
# Green Building Rating System

## For Existing Buildings
## Upgrades, Operations and Maintenance
## (LEED-EB)

**Ballot Draft**

**September 2004**

# Introduction

The Leadership in Energy and Environmental Design (LEED®) Green Building Rating System represents the U.S. Green Building Council's effort to provide a national standard for what constitutes a "green building." Through its use as a design, construction, operations and maintenance guideline and third-party certification tool, LEED aims to improve occupant well-being, environmental performance and economic returns of buildings using established and innovative practices, standards and technologies.

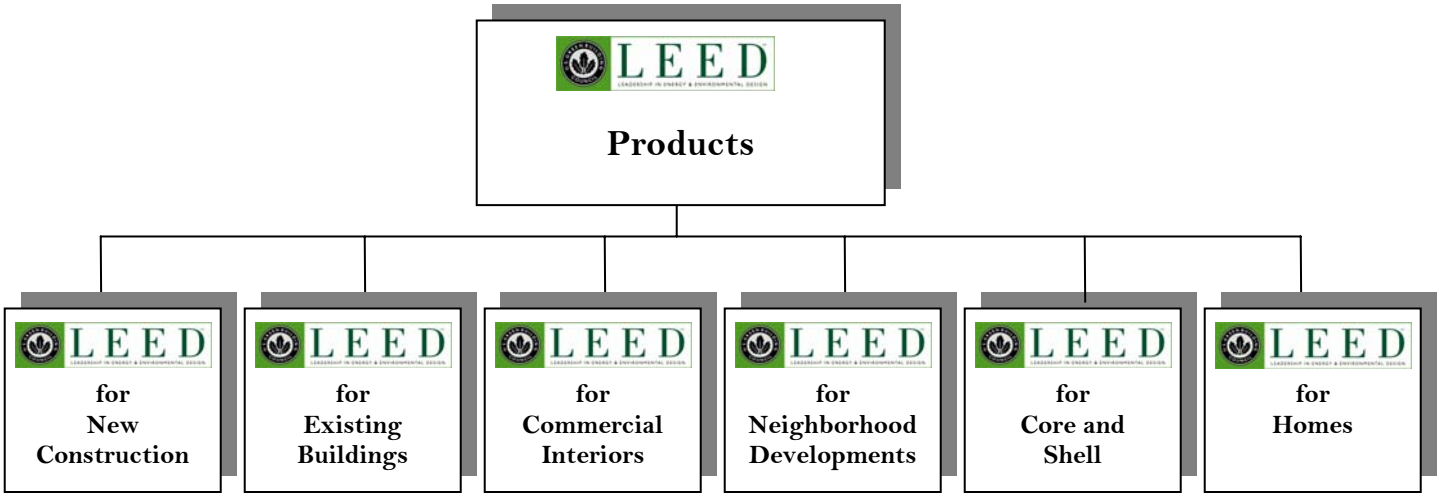
LEED for Existing Buildings, Upgrades, Operations and Maintenance (LEED-EB) is a set of *performance standards* for the sustainable upgrades and operation of buildings not undergoing major renovations. It provides sustainable guidelines for building operations, periodic upgrades of building systems, minor space use changes and building processes.

LEED-EB addresses exterior building site maintenance programs, efficient/optimized use of water and energy, purchasing of environmentally preferred products, waste stream management and ongoing indoor environmental quality (IEQ). In addition, LEED-EB provides sustainable guidelines for whole-building cleaning/maintenance, recycling programs and systems upgrades to improve building energy, water, IEQ and materials use.

The LEED-EB Rating System is designed in the style of the LEED Green Building Rating System for New Construction and Major Renovations (LEED-NC). LEED-EB, together with other LEED products, is intended to provide the existing building stock an entry point into the LEED certification process. Owners, tenants, designers and building teams who wish to certify their buildings should choose the appropriate LEED rating system for the scope of their project. Depending upon the type of building project or situational needs, LEED administrators will direct project teams to the most appropriate LEED product.

LEED-EB has been developed to address the operation of most existing buildings, both those new to LEED certification and buildings previously certified under LEED-NC. LEED-EB is a method for building owners and operators of existing buildings to implement sustainable operations and maintenance practices and reduce the environmental impact of a building over its functional life cycle.

The family of LEED rating systems is shown below. A description of when to use each of these LEED rating systems is provided on page 5.



# Overview of LEED for Existing Buildings

LEED-EB is a voluntary performance standard for sustainable operations and maintenance of buildings and provides guidelines for sustainable upgrade over time.

LEED-EB provides an important opportunity for building owners to lead the way in reducing the environmental impact of buildings.

### LEED-EB Certification Options

The goal of LEED-EB is to help building owners operate their buildings in a sustainable way over the long term. To achieve this goal, LEED-EB will provide certification and re-certification of building operation to recognize building owners' ongoing achievements. This includes both owners who have buildings certified under LEED-NC and those using LEED for the first time. LEED-EB can be used to certify the following types of buildings:

- LEED-NC certified buildings seeking ongoing re-certification
- LEED-EB certified buildings seeking ongoing re-certification
- Non-LEED buildings seeking initial certification and ongoing re-certification

### Building Operating Performance Data

LEED-EB certification is based on actual building operating performance, not design expectations. The LEED-EB certification application must provide at least one year of building operating performance data demonstrating that the building operation meets the LEED-EB criteria for prerequisites and relevant credits. An exception to this requirement is made in the initial LEED-EB certification of a building. Project teams submitting documentation for a buildings seeking initial LEED-EB certification may provide the most recent three months of building operating performance data to document compliance with the prerequisites and credits sought. When only three months of data are available with a first-time LEED-EB certification application, applicants are required to augment this data to approximate one full year of data All subsequent applications for re-certification under LEED-EB must include at least one full year of performance data, and the performance data must cover the full period since the previous LEED-EB certification.

### Initial Certification under LEED-EB

*Initial LEED-EB certification for all buildings*: In the initial LEED-EB certification filing, all of the policy statements and documentation, along with performance data, will be submitted. In subsequent LEED-EB re-certification applications, streamlined reporting will only require reporting of information that has changed in any policy statement in addition to electronic reporting of the building operating performance data. LEED-EB re-certification applications require performance data for the period since the previous LEED-EB certification.

*For buildings initially certified under LEED-NC*: LEED-NC reduces the environmental impact of new building construction and creates the opportunity for sustainable building operation. However, delivery of the sustainability potential validated by LEED-NC certification requires successful implementation of an operations and maintenance program that capitalizes on the sustainable design features integrated into an LEED-NC building. To ensure that this potential for sustainable performance is actually delivered, LEED-NC buildings are encouraged to enroll in LEED-EB at the time of LEED-NC certification. Performance of buildings that are not actively maintained decline over time. LEED-EB provides a mechanism to help

building owners and mangers maintain the potential of sustainable building performance verified by LEED-NC certification over the long term.

**Re-Certification under LEED-EB**

LEED-EB is the re-certification vehicle for all buildings, including buildings originally certified under LEED-NC or under LEED-EB.

LEED-EB re-certification applications require performance data for the entire period since the previous LEED-EB certification. The period between the previous LEED-EB certification and the current application is called the "performance period." To maintain LEED-EB certification, a re-certification application needs to be filed at least once every five years. LEED-EB re-certification applications can be filed as often as once per year. The documentation provided with the application needs to include the building operating performance data for the entire performance period — five years of performance data for a re-certification application, filed after five years, and one year of performance data for re-certification applications filed after one year.

*Annual Re-Certification*: Annual re-certification allows building owners, managers and occupants to have the ability to incorporate LEED-EB into annual performance reviews, annual budget planning or space leasing contracts. Annual re-certification also provides ongoing feedback so performance deficiencies can be identified and corrected and the positive impacts of improvements can be immediately recognized.

**Applicability of LEED-EB to Historic Buildings**

The flexibility afforded by the LEED credit system allows for the applicability of the rating system to historic buildings. LEED-EB is a performance not prescriptive standard. Provided the building meets all LEED-EB Prerequisites, certification can be achieved by demonstrating achievement of any combination of 32 credits (40% of the 80 points). During the development of LEED-EB, the U.S. Department of the Interior's Standards for Treatment of Historic Properties were reviewed and no direct conflicts were identified. An appendix is included in the LEED-EB Reference Guide that explains how the flexibility of LEED-EB makes it very applicable to historic buildings.

**Structure of LEED-EB Prerequisites and Credits**

LEED Prerequisites and Credits have identical structures.

- The "Intent" section describes the objective of each Prerequisite or Credit.
- The "Requirements" section describes what must be done to earn each Prerequisite or Credit.
- The "Strategies and Technologies" section describes ways for achieving each Prerequisite or Credit.
- The "Submissions" section describes what must be submitted to document achievement of each Prerequisite or Credit.

**Overview of the LEED-EB Participation and Certification Process**

To apply for USGBC certification of your building under LEED-EB:

- Contact the USGBC to enter your building into the LEED-EB rating process and register your building on the USGBC Web site www.usgbc.org (An entry fee will be required).
  - Project registration using the LEED Online Project Management Tool provides access to a complete copy of the rating system, rating tools, the quarterly reporting template, and the Project Checklist.
  - Use the Project Checklist at any time to gauge the status or progress of your building project.
  - The use of a LEED Accredited Professional is highly recommended for organizing your project application process, and will result in one additional credit. Visit the USGBC Web site for a list of LEED Accredited Professionals.

