Course Instructions

NOTE: The following two pages contain a preview of the final exam. This final exam is identical to the final exam that you will take online after you purchase the course.

After you purchase the course online, you will be taken to a receipt page online which will have the following link: **Click Here to Take Online Exam**. **You will then click on this link to take the final exam.**

3 Easy Steps to Complete the Course:

1.) **Read the Course PDF below**

2.) **Purchase the Course Online & Take the Final Exam – see note above**

3.) **Print Out Your Certificate**

FINAL EXAM - LEED for Existing Buildings: Recertification Guidance (2013)

1. One of the *Recertification Basics* is that:

a. projects are eligible to be recertified within five years of the previous certification and as often as every 12 months.
b. projects cannot be recertified until the 7th year following initial certification.
c. only institutional projects are recertified.
d. projects are eligible to be recertified within 3 years of the previous certification and as often as every 24 months.

2. Another of the *Recertification Basics* is that:

a. recertification performance data should be tracked for a minimum of 50% of the recertification performance period.
b. performance data often includes collection gaps due to budget restrictions.
c. recertification performance data should be tracked for the entire recertification performance period.
d. project teams comply with performance tracking requirements by relying on anecdotal evidence collected during tenant/user interviews.

3. One of the protocols of *Documentation Guidance* is that:

a. establishment documentation is always required.
b. establishment documentation is required if any changes have occurred.
c. establishment documentation is not required.
d. establishment documentation is only required if major changes have taken place.

4. According to Table A1, *Sustainable Sites*:

a. projects previously certified under EBv2.0 are eligible for credit under SSc1 if performance period includes entire time between EBv2.0 certification and submission of recertification application (up to 5 years).
b. projects previously certified under EBv2.0 are not eligible for credit under SSc1.
c. projects previously certified under EBv2.0 are eligible for credit under SSc1 if performance period includes 25 to 50% of the time between EBv2.0 certification and submission of recertification application (up to 5 years).
d. projects previously certified under EBv2.0 may be eligible for credit under SSc1 upon approval from USGBC.

5. According to Table A1, *Materials and Resources*:

a. recycling storage and collection areas are the preferred methods of achieving project goals.
b. recycling storage and collection areas are not allowed.
c. recycling storage and collection areas may help project achieve its goals and are sufficient to meet prerequisite requirements if sized properly.
d. recycling storage and collection areas may help project achieve its goals but are not sufficient to meet prerequisite requirements.

6. According to Table A1, *Indoor Environmental Quality*:

a. as in EBv2.0, systems that cannot meet ASHRAE minimum flow rates must provide at least 5 cfm per person.

b. as in EBv2.0, systems that cannot meet ASHRAE minimum flow rates must provide at least 10 cfm per person, but updated ASHRAE standards should be used to determine whether system can meet flow rate.

c. as in EBv2.0, systems that cannot meet ASHRAE minimum flow rates cannot be considered.

d. as in EBv2.0, systems that cannot meet ASHRAE minimum hourly air change requirements must provide at least 10 cfm per person.

7. The Recertification Redline Version of the LEED 2009 for Existing Buildings: Operations & Maintenance Rating System:

a. illustrates the distinct set of establishment and performance requirements found in each prerequisite and credit.

b. presents a general overview of performance requirements.

c. resulted in wholesale changes to the previously established prerequisite and credit requirements.

d. includes language taken only from LEED Online v3.

8. Under *Indoor Environmental Quality*, IEQ Credit 3.2, performance:

a. an audit is not required.

b. an audit should be conducted on a quarterly basis.

c. audits are optionally performed by ownership.

d. an audit should be conducted at least once every 2 years.

9. Under *Indoor Environmental Quality*, IEQ Credit 3.6, performance:

a. the IPM plan should be implemented and maintained 100% of the time.

b. the IPM plan should be implemented and maintained 50% of the time.

c. the IPM plan should be implemented and maintained 25% of the time.

d. the IPM plan is not required.

10. Under *Innovation in Operations*, IO Credit 2: LEED Accredited Professional:

a. at least 2 principal participants of the project team shall be a LEED Accredited Professional (AP).

b. at least 1 principal participant of the project team shall be a LEED Accredited Professional (AP).

c. at least 4 principal participants of the project team shall be a LEED Accredited Professional (AP).

d. at least 3 principal participants of the project team shall be a LEED Accredited Professional (AP).

PDH Academy
AIA CES Provider Number: 50119838

Course Title:

LEED for Existing Buildings: Recertification Guidance (2013)

Course Description:

By nature, LEED for Existing Buildings is an ongoing process, and it's prescriptive and performance strategies are intended to provide operational benefits throughout the life of the building. If the strategies are sustained, the building can maintain and even improve its performance over time. Projects that certify under any version of LEED for Existing Buildings must recertify at least once every five years in order to keep their certification up-to-date. The LEED for Existing Buildings: Operations & Maintenance Recertification Guidance is focused on providing clear direction for existing building projects that are ready to recertify.

This course includes a multiple-choice exam at the end, to test the student's knowledge and comprehension of the topics, and to comply with AIA and state requirements.

Learning Objectives:

At completion of this course, you will:

- Understand both the establishment period and the performance period for existing buildings pursuing LEED certification, including the credit categories.
- Know the parameters of tracking building performance data for the recertification performance period as well as the documentation requirements for LEED recertification.
- Be informed of the LEED recertification credit compliance performance requirements for sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation in operations.
- Thoroughly understand the similarities and differences between the older LEED for Existing Buildings v 2.0 and the newer LEED 2009 for Existing Buildings: O&M

AIA CES Registered Course Number: AIAPDH104

Number of AIA CES Learning Units/HSW: 4.5 LU/HSW (4.5 hours)

NOTE: PDH Academy is registered as an AIA Approved Provider. Credits earned on completion of this course will be reported to AIA CES for AIA members. We will also provide certificates of completion upon passing this course to both members and non-members.

This course is registered with the AIA CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing or dealing in any material or product. If you have any questions regarding the course, you can contact us at 888-564-9098 or pdhacademy@gmail.com.

EVALUATION FORM – PDH Academy LLC (AIA CES Provider #50119838)

We want to ensure that our training sessions are as meaningful as possible and appreciate your candid feedback. Please mail completed forms to:

PDH Academy, 15417 W. National Ave., #312 New Berlin, WI 53151

If you would like to offer feedback on this course to AIA CES, please visit www.aia.org/CESFeedback

Course Title: **LEED for Existing Buildings: Recertification Guidance (2013)** Course Number: **AIAPDH104**

Date: _____

Please indicate your role:

❏ Architect ❏ Intern ❏ Specification Writer ❏ Legal / Accounting /Staff

CIRCLE ONE NUMBER PER QUESTION:	Poor			Excellent
1. Overall satisfaction with this course:	1	2	3	4
2. Course learning objectives clearly stated and met:	1	2	3	4
3. Satisfaction with the format of this course:	1	2	3	4
4. Met overall personal objectives for attending:	1	2	3	4
5. Quality of course content:	1	2	3	4
6. Applicability/value of new knowledge, ideas, or information:	1	2	3	4

7. This course was non-biased, non-promotional of product, material or service: ❏ Yes ❏ No

If no, please explain: _____

How could this course be improved? _____

_____

_____

What other topics would be of interest? _____

_____

_____

Additional Comments: _____

_____

_____

LEED for Existing Buildings: Operations & Maintenance

RECERTIFICATION GUIDANCE

April 2013

LEED for Existing Buildings: Operations & Maintenance Recertification Guidance

Released April, 2013

Contact:
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LEED AS A PERFORMANCE PROGRAM

LEED is more than a rating system, and more than a checklist. It is a long-term commitment to environmental best practices in the building industry. Each project that earns a LEED plaque commits to continue striving for the outcomes that LEED certification represents. To support this pledge, the U.S. Green Building Council (USGBC) offers LEED for Existing Buildings: Operations & Maintenance Recertification, under which building owners and managers can regularly verify their facilities' high-performing operations.

LEED for Existing Buildings: O&M promotes the ongoing implementation of leading practices in building operations and sustaining high levels of performance. Built-in prescriptive and performance strategies are intended to provide operational benefits throughout the life of the building. By sustaining these strategies, the building can maintain and even improve its performance over time.

Addressing the need for a clear recertification process, this program has been restructured to emphasize the importance of ongoing performance verification while still maintaining the connection to daily operations. The new structure and clarity of the LEED for Existing Buildings: O&M Recertification program will help encourage a culture of ongoing performance verification.

This is the first step towards the long-term goal of more fully supporting ongoing performance verification by providing the following:

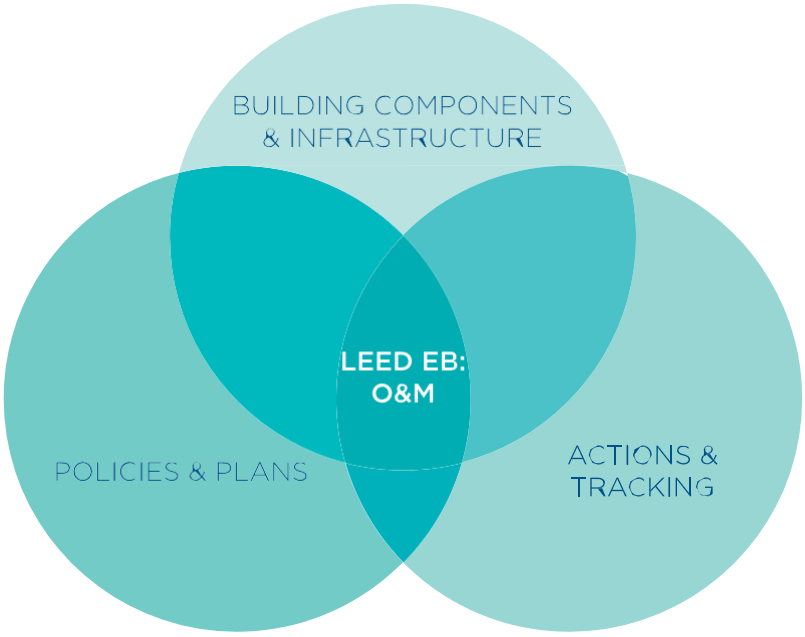
- A streamlined certification program with simplified submittals for all rating systems
- Automated processes for submittals, certification, and ongoing (re)certification
- A clear and structured (re)certification process

To achieve the goal, USGBC is embracing technology innovation and project feedback loops. USGBC will implement innovative strategies that enable a more streamlined certification process for ongoing verification and will aim to provide annual performance reports to all LEED-certified projects to help track their progress toward recertification. Each project's progress reports will contain feedback based on performance indicators that are consistent across all LEED rating systems. As USGBC begins to identify the supporting software and automation, LEED users will notice changes in the certification process that improve the overall experience and focus on the most important elements of ongoing performance verification.

INTRODUCTION

Green buildings help create healthful environments while saving energy, resources, and money. USGBC developed the LEED for Existing Buildings: Operations & Maintenance Recertification Guidance to help project teams with projects previously certified under any version of LEED for Existing Buildings continue to green their facilities by outlining the technical approaches to recertify under LEED for Existing Buildings: O&M This document was designed to be used with the LEED 2009 for Existing Buildings: O&M rating system document and LEED Online.

LEED for Existing Buildings: O&M contains performance standards for the sustainable operation of existing buildings that are not undergoing major renovations. It covers building systems, infrastructure, practices, and policies. The rating system can be applied both to buildings seeking LEED certification for the first time and to projects previously certified under any version of the Design and Construction LEED rating systems. It is the only LEED rating system under which buildings are eligible for recertification.



- **Initial certification:** Any first-time application for LEED for Existing Buildings: O&M certification. These applications include projects previously certified under a LEED Design & Construction rating system.
- **Recertification:** Subsequent application(s) for LEED for Existing Buildings: O&M certification after receiving an initial LEED for Existing Buildings certification under any version. To the extent possible, projects will be held to the requirements of the version of the rating system that is open for registration on the date the project registers for recertification.

This document defines a simplified, ongoing certification process for LEED for Existing Buildings certified projects. It supersedes any previously released temporary recertification guidance. It can be used by any project team whose building was certified under any version of LEED for Existing Buildings and is ready to certify again using LEED 2009.

ESTABLISHMENT VERSUS PERFORMANCE

For existing buildings pursuing LEED certification, the *establishment* period is the time when building infrastructure is assessed, policies are drafted, and programs and processes are put in place to enable ongoing performance measurement. The *performance* period is the continuous implementation of the strategies set during the establishment period.

In the recertification version of the LEED 2009 for Existing Buildings: O&M rating system, the establishment requirements, which are generally static and foundational to building operations, are distinguished from performance requirements, which recur over the performance period. Each prerequisite and credit lists the establishment and performance requirements separately.

Establishment requirements fall into one of two categories of credits, those based on building components and site infrastructure and those based on policies and plans.

- Building components and site infrastructure are the characteristics and systems of the building.
- Policies and plans are statements that set goals and outline the implementation of operational management strategies.

ESTABLISHMENT
static and foundational

BUILDING COMPONENTS & SITE INFRASTRUCTURE
meters, lighting, water fixtures

POLICIES
site management, purchasing

Performance requirements also fall into two primary categories of credits, those that require discrete actions and those that require ongoing tracking and measurement over time.

- Actions are regularly repeated to inform continued performance and to identify opportunities for improvement.
- Ongoing tracking occurs continuously, verifying continual high performance and upkeep of building systems.

PERFORMANCE
dynamic and recurring

ACTIONS
surveys, audits, testing

TRACKING
energy, purchasing, waste

This establishment and performance approach to rating system requirements can be a useful tool for organizing LEED for Existing Buildings activities. Figure 1 illustrates the difference in approach for a Sustainable Sites credit.

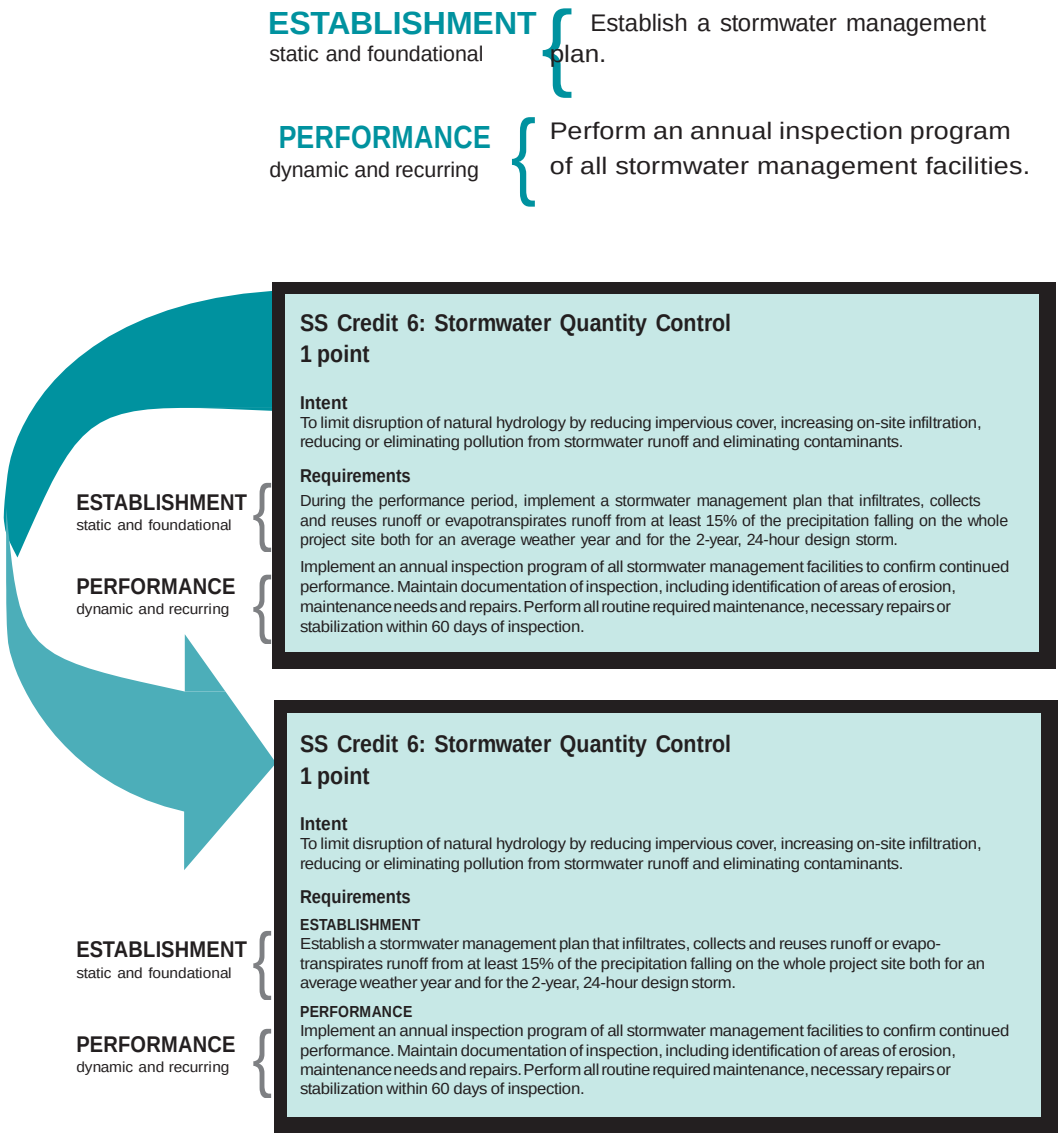


Figure 1. Illustration of the Establishment and Performance Split for SS Credit 6: Stormwater Quantity Control

The recertification redline version of the LEED 2009 for Existing Buildings: O&M rating system provides the intent and requirements, arranged according to establishment and performance, for each prerequisite and credit. This version of the rating system can be found in Appendix B.

RECERTIFICATION BASICS

Projects are eligible to be recertified within five years of the previous certification and as often as every 12 months.

Ideally, the five-year period starts at the end of the previous performance period. However, many project teams wait until they have received all review comments and earned certification before they commit to ongoing implementation of their LEED strategies. A project whose five-year period begins on the date of previous certification is eligible for recertification.

The recertification performance period extends from the end of the previous certification's performance period to the date of the recertification application.

Projects may wait to receive their review comments and certification to feel confident in the strategies they will implement during the recertification performance period. These projects will be given a grace period of 60 days after certification to begin their recertification performance period.

The performance period for new credits pursued during recertification is the same as for initial certification (for most credits, a minimum of three months).

Recertification performance data should be tracked for the entire recertification performance period.

Data may include collection gaps when reasonable and justifiable (e.g., staff or tenant turnover, management change).

Certification reviewers may request project data extending further back in time from the representative dataset provided for recertification, at their discretion and within reason. For example, if the representative data shows unusual trends or anomalies the reviewer may ask to see data from earlier in the recertification performance period.

Project teams comply with performance tracking requirements by providing a representative dataset to USGBC or GBCI. Performance tracking should be done consistently throughout the recertification performance period. The general categories of data used to document credit compliance (see page 12) are as follows:

- Data from the entire recertification performance period
- Data from the most recent 12 months of the recertification performance period (e.g., if the recertification performance period ended on November 30, 2011, data must be provided from December 1, 2010, through November 30, 2011)
- Data from the most recent 25% of the recertification performance period (e.g., if the recertification performance period was 24 months long, data must be provided for the most recent 6 months)

If MR Credit 3 (Sustainable Purchasing—Facility Alterations and Additions), MR Credit 9 (Solid Waste Management—Facility Alterations and Additions), and IEQ Credit 1.5 (Indoor Air Quality Best Management Practices—Indoor Air Quality Management for Facility Alterations and Additions) are chosen to be pursued in the recertification application, all alterations and additions that occur during the recertification performance period must be included, regardless of whether the credits were achieved in the previous certification.

