p><u>Are there regular procedures for checking and fixing leaks?</u></p> |
| 80        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB39       | <p><del>GG CIEB energy requirement is prescriptive.</del></p> <p><u>The Energy Performance Criteria in Green Globes is performance based. Credit is directly derived from Energy Star benchmarking protocol and uses the credit earning threshold of 75 percentile, the same threshold that Energy Star uses to award an Energy star label.</u></p>  |
| 81        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB41       | <p><del>Existing Buildings Green Building Initiative</del></p> <p><u>Energy Star approach is used for Energy Performance</u></p>   |
| 82        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB42       | <p>n/a</p> <p><u>80 points spread over Energy Star scores of 75 – 100 percentile</u></p>   |



| Comment # | Section # | Section         | Reviewer | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|-----------------|----------|--|---------|-------------|--|
| 83        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB43       | Existing Buildings Green Building Initiative<br><br><u>Energy Star Portfolio Manager protocol</u>  |
| 84        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB61       | n/a<br><br><u>Energy Use cannot be monitored without metering. Therefore, metering is necessarily implied in section 1.11 Energy Management, Monitoring and Targeting. There is also sub-metering in section 1.14 Sub-metering.</u>  |
| 85        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB83       | <u>Green Globes EB does not fully meet the intent of the Guidelines. Although it calls for a phase out plan it does not specifically call for zero use.</u><br><br><u>A phase out plan is the only practical path to zero use of refrigerants. The first criteria in this section, 4.2 Refrigerants allows for an N/A if no ODP refrigerants are used and credit for non-ODP refrigerants. In both cases, the rating system avoids penalizing the user. Therefore, GG does award credit to zero ODP refrigerant use.</u> |
| 86        | i         | Robustness (EB) | VS & KS  | <a href="mailto:Vicki@thegbi.org">Vicki@thegbi.org</a><br><a href="mailto:Kevin@thegbi.org">Kevin@thegbi.org</a> | 8/25/11 | REB89       | <u>There is no specific mention of the ASHRAE requirements in GG CIEB.</u><br><br><u>Under IAQ Management: 5.7 (“Are the following being monitored continuously: Temperature? Humidity?”), the associated ToolTip states “the building should conform to ASHRAE 55-2004 for thermal comfort.”</u>  |

## Appendix I: Certification System Owner Input – LEED

| Comment # | Section # | Section      | Reviewer        | Contact Information  | Date    | Question ID | Comments   |
|-----------|-----------|--------------|-----------------|--|---------|-------------|--|
| 1         | A         | Independence | Sarah Alexander | <a href="mailto:salexander@gbci.org">salexander@gbci.org</a> | 8/25/11 | I1          | <p><b>New Comment:</b> Green Building Certification Institute (GBCI), established in 2008 is a separately incorporated entity and is responsible for project registration and certification. GBCI administers the LEED certification program, performing third-party technical reviews and verification of registered projects to determine if they have met the standards set forth by the LEED rating system. Dedicated technical experts ensure building certification meets the highest levels of quality and integrity. Projects are randomly assigned through our unbiased pool of highly qualified reviewers based on their availability and expertise. Under certain unique circumstances (e.g. buildings on the same campus) project teams can request that the same reviewer be assigned to the related projects (subject to capacity). Each reviewer must confirm the absence of any conflict of interest prior to accepting any project application for review.</p> <p><b>Source:</b> GBCI Website - <a href="http://www.gbci.org/org-nav/about-gbci/about-gbci.aspx">http://www.gbci.org/org-nav/about-gbci/about-gbci.aspx</a></p> |
| 2         | A         | Independence | Sarah Alexander | <a href="mailto:salexander@gbci.org">salexander@gbci.org</a> | 8/25/11 | I3          | <p><b>New Comment:</b> The project team may initiate an appeal to GBCI prior to formal acceptance of and within twenty-five (25) business days of the applicable action or determination by GBCI. (Formal acceptance of a GBCI determination occurs within LEED Online) All appeals must be provided to GBCI via the same platform through which the project application was</p>   |

|   |   |              |                 |                     |         |    |   |
|---|---|--------------|-----------------|---------------------|---------|----|---|
|   |   |              |                 |                     |         |    | <p>submitted for review (usually LEED Online). The project team must remit the appeal fee as well as submit the following information to establish the basis for the appeal: 1) supplemental documentation supporting such MPR, prerequisite and/or credit; as well as 2) an explanation addressing the issues in the technical advice provided with the denial of the MPR, prerequisite and/or credit.</p> <p>GBCI will acknowledge filing of the appeal to the project team. GBCI representatives not previously involved in evaluating the relevant requirement for the Project will review the appeal documentation and explanation provided by the project team. GBCI endeavors to deliver a decision on the appeal within twenty-five (25) business days from the initial filing of the appeal. GBCI's appeal decision shall include identification of the technical basis underlying such decision.</p> <p><b>Source:</b> LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a></p> |
| 3 | A | Independence | Sarah Alexander | salexander@gbci.org | 8/25/11 | I4 | <p><b>New Comment:</b> The LEED certification program is a documentation-based verification program. Each LEED rating system and version thereof consists of unique documentation requirements to complete a LEED certification application. Within the LEED certification application, a series of required documents, attestations, data, or other information must be indicated in order to demonstrate the satisfaction of each MPR, prerequisite, and attempted credit. Specific documentation requirements vary across the different rating systems; though, usually consist of forms, calculations, narratives, maps, drawings, specifications, and other related media (collectively, "documentation"). The review process for LEED is conducted in LEED Online and occurs in two phases.</p>   |

|   |   |              |                 |                     |         |    |  |
|---|---|--------------|-----------------|---------------------|---------|----|--|
|   |   |              |                 |                     |         |    | <p>In both the preliminary and (optional) final review, all the documentation submitted with the application is reviewed for completeness and compliance with the appropriate LEED rating system. Each reviewed Project Information Form, prerequisite and credit is designated as anticipated, pending, or denied in the preliminary review and as awarded or denied in the final review. Each designation is accompanied by technical advice as deemed appropriate by the review team.</p> <p>Add'l Source: <a href="#">LEED Certification Policy Manual</a></p>   |
| 4 | B | Availability | Sarah Alexander | salexander@gbci.org | 8/25/11 | A1 | <p><b>New Comment:</b> Altogether, the process can take 3-4 months: 25 business days for the initial review followed by 25 business days for the project team to prepare their clarifications, followed by 15 business days for the final review. In instances where an appeal is necessary, this adds an additional 25 business days from when the appeal documentation is submitted for review. Subject to capacity, GBCI is able to provide an expedited review process for a higher fee, and this reduces the review time by approximately 50%.</p> <p><b>New Source:</b> LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbci/eed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbci/eed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a></p> |
| 5 | B | Availability | Sarah Alexander | salexander@gbci.org | 8/25/11 | A2 | <p><b>New Comment:</b> The LEED certification process includes a preliminary and a final review. The reviewer provides detailed feedback to the project team during the preliminary review and guidance on the outstanding submittal information that is required before credit/prerequisite compliance can be</p>   |

|   |   |              |                 |                     |         |    |   |
|---|---|--------------|-----------------|---------------------|---------|----|---|
|   |   |              |                 |                     |         |    | <p>confirmed. In addition, all project teams are able to contact GBCI technical staff, via the Contact Us Form on the GBCI website, should they have any follow-up questions about their preliminary review comments or other questions about the technical requirements of LEED. GBCI staff are available for conference calls with project teams should they need to discuss complex or unique situations where the project team may be facing challenges evaluating whether their project with comply with the LEED rating system requirements.</p> <p><b>New Source:</b> LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a></p> |
| 6 | B | Availability | Sarah Alexander | salexander@gbci.org | 8/25/11 | A3 | <b>New Comment:</b> Yes.  |
| 7 | B | Availability | Sarah Alexander | salexander@gbci.org | 8/25/11 | A4 | <b>New Source:</b> LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a>   |
| 8 | B | Availability | Sarah Alexander | salexander@gbci.org | 8/25/11 | A5 | <p><b>New Comment:</b> This depends largely on the size and complexity or innovative strategies presented by a project. On average, LEED technical reviewers will spend approximately 40 hours (range 30-120+ hrs) reviewing submitted documentation, spread over the preliminary and final review. Time spent to assess Appeal documentation for compliance would be additional.</p> <p><b>New Source:</b></p>   |

|    |   |              |                 |                     |         |    |  |
|----|---|--------------|-----------------|---------------------|---------|----|--|
| 9  | B | Availability | Sarah Alexander | salexander@gbci.org | 8/25/11 | A6 | <p><b>New Comment:</b> In general, three LEED reviewers are assigned to each project: a generalist reviewer, HVAC/energy reviewer and a QC reviewer.</p> <p><b>New Source:</b></p>   |
| 10 | C | Verification | Sarah Alexander | salexander@gbci.org | 8/25/11 | V1 | <p>The review process for LEED is conducted in LEED Online and occurs in two phases. In both the preliminary and (optional) final review, all the documentation submitted with the application is reviewed for completeness and compliance with the appropriate LEED rating system. Each reviewed Project Information Form, prerequisite and credit is designated as anticipated, pending, or denied in the preliminary review and as awarded or denied in the final review. Each designation is accompanied by technical advice as deemed appropriate by the review team.</p> |
| 11 | C | Verification | Sarah Alexander | salexander@gbci.org | 8/25/11 | V2 | <p><b>New Source:</b> LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/leed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a></p>   |
| 12 | C | Verification | Sarah Alexander | salexander@gbci.org | 8/25/11 | V3 | <p><b>New Comment:</b> LEED reviewers assess project documentation for compliance with the published, balloted LEED rating system requirements, Minimum Program Requirements, and individual credit/prerequisite requirements, LEED Online Forms, published Addenda &amp; LEED Interpretations and other LEED guidance documents published by USGBC (e.g. District and Campus Thermal Energy Treatment)</p> <p><b>New Source:</b> LEED Certification Policy Manual -</p>   |

|    |   |              |                          |  |           |    |   |
|----|---|--------------|--------------------------|--|-----------|----|---|
|    |   |              |                          |  |           |    | <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/eed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/eed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a>   |
| 13 | C | Verification | Sarah Alexander          | saalexander@gbci.org                                       | 8/25/11   | V4 | <p><b>New Comment:</b> LEED project reviews are performed using the LEED Online assessment tool.</p> <p><b>New Source:</b> LEED Certification Policy Manual - <a href="https://www.leedonline.com/irj/go/km/docs/documents/usgbc/eed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf">https://www.leedonline.com/irj/go/km/docs/documents/usgbc/eed/config/terms/Legal_Documents_Download/rating_system_doc_june_20_2011/June2011_Cert_Policy_Manual.pdf</a></p> |
| 14 | C | Verification | Sarah Alexander          | saalexander@gbci.org                                       | 8/25/11   | V5 | <p><b>New Comment:</b> GBCI employs highly qualified, professionally licensed, technical staff who have a wide breadth of experience. In instances where a particularly unique or complex project presents evaluation needs outside an assessors expertise, GBCI may pose technical questions to the standard developer (USGBC) and its robust technical committee structure.</p> <p><b>New Source:</b></p>   |
| 15 | F | Maturity     | Melissa Gallagher-Rogers | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/25/3011 | M1 | In general, as LEED evolves it adopts the latest versions of codes and standards, often requiring a percent improvement beyond the stated code or standard, when that can be quantified.  |
| 16 | f | Maturity     | Melissa Gallagher-       | mgrogers@usgbc.org   | 8/23/2011 | M4 | Minimum Program Requirement #6 requires projects to commit to supplying all available whole-project energy and water usage data for a period of at least 5 years post-  |

|    |   |                 |                          |  |           |        |  |
|----|---|-----------------|--------------------------|--|-----------|--------|--|
|    |   |                 | Rogers                   |  |           |        | certification. The MPRs ( <a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2102">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2102</a> ), introduced with LEED 2009, require projects to meet certain criteria to be eligible for LEED certification.   |
| 17 | F | Maturity        | Melissa Gallagher-Rogers | mgrogers@usgbc.org   | 8/23/2011 | M6     | In addition to the rating systems listed in your report please add LEED Italia. There is not a LEED Mexico to our knowledge.   |
| 18 | F | Maturity        | Melissa Gallagher-Rogers | mgrogers@usgbc.org   | 8/23/2011 | M8     | The LEED rating system is on a predictable 3 year development cycle. The next version of LEED, LEED 2012 is now open for second public comment.<br><a href="http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2360">http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2360</a>   |
| 19 | G | Usability       | Melissa Gallagher-Rogers | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/23/2011 | U6     | The various market sectors that use LEED have individual resource pages to assist those market sectors with their use of the LEED rating system as well as the general LEED resources. The government page is available at <a href="http://www.usgbc.org/government">www.usgbc.org/government</a> .  |
| 20 | I | Robustness      | Melissa Gallagher-Rogers | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/23/2011 | RNC135 | The LEED for Healthcare rating system is a supplement to the Green Building Design and Construction rating systems and has a prerequisite for integrated project planning and design. The LEED for Healthcare rating system also offers a credit for integrated project planning and design in the innovations in design section of the rating system. |
| 21 | I | Robustness      | Melissa Gallagher-Rogers | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/25/2011 | RNC9   | The LEED for Healthcare rating system Water Efficiency prerequisite 1 requires that projects employ strategies that, in aggregate, use 20% less process water than the process water use baseline calculated for equipment performance requirements listed in the credit.  |
| 22 | E | Consensus Based | Melissa Gallagher-       | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/25/2011 | C8     | USGBC conducts a Zone of Reasonableness Review prior to any item going to member ballot. For each rating system,   |



|    |   |             |                          |  |         |     |   |
|----|---|-------------|--------------------------|--|---------|-----|---|
|    |   |             | Rogers                   |  |         |     | independent technical experts who understand the content, but were not involved in developing content, perform a review to make sure that LEED is reasonable from a technical perspective. The results are presented to the LEED Steering Committee for review and determining how to address any issues brought about by the review.   |
| 23 | H | Recognition | Melissa Gallagher-Rogers | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/25/11 | N2  | <p>Every year, USGBC's Greenbuild conference coordinates 800 student volunteers who are able to attend the conference in exchange for working part of the week supporting the event. An additional 450 students pay a student rate to attend the conference.</p> <p>Additionally, USGBC currently has a network of 70 USGBC Students groups representing 1600 students as of August 2011. There are 60 trained, mid-career professionals who are committed to building the program locally, which will be ramping up through the fall of 2011 and into 2012. Each student group has a faculty advisor as well.</p> <p>From May 2009-August 2011, over 1400 students became LEED professionals (LEED AP with specialty or LEED Green Associate).</p> |
| 24 | H | Recognition | Melissa Gallagher-       | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/25/11 | N13 | 519 federal buildings are certified under LEED and 3,809 federal projects are registered and pursuing certification.  |

|    |   |             |                                 |  |         |    |   |
|----|---|-------------|---------------------------------|--|---------|----|---|
|    |   |             | Rogers                          |  |         |    | Please see <a href="http://www.usgbc.org/government">www.usgbc.org/government</a> for more information. |
| 25 | H | Recognition | Melissa<br>Gallagher-<br>Rogers | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/25/11 | N6 | 31,696 projects registered for LEED certification as of August 4, 2011.                                 |
| 26 | H | Recognition | Melissa<br>Gallagher-<br>Rogers | <a href="mailto:mgrogers@usgbc.org">mgrogers@usgbc.org</a> | 8/25/11 | N7 | 10,000 projects are LEED certified as of August 25, 2011.   |

## Appendix J: Certification System Owner Input – Living Building Challenge

| Comment # | Section # | Section          | Reviewer        | Contact Information                     | Date     | Question ID | Comments   |
|-----------|-----------|------------------|-----------------|---|----------|-------------|--|
| 1         | a         | Independenc<br>y | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/14/11 | I1          | <p>Auditors are selected first by expertise, then by location. As demand grows, additional auditors will be trained in diverse geographical locations. The intent is for the auditor to have an applied knowledge of the climate and culture of the place, allowing for a simplified assessment process.</p> <p>Prior to taking an assignment, the auditor must sign a ‘conflict of interest’ form, documenting that they have no personal or professional connection to the project and will not benefit from the outcome of the certification ruling.</p> <p>The auditor is not introduced to the project/representative project team member until the site visit is scheduled to maximize the potential for an unbiased review.</p>           |
| 2         | a         | Independenc<br>y | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/14/11 | I2          | <p>There is a documented appeal process, included in the certification flow diagram created for online viewing May 27, 2011. See <a href="https://ilbi.org/lbc/certification-process">https://ilbi.org/lbc/certification-process</a> for a simplified account. [Refer to the Appendix for a soft copy.]</p> <p>Details for each step in the flow diagram will be published in the upcoming <u>Process</u> book of the Petal Series – a collection of printed companion guides to provide the necessary generalized support information, strategies, rationale, case studies, and context for every Petal and Imperative. This resource will complement the “Dialogue”, the online forum where the most up-to-date information is maintained.</p> |

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| 3         | a         | Independenc<br>y | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/14/11 | I3          | <p>Once a team has initiated the certification process, there are three written instances when they can provide supplemental/clarifying data, and one verbal opportunity during the site visit:</p> <ol style="list-style-type: none"> <li>1. Institute staff perform a “completeness check” to ensure that sufficient data have been submitted and may request additional written information from the project team.</li> <li>2. During the written documentation review (prior to the site visit), the auditor performs a technical content review of the data and may request written nclarification about information provided by the project team.</li> <li>3. During the site visit, the auditor may ask questions and the representative project team member may provide clarifying explanations. Any otherwise undocumented relevant information learned during the site visit is included in the auditor’s written report.</li> <li>4. Once the team is informed of the official results and receives a simplified copy of the auditor’s written report, they have one opportunity to appeal. The appeal review is based on supplemental written documentation only – there will not be a second site visit.</li> </ol> |
| 4         | a         | Independenc<br>y | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/14/11 | I4          | <p>Imperatives are evaluated based on written documentation and/or site visit.</p> <p>See <a href="https://ilbi.org/lbc/certification-process">https://ilbi.org/lbc/certification-process</a> for a simplified account of the certification process. [Refer to the Appendix for a soft copy.]</p> <p>The project team is required to submit documentation and a single independent, third-party auditor will be engaged to review the submittal.</p> <p>- Team submits written documentation</p>   |