- The Online Project Management Tool is the mechanism for submission of all LEED-EB documentation. The USGBC will acknowledge receipt of your application and proceed with application review.
- Respond to clarifying questions and/or requests for additional data from the USGBC.
- Once all requested data is received, the USGBC will formally rule on your application within four weeks.
- The LEED-EB ratings are awarded according to the following scale:
  - Certified 32–39 points
  - Silver 40–47 points
  - Gold 48–63 points
  - Platinum 64–85 points
- The USGBC will recognize buildings that achieve one of these rating levels with a formal letter of certification and a plaque that can be displayed on the project building for as long as it remains certified.

## Guide to When to Use Each LEED Product

### LEED for Existing Buildings (LEED-EB)

LEED-EB covers building upgrades as well as on-going operations and maintenance for existing buildings. LEED-EB addresses the whole building and building site. LEED-EB covers a range of situations from buildings that just want to improve and rate their building operation to buildings that are upgrading their building as well as improving the building operation.

For all building re-certifications use LEED-EB. LEED-EB covers re-certification of existing buildings for both buildings originally certified under LEED-NC and buildings originally certified under LEED-EB.

Use LEED-EB for rating existing building operating performance and building upgrades. Because existing building upgrades are a normal part of ongoing existing building operation, LEED-EB includes standards for construction and site protection as well as building and site operation.

For building upgrades, use LEED-EB if more than 50% of the building occupants remain in the building during the building upgrade. The building is defined as the whole building or portion of a whole building that is being addressed in the LEED certification application. Another way to look at the scope of applicability for LEED-EB and LEED-NC: If the project involves a gut rehab or greater scope, use LEED-NC. If the project has less than a gut rehab scope use LEED-EB.

Just like LEED-NC, LEED-EB works best for buildings where one organization has control over the whole building and site. This can either be an owner-occupied building, a building entirely leased by one organization, or other circumstances where one organization occupies and controls the whole building and site.

### LEED for New Construction (LEED-NC)

LEED-NC covers the design and construction process for new construction and major reconstruction of buildings. LEED-NC addresses the whole building and building site.

For building upgrades, use LEED-NC if less than 50% of the building occupants remain in the building during the building upgrade. The building is defined as the whole building or portion of a whole building that is being addressed in the LEED certification application.

For all building re-certifications use LEED-EB. LEED-EB covers re-certification of existing buildings for both buildings originally certified under LEED-NC and buildings originally certified under LEED-EB.

## LEED for Core and Shell (LEED-CS)

LEED-CS addresses buildings being developed where the developer is responsible for the core and shell of the building and has no responsibility for the design and decisions concerning the interior space fit outs. LEED-CS covers the site, the building core and shell, but not the interior space fit outs.

## LEED for Commercial Interiors (LEED-CI)

LEED-CI covers fit outs of interior spaces (tenant improvements) in single- and multi-tenant buildings. LEED-CI should be used for fit outs of interior spaces in buildings that do not include whole building or system upgrades. It is anticipated that LEED-CI will be used concurrently or in addition to LEED-NC, LEED-EB and LEED-CS.

## LEED for Homes (LEED-H)

LEED-H is under development and will address single-family homes, detached and attached, and multifamily residential buildings with up to three stories, developed on a single lot.

## LEED for Neighborhood Development (LEED-ND)

LEED-ND is under development and will address the design and location of new, multi-lot residential, commercial, or mixed-use developments. The evaluation will take place at the block or neighborhood scale and not evaluate the buildings themselves. A developer who wishes to certify both the homes and the development or subdivision itself will need to pursue both certifications.

## Disclaimer and Notices



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# LEED-EB Project Checklist

## Sustainable Sites — 14 Possible Points

| | | |
|---|---|---|
| Prereq 1 | **Erosion & Sedimentation Control** | Required |
| Prereq 2 | **Age of Building** | Required |
| Credit 1 | **Plan for Green Site and Building Exterior Management** | 2 |
| Credit 2 | **High Development Density Building and Area** | 1 |
| Credit 3.1 | **Alternative Transportation:** Public Transportation Access | 1 |
| Credit 3.2 | **Alternative Transportation:** Bicycle Storage & Changing Rooms | 1 |
| Credit 3.3 | **Alternative Transportation**: Alternative Fuel Vehicles | 1 |
| Credit 3.4 | **Alternative Transportation:** Car Pooling & Telecommuting | 1 |
| Credit 4 | **Reduced Site Disturbance:** Protect or Restore Open Space | 2 |
| Credit 5 | **Stormwater Management:** Rate and Quantity Reduction | 2 |
| Credit 6.1 | **Heat Island Reduction:** Non-Roof | 1 |
| Credit 6.2 | **Heat Island Reduction:** Roof | 1 |
| Credit 7 | **Light Pollution Reduction** | 1 |

## Water Efficiency — 5 Possible Points

| | | |
|---|---|---|
| Prereq 1 | **Minimum Water Efficiency** | Required |
| Prereq 2 | **Discharge Water Compliance** | Required |
| Credit 1 | **Water Efficient Landscaping:** Reduce Water Use | 2 |
| Credit 2 | **Innovative Wastewater Technologies** | 1 |
| Credit 3 | **Water Use Reduction** | 2 |

## Energy & Atmosphere — 23 Possible Points

| | | |
|---|---|---|
| Prereq 1 | **Existing Building Commissioning** | Required |
| Prereq 2 | **Minimum Energy Performance** | Required |
| Prereq 3 | **Ozone Protection** | Required |
| Credit 1 | **Optimize Energy Performance** | 10 |
| Credit 2 | **On-site and Off-site Renewable Energy** | 4 |
| Credit 3.1 | **Building Operation & Maintenance:** Staff Education | 1 |
| Credit 3.2 | **Building Operation & Maintenance:** Building Systems Maintenance | 1 |
| Credit 3.3 | **Building Operation & Maintenance:** Building Systems Monitoring | 1 |
| Credit 4 | **Additional Ozone Protection** | 1 |
| Credit 5.1-5.3 | **Performance Measurement:** Enhanced Metering | 3 |
| Credit 5.4 | **Performance Measurement:** Emission Reduction Reporting | 1 |
| Credit 6 | **Documenting Sustainable Building Cost Impacts** | 1 |

## Materials & Resources — 16 Possible Points

| | | |
|---|---|---|
| Prereq 1.1 | **Source Reduction and Waste Management:** Waste Stream Audit | Required |

| | | |
|---|---|---|
| Prereq 1.2 | **Source Reduction and Waste Management:** Storage & Collection of Recyclables | Required |
| Prereq 2 | **Toxic Material Source Reduction:** Reduced Mercury in Light Bulbs | Required |
| Credit 1 | **Construction, Demolition and Renovation Waste Management** | 2 |
| Credit 2 | **Optimize Use of Alternative Materials** | 5 |
| Credit 3 | **Optimize Use of IAQ Compliant Products** | 2 |
| Credit 4 | **Sustainable Cleaning Products and Materials** | 3 |
| Credit 5 | **Occupant Recycling** | 3 |
| Credit 6 | **Additional Toxic Material Source Reduction:** Reduced Mercury in Light Bulbs | 1 |

## Indoor Environmental Quality — 22 Possible Points

| | | |
|---|---|---|
| Prereq 1 | **Outside Air Introduction and Exhaust Systems** | Required |
| Prereq 2 | **Environmental Tobacco Smoke (ETS) Control** | Required |
| Prereq 3 | **Asbestos Removal or Encapsulation** | Required |
| Prereq 4 | **PCB Removal** | Required |
| Credit 1 | **Outside Air Delivery Monitoring** | 1 |
| Credit 2 | **Increased Ventilation** | 1 |
| Credit 3 | **Construction IAQ Management Plan** | 1 |
| Credit 4.1 | **Documenting Productivity Impacts:** Absenteeism and Healthcare Cost Impacts | 1 |
| Credit 4.2 | **Documenting Productivity Impacts:** Other Impacts | 1 |
| Credit 5.1 | **Indoor Chemical and Pollutant Source Control:** Non-Cleaning – Reduce Particulates in Air Distribution | 1 |
| Credit 5.2 | **Indoor Chemical and Pollutant Source Control:** Non-Cleaning –High Volume Copying/Print Rooms/Fax Stations | 1 |
| Credit 6.1 | **Controllability of Systems:** Lighting | 1 |
| Credit 6.2 | **Controllability of Systems:** Temperature & Ventilation | 1 |
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| Credit 7.2 | **Thermal Comfort:** Permanent Monitoring System | 1 |
| Credit 8.1 | **Daylighting & Views:** Daylighting for 50% of Spaces | 1 |
| Credit 8.2 | **Daylighting & Views:** Daylighting for 75% of Spaces | 1 |
| Credit 8.3 | **Daylighting & Views:** Views for 40% of Spaces | 1 |
| Credit 8.4 | **Daylighting & Views:** Views for 80% of Spaces | 1 |
| Credit 9 | **Contemporary IAQ Practice** | 1 |
| Credit 10.1 | **Green Cleaning:** Entryway systems | 1 |
| Credit 10.2 | **Green Cleaning:** Isolation of Janitorial Closets | 1 |
| Credit 10.3 | **Green Cleaning:** Low Environmental Impact Cleaning Policy | 1 |
| Credit 10.4-5 | **Green Cleaning:** Low Environmental Impact Pest Management Policy | 2 |
| Credit 10.6 | **Green Cleaning:** Low Environmental Impact Cleaning Equipment Policy | 1 |

## Innovation in Operation & Upgrades — 5 Possible Points

| | | |
|---|---|---|
| Credit 1.1 | **Innovation in Operation & Upgrades** | 1 |
| Credit 1.2 | **Innovation in Operation & Upgrades** | 1 |
| Credit 1.3 | **Innovation in Operation & Upgrades** | 1 |
| Credit 1.4 | **Innovation in Operation & Upgrades** | 1 |
| Credit 2 | **LEED Accredited Professional** | 1 |

## Project Totals

**80 possible base points plus 5 for IOU**

| | |
|---|---|
| **Certified** | 32–39 points |
| **Silver** | 40–47 points |
| **Gold** | 48–63 points |
| **Platinum** | 64–85 points |

# Sustainable Sites (SS)

## SS Prerequisite 1 Erosion & Sedimentation Control

## Required

### Intent

Control erosion to reduce negative impacts on water and air quality.