Projects pursuing recertification are not exempt from any LEED minimum program requirements (MPRs).

Projects teams pursing recertification should refer to the following information for guidance on MPRs 5 and 6.

•• MPR 5: Must comply with minimum occupancy rates

If a building's occupancy temporarily falls below the required minimum occupancy rate during the recertification performance period but still meets MPR 5 using a weighted average (as described in the LEED 2009 Minimum Program Requirements Supplemental Guidance), the project team must submit a description of both the situation and the measures taken to prevent the reduced occupancy from affecting the results for each prerequisite and credit that deals with occupancy. Measures or explanations that address a specific prerequisite or credit should be described in the section of the application pertaining to that prerequisite or credit. General descriptions should be given in Project Information Form 1 in LEED Online v3.

If a building's weighted occupancy is less than 90% during a performance period, the project team should refer to the LEED for Existing Buildings: O&M Reduced Occupancy Guidance.

If occupancy falls below the required threshold using a weighted average, the project team should contact USGBC or GBCI to discuss potential options for recertification. If the weighted average falls below 50% in the final 12 months of the recertification performance period, the team should contact USGBC and GBCI to discuss affected compliance with EAp2.

•• MPR 6: Must commit to sharing whole-building energy and water usage data

All projects that earn LEED for Existing Building: O&M certification must commit to sharing with USGBC any available whole-building energy and water usage data for at least five years, starting on the date the building is awarded certification. Because documentation requirements for both recertification and initial LEED for Existing Buildings certification are aligned, project teams that track data on an ongoing basis will find it easier to provide documentation for the recertification application.

Participation in USGBC's Building Performance Program, which uses EPA's Energy Star Portfolio Manager to track energy and water usage data, will streamline compliance with MPR 6, EA prerequisite 2 (Minimum Energy Efficiency Performance), and EA credit 1 (Optimize Energy Performance).

DOCUMENTATION GUIDANCE

Recertification registration. Project teams should register for recertification once a project's initial certification is completed and accepted. Apply under the LEED for Existing Buildings: O&M rating system that is open for registration at that time.

> **Example A.** A project earns certification under LEED 2009 for Existing Buildings: O&M at the time that it is open for registration; the project's recertification application may be registered under LEED 2009 for Existing Buildings: O&M.
>
> **Example B.** A project earns certification under LEED 2008 for Existing Buildings: O&M at the time that LEED 2009 for Existing Buildings: O&M is open for registration; the project's recertification application may be registered under LEED 2009 for Existing Buildings: O&M.

If two versions of the rating system are open for registration at one time, project teams may register for recertification under the version most appropriate for their project.

Project teams pursuing recertification in the LEED Volume Program should refer to the LEED Volume Program: Submittal Guidance for Operations & Maintenance, Section 1.1.2, for details on registering for the recertification of volume projects.

LEED Online forms. Each LEED Online form includes separate establishment and performance sections that correspond to the establishment and performance requirements for each prerequisite and credit in the Recertification redline version of the LEED 2009 for Existing Buildings: O&M rating system.

Establishment documentation is only required if major changes have taken place.

During a project's initial certification, the establishment and performance sections in each form must be completed. In each subsequent application, establishment documentation is required only if major changes have been made (see next section). Documentation from the project's previous certification will be available to download and use in the recertification application. If a project team is applying for credits that were denied in the initial certification, establishment data from those credits should be resubmitted.

Establishment review and rereview. Even though a project's establishment data is constant by nature, major changes (e.g., major renovation, major addition, change in management and LEED Rating System version changes) can affect compliance with establishment requirements.

Major changes should be described in the appropriate forms, and the establishment documentation should be updated accordingly. Submit updated establishment documentation with the recertification application.

SS Credit 1: LEED Certified Design & Construction

CREDIT COMPLIANCE GUIDANCE

Projects certified under the 2008 and 2009 versions of LEED for Existing Buildings: O&M should refer to the following credit compliance guidance when planning for recertification. Table 1 outlines the establishment and performance requirements for LEED for Exiting Buildings: O&M prerequisites and credits and details the preferred frequency and duration of each performance requirement. Note that the frequency requirements must be measured according to the date that each action occurs.

Projects pursuing recertification in the LEED Volume Program should refer to the guidance on performance period and dataset requirements in the LEED Volume Program: Submittal Guidance for Operations & Maintenance, Section 1.1.2.

Recertification is based on compliance performance requirements. Teams may find it useful to refer to LEED 2009 for Existing Buildings: O&M Recertification sample forms in LEED Online. Special circumstances will be considered on a case by case basis. Please contact GBCI with questions as early in the recertification process as possible.

Table 1. Credit Compliance Guidance

		Establishment requirements	Performance requirements
SUSTAINABLE SITES			
SSc1	LEED-Certified Design and Construction	**Building components and site infrastructure** Show that building was previously certified under Design & Construction or Operations & Maintenance rating system.	**Ongoing tracking** For projects previously certified under any version of LEED for Existing Buildings, confirm that ongoing performance has been tracked during entire recertification performance period.
SSc2	Building Exterior and Hardscape Management Plan	**Policy** Establish building exterior and hardscape management plan.	**Ongoing tracking** Employ plan. Provide documentation of environmentally preferred practices from most recent 25% of recertification performance period.
SSc3	Integrated Pest Management, Erosion Control and Landscape Management Plan	**Policy** Establish integrated pest management, erosion control, and landscape management plan.	**Ongoing tracking** Employ plan. Provide documentation of environmentally preferred practices from most recent 25% of recertification performance period.
SSc4	Alternative Commuting Transportation	N/A	**Action** Perform commute survey at least once every 5 years. Compliance is based on results of most recent survey.

		Establishment requirements	Performance requirements
SSc5	Site Development—Protect or Restore Habitat	**Building components and site infrastructure** Establish native and adapted vegetation on-site and/or off-site.	Maintain areas of native and adapted vegetation and/or have in place off-site area contract for duration of recertification performance period.
SSc6	Stormwater Quantity Control	**Building components and site infrastructure** Establish stormwater management plan.	Perform annual inspection of all stormwater management facilities.
SSc7.1	Heat Island Reduction—Nonroof	**Building components and site infrastructure** Establish shading, high-SRI materials, or open-grid paving to reduce heat islands from nonroof surfaces.	Implement maintenance program to ensure that high-SRI surfaces are cleaned at least once every 3 years.
SSc7.2	Heat Island Reduction—Roof	**Building components and site infrastructure** Establish green roof or high-SRI materials to reduce heat island from roof surfaces.	Implement maintenance program to ensure that high-SRI surfaces are cleaned at least once every 3 years.
SSc8	Light Pollution Reduction	**Building components and site infrastructure** Establish lighting that minimizes light trespass from building.	N/A
WATER EFFICIENCY			
WEp1	Minimum Indoor Plumbing Fixture and Fitting Efficiency	**Building components and site infrastructure** Have in place indoor fixtures and fittings that reduce potable water use.	N/A
WEc1.1	Water Performance Measurement—Whole Building	**Building components and site infrastructure** Have in place water meters that measure total potable water use for entire building and grounds.	**Ongoing tracking** Maintain continuous manual or data-logged meter readings. Provide at least weekly meter readings from most recent 25% of recertification performance period. A data logging meter may be used to achieve the credit per LEED Interpretation 5190.
WEc1.2	Water Performance Measurement—Submetering	**Building components and site infrastructure** Have in place meters for one or more water subsystems.	**Ongoing tracking** Maintain continuous manual or data-logged meter readings. Provide at least weekly meter readings or weekly trend analysis from most recent 25% of recertification performance period.
WEc2	Additional Indoor Plumbing Fixture and Fitting Efficiency	**Building components and site infrastructure** Have in place indoor fixtures and fittings that reduce potable water use.	N/A
WEc3	Water Efficient Landscaping	**Building components and site infrastructure** Have in place landscaping and/or irrigation systems that reduce use of potable water for irrigation. If project does not have irrigation water meter, demonstrate reduction through theoretical calculations.	**Ongoing tracking** If project has irrigation water meter and is pursuing Option 1, track irrigation water use. Compare irrigation baseline with building's actual irrigation potable water use. Using same set of months as in baseline calculation, provide metered data from most recent set in recertification performance period.

		Establishment requirements	Performance requirements
WEc4.1	Cooling Tower Water Management—Chemical Management	**Policy** Establish and implement water management plan for cooling towers.	N/A
WEc4.2	Cooling Tower Water Management—Non-potable Source	N/A	**Ongoing tracking** Use makeup water that consists of at least 50% nonpotable water and have in place measurement program that verifies makeup water quantities. Provide meter readings from most recent 25% of recertification performance period.
ENERGY AND ATMOSPHERE			
EAp1	Energy Efficiency Best Management Practices—Planning, Documentation, and Opportunity Assessment	Establish building operating plan and preventive maintenance schedule. Perform preliminary ASHRAE Level 1 walk-through.	**Primarily action** Perform ASHRAE Level I walk-through assessment at least once every 5 years. Follow building operating plan and preventive maintenance schedule.
EAp2	Minimum Energy Efficiency Performance	**Building components and site infrastructure** Have in place energy meters that measure all energy use.	**Ongoing tracking*** Track building's energy use. Provide energy performance rating for most recent 12 months and annual summaries from preceding years. If energy performance rating for most recent 12 months does not meet minimum requirement, use average rating based on each year in recertification performance period.
EAp3	Fundamental Refrigerant Management	**Building components and site infrastructure** Use zero CFC-based refrigerants. If CFC refrigerants are used, establish phase-out plan and perform economic analysis for conversion.	**Action** Continue or complete phase-out plan. Conduct new economic analysis at least once every 5 years if CFC-based refrigerants are still used.
EAc1	Optimize Energy Performance	**Building components and site infrastructure** Have in place energy meters that measure all energy use.	**Ongoing tracking*** Track building's energy usage. Provide energy performance rating for most recent 12 months and annual summaries from preceding years.
EAc2.1	EB Cx—Investigation and Analysis	Establish ongoing commissioning plan and conduct investigation and analysis phase. Alternatively, perform preliminary ASHRAE Level II audit.	**Primarily action** Conduct investigation and analysis phase at least once every 5 years. Alternatively, perform ASHRAE Level II Energy Audit once every 5 years.
EAc2.2	EB Cx—Implementation	N/A	**Action** Implement all no and low cost operational improvements and add newly identified capital measures. No and low cost measures that were implemented in the previous certification do not contribute towards credit achievement.

*Projects pursuing EAp2 using Case 2, Option 2a must update their baseline accordingly: Every 5-years, add at least one year from the most recent 5 years to the baseline from the previous certification. Projects may not add data that is more than 5-years old.

		Establishment requirements	Performance requirements
EAc2.3	EB Cx—Ongoing Cx	Establish and implement ongoing commissioning program with 24-month cycle.	**Primarily action** Follow ongoing commissioning plan with 24-month cycle. EAp1 and EAc2.1 will be automatically awarded if EAc2.3 was achieved in the previous certification and is achieved in the recertification (with at least one full ongoing commissioning cycle), and building operating plan and preventive maintenance schedule are followed and updated as needed.
EAc3.1	Performance Measurement—BAS	**Building components and site infrastructure** Have in place computer-based building automation system that monitors and controls major building systems.	**Ongoing tracking** Use BAS to inform decisions regarding changes in building operations and energy-saving investments. Describe decisions made as result of BAS output.
EAc3.2	Performance Measurement—System-level Metering	**Building components and site infrastructure** Have in place system-level energy meters.	**Ongoing tracking** Compile monthly and annual summaries of meter results for each energy subsystem. Provide monthly and annual meter data for most recent 25% of recertification performance period.
EAc4	On-site and off-site renewable energy	N/A	**Ongoing tracking** Meet some of building's total energy use with on-site or off-site renewable energy systems. Provide renewable energy data for the entire recertification performance period.
EAc5	Enhanced Refrigerant Management	**Building components and site infrastructure** Use refrigerants and equipment that reduce overall refrigerant impact of project.	**Ongoing tracking** Track amount of refrigerant and date it was added to each piece of refrigerant-containing equipment over recertification performance period. Update refrigerant impact calculations using information from last refrigerant addition for each piece of refrigerant-containing equipment.
EAc6	Emissions Reduction Reporting	N/A	**Action** Report greenhouse gas emissions using third-party voluntary reporting or certification program at least once per year.
MATERIALS AND RESOURCES			
MRp1	Sustainable Purchasing Policy	**Policy** Establish and implement sustainable purchasing policy.	N/A
MRp2	Solid Waste Management Policy	**Policy** Establish and implement solid waste management policy.	N/A

		Establishment requirements	Performance requirements
MRc1	Sustainable Purchasing—Ongoing Consumables	N/A	**Ongoing tracking** Track all sustainable ongoing consumables purchases. Provide data for most recent 25% of recertification performance period.
MRc2	Sustainable Purchasing—Durable Goods	N/A	**Ongoing tracking** Track all sustainable durable goods purchases. Provide data from entire recertification performance period.
MRc3	Sustainable Purchasing—Facility Alterations and Additions	N/A	**Ongoing tracking** Purchase sustainable construction materials for facility alterations and additions. Provide data from entire recertification performance period. Any alterations that occur during recertification performance period must be included in credit calculations.
MRc4	Sustainable Purchasing—Reduced Mercury in Lamps	**Policy** Establish lighting purchasing plan.	**Ongoing tracking** Purchase lamps with low picogram per lumen hour value. Provide data for most recent 25% of recertification performance period.
MRc5	Sustainable Purchasing—Food	N/A	**Ongoing tracking** Purchase sustainable food. Provide data for most recent 25% of recertification performance period.
MRc6	Solid Waste Management—Waste Stream Audit	Perform preliminary waste audit.	**Action** Perform a waste audit every year. If MRc7: Solid Waste Management — Ongoing Consumables has been achieved, perform waste audit once every 5 years.
MRc7	Solid Waste Management—Ongoing Consumables	N/A	**Ongoing tracking** Divert ongoing consumables waste from landfills and incineration. Provide data for most recent 25% of recertification performance period.
MRc8	Solid Waste Management—Durable Goods	N/A	**Ongoing tracking** Divert durable goods waste from landfills and incineration. Provide data for most recent 25% of recertification performance period.
MRc9	Solid Waste Management—Facility Alterations and Additions	N/A	**Ongoing tracking** Divert construction waste from landfills and incineration. Provide data from entire recertification performance period. Any alterations that occur during recertification performance period must be included in credit calculations.

		Establishment requirements	Performance requirements
INDOOR ENVIRONMENTAL QUALITY			
EQp1	Minimum Indoor Air Quality Performance	**Building components and site infrastructure** Establish minimum ventilation rates.	**Action** Take outside air measurements and perform exhaust fan testing at least once every 5 years. Confirm that project meets minimum ventilation rates.
EQp2	ETS Control	**Policy and/or building components and site infrastructure** Prohibit smoking in building and on property within 25 feet of openings. For projects with residential space or smoking rooms, meet applicable design requirements.	N/A
EQp3	Green Cleaning Policy	**Policy** Establish and implement green cleaning policy.	N/A
EQc1.1	IAQ BMP—IAQ Management Program	Perform preliminary IAQ audit. Resolve any issues that are found.	**Primarily action** Perform IAQ audit at least once every 5 years. Resolve any issues that are found.
EQc1.2	IAQ BMP—Outdoor Air Delivery Monitoring	Establish and use monitoring systems for outdoor airflow.	N/A
EQc1.3	IAQ BMP—Increased Ventilation	Establish minimum ventilation rates.	**Action** Take outside air measurements and perform exhaust fan testing at least once every 5 years and confirm that outside air rates for project are 30% above minimum required rates.
EQc1.4	IAQ BMP—Reduced Particulates in Air Distribution	**Building components and site infrastructure** Have in place MERV 13 filters in all mechanical ventilation equipment.	Follow schedule for filtration media replacement.
EQc1.5	IAQ BMP—IAQ Management for Facility Alterations and Additions	**Policy** Establish IAQ management plan for construction and occupancy phases.	**Action** Follow IAQ management plan for all facility alterations and additions. Provide photographs highlighting IAQ management practices that were implemented during construction activities, along with details of flush-out processes.
EQc2.1	Occupant Comfort—Occupant Survey	NA	**Action** Conduct occupant comfort survey at least once every 2 years.
EQc2.2	Controllability of Systems—Lighting	**Building components and site infrastructure** Establish lighting system that allows occupants high level of control.	N/A

		Establishment requirements	Performance requirements
EQc2.3	Occupant Comfort—Thermal Comfort Monitoring	Establish and use system for continual tracking of indoor comfort conditions.	**Ongoing tracking** Continue to monitor air temperature and humidity. Measure air speed and radiant temperature annually, alternating between heating and cooling seasons each year.
EQc2.4	Daylight and Views	**Building components and site infrastructure** Establish daylight and views for occupants according to required thresholds.	N/A
EQc3.1	Green Cleaning—High Performance Cleaning Program	**Policy** Establish and implement high performance green cleaning program.	N/A
EQc3.2	Green Cleaning—Custodial Effectiveness Assessment	N/A	**Action** Conduct cleanliness audit at least once every 2 years.
EQc3.3	Green Cleaning—Purchase of Sustainable Cleaning Products and Materials	N/A	**Ongoing tracking** Track green cleaning product purchases. Provide data for most recent 25% of recertification performance period.
EQc3.4	Green Cleaning—Sustainable Cleaning Equipment	N/A	**Ongoing tracking** Purchase and use sustainable cleaning equipment. Provide purchasing data from entire recertification performance period.
EQc3.5	Green Cleaning—Indoor Chemical and Pollutant Source Control	**Building components and site infrastructure** Have in place permanent entryway systems at all public entry points to building.	Maintain entryway systems.
EQc3.6	Green Cleaning—Indoor Integrated Pest Management	**Policy** Establish indoor integrated pest management plan.	**Ongoing tracking** Follow plan. Provide pesticide application logs for most recent 25% of recertification performance period.
INNOVATION IN OPERATIONS			
IOc1	Innovation in Operations	Establish innovation in operations strategy.	Follow innovation in operations strategy.
IOc2	LEED Accredited Professional	Have LEED-accredited professional on project team.	N/A
IOc3	Documenting Sustainable Building Cost Impacts	N/A	**Ongoing tracking** Track all operating costs. Provide cost data from entire recertification performance period.

APPENDIX A:

LEED for Existing Buildings v2.0 and 2009 Crosswalk

The "crosswalk" highlights the similarities and differences between the two versions of the rating system and will help version LEED for Existing Buildings v2.0 project teams make the transition to LEED 2009 for Existing Buildings: O&M.

Most thresholds have been revised or reweighted from v2.0 to 2009. Some specific threshold changes are given in the table, but all should be checked carefully when preparing for certification under 2009. The credit names, numbers, and thresholds in Table A1 are based on LEED 2009 for Existing Buildings: O&M.

LEED for Existing Buildings v2.0 projects should contact USGBC if they are interested in discussing recertification pathways for their project. If possible, all policies and plans should be revised as needed to include the information required by the policy, program, and plan models available on new.usgbc.org.