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|           |           |              |              |                                |          |             | <ul style="list-style-type: none"> <li>- Institute performs a ‘completion check’ of Team’s documentation</li> <li>- Auditor performs a content review</li> <li>- Auditor performs a single-day site visit and compiles findings into written report</li> <li>- Institute performs quality control review of the report (to ensure that all elements for each relevant Imperative have been assessed – essentially a ‘completeness check’ of Auditor’s work)</li> <li>- Institute notifies Team of certification results and the team is provided a simplified copy of the report.</li> </ul>   |
| 5         | b         | Availability | Eden Brukman | eden.brukman@living-future.org | 08/14/11 | A1          | 4-12 weeks, depending on the complexity of the project and the availability of the representative team member to schedule the site visit.  |
| 6         | b         | Availability | Eden Brukman | eden.brukman@living-future.org | 08/14/11 | A2          | <p>[See also Comment 3 - I3] Once a team has initiated the certification process, there are three written instances when they can provide supplemental/clarifying data, and one verbal opportunity during the site visit. All data must be provided in writing to the Institute:</p> <ol style="list-style-type: none"> <li>1. Institute staff perform a “completeness check” to ensure that sufficient data have been submitted and may request additional written information from the project team.</li> <li>2. During the written documentation review (prior to the site visit), the auditor performs a technical content review of the data and may request written clarification about information provided by the project team.</li> <li>3. During the site visit, the auditor may ask questions and the representative project team member may provide clarifying explanations. Any otherwise undocumented relevant information learned during the site visit is included in the auditor’s written report.</li> </ol> |

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|           |           |              |                 |   |          |             | <p>4. Once the team is informed of the official results and receives a simplified copy of the auditor’s written report, they have one opportunity to appeal. The appeal review is based on supplemental written documentation only that is provided by the project team – there will not be a second site visit.</p> <p>The Institute is in the process of building an on-line <u>Project Portal</u>, to be complete in 2011, where all written documentation is uploaded and Dialogue activity is tracked. Once complete, teams will have access to the Project Portal from the time of registration and for the duration of the project.</p>   |
| 7         | b         | Availability | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/14/11 | A3          | <p>The evaluation schedule is published in the certification flow diagram. See <a href="https://ilbi.org/lbc/certification-process">https://ilbi.org/lbc/certification-process</a> for a simplified account. [Refer to the Appendix for a soft copy.]</p> <ul style="list-style-type: none"> <li>- Institute ‘completion check’: up to 2 weeks</li> <li>- Auditor content review: up to 4 weeks</li> <li>- Auditor single-day site visit: up to 2 weeks</li> <li>- Auditor completes written report: up to 2 weeks</li> <li>- Institute quality control review of the report: up to 2 weeks</li> </ul> <p>If additional information is required from the project team during the certification process [i.e. instances summarized in Comment 6 – A2], the schedule may be delayed. The team has up to 2 weeks to reply to requests made as a result of the Institute’s completeness check; up to 2 weeks to reply to requests made as a result of the auditor’s content review; and up to 4 weeks to provide all necessary data required for an appeal. The team must file an intent to appeal the certification results within 2 weeks of notification.</p> |
| 8         | b         | Availability | Eden<br>Brukman | eden.brukman<br>@ living-               | 08/14/11 | A4          | <p>The project team receives feedback in real time related to the evaluation schedule. The upcoming Project Portal will include an administrative area with a calendar that provides an up-to-date</p>   |

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|           |           |              |              | future.org                     |          |             | account of the position of the project in the certification process and anticipated timeline/end date for each phase.   |
| 9         | b         | Availability | Eden Brukman | eden.brukman@living-future.org | 08/14/11 | A5          | The Auditor may be connected to a single project for up to 8 weeks. Actual dedicated hours during this time likely range from 40-80, depending on the project's complexity, whether additional clarification is necessary, and availability of representative team member. (Hours noted include technical content review; site visit scheduling, walk through and associated travel; and composing report.)   |
| 10        | b         | Availability | Eden Brukman | eden.brukman@living-future.org | 08/14/11 | A6          | One auditor is assigned per project.<br>One Institute staff member will perform the completeness check for the initial submittal and the auditor's written report.  |
| 11        | c         | Verification | Eden Brukman | eden.brukman@living-future.org | 08/14/11 | V1          | Once the team submits written documentation and the Institute performs a completeness check, the auditor receives access to project data. The site visit is scheduled and the auditor reviews the written documentation. If applicable, the auditor maintains a list of clarifications, which are submitted to the team in one exchange. The auditor reviews any data submitted as a result of the clarification request prior to traveling to the project site. The auditor may add items to the site review checklist template, as necessary, based on the content review. (The documentation requirements for each Imperative indicate whether assessment is based on written documentation, site visit or a combination of both.) The auditor performs a site visit, then completes the written report summarizing findings about each Imperative, and submits the report to the Institute. |

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| 12        | c         | Verification | Eden Brukman | eden.brukman@living-future.org | 08/14/11 | V2          | <i>Replace “prerequisite” with “Imperative”, “audit” with “site visit”, and “User’s Guide” with “Petal Series” or “Documentation Requirements”.</i>  |
| 13        | c         | Verification | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | V3          | <p>Evaluation criteria are summarized in “Documentation Requirements”. [Most recent update to Documentation Requirements was December 03, 2010 and is posted within the online Living Building Community (a subscription is required): <a href="https://ilbi.org/action/community/users-guide">https://ilbi.org/action/community/users-guide</a>. Refer to the Appendix for a soft copy. Documentation requirements will also be present with assigned form fields in the online Project Portal.]</p> <p>In summary, each project team is expected to share the following:</p> <ul style="list-style-type: none"> <li>- ‘For Construction’ Drawing Set</li> <li>- A site plan with the project area clearly noted</li> <li>- Project Manual (specifications)</li> <li>- At least ten photographs or digital color 3D renderings</li> <li>- Additional information specific to each Imperative (in most cases)</li> </ul> |
| 14        | c         | Verification | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | V4          | The auditor is provided guidelines/checklists to aid in the content review and site visit portion of a project evaluation. To maximize the potential for a thorough review, the Institute also provides a report template with prompts for each Imperative.  |
| 15        | c         | Verification | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | V5          | Every effort is made to pair a project with an auditor that has broad and deep direct experience applying the technical requirements of the Living Building Challenge to its Typology (e.g. renovation, landscape, infrastructure, building, or neighborhood) and within its Living Transect (e.g. Natural Habitat Preserve, Rural Agriculture Zone, Village or Campus Zone,   |



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|           |           |              |              |                                |          |             | <p>General Urban Zone, Urban Center Zone, or Urban Core Zone).</p> <p>There are two possible pathways for dealing with an issue that is outside the auditor’s expertise:</p> <ul style="list-style-type: none"> <li>- Programmatic assistance is provided by Institute staff to clarify the intent of an Imperative.</li> <li>- Content assistance is provided by the associated Petal Committee to clarify the project’s applied solution.</li> </ul> <p>Petal Committees are comprised of national and/or international experts within a given field that share a strong philosophical alignment with the goals of the Living Building Challenge. Positions on a Petal Committee are voluntary and individuals serve at the discretion of the Institute for as long as they are able to provide expert guidance to the certification system and remain free of any significant conflicts of interest. For example, Petal Committee advisors may not be working on an active Living Building Challenge project while sitting on a Petal Committee, nor work for a building product manufacturer or a trade association. There is a minimum of five seats on each Petal Committee, one of which must be held by senior Institute staff to ensure continuity. Committees must be odd in number and may have as many as nine seats.</p> |
| 16        | d         | Transparency | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | T1          | <p>Comments are officially collected in one of two ways:</p> <ul style="list-style-type: none"> <li>- The Dialogue: an online forum where project teams are encouraged to ask clarifications about the intent of the Imperative – generally or specific to their project, and share information that may influence the evolution of an Imperative or Petal. The individual who posted the entry is noted, and there is a visual indicator that demarcates any</li> </ul>  |

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|           |           |              |              |                                |          |             | <p>post that has been officially adopted into the Living Building Challenge. [Refer to the Appendix for an annotated screenshot of the Dialogue.]</p> <ul style="list-style-type: none"> <li>- The Feedback Form: an online form that individuals may use to share ideas or suggestions for the evolution of a particular Imperative, Petal, or Living Building Challenge generally.</li> </ul>  |
| 17        | d         | Transparency | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | T2          | Comments are collected in real time.   |
| 18        | d         | Transparency | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | T3          | <p>As part of the process for updating the Living Building Challenge, the Dialogue activity and completed Feedback Forms are reviewed. [See Comment 16 – T1 for explanation of Dialogue and Feedback Form] These comments are then integrated into the certification system by Institute staff as appropriate after additional research is completed. Depending on the complexity and potential impact of a comment, the associated Petal Committee may be involved. [See Comment 15 – V5 for explanation of Petal Committee]</p> <ul style="list-style-type: none"> <li>- Step One – Registered Team Posting<br/>Someone who has subscribed to the Community may at any time post to the Dialogue seeking clarification as to how their particular project may meet a given Imperative. The project team may simply be seeking confirmation that their proposal is in alignment with the intent of the Imperative, or they may be proposing a temporary exception due to some unique characteristic of their project. Either way, all project team communication is done in full view of all other registered projects so that transparency and equitability is achieved.</li> <li>- Step Two – Query Identification</li> </ul> |

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|           |           |         |          |                     |      |             | <p>The Institute staff then review the Dialogue post and determine the best course of action. Postings typically fall into one of the following categories:</p> <ul style="list-style-type: none"> <li>A) Simple clarifications that have been previously addressed</li> <li>B) Simple clarifications that have not yet been addressed</li> <li>C) Substantive clarification/idea that needs deliberation at the ‘exception’ level</li> <li>D) Substantive clarification/idea that needs deliberation at the Imperative level</li> </ul> <p>- Step Three – Addressing the Query</p> <p>Postings that fall into category A) are simply and quickly answered: Institute staff post a response to the Dialogue that refers the project team to a previous ruling. This posting is made visible to all Community subscribers so transparency and equitability is achieved.</p> <p>Postings that fall into category B) are also simply and quickly answered: Institute staff endeavor to respond to these inquiries within two weeks and post a response to the Dialogue. This forms the basis for a new ‘ruling’, which should be a simple clarification based on the current version of the standard. When enough of these have been logged, a updated version of the standard will be released (e.g., 2.1, 2.2, 2.3, etc.).</p> <p>It is important to emphasize that no ruling will ever apply to just one project and no ‘backroom’ deals are permitted. All new exceptions – even if initiated by a specific project – must then apply to all projects that find themselves in that similar situation, and the rulings are always posted so that there is a transparent record.</p> <p>Postings that fall into category C) have two possible pathways.</p> <ul style="list-style-type: none"> <li>i) If it is a substantive ‘exception-level’ change well within the logic and philosophy of the standard, Institute staff</li> </ul> |

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|           |           |              |              |                                |          |             | <p>will meet as a group and reach a shared decision, and consult with the respective Petal Committee on an as-needed basis (Petal Committees are explained in the next section).</p> <p>ii) If it is a substantive ‘exception-level’ change that challenges the logic and philosophy of the standard, Institute staff will most likely bring the query to the Petal Committee for larger deliberation, although final decision rests with Institute staff.</p> <p>Postings that fall into category D) are always brought to the Petal Committee for review. The final decision may take a greater length of time to be posted to the Community, depending on the specifics of the query or proposal.</p>                              |
| 19        | d         | Transparency | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | T4          | Major certification system changes are noted in the current version of the Living Building Challenge. Changes stemming from project team comments are viewable in the Dialogue. [Refer to the Appendix for an annotated screenshot of the Dialogue.]  |
| 20        | e         | Consensus    | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C1          | <p><i>Replace paragraph in its entirety, which appears to reference the background to the Living Building Challenge Financial Study rather than the certification system itself.</i></p> <p>The Institute, a 501c3 non-profit organization, is responsible for the development and management of the certification system. Individuals representing government agencies, private industry, non-governmental organizations, and others have submitted comments that have helped to shape the evolution of the program.</p> <p>To-date, Living Building Challenge has been funded primarily by foundation grants, and augmented by project registration fees, Community subscriptions, and educational offerings on related topics.</p> |

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| 21        | e         | Consensus | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C2          | <p><i>Replace paragraph in its entirety.</i></p> <p>Government Agencies and Private Industry have participated in research efforts to substantiate the principles of the Living Building Challenge; and have offered suggestions for the evolution of the certification system via the online Dialogue. Parties other than the Institute do not oversee management, development or funding strategies.</p>  |
| 22        | e         | Consensus | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C3          | <p>The certification system was created using an expert opinion approach and has developed with input from the Living Building Community.</p> <p>Because transparency is fundamental to achieving the goals of the Living Building Challenge, the Institute avoids the notion of a ‘consensus-based approach’ -- Ironically, in the end, consensus decision-making still entrusts someone or some group with the final say. While there is a veil of transparency present, ultimately it is not achieved, which makes the consensus process disingenuous.</p>                         |
| 23        | e         | Consensus | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C4          | <p>Living Building Challenge does not have a points-based system. There are performance-based metrics assigned to each of the 20 Imperatives within the certification system.</p> <p>There are two types of certification: Projects earn “Living” status when all Imperatives assigned to its Typology are met, and earn “Petal Recognition” when projects satisfy the requirements in three or more categories, and at least one is Water, Energy or Materials. In addition, projects that earn Petal Recognition must comply with Imperative 01 (no development on greenfields,</p> |

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|           |           |           |              |                                |          |             | <p>on/adjacent to sensitive ecosystems, prime farmland, or within the 100-yr floodplain) and Imperative 20 (inspiration + education).</p> <p>The Institute also offers a specialized version of Petal Recognition called Zero Energy Building Certification. This process certifies projects that meet or exceed net-zero energy and are operationally carbon neutral.</p> <p>[A promotional flyer and postcard for Petal Recognition and Zero Energy Building Certification is available online: <a href="https://ilbi.org/about/handouts">https://ilbi.org/about/handouts</a>. Refer to the Appendix for a soft copy of each. Refer to <a href="http://zeb.livingbuildingchallenge.org">http://zeb.livingbuildingchallenge.org</a> for more information about Zero Energy Building Certification.]</p>  |
| 24        | e         | Consensus | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C5          | <p><i>Replace paragraph in its entirety, which appears to reference a municipal ordinance that offers support to Living Building Challenge project teams rather than the certification system itself.</i></p> <p>Each Imperative is created by identifying the ideal ‘end game’ for its area of influence and then stepping back to recognize the limits of our collective knowledge and current market realities; Thresholds for performance are established in part by looking to successful built examples. In this way, decisions are steered by restorative principles instead of code-minimum solutions. These also serve as ever-present reminders of the objectives we are working to achieve.</p> <p>Because Living Building Challenge is performance-based, “the specific methodology used to meet the expectations of the Living Building Challenge is relegated to the genius of the design teams, who are expected to make informed decisions appropriate to the</p> |

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|           |           |           |              |                                |          |             | project and bioregion.” [See page 5 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a> ] Therefore, there are myriad options for teams to explore and implement to be successful.  |
| 25        | e         | Consensus | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C6          | When there are differing opinions, the Petal Committees are brought into the conversation and provide expertise and recommendations. [See Comment 18 – T3 for details of the process]   |
| 26        | e         | Consensus | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C7          | Yes. This information is included in a document about how the Living Building Challenge is changed that was published within the Community in March 2010. The contents are being integrated into the upcoming <u>Process</u> book of the Petal Series.  |
| 27        | e         | Consensus | Eden Brukman | eden.brukman@living-future.org | 08/16/11 | C8          | Petal Committees are comprised of national and/or international experts within a given field that share a strong philosophical alignment with the goals of the Living Building Challenge.<br><br>Positions on a Petal Committee are voluntary and individuals serve at the discretion of the Institute for as long as they are able to provide expert guidance to the certification system and remain free of any significant conflicts of interest. For example, Petal Committee advisors may not be working on an active Living Building Challenge project while sitting on a Petal Committee, nor work for a building product manufacturer or a trade association. |
| 28        | f         | Maturity  | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | M1          | The tools and standards within the certification system are advanced compared to current standards and latest industry tools. Living Building Challenge and its support tools function on several levels to assist project teams and others in the industry   |

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|           |           |          |              |                                |          |             | (e.g. manufacturers, regulatory officials). Fundamentally, there is a shifted mindset when using in a performance-based system as opposed to a prescriptive system. As such, Living Building Challenge is designed to function as a philosophy, advocacy platform, and certification program. [Promotional “summary sheets” that introduce the concepts for these levels of engagement are available online: <a href="https://ilbi.org/about/handouts">https://ilbi.org/about/handouts</a> . Refer to the Appendix for a soft copy]   |
| 29        | f         | Maturity | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | M2          | <p>There have been two notable updates since the certification system was officially launched in November 2006: version 1.3 in August 2008, and version 2.0 in November 2009. The updates in version 1.3 primarily served to provide additional information about the system, whereas the release of version 2.0 included structural modifications.</p> <p>Tools are continually created and are updated as necessary to maximize the ability to support project teams. Project teams are also encouraged to share with others the tools that they create on the Brain Trust, an online area in the Living Building Community where subscribers (students, professionals and Institute staff) post and reference strategies, tools and research to further our collective knowledge base. [See page 44 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> |
| 30        | f         | Maturity | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | M6          | Several new and overseas systems and organizations’ guiding documents have been informed by the Living Building Challenge, such as: Eco-District Initiative (a regional framework championed by the Portland Sustainability Institute for the City of Portland); Estidama Pearl (a regional rating system for Abu Dhabi run by the  |



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|           |           |           |              |                                |          |             | Abu Dhabi Urban Planning Council); LENSES (a national academic framework championed by the Institute for the Built Environment at Colorado State University); International Ecocity Standard (an international rating system championed by Ecocity Builders, Inc.); and the update to Standard 5281 (the national green building code for the State of Israel published by the Standards Institution of Israel). There are also several new or expanded credits/prerequisites in the most recent version of LEED® (LEED 2012, now open for public comment) that were influenced by the Living Building Challenge. The Institute was informed of this influence by members of LEED technical committees. |
| 31        | f         | Maturity  | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | M7          | <i>Replace April 2010 with November 2009 – the “version” dated April 28, 2010 only corrected nominal items such as spelling errors.</i>   |
| 32        | f         | Maturity  | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | M8          | [See Comment 29 – M2] <i>Add</i> The updates in version 1.3 primarily served to provide additional information about the system, whereas the release of version 2.0 included structural modifications.  |
| 33        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | U1          | <i>Project registration fees were increased on August 1, 2011 after increased functionality was introduced to the Living Building Community</i><br><br>At least one person per team must maintain a current account in the Living Building Community throughout a project’s span from registration to certification. An individual subscription costs \$125/yr; there are volume discounts for company, institution or agency subscription, which allows for unlimited number of  |

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|           |           |           |              |                                |          |             | <p>individual accounts within a single office location and range in cost from \$300-\$3500/yr. A discounted rate is extended to Students and Elders, with a subscription fee of \$45/yr.</p> <p>Project Registration Fees are:</p> <p>\$250 – Renovation</p> <p>\$500 – Landscape, Infrastructure, Building</p> <p>\$1000 – Neighborhood</p> <p>Project Certification Fees are paid prior to audit and are tiered based on project size, ranging from \$1500 to \$25,000.</p> <p>[See Subscription Fees: <a href="https://secure.ilbi.org/community/registrationpage">https://secure.ilbi.org/community/registrationpage</a> and Registration/Certification Fees: <a href="https://ilbi.org/lbc/register-a-project">https://ilbi.org/lbc/register-a-project</a>]</p> |
| 34        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | U2          | <p>Project Registration forms are simple and may take 10-20 minutes to complete. [Refer to Appendix for a screenshot of the online form with all questions listed.]</p> <p>Documentation for project certification is intended to be compiled as the team progresses through the process, and related labor costs are unknown at this time. A portion of the information requested is based on project performance and/or site visit and does not require additional paperwork. “The Institute has an ongoing goal to reduce the amount of documentation needed to demonstrate compliance with the Living Building Challenge Imperatives. Over time, items may be deleted or slightly modified to reflect this effort. Teams</p>                                     |