### Requirements

Develop and implement a site erosion and sedimentation control policy that incorporates best management practices. The policy shall address ongoing maintenance of the facility's site to prevent soil erosion and sediment transfer under ongoing operation, as well as addressing erosion and sedimentation control for any future infrastructure repairs or other construction activities. The policy provisions shall address restoring eroded soil areas, elimination of conditions that result in erosion or sedimentation. The provisions addressing erosion and sedimentation control for additions and repairs shall require a sediment and erosion control plan, specific to the site, that conforms to U.S. Environmental Protection Agency (EPA) Document No. EPA 832/R-92-005 (September 2000), Storm Water Management for Construction Activities, Chapter 3, OR local erosion and sedimentation control standards and codes, whichever is more stringent. The person responsible for its ongoing implementation will sign off the facility sedimentation and control policy.

The plan shall meet the following objectives:

- Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse,
- Prevent sedimentation of storm sewer or receiving streams, and
- Prevent polluting the air with dust and particulate matter.
- Log building operations and maintenance activity to ensure that plan has been followed.

### Potential Technologies & Strategies

Adopt an erosion and sediment control plan to be implemented during any construction project. Consider employing strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps and sediment basins. Erosion on existing sites typically is the result of foot traffic killing the vegetation, steep slopes where sheet flow from stormwater exceeds existing vegetation holding power, or point stormwater outflow that exceeds the holding power of the vegetation covering the soil. Identifying and eliminating these and other causes of erosion on the sites of existing buildings on an ongoing basis are important components of eliminating erosion and sedimentation.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a narrative summary of the site construction and erosion control policy that conforms to the referenced EPA standard. If local standards are followed, describe how they meet or exceed the EPA best

management practices. The narrative summary should provide detailed information on all erosion and sedimentation control measures that may be implemented on the site.

- ❑ Provide the organization's erosion and sediment control policy that mandates implementation of erosion and sediment control techniques into all site construction plans and requires the techniques' inclusion into contract documents for any construction projects carried out on site.
- ❑ Provide copy of document committing organization to implement its erosion and sediment control policy.
- ❑ Provide log showing plan has been followed.
- ❑ Provide photos documenting site problems identified and solutions implemented.
- ❑ For any construction projects begun or completed at the building over the performance period:
  - Declare that the project followed the erosion control policy.
  - Submit relevant sections of the erosion control plan (or drawings and specifications) highlighting the sediment and erosion control measures implemented during the performance period.

## Submittals – LEED-EB Re-Certification

- ❑ Indicate that there have been no changes to the policy or plan since the initial LEED-EB filing.
- ❑ For any construction projects begun or completed at the building site over the performance period, submit relevant sections of the erosion control plan (or drawings and specifications) highlighting the sediment and erosion control measures implemented.

OR

- ❑ Provide a narrative summary that specifically highlights changes made to the policy and/or plan and provide rationale for all changes to the policy.
- ❑ Reaffirm that the revised policy specifies inclusion of the erosion and sediment control requirements in contract documents for any construction projects carried out on-site.
- ❑ Reaffirm that the site sedimentation and control plan conforms to either the referenced standard or the local standard. If local standards are followed, describe how they meet or exceed the EPA best management practices.
- ❑ Provide copy of document committing organization to implementing the erosion control policy.
- ❑ Provide log showing plan has been followed.
- ❑ Provide photos documenting site problems identified and solutions implemented.
- ❑ For any construction projects begun or completed at the building over the performance period, submit relevant sections of the erosion control plan (or drawings and specifications) highlighting the sediment and erosion control measures implemented

# SS Prerequisite 2 Age of Building

# Required

## Intent

Provide a distinction between buildings that are eligible to apply for LEED-NC certification and buildings that are eligible to apply for LEED-EB certification.

## Requirements

Buildings that have not been certified under LEED-NC must be at least two years old before they can achieve certification under LEED-EB.

- Buildings that are more than two years old can register to participate in LEED-EB and apply for LEED-EB certification as soon as they are prepared to do so.
- LEED-NC Certified buildings that are less that two years old can also register to participate in LEED-EB and apply for LEED-EB certification or re-certification as soon as they are prepared to do so.
- Buildings that are less than two years old that have not been certified under LEED-NC can register to participate in LEED-EB but must reach two years of age before LEED-EB certification will be awarded by USGBC.

## Potential Technologies & Strategies

Project teams with control over the design and construction of new buildings are encouraged to register and earn certification under LEED-NC and then apply for ongoing recertification under LEED-EB. If this opportunity has been missed for a building less than two years old, project teams may register the building for LEED-EB and utilize the reporting and documentation tools available to registered LEED-EB projects. Early implementation of sustainable operations and maintenance strategies coupled with data collection and documentation of performance will enable buildings to achieve LEED-EB certification once the building is two years old.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a statement that the building covered by the certification application will be at least two years old before certification is received.

OR

- ❑ If the building will be less than two years old when certification is received, provide a statement that the building covered by the certification application has been previously certified under LEED-NC.

## Submittals – LEED-EB Re-Certification

- ❑ Provide all dates of previous LEED-NC or LEED-EB certifications.

# SS Credit 1.1 & 1.2 Plan for Green Site and Building Exterior Management

# 1–2 Points

## Intent

Encourage grounds/site/building exterior management practices that have the lowest environmental impact possible and preserve ecological integrity, enhance diversity and protect wildlife while supporting building performance and integration into surrounding landscapes.

## Requirements

Have in place over the performance period a low-impact site and green building exterior management plan that addresses the topics listed below. One point is earned for each four items addressed.

1. Maintenance equipment
2. Plantings
3. Animal and vegetation pest control
4. Landscape waste
5. Irrigation management
6. Fertilizer use
7. Snow removal (where applicable)
8. Cleaning of building exterior
9. Paints and sealants used on building exterior
10. Other maintenance of the building exterior

## Potential Technologies & Strategies

Have in place over the performance period a low-impact site and green building exterior management plan that addresses overall site management practices, chemical/fertilizer/pest management/snow removal practices, building exterior cleaning and maintenance practices.

Include green cleaning and maintenance practices and materials that minimize environmental impacts in the green building exterior management plan.

Also include green landscape management actions, such as using a greater variety of plants, using more native plants, reducing size of lawns, changing maintenance practices, reducing the use of power equipment, stormwater control, using fertilizer on an as needed basis, composting waste, applying integrated pest management, creating wildlife habitat, avoiding/removing invasive plants, protecting natural areas and using plants to reduce heating and cooling needs.

Utilize Integrated Pest Management (IPM), a safer and usually less costly option for effective pest management. An IPM program employs commonsense strategies to reduce sources of food, water and shelter for pests in buildings and on the grounds. IPM programs take advantage of effective pest management strategies and minimize the use of pesticides.

Use mulching mowers to significantly reduce yard waste generation, fertilizer needs and water consumption through retention of organic matter.

## Submittals – Initial LEED-EB Certification

- Provide a narrative overview of an organizational management plan for establishing/maintaining a low-impact site and building exterior plan that addresses and specifically highlights the actions from the list in the requirements that are being implemented.
- Provide quarterly reports over performance period documenting that this management plan is being implemented on an ongoing basis.

## Submittals – LEED-EB Re-Certification

Provide an update on the status of the site management plan:

- If there has been no change to the organizational management plan for establishing/maintaining a low impact site and building exterior plan, clearly state this in update.

OR

- If there have been changes to the organizational management plan for establishing/maintaining a low impact site and building exterior plan, provide an updated description of this plan.

AND

- Provide a narrative overview of an organizational management plan for establishing/maintaining a low impact site and building exterior plan that addresses and specifically highlights the actions from the list in the requirements that are being implemented.

AND

- Provide quarterly reports over performance period documenting that this management plan is being implemented on an ongoing basis.

# SS Credit 2 High Development Density Building and Area

# 1 Point

## Intent

Channel development to urban areas with existing infrastructure, protect greenfields and preserve habitat and natural resources.

## Requirements

Occupy a building that has a density of at least 60,000 square feet of building floor space per acre located within an area with a density of at least 60,000 square feet of building floor space per acre (two-story downtown development). The goal is to encourage the occupancy of high development density buildings in high development density areas. Once earned and for subsequent re-certifications, the only requirement is that the building itself have the required density.

## Potential Technologies & Strategies

Give preference to urban sites by occupying high development density buildings in urban areas with high development density.

## Submittals – Initial LEED-EB Certification

The following must be provided for the first time this point is earned:

- ❑ A signed statement that the building meets the required development density.
- ❑ A signed statement that the buildings in the surrounding area meet the required development density.
- ❑ Calculations showing that the building has a density of at least 60,000 square feet of building floor space per acre area.
- ❑ An area map and calculations showing that on average the buildings in the surrounding downtown area are at least two stories tall.