Table A1. Comparison of Current (2009) and Previous (v2.0) LEED for Existing Buildings Requirements

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
Project Information	N/A	Please see project information forms for required information.	New
SUSTAINABLE SITES			
SSc1: LEED-Certified Design and Construction	N/A	Projects previously certified under EBv2.0 are eligible for credit under SSc1 if performance period includes entire time between EBv2.0 certification and submission of recertification application (up to 5 years). In particular, project must have maintained tracking since initial LEED certification.	New
SSc2: Building Exterior and Hardscape Management Plan	SSc1: Plan for Green Site and Building Exterior Management	Portions of project's plan for green site and building exterior management may be used for SSc2: Building Exterior and Hardscape Management Plan, including maintenance equipment, snow removal, cleaning of building exterior, and paints and sealants used on building exterior. However, be sure to update sustainability criteria to reflect those specified in the LEED 2009 Reference Guide. Revise plan as needed to include all information required by plan model available on new.usgbc.org. Develop documentation in narrative form or tracking logs to show that environmentally preferable practices have been used at least 20% of time during performance period for each element of plan.	Significant

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
SSc3:Integrated Pest Management, Erosion Control, and Landscape Management Plan	SSc1: Plan for Green Site and Building Exterior Management SSp1: Erosion and Sedimentation Control	Portions of project's plan for green site and building exterior management may be used for SSc3: Integrated Pest Management, Erosion Control, and Landscape Management Plan, including animal and vegetation pest control, landscape waste, and fertilizer use. SSp1: Erosion and Sediment Control plan requirements may be used as part of erosion and sedimentation control portion of SSc3 plan. SSc3 plan must address both site soil and potential construction materials. Revise plan as needed to include all information required by plan model available on new.usgbc.org. Develop documentation in narrative form or tracking log to show that environmentally preferable practices have been used at least 20% of time during performance period for landscape waste management and fertilizer use. Erosion control and IPM portions of plan must be implemented in their entirety throughout performance period.	Significant
SSc4: Alternative Commuting Transportation	SSc3.1-3.4: Alternative Transportation	Perform survey in accordance with methodology outlined in the LEED 2009 Reference Guide.	Significant
SSc5: Site Development —Protect or Restore Open Habitat	SSc4: Reduced Site Disturbance—Protect or Restore Open Space	If 5% of site including building footprint is greater than 25% of site excluding building footprint, follow LEED 2009 EB:O&M submittal path. Otherwise, projects that achieved EBv2.0 SSc4 have sufficient vegetation to meet 2009 SSc5 requirements. If achieving compliance via off-site habitat conservation area, provide full documentation to confirm that contract is in place for sufficient off-site area.	Minor
SSc6: Stormwater Quantity Control	SSc5: Stormwater Management: Rate and Quantity Reduction	Form calculation is based on 2-year, 24-hour design storm in addition to mitigating annual rainfall. Although calculations have to be revised, many EBv2.0 projects that achieved SSc5 should be able to meet LEED 2009 EB:O&M SSc6 requirements.	Significant
SSc7.1: Heat Island Reduction—Non-Roof	SSc6.1: Heat Island Reduction—Non-Roof	Projects that used Options C or D under EBv2.0 and have not altered site will meet LEED 2009 EB:O&M requirements. Projects that used Options A or B under EBv2.0 must determine whether project meets 50% threshold required for LEED 2009 EB:O&M .	Significant (minor for some options)
SSc7.2: Heat Island Reduction—Roof	SSc6.2: Heat Island Reduction—Roof	Threshold for vegetated roof is same for EBv2.0 as for LEED 2009 EB:O&M . However, calculations for highly reflective surfaces differ, so compliance must be reviewed for projects that used reflective surfaces for EBv2.0.	Minor
SSc8: Light Pollution Reduction	SSc7: Light Pollution Reduction	LEED 2009 EB:O&M incorporates interior lighting requirement not found under EBv2.0. Projects using fully or partially shielded fixtures (if over 50 watts) qualify for exterior portion of credit.	Significant

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
WATER EFFICIENCY			
WEp1: Minimum Indoor Plumbing Fixture and Fitting Efficiency	WEp1: Minimum Water Efficiency	Baseline fixture flush and flow values differ between LEED 2009 EB:O&M and EBv2.0, so required reduction may change. Develop economic assessment policy to meet LEED 2009 EB:O&M requirements.	Significant
WEc1: Water Performance Measurement	WEp1: Minimum Water Efficiency	Option 1 takes following requirement from WEp1 v2.0: "At least one meter for overall building water use is required." Meter readings, including utility-owned meters, must be taken on continual basis (at least once per week or monthly readings with trend analysis) throughout performance period to earn this credit.	New
WEc2: Additional Indoor Plumbing Fixture and Fitting Efficiency	WEc3: Water Use Reduction	Point thresholds have been reweighted from 1–2 points in EBv2.0 to 1–5 points in LEED 2009 EB:O&M. Calculations must be based on LEED 2009 EB:O&M WEp1.	Minor
WEc3: Water Efficient Landscaping	WEc1: Water Efficient Landscaping—Reduce Water Use	Theoretical calculation option is available for projects that do not meter irrigation water use separately. Some calculation options from EBv2.0 may be used. Baseline developed based on conventional practices in area or historical data may be used. Point thresholds have been reweighted. Credit compliance cannot be achieved by projects that have planters and garden spaces that cover less than 5% of building site area.	Significant
WEc4.1	N/A	Please see rating system for credit requirements.	New
WEc4.2	N/A	Please see rating system for credit requirements.	New
ENERGY EFFICIENCY			
EAp1: Energy Efficiency Best Management Practices—Planning, Documentation, and Opportunity Assessment	EAp1: Existing Building Commissioning	Projects that have completed ASHRAE Level I audit within past 5 years before end of performance period do not need to repeat audit, but audit report and findings must be updated. Several new requirements must be met.	Significant
EAp2: Minimum Energy Efficiency Performance	EAp2: Minimum Energy Performance	For spaces eligible for ENERGY STAR score, methodology is same, but point thresholds have been revised. For spaces ineligible for ENERGY STAR score, LEED 2009 EB:O&M calculation spreadsheet must be used.	Significant

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
EAp3: Fundamental Refrigerant Management	EAp3: Ozone Protection	Projects that used no-CFC option under EBv2.0 will meet LEED 2009 EB:O&M requirements. Projects that contain CFCs must perform or update economic assessment to determine whether it is still uneconomic to replace refrigerant or system.	Minor
EAc1: Optimize Energy Efficiency Performance	EAc1: Optimize Energy Performance	See EAp2, above. Point thresholds have been revised.	Significant
EAc2.1	N/A	Please see rating system for credit requirements.	New
EAc2.2	N/A	Please see rating system for credit requirements.	New
EAc2.3	N/A	Please see rating system for credit requirements.	New
EAc3.1	N/A	Please see rating system for credit requirements.	New
EAc3.2: Performance Measurement-System-Level Metering	EAc5: Performance Measurement: Enhanced Metering	Provide energy use breakdown. Meter readings must be continuous and data logged. In LEED 2009 EB:O&M, projects must employ system-level metering that covers at least 40% or 80% of building's total expected annual energy consumption. EBv2.0 projects that achieved EAc5 will be well-positioned to meet EAc3.2 requirements, but additional action and documentation are required.	Significant
EAc4: On-site and Off-site Renewable Energy	EAc2: On-Site and Off-Site Renewable Energy	Process and requirements are similar between LEED 2009 EB:O&M and EBv2.0, but RECs and/or carbon offsets must be current and cover energy used during performance period. Projects must also submit proof of contract to purchase RECs for minimum of 2 years and commit to purchasing RECs on ongoing basis beyond that.	Significant
EAc5: Enhanced Refrigerant Management	EAc4: Additional Ozone Protection	Projects that achieved this credit using Option A will likely meet LEED 2009 EB:O&M requirement if no changes have been made since initial certification. HVAC units and other equipment, such as commercial kitchen refrigerators that contain more than 0.5 pounds of refrigerant, must be included in calculations. Option 2 in LEED 2009 EB:O&M corresponds to Option B in EB v2.0. This option now requires base-building HVAC&R equipment to comply with specific formula, which sets limit on combined contributions to ozone depletion and global warming potential.	Significant
EAc6:Emissions Reduction Reporting	EAc5.4: Performance Measurement: Emission Reduction Reporting	Requirements for LEED 2009 EB:O&M are similar to EBv2.0 requirements, but emissions reduction and list of actions and relative contributions must be analyzed for performance period.	Significant

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
MATERIALS AND RESOURCES			
MRp1: Sustainable Purchasing Policy	N/A	Please see rating system for prerequisite requirements.	New
MRp2: Solid Waste Management Policy	MRp1.2: Source Reduction and Waste Management: Storage & Collection of Recyclables	Recycling storage and collection areas may help project achieve its goals but are not sufficient to meet prerequisite requirements. Solid waste management policy must cover diversion of waste from ongoing consumables, durable goods, facility alterations and additions, and mercury-containing lamps. Policy must adhere to EB: O&M policy model and cover any waste streams that building and site management is able to control.	Significant
MRc1: Sustainable Purchasing—Ongoing Consumables	MRc2: Optimize Use of Alternative Materials	MRc2 under EBv2.0 has been divided into several credits (MRc1–3). Many of sustainability criteria are similar. Criteria that appear under EBv2.0 but are not listed under LEED 2009 EB:O&M requirements may not be counted toward credit compliance. Each purchase in LEED 2009 EB:O&M can receive credit for each sustainable criterion it meets.	Significant
MRc2.1	MRc2: Optimize Use of Alternative Materials	MRc2 under EBv2.0 has been divided into several credits (MRc1–3). Many of sustainability criteria are similar. Criteria that appear under EBv2.0 but are not listed under LEED 2009 EB:O&M requirements may not be counted toward credit compliance. Each purchase in LEED 2009 EB:O&M can receive credit for each sustainable criterion it meets.	Significant
MRc2.2	MRc2: Optimize Use of Alternative Materials	MRc2 under EBv2.0 has been divided into several credits (MRc1–3). Many of sustainability criteria are similar. Criteria that appear under EBv2.0 but are not listed under LEED 2009 EB:O&M requirements may not be counted toward credit compliance. Each purchase in LEED 2009 EB:O&M can receive credit for each sustainable criterion it meets.	Significant
MRc3	MRc2: Optimize Use of Alternative Materials	MRc2 under EBv2.0 has been divided into several credits (MRc1–3). Many of sustainability criteria are similar. Criteria that appear under EBv2.0 but are not listed under LEED 2009 EB:O&M requirements may not be counted toward credit compliance. Each purchase in LEED 2009 EB:O&M can receive credit for each sustainable criterion it meets.	Significant

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
MRc4: Sustainable Purchasing—Reduced Mercury in Lamps	MRc6: Additional Toxic Material Source Reduction—Reduced Mercury in Light Bulbs MRp2: Toxic Material Source Reduction—Reduced Mercury in Light Bulbs	Product cut sheets confirming rated life, mercury content, and mean lumens must be provided rather than product MSDS. To achieve this credit under LEED 2009 EB:O&M, projects must maintain average mercury content of 90 picograms per lumen hour or less. There are no prerequisites. All purchases of mercury-containing lamps—for interior, exterior, and portable fixtures—made during performance period must be included.	Minor
MRc5: Sustainable Purchasing—Food	N/A	Please see rating system for credit requirements.	New
MRc6: Solid Waste Management—Waste Stream Audit	MRp1.1: Source Reduction and Waste Management—Waste Management Policy and Waste Stream Audit	An audit must be conducted during performance period. Requirements are more clearly defined in the LEED 2009 EB:O&M Reference Guide. Audit must include physical sorting and measuring of all waste generated during audit period (typically 1 business day).	New
MRc7: Solid Waste Management—Ongoing Consumables	MRc5: Occupant Recycling	At least 50% of ongoing consumables waste stream generated during performance period must be diverted to meet LEED 2009 EB:O&M requirements. At least 80% of batteries must be diverted from landfills. Mercury-containing lamps and landscape waste are not included in MRc7 calculations.	Significant
MRc8: Solid Waste Management—Durable Goods	N/A	Please see rating system for credit requirements.	Significant
MRc9: Solid Waste Management—Facility Alterations and Additions	MRc1: Construction, Demolition and Renovation Waste Management	Diversion of waste applies only to base-building elements permanently or semipermanently attached to building itself. Credit can be achieved only if facility alteration or addition occurred during performance period. Calculations are based on volume rather than weight or volume.	Significant

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
INDOOR ENVIRONMENTAL QUALITY			
EQp1: Minimum Indoor Air Quality Performance	EQp1: Outside Air Introduction and Exhaust Systems	ASHRAE Standard 62.1–2004 has been updated to ASHRAE Standard 62.1–2007 in LEED 2009 EB:O&M. This applies to each outside air intake, supply air fan, and/or ventilation distribution system. Calculations and any supporting documentation must be provided to confirm prerequisite compliance. As in EBv2.0, systems that cannot meet ASHRAE minimum flow rates must provide at least 10 cfm per person, but updated ASHRAE standards should be used to determine whether system can meet flow rate.	Significant
EQp2: Environmental Tobacco Smoke (ETS) Control	EQp2: Environmental Tobacco Smoke (ETS) Control	Requirements are same, but documentation requirements may be slightly different.	Minor
EQp3: Green Cleaning Policy	EQc10.3: Green Cleaning—Low Environmental Impact Cleaning Policy	Policy created for EBv2.0 can be used as framework for EB: O&M policy, but additional information may be required. Policy model on new.usgbc.org should be followed.	New
EQc1.1: Indoor Air Quality Best Management Practices—Indoor Air Quality Management Program	EQc9: Contemporary IAQ Practice	Audit standard differs from EBv2.0, so new audit must be conducted using EPA Indoor Air Quality Building Education and Assessment Model (I-BEAM). Audit must be conducted during performance period, and plan for addressing any issues identified during audit must be provided. In addition, protocols to manage at least 2 pollutant sources—such as shipping and receiving, painting, facility alterations, and pest management—must be provided.	Significant
EQc1.2: Indoor Air Quality Best Management Practices—Outdoor Air Delivery Monitoring	EQc1: Outdoor Air Delivery Monitoring	Standard has been updated to ASHRAE 62.1–2007. Sensors must be located in breathing zone, which LEED 2009 EB:O&M defines as between 3 feet and 6 feet above floor. LEED 2009 EB:O&M requirements for all options are similar to EBv2.0 requirements, but there are some additional calibration and monitoring requirements.	Minor
EQc1.3: Indoor Air Quality Best Management Practices—Increased Ventilation	EQc2: Increased Ventilation	Projects must use calculations based on ASHRAE 62.1–2007, so projects that achieved IEQc2 under EBv2.0 may need to reevaluate compliance with LEED 2009 EB:O&M IEQc1.3. Naturally ventilated projects using Case 2, Option 1, have choice of following CIBSE Applications Manual 10: 2005 or CIBSE AM 13:2000 to determine whether natural ventilation is effective strategy for project in LEED 2009 EB:O&M. Naturally ventilated projects using Case 2, Option 2, must use ASHRAE Standard 62.1–2007, Chapter 6, to predict that room-by-room airflows will effectively naturally ventilate at least 90% of occupied spaces, in addition to using macroscopic, multizone analytic model in LEED 2009 EB:O&M.	Minor

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
EQc1.4: Indoor Air Quality Best Management Practices—Reduce Particulates in Air Distribution	EQc5.1: Indoor Chemical and Pollutant Source Control, Non-Cleaning—Reduce Particulates in Air Distribution	Requirements are same as for EBv2.0.	Same
EQc1.5: Indoor Air Quality Management Plan-Indoor Air Quality Management for Facility Alterations and Additions	EQc3: Construction IAQ Management Plan	LEED 2009 EB:O&M references more recent version of SMACNA guidance. Flush-out requirements are different. In LEED 2009 EB:O&M, flush-out must supply total outdoor air volume of 14,000 cubic feet per square foot of floor area while maintaining internal temperature of at least 60°F and maintaining relative humidity no higher than 60% where cooling mechanisms are operated. Affected space may be occupied only after delivery of at least 3,500 cubic feet of outdoor air per square foot of floor area and space has been ventilated at minimum rate of 0.30 cfm per square foot of outdoor air or design minimum outside air rate (whichever is greater) for at least 3 hours prior to occupancy until total of 14,000 cubic feet per square foot of outdoor air has been delivered to space. If facility alteration or addition occurs during performance period, flush-out must be performed. Note that consistency should be maintained with MRc3 and MRc9, which cannot be earned unless qualifying facility alteration or addition has occurred.	Significant
EQc2.1: Occupant Comfort—Occupant Survey	N/A	Please see rating system for credit requirements.	New
EQc2.2: Controllability of Systems—Lighting	EQc6.1: Controllability of Systems—Lighting	Unlike EBv2.0, LEED 2009 EB:O&M credit requires that compliance be met separately for individual workstations and multioccupant spaces. At least 50% of each type of space must have sufficient controls.	Significant
EQc2.3: Occupant Comfort—Thermal Comfort Monitoring	EQc7.1: Thermal Comfort—Compliance	LEED 2009 EB:O&M still requires compliance with ASHRAE Standard 55–2004. LEED 2009 EB:O&M additional requirements: • Continuous monitoring of air temperature and humidity, at minimum, in occupied spaces. Sampling interval cannot exceed 15 minutes. • Periodic testing of air speed and radiant temperature in occupied spaces. Using handheld meters is permitted. • Alarms for conditions that require system adjustment or repair. Submit list of sensors, zone set-points, and limit values that would trigger alarm. Having procedures in place that will result in prompt adjustments or repairs when problems are identified All monitoring devices must be calibrated according to manufacturer's recommendations.	Significant

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
EQc2.4: Daylight and Views	EQc8.1: Daylighting and Views—Daylighting for 50% of Spaces EQc8.2: Daylighting and Views—Daylighting for 75% of Spaces EQc8.3: Daylighting and Views—Views for 45% of Spaces EQc8.4: Daylighting and Views—Views for 90% of Spaces	These four credits have been combined into single credit. Daylighting: Four compliance paths are outlined in LEED 2009 EB:O&M: Simulation, Prescriptive, Measurement, and Combination. Calculations options differ from EBv2.0. Views: Since thresholds and calculations are similar, projects that met requirements of EQc8.3 and EQc8.4 will likely meet views requirements for IEQc2.4. However, building should be evaluated to determine whether any changes to furnishings or layouts affect compliance.	Significant
EQc3.1: Green Cleaning—High Performance Cleaning Program	EQc10.3: Green Cleaning—Low Environmental Impact Cleaning Policy	Green cleaning policy created for EBv2.0 can be used as framework for LEED 2009 EB:O&M program, but additional information may be required. Follow program model on new.usgbc.org.	Significant
EQc3.2: Green Cleaning—Custodial Effectiveness Assessment	N/A	Please see rating system for credit requirements.	New
EQc3.3: Green Cleaning-Sustainable Cleaning Products and Materials Purchases	MRc4: Sustainable Cleaning Products and Materials	Although this credit was moved to different credit category, changes to requirements are minor. Criteria used for EBv2.0 are also applicable to LEED 2009 EB:O&M, but additional sustainability criteria for products are now included.	Minor
EQc3.4: Green Cleaning-Sustainable Cleaning Equipment	EQc10.6: Green Cleaning—Low Environmental Impact Cleaning Equipment Policy	Several criteria have been altered, and threshold has been reduced. At least 20% of total equipment must meet applicable criteria, and all purchases made during performance period must meet applicable criteria. Projects that achieved EQc10.6 should be able to meet this credit under LEED 2009 EB:O&M as long as all new purchases meet applicable criteria.	Minor
EQc3.5: Green Cleaning—Indoor Chemical and Pollutant Source Control	EQc10.1: Green Cleaning—Entryway Systems	Entryway systems must be at least 10 feet long in primary direction of travel. Public entryways that are not in use or serve only as emergency exits are excluded from requirements, as are private offices. Entrances from parking garages and loading docks must also have entryway systems.	Minor

LEED 2009 EB:O&M Credit	Related EBv2.0 Credit	Recertification Guidance	Change
EQc3.6: Green Cleaning—Indoor Integrated Pest Management	EQc10.4-5: Green Cleaning—Low Environmental Impact Pest Management Policy	Reference for least toxic pesticides has been changed. San Francisco Pesticide Hazard Screening List must be used to determine whether pesticides are considered Tier I, II, or III. Only Tier III pesticides are considered least toxic. Other practices, such as use of rodent baits, are detailed in reference guide. Boric acid is no longer considered Tier III pesticide. This credit cannot be earned if any pesticide applications that are not least toxic occur without universal notification during performance period.	Significant
INNOVATION IN OPERATIONS			
IOc1—1-1.4	IUc1—1-1.4	Only 3 of 4 Innovation in Operations points may be achieved through exemplary performance. LEED 2009 EB:O&M reference guide provides examples of some acceptable Innovation in Operations strategies.	Minor
IOc2	IUc2	Credit requirements are same.	Same
IOc3	N/A	Please see rating system for credit requirements.	New

APPENDIX B:

Recertification Redline Version of the LEED 2009 for Existing Buildings: Operations & Maintenance Rating System

The redline version of the LEED 2009 for Existing Buildings: O&M rating system illustrates the distinct set of establishment and rerformance requirements found in each prerequisite and credit. This language restructure does not result in any changes or modifications to the previously established prerequisite and credit requirements. All of the language included in the redline version of the LEED 2009 for Existing Buildings: O&M rating system was taken directly from the LEED Reference Guide for Green Building Operations and Maintenance, the LEED 2009 for Existing Building: Operations & Maintenance Rating System, and/or the associated forms found on LEED Online v3.