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|           |           |           |              |                                |          |             | may elect to submit information using the most current guidelines at the time of project registration or any subsequent releases.” [See page 2 of the Documentation Requirements. Refer to the Appendix for a soft copy.]  |
| 35        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | U3          | <p>The tools are user-friendly and straightforward.</p> <p>Because Living Building Challenge is performance-based, there is a lot of flexibility written into the program and myriad options for teams to explore and implement to be successful. “The specific methodology used to meet the expectations of the Living Building Challenge is relegated to the genius of the design teams, who are expected to make informed decisions appropriate to the project and bioregion.” [See page 5 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> <p>“The Living Building Challenge does not dwell on basic best practice issues so it can instead focus on fewer, high level needs. It is assumed that to achieve this progressive standard, typical best practices are being met. The implementation of this standard requires leading-edge technical knowledge, an integrated design approach, and design and construction teams well versed in advanced practices related to ‘green building’.” [See page 10 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> |
| 36        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/18/11 | U4          | <p>Imperatives are evaluated based on written documentation and/or site visit.</p> <p>See <a href="https://ilbi.org/lbc/certification-process">https://ilbi.org/lbc/certification-process</a> for a simplified</p>   |

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|           |           |           |              |                                |          |             | <p>account of the certification process. [Refer to the Appendix for a soft copy.]</p> <p>Teams are encouraged to collect written documentation in real time; it is officially reviewed for certification at one time after at least twelve consecutive months of operation.</p> <p>Because decisions made early in the design process have an outsized influence on a project's success, the Institute offers an optional service to review and comment on a project's Design Development drawing set and draft Project Manual. Noted observations parallel the requirements of the 20 Imperatives of the Living Building Challenge and highlight areas that may be in conflict with the intent of the program. As such, this Review Guidance includes observations about in-progress design documents that are intended to improve a project's potential to comply with the Living Building Challenge requirements. It can also be a useful reference when preparing subsequent documents for construction. However, the Review Guidance does not constitute a ruling for certification nor is not a guarantee that an Imperative or Petal has been fulfilled. [Refer to the Appendix for a promotional flyer introducing some of the optional technical assistance services available to project teams.]</p> |
| 37        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | U5          | <p>Because the Living Building Challenge requires twelve consecutive months of operation before it can be certified, it relies on actual performance data for the certification process. This should also minimize the need for the team to generate additional documentation uniquely applicable to the Living Building Challenge.</p>  |

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|           |           |         |          |                     |      |             | <p>Performance metrics include:</p> <ul style="list-style-type: none"> <li>- Site: photographic documentation of agricultural areas showing use patterns throughout the year</li> <li>- Water: actual onsite collection methods (e.g. well, rainwater, other) and reuse methods (e.g. infiltration, irrigation/landscaping, non-potable use, potable use, other)</li> <li>- Water: completed water use table listing total actual water use, volume of potable water supplied by Utility (if applicable), volume of water harvested onsite.</li> <li>- Energy: completed energy use table listing total actual energy generated, actual energy used for heating, cooling, lighting, fans/pumps, plug loads/equipment, vertical transportation, domestic hot water, other.</li> <li>- Health: for building and renovation projects - results from pre- and post-occupancy air quality tests listing amounts of respirable suspended particulates (RSP), total volatile organic compounds (TVOC), carbon dioxide, temperature and relative humidity.</li> <li>- Health: as part of the site visit, the auditor may take daylight measurements. The team is encouraged to take into account the acceptable range for daylight factors based on the function of the space.</li> <li>- Materials: completed Materials Conservation Management Plan that explains how the project optimizes materials in each of the following phases: <ul style="list-style-type: none"> <li>- Design Phase, including the consideration of appropriate durability in product specification</li> <li>- Construction Phase, including product optimization and collection of wasted materials</li> <li>- Operation Phase, including a collection plan for consumables and durables</li> <li>- End of Life Phase, including a plan for Adaptable Reuse and Deconstruction.</li> </ul> </li> </ul> |

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| 38        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | U6          | <p><i>Add</i> The Dialogue is a primary way for project teams to receive direct programmatic guidance from Institute staff. Individuals may post questions to the Dialogue at any time.</p> <p>[Also refer to the Appendix for a promotional flyer introducing some of the optional technical assistance services available to project teams.]</p>  |
| 39        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | U7          | <p>Private industry now advertises design and consulting services specifically related to Living Building Challenge. Project teams tend to include a more diverse range of practitioners, drawing expertise from less conventional areas of influence and allowing for a deeply integrated design process.</p> <p>To increase the availability of technical knowledge throughout private industry, the Institute created the Brain Trust. [See comment 29 – M2 for additional information about the Brain Trust]</p> <p>The Institute also created the Ambassador Network to amplify the potential for information sharing that is particular to place. Specifically, the Institute trains and provides ongoing support to volunteer presenters and facilitators of <u>Living Building Challenge Collaboratives</u> who bring the restorative principles represented in the certification system to others in their communities.</p> <ul style="list-style-type: none"> <li>- Collaboratives are community-based, in-person groups of Living Building Challenge enthusiasts that provide an opportunity for individuals to come together for informal learning experiences and to advance community transformation. Collaborative participants’ activities support creation of the local conditions that allow for development</li> </ul> |

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|           |           |           |              |                                |          |             | <p>of Living Buildings, Sites and Neighborhoods. Collaborative events are held at least quarterly and up to monthly throughout the year, and are typically organized as meetings that address topics relevant to Living Building Challenge and foster an opportunity for dialogue.</p> <ul style="list-style-type: none"> <li>- Volunteer facilitators support the development of the local Collaborative over time by inspiring new participants, cultivating leadership among current members and by organizing and hosting regular Collaborative events. They provide a local connection for those interested in getting more involved with the movement, and maintain regular communication between the Institute and the Collaborative by participating in regular check-in and update calls with staff, and by logging all Collaborative events.</li> <li>- Volunteer presenters commit to a year of service as a volunteer presenter, during which time they deliver at least six introductory, informal presentations to peers, local organizations, institutions, companies and community groups.</li> </ul> <p>[Refer to the Living Building Challenge website for more information about the Ambassador Network:<br/> <a href="https://ilbi.org/action/network">https://ilbi.org/action/network</a>]</p> |
| 40        | g         | Usability | Eden Brukman | eden.brukman@living-future.org | 08/17/11 | U8          | <p>Users of the certification system tend to describe it as straightforward, easy to understand, and inspiring. They also note that the Imperatives are advanced and require anon-traditional approach to design and construction. When asked, one project owner said this about his early experience with the Living Building Challenge: “You start to question everything. And you can’t go back once you realize this is the way you should do things.” [Refer to the Appendix for other testimonials from a diverse group of certification system enthusiasts. This is the back</p>   |

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|           |           |             |                 |   |          |             | page of <u>Taking Root</u> , a promotional pamphlet that is updated regularly and documents where Living Building Challenge has influenced people, projects and practices throughout the world. A soft copy is available online: <a href="https://ilbi.org/about/handouts.">https://ilbi.org/about/handouts.</a> ]   |
| 41        | h         | Recognition | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/17/11 | N1          | <p>Living Building Challenge is being used in the curriculum at K-12 institutions as well as in college courses at the undergraduate and graduate levels. Though most frequently used in the school of architecture, it has also been taught in other focus areas such as: real estate, business, interior design, construction management, engineering (mechanical, electrical, plumbing),</p> <p>Of the top US Architecture Schools, the following are known to have lectures and/or course curriculum based on the Living Building Challenge (listed in no particular order):</p> <ul style="list-style-type: none"> <li>- Kansas State University</li> <li>- University of California at Berkeley</li> <li>- Carnegie Mellon University</li> <li>- University of Southern California</li> <li>- University of Oregon</li> <li>- University of Texas at Austin</li> <li>- Washington University in St Louis</li> <li>- Syracuse University</li> <li>- University of Pennsylvania</li> <li>- Harvard</li> <li>- University of Minnesota</li> <li>- Southern California Institute of Architecture</li> <li>- University of California, Los Angeles</li> </ul> |
| 42        | h         | Recognition | Eden<br>Brukman | eden.brukman<br>@ living-               | 08/17/11 | N2          | <ul style="list-style-type: none"> <li>- The Institute is aware of curriculum based on the Living Building Challenge in more than 100 colleges and universities.</li> <li>- To supplement their studies, more than 60 students have</li> </ul>   |



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|           |           |             |              | future.org                     |          |             | <p>subscribed to the Living Building Community on an individual level, and 3 professors have subscribed for a group account for one or more classes.</p> <ul style="list-style-type: none"> <li>- Out of 81 total entries, 11 student groups entered the Living City Design Competition <a href="http://www.ilbi.org/lcdc">www.ilbi.org/lcdc</a> and one student team was recognized among the winners: <a href="https://ilbi.org/lcdc-winners">https://ilbi.org/lcdc-winners</a>.</li> <li>- Each year, the Institute offers reduced rates for students and recent graduates to attend the Living Future unConference, an annual event with approximately 800 attendees. In 2011, students attended the conference in Vancouver, BC; in 2010, approximately 80 students attended the conference in Seattle, WA. In 2012, the conference will be held in Portland, OR.</li> <li>- The volunteer facilitator option in the Ambassador Network originally was created with a student focus, and dozens of students have received training in the Living Building Challenge, group leadership dynamics and methods for fostering an inclusive environment. [See comment 39 – U7]</li> </ul> |
| 43        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N3          | <ul style="list-style-type: none"> <li>- State of Oregon Legislature passed House Bill 2080, which legalizes graywater and rainwater use in residential and commercial buildings throughout the state. Living Building Challenge and Institute staff were instrumental to this Bill's development and adoption.</li> <li>- State of Oregon Department of Environmental Quality refers to Living Building Challenge as a standard and resource for Life Cycle Approaches to Prioritizing Methods of Preventing Waste from the Residential Construction.</li> <li>- State of California refers to the Living Building Challenge as a potential national partner in its 2010-2012 Energy Efficiency Strategic Plan. Several departments within the State of California refer to Living Building Challenge as a resource that "does take a very different approach through (Imperatives) rather than "trade offs" found in most existing</li> </ul>  |

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|           |           |             |              |                                |          |             | <p>green rating systems.”</p> <ul style="list-style-type: none"> <li>- New Hampshire Department of Environmental Services refers to Living Building Challenge as a resource and innovative program for its “Innovative Land Development Technical Assistance and Coordinated Permitting Initiative”</li> <li>- State of Washington Department of Ecology refers to Living Building Challenge as a certification program and resource for residential and commercial construction.</li> </ul>  |
| 44        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N4          | <ul style="list-style-type: none"> <li>- Clark County and City of Vancouver, WA created the Sustainable Communities Pilot Program: departs from code requirements that may discourage or prevent Living Building Challenge Imperatives</li> </ul>   |
| 45        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N5          | <p>Living Building Challenge is referenced by dozens of Cities directly as a certification system, or indirectly by posting findings from the Institute’s various research reports as resources for their constituents.</p> <p>Several instances of regulatory reform cite the Living Building Challenge (Links to details about each as online: <a href="https://ilbi.org/education/regreform">https://ilbi.org/education/regreform</a>). The following is a list of focused efforts in the Pacific Northwest; Living Building Challenge project teams all over the world are presenting viable alternatives to existing codes in order to create Living Buildings, Sites and Communities (The Institute is collecting these examples of reform in the documentation provided by project teams for certification and will publicize this information on the program website).</p> <ul style="list-style-type: none"> <li>- Bainbridge Island, WA. Ordinance 2009–06: offers flexible development + density incentives for housing projects □</li> <li>- Seattle, WA. Living Building Pilot: additional flexibility + gives special assistance for Living Building Challenge</li> </ul> |

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|           |           |             |              |                                |          |             | <p>projects ☐</p> <ul style="list-style-type: none"> <li>- Seattle, WA. Priority Green (formerly Green Q): provides expedited appointments + individual assistance for permit review, public recognition for effort ☐</li> <li>- Clark County and City of Vancouver, WA. Sustainable Communities Pilot Program: departs from code requirements that may discourage or prevent Living Building Challenge Imperatives</li> <li>- Portland, OR. Green Building Policy (proposed): rebates up to \$17.30/ft<sup>2</sup> for projects pursuing Living Building Challenge ☐</li> <li>- Eugene, OR. Guide 2 Green: grants prioritized plan reviews and inspections, one-day permits and reduced system development charges</li> </ul> <p>The Institute has provided consulting or served as an advisor to more than 20 cities to inform their sustainability goals.</p> <p>There are active Living Building Challenge Collaboratives [See Comment 39 – U7] in 11 cities, and training is in-progress for the initiation of 10 Collaboratives in other areas.</p> |
| 46        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N6          | <p>There are currently 87 active registered projects, and the Institute is aware of an additional 30+ that have not yet formally registered. There are also approximately 20 registered projects not included in the count above that have been archived due to undefined hold or discontinuation, mostly due to shifted economic influences in 2008 and 2009.</p>  |
| 47        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N8          | <p>Thousands of building industry professionals are involved with the Living Building Challenge (both nationally and internationally) such as designers, engineers, contractors, product manufacturers, developers, sustainability consultants, regulatory officials, etc.</p>  |

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|           |           |             |              |                                |          |             | Individuals have participated as members of project teams, volunteer Ambassadors [See Comment 39 – U7], or attendees to conferences and/or workshops offered by the Institute.   |
| 48        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N9          | Living Building Challenge does not have a membership model.  |
| 49        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N10         | <p>Among other, smaller associations, two of the most relevant organizations to green building both have recognized and supported the Living Building Challenge:</p> <ul style="list-style-type: none"> <li>- American Institute of Architects (<a href="http://www.aia.org/advocacy/local/AIAS076929?dvid=&amp;respec=AIAS076929">http://www.aia.org/advocacy/local/AIAS076929?dvid=&amp;respec=AIAS076929</a>) Living Building Challenge was the reference standard for the AIA Committee on Design “Ideas Competition” in 2009 and 2010</li> <li>- The US Green Building Council has publicly endorsed the Living Building Challenge</li> </ul>   |
| 50        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | N11         | <p><i>Replace text</i></p> <ul style="list-style-type: none"> <li>- National Institute of Building Sciences, Whole Building Design Guide: <a href="http://www.wbdg.org/resources/livingbuildings.php">http://www.wbdg.org/resources/livingbuildings.php</a></li> <li>- EPA <ul style="list-style-type: none"> <li>- Region 9, Green Building: Green Building and Energy Codes <a href="http://www.epa.gov/region9/greenbuilding/building-codes.html">http://www.epa.gov/region9/greenbuilding/building-codes.html</a></li> <li>- Office of Brownfields and Land Revitalization</li> </ul> </li> <li>- General Services Administration, Strategic Sustainability Performance Plan: <a href="http://www.gsa.gov/portal/content/186749">http://www.gsa.gov/portal/content/186749</a></li> </ul> |

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|           |           |             |              |                                |          |             | - National Parks Service  |
| 51        | h         | Recognition | Eden Brukman | eden.brukman@living-future.org | 08/15/11 | N13         | <i>Replace text</i><br>There are no certified Federal buildings, but there are two Federal projects that have been registered by the National Parks Service.  |
| 52        | i         | Robustness  | Eden Brukman | eden.brukman@living-future.org | 08/15/11 | RNC1        | None.   |
| 53        | i         | Robustness  | Eden Brukman | eden.brukman@living-future.org | 08/15/11 | RNC2        | None.   |
| 54        | i         | Robustness  | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC4        | <i>Add</i><br><br>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.<br><br>There is an exception for water that must be from potable sources due to local health regulations, including sinks, faucets and showers but excluding irrigation, toilet flushing, janitorial uses and equipment uses. However, due diligence to comply with this Imperative must be demonstrated by filing an appeal(s) with the appropriate agency (or agencies).<br><br>An exception is made for an initial water purchase to get cisterns topped off. A Living Building Challenge project only buys water |

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|           |           |            |              |                                |          |             | <p>once.</p> <p>[See Footnotes 28-30 on page 20 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a></p>   |
| 55        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC10       | <p><i>Add</i></p> <p>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.</p> <p>There is an exception for water that must be from potable sources due to local health regulations, including sinks, faucets and showers but excluding irrigation, toilet flushing, janitorial uses and equipment uses. However, due diligence to comply with this Imperative must be demonstrated by filing an appeal(s) with the appropriate agency (or agencies).</p> <p>An exception is made for an initial water purchase to get cisterns topped off. A Living Building Challenge project only buys water once.</p> <p>[See Footnotes 28-30 on page 20 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a></p> |
| 56        | i         | Robustness | Eden Brukman | eden.brukman@living-           | 08/19/11 | RNC16       | <p><i>Add</i></p> <p>This Imperative may be attempted using the Scale Jumping design</p>  |

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|           |           |         |          | future.org          |      |             | <p>overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.</p> <p>There is an exception for water that must be from potable sources due to local health regulations, including sinks, faucets and showers but excluding irrigation, toilet flushing, janitorial uses and equipment uses. However, due diligence to comply with this Imperative must be demonstrated by filing an appeal(s) with the appropriate agency (or agencies).</p> <p>An exception is made for an initial water purchase to get cisterns topped off. A Living Building Challenge project only buys water once.</p> <p>[See Footnotes 28-30 on page 20 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> <p>Imperative 06: Ecological Water Flow</p> <p>One hundred percent of storm water and building water discharge must be managed onsite to feed the project’s internal water demands or released onto adjacent sites for management through acceptable natural time-scale surface flow, groundwater recharge, agricultural use or adjacent building needs.</p> <p>Municipal storm sewer solutions do not qualify as acceptable</p> |

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|           |           |            |              |                                |          |             | <p>onsite storm water management practices.</p> <p>For Building projects that have a F.A.R. equal to or greater than 1.5 in Transects L5 or L6, a conditional exception may apply, which allows some water to leave the site at a reduced rate and depends on site and soil conditions and the surrounding development context. Greater flexibility is given to projects with higher densities.</p> <p>[See page 21 (including Footnote 31) of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> <p>Imperative 01: Limits to Growth (<i>partial</i>)</p> <p>On-site landscape may only include native and/or naturalized species planted in such a way that emulates density and biodiversity of indigenous ecosystems and supports succession.</p> <p>[See page 15 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> |
| 57        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC22       | <p><i>Add</i></p> <p>Municipal storm sewer solutions do not qualify as acceptable onsite storm water management practices.</p> <p>For Building projects that have a F.A.R. equal to or greater than 1.5 in Transects L5 or L6, a conditional exception may apply, which allows some water to leave the site at a reduced rate and depends on site and soil conditions and the surrounding</p>  |