## Submittals – LEED-EB Re-Certification

In re-certifications after this point has been earned once, only following must be provided:

- ❑ A signed statement that the building meets the required development density.
- ❑ Calculations showing that the building has a density of at least 60,000 square feet of building floor space per acre area.

# SS Credit 3.1 Alternative Transportation: Public Transportation Access

# 1 Point

## Intent

Reduce pollution and land development impacts from automobile use.

## Requirements

Meet at least one of the following three criteria:

- The building is located within 1/2 mile of a commuter rail, light rail or subway station.
- The building is located within 1/4 mile of two or more public or campus bus lines usable by building occupants.
- Building occupants are provided with a conveyance (shuttle link) that supplies transportation between the building and public transportation meeting criteria (1) or (2) above.

## Potential Technologies & Strategies

Survey potential building occupants and determine if available mass transportation options meet their needs. Use existing transportation networks to minimize the need for new transportation lines. Provide sidewalks, paths and walkways to existing mass transit stops. Provide incentives such as transit passes to encourage occupants to use mass transit. Include the option of telecommuting in the building design and size facilities appropriately. Encourage off-site work as this reduces office space requirements and employee facilities. Engage public transportation link service providers. Explore the possibility of sharing facilities with other groups for transportation link services.

## Submittals – Initial LEED-EB Certification

- ❑ Provide an area drawing or transit map highlighting the building location, the fixed rail stations and bus lines. Include a scale bar for distance measurement and indicate the distance between the building and each service.
- ❑ Provide records and results of quarterly contacts over the performance period with transit services to verify that service continues to be provided within specified distances from the building.

## Submittals – LEED-EB Re-Certification

- ❑ Provide records and results of quarterly contacts with transit services to verify that service continues to be provided within specified distances from the building.

AND EITHER

- ❒ Provide a signed statement declaring that the transit lines recognized under previous LEED-EB submittals continue to meet the credit requirements.

OR

- ❑ If the transit systems serving the building have changed, provide an area drawing or transit map highlighting the building location, the fixed rail stations and bus lines. Include a scale bar for distance measurement and indicate the distances between the building and each service.

## SS Credit 3.2 Alternative Transportation: Bicycle Storage & Changing Rooms

## 1 Point

### Intent

Reduce pollution and land development impacts from automobile use.

### Requirements

For commercial or institutional buildings, provide secure bicycle storage with convenient (within 200 yards of the building) changing/shower facilities for regular building occupants. Maintain bike storage and shower capacity that is sufficient for the greater of 1% of the building occupants or 125% of peak demand for these facilities.

For residential buildings, provide covered storage facilities for securing bicycles for 15% or more of building occupants in lieu of changing/shower facilities. These facilities may be provided incrementally as long as the capacity of the facilities supplied exceeds the demand for these facilities.

In campus settings, if secure bicycle storage and showers are provided for all buildings occupants on a campus wide basis, the maximum distance from individual buildings to showers requirement can be replaced with a requirement that two lines be drawn at 90 degrees to each other through the center of the campus on a campus map and that it be documented that the bicycle storage and showers requirements are met for all buildings occupants within each quadrant.

### Potential Technologies & Strategies

Add or maintain building transportation amenities such as bicycle storage (racks) and showering/changing facilities.

### Submittals – Initial LEED-EB Certification

- ❑ Provide site drawings (Drawings showing where the showers and bike storage are located do not need to be the original building architectural drawings of the building), product cut sheets and/or photographs highlighting:
  - Bicycle securing apparatus.
  - Changing/shower facilities.
- ❑ Provide records and results of quarterly inspections over the performance period to verify that the initially identified number of bicycle securing apparatus and shower/changing facilities continue to be available and that bicycle storage peak usage is being tracked on a quarterly basis.
- ❑ Provide record of quarterly assessments of the number to building occupants and associated calculations to verify that these facilities continue to meet the credit requirements.
- ❑ If a LEED-NC certified building is less than 2 years old:
  - Document that secure bicycle storage with convenient changing/shower facilities (within 200 yards of the building) are provided for at least 5% of all building users.
- ❑ If building is more than 2 years old, document that:

(1) The initially installed bike storage capacity is equal to the greater of the following:

a) 125% of the peak demand for bicycle parking.

b) 1% of the full-time equivalent building users.

(2) The initially provided shower capacity is adequate based on required bike storage capacity calculated in (1) above.

(3) The bike storage capacity has been increased within six months for each time there is an increase in peak usage so that the bike storage capacity is maintained at 125% of the peak demand for bicycle parking until a maximum bike storage capacity of 5% of the building users is reached.

(4) The number of showers has been increased to provide the required shower capacity for any increase in the required number of bike storage identified in (3) above.

## Submittals – LEED-EB Re-Certification

Provide an update on previous filing that includes:

- ❑ A signed statement declaring that there have been no changes to either number of building users, bike storage capacity or shower/changing facilities and that these facilities continue to meet the needs of the building occupants.
- ❑ Quarterly checks on the number to building occupants to verify that the bike storage capacity or shower/changing facilities continue to meet the needs of the building users and that bicycle storage peak usage is being tracked on a quarterly basis

OR

If there have been changes in the number of building users and/or storage/shower/changing facilities, provide:

- ❒ Current site drawings, product cut sheets and/or photographs highlighting:
  - bicycle securing apparatus
  - changing/shower facilities
- ❑ Records and results of quarterly inspections to verify that the initially identified number of bicycle securing apparatus and shower/changing facilities continue to be available and that bicycle storage peak usage is being tracked on a quarterly basis
- ❑ A record of quarterly assessments of the number of building users and associated calculations to verify that these facilities continue to meet the credit requirements
- ❑ Documentation that:

(1) The installed bike storage capacity continues to be the greater than the larger of the following:

a) 125% of the peak demand for bicycle parking.

b) 1% of the full-time equivalent building users.

(2) The bike storage capacity has been increased as necessary (within six months of identification of need), each time there has been an increase in peak usage so that the bike storage capacity is maintained at 125% of the peak demand for bicycle parking until a maximum bike storage capacity of 5% of the building users is reached.

(3) The provided shower capacity continues to be adequate based on required bike storage capacity calculated in (1) above.

# SS Credit 3.3 Alternative Transportation: Alternative Fuel Vehicles

# 1 Point

## Intent

Reduce pollution and land development impacts from automobile use.

## Requirements

Have in place over the performance period:

- A communication program that promotes the use of alternative fuel vehicles for building occupants.

AND EITHER

Option A

- Alternative fuel refueling station(s) for 3% of the total vehicle parking capacity of the site. NOTE: liquid or gaseous fueling facilities must be separately ventilated or located outdoors.

OR

Option B

- Provide (or achieve result in some other way) alternative fuel vehicles or hybrid vehicles for 3% of building occupants.
- Provide preferred parking for these vehicles.

OR

Option C

- Provide preferred parking programs for hybrid or alternative fuel vehicles for at least 3% of the total vehicle parking capacity and increase as necessary the amount preferred parking to meet the demand for preferred parking up to 10% or more of the total vehicle parking capacity.

## Potential Technologies & Strategies

Provide transportation amenities such as alternative fuel refueling stations. Provide preferred parking for alternate fueled vehicles or hybrid vehicles. Provide alternate fueled or hybrid vehicles to building occupants or find a market-based way to get building occupants to drive alternate fueled or hybrid vehicles.

## Submittals – Initial LEED-EB Certification

Option A

- ❑ Provide specifications and site drawings documenting that the installed alternative fuel refueling stations have the capacity to accommodate 3% or more of the total vehicle parking capacity.
- ❑ Provide records and results of quarterly inspections to verify that the initial alternative fueling capacity continues to be available.
- ❑ Provide evidence that the program to promote use of alternative fuel vehicles is communicated to building occupants.

- ❑ Perform quarterly checks of the total vehicle parking capacity to verify that these refueling facilities continue to have the capacity to accommodate 3% or more of the total vehicle parking requirements.

Option B

- ❑ Provide proof of ownership or lease agreement of at least two years to prove that alternative fuel vehicles are being provided for 3% of building occupants.
- ❑ Provide specifications and site drawings documenting that preferred parking is being provided for these vehicles.
- ❑ Provide evidence that the program to promote use of alternative fuel vehicles is communicated to building occupants.
- ❑ Perform quarterly checks of the total vehicle parking capacity to verify that alternative fuel vehicles continue to be provided to accommodate 3% or more of the total vehicle parking requirements.

Option C

- ❑ Provide specifications and site drawings and calculations documenting that:
  - Preferred parking for hybrid or alternative fuel vehicles is being provided for at least 3% of the total vehicle parking capacity
  - The amount of preferred parking has been increased as necessary so that the amount of preferred parking meets the demand for this preferred parking up to 10% or more of the total vehicle parking capacity.
- ❑ Perform quarterly checks of the total vehicle parking capacity to verify that preferred parking for alternative fuel vehicles continues to be provided and that it continues to meets the demand for this preferred parking up to 10% or more of the total vehicle parking capacity.
- ❑ Provide evidence that the program to promote use of hybrid vehicles is communicated to building occupants.

## Submittals – LEED-EB Re-Certification

- ❑ If no changes in parking or building occupancy have occurred, provide a signed letter stating that there have been no changes, and reaffirm that the alternative fuel vehicle strategy certified in the initial LEED-EB Certification remains valid.

OR

- ❑ If there have been any changes to how option (A), (B) or (C) above is being met, provide documentation of the nature of any such changes. Provide specifications, drawings, calculations and the results from quarterly inspections over the performance period to demonstrate that the requirements certified under the initial LEED-EB Certification continue to be met and that the annual capacity of the alternative refueling stations meets demand.