SUSTAINABLE SITES

SS Credit 1: LEED Certified Design and Construction
4 points

Intent:

To reward environmentally sensitive building design and construction, thereby enabling high-performance building operations to be achieved more easily.

Requirements:

ESTABLISHMENT

Choose 1 of the following options:

OPTION 1
Show that the building has previously been certified under LEED for New Construction and Major Renovations.

OR

OPTION 2
Show that the building has been previously certified under LEED for Schools.

OR

OPTION 3
Show that the building has previously been certified under LEED for Core & Shell Development

AND
at least 75% of the floor area has also been certified under LEED for Commercial Interiors.

OR

OPTION 4

Show that the building has been previously certified under LEED for Retail: New Construction and Major Renovations.

OR

OPTION 5
Show that the building has been previously certified under LEED for Healthcare New Construction and Major Renovations.

OR

OPTION 6

Show that the building has previously been certified under any version of LEED for Existing Buildings. ~~and that ongoing performance has been tracked during the entire recertification period (from initial certification until the recertification application).~~

PERFORMANCE

For Option 6, show that ongoing performance has been tracked during the entire recertification performance period (from initial certification until the recertification application).

SS Credit 2: Building Exterior and Hardscape Management Plan
1 point

Intent

To encourage environmentally sensitive building exterior and hardscape management practices that provide a clean, well-maintained and safe building exterior while supporting high-performance building operations.

Requirements

ESTABLISHMENT

~~Employ~~ Establish an environmentally sensitive, low-impact building exterior and hardscape management plan that helps preserve surrounding ecological integrity. The plan must employ best management practices that significantly reduce harmful chemical use, energy waste, water waste, air pollution, solid waste and/or chemical runoff (e.g., gasoline, oil, antifreeze, salts) compared with standard practices. The plan must address all of the following operational elements that occur on the building and grounds:

- Maintenance equipment.
- Snow and ice removal.
- Cleaning of building exterior.
- Paints and sealants used on building exterior.
- Cleaning of sidewalks, pavement and other hardscape.

PERFORMANCE

Employ the plan and demonstrate that for each operational element included in the plan, environmentally preferred practices were used at least 20% of the time based on the performance measurement methods established in the plan.

SS Credit 3: Integrated Pest Management, Erosion Control and Landscape Management Plan — 1 point

Intent

To preserve ecological integrity, enhance natural diversity and protect wildlife while supporting high-performance building operations and integration into the surrounding landscape.

Requirements

ESTABLISHMENT

Establish ~~Have~~ an environmentally friendly and sensitive management plan ~~in place~~ for the site's natural components. The plan must employ best management practices that significantly reduce harmful chemical use, energy waste, water waste, air pollution, solid waste and/or chemical runoff (e.g., gasoline, oil, antifreeze, salts) compared with standard practices. The plan must address all of the following operational elements:

- Outdoor integrated pest management (IPM), defined as managing outdoor pests (plants, fungi, insects, and/or animals) in a way that protects human health and the surrounding environment and that improves economic returns through the most effective, least-risk option. IPM calls for the use of least toxic chemical pesticides, minimum use of the chemicals, use only in targeted locations, and use only for targeted species. IPM requires routine inspection and monitoring. The outdoor IPM plan must address all the specific IPM requirements listed in IEQ Credit 3.6: Green Cleaning: Indoor Integrated Pest Management, including preferred use of nonchemical methods, definition of emergency conditions and universal notification (advance notice of not less than 72 hours under normal conditions and 24 hours in emergencies before a pesticide, other than a least-toxic pesticide, is applied in a building or on surrounding grounds that the building management maintains). The outdoor IPM plan must also be integrated with any indoor IPM plan for the building, as appropriate.
- Erosion and sedimentation control for ongoing landscape operations (where applicable) and future construction activity. The plan must address both site soil and potential construction materials. The plan must also include measures that prevent erosion and sedimentation, prevent air pollution from dust or particulate matter and restore eroded areas.
- Further, the plan must address the following operational elements, if applicable:
- Diversion of landscape waste from the waste stream via mulching, composting or other low-impact means.
- Chemical fertilizer use. The use of artificial chemicals can be minimized by the use of locally adapted plants that need no fertilizer, less-polluting alternatives to artificial chemicals, or other low-impact maintenance practices.

PERFORMANCE

Demonstrate that compliant IPM and erosion control and sedimentation practices were used 100% of the time on project site and grounds. If applicable, demonstrate that environmentally preferred landscape waste diversion and chemical fertilizer practices were used at least 20% of the time based on the performance measurement methods established in the plan.

SS Credit 4: Alternative Commuting Transportation 3–15 points

Intent

To reduce pollution and land development impacts from automobile use for commuting.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Reduce the number of commuting round trips made by regular building occupants using single occupant, conventionally powered and conventionally fueled vehicles. For the purposes of this credit, alternative transportation includes at a minimum, telecommuting; compressed workweeks; mass transit; walking; bicycles or other human-powered conveyances; carpools; vanpools; and low-emitting, fuel-efficient[1] or alternative-fuel vehicles.

Performance calculations are made relative to a baseline case that assumes all regular occupants commute alone in conventional automobiles. The calculations must account for seasonal variations in the use of alternative commuting methods and, where possible, indicate the distribution of commuting trips using each type of alternative transportation.

Points are earned for reductions in conventional commuting trips ~~during the performance period~~ according to the following schedule:

Demonstrated percentage reduction in conventional commuting trips	Points
10%	3
13.75%	4
17.50%	5
21.25%	6
25.00%	7
31.25%	8
37.50%	9
43.75%	10
50.00%	11
56.25%	12
62.50%	13
68.75%	14
75.00%	15

Commute surveys must be performed at least once every 5 years.

[1] Low-emitting vehicles and fuel-efficient vehicles are defined as vehicles that are classified as zero-emission vehicles (ZEVs) by the California Air Resources Board or that have achieved a minimum green score of 40 on the American Council for an Energy Efficient Economy annual vehicle-rating guide.

SS Credit 5: Site Development—Protect or Restore Open Habitat
1 point

Intent

To conserve existing natural site areas and restore damaged site areas to provide habitat and promote biodiversity.

Requirements

ESTABLISHMENT

~~During the performance period, have in place~~ Establish native[2] or adapted vegetation[3] covering a minimum of 25% of the total site area (excluding the building footprint) or 5% of the total site area (including the building footprint), whichever is greater.

Improving and/or maintaining off-site areas with native or adapted plants can contribute toward earning this credit provided the improvement and maintenance are documented in a contract with the owner of the off-site area. Every 2 square feet off-site can be counted as 1 square foot on-site.

Other ecologically appropriate features that contribute to this credit are natural site elements beyond vegetation that maintain or restore the ecological integrity of the site, including water bodies, exposed rock, unvegetated ground or other features that are part of the historic natural landscape within the region and provide habitat value.

PERFORMANCE

Maintain the area of native or adapted vegetation. If off-site areas contribute towards the credit requirements, demonstrate that the contract was in place.

[2] Native plants are plants indigenous to a locality.
[3] Adapted plants are cultivars of native plants that are adapted to the local climate and are not considered invasive species or noxious weeds.

SS Credit 6: Stormwater Quantity Control
1 point

Intent

To limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff and eliminating contaminants.

Requirements

ESTABLISHMENT

~~During the performance period, implement~~ Establish a stormwater management plan that infiltrates, collects and reuses runoff or evapotranspirates runoff from at least 15% of the precipitation falling on the whole project site both for an average weather year and for the 2-year, 24-hour design storm.

PERFORMANCE

~~Implement~~ Employ an annual inspection program of all stormwater management facilities ~~to~~ and confirm continued performance. Maintain documentation of inspection, including identification of areas of erosion, maintenance needs and repairs. Perform all routine required maintenance, necessary repairs or stabilization within 60 days of inspection.

SS Credit 7.1: Heat Island Reduction—Nonroof
1 point

Intent

To reduce heat islands[4] to minimize impacts on microclimates and human and wildlife habitats.

Requirements

Choose 1 of the following options:

OPTION 1

ESTABLISHMENT

Use any combination of the following strategies for 50% of the site hardscape (including roads, sidewalks, courtyards and parking lots):

- Provide shade from the existing tree canopy or within 5 years of landscape installation; landscaping (trees) must be in place at the time of certification application.
- Provide shade from structures covered by solar panels that produce energy used to offset some nonrenewable resource use.
- Provide shade from architectural devices or structures that have a solar reflectance index (SRI)[5] of at least 29. ~~Implement a maintenance program that ensures these surfaces are cleaned at least every 2 years to maintain good reflectance.~~
- Use hardscape materials with an SRI of at least 29. ~~and implement a maintenance program that ensures these surfaces are cleaned at least every 2 years to maintain good reflectance.~~
- Use an open-grid pavement system (at least 50% pervious).

PERFORMANCE

Implement a maintenance program, or maintenance agreement between the owner and building operator, that ensures SRI surfaces are cleaned at least every 3 years to maintain good reflectance.

OR

OPTION 2

ESTABLISHMENT

Place a minimum of 50% of parking spaces under cover[6]. Any roof used to shade or cover parking must have an SRI of at least 29, be a vegetated roof or be covered by solar panels that produce energy used to offset some nonrenewable resource use. ~~Implement a maintenance program that ensures all SRI surfaces are cleaned at least every 2 years to maintain good reflectance.~~ The top parking level of a multilevel parking structure is included in the total parking spaces calculation but is not considered a roof and is not required to be an SRI surface.

PERFORMANCE

Implement a maintenance program that ensures that all SRI surfaces are cleaned at least every 3 years to maintain good reflectance.

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[4] Heat islands are defined as thermal gradient differences between developed and undeveloped areas.

[5] The solar reflectance index (SRI) is a measure of the constructed surface's ability to reflect solar heat, as shown by a small temperature rise. It is defined so that a standard black surface (reflectance 0.05, emittance 0.90) is 0 and a standard white surface (reflectance 0.80, emittance 0.90) is 100. To calculate the SRI for a given material, obtain the reflectance value and emittance value for the material. SRI is calculated according to ASTM E 1980. Reflectance is measured according to ASTM E 903, ASTM E 1918 or ASTM C 1549. Emittance is measured according to ASTM E 408 or ASTM C 1371.

[6] For the purposes of this credit, under cover parking is defined as parking underground, under deck, under roof, or under a building.

SS Credit 7.2: Heat Island Reduction—Roof
1 point

Intent

To reduce heat islands[7] to minimize impacts on microclimates and human and wildlife habitats.

Requirements

OPTION 1

ESTABLISHMENT

Use roofing materials with a solar reflectance index (SRI)[8] equal to or greater than the values in the table below for a minimum of 75% of the roof surface.

Roofing materials having a lower ~~SIR~~ SRI value than those listed below may be used if the weighted rooftop SRI average meets the following:

$$\frac{\text{Area Roof Meeting Minimum SRI}}{\text{Total Roof Area}} \times \frac{\text{SRI of Installed Roof}}{\text{Required SRI}} \varepsilon 75\%$$

Alternatively, the following equation may be used to calculate compliance:

$$\left[\text{Area of Roof A} \times \frac{\text{SRI of Root A}}{\text{Required SRI}}\right] + \left[\text{Area of Roof B} \times \frac{\text{SRI of Roof B}}{\text{Required SRI}}\right] + \ldots \quad \varepsilon \quad \text{Total Roof Area}$$

0.75

PERFORMANCE

Implement a maintenance program that ensures all SRI surfaces are cleaned at least every 3 years to maintain good reflectance.

OR

OPTION 2

ESTABLISHMENT

Install ~~and maintain~~ a vegetated roof that covers at least 50% of the roof area.

PERFORMANCE

Maintain the vegetated roof.

OR

OPTION 3

ESTABLISHMENT

Install high-albedo and vegetated roof surfaces that, in combination, meet the following criteria:

$$\frac{\text{Area Roof Meeting Minimum SRI}}{0.75} + \frac{\text{Area of Vegetated Roof}}{0.5} \varepsilon \text{ Total Roof Area}$$

[7] Heat islands are defined as thermal gradient differences between developed and undeveloped areas.

[8] The solar reflectance index (SRI) is a measure of the constructed surface's ability to reflect solar heat, as shown by a small temperature rise. It is defined so that a standard black surface (reflectance 0.05, emittance 0.90) is 0 and a standard white surface (reflectance 0.80, emittance 0.90) is 100. To calculate the SRI for a given material, obtain the reflectance value and emittance value for the material. SRI is calculated according to ASTM E 1980. Reflectance is measured according to ASTM E 903, ASTM E 1918 or ASTM C 1549. Emittance is measured according to ASTM E 408 or ASTM C 1371.

Alternatively, a weighted average approach may be used to calculate compliance for multiple materials:

$$\frac{\text{Roof A} \times \frac{\quad}{\text{Required SRI}} \Big] + \Big[\text{Area of Roof B} \times \frac{\text{SRI of Roof B}}{\text{Required SRI}} \Big]}{0.75} + \frac{\text{Area of Vegetated Roof}}{0.5} \varepsilon \text{ Total Roof Area}$$

Roof Type	Slope	SRI
Low-sloped roof	≤ 2:12	78
Steep-sloped roof	> 2:12	29

PERFORMANCE

Implement a maintenance program that ensures all SRI surfaces are cleaned at least every 3 years to maintain good reflectance.

SS Credit 8: Light Pollution Reduction
1 point

Intent

To minimize light trespass from the building and site, reduce sky-glow to increase night sky access, improve nighttime visibility through glare reduction and reduce development impact from lighting on nocturnal environments.

Requirements

Project teams must comply with the interior lighting requirement

AND

1 of the 3 options for exterior lighting.

INTERIORLIGHTING

ESTABLISHMENT

All nonemergency built-in luminaires with a direct line of sight to any openings in the envelope (translucent or transparent, wall or ceiling) must be automatically controlled to turn off during all after-hours periods ~~during the performance period~~. The total duration of all programmed after-hours periods annually must equal or exceed 2,190 hours per year (50% of annual nighttime hours).

Manual override capability may be provided for occasional after-hours use.

Establish ~~Implement~~ a program to ensure that the lighting control system is being properly used to adjust lighting levels during all after-hours periods.

PERFORMANCE

Confirm that the total duration of all programmed after-hours periods is maintained.

EXTERIOR LIGHTING

ESTABLISHMENT

OPTION 1

If the project is certified under LEED for Schools or New Construction, show that SS Credit 8: Light Pollution Reduction was earned. If the project is certified under LEED for Core & Shell Development and 75% of the floor area is LEED for Commercial Interiors, show that SS Credit 8: Light Pollution Reduction was earned for both systems.

OR

OPTION 2

Partially[9] or fully shield[10] all exterior fixtures 50 watts and over so that they do not directly emit light to the night sky.

[9] Partially shielded means exterior light fixtures are shielded so that the lower edge of the shield is at or below the centerline of the light source or lamp such that light emission above the horizontal plane is minimized.

[10] Fully shielded means exterior light fixtures are shielded or constructed so that light rays emitted by the fixture are projected below the horizontal plane passing through the lowest point on the fixture from which light is emitted.

OR

OPTION 3

Measure the night illumination levels at regularly spaced points around the perimeter of the property, taking the measurements with the building's exterior and site lights both on and off. The building's interior lights must be in the same state during both measurements. At least 8 measurements are required at a maximum spacing of 100 feet apart, so as to be representative of the illumination levels at the perimeter of the property. The illumination level measured with the lights on must not be more than 20% above the level measured with the lights off. This requirement must be met for each measurement point; averaging of all points is prohibited.

PERFORMANCE

If exterior lighting has changed, re-measure the night illumination levels (as described above).

WATER EFFICIENCY

WE Prerequisite 1: Minimum Indoor Plumbing Fixture and Fitting Efficiency – REQUIRED

Intent

To reduce indoor fixture and fitting water use within buildings to reduce the burdens on potable water[11] supply and wastewater systems.

Requirements

ESTABLISHMENT

Reduce potable water use of indoor plumbing fixtures and fittings to a level equal to or below the LEED 2009 for Existing Buildings: Operations & Maintenance baseline, calculated assuming 100% of the building's indoor plumbing fixtures and fittings meet the plumbing code requirements as stated in the 2006 editions of the Uniform Plumbing Code (UPC) or International Plumbing Code (IPC) pertaining to fixture and fitting performance. Fixtures and fittings included in the calculations for this credit are water closets, urinals, showerheads, faucets, faucet replacement aerators and metering faucets.

The LEED 2009 for Existing Buildings: Operations & Maintenance water use baseline is set depending on the year of substantial completion of the building's indoor plumbing system. Substantial completion is defined as either initial building construction or the last plumbing renovation of all or part of the building that included 100% retrofit of all plumbing fixtures and fittings as part of the renovation. Set the baseline as follows:

- For a plumbing system substantially completed in 1994 or later throughout the building, the baseline is 120% of the water use that would result if all fixtures met the codes cited above.
- For a plumbing system substantially completed before 1994 throughout the building, the baseline is 160% of the water use that would result if all fixtures met the codes cited above.

