

**Summary of the Green Cleaning Provisions of
LEED EBOM v4**

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I Introduction

LEED, or Leadership in Energy & Environmental Design, for Existing Buildings Operations and Maintenance (EBOM) is a green building certification program operated by the U.S. Green Building Council (USGBC) that recognizes “best in class building strategies and practices.” To receive LEED certification, building projects must satisfy certain prerequisites and earn points to achieve different levels of certification as set forth below.

The most recent version of this green building certification program, LEED-EBOM v4, assigns different levels of certification based on the following distribution of points.

<u>Points</u>	<u>Certification Level</u>
40-49	Certified
50-59	Silver
60-79	Gold
80+	Platinum

Points are earned toward certification based on various categories of environmental performance including:

- Site management policy
- Water efficiency
- Energy efficiency
- Solid waste management
- Indoor environmental quality

It is important to note that cleaning and maintenance activities (including purchase and use of green cleaning products, integrated pest management and solid waste management) can contribute up to 10 points toward the minimum 40 points needed for certification. Moreover, most of the cleaning related items in LEED-EBOM v4 are relatively inexpensive and easy to implement.

Thus suppliers of cleaning products and services can play a critical supportive role in helping building owners and operators obtain and/or maintain LEED-EBOM certification. In addition, those sections of LEED-EBOM v4 that address cleaning and maintenance activities set forth a framework for the development of a comprehensive green cleaning program.

This document identifies those LEED-EBOM v4 prerequisites and credits that are related to cleaning and maintenance, and describes the actions necessary to achieve credit for those items.

II Major Changes in LEED EBOM v4

LEED-EBOM v4 was passed by a ballot of the USGBC membership in July 2013 and represents the latest iteration of this well recognized green building certification program. Please note that USGBC is phasing in LEED-EBOM v4 over time. Specifically, projects are allowed to register

for certification pursuant to either LEED-EBOM v4 or LEED-EBOM 2009 until June 1, 2015. After that date, projects may only register pursuant to LEED-EBOM v4.

Among other things, LEED-EBOM v4 includes new market sector adaptations for data centers, warehouses and distribution centers, schools, retail, and mid-rise residential projects.

Another major change to LEED-EBOM v4 is an increased emphasis on energy and water use. New prerequisites require that projects monitor and report their total water and energy use to USGBC. In addition, LEED-EBOM v4 also requires projects to improve their energy efficiency.

LEED-EBOM v4 also sets forth a new prerequisite, the Site Management Policy, which reflects a more holistic approach to sustainable site management. LEED-EBOM v4 emphasizes the potential for projects to positively impact and sustainably manage their sites, with improved clarity on how to comply with requirements.

V Green Cleaning Components of LEED-EBOM v4

The following is a summary of the green cleaning components set forth in LEED-EBOM v4.

A. Green Cleaning Policy (Required)—EQ Prerequisite: A green cleaning policy is a prerequisite to certification under the LEED-EBOM Rating System.

1. Intent. To reduce levels of chemical, biological, and particulate contaminants that can compromise air quality, human health, building finishes, building systems, and the environment. There are two options in complying with this requirement.

2. Option 1: In-House Green Cleaning Policy. Under Option 1, facilities must have in place a green cleaning policy for the building and site addressing the green cleaning credits, goals and strategies, and personnel listed below. At a minimum, the policy must cover green cleaning procedures, materials, and services that are within the building and site management's control, and include the organization responsible for cleaning the building and building site.

The green cleaning policy must address the requirements of the following credits:

- EQ Credit: Green Cleaning—Purchase of Cleaning Products and Materials
- EQ Credit: Green Cleaning—Equipment

Goals and Strategies.

- Establish standard operating procedures addressing how an effective cleaning and hard floor and carpet maintenance system will be consistently used, managed, and audited.
- Address protection of vulnerable building occupants during cleaning.
- Address selection and appropriate use of disinfectants and sanitizers.
- Develop guidelines addressing the safe handling and storage of cleaning chemicals used in the building, including a plan for managing hazardous spills and mishandling incidents.

- Develop goals and strategies for reducing the toxicity of the chemicals used for laundry, ware washing, and other cleaning activities.
- Develop goals and strategies for promoting the conservation of energy, water, and chemicals used for cleaning.
- Develop strategies for promoting and improving hand hygiene.

Personnel.

- Develop requirements for maintenance personnel. Specifically address contingency planning to manage staffing shortages under a variety of conditions to ensure that basic cleaning services are met and critical cleaning needs are addressed. Include a process to obtain occupant and custodial staff input and feedback after contingency plans are implemented.
- Determine the timing and frequency of training for maintenance personnel in the hazards of use, disposal, and recycling of cleaning chemicals, dispensing equipment, and packaging.