# SS Credit 3.4 Alternative Transportation: Car Pooling and Telecommuting

## 1 Point

### Intent

Reduce pollution and land development impacts from single-occupancy vehicle use.

### Requirements

- Provide preferred parking and implement/document programs and policies for car pools or van pools capable of serving 5% of the building occupants and add no new parking.

OR

- Operate over performance period an occupant telecommuting program that reduces commuting frequency by 20% for 20% or more of the building occupants and provides the necessary communications infrastructure in the building to accommodate telecommuting.

### Potential Technologies & Strategies

Provide incentives for using car pooling or telecommuting to encourage occupants to reduce vehicle miles traveled. Include the option of telecommuting in the building design and size facilities appropriately. Encourage off-site work as this reduces office space requirements and employee facilities.

Encourage car pooling through initiatives such as preferred parking areas for high-occupancy vehicles (HOV) and the elimination of parking subsidies for non–car pool vehicles.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a description, calculations, parking plan, and company literature describing carpool and vanpool programs designed to serve 5% of the building occupants.
- ❑ Submit a summary for the performance period and an excerpt from underlying daily or weekly reports on car pool and van pool usage.
- ❑ Submit a letter verifying that the project has added no new parking over the performance period.

OR

- ❑ Provide a detailed description of telecommuting program (including specific information on baselines, assumptions and calculation methodology) designed to reduce the commuting frequency by 20% for 20% or more of the building occupants.
- ❑ Submit a summary for the performance period and an excerpt from underlying daily or weekly reports on telecommuting participation documenting that this program is reducing the commuting frequency by 20% for 20% or more of the building occupants on an average basis over the performance period.

### Submittals – LEED-EB Re-Certification

- ❑ If there have been no changes in the building occupant numbers, car pool/van pool programs or policies, no new parking has been added and no changes to the telecommuting program or policies:

- Provide a letter of verification that there have been no changes that affect the building's achievement of the requirements of the credit.

OR

❑ If there have been changes in any of the credit achievement requirements:

- Submit a summary for the performance period and an excerpt from underlying daily or weekly reports on car pool and van pool usage.
- Submit a letter verifying that the project has added no new parking over the performance period.

OR

- Provide a detailed description of telecommuting program (including specific information on baselines, assumptions and calculation methodology) designed to reduce the commuting frequency by 20% for 20% or more of the building occupants.
- Submit a summary for the performance period and an excerpts from underlying daily or weekly reports on telecommuting participation documenting that this program is reducing the commuting frequency by 20% for 20% or more of the building occupants on an average basis over the performance period.

# SS Credit 4.1 Reduced Site Disturbance–Protect or Restore Open Space: 50% of Site Area

## 1 Point

### Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

### Requirements

Have in place over the performance period, native or adapted vegetation covering a minimum of 50% of the site area excluding the building footprint.

Improving/maintaining off-site areas with native or adaptive plants can count toward earning both SS Credit 4.1 and 4.2. Every 2 square feet off-site will be counted as 1 square foot on-site. Off-site areas must be documented with a contract with the owner of the off-site area that specifies the required improvement and maintenance of the off-site area.

Native/Adapted Plants are those that are indigenous to a locality or cultivars of native plant materials that have adapted to the local climate and are not considered invasive species or noxious weeds. Such plants require only limited irrigation water for sustenance once established, and do not require active maintenance such as mowing. Native/Adapted Plants should provide habitat value and promote biodiversity through avoidance of monoculture plantings.

### Potential Technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for management of the building site. Activities may include removing excessive paved areas and replacing them with landscaped areas, or replacing excessive turf-grass area with natural landscape features. Work with local horticultural extension services or native plant societies to select and maintain indigenous plant species for site restoration and landscaping. Coordinate with activities, technologies and strategies under Green Groundskeeping.

### Submittals – Initial LEED-EB Certification

- Provide highlighted site drawings with area calculations demonstrating that at least 50% of the site area excluding the build footprint has been vegetated with native or adapted vegetation over the performance period.
- Provide a list of the native or adapted plants used in earning this credit.
- Provide records and results of quarterly inspections for performance period to show that at least 50% of the site area excluding the build footprint remains vegetated with native or adapted vegetation.

### Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

- If there has been no change in the site area vegetation, provide a letter stating that no change has occurred and summary results of quarterly inspections over the performance period to document that at least 50% of the site area excluding the build footprint remains vegetated with native or adapted vegetation.

OR

- If there has been a change in the site area vegetation:
  - Provide highlighted site drawings with area calculations and provide records and results of quarterly inspections over the performance period to document that at least 50% of the site area excluding the build footprint remains vegetated with native or adapted vegetation over the performance period.
  - Provide a list of the native or adapted plants used in earning this credit.
  - Provide records and results of quarterly inspections over the performance period to document that at least 50% of the site area excluding the build footprint remains vegetated with native or adapted vegetation.

# SS Credit 4.2 Reduced Site Disturbance–Protect or Restore Open Space: 75% of Site Area

## 1 Point

### Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

### Requirements

Have in place over the performance period native or adapted vegetation covering a minimum of 75% of the site area excluding the building footprint.

### Potential Technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for development of the project site. Activities may include removing excessive paved areas and replacing them with landscaped areas, or replacing excessive turf-grass area with natural landscape features. Work with local horticultural extension services or native plant societies to select and maintain indigenous plant species for site restoration and landscaping.

### Submittals – Initial LEED-EB Certification

- ❑ Provide highlighted site drawings with area calculations demonstrating that at least 75% of the site area excluding the building footprint is vegetated with native or adapted vegetation.
- ❑ Provide a list of the native or adapted plants used in earning this credit.
- ❑ Provide records and results of quarterly inspections over the performance period to document that at least 75% of the site area excluding the building footprint remained vegetated with native or adapted vegetation.

### Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

- ❑ Provide records and results of quarterly inspections over the performance period to document that at least 75% of the site area excluding the building footprint remained vegetated with native or adapted vegetation.

AND EITHER

- ❑ Provide a letter stating that no change has occurred if there has been no change in the site area vegetation.

OR

- ❑ Provide highlighted site drawings with area calculations if there has been a change in the site area vegetation, and
- ❑ Provide a list of the native or adapted plants used in earning this credit.

# SS Credit 5.1 & 5.2 Stormwater Management: Rate and Quantity Reduction 1–2 Points

## Intent

Limit disruption and pollution of natural water flows by managing stormwater runoff.

## Requirements

Have in place over the performance period a stormwater management plan that is designed to mitigate run off from the site. This mitigation can be accomplished through a variety of measures including perviousness of site, stormwater management practices (structural and non structural), capture of rainwater for reuse or other measures.

- SS Credit 5.1: Have measures in place on the site that mitigate at least 25% of the annual stormwater falling on the site. (1 point)

- SS Credit 5.2: Have measures in place on the site that mitigate at least 50% of the annual stormwater falling on the site. (1 point)

## Potential Technologies & Strategies

Increase perviousness by reducing the amount of impervious surface area or replace with permeable alternatives (e.g., paving blocks, porous concrete, green/vegetated roofs). Capture rainwater from impervious areas of the building for groundwater recharge or reuse within building. Use green/vegetated roofs. Utilize biologically based and innovative stormwater management features for pollutant load reduction such as constructed wetlands, stormwater filtering systems, bioswales, bioretention basins or filters and vegetated filterstrips.

## Submittals – Initial LEED-EB Certification

- ❑ Document Stormwater Runoff Mitigation.
  - ❒ Provide a narrative description and calculations showing the impact of the implemented stormwater management plan and the annual stormwater falling on the site mitigation percentage provided.
  - ❒ Provide records and results of quarterly inspections over the performance period to determine if the stormwater management plan on the site is being maintained and functions properly.

## Submittals – LEED-EB Re-Certification

- ❑ Provide an update of previous filings.
  - ❑ If there has been no change to the stormwater management plan since previous LEED-EB filing, provide statement that there has been no change.
  - ❑ If there has been a change to the stormwater management plan since previous LEED-EB filing, provide updated information.

- Provide a narrative description and calculations showing the impact of the stormwater management plan that has been implemented and how much mitigates of the annual stormwater load on the site it provides.
- Provide records and results of quarterly inspections over the performance period to determine if the stormwater management plan has been implemented on the site is being maintained and functions properly.

# SS Credit 6.1 Heat Island Reduction: Non-Roof

# 1 Point

## Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

## Requirements

The building must meet at least one of the following three requirements:

- Provide (from existing canopy or within five years of landscape installation) shade on at least 30% of non-roof impervious surfaces on the site, including parking lots, walkways, plazas, etc., or use/maintain light-colored/high-albedo materials (reflectance of at least 0.3) for 30% of the site's non-roof impervious surfaces.
- Place/maintain a minimum of 50% of parking space underground.
- Use/maintain an open-grid pavement system (net impervious area of LESS than 50%) for a minimum of 50% of the parking lot area.

## Potential Technologies & Strategies

Employ strategies, materials and landscaping techniques that reduce heat absorption of exterior materials. Provide shade (calculated on June 21, noon solar time) using native or climate tolerant trees and large shrubs, vegetated trellises, or other exterior structures supporting vegetation. Explore elimination of blacktop and the use of new coatings and integral colorants for asphalt to achieve light colored surfaces. Position photovoltaic cells to shade impervious surfaces.

## Submittals – Initial LEED-EB Certification

In addition to the documentation required for each specific compliance path, provide records and results of quarterly inspections over the performance period to determine that one of the following features are being maintained:

❑ Provide site plan highlighting all non-roof impervious surfaces and portions of these surfaces that will be shaded within five years. Include calculations demonstrating that a minimum of 30% of non-roof impervious surface areas will be shaded within five years.