If indoor plumbing systems were substantially completed at different times (because the plumbing renovations occurred at different times in different parts of the building), Set a whole-building average baseline by prorating between the above limits. Prorate based on the proportion of plumbing fixtures installed during the plumbing renovations in each date period, as explained in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition. Pre-1994 buildings that have had only minor fixture retrofits (e.g., aerators, showerheads, flushing valves) but no plumbing renovations in or after 1994 may use the 160% baseline for the whole building.

Demonstrate fixture and fitting performance through calculations to compare the water use of the as-installed fixtures and fittings with the use of UPC- or IPC-compliant fixtures and fittings, as explained in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

Develop and implement a policy requiring economic assessment of conversion to high-performance plumbing fixtures and fittings as part of any future indoor plumbing renovation. The assessment must account for potential water supply and disposal cost savings and maintenance cost savings.

PERFORMANCE

None.

[11] Potable water is defined as water that is suitable for drinking and is supplied from wells or municipal water systems.

WE Credit 1: Water Performance Measurement 1–2 points

Intent

To measure building and subsystem water performance over time to understand consumption patterns and identify opportunities for additional water savings.

Requirements

OPTION 1 (1 point)

ESTABLISHMENT

Establish ~~Have in place~~ permanently installed water meters that measure the total potable water[12] use for the entire building and associated grounds. Applicants are also encouraged to meter gray or reclaimed water supplied to the building.

PERFORMANCE

Meter data must be recorded on a regular basis (at least weekly) and compiled into monthly and annual summaries.

OR

OPTION 2 (2 points)

ESTABLISHMENT

Meet the requirements for Option 1 and ~~have in place~~ establish permanently installed meters~~ing~~ for 1 or more of the following water subsystems:

- **Irrigation.** Meter water systems serving at least 80% of the irrigated landscape area on the grounds. The percentage of irrigated landscape area served must be calculated as the total metered irrigated landscape area divided by the total irrigated landscape area. All landscaping areas fully covered with xeriscaping or native vegetation that requires no routine irrigation must be excluded from the calculation entirely.
- **Indoor plumbing fixtures and fittings.** Meter water systems serving at least 80% of the indoor plumbing fixtures and fittings described in WE Prerequisite 1, either directly or by deducting all other measured water use from the measured total water consumption of the building and grounds.
- **Cooling towers.** Meter replacement water use of all cooling towers serving the facility.
- **Domestic hot water.** Meter water use of at least 80% of the installed domestic hot water heating capacity (including both tanks and on-demand heaters).
- **Other process water.** Meter at least 80% of expected daily water consumption for process-type end uses, such as humidification systems, dishwashers, clothes washers, pools and other systems using process water.

Meters must measure potable water use, but gray or reclaimed water use may also be measured to meet the requirements of this credit.

PERFORMANCE

Metering must be continuous (at least weekly) 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.

Meters must be calibrated within the manufacturer's recommended interval if the building owner, management organization or tenant owns the meter. Meters owned by third parties (e.g., utilities or governments) are exempt.

[12] Potable water is defined as water that is suitable for drinking and is supplied from wells or municipal water systems.

WE Credit 2: Additional Indoor Plumbing Fixture and Fitting Efficiency
1–5 points

Intent

To maximize indoor plumbing fixture and fitting efficiency within buildings to reduce the use of potable water[13] and consequent burden on municipal water supply and wastewater systems.

Requirements

ESTABLISHMENT

~~During the performance period, have in place~~ Establish strategies and systems that in aggregate produce a reduction in indoor plumbing fixture and fitting potable water[13] use from the calculated baseline established in WE Prerequisite 1: Minimum Indoor Plumbing Fixture and Fitting Efficiency.

The minimum water reduction percentage for each point threshold is as follows:

Percentage Reduction	Points
10%	1
15%	2
20%	3
25%	4
30%	5

PERFORMANCE

If changes have been made to the plumbing fixtures, update the calculations to reflect current conditions.

[13] Potable water is defined as water that is suitable for drinking and is supplied from wells or municipal water systems.

WE Credit 3: Water Efficient Landscaping 1–5 points

Intent

To limit or eliminate the use of potable water[14], or other natural surface or subsurface resources available on or near the project site, for landscape irrigation.

Requirements

Reduce potable water or other natural surface or subsurface resource consumption for irrigation compared with conventional means of irrigation. If the building does not have separate water metering for irrigation systems, the water-use reduction achievements can be demonstrated through calculations. The minimum water savings percentage for each point threshold is as follows:

Percentage Reduction	Points
50%	1
62.5%	2
75%	3
87.5%	4
100%	5

For buildings without vegetation or other ecologically appropriate features on the grounds, points can be earned by reducing the use of potable water for watering any roof and/or courtyard garden space or outdoor planters, provided the planters and/or garden space cover at least 5% of the building site area (including building footprint, hardscape area, parking footprint, etc). If the planters and/or garden space cover less than 5% of the building site area, the project is ineligible for this credit.

Three options are available to demonstrate compliance with the above requirements. Project teams that do not separately meter their actual irrigation water use ~~during the performance period~~ must choose Option 2.

Choose 1 of the following options:

OPTION 1

ESTABLISHMENT

Calculate the mid-summer baseline irrigation water use by determining the water use that would result from using an irrigation system typical for the region.

PERFORMANCE

Compare the baseline ~~this~~ with the building's actual irrigation potable water use, which can be determined through submetering. Use the baseline and actual water use values to calculate the percentage reduction in potable water or other natural surface or subsurface resource use. More detail about completing this calculation is available in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

[14] Potable water is defined as water that is suitable for drinking and is supplied from wells or municipal water systems.

OR

OPTION 2

ESTABLISHMENT

Calculate the estimated mid-summer irrigation water use by determining the landscape area for the project and sorting this area into the major vegetation types. Determine the reference evapotranspiration rate (ETo) for the region and determine the species factor (k_s), density factor (k_d) and microclimate factor (k_{mc}) for each vegetation type. Use this information to calculate the landscape coefficient (K_L) and irrigation water use for the design case. Calculate the baseline case irrigation water use by setting the above factors to average values representative of conventional equipment and design practices. Use the estimated and baseline case to determine the percentage reduction in potable water or other natural surface or subsurface resource use. Factor values and other resources for completing these calculations are available in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

PERFORMANCE

None.

OR

OPTION 3

ESTABLISHMENT

If independent irrigation performance and ranking tools are available from local, regional, state or national sources, use such tools to demonstrate reductions in potable water or other natural surface or subsurface resource for irrigation purposes.

PERFORMANCE

None.

WE Credits 4.1 - 4.2: Cooling Tower Water Management
1–2 points

Intent

To reduce potable water[15] consumption for cooling tower equipment through effective water management and/or use of nonpotable makeup water.

Requirements

WE CREDIT 4.1 (1 POINT): CHEMICAL MANAGEMENT

ESTABLISHMENT

Establish ~~Develop~~ and implement a water management plan for the cooling tower that addresses chemical treatment, bleed-off, biological control and staff training as it relates to cooling tower maintenance.

Improve water efficiency by installing and/or maintaining a conductivity meter and automatic controls to adjust the bleed rate and maintain proper concentration at all times.

PERFORMANCE

None.

AND/OR

WE CREDIT 4.2 (1 POINT): NONPOTABLE WATER SOURCE USE

ESTABLISHMENT

None

PERFORMANCE

Use makeup water that consists of at least 50% nonpotable water, such as harvested rainwater, harvested stormwater, air-conditioner condensate, swimming pool filter backwash water, cooling tower blowdown, pass-through (once-through) cooling water, recycled treated wastewater from toilet and urinal flushing, foundation drain water, municipally reclaimed water or any other appropriate on-site water source that is not naturally occurring groundwater or surface water.

Have a measurement program in place that verifies makeup water quantities used from nonpotable sources. Meters must be calibrated within the manufacturer's recommended interval if the building owner, management organization or tenant owns the meter. Meters owned by third parties (e.g., utilities or governments) are exempt.

[15] Potable water is defined as water that is suitable for drinking and is supplied from wells or municipal water systems.

ENERGY & ATMOSPHERE

EA Prerequisite 1: Energy Efficiency Best Management Practices—Planning, Documentation and Opportunity Assessment
REQUIRED

Intent

To promote continuity of information to ensure that energy-efficient operating strategies are maintained and provide a foundation for training and system analysis.

Requirements

ESTABLISHMENT

Document the current sequence of operations for the building.

Establish ~~Develop~~ a building operating plan that provides details on how the building is to be operated and maintained. The operating plan must include, at a minimum, an occupancy schedule, equipment run-time schedule, design set points for all HVAC equipment, and design lighting levels throughout the building. Identify any changes in schedules or set points for different seasons, days of the week and times of day.

Develop a systems narrative that briefly describes the mechanical and electrical systems and equipment in the building. The systems narrative must include all the systems used to meet the operating conditions stated in the operating plan, including at a minimum, heating, cooling, ventilation, lighting and any building controls systems.

Create a narrative of the preventive maintenance plan for equipment described in the systems narrative ~~and~~.

Conduct an energy audit that meets the requirements of the ASHRAE Level I walk-through assessment.

PERFORMANCE

Validate that the building operating plan has been followed ~~met~~. ~~during the performance period.~~

~~document~~ Document ~~the~~ ongoing preventive maintenance according to the established schedule ~~during the performance period~~.

Perform a~~n~~ new ASHRAE Level I walk-through assessment if it has greater than five years since the last assessment. If necessary, update the sequence of operations and building operating plan based on the results of the walk-though assessment.

EA Prerequisite 2: Minimum Energy Efficiency Performance
REQUIRED

Intent
To establish the minimum level of operating energy efficiency performance relative to typical buildings of similar type to reduce environmental and economic impacts associated with excessive energy use.

Requirements

ESTABLISHMENT

Establish~~Have~~ energy meters ~~in place~~that measure all energy use for all of the buildings to be certified. Calibrate meters within the manufacturer's recommended interval if the building owner, management organization or tenant owns the meter. Meters owned by third parties (e.g., utilities or governments) are exempt.

Each building's energy performance must be based on actual metered energy consumption. This applies to both the LEED project building(s) and all comparable buildings used for the benchmark.

Analyze the building's space attributes and operational variables to determine which Case below will be used to demonstrate energy efficiency performance. Use the Portfolio Manager tool available on the ENERGY STAR website to benchmark the project even if it is not eligible for an EPA rating: **energystar.gov/benchmark**

PERFORMANCE

Collect a ~~A~~ full 12 months of continuous measured energy data ~~is required~~.

CASE 1. Projects Eligible for Energy Star Rating
For buildings eligible to receive an energy performance rating using the EPA's ENERGY STAR® Portfolio Manager tool, achieve an energy performance rating of at least 69. If the building is eligible for an energy performance rating using Portfolio Manager, Option 1 must be used.

CASE 2. Projects Not Eligible for Energy Star Rating
For buildings not eligible to receive an energy performance rating using Portfolio Manager, comply with 1 of the following:

OPTION 1
Demonstrate energy efficiency performance that is better than 69% of similar buildings (69th percentile or better) by benchmarking against national source energy data provided in the Portfolio Manager tool as an alternative to energy performance ratings. Follow the detailed instructions in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

OR

OPTION 2
Use the alternative method described in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

EA Prerequisite 3: Fundamental Refrigerant Management
REQUIRED

Intent

To reduce stratospheric ozone depletion.

Requirements

ESTABLISHMENT

Zero use of chlorofluorocarbon (CFC)-based refrigerants in heating, ventilating, air conditioning and refrigeration (HVAC&R) base building systems unless a third-party audit (as defined in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition) shows that system replacement or conversion is not economically feasible or it is demonstrated that a phase-out plan for CFC-based refrigerants is in place.

Required economic analysis: The replacement of a chiller is considered not economically feasible if the simple payback of the replacement is greater than 10 years. To determine the simple payback, divide the cost of implementing the replacement by the annual cost avoidance for energy that results from the replacement and any difference in maintenance costs. If CFC-based refrigerants are maintained in the building, reduce annual leakage to 5% or less using EPA Clean Air Act, Title VI, Rule 608 procedures governing refrigerant management and reporting, and reduce the total leakage over the remaining life of the unit to less than 30% of its refrigerant charge.

Small HVAC&R units (defined as containing less than 0.5 pounds of refrigerant), standard refrigerators, small water coolers and any other cooling equipment that contains less than 0.5 pounds of refrigerant are not considered part of the base building system and are exempt.

PERFORMANCE

If a phase out plan was established in a previous certification, confirm that no CFC-based refrigerants are currently maintained in the project.

If CFC-based refrigerants have been maintained in the project since a previous certification, describe how the phase-out plan has been followed, and conduct a new economic analysis at least once every five years (as described above).

EA Credit 1: Optimize Energy Efficiency Performance 1–18 points

Intent

To achieve increasing levels of operating energy performance relative to typical buildings of similar type to reduce environmental and economic impacts associated with excessive energy use.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

CASE 1. Projects Eligible for Energy Star Rating

For buildings eligible to receive an energy performance rating using the EPA's ENERGY STAR's Portfolio Manager tool, achieve an energy performance rating of at least 71. If the building is eligible for an energy performance rating using Portfolio Manager, Option 1 must be used.

The minimum energy cost savings percentage for each ENERGY STAR threshold is as follows:

EPA ENERGY STAR Energy Performance Rating	Points
71	1
73	2
74	3
75	4
76	5
77	6
78	7
79	8
80	9
81	10
82	11
83	12
85	13
87	14
89	15
91	16
93	17
95	18

Achieve energy efficiency performance better than the minimum requirements listed above; points are awarded according to the table below.

Have energy meters that measure all energy use of ~~throughout the performance period of~~ buildings to be certified. Each building's energy performance must be based on actual metered energy consumption for the LEED project. A full 12 months of continuous measured energy data is required.

Calibrate meters within the manufacturer's recommended interval if the building owner, management organization or tenant owns the meter. Meters owned by third parties (e.g., utilities or governments) are exempt.

CASE 2. Projects Not Eligible for Energy Star Rating

For buildings not eligible to receive an energy performance rating using Portfolio Manager, comply with 1 of the following:

OPTION 1

Demonstrate energy efficiency performance that is better than 71% of similar buildings (71st percentile or better) by benchmarking against national source energy data provided in the Portfolio Manager tool as an alternative to energy performance ratings. Follow the detailed instructions in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

OR

OPTION 2

For buildings not suited for Case 2, Option 1, use the alternative method described in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

AND

- Achieve energy efficiency performance better than the minimum requirements listed above; points are awarded according to the table below.
- Have energy meters that measure all energy use ~~throughout the performance period~~ of of all buildings to be certified. Each building's energy performance must be based on actual metered energy consumption for both the LEED project and all comparable buildings used for the benchmark. A full 12 months of continuous measured energy data is required.
- Calibrate meters within the manufacturer's recommended interval if the building owner, management organization or tenant owns the meter. Meters owned by third parties (e.g., utilities or governments) are exempt.
- Use the Portfolio Manager tool available on the ENERGY STAR website to benchmark the project even if it is not eligible for an EPA rating: **energystar.gov/benchmark.**

Percentile level above the national median (for buildings not eligible for ENERGY STAR energy performance rating	Points
21	1
23	2
24	3
25	4
26	5
27	6
28	7
29	8
30	9
31	10
32	11
33	12
35	13
37	14
39	15
41	16
43	17
45	18

EA Credit 2.1: Existing Building Commissioning—Investigation and Analysis
2 points

Intent

Through a systematic process, to develop an understanding of the operation of the building's major energy-using systems, options for optimizing energy performance and a plan to achieve energy savings.

Requirements

ESTABLISHMENT

OPTION 1. Commissioning Process

- Establish~~Develop~~ a retrocommissioning, recommissioning or ongoing commissioning plan for the building's major energy-using systems.
- Conduct the investigation and analysis phase.
- Document the breakdown of energy use in the building.
- List the operating problems that affect occupants' comfort and energy use, and develop potential operational changes that will solve them.
- List the identified capital improvements that will provide cost-effective energy savings and document the cost-benefit analysis associated with each.

OR

OPTION 2. ASHRAE Level II Energy Audit

- Conduct an energy audit that meets the requirements of American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Level II, Energy Survey and Analysis.
- Document the breakdown of energy use in the building.
- Perform a savings and cost analysis of all practical measures that meet the owner's constraints and economic criteria, along with a discussion of any effect on operations and maintenance procedures.
- List the identified capital improvements that will provide cost-effective energy savings and document the cost-benefit analysis associated with each.

PERFORMANCE

OPTION 1: Perform the investigation and analysis phase of commissioning every 5 years.

OPTION 2: Perform an audit every 5 years.

EA Credit 2.2: Existing Building Commissioning—Implementation 2 points

Intent

To implement minor improvements and identify planned capital projects to ensure that the building's major energy-using systems are repaired, operated and maintained effectively to optimize energy performance.

Requirements

ESTABLISHMENT

None

PERFORMANCE

Implement no- or low-cost operational improvements and create a capital plan for major retrofits or upgrades.

Provide training for management staff that builds awareness and skills in a broad range of sustainable building operations topics. This could include energy efficiency and building, equipment and systems operations and maintenance.

Demonstrate the observed and/or anticipated financial costs and benefits of measures that have been implemented.

Update the building operating plan as necessary to reflect any changes in the occupancy schedule, equipment run-time schedule, design set points and lighting levels.

EA Credit 2.3: Existing Building Commissioning—Ongoing Commissioning
2 points

Intent

To use commissioning to address changes in facility occupancy, use, maintenance and repair. Make periodic adjustments and reviews of building operating systems and procedures essential for optimal energy efficiency and service provision.

Requirements

ESTABLISHMENT

Establish and iImplement an ongoing commissioning program that includes elements of planning, system testing, performance verification, corrective action response, ongoing measurement and documentation to proactively address operating problems.

Create a written plan that summarizes the overall commissioning cycle for the building by equipment or building system group. The ongoing commissioning cycle must not exceed 24 months. This plan must include a building equipment list, performance measurement frequency for each equipment item and steps to respond to deviation from expected performance parameters.

PERFORMANCE

Complete at least half of the scope of work in the first commissioning cycle (as indicated by the percentage of the plan's total budget) prior to the date of initial certification application for LEED 2009 for Existing Buildings: Operations & Maintenance. Only work completed within 2 years prior to initial application may be included to show progress in the ongoing commissioning cycle.

Follow the ongoing commissioning program on a 24 month cycle. Update the building operating plan and/or systems narrative as necessary to reflect any changes in the occupancy schedule, equipment run-time schedule, design set points, lighting levels or system specifications.

EA Credit 3.1: Performance Measurement—Building Automation System
1 point

Intent

To provide information to support the ongoing accountability and optimization of building energy performance and identify opportunities for additional energy-saving investments.

Requirements

ESTABLISHMENT

Have in place a computer-based building automation system (BAS) that monitors and controls major building systems, including at a minimum, heating, cooling, ventilation and lighting.

Establish~~Have~~ a preventive maintenance program ~~in place~~ that ensures BAS components are tested and repaired or replaced according to the manufacturer's recommended interval.

PERFORMANCE

Demonstrate that the BAS is being used to inform decisions regarding changes in building operations and energy-saving investments. Follow the preventative maintenance program.

EA Credit 3.2: Performance Measurement— System-Level Metering
1–2 points

Intent

To provide accurate energy-use information to support energy management and identify opportunities for additional energy-saving improvements.