Performance. Implement a high-performance cleaning program based on the above policy and track performance goals associated with this policy.

3. Option 2: Certified Cleaning Service. Another manner by which facilities can comply with this requirement is by cleaning the building with a cleaning service provider, either in-house custodial staff or a contracted service contractor, that is certified under one of the following programs:

- International Sanitary Supply Association (ISSA) Cleaning Industry Management Standard for Green Buildings (CIMS-GB)—see www.issa.com/cims-gb; or
- Green Seal’s Environmental Standard for Commercial Cleaning Services (GS-42); or
- Local equivalent for projects outside the U.S.

Facilities must confirm that the building was audited by the third party within 12 months of the end of the performance period. In addition, the cleaning contractor must develop goals and strategies for promoting the conservation of energy, water, and chemicals used for cleaning the building.

B. EQ Credit: Enhanced Indoor Air Quality Strategies—Entryway Systems (1 point).

Facilities should have in place permanent entryway systems at least 10 feet (3 meters) long in the primary direction of travel to capture dirt and particulates entering the building at regularly used exterior entrances. Acceptable entryway systems include permanently installed grates, grilles, slotted systems that allow for cleaning underneath, rollout mats, and any other materials manufactured as entryway systems with equal to or better performance. Maintain all on a weekly basis.

C. EQ Credit: Green Cleaning—Custodial Effectiveness Assessment (1 point). Implement the strategies set forth in the facility’s green cleaning policy and perform routine inspection and monitoring. This inspection must verify that the specified strategies have been implemented and must identify areas in need of improvement.

Additionally, conduct an annual audit in accordance with APPA Leadership in Educational Facilities' Custodial Staffing Guidelines, or a local equivalent, whichever is more stringent, to determine the appearance level of the facility. The facility must score 2.5 or better.

The APPA Custodial Staffing Guidelines for Educational Facilities defines five levels of cleanliness:

1. Orderly Spotlessness
2. Orderly Tidiness
3. Casual Inattention
4. Moderate Dinginess
5. Unkempt Neglect

D. EQ Credit: Green Cleaning—Products and Materials (1 point). Purchase green cleaning materials and products such as general purpose, glass or bathroom cleaners, disposable janitorial paper products, and trash bags. Include items used by in-house staff or outsourced service providers.

At least 75%, by cost, of the total annual purchases of these products must meet at least one of the following standards.

1. Cleaning Products. Cleaning products must meet one or more of the following standards, or a local equivalent for projects outside the U.S.:

- Green Seal GS-37, for general-purpose, bathroom, glass and carpet cleaners used for industrial and institutional purposes;
- Environmental Choice CCD-110, for cleaning and degreasing compounds;
- Environmental Choice CCD-146, for hard-surface cleaners;
- Environmental Choice CCD-148, for carpet and upholstery care;
- Green Seal GS-40, for industrial and institutional floor care products;
- Environmental Choice CCD-147, for hard-floor care;
- EPA Design for the Environment Program's Standard for Safer Cleaning Products; and/or
- Cleaning devices that use only ionized water or electrolyzed water and have third-party-verified performance data equivalent to the other standards mentioned above (if the device is marketed for antimicrobial cleaning, performance data must demonstrate antimicrobial performance comparable to EPA Office of Pollution Prevention and Toxics and Design for the Environment requirements, as appropriate for use patterns and marketing claims).

2. Specialty Cleaners. Disinfectants, metal polish, or other cleaning products not addressed by the above standards must meet one or more of the following standards (or a local equivalent for projects outside the U.S.):

- Environmental Choice CCD-112, for digestion additives for cleaning and odor control;
- Environmental Choice CCD-113, for drain or grease trap additives;
- Environmental Choice CCD-115, for odor control additives;
- Green Seal GS-52/53, for specialty cleaning products;
- California Code of Regulations maximum allowable VOC levels for the specific product category;
- EPA Design for the Environment Program’s standard for safer cleaning products; and/or
- Cleaning devices that use only ionized water or electrolyzed water and have third-party-verified performance data equivalent to the other standards mentioned above (if the device is marketed for antimicrobial cleaning, performance data must demonstrate antimicrobial performance comparable to EPA Office of Pollution Prevention and Toxics and Design for the Environment requirements, as appropriate for use patterns and marketing claims).