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|           |           |            |              |                                |          |             | <p>development context. Greater flexibility is given to projects with higher densities.</p> <p>[See page 21 (including Footnote 31) of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> <p>Imperative 01: Limits to Growth (<i>partial</i>)</p> <p>On-site landscape may only include native and/or naturalized species planted in such a way that emulates density and biodiversity of indigenous ecosystems and supports succession.</p> <p>[See page 15 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> |
| 58        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC27       | The Institute avoids prescriptive paths to certification, and as such does not provide a list of products to use. However, the performance-based requirements of Imperative 05: New Zero Water necessitate that project teams strictly evaluate products based on their water conservation potential.  |
| 59        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC28       | EPA’s WaterSense listings are noted as a resource for project teams in the Dialogue, and in the <u>Water</u> book of the Petal Series (currently in pre-published draft form).   |
| 60        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC33       | <p><i>Add</i></p> <p>Living Building Challenge frames energy efficiency in the context of the carrying capacity of the site, and as such, requires that the</p>  |

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|           |           |            |              |                                |          |             | <p>project performs within this parameter. When the Scale Jumping overlay is used by project teams to achieve Net Zero Energy, they are required to demonstrate that a project’s demand does not exceed the proportional amount of energy available.</p> <p>The Institute emphasizes the primary strategy of optimizing energy efficiencies prior to installing renewable energy systems.</p> <p>The Case Studies for certified projects indicate the following metrics:</p> <ul style="list-style-type: none"> <li>- Hawaii Preparatory Academy Energy Lab: 3.23 kWh/sq ft (<a href="https://ilbi.org/lbc/casestudies/HPAenergylab/energy">https://ilbi.org/lbc/casestudies/HPAenergylab/energy</a>)</li> <li>- Omega Center for Sustainable Living: 28.3 kWh/sq ft (<a href="https://ilbi.org/lbc/casestudies/omega/energy">https://ilbi.org/lbc/casestudies/omega/energy</a>)</li> <li>- Tyson Living Learning Center: 33.1 kWh/sq ft (<a href="https://ilbi.org/lbc/casestudies/tllc/energy">https://ilbi.org/lbc/casestudies/tllc/energy</a>)</li> </ul> |
| 61        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC34       | <p><i>Add</i></p> <p>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.</p> <p>This must include all electricity, heating and cooling requirements. Back-up generators are excluded. System may be grid-tied or off the grid.</p> <p>Renewable energy is defined as passive solar, photovoltaics, solar thermal, wind turbines, water-powered microturbines, direct geothermal or fuel cells powered by hydrogen generated from renewably powered electrolysis – nuclear energy is not an</p>   |

| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments   |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|--|
|           |           |            |              |                                |          |             | <p>acceptable option. No combustion of any kind is allowed.</p> <p>[See Footnotes 32-34 on page 23 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p>  |
| 62        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC39       | <p><i>Replace Text</i></p> <p>To meet the requirements of the Living Building Challenge, 100% of all water heating systems must be powered with renewable energy systems.</p>  |
| 63        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC40       | <p><i>Add</i></p> <p>This Imperative may be attempted using the Scale Jumping design overlay, which endorses the implementation of solutions beyond the building scale that maximize ecological benefit while maintaining self-sufficiency at the city block, neighborhood, or community scale.</p> <p>This must include all electricity, heating and cooling requirements. Back-up generators are excluded. System may be grid-tied or off the grid.</p> <p>Renewable energy is defined as passive solar, photovoltaics, solar thermal, wind turbines, water-powered microturbines, direct geothermal or fuel cells powered by hydrogen generated from renewably powered electrolysis – nuclear energy is not an acceptable option. No combustion of any kind is allowed.</p> <p>[See Footnotes 32-34 on page 23 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> |

| Comment # | Section # | Section    | Reviewer        | Contact Information                     | Date     | Question ID | Comments  |
|-----------|-----------|------------|-----------------|---|----------|-------------|---|
|           |           |            |                 |   |          |             | <a href="#">0.pdf</a> ]   |
| 64        | i         | Robustness | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/19/11 | RNC45       | <p><i>Replace Text</i></p> <p>Measurement and verification is fundamental to the documentation for the Energy and Water Petal requirements in the Living Building Challenge.</p> <ul style="list-style-type: none"> <li>- Imperative 05: Net Zero Water - Monthly readings throughout the 12-month occupancy period from meter(s) or other onsite tracking systems that clearly record the amount of water received by the project from every source (including cisterns).</li> <li>- Imperative 07: Net Zero Energy - Monthly readings throughout the 12-month occupancy period from meter(s), other onsite tracking systems or web-link to online mechanism that clearly records energy produced and consumed.</li> </ul> <p>[Refer to the Appendix for a soft copy of the Documentation Requirements.]</p> |
| 65        | i         | Robustness | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/19/11 | RNC46       | <p>Performance.</p> <p>Metering is required to track the following:</p> <ul style="list-style-type: none"> <li>- Water: actual onsite collection methods (e.g. well, rainwater, other) and reuse methods (e.g. infiltration, irrigation/landscaping, non-potable use, potable use, other)</li> <li>- Water: completed water use table listing total actual water use, volume of potable water supplied by Utility (if applicable), volume of water harvested onsite.</li> <li>- Energy: completed energy use table listing total actual energy generated, actual energy used for heating, cooling, lighting, fans/pumps, plug loads/equipment, vertical</li> </ul>  |

| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments  |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|---|
|           |           |            |              |                                |          |             | transportation, domestic hot water, other.  |
| 66        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC49       | <p><i>Replace Text</i></p> <p>Benchmarking is part of the documentation process for the Energy and Water Petal requirements in the Living Building Challenge. Project teams are required to provide the simulated/design water and energy demand, as well as list any/all tools used for the calculations.</p> <p>This information is then compared to the actual performance data provided, and published in the public Case Studies online.</p> <p>[Refer to the Appendix for a soft copy of the Documentation Requirements.]</p>   |
| 67        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC65       | <p><i>Delete “However, there is no specific requirements.”</i></p> <p><i>[See Comment 68 – RNC66 for list of specific requirements.]</i></p>  |
| 68        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC66       | <ul style="list-style-type: none"> <li>- Imperative 09: Healthy Air (<i>excerpt</i>) - “Conduct air quality testing at pre-occupancy and after nine months of occupancy to measure levels of Respirable Suspended Particulates (RSP) and Total Volatile Organic Compounds (TVOC).”</li> <li>- Imperative 10: Biophilia - “The project must be designed to include elements that nurture the innate human attraction to natural systems and processes. Each of the six established Biophilic Design Elements<sup>39</sup> must be represented for every 2,000 m<sup>2</sup> of the project: Environmental features; Natural shapes and forms; Natural patterns and processes; Light and space; Place-based relationships; Evolved human-nature relationships.”</li> <li>- Imperative 11: Red List - “The project cannot contain any of the following Red List materials or chemicals: Asbestos;</li> </ul> |

| Comment # | Section # | Section | Reviewer | Contact Information | Date | Question ID | Comments   |
|-----------|-----------|---------|----------|---------------------|------|-------------|--|
|           |           |         |          |                     |      |             | <p>Cadmium; Chlorinated Polyethylene and Chlorosulfonated Polyethylene; Chlorofluorocarbons (CFCs); Chloroprene (Neoprene); Formaldehyde (added); Halogenated Flame Retardants; Hydrochlorofluorocarbons (HCFCs); Lead (added); Mercury; Petrochemical Fertilizers and Pesticides; Phthalates; Polyvinyl Chloride (PVC); Wood treatments containing Creosote, Arsenic or Pentachlorophenol. There are temporary exceptions for numerous Red List items due to current limitations in the materials economy. Refer to the Living Building Community Dialogue for complete and up-to-date listings.”</p> <ul style="list-style-type: none"> <li>- Imperative 13: Responsible Industry - “The project must advocate for the creation and adoption of third-party certified standards for sustainable resource extraction and fair labor practices. Applicable raw materials include stone and rock, metal, and timber. For timber, all wood must be certified by the Forest Stewardship Council (FSC), from salvaged sources, or from the intentional harvest of timber onsite for the purpose of clearing the area for construction.”</li> <li>- Imperative 14: Appropriate Sourcing - The project must incorporate place-based solutions and contribute to the expansion of regional economy rooted in sustainable practices, products and services. Source locations for materials and services must adhere to listed restrictions. [See pages 32-33 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</li> <li>- Imperative 15: Conservation + Reuse (<i>excerpted</i>)- "All projects teams must strive to reduce or eliminate the production of waste during design, construction, operation, and end of life in order to conserve natural resources. Project teams must create a material conservation management plan that explains how the project optimizes materials in each of the following phases: Design Phase, including the consideration of appropriate durability in product</li> </ul> |

| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments   |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|--|
|           |           |            |              |                                |          |             | specification; Construction Phase, including product optimization and collection of wasted materials...”   |
| 69        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC69       | <i>Delete (The Pharos Project is not required and does not function as a protocol)</i><br>US EPA Design for the Environment (DfE) is referenced as a resource for understanding thresholds for disclosure of ingredients for Imperative 11:Red List.   |
| 70        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC72       | Design and Performance   |
| 71        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC84       | Design and Performance<br><i>Add</i><br>Imperative 09: Healthy Air ( <i>excerpt</i> ) - “Conduct air quality testing at pre-occupancy and after nine months of occupancy to measure levels of Respirable Suspended Particulates (RSP) and Total Volatile Organic Compounds (TVOC).”  |
| 73        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC90       | Design and Performance<br><i>Add</i><br>Imperative 09: Healthy Air ( <i>excerpt</i> ) - “Ventilation rates must be designed to comply with ASHRAE 62 and equipment must be installed to monitor levels of carbon dioxide (CO <sub>2</sub> ), temperature and humidity. Conduct air quality testing at pre-occupancy and after nine months of occupancy to measure levels of Respirable Suspended Particulates (RSP) and Total Volatile Organic |

| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments  |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|---|
|           |           |            |              |                                |          |             | Compounds (TVOC).”<br><br>Testing reports must include the following for each location:<br><br><ul style="list-style-type: none"> <li>- Test location (Name of Room or Area)</li> <li>- RSP (ug/m<sup>3</sup> or ug/ft<sup>3</sup>)</li> <li>- TVOC (ug/m<sup>3</sup> or ug/ft<sup>3</sup>)</li> <li>- (CO<sub>2</sub>) (ppm)</li> <li>- Temperature (°F or °C)</li> <li>- Relative Humidity (%)</li> </ul>   |
| 74        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC95       | Living Building Challenge includes requirements for compliance with ASHRAE 62 and required testing throughout the project for temperature and relative humidity.  |
| 79        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC96       | Design and Performance<br><br>Imperative 08: Civilized Environment: Every occupiable space must have operable windows that provide access to fresh air and daylight. As part of the site visit, the auditor may take daylight measurements. The team is encouraged to take into account the acceptable range for daylight factors based on the function of the space.<br><br>Imperative 09: Healthy Air ( <i>excerpt</i> ) - “Ventilation rates must be designed to comply with ASHRAE 62 and equipment must be installed to monitor levels of carbon dioxide (CO <sub>2</sub> ), temperature and humidity. Conduct air quality testing at pre-occupancy and after nine months of occupancy to measure levels of Respirable Suspended Particulates (RSP) and Total Volatile Organic Compounds (TVOC).”<br><br>Testing reports must include the following for each location: |



| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments   |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|--|
|           |           |            |              |                                |          |             | <ul style="list-style-type: none"> <li>- Test location (Name of Room or Area)</li> <li>- RSP (ug/m<sup>3</sup> or ug/ft<sup>3</sup>)</li> <li>- TVOC (ug/m<sup>3</sup> or ug/ft<sup>3</sup>)</li> <li>- (CO<sub>2</sub>) (ppm)</li> <li>- Temperature (°F or °C)</li> <li>- Relative Humidity (%)</li> </ul> |
| 80        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC102      | <p>Design and Performance</p> <p><i>Add</i></p> <p>As part of the site visit, the auditor may take daylight measurements. The team is encouraged to take into account the acceptable range for daylight factors based on the function of the space.</p>  |
| 81        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC107      | <p>Design and Performance</p> <p>As part of the site visit, the auditor will observe smoking patterns of occupants and project visitors, as well as any related printed/posted instructions.</p>   |
| 82        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC118      | <p>Living Building Challenge reduces the potential for exposure and by requiring that project teams focus on specifying products that do not compromise human and ecological health.</p>   |
| 83        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC119      | <p>Design and Performance</p> <p><i>Add</i></p> <p>Imperative 11: Red List - “The project cannot contain any of the following Red List materials or chemicals: Asbestos; Cadmium; Chlorinated Polyethylene and Chlorosulfonated Polyethylene; Chlorofluorocarbons (CFCs); Chloroprene (Neoprene);</p>        |

| Comment # | Section # | Section    | Reviewer        | Contact Information                     | Date     | Question ID | Comments  |
|-----------|-----------|------------|-----------------|---|----------|-------------|---|
|           |           |            |                 |   |          |             | <p>Formaldehyde (added); Halogenated Flame Retardants; Hydrochlorofluorocarbons (HCFCs); Lead (added); Mercury; Petrochemical Fertilizers and Pesticides; Phthalates; Polyvinyl Chloride (PVC); Wood treatments containing Creosote, Arsenic or Pentachlorophenol.</p> <p>Imperative 09: Healthy Air (<i>excerpt</i>) – “Conduct air quality testing at pre-occupancy and after nine months of occupancy to measure levels of Respirable Suspended Particulates (RSP) and Total Volatile Organic Compounds (TVOC).”</p> <p>Testing reports must include the following for each location:</p> <ul style="list-style-type: none"> <li>- Test location (Name of Room or Area)</li> <li>- RSP (ug/m<sup>3</sup> or ug/ft<sup>3</sup>)</li> <li>- TVOC (ug/m<sup>3</sup> or ug/ft<sup>3</sup>)</li> <li>- (CO<sub>2</sub>) (ppm)</li> <li>- Temperature (°F or °C)</li> <li>- Relative Humidity (%)</li> </ul> |
| 84        | i         | Robustness | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/20/11 | RNC133      | <p>Design and Performance</p> <p><i>Replace “Care” with “Car” so that the text reads “04 Car Free Living”</i></p> <p><i>Add</i></p> <ul style="list-style-type: none"> <li>- Imperative 16: Human Scale and Humane Places<br/>The project must be designed to create human-scaled rather than automobile-scaled places, so that the experience brings out the best in humanity and promotes culture and interaction. In context of the character of each Transect, there are specific maximum (and sometimes minimum) requirements for paved areas, street and block design,</li> </ul>   |

| Comment # | Section # | Section | Reviewer | Contact Information | Date | Question ID | Comments  |
|-----------|-----------|---------|----------|---------------------|------|-------------|---|
|           |           |         |          |                     |      |             | <p>building scale and signage that contribute to livable places. [Refer to the Appendix for a soft copy of detailed guidelines.]</p> <ul style="list-style-type: none"> <li>- Imperative 17: Democracy + Social Justice<br/>All primary transportation, roads and non-building infrastructure that are considered externally focused must be equally accessible to all members of the public regardless of background, age and socioeconomic class including the homeless, with reasonable steps taken to ensure that all people can benefit from the project's creation. (There is an exception for instances wherein such access would seriously threaten the security of the public directly or indirectly.)<br/>For all projects types located in Transect L3-L6, street furniture (such as benches) must be provided for and accessible to all members of society. For the Neighborhood typology, a minimum of fifteen percent of housing units must meet an affordable housing standard. Provisions must be in place for these units to remain affordable through time. Access for those with physical disabilities must be safeguarded through designs meeting the Americans with Disabilities Act (ADA).</li> <li>- Imperative 18: Rights to Nature<br/>The project may not block access to, nor diminish the quality of, fresh air, sunlight and natural waterways for any member of society or adjacent developments.<br/>Fresh Air: The project must be designed to protect adjacent properties from any noxious emissions that would compromise its ability to use natural ventilation. All operational emissions must be free of Red List chemicals, persistent bioaccumulative toxicants, and known or suspect carcinogenic, mutagenic and reprotoxic chemicals.<br/>Sunlight: The project may not block sunlight to adjacent building façades and rooftops such that they are shaded above the maximum height allotted per the listed</li> </ul> |

| Comment # | Section # | Section    | Reviewer        | Contact Information                     | Date     | Question ID | Comments   |
|-----------|-----------|------------|-----------------|---|----------|-------------|--|
|           |           |            |                 |   |          |             | <p>restrictions. [See page 39 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> <p>Natural Waterways (such as ocean shoreline, rivers, lakes, wetlands, ponds, and creeks): The project may not restrict access<sup>82</sup> to the edge of any natural waterway, except where such access can be proven to be a hazard to public safety or would severely compromise the function of the development. No project may assume ownership of water contained in these bodies or compromise the quality or quantity that flows downstream. If a project’s boundary is more than sixty meters long parallel to the edge of the waterway, the project must incorporate and maintain an access path to the waterway from the most convenient public right-of-way. The pathway must be at least three meters wide and allow entry to both pedestrians and bicyclists.</p> |
| 85        | i         | Robustness | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/19/11 | RNC135      | <p><i>Replace text</i></p> <p>“The Living Building Challenge does not dwell on basic best practice issues so it can instead focus on fewer, high level needs. It is assumed that to achieve this progressive standard, typical best practices are being met. The implementation of this standard requires leading-edge technical knowledge, an integrated design approach, and design and construction teams well versed in advanced practices related to ‘green building’.” [See page 10 of the standard – Living Building Challenge 2.0 <a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a>]</p> <p>Project teams tend to include a more diverse range of practitioners, drawing expertise from less conventional areas of influence and allowing for a deeply integrated design process. [To view a testimonial from a project team about integrated design in the</p>  |

| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments  |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|---|
|           |           |            |              |                                |          |             | <p>Living Building Challenge, see this video: Integrative Design: Phipps – A Case Study, created without Institute involvement. <a href="http://www.youtube.com/hippsconservatory#p/u/5/rETpS0uq7_E">http://www.youtube.com/hippsconservatory#p/u/5/rETpS0uq7_E</a> ]</p> <p>This topic is also discussed on the Dialogue, as in this excerpted response to a project team’s query about the use of certain structural materials:</p> <p><i>“There are certainly trade-offs for most material decisions and the early stages of a project are ideal to investigate available structural materials that do not contain Red List materials or have the potential to compromise Responsible Industry. Ideally, an integrated design process would make room for the manufacturer at the table.</i></p> <p><i>We encourage project teams to consider all available options to satisfy a system's functional requirements. This suggests a possible departure from current conventional details and assemblies, once again bringing focus to the fundamental question of the performance-based needs that the system is expected to fulfill. Any individual product's role may shift (or be eliminated) when evaluating design through this lens.”</i></p> |
| 86        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC136      | <p>The Institute offers an optional service to project teams that includes the facilitation of a 1-, 2- or 3-day charrette, or kick-off meeting. This process requires an integrated process by having a broad cross-section of stakeholders present to define fundamental, strategic goals. The charrette should take place at the beginning of a project when the potential to explore is at its fullest. The one-day meeting format focuses on fostering an interactive dialogue that</p>  |