Requirements

ESTABLISHMENT

Develop a breakdown of energy use in the building, either through EA Credits 2.1 and 2.2 or by using energy bills, spot metering or other metering to determine the energy consumption of major mechanical systems and other end-use applications. This analysis of major energy-use categories must have been conducted within 2 years prior to the date of application for LEED 2009 for Existing Buildings: Operations & Maintenance certification.

Based on the energy-use breakdown, establish~~mploy~~ system-level metering covering at least 40% or 80% of the total expected annual energy consumption of the building. Permanent metering and recording are required. All types of submetering are permitted.

Demonstrate that system-level metering is in place covering the percentage of total expected annual energy consumption of the building as outlined in the table below.

Demonstrate that the number of the largest energy-use categories from the breakdown report outlined in the table are covered by at least 80% (i.e., if energy use in the 2 or 3 largest categories is each 100 Btus/year, at least 80 Btu/year in 1 or 2 of them must be metered).

Meters must be calibrated within the manufacturer's recommended interval if the building owner, management organization or tenant owns the meter. Meters owned by third parties (e.g., utilities or governments) are exempt.

Develop a plan to continuously data log the meters.

System Level Metering Requirements		
Percentage of Total Annual Energy Consumption to be Metered	Number of Largest Energy Use Categories to be Covered by 80% or more	Points
40%	1 of 2	1
80%	2 of 3	2

PERFORMANCE

~~Metering must be continuous and data logged to allow for an analysis of time trends. The project team must c~~Compile monthly and annual summaries of results for each system covered.

EA Credit 4: On-site and Off-site Renewable Energy 1–6points

Intent

To encourage and recognize increasing levels of on and off-site renewable energy to reduce environmental and economic impacts associated with fossil fuel energy use.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

M~~During the performance period, m~~eet some or all of the building's total energy use with on-site or off-site renewable energy systems. Points are earned according to the following table, which shows the percentages of building energy use met by renewable energy ~~during the performance period~~.

Off-site renewable energy sources are defined by the Center for Resource Solutions Green-e Energy program's products certification requirements, or the equivalent. Green power may be procured from a Green-e Energy-certified power marketer or a Green-e Energy-accredited utility program, or through Green-e Energy-certified tradable renewable energy certificates (RECs) or the equivalent. For on-site renewable energy that is claimed for LEED 2009 for Existing Buildings: Operations & Maintenance credit, the associated environmental attributes must be retained or retired and cannot be sold.

If the green power is not Green-e Energy certified, equivalence must exist for both major Green-e Energy program criteria: 1) current green power performance standards, and 2) independent, third-party verification that those standards are being met by the green power supplier over time.

Up to the 6-point limit, any combinations of individual actions are awarded the sum of the points allocated to those individual actions. For example, 1 point would be awarded for implementing 3% of on-site renewable energy, and 3 additional points would be awarded for meeting 50% of the building's energy load with renewable power or certificates ~~during the performance period~~. Projects must submit proof of a contract to purchase RECs for a minimum of 2 years and must also make a commitment to purchase RECs on an ongoing basis beyond that.

On-site renewable energy		Off-site renewable energy certificates	Points
3%	or	25%	1
4.5%	or	37.5%	2
6%	or	50%	3
7.5%	or	62.5%	4
9%	or	75%	5
12%	or	100%	6

EA Credit 5: Enhanced Refrigerant Management
1 point

Intent

To reduce ozone depletion and support early compliance with the Montreal Protocol while minimizing direct contributions to global climate change.

Requirements

OPTION 1

ESTABLISHMENT

Do not use refrigerants in base building heating, ventilating, air conditioning and refrigeration (HVAC&R) systems.

PERFORMANCE

None.

OR

OPTION 2

ESTABLISHMENT

Select refrigerants and heating, ventilation, air conditioning and refrigeration HVAC&R equipment that minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change. The base building HVAC&R equipment must comply with the following formula, which sets a maximum threshold for the combined contributions to ozone depletion and global warming potential:

$$LCGWP + LCODP \times 10^5 \ \delta 100$$

Calculation definitions for LCGWP + LCODP × 105 δ100
LCODP = [ODPr × (Lr × Life + Mr) × Rc]/Life
LCGWP = [GWPr × (Lr × Life + Mr) × Rc]/Life
LCODP: Lifecycle Ozone Depletion Potential (lbCFC11/Ton-Year)
LCGWP: Lifecycle Direct Global Warming Potential (lbCO_2/Ton-Year)
GWPr: Global Warming Potential of Refrigerant (0 to 12,000 lbCO_2/lbr)
ODPr: Ozone Depletion Potential of Refrigerant (0 to 0.2 lbCFC11/lbr)
Lr: Refrigerant Leakage Rate (0.5% to 2.0%; default of 2% unless otherwise demonstrated)
Mr: End-of-life Refrigerant Loss (2% to 10%; default of 10% unless otherwise demonstrated)
Rc: Refrigerant Charge (0.5 to 5.0 lbs of refrigerant per ton of gross ARI rated cooling capacity)
Life: Equipment Life (10 years; default based on equipment type, unless otherwise demonstrated)

For multiple types of equipment, a weighted average of all base building HVAC&R equipment must be calculated using the following formula:

$$\frac{\left[\square(LCGWP + LCODP \times 10^5) \times Qunit\right]}{Qtotal\ \delta 100}$$

Calculation definitions for $[\square(LCGWP + LCODP \times 10^5) \times Qunit] / Qtotal\ \delta 100$
Qunit = Gross ARI rated cooling capacity of an individual HVAC or refrigeration unit (tons)
Qtotal = Total gross ARI rated cooling capacity of all HVAC or refrigeration

Small HVAC units (defined as containing less than 0.5 pounds of refrigerant), and other equipment such as standard refrigerators, small water coolers and any other cooling equipment that contains less than 0.5 pounds of refrigerant are not considered part of the base building system and are not subject to the requirements of this credit.

Do not operate or install fire suppression systems that contain ozone-depleting substances — such as CFCs, hydrochlorofluorocarbons (HCFCs) or halons.

Confirm that the leakage rates will be tracked, including the amount of refrigerant added to each piece of equipment and the date the refrigerant is added.

PERFORMANCE

Demonstrate that the refrigerant additions for each piece of equipment are being tracked and update the refrigerant impact calculations to utilize the actual tracked refrigerant data.

EA Credit 6: Emissions Reduction Reporting
1 point

Intent

To document the emissions reduction benefits of building efficiency measures.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Identify building performance parameters that reduce conventional energy use and emissions, quantify those reductions and report them to a formal tracking program:

Track and record emissions reductions delivered by energy efficiency, renewable energy and other building emissions reduction measures, including reductions from the purchase of renewable energy credits.

Report emissions reductions using a third-party voluntary reporting or certification program at least annually (e.g., U.S. Environmental Protection Agency (EPA) Climate Leaders, ENERGY STAR or World Resources Institute / World Business Council for Sustainable Development (WRI/WBCSD)) protocols).

MATERIALS & RESOURCES

MR Prerequisite 1: Sustainable Purchasing Policy

REQUIRED

Intent

To reduce the environmental impacts of materials acquired for use in the operations, maintenance and upgrades of buildings.

Requirements

ESTABLISHMENT

~~Have in place~~Establish an Environmentally Preferable Purchasing (EPP) policy that includes, at a minimum, product purchasing policies for the building and site addressing the requirements of MR Credit 1: Sustainable Purchasing—Ongoing Consumables. This policy must adhere to the LEED 2009 for Existing Buildings: Operations & Maintenance policy model (see Introduction). At a minimum, the policy must cover those product purchases that are within the building and site management's control.

Additionally, extend the EPP policy to include product purchasing policies for the building and site addressing the requirements of at least 1 of the credits listed below. This extended policy must also adhere to the LEED 2009 for Existing Buildings: Operations & Maintenance policy model and specifically address the goal, scope and performance metric for the respective credit:

- MR Credit 2.1: Sustainable Purchasing—Electric-Powered Equipment
- MR Credit 2.2: Sustainable Purchasing—Furniture
- MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions
- MR Credit 4: Sustainable Purchasing—Reduced Mercury in Lamps

~~This prerequisite requires only policies, not ongoing actual sustainable performance.~~

PERFORMANCE

None.

MR Prerequisite 2: Solid Waste Management Policy

REQUIRED

Intent

To facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills or incineration facilities.

Requirements

ESTABLISHMENT

~~Have in place~~Establish a solid waste management policy for the building and site addressing the requirements of the waste management credits listed below as well as recycling of all mercury-containing lamps. This policy must adhere to the LEED 2009 for Existing Buildings: Operations & Maintenance policy model (see Introduction). At a minimum, the policy must cover the waste streams that are within the building and site management's control.

- MR Credit 7: Solid Waste Management—Ongoing Consumables
- MR Credit 8: Solid Waste Management—Durable Goods
- MR Credit 9: Solid Waste Management—Facility Alterations and Additions

~~This prerequisite requires only policies, not ongoing actual sustainable performance.~~

PERFORMANCE

None.

MR Credit 1: Sustainable Purchasing—Ongoing Consumables
1 Point

Intent

To reduce the environmental and air quality impacts of the materials acquired for use in the operations and maintenance of buildings.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Maintain a sustainable purchasing program covering materials with a low cost per unit that are regularly used and replaced through the course of business. These materials include at a minimum, paper (printing or copy paper, notebooks, notepads, envelopes), toner cartridges, binders, batteries and desk accessories. Food and beverages are excluded from this credit but are covered under MR Credit 5: Sustainable Purchasing - Food. For materials that may be considered either ongoing consumables or durable goods (see MR Credits 2.1 and 2.2), the project team is free to decide which category to put them in as long as consistency is maintained with MR Credits 2.1 and 2.2, with no contradictions, exclusions or double-counting. Consistency must also be maintained with MR Credit 7.

A template calculator for MRc1 is available in LEED Online 3 as a credit submittal. One point is awarded to projects that achieve sustainable purchases of at least 60%, of total purchases (by cost) ~~during the performance period~~. Sustainable purchases are those that meet one or more of the following criteria:

- Purchases contain at least 10% postconsumer and/or 20% postindustrial material.
- Purchases contain at least 50% rapidly renewable materials.
- Purchases contain at least 50% materials harvested and processed or extracted and processed within 500 miles of the project.
- Purchases consist of at least 50% Forest Stewardship Council (FSC)–certified paper products.
- Batteries are rechargeable.

Each purchase can receive credit for each sustainable criterion met (i.e., a $100 purchase that contains both 10% postconsumer recycled content and 50% of content harvested within 500 miles of the project counts twice in the calculation, for a total of $200 of sustainable purchasing).

Ongoing consumables must be purchased ~~during the performance period~~ to earn points in this credit.

MR Credits 2.1 - 2.2: Sustainable Purchasing—Durable Goods 1–2 Points

Intent

To reduce the environmental and air quality impacts of the materials acquired for use in the operations and maintenance of buildings.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Maintain a sustainable purchasing program covering items available at a higher cost per unit and durable goods that are replaced infrequently and/or may require capital program outlays to purchase. Materials that may be considered either ongoing consumables (see MR Credit 1: Sustainable Purchasing—Ongoing Consumables) or durable goods, can be counted under either category provided consistency is maintained with MR Credit 1, with no contradictions, exclusions or double-counting. Consistency must also be maintained with MR Credit 8: Solid Waste Management—Durable Goods.

MR CREDIT 2.1 (1 POINT): ELECTRIC-POWERED EQUIPMENT

Achieve sustainable purchase of at least 40% of total purchases of electric-powered equipment (by cost) ~~during the performance period~~. Examples of electric-powered equipment include, but are not limited to, office equipment (computers, monitor, copiers, printers, scanners, fax machines), appliances (refrigerators, dishwashers, water coolers), external power adapters, and televisions and other audiovisual equipment. Sustainable purchases are those that meet one of the following criteria:

- The equipment is ENERGY STAR® qualified (for product categories with developed specifications).
- The equipment (either battery or corded) replaces conventional gas-powered equipment[16].

AND/OR

MR CREDIT 2.2 (ONE POINT): FURNITURE

Achieve sustainable purchases of at least 40% of total purchases of furniture (by cost) ~~during the performance period~~. Sustainable purchases are those that meet one or more of the following criteria:

- Purchases contain at least 10% postconsumer and/or 20% postindustrial material.
- Purchases contain at least 70% material salvaged from off-site or outside the organization.
- Purchases contain at least 70% material salvaged from on-site, through an internal organization materials and equipment reuse program.
- Purchases contain at least 50% rapidly renewable material.
- Purchases contain at least 50% Forest Stewardship Council (FSC)-certified wood.
- Purchases contain at least 50% material harvested and processed or extracted and processed within 500 miles of the project.

Each furniture purchase can receive credit for each sustainable criterion met (i.e., a $100 purchase that contains both 10% postconsumer recycled content and 50% of content harvested within 500 miles of the project counts twice in the calculation, for a total of $200 of sustainable purchasing).

Durable goods must be purchased ~~during the performance period~~ to earn points in this credit.

[16] Gas-powered equipment includes, at a minimum, maintenance equipment and vehicles, landscaping equipment and cleaning equipment.

MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions
1 Point

Intent

To reduce the environmental and air quality impacts of the materials acquired for use in the upgrade of buildings.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Maintain a sustainable purchasing program covering materials for facility renovations, demolitions, refits and new construction additions. This applies only to base building elements permanently or semipermanently attached to the building itself. Materials considered furniture, fixtures and equipment (FF&E) are not considered base building elements[17] and are excluded from this credit. Mechanical, electrical and plumbing components and specialty items such as elevators are also excluded from this credit.

A sample calculation for this credit is available in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition. Achieve sustainable purchases of 50% of total purchases (by cost) ~~during the performance period~~ during the entire recertification performance period. Sustainable purchases shall meet 1 or more of the following criteria:

- Purchases contain at least 10% postconsumer and/or 20% postindustrial material.
- Purchases contain at least 70% material salvaged from off-site or outside the organization.
- Purchases contain at least 70% material salvaged from on-site, through an internal organization materials and equipment reuse program.
- Purchases contain at least 50% rapidly renewable material.
- Purchases contain at least 50% Forest Stewardship Council certified wood.
- Purchases contain at least 50% material harvested and processed or extracted and processed within 500 miles of the project.
- Adhesives and sealants have a VOC content less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168, or sealants used as fillers meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.
- Paints and coating have VOC emissions not exceeding the VOC and chemical component limits of Green Seal's Standard GS-11 requirements.
- Noncarpet finished flooring is FloorScore-certified and constitutes a minimum of 25% of the finished floor area.
- Carpet meets the requirements of the CRI Green Label Plus Carpet Testing Program.
- Carpet cushion meets the requirements of the CRI Green Label Testing Program.
- Composite panels and agrifiber[18] products contain no added urea-formaldehyde resins.

Each purchase can receive credit for each sustainable criterion met (i.e., a $100 purchase that contains both 10% postconsumer recycled content and 50% of content harvested within 500 miles of the project counts twice in the calculation, for a total of $200 of sustainable purchasing).

Materials for alterations or additions must be purchased ~~during the performance period~~ to earn points in this credit.

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[17] Base building elements include ,at a minimum, building components and structures (wall studs, insulation, doors, windows), panels, attached finishings (drywall, trim, ceiling panels), carpet and other flooring material, adhesives, sealants, paints and coatings.

[18] Composite wood and agrifiber products are defined as particleboard, medium-density fiberboard (MDF), plywood, oriented-strand board (OSB), wheatboard, strawboard, panel substrates and door cores.

MR Credit 4: Sustainable Purchasing—Reduced Mercury in Lamps
1 Point

Intent

To establish and maintain a toxic material source reduction program to reduce the amount of mercury brought onto the building site through purchases of lamps.

Requirements

ESTABLISHMENT

~~Develop~~Establish a lighting purchasing plan that specifies maximum levels of mercury permitted in mercury-containing lamps purchased for the building and associated grounds, including lamps for both indoor and outdoor fixtures, as well as both hard-wired and portable fixtures. The purchasing plan must specify a target for the overall average of mercury content in lamps of 90 picograms per lumen-hour or less. The plan must include lamps for both indoor and outdoor fixtures, as well as both hard-wired and portable fixtures. The plan must require that at least 90% of purchased lamps comply with the target (as measured by the number of lamps). Lamps containing no mercury may be counted toward plan compliance only if they have energy efficiency at least as good as their mercury-containing counterparts.

PERFORMANCE

Implement the lighting purchasing plan ~~during the performance period~~such that all purchased mercury-containing lamps comply with the plan. One point is awarded to projects for which at least 90% of all mercury-containing lamps purchased ~~during the performance period~~ (as measured by the number of lamps) comply with the purchasing plan and meet the following overall target for mercury content of 90 picograms per lumen-hour.

Exception: Screw-based, integral compact fluorescent lamps (CFLs) may be excluded from both the plan and the performance calculation if they comply with the voluntary industry guidelines for maximum mercury content published by the National Electrical Manufacturers Association (NEMA), as described in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition. Screw-based, integral CFLs that do not comply with the NEMA guidelines must be included in the purchasing plan and the performance calculation.

Performance metrics for lamps — including mercury content (mg/lamp), mean light output (lumens) and rated life (hours) — must be derived according to industry standards, as described in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition. Mercury values generated by toxicity characteristic leaching procedure (TCLP) tests do not provide the required mercury information for LEED 2009 for Existing Buildings: Operations & Maintenance and cannot be used in the calculation.

LEED 2009 for Existing Buildings: Operations & Maintenance addresses only the lamps that are purchased ~~during the performance period~~, not the lamps installed in the building. Similarly, LEED 2009 for Existing Buildings: Operations & Maintenance does not require that each purchased lamp comply with the specified mercury limit; only the overall average of purchased lamps must comply.

Mercury-containing lamps (or their high-efficiency counterparts) must be purchased ~~during the performance period~~ to earn points in this credit.

MR Credit 5: Sustainable Purchasing—Food
1 Point

Intent

To reduce the environmental and transportation impacts associated with food production and distribution.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Achieve sustainable purchases of at least 25% of total combined food and beverage purchases (by cost) ~~during the performance period~~. Sustainable purchases are those that meet 1 or both of the following criteria:

- Purchases are labeled USDA Organic, Food Alliance Certified, Rainforest Alliance Certified, Protected Harvest Certified, Fair Trade or Marine Stewardship Council's Blue Eco-Label.
- Purchases are produced within a 100-mile radius of the site.

Each purchase can receive credit for each sustainable criterion met (i.e., a $100 purchase that is both USDA Organic and is produced on a farm within 100 miles of the project counts twice in the calculation, for a total of $200 of sustainable purchasing).

Food or beverages must be purchased ~~during the performance period~~ to earn points in this credit.

MR Credit 6: Solid Waste Management—Waste Stream Audit
1 Point

Intent

To facilitate the reduction of ongoing waste and toxins generated by building occupants and building operations that are hauled to and disposed of in landfills or incineration facilities.

Requirements

ESTABLISHMENT

Conduct a waste stream audit of the building's entire ongoing consumables waste stream (not durable goods or construction waste for facility alterations and additions). Use the audit's results to establish a baseline that identifies the types of waste making up the waste stream and the amounts of each type by weight or volume. Identify opportunities for increased recycling and waste diversion.

PERFORMANCE

Demonstrate that a waste audit has been conducted annually, or comply with MR Credit 7 and demonstrate that a waste audit has been conducted once every 5 years.