OR

❑ Provide third-party reflectance documentation, site plan, calculations and photographs documenting use of high-albedo materials on 30% of non-roof impervious surfaces.

OR

❑ Provide a parking plan demonstrating that a minimum of 50% of site parking spaces are located underground.

OR

- ❑ Provide third-party documentation on paving system perviousness, site plan, calculations and photographs for a pervious paving system with a minimum perviousness of 50%. Include calculations demonstrating that this paving system covers a minimum of 50% of the total parking area.

## Submittals – LEED-EB Re-Certification

Provide an update of previous filings:

- ❒ If no change in the policies or techniques used to earn this credit has occurred, provide records and results of quarterly inspections over the performance period to determine that the specific feature used to earn this credit is being maintained.

OR

- ❒ If the policy or technique used to earn this credit in previous LEED-EB Certifications has changed, in addition to the documentation required for each specific compliance path, provide records and results of quarterly inspections over the performance period to determine that one of the following features are being maintained:

  - ❑ Provide site plan highlighting all non-roof impervious surfaces and portions of these surfaces that will be shaded within five years. Include calculations demonstrating that a minimum of 30% of non-roof impervious surface areas will be shaded within five years.

  OR

  - ❑ Provide third-party reflectance documentation, site plan, calculations and photographs documenting use of high-albedo materials on 30% of non-roof impervious surfaces.

  OR

  - ❑ Provide a parking plan demonstrating that a minimum of 50% of site parking spaces are located underground.

  OR

  - ❑ Provide third-party documentation on paving system perviousness, site plan, calculations and photographs for a pervious paving system with a minimum perviousness of 50%. Include calculations demonstrating that this paving system covers a minimum of 50% of the total parking area.

# SS Credit 6.2 Heat Island Reduction: Roof

# 1 Point

## Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

## Requirements

- Have in place over the performance period ENERGY STAR®–compliant, high-reflectance and high emissivity roofing material that has a minimum emissivity of 0.9 when tested in accordance with ASTM 408 for a minimum of 75% of the roof surface.

OR

- Install/maintain a "green" (vegetated) roof for at least 50% of the roof area.

Combinations of roofing area that meets the specified requirements and vegetated roof area can be used providing they collectively cover 75% of the roof area.

## Potential Technologies & Strategies

Visit the ENERGY STAR Web site, www.energystar.gov, to research compliant products. Consider installing high-albedo and vegetated roofs to reduce heat absorption.

## Submittals – Initial LEED-EB Certification

- ❑ In addition to the documentation required for each specific compliance path, provide records and results of quarterly inspections over the performance period to determine that one of the following features are being maintained:
  - ❑ Provide documentation on roofing that meets ENERGY STAR–label requirements and has an emissivity of at least 0.9 covering 70% of the roof. Documentation must include a roof plan, photographs and measurements of reflectance and emissivity. Manufacturer measurements are acceptable if the materials have been in place less than five years. If the materials have been in place more that five years, current measurements must be provided.
  - ❑ Include area calculations demonstrating that the roofing material covers a minimum of 75% of the total roof area.

  OR

  - ❑ Provide photographs and a roof plan documenting the installation/maintenance of a green vegetated roof system. Include a description of the green roof system being used and the types of vegetation being grown in the green roof. Include area calculations demonstrating that the roof system covering a minimum or 50% of the total roof area.

## Submittals – LEED-EB Re-Certification

Provide an update of previous filings:

- ❒ If no change in the policies or techniques used to earn this credit has occurred, provide records and results of quarterly inspections over the performance period to determine that the specific feature used to earn this credit is being maintained.

OR

- ❒ If the policy or technique used to earn this credit in previous LEED-EB Certifications has changed, in addition to the documentation required for each specific compliance path, provide records and results of quarterly inspections over the performance period to determine that one of the following features are being maintained:

    - ❒ Provide documentation on roofing that meets ENERGY STAR–label requirements and has an emissivity of at least 0.9 covering 70% of the roof. Documentation needs to include a roof plan, photographs and measurements of reflectance and emissivity. Manufacturer measurements are acceptable if the materials have been in place less than five years. If the materials have been in place more that five years, current measurements must be provided.

    - ❒ Include area calculations demonstrating that the roofing material covers a minimum of 75% of the total roof area.

    OR

    - ❒ Provide photographs and a roof plan documenting the installation/maintenance of a green vegetated roof system. Include a description of the green roof system being used and the types of vegetation being grown in the green roof. Include area calculations demonstrating that the roof system covering a minimum or 50% of the total roof area.

# SS Credit 7 Light Pollution Reduction

# 1 Point

## Intent

Eliminate light trespass from the building and site, improve night sky access and reduce development impact on nocturnal environments.

## Requirements

- All outdoor luminaries 50 watts and over need to be shielded so that they do not directly emit light to the night sky.

OR

- Provide calculations showing that less then 5% of light emitted by all outdoor lighting reach the night sky on an annual basis.
- With the building interior, exterior and site lights on and off, measure the illumination levels at the same locations at regular intervals around the perimeter of the property. At least eight measurements are required with documentation that the measurements made are sufficient in quantity to be representative of the illumination levels on the perimeter of the property. The property perimeter illumination levels measured with the lights on must not be more than 10% above the levels measured with the lights off.

OR

- Provide calculations showing that the maximum candela value of all interior lighting shall fall within the building (not out through windows) and the maximum candela value of all exterior lighting shall fall within the property.
- Provide records and results of quarterly inspections to determine if required features are being maintained.

## Potential Technologies & Strategies

Implement site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model to predict impacts when changing lighting. Technologies to reduce light pollution include full cutoff luminaries, and low-reflectance surfaces.

## Submittals – Initial LEED-EB Certification

Provide documentation that:

(1) All outdoor luminaires 50 watts and over are shielded so that they do not directly emit light to the night sky.

OR

Provide calculations showing that less then 5% of light emitted by all outdoor lighting reach the night sky on an annual basis.

(2) With the buildings lights on and off, measure the illumination levels at the same locations at regular intervals around the perimeter of the property. At least eight measurements are required with documentation that the measurements made are sufficient in quantity to be representative of the illumination levels on the perimeter of the property. The property perimeter illumination levels measured with the lights on must not be more than 10% above the levels measured with the lights off.

OR

Provide calculations showing that the maximum candela value of all interior lighting shall fall within the building (not out through windows) and the maximum candela value of all exterior lighting shall fall within the property.

(3) Provide records and results of quarterly inspections to determine if these features are being maintained.

## Submittals – LEED-EB Re-Certification

Provide update of previous filing:

If no changes to the site or building lighting have occurred, provide results of quarterly site inspection reports for performance period to demonstrate that the site lighting is maintained and continues to achieve the credit requirements.

OR

If changes have occurred that affect the site or building lighting, provide documentation that:

(1) All outdoor luminaires 50 watts and over are shielded so that they do not directly emit light to the night sky.

OR

Provide calculations showing that less then 5% of light emitted by all outdoor lighting reach the night sky on an annual basis.

(2) With the buildings lights on and off, measure the illumination levels at the same locations at regular intervals around the perimeter of the property. At least eight measurements are required with documentation that the measurements made are sufficient in quantity to be representative of the illumination levels on the perimeter of the property. The property perimeter illumination levels measured with the lights on must not be more than 10% above the levels measured with the lights off.

OR

Provide calculations showing that The maximum candela value of all interior lighting shall fall within the building (not out through windows) and the maximum candela value of all exterior lighting shall fall within the property.

(3) Provide records and results of quarterly inspections to determine if these features are being maintained.

# Water Efficiency (WE)

## WE Prerequisite 1 Minimum Water Efficiency Required

### Intent

Maximize fixture water efficiency within buildings to reduce the burden on potable water supply and wastewater systems.

### Requirements

Reduce fixture potable water usage to a level equal to or below water use baseline, calculated as 120% of the water usage that would result if 100% of the total building fixture count were outfitted with plumbing fixtures that meet the Energy Policy Act of 1992 fixture performance requirements. If the building does not have separate metering for each water use (fixture use, process use, irrigation and other uses), the water use reduction achievements can be demonstrated with calculations. At least one meter for the overall building water use is required and metering for cooling towers and other process water uses are encouraged but not required.

### Potential Technologies & Strategies

Reduce fixture potable water usage through automatic water control systems. Install, where possible, water conserving plumbing fixtures that meet or exceed Energy Policy Act of 1992 fixture requirements in combination with ultra high efficiency or dry fixture and control technologies.

### Submittals – Initial LEED-EB Certification

- ❑ Provide documentation showing that the existing building fixture potable water use is equal to or less than a baseline calculated as 120% of the water usage that would result if 100% of the total building fixture count were outfitted with plumbing fixtures that meet the Energy Policy Act of 1992 fixture performance requirements.
- ❑ Provide quarterly and annual water meter data for the performance period for potable water use inside the building showing that the annual fixture potable water use is equal to or less than the calculated baseline.
- ❑ Provide calculations showing fixture potable water use per occupant and per square foot.

### Submittals – LEED-EB Re-Certification

- ❑ If there has been no change to building potable water consumption relative to the 120% baseline since the previous LEED-EB filing:
  - Provide a statement that there has been no change.
  - Provide quarterly and annual fixture potable water meter data for water use inside the building showing that the annual potable water use is equal to or less than the calculated baseline over the performance period.