| Comment # | Section # | Section    | Reviewer        | Contact Information                     | Date     | Question ID | Comments  |
|-----------|-----------|------------|-----------------|---|----------|-------------|---|
|           |           |            |                 |   |          |             | <p>allows participants to consider each area of impact. The two- or three-day format allows time for a deeper examination of promising ideas. The Institute designs the agenda, facilitates the session, and provides a follow-up summary. [Refer to the Appendix for a soft copy of a promotional flyer introducing some of the optional technical assistance services available to project teams.]</p> <p>The Living Building Challenge establishes performance goals for site, water, energy, indoor environmental quality (health), materials, social equity and beauty – because certification is performance-based, these goals must be incorporated throughout the design and lifecycle of the building.</p>   |
| 87        | i         | Robustness | Eden<br>Brukman | eden.brukman<br>@ living-<br>future.org | 08/19/11 | RNC137      | <p>The Institute helps users achieve cost savings through integrated design. A few examples include:</p> <ul style="list-style-type: none"> <li>- Charette facilitation [See Comment 86 – RNC136]</li> <li>- Education. e.g., The 6-hr “Understanding the Living Building Challenge” workshop (offered publicly, on-line for asynchronous learning, or privately as in-house sessions) includes discussion about the hard costs of various project types and design strategies, and demonstrates the benefits of a holistic and integrated approach. [Refer to the Appendix for a soft copy of sample slides “Tunneling Through Costs” from this workshop]</li> <li>- Research (publicly available). The Institute has completed three reports that address costs in the context of achieving advanced performance-based goals in site, water, energy, health, materials, equity and beauty. [Soft copies are available online: <a href="https://ilbi.org/education/reports">https://ilbi.org/education/reports</a>]</li> <li>- Living Building Financial Study. April 2009</li> <li>- Code and Regulatory Barriers to the Living Building</li> </ul> |

| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments  |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|---|
|           |           |            |              |                                |          |             | Challenge for Sustainable, Affordable, Residential Development (SARD), Part 3: Cost Benefit Summary. June 2009<br>- Quantifying the Value of Building Reuse. August 2011  |
| 88        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/19/11 | RNC138      | Living Building Challenge cites Commissioning as a key strategy for success in achieving the requirements for Imperative 07: Net Zero Energy, though as a rule, the Institute avoids prescriptive paths to certification. The Institute explicitly notes that a “copy of commissioning reports or other design or construction documents identifying corrections and/or improvements made to the system(s) or envelope throughout the 12-month occupancy period” may be included with the project team’s documentation.   |
| 89        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC142      | Living Building Challenge requires that project teams calculate the project’s total embodied carbon footprint (tCO <sub>2</sub> e), and purchase Certified Emission Reduction credits or Verified Emission Reduction credits from qualifying renewable energy projects.   |
| 90        | i         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | RNC143      | Evidence of Intent<br><br>Imperative 12: Embodies Carbon Footprint<br><br>The project must account for the total footprint of embodied carbon (tCO <sub>2</sub> e) from its construction and projected replacement parts through a one-time carbon offset tied to the project boundary. Superstructure and interior components of floors, walls and ceilings are included in the calculation of projected replacement parts based on a 100-year life expectancy of the building. The amount of carbon offsets required may be reduced by 50 percent for renovations of existing buildings. [See page 30 of the standard – Living Building Challenge 2.0 |

| Comment # | Section # | Section    | Reviewer     | Contact Information            | Date     | Question ID | Comments  |
|-----------|-----------|------------|--------------|--------------------------------|----------|-------------|---|
|           |           |            |              |                                |          |             | <p><a href="https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf">https://ilbi.org/lbc/Standard-Documents/LBC2-0.pdf</a></p> <p>Project teams must document the following characteristics about the carbon offsets that are purchased:</p> <ul style="list-style-type: none"> <li>- Renewable energy projects that ensure real, verifiable, permanent carbon reductions.</li> <li>- Green-e certified (3rd party verification)</li> <li>- Proven Additionality</li> <li>- Forecasted performance</li> <li>- Unique Recipients</li> <li>- Transparency / Education to buyers</li> <li>- Social co-benefits</li> <li>- Minimal environmental impacts</li> </ul> <p>Documentation must include the following:</p> <ul style="list-style-type: none"> <li>- Project embodied carbon footprint TCO<sub>2e</sub> (with calculations)</li> <li>- Name of Carbon Offset project</li> <li>- Location of Carbon Offset project (City, State/Province, Country)</li> <li>- Name of Carbon Offset provider</li> <li>- Carbon Offset provider's website</li> </ul> |
| 91        | j         | Robustness | Eden Brukman | eden.brukman@living-future.org | 08/20/11 | REB1-REB145 | <p><b><i>Please refer to Comments 53 – 92 (RNC1-RNC143) for suggested modifications to the information currently listed in the parallel questions relating to the Robustness of the certification system as it applies to Existing Buildings (REB).</i></b></p>   |



## **Appendix K: Certification System Mapping to Measured, Calculated, and Evidence of Intent**

Note: The numbers in the left-hand column of each certification system reflect the numbering system used by the certification systems.

# NEW CONSTRUCTION

|  |                    |
|--|--------------------|
|  | Calculated         |
|  | Measured           |
|  | Evidence of Intent |

| Green Globes   | LEED             |   | Living Building Challenge |  |
|--|------------------|---|---------------------------|--|
| NC   | NC               |   | Building                  |  |
| Site   | Sustainable Site |   | Site                      |  |
| <b>7.1 Site Development</b> 33                                 | <b>PR</b>        | <b>Construction Activity Pollution Prevention</b><br>Create and implement an erosion and sedimentation control plan | <b>1</b>                  | <b>Limits to growth</b><br>Projects may only be built on greyfields, brownfields, or previously developed sites  |
| 7.1.1 Urban Infill, Urban Sprawl and Public Transportation     |                  |   |                           |  |
| 7.1.1.1 Within a commercial zone 3                             |                  |   |                           |  |
| 7.1.1.2 Close to public transportation 4                       |                  |   |                           |  |
| 7.1.1.3 Bicycle facilities 1-3                                 |                  |   |                           |  |
| 7.1.1.4 Previously developed site 3                            |                  |   |                           |  |
| 7.1.2 Greenfields, Brownfields and Floodplains                 |                  |   |                           |  |
| 7.1.2.1 Remediated brownfield or superfund site 15             |                  |   |                           |  |
| 7.1.2.2 Greenfields 3  |                  |   |                           |  |
| 7.1.2.3 100-year flood plain 2                                 |                  |   |                           |  |
| <b>7.2 Ecological Impacts</b> 25                               | <b>1</b>         | <b>Site Selection</b>   | <b>1</b>                  | <b>2 Urban Agriculture</b><br>SJ All projects Must integrate opportunities for agriculture.  |
| 7.2.1 Site Disturbance and Erosion                             |                  |   |                           |  |
| 7.2.1.1 Soil control strategies during construction 1-5        |                  |   |                           |  |
| 7.2.1.2 Tree preservation 2                                    |                  |   |                           |  |
| 7.2.1.3 Construction activities management 2                   |                  |   |                           |  |
| 7.2.2 Heat Island Effect                                       |                  |   |                           |  |
| 7.2.2.1 Increase vegetated space by 10% 2                      |                  |   |                           |  |
| 7.2.2.2 Vegetated roof or roofing surface SRI requirements 2-6 |                  |   |                           |  |
| 7.2.2.3 Paved surfaces SRI requirements 2                      |                  |   |                           |  |
| 7.2.2.4 Trees shading 3  |                  |   |                           |  |
| 7.2.2.5 Wall surface SRI requirements 1                        |                  |   |                           |  |
| 7.2.3 Bird Collisions 1-2                                      |                  |   |                           |  |
| <b>7.3 Watershed Features</b> 27                               | <b>2</b>         | <b>Development Density and Community Connect</b>  | <b>5</b>                  | <b>3 Habitat Exchange</b><br>SJ For each hectare of development, an equal amount of land (min. 0.4 hectare) Must be set-aside in perpetuity as part of a habitat exchange. |
| 7.3.1 Storm Water Management                                   |                  |   |                           |  |
| 7.3.1.1 Storm water runoff 10                                  |                  |   |                           |  |
| 7.3.1.2 Site boundaries 8                                      |                  |   |                           |  |
| 7.3.1.3 Vegetated roof 1-9                                     |                  |   |                           |  |
| <b>7.4 Site Ecology</b> 28                                     | <b>3</b>         | <b>Brownfield Redevelopment</b>   | <b>1</b>                  | <b>4 Car Free Living</b><br>The proposed development may not lower the density of the existing site or the catchment area of the Transect                                  |
| 7.4.1 Landscape and Irrigation                                 |                  |   |                           |  |
| 7.4.1.1-7 25%-100% of exterior vegated spaces 7-28             |                  |   |                           |  |
| 7.4.1.8 Landscaping  |                  |   |                           |  |
| 7.4.8.1.1 Landscape and Irrigation plan 2                      |                  |   |                           |  |
| 7.4.8.1.2 Plan palette measures 8                              |                  |   |                           |  |
| 7.4.8.1.3 Soil requirements 1                                  |                  |   |                           |  |
| 7.4.8.1.4 Organic Mulch 1                                      |                  |   |                           |  |
| 7.4.8.1.5 Group plants 2                                       |                  |   |                           |  |
| 7.4.8.1.6 Native plants 3                                      |                  |   |                           |  |
| 7.4.8.1.7 Pervious materials 1                                 |                  |   |                           |  |
| 7.4.1.9 Irrigation   |                  |   |                           |  |
| 7.4.1.9.1 No irrigation 1-10                                   |                  |   |                           |  |
| 7.4.1.9.2 Irrigation system 1-3                                |                  |   |                           |  |
| 7.4.1.9.3 Swing joints or flex pipes 1                         |                  |   |                           |  |

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| 7.4.1.9.4    | Irrigation control technology                                       | 1                |  |   |  |
| 7.4.1.9.5    | Best practice   | 5                |  |   |  |
| <b>7.5</b>   | <b>Exterior Light Pollution</b>                                     | <b>7</b>         | <b>4.1</b>                               | <b>Alternative Transportation—Public Transportation</b> | <b>6</b>   |
| 7.5.1        | Exterior Light Pollution  |                  |  |   |  |
| 7.5.1.1      | Light fixture photometric and output                                | 3                |  |   |  |
| 7.5.1.2      | Lamp output and Cutoff  | 2                |  |   |  |
| 7.5.1.3      | Light fixture location  | 2                |  |   |  |
|              | <b>Total Points</b>   | <b>120</b>       |  |   |  |
|              | <b>Possible n/a</b>   | <b>52</b>        | <b>4.2</b>                               | <b>Alternative Transportation—Bicycle Storage and</b>   | <b>1</b>   |
|              | <b>Minimum requirement</b>  | <b>24%</b>       | <b>4.3</b>                               | <b>Alternative Transportation—Low-Emitting and</b>      | <b>3</b>   |
|              |   |                  | <b>4.4</b>                               | <b>Alternative Transportation—Parking Capacity</b>      | <b>2</b>   |
|              |   |                  | <b>5.1</b>                               | <b>Site Development—Protect or Restore Habitat</b>      | <b>1</b>   |
|              |   |                  | <b>5.2</b>                               | <b>Site Development—Maximize Open Space</b>             | <b>1</b>   |
|              |   |                  | <b>6.1</b>                               | <b>Stormwater Design—Quantity Control</b>               | <b>1</b>   |
|              |   |                  | <b>6.2</b>                               | <b>Stormwater Design—Quality Control</b>                | <b>1</b>   |
|              |   |                  | <b>7.1</b>                               | <b>Heat Island Effect—Non-roof</b>                      | <b>1</b>   |
|              |   |                  | <b>7.2</b>                               | <b>Heat Island Effect—Roof</b>                          | <b>1</b>   |
|              |   |                  | <b>8</b>                                 | <b>Light Pollution Reduction</b>                        | <b>1</b>   |
| Water        |   | Water Efficiency |  | Water   |  |
| <b>9.1</b>   | <b>Points Calculation Methodology for the Water Assessment Area</b> | <b>PR</b>        | <b>Water Use Reduction—20% Reduction</b> | <b>5</b>  | <b>Net Zero Water</b>  |
|              |   |                  |  |   | <b>SJ</b> 100% of occupants' water use Must come from captured precipitation or closed loop water systems that account for downstream ecosystem impacts and that are appropriately purified without the use of chemicals.<br>Exception: For water that Must be from potable sources due to local health regulations, including sinks, faucets and showers but excluding irrigation, toilet flushing, janitorial uses and equipment uses.   |
| <b>9.2</b>   | <b>Plumbing Fixtures and Fittings, Appliances and Equipment</b>     | <b>46</b>        | <b>1</b>                                 | <b>Water Efficient Landscaping</b>                      | <b>2~4</b>   |
| 9.2.1        | Plumbing Fixtures and Fittings, Appliance and Equipment             |                  |  | Reduce by 50% or No Potable Water Use or Irrigation     | <b>6</b>   |
|              |   |                  |  |   | <b>Ecological Water Flow</b>   |
| 9.2.1.1      | Met or surpassed Energy Policy Act of 1992 by a min. of 25%         | 6~24             |  |   | <b>SJ</b> 100% of storm water and building water discharge Must be managed onsite to feed the project's internal water demands or released onto adjacent sites for management through acceptable natural time-scale surface flow, groundwater recharge, agricultural use or adjacent building needs.<br><br>For Building projects that have a F.A.R. equal to or greater than 1.5 in Transects L5 or L6, a conditional exception may apply, which allows some water to leave the site at a reduced rate and depends on site and soil conditions and the surrounding development context. Greater flexibility is given to projects with higher densities. |
| 9.2.1.2      | Fixture and fittings in compliance with EPA WaterSense Program      | 18               |  |   |  |
| 9.2.1.3      | EnergyStar labeled residential clothes washers and dish washers     | 2~4              |  |   |  |
| <b>9.3</b>   | <b>Cooling Towers</b>   | <b>18</b>        | <b>2</b>                                 | <b>Innovative Wastewater Technologies</b>               | <b>2</b>   |
| 9.3.1        | Cooling Towers Cooling tower water quality                          |                  |  |   |  |
| 9.3.1.1      | Cooling tower water quality   | 4~6              |  |   |  |
| 9.3.1.2      | Cooling tower water treatment program (controllers and              | 6                |  |   |  |
| 9.3.1.3      | % of sensible (dry) cooling   | 1~4              |  |   |  |
| 9.3.1.4      | Drift Eliminators efficiency  | 2                |  |   |  |
| <b>9.4</b>   | <b>Boilers and Water Heaters</b>                                    | <b>3</b>         | <b>3</b>                                 | <b>Water Use Reduction</b>                              | <b>2~4</b>   |
| 9.4.1        | Meters and controllers  |                  |  | Reduce by 30%, 35%, 40%                                 |  |

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| 9.4.1.1   | Boilers and water heater features                              | 3                            |  |
| <b>9.5 Commercial Food Service Operations</b>   |  | <b>12</b>                    |  |
| <b>9.5.1 Commercial Food Service Equipment</b>  |  |                              |  |
| 9.5.1.1   | No one-through water-cooled equipment                          | 3                            |  |
| 9.5.1.2   | No water-fed garbage disposals                                 | 2                            |  |
| 9.5.1.3   | Energy Star Ice machines                                       | 2                            |  |
| 9.5.1.4   | Combination ovens maximum hourly water use                     | 1~2                          |  |
| 9.5.1.5   | Pre-rinse spray valves met EPA 2005                            | 1                            |  |
| 9.5.1.6   | Boilerless/connectionless food steamers maximum                | 1                            |  |
| 9.5.1.7   | Energy Star dish washer  | 1                            |  |
| <b>9.6 Medical/Dental and Laboratory Facilities</b>   |  | <b>11</b>                    |  |
| <b>9.6.1 Medical/Dental and Laboratory Equipment</b>  |  |                              |  |
| 9.6.1.1   | Steam sterilizer   | 2~4                          |  |
| 9.6.1.2   | Non-potable water for once through cooling                     | 3                            |  |
| 9.6.1.3   | Install dry vacuum systems                                     | 2                            |  |
| 9.6.1.4   | Digital imaging technology or film processors with water       | 1                            |  |
| 9.6.1.5   | Wet scrubbers with water recirculation systems                 | 1                            |  |
| <b>9.7 Commercial/Institutional Laundry Operations</b>  |  | <b>10</b>                    |  |
| <b>9.7.1 Commercial/Institutional On-Premise Laundry Equipment</b>                                      |  |                              |  |
| 9.7.1.1   | Water factor for clothes washers                               | 1~10                         |  |
| <b>9.8 Special Water Features</b>   |  | <b>4</b>                     |  |
| <b>9.8.1 Special Water Features (e.g. swimming pools, spas, ornamental fountains, water playscapes)</b> |  |                              |  |
| 9.8.1.1   | Reuse within the system  | 1                            |  |
| 9.8.1.2   | Meters for potable water makeup lines                          | 1                            |  |
| 9.8.1.3   | Alternate sources of water for makeup water                    | 2                            |  |
| <b>9.9 Water Treatment</b>  |  | <b>5</b>                     |  |
| <b>9.9.1 Water Treatment</b>  |  |                              |  |
| 9.9.1.1   | Equip filtration systems with pressure drop gauges             | 2                            |  |
| 9.9.1.2   | Reverse osmosis systems performance                            | 2                            |  |
| 9.9.1.3   | Equip water softeners with recharge controls                   | 1                            |  |
| <b>9.10 Alternate Sources of Water</b>  |  | <b>15</b>                    |  |
| <b>9.10.1 Alternate Sources of water</b>  |  |                              |  |
| 9.10.1.1  | Minimum 15% non-potable water applications                     | 2~15                         |  |
| <b>9.11 Metering</b>  |  | <b>6</b>                     |  |
| 9.11.1  | Meter Data Management System                                   | 4                            |  |
| 9.11.2  | Makeup Meters (for chilled or hot water loops)                 | 2                            |  |
| <b>Total Points</b>   |  | <b>130</b>                   |  |
| <b>Possible n/a</b>   |  | <b>62</b>                    |  |
| <b>Minimum requirement</b>  |  | <b>26%</b>                   |  |
| <b>Energy</b>   |  | <b>Energy and Atmosphere</b> | <b>Energy</b>  |
| <b>8.1 Building CO<sub>2</sub>e Emissions -- Path A</b>   |  | <b>250</b>                   | <b>7 Net Zero Energy</b>   |
| 8.1.1   | Percent Reduction in CO <sub>2</sub> e Emissions (min. 50%)    | 150~250                      | <b>SJ</b> 100% of the project's energy needs must be supplied by on-site renewable energy on a net annual basis. |
| <b>8.2 Demand -- Path A</b>   |  | <b>40</b>                    |  |
| <b>8.2.1 Passive Demand Reduction</b>   |  |                              |  |
| 8.2.1.1   | Thermal mass in wall construction (building envelope)          | 4                            |  |
| 8.2.1.2   | Thermal mass in wall construction (interior partitions)        | 4                            |  |
| 8.2.1.3   | Thermal mass in floor construction                             | 4                            |  |
| 8.2.2   | Thermal Energy Storage System (% of offsetting of peak demand) | 4~12                         |  |
| 8.2.3   | Power Demand Reduction   | 8                            |  |