MR Credit 7: Solid Waste Management—Ongoing Consumables 1 Point

Intent

To facilitate the reduction of waste and toxins generated from the use of ongoing consumable products by building occupants and building operations that are hauled to and disposed of in landfills or incineration facilities.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Reuse, recycle or compost 50% of the ongoing consumables waste stream (by weight or volume).

~~Maintain a waste reduction and recycling program that~~ Ongoing Consumables ~~addresses~~ are materials with a low cost per unit that are regularly used and replaced through the course of business. These materials include at a minimum, paper, toner cartridges, glass, plastics, cardboard and old corrugated cardboard, food waste, and metals. Materials that may be considered either ongoing consumables or durable goods (see MR Credit 8: Solid Waste Management—Durable Goods) can be counted under either category provided consistency is maintained with MR Credit 8, with no contradictions, exclusions or double-counting. Consistency must also be maintained with MR Credits 1: Sustainable Purchasing—Ongoing Consumables and 5: Sustainable Purchasing—Food.

Have a battery recycling program in place that implements the battery recycling policy adopted in MR Prerequisite 2: Solid Waste Management Policy. The program must have a target of diverting at least 80% of discarded batteries from the trash, and actual diversion performance must be verified at least annually. The program must cover all portable dry-cell types of batteries, including single-use and/or rechargeables used in radios, phones, cameras, computers and other devices or equipment.

MR Credit 8: Solid Waste Management—Durable Goods
1 Point

Intent

To facilitate the reduction of waste and toxins generated from the use of durable goods by building occupants and building operations that are hauled to and disposed of in landfills or incineration facilities.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Reuse or recycle 75% of the durable goods waste stream[19] (by weight, volume or replacement value)

~~Maintain a waste reduction, reuse and recycling program that addresses durable~~ Durable goods ~~(those that~~ are replaced infrequently and/or may require capital program outlays to purchase~~).~~ Durable goods include at a minimum, office equipment (computers, monitors, copiers, printers, scanners, fax machines), appliances (refrigerators, dishwashers, water coolers), external power adapters, televisions and other audiovisual equipment. Materials that may be considered either ongoing consumables (see MR Credit 7. Solid Waste Management—Ongoing Consumables) or durable goods can be counted under either category provided consistency is maintained with MR Credit 7, with no contradictions, exclusions or double-counting. Consistency must also be maintained with MR Credit 2: Sustainable Purchasing—Electric-Powered Equipment and MR Credit 2.2 Sustainable Purchasing—Furniture.

~~during the performance period.~~.

[19] Durable goods waste stream is defined as durable goods leaving the project building, site and organization that have fully depreciated and reached the end of their useful lives for normal business operations. Durable goods that remain useful and functional and are moved to another floor or building, etc. do not qualify. Leased durable goods returned to their owner at the end of their useful lives for normal business operations do qualify.

MR Credit 9: Solid Waste Management—Facility Alterations and Additions
1 Point

Intent

To divert construction and demolition debris from disposal to landfills and incineration facilities. Redirect recyclable recovered resources back to the manufacturing process and reusable materials to appropriate sites.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Divert at least 70% of waste (by volume) generated by facility alterations and additions from disposal to landfills and incineration facilities. This applies only to base building elements permanently or semipermanently attached to the building itself that enter the waste stream during facility renovations, demolitions, refits and new construction additions. Base building elements include at a minimum, building components and structures (wall studs, insulation, doors, windows), panels, attached finishings (drywall, trim, ceiling panels), carpet and other flooring material, adhesives, sealants, paints and coatings. Furniture, fixtures and equipment (FF&E) are not considered base building elements and are excluded from this credit. Mechanical, electrical and plumbing components and specialty items such as elevators are also excluded.

INDOOR ENVIRONMENTAL QUALITY

IEQ Prerequisite 1: Minimum Indoor Air Quality Performance
REQUIRED

Intent
To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the health and well-being of the occupants.

Requirements

ESTABLISHMENT

CASE 1. Projects Able to Meet ASHRAE Standard 62.1–2007

Modify or maintain each outside air intake, supply air fan and/or ventilation distribution system to supply at least the outdoor air ventilation rate required by ASHRAE Standard 62.1–2007 Ventilation Rate Procedure (with errata but without addenda[20]) under all normal operating conditions.

CASE 2. Projects Unable to Meet ASHRAE Standard 62.1–2007

If meeting ASHRAE Standard 62.1–2007 ventilation rates (with errata but without addenda) is infeasible because of the physical constraints of the existing ventilation system, modify or maintain the system to supply at least 10 cubic feet per minute (cfm) of outdoor air per person under all normal operating conditions. Demonstrate through design documentation, measurements or other evidence that the current system cannot provide the flow rates required by ASHRAE Standard 62.1-2007 under any operating condition even when functioning properly.

Each air-handling unit in the building must comply with either Case 1 or Case 2. If some air-handling units can provide the outside air flow required by ASHRAE Standard 62.1-2007 (with errata but without addenda) and others cannot, those that can must do so. Buildings must provide at least 10 cfm per person of outside air at each air-handling unit under all normal operating conditions to earn this prerequisite.

Naturally ventilated buildings must comply with ASHRAE Standard 62.1-2007, paragraph 5.1(with errata but without addenda).

Implement an HVAC system maintenance program to ensure the proper operations and maintenance of HVAC components as they relate to outdoor air introduction and exhaust.

PERFORMANCE

Confirm that the minimum ventilation rates determined in the establishment period are up to date

AND:

- Show compliance with the applicable requirement above (Case 1 or Case 2) through measurements taken at the system level (i.e., the air-handling unit). Measurements must be taken at least once every 5 years. For variable air volume systems, the dampers, fan speeds, etc. must be set during the test to the worst-case system conditions (minimum outside air flow) expected during normal ventilation operations. Each air-handler must be measured; sampling or grouping of air-handlers is prohibited.
- Follow and maintain ~~an~~ the established HVAC system maintenance program.
- Test and maintain the operation of all building exhaust systems, including bathroom, shower, kitchen and parking exhaust systems. Exhaust testing must be performed at least once every 5 years.

[20] Project teams wishing to use ASHRAE approved addenda for the purposes of this prerequisite may do so at their discretion. Addenda must be applied consistently across all LEED credits.

IEQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control
REQUIRED

Intent

To prevent or minimize exposure of building occupants, indoor surfaces and systems to environmental tobacco smoke (ETS).

Requirements

OPTION 1

ESTABLISHMENT

- Prohibit smoking in the building.
- Prohibit on-property smoking within 25 feet of entries, outdoor air intakes and operable windows.

PERFORMANCE

None.

OR

OPTION 2

CASE 1. Non-Residential Projects

ESTABLISHMENT

- Prohibit smoking in the building except in designated smoking rooms and establish negative pressure in the rooms with smoking.
- Prohibit on-property smoking within 25 feet of building entries, outdoor air intakes and operable windows.
- Locate designated smoking room(s) to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room must be directly exhausted to the outdoors, away from air intakes and building entry paths, away from air intakes and building entry paths, with no recirculation of ETS-containing air to the nonsmoking area of the building; enclosed with impermeable deck-to-deck partitions. Operate exhaust sufficient to create a negative pressure differential with the surrounding spaces of at least an average of 5 Pascals (Pa) (0.02 inches water gauge) and a minimum of 1 Pa (0.004 inches water gauge) when the door(~~(~~s) to the rooms are closed.
- Verify performance of the smoking room differential air pressures by conducting 15 minutes of measurement, with a minimum of 1 measurement every 10 seconds, of the differential pressure in the smoking room with respect to each adjacent area and in each adjacent vertical chase with the doors to the smoking room closed. Conduct the testing with each space configured for worst-case conditions for transport of air from the smoking room (with closed doors) to adjacent spaces.

PERFORMANCE

None.

CASE 2. Residential and Hospitality Projects

ESTABLISHMENT

- Reduce air leakage between smoking and nonsmoking areas.
- Prohibit smoking in all common areas of the building.
- Prohibit on-property smoking within 25 feet of building entries, outdoor air intakes and operable windows opening to common areas.
- Minimize uncontrolled pathways for ETS transfer between individual residential units by sealing penetrations in walls, ceilings and floors in the residential units and by sealing adjacent vertical chases adjacent to the units.
- Weather-strip all doors in the residential units leading to common hallways to minimize air leakage into the hallway[21].

Demonstrate acceptable sealing of residential units by a blower door test conducted in accordance with ASTM-779-03, Standard Test Method for Determining Air Leakage Rate by Fan Pressurization, AND use the progressive sampling methodology defined in Chapter 7 (Home Energy Rating Systems, HERS Required Verification and Diagnostic Testing) of the California Residential Alternative Calculation Method Approval Manual. Residential units must demonstrate less than 1.25 square inches of leakage area per 100 square feet of enclosure area (i.e., the sum of all wall, ceiling and floor areas).

PERFORMANCE

None.

[21] If the common hallways are pressurized with respect to the residential units then doors in the residential leading to the common hallways need not be weather-stripped provided that the positive differential pressure is demonstrated as in Option 2, Case 1 above, considering the residential unit as the smoking room.

IEQ Prerequisite 3: Green Cleaning Policy
REQUIRED

Intent

To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems and the environment.

Requirements

ESTABLISHMENT

Establish~~Have in place~~ a green cleaning policy for the building and site addressing the following green cleaning credits and other requirements:

- Purchase sustainable cleaning and hard floor and carpet care products meeting the sustainability criteria outlined in IEQ Credit 3.3: Green Cleaning—Purchase of Sustainable Cleaning Products and Materials.
- Purchase cleaning equipment meeting the sustainability criteria outlined in IEQ Credit 3.4: Green Cleaning—Sustainable Cleaning Equipment.
- Establish standard operating procedures addressing how an effective cleaning and hard floor and carpet maintenance system will be consistently utilized, managed and audited. Specifically address cleaning to protect vulnerable building occupants.
- Develop strategies for promoting and improving hand hygiene, including both hand washing and the use of alcohol-based waterless hand sanitizers.
- Develop guidelines addressing the safe handling and storage of cleaning chemicals used in the building, including a plan for managing hazardous spills or mishandling incidents.
- Develop requirements for staffing and training of maintenance personnel appropriate to the needs of the building. Specifically address the training of maintenance personnel in the hazards of use, disposal and recycling of cleaning chemicals, dispensing equipment and packaging.
- Provide for collecting occupant feedback and continuous improvement to evaluate new technologies, procedures and processes.

This policy must adhere to the LEED 2009 for Existing Buildings: Operations & Maintenance policy model (see Introduction). At a minimum, the policy must cover the green cleaning procedures and materials that are within the building and site management's control.

PERFORMANCE

None.

IEQ Credit 1.1: Indoor Air Quality Best Management Practices—Indoor Air Quality Management Program
1 point

Intent

To enhance indoor air quality (IAQ) by optimizing practices to prevent the development of indoor air quality problems in buildings, correcting indoor air quality problems when they occur and maintaining the well-being of the occupants.

Requirements

ESTABLISHMENT

~~Develop and implement~~Establish ~~as an ongoing basis~~ an IAQ management program and perform an IAQ audit based on the EPA Indoor Air Quality Building Education and Assessment Model (I-BEAM), EPA Reference Number 402-C-01-001, December 2002, available at **epa.gov/iaq/largebldgs/i-beam/index.html**.

PERFORMANCE

Demonstrate that all minor issues identified in the audit were addressed and that a timeline has been established for addressing all major issues. Perform an IAQ audit at least once every five years.

IEQ Credit 1.2: Indoor Air Quality Best Management Practices—Outdoor Air Delivery Monitoring
1 point

Intent

To provide capacity for ventilation system monitoring to help sustain occupant comfort and well-being.

Requirements

ESTABLISHMENT

Establish~~Install~~ permanent, continuous monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain minimum outdoor airflow rates under all operating conditions

AND

CASE 1. Mechanical Ventilation Systems

Provide an outdoor airflow measurement device capable of measuring (and, if necessary, controlling) the minimum outdoor airflow rate at all expected system operating conditions within 15% of the design minimum outdoor air rate. Monitoring must be performed for at least 80% of the building's total outdoor air intake flow serving occupied spaces.

The outdoor airflow measurement device(s) must take measurements at the system level (i.e., the air-handling unit). The device must be monitored by a control system that is configured to trend outdoor airflow in intervals no longer than 15 minutes for a period of no less than 6 months. The control system must be configured to generate an alarm visible to the system operator if the minimum outdoor air rate falls more than 15% below the design minimum rate.

All measurement devices must be calibrated within the manufacturer's recommended interval.

CASE 2. Mechanical Ventilation Systems that Predominantly Serve Densely Occupied Spaces[22]

Have a CO_2 sensor or sampling location for each densely occupied space and compare it with outdoor ambient CO_2 concentrations. Each sampling location must be between 3 and 6 feet above the floor.

Test and calibrate CO_2 sensors to have an accuracy of no less than 75 parts per million (ppm) or 5% of the reading, whichever is greater. Sensors must be tested and calibrated at least once every 5 years or per the manufacturer's recommendation, whichever is shorter.

Monitor CO_2 sensors with a system configured to trend CO_2 concentrations in intervals no longer than 30 minutes. The system must generate an alarm visible to the system operator and, if desired, to building occupants if the CO_2 concentration in any zone rises more than 15% above that corresponding to the minimum outdoor air rate required by ASHRAE Standard 62.1-2007 (with errata but without addenda[23]) (see IEQ Prerequisite 1: Energy Efficiency Best Management Practices).

CO_2 sensors may be used for demand-controlled ventilation provided the control strategy complies with ASHRAE Standard 62.1-2007 (see IEQ Prerequisite 1: Energy Efficiency Best Management Practices, including maintaining the area-based component of the design ventilation rate.

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[22] Densely occupied space is defined as an area with a design occupant density of 25 people or more per 1,000 square feet (40 square feet or less per person). If the total square footage of all dense space is less than 5% of total occupied square footage, the project is exempt from the requirements of this section. Rooms smaller than 150 square feet are also exempt.

[23] Project teams wishing to use ASHRAE approved addenda for the purposes of this prerequisite may do so at their discretion. Addenda must be applied consistently across all LEED credits.

CASE 3. NATURAL VENTILATION SYSTEMS

Locate CO_2 sensors in the breathing zone of every densely populated room and every natural ventilation zone.

CO_2 sensors must provide an audible or visual alarm to the occupants in the space and to the system operator if CO_2 conditions are greater than 530 ppm above outdoor CO_2 levels or 1,000 ppm absolute. The alarm signal must indicate that ventilation adjustments (e.g. opening windows) are required in the affected space.

All monitoring devices must be calibrated within the manufacturer's recommended interval.

Permanently open areas must meet the requirements of ASHRAE 62.1-2007, Section 5.1 (with errata but without addenda[24]).

Exemptions: If the total square footage of all space served by natural ventilation systems is less than 5% of total occupied square footage, the project is exempt from the requirements of this section. Rooms smaller than 150 square feet are also exempt.

PERFORMANCE

None.

[24] Project teams wishing to use ASHRAE approved addenda for the purposes of this prerequisite may do so at their discretion. Addenda must be applied consistently across all LEED credits.

IEQ Credit 1.3: Indoor Air Quality Best Management Practices—Increased Ventilation
1 point

Intent

To provide additional outdoor air ventilation to improve indoor air quality (IAQ) for improved occupant comfort, well-being and productivity.

Requirements

CASE 1. MECHANICALLY VENTILATED SPACES

ESTABLISHMENT

None.

PERFORMANCE

Increase outdoor air ventilation rates for all air-handling units serving occupied spaces by at least 30% above the minimum required by ASHRAE Standard 62.1-2007 (with errata but without addenda[25]). Measurements must be taken at least once every 5 years.

CASE 2. NATURALLY VENTILATED SPACES

ESTABLISHMENT

Determine whether natural ventilation is an effective strategy for the project by following the flow diagram process in Figure 2.8 of the Chartered Institution of Building Services Engineers (CIBSE) Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings

AND

OPTION 1

Show that the natural ventilation systems design meets the recommendations set forth in the CIBSE manuals appropriate to the project space.

- CIBSE Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings
- CIBSE AM 13:2000, Mixed Mode Ventilation

OR

OPTION 2

Use a macroscopic, multizone, analytic model to predict that room-by-room airflows will effectively naturally ventilate, defined as providing the minimum ventilation rates required by ASHRAE Standard 62.1-2007 Chapter 6 (with errata but without addenda), at least 90% of occupied spaces.

PERFORMANCE

None.

[25] Project teams wishing to use ASHRAE approved addenda for the purposes of this prerequisite may do so at their discretion. Addenda must be applied consistently across all LEED credits.

IEQ Credit 1.4: Indoor Air Quality Best Management Practices—Reduce Particulates in Air Distribution
1 point

Intent

To reduce exposure of building occupants and maintenance personnel to potentially hazardous particulate contaminants, which adversely affect air quality, human health, building systems and the environment.

Requirements

ESTABLISHMENT

In mechanically ventilated buildings, each ventilation system that supplies outdoor air shall comply with the following ~~during the performance period~~:

- Particle filters or air cleaning devices shall clean the outdoor air at any location prior to its introduction to occupied spaces.
- These filters or devices shall be rated a minimum efficiency reporting value (MERV) of 13 in accordance with ASHRAE Standard 52.2 or greater for all outside air intakes and inside air recirculation returns.
- Establish ~~and follow~~ a regular schedule for maintenance and replacement of these filtration media according to the manufacturer's recommended interval.

PERFORMANCE

Follow ~~a resular~~the schedule for maintenance and replacement of these filtration media according to the manufacturer's recommended interval.

IEQ Credit 1.5: Indoor Air Quality Best Management Practices—Indoor Air Quality Management for Facility Alterations and Additions
1 point

Intent

To prevent indoor air quality (IAQ) problems resulting from any construction or renovation projects to help sustain the comfort and well-being of construction workers and building occupants.

Requirements

ESTABLISHMENT

~~Develop and implement~~Establish an IAQ management plan for the construction and occupancy phases:

- During construction, meet or exceed the recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).
- If the building undergoes a tenant improvement, develop and implement an IAQ management plan for the preoccupancy phases. Perform a flush-out procedure as follows: After construction ends and all interior finishes have been installed, install new filtration media and flush out the affected space. The flush out must be done by supplying a total outdoor air volume of 14,000 cubic feet per square foot of floor area while maintaining an internal temperature of at least 60° F and maintaining a relative humidity no higher than 60% where cooling mechanisms are operated. The affected space may be occupied only after the delivery of at least 3,500 cubic feet of outdoor air per square foot of floor area and the space has been ventilated at a minimum rate of 0.30 cfm per square foot of outdoor air or the design minimum outside air rate (whichever is greater) for at least 3 hours prior to occupancy until the total of 14,000 cubic feet per square foot of outdoor air has been delivered to the space. The flush-out may continue during occupancy.
- Protect stored on-site or installed absorptive materials from moisture damage.
- If permanently installed air-handlers must be used during construction, filtration media with a minimum efficiency reporting value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE Standard 52.2-1999 (with errata but without addenda[26]). Replace all filtration media immediately prior to occupancy.
- Upon the completion of construction, HVAC and lighting systems must be returned to the designed or modified sequence of operations.

PERFORMANCE

Demonstrate that the IAQ management plan was implemented for any facility alterations or additions.

[26] Project teams wishing to use ASHRAE approved addenda for the purposes of this prerequisite may do so at their discretion. Addenda must be applied consistently across all LEED credits.