- If there has been a change to building fixture potable water consumption relative to the 120% baseline provide:
  - Calculations showing that the existing building fixture potable water use over the performance period is equal to or less than a baseline calculated as 120% of the water usage that would result if 100% of the total building fixture count were outfitted with plumbing fixtures that meet the Energy Policy Act of 1992 fixture performance requirements. Quarterly and annual water meter data for the performance period, including potable water meter data for water use inside the building, supporting the documentation of the fixture potable water use.
  - Calculations showing fixture potable water use per occupant and per square foot.

# WE Prerequisite 2 Discharge Water Compliance Required

## Intent

Protect natural habitat, waterways and water supply from pollutants carried by building discharge water.

## Requirements

If regulated by EPA National Pollution Discharge Elimination System (NPDES) Clean Water Act requirements, demonstrate NPDES permit compliance including use of any required oil separators, grease interceptors and other filtration for in-building generated discharges and proper disposal of any wastes collected. If the facility is not regulated by a NPDES Permit, this prerequisite is achieved.

## Potential Technologies & Strategies

If applicable, follow NPDES requirements and links to technical information on the EPA requirements. Establish a discharge monitoring report (DMR) process to bring and keep NPDES Permit into compliance.

## Submittals – Initial LEED-EB Certification

- ❑ If regulated by the EPA NPDES Clean Water Act requirements, provide documentation demonstrating ongoing NPDES permit compliance and ongoing discharge monitoring reporting (DMR) over the performance period being reported.

OR

- ❑ Provide a letter of confirmation that the facility is not regulated by the EPA NPDES Clean Water Act requirements.

## Submittals – LEED-EB Re-Certification

- ❑ If regulated by the EPA NPDES Clean Water Act requirements, provide documentation demonstrating ongoing NPDES permit compliance and ongoing discharge monitoring reporting (DMR) over the year being reported.

OR

- ❑ Provide a letter of reconfirming that the facility is not regulated by the EPA NPDES Clean Water Act requirements.

# WE Credit 1.1 & 1.2 Water Efficient Landscaping–Reduce Water Use

# 1–2 Points

## Intent

Limit or eliminate the use of potable water for landscape irrigation.

## Requirements

Use high-efficiency irrigation technology OR use captured rain/recycled site water to reduce potable water consumption for irrigation in comparison to conventional means of irrigation. If the building does not have separate metering for each water use (fixture use, process use, irrigation and other uses), the water use reduction achievements can be demonstrated with calculations. At least one meter for the overall building water use is required and metering for cooling towers and other process water use is encouraged but not required. In urban settings, where there is no lawn, credits can be earned by reducing the use of potable water for watering any roof/courtyard garden space or outdoor planters.

- WE Credit 1.1: 50% reduction in potable water use for irrigation over conventional means of irrigation. (1 point)
- WE Credit 1.2: 95% reduction in potable water use for irrigation over conventional means of irrigation. (1 point)

## Potential Technologies & Strategies

Specify water-efficient, native or adapted, climate tolerant plantings. Implement or maintain high efficiency irrigation technologies that include micro irrigation, moisture sensors, or weather data based controllers. Feed irrigation systems with captured rainwater, gray water (site or municipal), or on-site treated wastewater. Consider not operating an irrigation system. Consider use of xeriscaping principles in dry/arid climates.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a brief narrative description, system schematics, photographs and calculations demonstrating how much potable water use for irrigation is reduced in comparison to conventional means of irrigation.
- ❑ Provide a description of the type of irrigation system that is “conventional” in the area and the extent that the conventional” type of irrigation system is used in the area.

  The head of facility management for the facility is required to sign off on the calculation of reduction in the amount of potable water used for irrigation.
- ❑ Provide quarterly water meter readings over the performance period supporting the documentation of the reduction in potable water use for irrigation as well as quarterly reports over the performance period that document the maintenance activities implemented to ensure proper operation of the irrigation system.

## Submittals – LEED-EB Re-Certification

- ❑ If there has been no change to the irrigation system or organizational policy regarding landscape irrigation:
  - Provide a letter stating that there has been no change.

- Provide quarterly water meter readings for the performance period demonstrating how much the potable water use for irrigation is reduced in comparison to conventional means of irrigation.
- Provide quarterly reports for the performance period that document the maintenance activities implemented to ensure proper operation of the irrigation system.
- The head of facility management for the facility is required to sign off on the calculation of reduction in the amount of potable water used for irrigation.

OR

❑ If there has been a change to the irrigation system or organizational policy regarding landscape irrigation, provide a brief narrative description, system schematics, photographs and calculations demonstrating how much potable water use for irrigation is reduced in comparison to conventional means of irrigation.

The head of facility management for the facility is required to sign off on the calculation of reduction in the amount of potable water used for irrigation.

❒ Provide quarterly water meter readings over the performance period supporting the documentation or how much potable water use for irrigation is has been reduced as well as quarterly reports over the performance period that document the maintenance activities implemented to ensure proper operation of the irrigation system.

# WE Credit 2 Innovative Wastewater Technologies

# 1 Point

## Intent

Reduce generation of wastewater and potable water demand, while increasing the local aquifer recharge.

## Requirements

- Reduce use of potable water for building sewage conveyance by 50%, based on water use baseline calculated for WE Prerequisite 1.

OR

- Treat 100% of wastewater on site to tertiary standards.

## Potential Technologies & Strategies

Implement decentralized on-site wastewater treatment and reuse systems. Decrease the use of potable water for sewage conveyance by utilizing gray and/or black water systems. Non-potable reuse opportunities include toilet flushing, landscape irrigation, etc. Provide advanced wastewater treatment after use by employing innovative, ecological, on-site technologies including constructed wetlands, a mechanical re-circulating sand filter or aerobic treatment systems. For wastewater treatment systems, employ treatment methods appropriate to the requirement of state and local regulatory authorities for effluent disposal. Where possible, adopt innovative treatment systems that minimize energy use, and dispose of treated effluent by applying it to the land, either by surface application or subsurface dispersal. Utilize systems that re-circulate and reuse water to reduce water use.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a narrative description of measures implemented to reduce potable water sewage conveyance. Include calculations demonstrating that potable water sewage conveyance volumes are reduced by 50% over baseline conditions.
- ❑ Provide quarterly and annual water meter data over performance period showing that 50% reduction is being achieved on an average annual basis.

OR

- ❑ Provide a narrative description and schematic drawings detailing equipment locations and that 100% of building wastewater is directed to an on-site wastewater treatment system that provides treatment to tertiary levels. Include a letter from the local health department documenting compliance with local code.
- ❑ Provide quarterly water meter readings over performance period documenting that 100% of building wastewater volume is directed to on-site wastewater treatment system that provides treatment to tertiary levels.

Note: If the building does not have separate metering for each water use (fixture use, process use, irrigation and other uses), the water use reduction achievements can be demonstrated with calculations.

## Submittals – LEED-EB Re-Certification

- If there has been no change to the wastewater conveyance system or organizational policy regarding wastewater, provide quarterly and annual water meter data over performance period showing that 50% reduction is being achieved on an average annual basis.

OR

- If there has been a change to the wastewater conveyance system or organizational policy regarding wastewater, provide a narrative description and schematic drawings detailing equipment locations and that 100% of building wastewater is directed to an on-site wastewater treatment system that provides treatment to tertiary levels. Include a letter from the local health department documenting compliance with local code.
- Provide quarterly water meter readings over the performance period documenting that 100% of building wastewater volume is directed to on-site wastewater treatment systems that provide treatment to tertiary levels.

Note: If the building does not have separate metering for each water use (fixture use, process use, irrigation and other uses), the water use reduction achievements can be demonstrated with calculations.

# WE Credit 3.1 & 3.2 Water Use Reduction

# 1–2 Points

## Intent

Maximize fixture potable water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

## Requirements

Have in place over the performance period strategies and systems that in aggregate produce a reduction of fixture potable water use from the calculated fixture water usage baseline established in WE Prerequisite 1. If the building does not have separate metering for each water use (fixture use, process use, irrigation and other uses), the water use reduction achievements can be demonstrated for WEc3.1 with calculations. At least one meter for the overall building water use is required and metering for cooling towers and other process water use encouraged but not required. To earn WEc3.2, measured fixture water use demonstrating required level of efficiency must be provided.

- WE 3.1: 10% reduction in fixture water use from the baseline. (1 point)
- WE 3.2: 20% reduction in fixture water use from the baseline. (1 point)

## Potential Technologies & Strategies

Reduce fixture water usage through automatic controls and other actions. Specify water conserving plumbing fixtures that exceed Energy Policy Act of 1992 fixture requirements in combination with ultra-high efficiency or dry fixture and control technologies.

## Submittals – Initial LEED-EB Certification

❑ Provide documentation (calculations, fixture cut sheets, results of direct measurement and photographs) that the existing building fixture potable water use over the performance period is less than the baseline established in WE Prerequisite 1.

❒ Provide quarterly and annual water meter data for water use in the building supporting the documentation of the annual fixture potable water use over the performance period.

## Submittals – LEED-EB Re-Certification

❒ Provide calculations, fixture cut sheets, results of direct measurement and photographs documenting that the amount the existing building fixture potable water use is less than the baseline established in WE Prerequisite 1 over the performance period.

❒ Provide quarterly and annual water meter data for water use in the building supporting the documentation of the annual fixture potable water use over the performance period.

# Energy & Atmosphere (EA)

## EA Prerequisite 1 Existing Building Commissioning Required

### Intent

Verify that fundamental building systems and assemblies are performing as intended to meet current needs and sustainability requirements.