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| 8.2.4  | Demand Capable Energy Management System (% reduction)      | 8         |           |  |
| <b>8.3 Measurement and Verification -- Path A</b>        |  | <b>10</b> | <b>PR</b> | <b>Fundamental Refrigerant Management</b>  |
| 8.3.1 Measurement and Verification Protocol              |  |           |           |  |
| 8.3.1.1  | Energy Metering Reporting Plan in the O&M Manual           | 8         |           |  |
| 8.3.1.2  | M&V program in accordance with EVO's IPMVP                 | 2         |           |  |
| <b>8.4 Building Opaque Envelope -- Path B (Prescript</b> |  | <b>42</b> | <b>1</b>  | <b>Optimize Energy Performance</b> 1~19  |
| 8.4.1  | Thermal Resistance and Transmittance (min. R value)        | 12        |           | Option 1: Improve by 12%-48% for New Buildings or 8%-44% for Existing Building Renovations       |
| 8.4.2  | Orientation (window to wall ratio)                         | 1-6       |           | Option 2: Prescriptive Compliance Path: ASHRAE Advanced Energy Design Guides 1                   |
| 8.4.3 Fenestration Systems                               |  |           |           | Option 3: Prescriptive Compliance Path: Advanced Buildings™ Core Performance Guide 1~3           |
| 8.4.3.1  | U-factors of the fenestration system                       | 12        |           | <i>Note: Options 2 &amp; 3 are not represented graphically because they offer limited points</i> |
| 8.4.3.2  | SHGC of the fenestration system                            | 12        |           |  |
| <b>8.5 Daylighting -- Path B</b>                         |  | <b>15</b> | <b>2</b>  | <b>On-Site Renewable Energy</b> 1~7  |
| 8.5.1 Daylighting  |  |           |           | 1-13% renewable energy   |
| 8.5.1.1  | Min. 10% daylighted area                                   | 1-8       |           |  |
| 8.5.1.2  | Minimum effective aperture for vertical fenestration       | 4         |           |  |
| 8.5.1.3  | 2-6% of the roof area installed with skylights             | 3         |           |  |
| <b>8.6 HVAC Systems and Controls -- Path B</b>           |  | <b>84</b> | <b>3</b>  | <b>Enhanced Commissioning</b> 2  |
| 8.6.1 Cooling Equipment                                  |  |           |           |  |
| 8.6.1.1  | Base Efficiency  | 5         |           |  |
| 8.6.1.2  | Incremental efficiency improvement                         | 1-10      |           |  |
| 8.6.2 Cooling Towers                                     |  |           |           |  |
| 8.6.2.1  | Reduce fan energy consumption measures                     | 3         |           |  |
| 8.6.2.2  | Install waterside economizer system                        | 3         |           |  |
| 8.6.3 Heat Pumps (efficiency)                            |  | 5-12      |           |  |
| 8.6.4 Heating Equipment (efficiency)                     |  | 1-12      |           |  |
| 8.6.5 Condensate Recovery (% of condensate return)       |  | 1-3       |           |  |
| 8.6.6 Steam Traps  |  | 2         |           |  |
| 8.6.7 Domestic Hot Water Heater                          |  | 2         |           |  |
| 8.6.8 (% of )Variable Speed Control of Pumps             |  | 1-5       |           |  |
| 8.6.9 Minimizing Reheat and Re-cool                      |  | 1-8       |           |  |
| 8.6.10 Air Economizers                                   |  |           |           |  |
| 8.6.10.1   | Use outdoor air for cooling in place of mechanical cooling | 1         |           |  |
| 8.6.10.2   | Controls to shut outdoor air and exhaust air dampers       | 1         |           |  |
| 8.6.10.3   | Low leakage dampers for air handling systems               | 1         |           |  |
| 8.6.11 Fans and Duckwork                                 |  |           |           |  |
| 8.6.11.1   | Max. pressure drop and noise criteria                      | 1         |           |  |
| 8.6.11.2   | Flexible duct work requirements                            | 1         |           |  |
| 8.6.11.3   | Overall leak rate < 5%                                     | 1         |           |  |
| 8.6.11.4   | Meet NEMA's Premium Energy Efficiency Motor Program        | 1         |           |  |
| 8.6.11.5   | Variable speed fans or energy management control system    | 2         |           |  |
| 8.6.12 Demand Control Ventilation                        |  |           |           |  |
| 8.6.12.1   | Use occupancy and/or CO2 sensors to control ventilation    | 5         |           |  |
| 8.6.12.2   | Ventilating heat recovery                                  | 5         |           |  |
| <b>8.7 Lighting Systems and Controls -- Path B</b>       |  | <b>38</b> | <b>4</b>  | <b>Enhanced Refrigerant Management</b> 2   |
| 8.7.1  | Total Lighting Power Density                               | 13        |           |  |
| 8.7.2  | Interior Automatic Light Shutoff Controls                  | 3         |           |  |
| 8.7.3  | Light Reduction Controls                                   | 7         |           |  |
| 8.7.4  | Controls for Daylighted Zones                              | 2-6       |           |  |

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| 8.7.5              | Exterior Lighting Controls   | 2-3                          |           |  |   |
| 8.7.6              | Exterior Luminaires  |                              |           |  |   |
| 8.7.6.1            | Lamp efficacy and Cutoff   | 4                            |           |  |   |
| 8.7.6.2            | Pulse-start, metal halide for all exterior lighting                      | 2                            |           |  |   |
| <b>8.8</b>         | <b>Elevator and Conveyance Systems -- Path B</b>                         | <b>5</b>                     | <b>5</b>  | <b>Measurement and Verification</b>              | <b>3</b>  |
| 8.8.1              | Elevators and Escalators   |                              |           |  |   |
| 8.8.1.1            | Regenerative braking elevators   | 3                            |           |  |   |
| 8.8.1.2            | Capability to slow down or stop when no traffic                          | 2                            |           |  |   |
| <b>8.9</b>         | <b>Renewable Energy -- Path B</b>  | <b>50</b>                    | <b>6</b>  | <b>Green Power</b>                               | <b>2</b>  |
| 8.9.1              | Off-site Renewable Energy  | 1-50                         |           |  |   |
| 8.9.2              | On-site Renewable Energy   | 1-50                         |           |  |   |
|                    | <b>Total Points (Path A)</b>   | <b>300</b>                   |           |  |   |
|                    | <b>Possible n/a (Path A)</b>   | <b>24</b>                    |           |  |   |
|                    | <b>Minimum requirement (Path A)</b>                                      | <b>50%</b>                   |           |  |   |
|                    | <b>Total Points (Path B)</b>   | <b>228</b>                   |           |  |   |
|                    | <b>Possible n/a (Path B)</b>   | <b>107</b>                   |           |  |   |
|                    | <b>Minimum requirement (Path B)</b>                                      | <b>33%</b>                   |           |  |   |
| Indoor Environment |  | Indoor Environmental Quality |           | Health   |   |
| <b>12.1</b>        | <b>Ventilation Systems</b>   | <b>39</b>                    | <b>PR</b> | <b>Minimum Indoor Air Quality Performance</b>    | <b>8</b>  |
| 12.1.1             | Ventilation Air Quantity   | 10                           |           |  | <b>Civilized Environment</b><br>Every occupiable space Must have operable windows that provide access to fresh air and daylight.  |
| 12.1.2             | Air Exchange   | 10                           |           |  |   |
| 12.1.3             | Ventilation Intakes and Exhausts   | 8                            |           |  |   |
| 12.1.4             | CO2 Sensing and Ventilation Control Equipment                            | 6                            |           |  |   |
| 12.1.5             | Air Handling Equipment   | 5                            |           |  |   |
| <b>12.2</b>        | <b>Source Control of Indoor Pollutants</b>                               | <b>34</b>                    | <b>PR</b> | <b>Environmental Tobacco Smoke (ETS) Control</b> | <b>9</b>  |
| 12.2.1             | Volatile Organic Compounds   | 10                           |           |  | <b>Healthy Air</b><br><ul style="list-style-type: none"> <li>• Entryways Must have an external dirt track-in system and an internal dirt track-in system contained within a separate entry space.</li> <li>• All kitchens, bathrooms, copy rooms, janitorial closets and chemical storage spaces Must be separately ventilated and exhaust directly to outside air.</li> <li>• Ventilation rates Must be designed to comply with ASHRAE 62 and equipment Must be installed to monitor levels of carbon dioxide (CO2), temperature and humidity.</li> <li>• Smoking Must be prohibited within the project boundary.</li> </ul> |
| 12.2.2             | Leakage, Condensation and Humidity                                       | 5                            |           |  |   |
| 12.2.3             | Access for HVAC Maintenance  | 4                            |           |  |   |
| 12.2.4             | Carbon Monoxide Monitoring   | 3                            |           |  |   |
| 12.2.5             | Wet Cooling Tower  | 4                            |           |  |   |
| 12.2.6             | Domestic Hot Water Systems   | 2                            |           |  |   |
| 12.2.7             | Humidification and Dehumidification Systems                              | 4                            |           |  |   |
| 12.2.8             | Ventilation and Physical Isolation for Specialized Activities            | 2                            |           |  |   |
| <b>12.3</b>        | <b>Source Control</b>  | <b>6</b>                     | <b>1</b>  | <b>Outdoor Air Delivery Monitoring</b>           | <b>10</b>   |
| 12.3.1             | Pest and Contamination Control   |                              |           |  | <b>Biophilia</b><br>Each of the six established Biophilic Design Elements <sup>39</sup> Must be represented for every 2,000 m2 of the project: <ul style="list-style-type: none"> <li>• Environmental features</li> <li>• Natural shapes and forms</li> <li>• Natural patterns and processes</li> <li>• Light and space</li> <li>• Place-based relationships</li> <li>• Evolved human-nature relationships</li> </ul>   |
| 12.3.1.1           | Integrated pest management strategies                                    | 2                            |           |  |   |
| 12.3.1.2           | Provide a sealed storage area for food/kitchen solid waste and recycling | 2                            |           |  |   |
| 12.3.2             | Radon Entry and Control  | 2                            |           |  |   |
| <b>12.4</b>        | <b>Lighting Design and Integration of Lighting Sy:</b>                   | <b>39</b>                    | <b>2</b>  | <b>Increased Ventilation</b>                     |   |
| 12.4.1             | Daylighting  |                              |           |  |   |
| 12.4.1.1           | Min 10% of primary occupied spaces receive minim 25 fc daylight          | 3-11                         |           |  |   |
| 12.4.1.2           | Min 10% of task areas have views to the outside                          | 3-9                          |           |  |   |

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| 12.4.1.3  | Shading devices for southern, western, and eastern exposures   | 6                       |            |  |  |
| <b>12.4.2 Lighting Design</b>                             |  |                         |            |  |  |
| 12.4.2.1  | Lighting levels in compliance with IESNA Lighting Handbook   | 7                       |            |  |  |
| 12.4.2.2  | Reduce glare on VDT--Wall luminance (3:1 task to far surround luminance ratio)   | 2-6                     |            |  |  |
| <b>12.5 Thermal Comfort</b>                               |  | <b>20</b>               | <b>3.1</b> | <b>Construction IAQ Management Plan—During C</b>     | <b>1</b>   |
| 12.5.1  | Thermal Comfort Zones  | 10                      |            |  |  |
| 12.5.2  | Thermal Comfort Design   | 10                      |            |  |  |
| <b>12.6 Acoustic Comfort</b>                              |  | <b>22</b>               | <b>3.2</b> | <b>Construction IAQ Management Plan—Before C</b>     | <b>1</b>   |
| <b>12.6.1 Acoustic Comfort Design</b>                     |  |                         |            |  |  |
| 12.6.1.1  | Acoustic design strategies for specific interior sound control performance targets   | 4                       |            |  |  |
| 12.6.1.2  | Minimum Sound Transmission Class ratings of floor/ceiling assemblies, walls and doors between acoustically separated areas and adjacent spaces | 2                       |            |  |  |
| 12.6.1.3  | Impact Insulation Class of all floor-ceiling assemblies rating   | 2                       |            |  |  |
| 12.6.1.4  | Reverberation Time in quiet areas and all other areas where speech intelligibility is important  | 2                       |            |  |  |
| <b>12.6.2 Mechanical, Plumbing and Electrical Systems</b> |  |                         |            |  |  |
| 12.6.2.1  | Reduce background sound level performance associated with mechanical systems   | 4                       |            |  |  |
| 12.6.2.2  | Minimize air-borne noise from the HVAC system  | 2                       |            |  |  |
| 12.6.2.3  | Minimize structure-borne noise from the HVAC system  | 2                       |            |  |  |
| 12.6.2.4  | Mitigate noise from the plumbing system  | 2                       |            |  |  |
| 12.6.2.5  | Minimize noise from the electrical system  | 2                       |            |  |  |
| <b>Total Points</b>                                       |  | <b>160</b>              | <b>4.1</b> | <b>Low-Emitting Materials—Adhesives and Sealants</b> | <b>1</b>   |
| <b>Possible n/a</b>                                       |  | <b>32</b>               | <b>4.2</b> | <b>Low-Emitting Materials—Paints and Coatings</b>    | <b>1</b>   |
| <b>Minimum requirement</b>                                |  | <b>32%</b>              | <b>4.3</b> | <b>Low-Emitting Materials—Flooring Systems</b>       | <b>1</b>   |
|   |  |                         | <b>4.4</b> | <b>Low-Emitting Materials—Composite Wood and</b>     | <b>1</b>   |
|   |  |                         | <b>5</b>   | <b>Indoor Chemical and Pollutant Source Control</b>  | <b>1</b>   |
|   |  |                         | <b>6.1</b> | <b>Controllability of Systems—Lighting</b>           | <b>1</b>   |
|   |  |                         | <b>6.2</b> | <b>Controllability of Systems—Thermal Comfort</b>    | <b>1</b>   |
|   |  |                         | <b>7.1</b> | <b>Thermal Comfort—Design</b>                        | <b>1</b>   |
|   |  |                         | <b>7.2</b> | <b>Thermal Comfort—Verification</b>                  | <b>1</b>   |
|   |  |                         | <b>8.1</b> | <b>Daylight and Views—Daylight</b>                   | <b>1</b>   |
|   |  |                         | <b>8.2</b> | <b>Daylight and Views—Views</b>                      | <b>1</b>   |
| Resources/Materials                                       |  | Materials and Resources |            | Material   |  |
| <b>10.1 Assemblies (Structural and Envelope)</b>          |  | <b>33/25</b>            | <b>PR</b>  | <b>Storage and Collection of Recyclables</b>         | <b>11 Red List</b>   |
| 10.1.1  | Assemblies--Path A   | 1-33                    |            |  | The project cannot contain any of the Red List materials or chemicals.<br>Exception: There are temporary exceptions for numerous Red List items due to Current limitations in the materials economy. |
| 10.1.2 Material Content Assemblies--Path B                |  |                         |            |  |  |
| 10.1.2.1  | Recycled content materials accounted for min 1% of building materials  | 1-8                     |            |  |  |
| 10.1.2.2  | Bio-based products accounted for min 1% of building materials  | 1-7                     |            |  |  |
| 10.1.3  | Transportation of Harvested, Reclaimed Salvaged, or Extracted Materials--Path B  | 1-5                     |            |  |  |
| 10.1.4  | Transportation of Processed or Manufactured Materials--Path B  | 1-5                     |            |  |  |
| <b>10.2 Furnishings, Finishes and Fit-outs</b>            |  | <b>17</b>               | <b>1.1</b> | <b>Building Reuse—Maintain Existing Walls, Floor</b> | <b>1-3</b>   |
|   |  |                         |            |  | <b>12 Embodied Carbon Footprint</b>  |

| Green Globes  |   | LEED      |  | Living Building Challenge |   |
|---|---|-----------|--|---------------------------|---|
| 10.2.1  | Furnishings, Finishes and Fit-outs--Life Cycle Assessment   | 1~4       | Reuse 55%, 75%, 95%  |                           | <b>SJ</b> The project Must account for the total footprint of embodied carbon (tCO2e) from its construction and projected replacement parts through a one-time carbon offset tied to the project boundary.  |
| <b>10.2.2 Material Content--Furnishing, Finishes and Fit-outs</b> |   |           |  |                           |   |
| 10.2.2.1  | Recycled content materials accounted for min 1% of Furnishings, Finishes and Fit-outs   | 1~5       |  |                           |   |
| 10.2.2.2  | Bio-based products accounted for min 1% of Furnishings, Finishes and Fit-outs   | 1~4       |  |                           |   |
| 10.2.3  | Transportation of Harvested, Reclaimed Salvaged, or Extracted Materials   | 1~2       |  |                           |   |
| 10.2.4  | Transportation of Processed or Manufactured Materials   | 1~2       |  |                           |   |
| <b>10.3 Other Material Properties</b>                             |   | <b>12</b> | <b>1.2</b> <b>Building Reuse—Maintain 50% of Interior Non-</b> | <b>1</b>                  | <b>13 Responsible Industry</b>  |
| 10.3.1  | Off-Site Salvaged Materials   | 1~6       |  |                           | The project Must advocate for the creation and adoption of third-party certified standards for sustainable resource extraction and fair labor practices.  |
| 10.3.2  | Certification of Wood-Based Products  | 1~6       |  |                           |   |
| <b>10.4 Reuse of Existing Structures</b>                          |   | <b>18</b> | <b>2</b> <b>Construction Waste Management</b>                  | <b>1~2</b>                | <b>14 Appropriate Sourcing</b>  |
| 10.4.1  | Reuse of Building Façade  | 1~6       | 50%, 75% recycled or salvaged                                  |                           | The project Must incorporate place-based solutions and contribute to the expansion of a regional economy rooted in sustainable practices, products and services. Source locations for materials and services Must adhere to the restrictions (500 km-20,004 km varied in type of materials and services). |
| 10.4.2  | Reuse of Structural Systems   | 1~6       |  |                           |   |
| 10.4.3  | Reuse of Non-Structural Elements  | 1~6       |  |                           |   |
| <b>10.5 Reduction, Re-use and Recycling of Waste</b>              |   | <b>9</b>  | <b>3</b> <b>Materials Reuse</b>                                | <b>1~2</b>                | <b>15 Conservation + Reuse</b>  |
| 10.5.1  | Demolition and Construction Waste   | 1~6       | Reuse 5%, 10%  |                           | <ul style="list-style-type: none"> <li>Project teams Must create a material conservation management</li> <li>During construction, teams Must divert wasted material from landfills to the following levels (80%--100% varied in types)</li> </ul>   |
| 10.5.2  | Reuse of Existing Materials for Site Development and Landscaping  | 1         |  |                           |   |
| 10.5.3  | Operational Waste   | 2         |  |                           | <ul style="list-style-type: none"> <li>There Must be dedicated infrastructure for the collection of recyclables and compostable food scraps.</li> </ul>   |
| <b>10.6 Resource Conservation through Design</b>                  |   | <b>14</b> | <b>4</b> <b>Recycled Content</b>                               | <b>1~2</b>                |   |
| 10.6.1  | Building Service Life Plan  | 7         | 10%, 20% of content  |                           | Exception: There is a temporary exception for meeting this level of diversion in jurisdictions where Municipalities do not have systems in place to collect all listed construction materials or recyclables.   |
| 10.6.2  | Materials and Raw Materials   | 2         |  |                           |   |
| <b>10.6.3 Multi-Functional Assemblies</b>                         |   |           |  |                           |   |
| 10.6.3.1  | Architect or design professional to provide letter documentation describing how the building design uses assemblies that perform Multiple functions.    | 2         |  |                           |   |
| 10.6.3.2  | The building design plans facilitated demounting or disassembling reusable materials without substantial damage to the materials or there surroundings. | 3         |  |                           |   |
| <b>10.7 Building Envelope</b>                                     |   | <b>30</b> | <b>5</b> <b>Regional Materials</b>                             | <b>1~2</b>                |   |
| 10.7.1  | Roofing Membrane Assemblies and Systems   | 5         | 10%, 20% of materials  |                           |   |
| 10.7.2  | Flashings   | 5         |  |                           |   |
| 10.7.3  | Roof and Wall Openings  | 5         |  |                           |   |
| <b>10.7.4 Foundation Systems</b>                                  |   |           |  |                           |   |
| 10.7.4.1  | Vapor retarders   | 2         |  |                           |   |
| 10.7.4.2  | Damp roofing  | 2         |  |                           |   |
| 10.7.5  | Below Grade Wall Slabs and Above Grade Horizontal Assemblies  | 4         |  |                           |   |