3. Disposables. Disposable janitorial paper products and trash bags must meet the minimum requirements of one or more of the following programs, or a local equivalent for projects outside the U.S.:

- EPA comprehensive procurement guidelines, for janitorial paper;
- Green Seal GS-01, for tissue paper, paper towels and napkins;
- Environmental Choice CCD-082, for toilet tissue;
- Environmental Choice CCD-086, for hand towels;
- Janitorial paper products derived from rapidly renewable resources or made from tree-free fibers;
- FSC certification, for fiber procurement;
- EPA comprehensive procurement guidelines, for plastic trash can liners; and/or
- California integrated waste management requirements, for plastic trash can liners (California Code of Regulations Title 14, Chapter 4, Article 5, or SABRC 42290-42297 Recycled Content Plastic Trash Bag Program).

4. Hand Soaps and Sanitizers. Hand soaps and hand sanitizers must meet one or more of the following standards, or a local equivalent for projects outside the U.S.:

- No antimicrobial agents (other than as a preservative) except where required by health codes and other regulations (e.g., food service and health care requirements);
- Green Seal GS-41, for industrial and institutional hand cleaners;
- Environmental Choice CCD-104, for hand cleaners and hand soaps;
- Environmental Choice CCD-170, for hand sanitizers;
- EPA Design for the Environment Program’s standard for safer cleaning products;

- For projects outside the U.S., any Type 1 eco-labeling program as defined by ISO 14024: 1999 developed by a member of the Global Ecolabelling Network may be used in lieu of Green Seal or Environmental Choice standards.

E. EQ Credit: Green Cleaning—Equipment (1 point). Create an inventory of existing interior and exterior equipment, including what is brought on site by vendors. At least 40% of all powered janitorial equipment (purchased, leased, or used by contractors) must meet the criteria set forth below.

For existing equipment that does not meet the criteria, facilities must develop a phase-out plan for its replacement with environmentally preferable products at the end of its useful life.

All powered equipment must have the following features:

- Safeguards, such as rollers or rubber bumpers, to avoid damage to building surfaces;
- Ergonomic design to minimize vibration, noise, and user fatigue, as reported in the user manual in accordance with ISO 5349-1 for arm vibrations, ISO 2631–1 for vibration to the whole body, and ISO 11201 for sound pressure at operator’s ear; and
- As applicable, environmentally preferable batteries (e.g., gel, absorbent glass mat, lithium-ion) except in applications requiring deep discharge and heavy loads where performance or battery life is reduced by the use of sealed batteries.

In addition, the following criteria apply to the specified powered cleaning equipment:

- Vacuum cleaners must be certified by the Carpet and Rug Institute Seal of Approval/Green Label Vacuum Program and operate with a maximum sound level of 70 dBA or less in accordance with ISO 11201.
- Carpet extraction equipment, for restorative deep cleaning, must be certified by the Carpet and Rug Institute's Seal of Approval Deep Cleaning Extractors and Seal of Approval Deep Cleaning Systems program.
- Powered floor maintenance equipment, such as vacuums, guards, or other devices for capturing fine particulates, must operate with a maximum sound level of 70 dBA, in accordance with ISO 11201.
- Propane-powered floor equipment must have high-efficiency, low-emissions engines with catalytic converters and mufflers that meet the California Air Resources Board or EPA standards for the specific engine size and operate with a sound level of 90 dBA or less, in accordance with ISO 11201.
- Automated scrubbing machines must be equipped with variable-speed feed pumps and either (1) on-board chemical metering to optimize the use of cleaning fluids; or (2) dilution control systems for chemical refilling. Alternatively, scrubbing machines may use tap water only, with no added cleaning products.

F. EQ Credit: Integrated Pest Management (2 points). Facilities must have in place an integrated pest management (IPM) plan for the building and grounds within the project boundary. The IPM plan must include the following elements.