IEQ Credit 2.1: Occupant Comfort—Occupant Survey
1 point

Intent

To provide for the assessment of building occupants' comfort as it relates to thermal comfort, acoustics, indoor air quality (IAQ), lighting levels, building cleanliness and any other comfort issues.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

- Implement an occupant comfort survey and complaint response system to collect anonymous responses about thermal comfort, acoustics, IAQ, lighting levels, building cleanliness and other occupant comfort issues. The survey must be collected from a representative sample of building occupants making up at least 30% of the total occupants, and it must include an assessment of overall satisfaction with building performance and identification of any comfort-related problems.
- Document survey results and develop a plan to implement corrective actions to address comfort issues identified through the surveys.
- Conduct at least 1 new occupant survey every 2-years ~~during the performance period~~.
- Demonstrate that corrective actions to address comfort issues identified through the surveys were implemented.

IEQ Credit 2.2: Controllability of Systems—Lighting
1 point

Intent

To provide a high level of lighting system control by individual occupants or groups in multi-occupant spaces (e.g., classrooms or conference areas) to promote the productivity, comfort and well-being of building occupants.

Requirements

ESTABLISHMENT

For at least 50% of building occupants, use lighting controls that enable adjustments to suit the task needs and preferences of individuals for at least 50% of individual workstations, and for groups sharing a multioccupant space or working area for at least 50% of multi-occupant space in the building.

PERFORMANCE

None.

IEQ Credit 2.3: Occupant Comfort—Thermal Comfort Monitoring 1 point

Intent

To support the appropriate operations and maintenance of buildings and building systems so that they continue to meet target building performance goals over the long term and provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

Requirements

ESTABLISHMENT

~~Have in place~~Establish a system for continuous tracking and optimization of systems that regulate indoor comfort and conditions (air temperature, humidity, air speed and radiant temperature) in occupied spaces. Have a permanent monitoring system to ensure ongoing building performance to the desired comfort criteria as determined ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy (with errata but without addenda[27]).

The building must establish the following:

- Continuous monitoring of, at a minimum, air temperature and humidity in occupied spaces. The sampling interval cannot exceed 15 minutes.
- Periodic testing of air speed and radiant temperature in occupied spaces. Using handheld meters is permitted.
- Alarms for conditions that require system adjustment or repair. Submit a list of the sensors, zone set-points and limit values that would trigger an alarm.
- Procedures that deliver prompt adjustments or repairs in response to problems identified.

All monitoring devices must be calibrated within the manufacturer's recommended interval.

PERFORMANCE

Demonstrate continued monitoring of air temperature and humidity and periodic (at least annually) testing of air speed and radiant temperature.

[27] Project teams wishing to use ASHRAE approved addenda for the purposes of this prerequisite may do so at their discretion. Addenda must be applied consistently across all LEED credits.

IEQ Credit 2.4: Daylight and Views
1 point

Intent

To provide building occupants with a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Requirements

ESTABLISHMENT

Project teams must achieve the performance thresholds in either the daylight or views requirements below:

OPTION 1. DAYLIGHT

Through 1 of the 4 paths, achieve daylighting in at least 50% of all regularly occupied spaces[28].

PATH 1. Simulation

Demonstrate through computer simulations that the applicable spaces achieve daylight illuminance levels of a minimum of 10 footcandles (fc) and a maximum of 500 fc in a clear sky condition on September 21 at 9 a.m. and 3 p.m.

Provide glare control devices to avoid high-contrast situations that could impede visual tasks. However, designs that incorporate view-preserving automated shades for glare control may demonstrate compliance for only the minimum 10 fc illuminance level.

OR

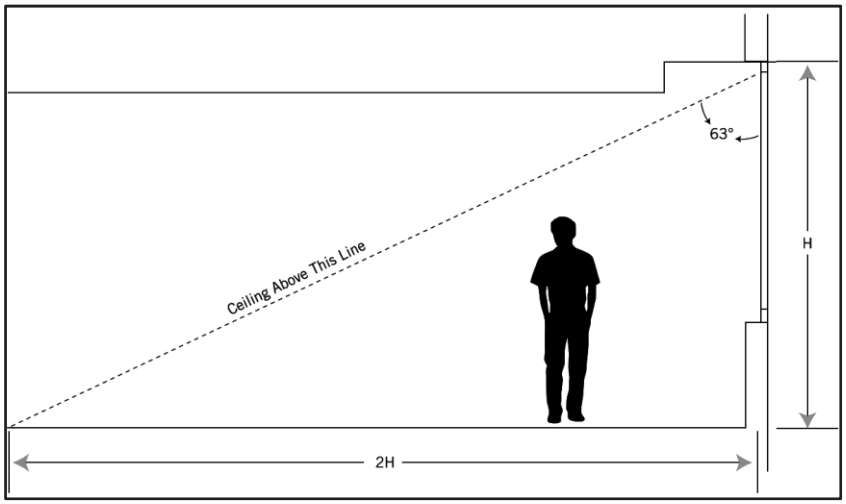
PATH 2. Prescriptive

For sidelighting zones:

- Achieve a value, calculated as the product of the visible light transmittance (VLT) and window–to-floor area ratio (WFR) of daylight zone, of between 0.150 and 0.180.

  $$0.150 < VLT \times WFR < 0.180$$

- The window area included in the calculation must be at least 30 inches above the floor.
- In section, the ceiling must not obstruct a line in that extends from the window-head to a point on the floor that is located twice the height of the window-head from the exterior wall as measured perpendicular to the glass (see diagram below).

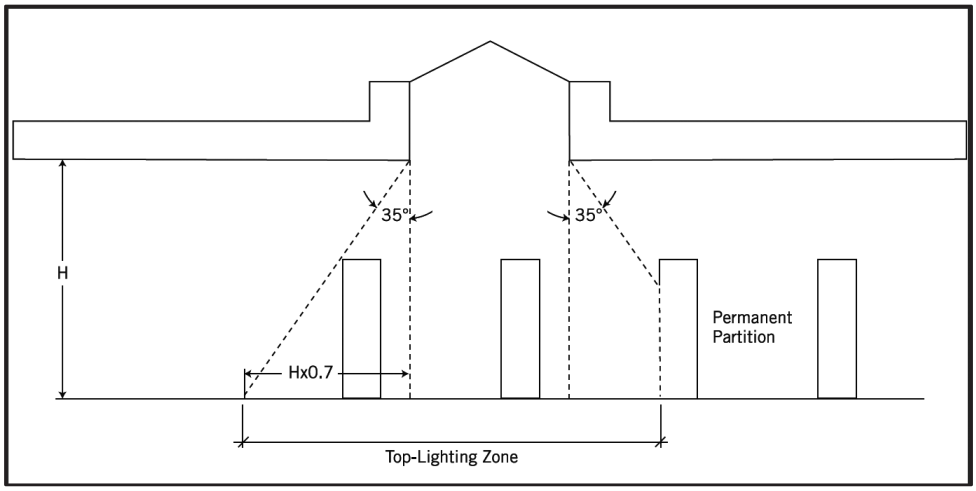


[28] Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

- Provide glare control devices to avoid high-contrast situations that could impede visual tasks. However, designs that incorporate view-preserving automated shades for glare control may demonstrate compliance for only the minimum 0.150 value.

For toplighting zones:

- The toplighting zone under a skylight is the outline of the opening beneath the skylight, plus in each direction the lesser of(see diagram below):
  - 70% of the ceiling height
  - 1/2 the distance to the edge of the nearest skylight,
  - The distance to any permanent partition that is closer than 70% of the distance between the top of the partition and the ceiling.



- Achieve skylight coverage for the applicable space (containing the toplighting zone) between 3% and 6% of the total floor area.
- The skylight must have a minimum 0.5 VLT.
- A skylight diffuser, if used, must have a measured haze value of greater than 90% when tested according to ASTM D1003.

PATH 3. Measurement

Demonstrate through records of indoor light measurements that a minimum daylight illumination level of 10 fc and a maximum of 500 fc has been achieved in the applicable spaces. Measurements must be taken on a 10-foot grid and recorded on building floor plans.

Provide glare control devices to avoid high-contrast situations that could impede visual tasks. However, designs that incorporate view-preserving automated shades for glare control may demonstrate compliance for only the minimum 10 fc illuminance level.

OR

PATH 4. Combination

Any of the above calculation methods may be combined to document the minimum daylight illumination in applicable spaces.

OPTION 2. FOR VIEWS

Achieve a direct line of sight to the outdoor environment via vision glazing between 30 inches and 90 inches above the finished floor for building occupants in 45% of all regularly occupied areas. Determine the area with direct line of sight by totaling the regularly occupied square footage that meets the following criteria:

- In plan view, the area is within sight lines drawn from perimeter vision glazing.
- In section view, a direct sight line can be drawn from the area to perimeter vision glazing.

The line of sight may be drawn through interior glazing. For private offices, the entire square footage of the office can be counted if 75% or more of the area has a direct line of sight to perimeter vision glazing. For multioccupant spaces, the actual square footage with a direct line of sight to perimeter vision glazing is counted.

PERFORMANCE

None.

IEQ Credit 3.1: Green Cleaning—High-Performance Cleaning Program 1 point

Intent

To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems and the environment.

Requirements

ESTABLISHMENT

~~Have in place~~Establish ~~during the performance period~~ a high-performance cleaning program, supported by a green cleaning policy (IEQ Prerequisite 3: Green Cleaning Policy), that addresses the following:

- Provide an appropriate staffing plan.
- Implement a training of maintenance personnel in the hazards, use, maintenance, disposal and recycling of cleaning chemicals, dispensing equipment and packaging.
- Use chemical concentrates with appropriate dilution systems to minimize chemical use wherever possible.
- Use sustainable cleaning materials, products, equipment, janitorial paper products and trash bags (including microfiber tools and wipes).
- Use sustainable cleaning and hard floor and carpet care products meeting the sustainability criteria outlined in IEQ Credits 3.3: Green Cleaning—Purchase of Sustainable Cleaning Products and Materials.
- Use cleaning equipment meeting the sustainability criteria outlined in IEQ Credit 3.4: Green Cleaning— Sustainable Cleaning Equipment.

PERFORMANCE

None.

EQ Credit 3.2: Green Cleaning—Custodial Effectiveness Assessment 1 point

Intent

To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems and the environment, by implementing, managing and auditing cleaning procedures and processes.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Conduct an audit in accordance with APPA Leadership in Educational Facilities' (APPA) "Custodial Staffing Guidelines" to determine the appearance level of the facility.

•• The facility must score 3 or less.

More information about the audit procedures is provided in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

Conduct an audit at least once every 2 years.

IEQ Credit 3.3: Green Cleaning—Purchase of Sustainable Cleaning Products and Materials
1 point

Intent

To reduce the environmental impacts of cleaning products, disposable janitorial paper products and trash bags.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Implement sustainable purchasing for cleaning materials and products, disposable janitorial paper products and trash bags. Cleaning product and material purchases include items used by in-house staff or outsourced service providers. One point is awarded if 30% of the total annual purchases of these products (by cost) meet at least 1 of the following sustainability criteria:

- The cleaning products meet 1 or more of the following standards for the appropriate category:
  - 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.
- Disinfectants, metal polish, floor finishes, strippers or other products not addressed by the above standards meet 1 or more of the following standards for the appropriate category:
  - Green Seal GS-40, for industrial and institutional floor care products.
  - Environmental Choice CCD-112, for digestion additives for cleaning and odor control.
  - Environmental Choice CCD-113, for drain or grease traps additives.
  - Environmental Choice CCD-115, for odor control additives.
  - Environmental Choice CCD-147, for hard floor care.
  - California Code of Regulations maximum allowable VOC levels for the specific product category.
- Disposable janitorial paper products and trash bags meet the minimum requirements of 1 or more of the following programs for the applicable product category:
  - Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.
  - Green Seal GS-09, for paper towels and napkins.
  - Green Seal GS-01, for tissue paper.
  - 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.

•• Hand soaps meet 1 or more of the following standards:

- 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.

The materials and products described above must be purchased ~~during the performance period~~ during the recertification performance period to count toward the credit.

IEQ Credit 3.4: Green Cleaning—Sustainable Cleaning Equipment 1 point

Intent

To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants that adversely affect air quality, human health, building finishes, building systems and the environment, from powered cleaning equipment.

Requirement

ESTABLISHMENT

None.

PERFORMANCE

Implement a program for the use of janitorial equipment that reduces building contaminants and minimizes environmental impact. The cleaning equipment program must require the following:

- Vacuum cleaners are certified by the Carpet and Rug Institute "Green Label" Testing Program for vacuum cleaners and operate with a sound level of less than 70dBA.
- Carpet extraction equipment used for restorative deep cleaning is certified by the Carpet and Rug Institute's "Seal of Approval" Testing Program for deep-cleaning extractors.
- Powered floor maintenance equipment, including electric and battery-powered floor buffers and burnishers, is equipped with vacuums, guards and/or other devices for capturing fine particulates and operates with a sound level of less than 70dBA.
- Propane-powered floor equipment has high-efficiency, low-emissions engines with catalytic converters and mufflers that meet the California Air Resources Board (CARB) or Environmental Protection Agency (EPA) standards for the specific engine size and operate with a sound level of less than 90dBA.
- Automated scrubbing machines are equipped with variable-speed feed pumps and on-board chemical metering to optimize the use of cleaning fluids. Alternatively, the scrubbing machines use only tap water with no added cleaning products.
- Battery-powered equipment is equipped with environmentally preferable gel batteries.
- Powered equipment is ergonomically designed to minimize vibration, noise and user fatigue.
- Equipment is designed with safeguards, such as rollers or rubber bumpers, to reduce potential damage to building surfaces.

Keep a log for all powered cleaning equipment to document the date of equipment purchase and all repair and maintenance activities and include vendor specification sheets for each type of equipment in use.

IEQ Credit 3.5: Green Cleaning—Indoor Chemical and Pollutant Source Control
1 point

Intent

To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants, that adversely affect air quality, human health, building finishes, building systems and the environment.

Requirements

ESTABLISHMENT

Establish~~mploy~~ permanent entryway systems (grilles, grates, mats) at least 10 feet long in the primary direction of travel to capture dirt and particulates entering the building at all public entry points, and develop the associated cleaning strategies to maintain those entryway systems as well as exterior walkways. Public entryways that are not in use or serve only as emergency exits are excluded from the requirements, as are private offices.

PERFORMANCE

Maintain entryway systems.

IEQ Credit 3.6: Green Cleaning—Indoor Integrated Pest Management
1 point

Intent

To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants that adversely affect air quality, human health, building finishes, building systems and the environment.

Requirement

ESTABLISHMENT

~~Develop, implement and maintain~~Establish an indoor integrated pest management (IPM) plan, defined as managing indoor pests in a way that protects human health and the surrounding environment and that improves economic returns through the most effective, least-risk option. IPM calls for using least-toxic chemical pesticides, minimum use of chemicals, use only in targeted locations and use only for targeted species. IPM requires routine inspection and monitoring. The plan must include the following elements, integrated with any outdoor IPM plan used for the site as appropriate:

- Integrated methods, site or pest inspections, pest population monitoring, evaluation of the need for pest control and 1 or more pest control methods, including sanitation, structural repairs, mechanical and living biological controls, other nonchemical methods, and if nontoxic options are unreasonable and have been exhausted, a least-toxic pesticide.
- Specification of the circumstances under which an emergency application of pesticides in a building or on surrounding grounds being maintained by building management can be conducted without complying with the earlier provisions.
- A communications strategy directed to building occupants that addresses universal notification, which requires advance notice of not less than 72 hours before a pesticide under normal conditions and 24 hours after application of a pesticide in emergencies, other than a least-toxic pesticide, is applied in a building or on surrounding grounds that the building management maintains.

Any cleaning products included in the integrated pest management policy must meet the requirements for IEQ Credit 3.3: Green Cleaning—Purchase of Sustainable Cleaning Products and Materials.

PERFORMANCE

Demonstrate that the IPM plan was implemented and maintained 100% of the time.

INNOVATION IN OPERATIONS

IO Credit 1: Innovation in Operations 1–4 points

Intent

To provide building operations, maintenance and upgrade teams with the opportunity to achieve additional environmental benefits achieved beyond those already addressed by the LEED 2009 for Existing Buildings: Operations & Maintenance Rating System.

Requirements

Credit can be achieved through any combination of the Innovation in Operations and Exemplary Performance paths as described below:

PATH 1. Innovation in Operations (1-4 points)

Achieve significant, measurable environmental performance using an operations, maintenance or system upgrade strategy not addressed in the LEED 2009 for Existing Buildings: Operations & Maintenance Rating System.

One point is awarded for each innovation achieved. No more than 4 points under IOc1 may be earned through PATH 1—Innovation in Operations.

ESTABLISHMENT

Identify following in writing:

- The intent of the proposed innovation credit
- The additional environmental benefits delivered
- The proposed requirements for compliance
- The proposed performance metrics to demonstrate compliance and the approaches (strategies) used to meet the requirements

PERFORMANCE

Demonstrate that the proposed requirements are met ~~during the performance period.~~

PATH 2. Exemplary Performance (1-3 points)

ESTABLISHMENT OR PERFORMANCE

Achieve exemplary performance in an existing LEED 2009 for Existing Buildings: Operations & Maintenance prerequisite or credit that allows exemplary performance as specified in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition. An exemplary performance point may be earned for achieving double the credit requirements and/or achieving the next incremental percentage threshold of an existing credit in LEED.

One point is awarded for each exemplary performance achieved. No more than 3 points under IOc1 may be earned through PATH 2— Exemplary Performance.

PATH 3. Pilot Credit (1-4 points)

ESTABLISHMENT OR PERFORMANCE

Attempt a pilot credit available in the Pilot Credit Library at **usgbc.org/pilotcreditlibrary**. Register as a pilot credit participant and compete the required documentation. Projects may pursue up to 4 Pilot Credits total.

IO Credit 2: LEED® Accredited Professional
1 point

Intent

To support and encourage the operations, maintenance, upgrade and project team integration required by LEED to streamline the application and certification process.

Requirements

ESTABLISHMENT

At least 1 principal participant of the project team shall be a LEED Accredited Professional (AP).

PERFORMANCE

None.

IO Credit 3: Documenting Sustainable Building Cost Impacts
1 point

Intent

To document sustainable building cost impacts.

Requirements

ESTABLISHMENT

None.

PERFORMANCE

Document overall building operating costs for the previous 5 years (or length of building occupancy, whichever is shorter) and track changes in overall building operating costs ~~during the performance period~~. Document building operating costs and financial impacts of all aspects of LEED 2009 for Existing Buildings: Operations & Maintenance implementation on an ongoing basis.

Follow the detailed instructions in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

REGIONAL PRIORITY

RP Credit 1: Regional Priority 1– 4 Points

Intent

To provide an incentive for the achievement of credits that address geographically specific environmental priorities.

Requirements

Earn 1 of the 6 Regional Priority Credits (credits identified by the USGBC Regional Councils and Chapters as having additional regional environmental importance). A database of Regional Priority Credits and their geographic applicability is available on the USGBC Web site, **usgbc.org.**

One point is awarded for each Regional Priority credit achieved. No more than 4 credits identified as Regional Priority credits may be earned. The USGBC has prioritized credits for projects located in the U.S., Puerto Rico, the U.S. Virgin Islands, and Guam. All other international projects should check the database for eligible Regional Priority credits.