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|--------------------|---|-------------------------------|---------------------------------------|---------------------------|--|
| 10.7.6             | Exterior Wall Cladding Systems  | 5                             |                                       |                           |  |
| 10.7.7             | Rainscreen Wall Cladding  | 2                             |                                       |                           |  |
| <b>10.8</b>        | <b>Air Barrier</b>  | <b>6</b>                      | <b>6</b> Rapidly Renewable Materials  | <b>1</b>                  |  |
| 10.8.1             | Continuous Air Barrier  |                               |                                       |                           |  |
| 10.8.1.1           | A continuous air barrier was in stalled                                   | 3                             |                                       |                           |  |
| 10.8.1.2           | Compliance of the continuous air barrier for the opaque building envelope | 3                             |                                       |                           |  |
| <b>10.9</b>        | <b>Vapor Retarders</b>  | <b>6</b>                      | <b>7</b> Certified Wood               | <b>1</b>                  |  |
| 10.9.1             | Vapor Retarders   |                               |                                       |                           |  |
| 10.9.1.1           | The interior side of framed walls   | 3                             |                                       |                           |  |
| 10.9.1.2           | Crawl space walls   | 3                             |                                       |                           |  |
|                    | <b>Total Points (Path A)</b>  | <b>145</b>                    |                                       |                           |  |
|                    | <b>Total Points (Path B)</b>  | <b>137</b>                    |                                       |                           |  |
|                    | <b>Minimum requirement (Path B)</b>                                       | <b>29%</b>                    |                                       |                           |  |
| Emissions          |   |                               |                                       |                           |  |
| <b>11.1</b>        | <b>Heating Equipment</b>  | <b>18</b>                     |                                       |                           |  |
| 11.1.1             | District Heating--Path A  | 18                            |                                       |                           |  |
| 11.1.2             | Ultra Low NOx/Low CO Boilers and Furnaces--Path B                         | 10                            |                                       |                           |  |
| 11.1.3             | Low NOx/Low CO Boilers and Furnaces--Path B                               | 8                             |                                       |                           |  |
| <b>11.2</b>        | <b>Cooling Equipment</b>  | <b>21</b>                     |                                       |                           |  |
| 11.2.1             | Ozone-Depleting Potential (ODP)   | 1-7                           |                                       |                           |  |
| 11.2.2             | Globe Warming Potential (GWP)   | 1-7                           |                                       |                           |  |
| 11.2.3             | Leak Detection  | 7                             |                                       |                           |  |
| <b>11.3</b>        | <b>Storage of Janitorial Supplies</b>                                     | <b>6</b>                      |                                       |                           |  |
| 11.3.1             | Storage of Janitorial Supplies  | 6                             |                                       |                           |  |
|                    | <b>Total Points</b>   | <b>45</b>                     |                                       |                           |  |
|                    | <b>Possible n/a</b>   | <b>24</b>                     |                                       |                           |  |
|                    | <b>Minimum requirement</b>  | <b>9%</b>                     |                                       |                           |  |
| Project Management |   | Innovation and Design Process |                                       | Equity                    |  |
| <b>6.1</b>         | <b>Coordination and Benchmarking</b>                                      | <b>28</b>                     | <b>1</b> Innovation in Design         | <b>1-5</b>                | <b>16</b> Human Scale + Human Places   |
| 6.1.1              | GDDC Performance Goals  | 4                             |                                       |                           | Specific maximum (and sometimes minim) requirements for paved areas, street and block design, building scale and signage that contribute to livable places.  |
| 6.1.2              | GDDC Progress Meetings for Design   | 10                            |                                       |                           |  |
| 6.1.3              | GDDC Pre-design Green Design Meetings                                     | 2-6                           |                                       |                           |  |
| 6.1.4              | GDDC Progress Meetings for Construction                                   | 2-8                           |                                       |                           |  |
| <b>6.2</b>         | <b>Environmental Management during</b>                                    | <b>16</b>                     | <b>2</b> LEED Accredited Professional | <b>1</b>                  | <b>17</b> Democracy + Social Justice   |
| 6.2.1              | Environmental Management  | 4                             |                                       |                           | • All primary transportation, roads and non-building infrastructure that are considered externally focused Must be equally accessible to all members of the public regardless of background, age and socioeconomic class including the homeless. |
| 6.2.2              | Clean Diesel Practices  | 1                             |                                       |                           | • The ADA shall be considered the minim design compliance path.  |
| 6.2.3              | Building Materials and Building Envelope                                  | 1-2                           |                                       |                           |  |
| 6.2.4              | Indoor Environmental Quality  |                               |                                       |                           |  |
| 6.2.4.1            | Air flush or IAQ test after construction                                  | 4                             |                                       |                           |  |
| 6.2.4.2            | Air and dust contaminants control strategies                              | 1-5                           |                                       |                           |  |
| <b>6.3</b>         | <b>Whole Building Commissioning</b>                                       | <b>42</b>                     |                                       |                           | <b>18</b> Rights to Nature   |

| Green Globes                                |  | LEED                     | Living Building Challenge   |
|---|--|--------------------------|---|
| 6.3.1                                       | Pre-commissioning  | 3                        | The project may not block access to, nor diminish the quality of, fresh air, sunlight and natural waterways for any member of society or adjacent developments.   |
| <b>6.3.2 Whole Building Commissioning</b>   |  |                          |   |
| 6.3.2.1                                     | Envelope   | 5                        |   |
| 6.3.2.2                                     | HVAC&R   | 5                        |   |
| 6.3.2.3                                     | Structural system  | 4                        |   |
| 6.3.2.4                                     | Fire protection  | 4                        |   |
| 6.3.2.5                                     | Plumbing system  | 3                        |   |
| 6.3.2.6                                     | Electrical system  | 3                        |   |
| 6.3.2.7                                     | Lighting system  | 3                        |   |
| 6.3.2.8                                     | Interior, elevating and conveying, communication systems | 2-6                      |   |
| 6.3.2.9                                     | Noise isolation  | 2                        |   |
| 6.3.2.10                                    | Building system specifications                           | 2                        |   |
| 6.3.2.11                                    | Training   | 2                        |   |
| <b>6.4 Environmental Management -- Post</b> |  | <b>14</b>                |   |
| 6.4.1                                       | Operation and Maintenance Manuals                        | 1-14                     |   |
| <b>Total Points</b>                         |  | <b>100</b>               |   |
| <b>Possible n/a</b>                         |  | <b>2</b>                 |   |
| <b>Minimum requirement</b>                  |  | <b>50%</b>               |   |
|   |  | <b>Regional Priority</b> | <b>Beauty</b>   |
| <b>1</b>                                    | <b>Regional Priority</b>                                 | <b>4</b>                 | <b>19 Beauty + Spirit</b><br>The project Must contain design features intended solely for human delight and the celebration of culture, spirit and place appropriate to its function.   |
|   |  |                          | <b>20 Inspiration + Education</b><br>Educational materials about the performance and operation of the project Must be provided to the public to share successful solutions and to motivate others to make change. Non-sensitive areas of Building Must be open to the public at least one day per year to facilitate direct contact with the Living Building Challenge. |

# EXISTING BUILDINGS

|                    |
|--------------------|
| Calculated         |
| Measured           |
| Evidence of Intent |

| Green Globes |  | LEED             |   | Living Building Challenge   |     |  |
|--------------|--|------------------|---|---|-----|--|
| CIEB         |  | EBOM             |   | Renovation  |     |  |
|              |  | Sustainable Site |   | Site  |     |  |
|              |  | 1                | LEED Certified Design and Construction  | 4   | 1   | <b>Limits to growth</b><br>Projects may only be built on greyfields, brownfields, or previously developed sites  |
|              |  | 2                | Building Exterior and Hardscape Management Plan   | 1   | 3   | <b>Habitat Exchange</b><br><b>SJ</b> For each hectare of development, an equal amount of land (min. 0.4 hectare) must be set-aside in perpetuity as part of a habitat exchange.  |
|              |  | 3                | Integrated Pest Management, Erosion Control, and Landscape Management Plan  | 1   |     |  |
|              |  | 4                | Alternative Commuting Transportation<br>Baseline assumes all regular occupants commute alone in conventional automobiles. Demonstrate 10%-35% reduction in commuting trips  | 3~15  |     |  |
|              |  | 5                | Site Development—Protect or Restore Open<br>Native or adapted vegetation covering 25% of the total site (excluding building) or 5% of the site (including building). Every 2SF off-site can be counted as 1SF onsite. | 1   |     |  |
|              |  | 6                | Stormwater Quantity Control<br>stormwater management of 15% of the precipitation  | 1   |     |  |
|              |  | 7.1              | Heat Island Reduction—Nonroof<br>50% of the site hardscape under cover, or with high SRI (≥29) or pervious material (≥50%)  | 1   |     |  |
|              |  | 7.2              | Heat Island Reduction—Roof<br>75% of roof with high SRI (≥29) material, 50% vegetated roof, or combination  | 1   |     |  |
|              |  | 8                | Light Pollution Reduction<br>Interior lighting auto off during after-hours periods. Shield exterior lighting  | 1   |     |  |
|              |  |                  | <b>Total Points</b>   | <b>26</b>   |     |  |
| Water        |  | Water Efficiency |   | Water   |     |  |
| 2.1          | Water Consumption of 12 months                 | 30               | PR  | <b>Minimum Indoor Plumbing Fixture and Fitting Efficiency</b><br>Meet plumbing code UPC or IPC 2006 (baseline)<br>Adjusted baseline:<br>--after 1993, 120% baseline<br>--before 1993, 160% baseline | 5   | <b>Net Zero Water</b><br><b>SJ</b> 100% of occupants' water use must come from captured precipitation or closed loop water systems that account for downstream ecosystem impacts and that are appropriately purified without the use of chemicals. |
| 2.2          | Water Conserving Features                      | 32               | 1   | <b>Water Performance Measurement</b><br>Whole building metering or submetering  | 1~2 | Exception: For water that must be from potable sources   |
|              | Low flow fixtures and controls (based on code) | 17               |   |   |     |  |
|              | Other features                                 | 2                |   |   |     |  |
|              | Irrigation                                     | 5                |   |   |     |  |
|              | Nonpotable water                               | 6                |   |   |     |  |

Calculated  
 Measured  
 Evidence of Intent

| Green Globes       |   |           | LEED                  |   | Living Building Challenge |   |
|--------------------|---|-----------|-----------------------|---|---------------------------|---|
| CIEB               |   |           | EBOM                  |   | Renovation                |   |
| Water-cooled units |   |           | 2                     |   |                           |   |
| <b>2.3</b>         | <b>Water Management</b>                 | <b>18</b> | <b>2</b>              | <b>Additional Indoor Plumbing Fixture and Fitting Efficiency</b><br>10%-30% reduction in water use from baseline  | <b>1~5</b>                |   |
|                    | Written policy                          | 3         |                       |   |                           |   |
|                    | Monitor consumption                     | 4         |                       |   |                           |   |
|                    | Water audit                             | 4         |                       |   |                           |   |
|                    | Reduction target                        | 4         |                       |   |                           |   |
|                    | Regular checking                        | 3         |                       |   |                           |   |
|                    |   |           | <b>3</b>              | <b>Water Efficient Landscaping</b><br>50%-100% potable water reduction for irrigation   | <b>1~5</b>                |   |
|                    |   |           | <b>4.1</b>            | <b>Cooling Tower Water Management—Chemical Management</b>   | <b>1</b>                  |   |
|                    | <b>Total Points</b>                     | <b>80</b> | <b>4.2</b>            | <b>Cooling Tower Water Management—Nonpotable Water Source</b><br>Use makeup water that consists of ≥50% nonpotable water  | <b>1</b>                  |   |
|                    | <b>Possible n/a</b>                     | <b>11</b> |                       |   |                           |   |
|                    | <b>Minimum requirement</b>              | unknown   |                       | <b>Total Points</b>   | <b>14</b>                 |   |
| Energy             |   |           | Energy and Atmosphere |   | Energy                    |   |
| <b>1.1</b>         | <b>Energy Consumption of 12 months</b>  | <b>80</b> | <b>PR</b>             | <b>Energy Efficiency Best Management Practices—Planning, Documentation, and Opportunity Assessment</b>  |                           | <b>7</b> <b>Net Zero Energy</b><br><br><b>SJ</b> 100% of the project's energy needs must be supplied by on-site renewable energy on a net annual basis. |
| <b>1.2</b>         | <b>Lighting</b>                         | <b>25</b> | <b>PR</b>             | <b>Minimum Energy Efficiency Performance</b><br>Achieve ENERGY STAR rating of at least 69 or 19% better than the average for typical buildings of similar type  |                           |   |
|                    | High-efficiency lighting fixtures       | 15        |                       |   |                           |   |
|                    | Lighting controls                       | 3         |                       |   |                           |   |
|                    | Percentage of high efficiency lighting  | 7         |                       |   |                           |   |
| <b>1.3</b>         | <b>Boilers</b>                          | <b>16</b> | <b>PR</b>             | <b>Fundamental Refrigerant Management</b><br>Zerouse of CFC-based refrigerants  |                           |   |
|                    | Percentage of high-efficiency boilers   | 12        |                       |   |                           |   |
|                    | Automatic vent damper                   | 4         |                       |   |                           |   |
| <b>1.4</b>         | <b>Controls</b>                         | <b>14</b> | <b>1</b>              | <b>Optimize Energy Efficiency Performance</b><br>Achieve ENERGY STAR rating of 71-95 or 21%-45% better than the average for typical buildings of similar type   | <b>1~18</b>               |   |
|                    | Temperature setback                     | 6         |                       |   |                           |   |
|                    | BAS installation                        | 8         |                       |   |                           |   |
| <b>1.5</b>         | <b>Hot Water</b>                        | <b>12</b> | <b>2.1</b>            | <b>Existing Building Commissioning—Investigation and Analysis</b><br>Conduct commissioning or ASHRAE level II energy audit                                      | <b>2</b>                  |   |
|                    | High-efficiency water heater            | 4         |                       |   |                           |   |
|                    | Hot water saving devices                | 4         |                       |   |                           |   |
|                    | Hot water temperature                   | 4         |                       |   |                           |   |
| <b>1.6</b>         | <b>Other Energy Efficiency Features</b> | <b>16</b> | <b>2.2</b>            | <b>Existing Building Commissioning—Implementation</b><br>Implement no- or low-cost operational improvements, create retrofit/upgrade plan, and provide training | <b>2</b>                  |   |
|                    | Percentage of high-efficiency chillers  | unk       |                       |   |                           |   |
|                    | Variable speed drives                   | unk       |                       |   |                           |   |

Calculated  
 Measured  
 Evidence of Intent

| Green Globes |   | LEED      |   | Living Building Challenge |  |
|--------------|---|-----------|---|---------------------------|--|
| CIEB         |   | EBOM      |   | Renovation                |  |
|              | Combined heat and power plants                            | unk       |   |                           |  |
|              | Energy recovery ventilation                               | unk       |   |                           |  |
|              | Energy-saving systems or measures                         | unk       |   |                           |  |
| <b>1.7</b>   | <b>Green Energy</b>                                       | <b>12</b> | <b>2.3 Existing Building Commissioning—Ongoing Commissioning</b>  | <b>2</b>                  |  |
|              |   |           | Implement an ongoing commissioning program and complete at least half of the scope of work in the first commissioning cycle           |                           |  |
|              | Purchase green electricity                                | 5         |   |                           |  |
|              | On-site energy sources                                    | 5         |   |                           |  |
|              | Percentage of renewable energy                            | 2         |   |                           |  |
| <b>1.8</b>   | <b>Envelope</b>   | <b>35</b> | <b>3.1 Performance Measurement—Building Automation System</b>   | <b>1</b>                  |  |
|              |   |           | Have in place a BAS and a preventive maintenance program  |                           |  |
|              | Assess performance and condition of the building envelope | 4         |   |                           |  |
|              | Energy-efficient windows and doors                        | 5         |   |                           |  |
|              | Shading   | 3         |   |                           |  |
|              | Air-sealed  | 11        |   |                           |  |
| <b>1.9</b>   | <b>Energy Policy</b>                                      | <b>5</b>  | <b>3.2 Performance Measurement—System Level</b>   | <b>1~2</b>                |  |
|              |   |           | Develop a breakdown of energy use and employing metering covering at least 40% or 80% of the total expected annual energy consumption |                           |  |
| <b>1.10</b>  | <b>Energy Audit</b>                                       | <b>2</b>  | <b>4 On-site and Off-site Renewable Energy</b>  | <b>1~6</b>                |  |
|              | Energy audit within the past 3 years                      | 2         | Implement 3%-12% of on-site renewable energy or 25%-100% of off-site renewable energy certificates                                    |                           |  |
| <b>1.11</b>  | <b>Energy Management, Monitoring and Targeting</b>        | <b>16</b> | <b>5 Enhanced Refrigerant Management</b>  | <b>1</b>                  |  |
|              |   |           | Do not use refrigerants or minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change      |                           |  |
|              | Energy management plan                                    | 2         |   |                           |  |
|              | Energy use monitor  | 3         |   |                           |  |
|              | Energy usage targets and movement                         | 7         |   |                           |  |
|              | Analyze and reduce peak demand                            | 4         |   |                           |  |
| <b>1.12</b>  | <b>Energy Training</b>                                    | <b>5</b>  | <b>6 Emissions Reduction Reporting</b>  | <b>1</b>                  |  |
|              |   |           | Track, record, and report emissions reductions  |                           |  |
| <b>1.13</b>  | <b>Financial Resources</b>                                | <b>5</b>  |   |                           |  |
| <b>1.14</b>  | <b>Sub-metering</b>                                       | <b>10</b> | <b>Total Points</b>   | <b>35</b>                 |  |
|              | Percentage of tenants' sub-metering                       | 7         |   |                           |  |
|              | Sub-metering of major energy uses                         | 3         |   |                           |  |
| <b>1.15</b>  | <b>Operating Manual</b>                                   | <b>15</b> |   |                           |  |
| <b>1.16</b>  | <b>Maintenance Schedule</b>                               | <b>22</b> |   |                           |  |
|              | Check mechanical systems and controls                     | 15        |   |                           |  |
|              | Preventive maintenance program                            | 7         |   |                           |  |
| <b>1.17</b>  | <b>Public Transportation</b>                              | <b>45</b> |   |                           |  |
|              | Access to public transport within 0.3 miles               | 25        |   |                           |  |
|              | Service at least every 15 minutes during rush hour        | 20        |   |                           |  |