- Identification of an IPM team. Identify roles for building management, pest management contractors, maintenance staff, and liaisons with building occupants.
- Provisions for identifying and monitoring pests. Specify inspections, pest population monitoring, and a reporting system that allows occupants, maintenance staff, and others to report evidence of pest infestations.
- Action thresholds for all pests likely encountered in the building. Also describe a process for modifying action thresholds, if necessary, through active communication between occupants and the IPM team.
- Nonchemical pest preventive measures, either designed into the structure or implemented as part of pest management activities.
- Pest control methods to be used when action thresholds are exceeded. For each pest, list all potential control methods considered and adopt the lowest-risk options, considering the risks to the applicator, building occupants, and the environment. The plan must preferentially require nonchemical approaches, with pesticides registered for the site applied only if those approaches fail. Give preference to the use of least-risk pesticides based on inherent toxicity and exposure potential. If a pesticide that is not in the least-risk category is selected, document the reason.
- A mechanism for documentation of inspection, monitoring, prevention, and control methods and for evaluation of the effectiveness of the IPM plan. Specify the metrics by which performance will be measured, and describe the quality assurance process to evaluate and verify successful implementation of the plan.
- A strategy for communications between the IPM team and the building occupants (for schools, faculty and staff). This strategy should include education about the IPM plan, participation in problem solving, feedback mechanisms (e.g., a system for recording pest complaints), and provision for notification of pesticide applications. At a minimum, the facility manager must notify any building occupant or employee who requests it and post a sign at the application site, which must remain in place for 24 hours. Notifications must include the pesticide name, EPA registration number, treatment location, and date of application. Applications of least-risk pesticides do not require notification. For an emergency application of a pesticide, anyone who requested notice must be notified within 24 hours of the application and given an explanation of the emergency.
- Implement the strategies set forth in the IPM plan and evaluate the plan annually. This evaluation must verify that the strategies specified in the IPM plan have been implemented and identify any chemical applications that did not comply with the plan.
- Perform recordkeeping and documentation required under the IPM plan. Maintain records of IPM team participation and decisions, as well as pesticide applications.
- A project meets the requirements if the IPM service is provided by a certified member in good standing of GreenPro, EcoWise, or GreenShield, or a program with equivalent IPM standards, who complies with the program's standards.

G. EQ Credit: Occupant Comfort Survey (1 point). Administer at least one occupant comfort survey to collect anonymous responses regarding at least the following:

- Acoustics;
- ***Building cleanliness;***
- Indoor air quality;
- Lighting;

- Thermal comfort; and
- The responses must be collected from a representative sample of building occupants making up at least 30% of the total occupants.

Document survey results. Develop and implement a corrective action plan to address comfort issues if the results indicate that more than 20% of occupants are dissatisfied.

Perform at least one survey and implement corrective actions. At a minimum, perform one new survey at least once every 2 years.

H. MR Credit: Solid Waste Management—Ongoing (2 points). Maintain a waste reduction and recycling program that reuses, recycles, or composts the following:

- At least 50% of the ongoing waste as specified in Materials and Resources Prerequisite: Ongoing Purchasing and Waste Policy (by weight or volume); and
- At least 75% of the durable goods waste as specified in Materials and Resources Prerequisite: Ongoing Purchasing and Waste Policy (by weight, volume or replacement value).

In addition, safely dispose of the following:

- All discarded batteries; and
- All mercury-containing lamps.

I. SS Credit: Site Management (1 point). Demonstrate that the following performance criteria were met:

- *Use no calcium chloride or sodium chloride deicers, and/or establish reduced treatment areas equal to 50% of applicable paving area.*
- Prevent erosion and sedimentation, and restore any eroded soils.
- Prevent air pollution from construction materials and activities.
- Divert from landfills 100% of plant material waste via low-impact means.
- Prevent the over application of nutrients. Use no ammonia-based fertilizers, biosolid-based fertilizers (for continuous application), synthetic quick-release fertilizers, or “weed and feed” formulations. Blanket applications of herbicides are prohibited; turf weeds may be controlled by spot spraying only.
- Monitor irrigation systems manually or with automated systems at least every two weeks during the operating season and correct any leaks, breaks, inappropriate water usage, or incorrect timing.
- Store materials and equipment to prevent air and site contamination.

AND

Meet one of the following options:

- Option 1: Limited Turf Area
Limit turf to 25% or less of the vegetated area.
Playgrounds and athletic fields in schools or parks are excluded from this option.

OR

- Option 2: All Manual or Electric-Powered Equipment
Use all manual or electric-powered equipment in all site management operations.

OR

- Option 3: Reduction in Emissions from Site Management Equipment
Show and maintain a 50% reduction in hydrocarbon (HC) and nitrogen oxide (NO_x) emissions, and a 75% reduction in carbon monoxide (CO) emissions from baseline conditions.

J. Miscellaneous. Additional points toward certification can be achieved using the IN Credits: Innovation and/or LEED Accredited Professional.

1. IN Credit: Innovation (1 – 2 points). Achieve exemplary performance in an existing LEED v4 prerequisite or credit that allows exemplary performance, as specified in the LEED Reference Guide, v4 edition. An exemplary performance point is typically earned for achieving double the credit requirements or the next incremental percentage threshold.

2. IN Credit (1 point). At least one principal participant of the project team must be a LEED Accredited Professional (AP) with a specialty appropriate for the project.