Calculated  
 Measured  
 Evidence of Intent

| Green Globes       |  | LEED                         |   | Living Building Challenge             |  |
|--------------------|--|------------------------------|---|---------------------------------------|--|
| CIEB               |  | EBOM                         |   | Renovation                            |  |
| 1.18               | Cycling Facilities   | 10                           |   |                                       |  |
| 1.19               | Other Measures   | 5                            |   |                                       |  |
|                    | <b>Total Points</b>  | <b>350</b>                   |   |                                       |  |
|                    | <b>Possible n/a</b>  | <b>36</b>                    |   |                                       |  |
|                    | <b>Minimum requirement</b>   | <b>?</b>                     |   |                                       |  |
| Indoor Environment |  | Indoor Environmental Quality |   | Health                                |  |
| 5.1                | <b>Ventilation System</b>  | 24                           | <b>PR</b> <b>Minimum Indoor Air Quality Performance</b>   | <b>8</b> <b>Civilized Environment</b> | <p>Every occupiable space must have operable windows that provide access to fresh air and daylight.</p> <p>• Entryways must have an external dirt track-in system and an internal dirt track-in system contained within a separate entry space.</p> <p>• All kitchens, bathrooms, copy rooms, janitorial closets and chemical storage spaces must be separately ventilated and exhaust directly to outside air.</p> <p>• Ventilation rates must be designed to comply with ASHRAE 62 and equipment must be installed to monitor levels of carbon dioxide (CO2), temperature and humidity.</p> <p>• Smoking must be prohibited within the project boundary.</p> |
|                    | Location of air intakes  | 6                            | Meet ASHRAE 62.1-2007 or supply at least 10 cfm of outdoor air per person under all normal operating conditions |                                       |  |
|                    | Regular check of air intakes\  | 2                            |   |                                       |  |
|                    | free-standing water  | 3                            |   |                                       |  |
|                    | Signs of corrosion, loose materials in the AHU   | 2                            |   |                                       |  |
|                    | Measured CO2 levels less than 850 ppm  | 6                            |   |                                       |  |
|                    | Permanent CO2 monitoring   | 3                            |   |                                       |  |
|                    | Occupants' control of ventilation rates  | 2                            |   |                                       |  |
| 5.2                | <b>Filtration System</b>   | 11                           | <b>PR</b> <b>Environmental Tobacco Smoke (ETS) Control</b>  | <b>9</b> <b>Healthy Air</b>           |  |
|                    | Able to remove particles from incoming air   | 4                            |   |                                       |  |
|                    | Manometers   | 3                            |   |                                       |  |
|                    | Easy access  | 2                            |   |                                       |  |
|                    | fit snugly within supports   | 2                            |   |                                       |  |
| 5.3                | <b>Humidification System</b>   | 15                           | <b>PR</b> <b>Green Cleaning Policy</b>  |                                       |  |
|                    | Type and maintenance   | 15                           |   |                                       |  |
| 5.4                | <b>Cooling Towers</b>  | 15                           | <b>1.1</b> <b>Indoor Air Quality Best Management Practices—Indoor Air Quality Management</b>                    | 1                                     |  |
|                    | Develop and implement on an ongoing basis an IAQ management program based on the EPA I-BEAM              |                              |   |                                       |  |
|                    | location   | 5                            |   |                                       |  |
|                    | Drift eliminators  | 5                            |   |                                       |  |
|                    | Maintenance program  | 5                            |   |                                       |  |
| 5.5                | <b>Parking and Receiving</b>   | 10                           | <b>1.2</b> <b>Indoor Air Quality Best Management Practices—Outdoor Air Delivery Monitoring</b>                  | 1                                     |  |
|                    | Installed permanent, continuous monitoring systems to ensure minimum outdoor airflow                     |                              |   |                                       |  |
|                    | Mechanical ventilation   | 3                            |   |                                       |  |
|                    | Prevent intake from the loading/parking area   | 4                            |   |                                       |  |
|                    | Carbon monoxide monitoring   | 3                            |   |                                       |  |
| 5.6                | <b>Control of Pollutants at Source</b>   | 43                           | <b>1.3</b> <b>Indoor Air Quality Best Management Practices—Increased Ventilation</b>                            | 1                                     |  |
|                    | Increase outdoor ventilation rates by at least 30% above ASHRAE 62.1-2007 or provide natural ventilation |                              |   |                                       |  |
|                    | Complaints   | 7                            |   |                                       |  |
|                    | Effective local exhaust for special rooms  | 3                            |   |                                       |  |

■ Calculated  
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| Green Globes |  | LEED       |            | Living Building Challenge  |          |
|--------------|--|------------|------------|--|----------|
| CIEB         |  | EBOM       |            | Renovation   |          |
|              | Documented measures to control pollutants at source  | 3          |            |  |          |
|              | Environmentally preferable cleaning materials  | 5          |            |  |          |
|              | Smoking not permitted  | 15         |            |  |          |
|              | An IAQ checklist for project team discussions  | 10         |            |  |          |
| <b>5.7</b>   | <b>IAQ Management</b>  | <b>25</b>  | <b>1.4</b> | <b>Indoor Air Quality Best Management Practices—Reduce Particulates in Air Distribution</b>                              | <b>1</b> |
|              |  |            |            | Have in place filtration media with a MERV of 13 or greater  |          |
|              | Address tenants/occupant concerns  | 4          |            |  |          |
|              | IAQ audit in the past year   | 5          |            |  |          |
|              | Procedures for maintaining good IAQ  | 8          |            |  |          |
|              | Training   | 4          |            |  |          |
| <b>5.8</b>   | <b>Lighting Features</b>   | <b>25</b>  | <b>1.5</b> | <b>Indoor Air Quality Best Management Practices—Indoor Air Quality Management for Facility Alterations and Additions</b> | <b>1</b> |
|              |  |            |            | Develop and implement and IAQ management plan  |          |
|              | High frequency ballasts  | 5          |            |  |          |
|              | Controllable blinds  | 5          |            |  |          |
|              | Lighting levels meet IES guidelines for office   | 5          |            |  |          |
|              | Individual control of task lighting  | 5          |            |  |          |
|              | Floor plan allows 80% of a typical work area to have access to daylighting or 40% of workstations within 22ft from the windows | 5          |            |  |          |
|              | Good lighting control  | 0          |            |  |          |
| <b>5.9</b>   | <b>Lighting Management</b>   | <b>7</b>   | <b>2.1</b> | <b>Occupant Comfort—Occupant Survey</b>  | <b>1</b> |
|              |  |            |            | Implement an occupant comfort survey among at least 30% of the occupants   |          |
|              | Planned schedule of cleaning   | 4          |            |  |          |
|              | Group-relamping program  | 3          |            |  |          |
| <b>5.10</b>  | <b>Noise</b>   | <b>10</b>  | <b>2.2</b> | <b>Controllability of Systems—Lighting</b>   | <b>1</b> |
|              |  |            |            | Provide lighting controls to at least 50% of occupants   |          |
|              | Open office areas acoustic condition   | 5          |            |  |          |
|              | Sufficient acoustic privacy  | 5          |            |  |          |
|              |  |            | <b>2.3</b> | <b>Occupant Comfort—Thermal Comfort Monitoring</b>   | <b>1</b> |
|              |  |            |            | Have a permanent monitoring system to ensure indoor comfort meet ASHRAE 5502994  |          |
|              | <b>Total Points Possible n/a</b>   | <b>185</b> | <b>2.4</b> | <b>Daylight and Views</b>  | <b>1</b> |
|              |  |            |            | 50% or more of all regularly occupied spaces achieve 25 fc daylight  |          |
|              | <b>Minimum requirement</b>   |            | <b>3.1</b> | <b>Green Cleaning—High Performance Cleaning Program</b>  | <b>1</b> |
|              |  |            |            | Have in place a high-performance cleaning program  |          |
|              |  |            | <b>3.2</b> | <b>Green Cleaning—Custodial Effectiveness Assessment</b>   | <b>1</b> |

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 Evidence of Intent

| Green Globes |   | LEED   |   | Living Building Challenge  |  |
|--------------|---|--|---|--|--|
| CIEB         |   | EBOM   |   | Renovation   |  |
|              |   | Conduct an audit accordance with APPA Leadership in Educational Facilities and score 3 or less |   |  |  |
|              |   | <b>3.3</b>   | <b>Green Cleaning—Purchase of Sustainable Cleaning Products and Materials</b>   | 1  |  |
|              |   |  | 30% of the total annual purchases of cleaning products (by cost) meet the sustainability criteria                             |  |  |
|              |   | <b>3.4</b>   | <b>Green Cleaning—Sustainable Cleaning Equipment</b>  | 1  |  |
|              |   |  | Implement a program for the use of janitorial equipment that reduces building contaminants and minimizes environmental impact |  |  |
|              |   | <b>3.5</b>   | <b>Green Cleaning—Indoor Chemical and Pollutant Source Control</b>  | 1  |  |
|              |   |  | Employ permanent entryway systems   |  |  |
|              |   | <b>3.6</b>   | <b>Green Cleaning—Indoor Integrated Pest Management</b>   | 1  |  |
|              |   |  | Implement an indoor IPM plan  |  |  |
|              |   |  | <b>Total Points</b>   | <b>15</b>  |  |
| Resources    |   | Materials and Resources  |   | Material   |  |
| <b>3.1</b>   | <b>Facilities for Storing and Handling Recyclable Materials</b> | <b>25</b>  | <b>PR</b>   | <b>Sustainable Purchasing Policy</b>                             | <b>11 Red List</b>   |
|              | Separate storage/handling facilities for recycling              | 10   |   |  | The project cannot contain any of the Red List materials or chemicals.   |
|              | Collection points for sorting                                   | 10   |   |  | Exception: There are temporary exceptions for numerous Red List items due to current limitations in the materials economy.   |
|              | Composting program  | 5  |   |  |  |
| <b>3.2</b>   | <b>Waste Reduction Workplan</b>                                 | <b>30</b>  | <b>PR</b>   | <b>Solid Waste Management Policy</b>                             | <b>12 Embodied Carbon Footprint</b>  |
|              | Waste audit in the last three years                             | 5  |   |  | The project must account for the total footprint of embodied carbon (tCO2e) from its construction and projected replacement parts through a one-time carbon offset tied to the project boundary. |
|              | Regular monitoring of waste                                     | 5  |   |  | The amount of carbon offsets required may be reduced by 50 percent for renovations.  |
|              | Diversion rate  | 10   |   |  |  |
|              | Waste-reduction targets and management policy                   | 10   |   |  |  |
| <b>3.3</b>   | <b>Site Pollution</b>   | <b>50</b>  | <b>1</b>  | <b>Sustainable Purchasing—Ongoing Consumables</b>                | <b>13 Responsible Industry</b>   |
|              | Free of contamination based on document or assessment           | 50   |   | Sustainable purchases of at least 60% of total purchases by cost | The project must advocate for the creation and adoption of third-party certified standards for sustainable resource extraction and fair labor practices.   |
| <b>3.4</b>   | <b>Site Enhancement</b>   | <b>5</b>   | <b>2.1</b>  | <b>Sustainable Purchasing—Electric-Powered Equipment</b>         | <b>14 Appropriate Sourcing</b>   |



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|---|--|------------|--|---------------------------|---|
| CIEB  |  | EBOM       |  | Renovation                |   |
|   | Site has been enhanced   | 5          | Sustainable purchases of at least 40% of total purchases of electric-powered equipment by cost   |                           | The project must incorporate place-based solutions and contribute to the expansion of a regional economy rooted in sustainable practices, products and services. Source locations for materials and services must adhere to the restrictions (500 km-20,004 km varied in type of materials and services). |
|   | <b>Total Points</b>  | <b>110</b> | <b>2.2</b> <b>Sustainable Purchasing—Furniture</b><br>Sustainable purchases of at least 40% of total purchases of furniture by cost                      | <b>1</b>                  | <b>15</b> <b>Conservation + Reuse</b><br>• Project teams must create a material conservation management.  |
|   | <b>Possible n/a</b>  | <b>5</b>   | <b>3</b> <b>Sustainable Purchasing—Facility Alterations and Additions</b><br>Sustainable purchases of at least 50% of total purchases by cost            | <b>1</b>                  | • During construction, teams must divert wasted material from landfills to the following levels (80%--100% varied in types)   |
|   | <b>Minimum requirement</b>   | <b>?</b>   |  |                           | • There must be dedicated infrastructure for the collection of recyclables and compostable food scraps.   |
| <b>Emissions, Effluents, and Pollution Controls</b> |  | <b>4</b>   | <b>Sustainable Purchasing—Reduced Mercury in Lamps</b><br>Develop a lighting purchasing plan and at least 90% of purchased lamps comply with the target  | <b>1</b>                  | Exception: There is a temporary exception for meeting this level of diversion in jurisdictions where municipalities do not have systems in place to collect all listed construction materials or recyclables.   |
| <b>4.1</b>  | <b>Boiler Emissions</b>  | <b>30</b>  | <b>5</b> <b>Sustainable Purchasing—Food</b><br>Sustainable purchases of at least 25% of total combined food and beverage purchases by cost               | <b>1</b>                  |   |
|   | Percentage of boilers with low Nox emission rate                             | 23         |  |                           |   |
|   | Cleaning records   | 7          |  |                           |   |
| <b>4.2</b>  | <b>Refrigerants</b>  | <b>25</b>  | <b>6</b> <b>Solid Waste Management—Waste Stream Audit</b><br>Conduct a waste stream audit and establish a baseline                                       | <b>1</b>                  |   |
|   | Type of refrigerant  | 10         |  |                           |   |
|   | Automatic refrigerant leak detectors   | 10         |  |                           |   |
|   | System capable of pumping down all the refrigerant into a suitable container | 5          |  |                           |   |
| <b>4.3</b>  | <b>Management of Ozone Depleting Refrigerants</b>                            | <b>10</b>  | <b>7</b> <b>Solid Waste Management—Ongoing Consumables</b><br>Reuse, recycle, or compost 50% of the ongoing consumables waste stream by weight or volume | <b>1</b>                  |   |
| <b>4.4</b>  | <b>Halons</b>  | <b>10</b>  | <b>8</b> <b>Solid Waste Management—Durable Goods</b><br>Reuse or recycle 75% of the durable goods waste stream by weight, volume or replacement value    | <b>1</b>                  |   |
| <b>4.5</b>  | <b>Waste Water Effluents</b>   | <b>20</b>  | <b>9</b> <b>Solid Waste Management—Facility Alterations and Additions</b><br>Divert at least 70% of waste by volume                                      | <b>1</b>                  |   |
| <b>4.6</b>  | <b>Asbestos</b>  | <b>15</b>  | <b>Total Points</b>  | <b>10</b>                 |   |
| <b>4.7</b>  | <b>Radon</b>   | <b>5</b>   |  |                           |   |
| <b>4.8</b>  | <b>PCBs</b>  | <b>5</b>   |  |                           |   |
| <b>4.9</b>  | <b>Storage Tanks</b>   | <b>20</b>  |  |                           |   |
| <b>4.10</b>   | <b>Drinking Water (lead and bacteria)</b>                                    | <b>2</b>   |  |                           |   |

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| Green Globes                            |  | LEED                           |          | Living Building Challenge  |          |
|---|--|--------------------------------|----------|--|----------|
| CIEB                                    |  | EBOM                           |          | Renovation   |          |
| 4.11                                    | HCS Program  | 10                             |          |  |          |
| 4.12                                    | Health & Safety Management of Hazardous Products     | 18                             |          |  |          |
| 4.13                                    | Pesticides   | 5                              |          |  |          |
|   | <b>Total Points</b>                                  | <b>175</b>                     |          |  |          |
|   | <b>Possible n/a</b>                                  | <b>93</b>                      |          |  |          |
|   | <b>Minimum requirement</b>                           | <b>?</b>                       |          |  |          |
| <b>Environmental Management Systems</b> |  | <b>Innovation in Operation</b> |          | <b>Equity</b>  |          |
| 6.1                                     | Environmental Management Systems (EMS) Documentation | 30                             | 1        | Innovation in Operations   | 1~4      |
|   | Environmental policy                                 | 10                             |          |  |          |
|   | Goals and targets                                    | 10                             |          |  |          |
|   | Action plans   | 10                             |          |  |          |
| 6.2                                     | Environmental Purchasing                             | 25                             | 2        | LEED Accredited Professional                                       | 1        |
|   | Environmental-purchasing plan                        | 6                              |          |  |          |
|   | A list of preferred products                         | 7                              |          |  |          |
|   | Requirement for energy saving equipment              | 6                              |          |  |          |
|   | Hazardous products staff                             | 6                              |          |  |          |
| 6.3                                     | Emergency Response                                   | 20                             | 3        | Documenting Sustainable Building Cost                              | 1        |
|   |  |                                |          | Document overall building operating costs for the previous 5 years |          |
|   |  |                                |          | <b>Total Points</b>  | <b>6</b> |
| 6.4                                     | Tenant Awareness                                     | 25                             |          |  |          |
|   | <b>Total Points</b>                                  | <b>100</b>                     | <b>1</b> | <b>Regional Priority</b>   | <b>4</b> |
|   | <b>Possible n/a</b>                                  | <b>55</b>                      |          |  |          |
|   | <b>Minimum requirement</b>                           | <b>?</b>                       |          | <b>Total Points</b>  | <b>4</b> |

The project must contain design features intended solely for human delight and the celebration of culture, spirit and place appropriate to its function.

Educational materials about the performance and operation of the project must be provided to the public to share successful solutions and to motivate others to make change. Non-sensitive areas of Building must be open to the public at least one day per year to facilitate direct contact with the Living Building Challenge.