### Requirements

Verify and ensure that fundamental building elements and systems are installed, calibrated, and operating as intended so they can deliver functional and efficient performance. Carry out a comprehensive existing building commissioning including the following procedures:

1. Develop a comprehensive building operation plan that meets the requirements of current building usage, and addresses the: heating system, cooling system, humidity control system, lighting system, safety systems and the building automation controls.
2. Prepare a commissioning plan for carrying out the testing of all building systems to verify that they are working according to the specifications of the building operation plan.
3. Implement the commissioning plan documenting all the results.
4. Repair or upgrade all systems components that are found to not be working according to the specifications of the building operation plan.
5. Re-test all building components that required repairs or upgrades to verify that they are working according to the specifications of the building operation plan.

OR

Submit a 1- to 5-Year Plan for continuous improvement of these aspects of commissioning requirements 1-6 until all aspects are completed. During the implementation of the continuous improvement plan, demonstrate continuous improvement on a yearly basis until all aspects are completed. All low-cost and no-cost measures must be implemented in the first two years of the implementation program.

### Potential Technologies & Strategies:

The commissioning process activities begin by identifying the current building operating intents (Owner's Operational Requirements) and then proactively making sure that the buildings systems are operating as necessary to meet these operating intents.

### Submittals – Initial LEED-EB Certification

- ❑ A narrative summary of the current building operation plan that highlights major building systems and assemblies.
- ❑ Documentation that all six actions in the Requirements have been completed.

  OR

- ❑ If one or more aspects of the six actions in the Requirements have not been completed, submit a 5-Year Plan that includes a schedule of annual actions that will be implemented in order to complete all six actions in the Requirements within five years.

## Submittals – LEED-EB Re-Certification

Provide an update of previous filings:

- ❑ A narrative summary of the current building operation plan that highlights major building systems and assemblies.

AND EITHER

- ❑ Documentation that all six actions in the requirements have been completed.

OR

- ❒ If one or more aspects of the six actions in the requirements were not completed in the original submittal, submit a progress report showing that the 5-Year Plan remains on schedule for meeting all of the Requirements.

# EA Prerequisite 2 Minimum Energy Performance Required

## Intent

Establish the minimum level of energy efficiency for the building and systems.

## Requirements

Demonstrate that your building has achieved an EPA ENERGY STAR score of at least 60 utilizing the EPA ENERGY STAR Benchmarking Tool for building types addressed by ENERGY STAR, OR for building types not addressed by Energy Star, demonstrate that the building has energy consumption equal to an ENERGY STAR Score of at least 60, as calculated using the alternate method described in the LEED-EB Reference Guide.

## Potential Technologies & Strategies:

Implement energy efficiency retrofits and energy saving techniques to reduce energy use to the level required to meet this prerequisite.

## Submittals – Initial LEED-EB Certification

- ❑ If the building type is addressed by ENERGY STAR, provide benchmarking tool output documenting that the building energy has achieved an EPA ENERGY STAR score of at least 60.
- ❑ Provide a summary of the annual bills, including cost and usage amounts (kilowatt-hours, therms, gallons, etc.), for each type of energy used by the building.
- ❑ Provide copies of most recent 12 months of building utility bills.

OR

- ❑ If the building is not a building type addressed by ENERGY STAR, provide calculations showing the building energy efficiency and performance meets the equivalent of an EPA ENERGY STAR score of at least 60 using the alternate calculation method described in the LEED-EB Reference Guide.
- ❑ Provide a summary of the annual bills including cost and usage amounts (kilowatt-hours, therms, gallons, etc.) for each type of energy used by the building annually over the performance period.
- ❑ Provide copies of the most recent 12 months of building utility bills.

## Submittals – LEED-EB Re-Certification

- ❑ If the building type is addressed by ENERGY STAR, provide benchmarking tool output documenting that the building continues to maintain an EPA ENERGY STAR score of at least 60.
- ❑ Provide a summary of the annual bills, including cost and usage amounts (kilowatt-hours, therms, gallons, etc.), for each type of energy used by the building annually over the performance period.
- ❑ Provide copies of the most recent 12 months of building utility bills.

OR

- ❒ If the building is not a building type addressed by ENERGY STAR, provide calculations showing the building energy efficiency and performance continues to meet the equivalent of an EPA ENERGY STAR score of at least 60 using the alternate calculation method described in the LEED-EB Reference Guide.
- ❑ Provide a summary of the annual bills, including cost and usage amounts (kilowatt-hours, therms, gallons, etc.), for each type of energy used by the building annually over the performance period.
- ❑ Provide copies of the most recent 12 months of building utility bills.

# EA Prerequisite 3 Ozone Protection

# Required

## Intent

Reduce ozone depletion.

## Requirements

Zero use of CFC-based refrigerants in HVAC&R base building systems unless a third party (as defined in the LEED-EB Reference Guide) audit shows that system replacement or conversion is not economically feasible.

Definition of required economic analysis: The replacement of a chiller will be considered to be 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.

## Potential Technologies & Strategies:

Set up loss minimization procedures and systems to meet annual loss minimization standards and reporting requirements.

## Submittals – Initial LEED-EB Certification

- ❑ Provide documentation that base building HVAC&R systems do not use CFCs.

OR

- ❑ Provide results of third-party audit demonstrating that replacement is not economically feasible.
- ❑ Provide documentation showing compliance with EPA Clean Air Act, Title VI, Rule 608 governing refrigerant management and reporting.
- ❑ Provide documentation showing that the annual refrigerant leakage rate is below 5%, and the leakage over the remainder of unit life is being maintained below 30%.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ Provide documentation that base building HVAC&R systems do not use CFCs.

OR

- ❑ Provide results of a current (performed within the last five years) third-party audit demonstrating that replacement is not economically feasible.
- ❑ Provide documentation showing compliance with EPA Clean Air Act, Title VI, Rule 608 governing refrigerant management and reporting.

- Provide documentation showing that the annual refrigerant leakage rate is below 5% and the leakage over the remainder of unit life is being maintained below 30%.

# EA Credit 1 Optimize Energy Performance

# 1–10 Points

## Intent

Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

## Requirements

Demonstrate the EPA ENERGY STAR score that the building has achieved. Utilize the EPA ENERGY STAR Benchmarking Tool for building types addressed by ENERGY STAR, or for building types not addressed by ENERGY STAR, demonstrate the ENERGY STAR equivalent score for the building energy use, calculated using the alternate method described in the LEED-EB Reference Guide.

| Energy Star Score | LEED-EB Points |
|---|---|
| 63 | 1 |
| 67 | 2 |
| 71 | 3 |
| 75 | 4 |
| 79 | 5 |
| 83 | 6 |
| 87 | 7 |
| 91 | 8 |
| 95 | 9 |
| 99 | 10 |

## Potential Technologies & Strategies

Implement energy efficiency retrofits and energy saving techniques to reduce energy use to the level required to meet this credit.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a summary of the annual bills, including cost and usage amounts (kilowatt-hours, therms, gallons, etc.), for each type of energy used by the building annually over the performance period.
- ❑ Provide copies of the most recent 12 months of building utility bills including both energy use and peak demand, if available.

AND EITHER

- If the building type is addressed by ENERGY STAR, provide benchmarking tool output documenting the building EPA ENERGY STAR scores over the performance period.
- If previously certified under LEED-NC, provide for the baseline (budget) building and design building projected energy consumption, projected peak demand and the energy points earned under LEED-NC.

OR

- If the building type is not addressed by ENERGY STAR, provide calculations showing the equivalent EPA ENERGY STAR score for the building calculated using the alternate calculation method described in the LEED-EB Reference Guide.

## Submittals – LEED-EB Re-Certification

Where documentation has been provided for EA Prerequisite 2 simply reference this material:

- Provide a summary of the annual bills, including cost and usage amounts (kilowatt-hours, therms, gallons, etc.), for each type of energy used by the building annually over the performance period.
- Provide copies of the most recent 12 months of building utility bills including both energy use and peak demand, if available.

AND EITHER

- If the building type is addressed by ENERGY STAR, provide benchmarking tool output documenting the building EPA ENERGY STAR scores over the performance period.

OR

- If the building type is not addressed by ENERGY STAR, provide calculations showing equivalent EPA ENERGY STAR score for the building calculated using the alternate calculation method described in the LEED-EB Reference Guide over the performance period.

# EA Credit 2.1-2.4 On-Site and Off-Site Renewable Energy

# 1–4 Points

## Intent

Encourage and recognize increasing levels of on-site and off-site renewable energy in order to reduce environmental impacts associated with fossil fuel energy use.

## Requirements

Over the performance period, meet some or all of the building's total energy use through the use of on-site or off-site renewable energy systems. Points are earned according to the following table. The percentages shown in the table are the percentage of building energy use over the performance period that is met by renewable energy.

Off-site renewable energy sources are as defined by the Center for Resource Solutions (CRS) Green-e products certification requirements or the equivalent. Green power may be procured from a Green-e certified power marketer, a Green-e accredited utility program, or through Green-e certified Tradable Renewable Certificates or the equivalent. At least 25% of any off-site green power or Green Certificates used to earn this credit needs to be from new sources (sources constructed after 1997). For on-site renewable energy, that is claimed for LEED-EB credit, the associated environmental attributes must be retained or retired and cannot be sold.

Up to the four-point limit, any combination of individual actions will be awarded the sum of the points allocated to those individual actions. For example, one point would be awarded for implementing 5% of on-site renewable energy. Two additional points would be awarded for meeting 50% of the building's electrical load with renewable power or certificates over the performance period.

| LEED-EB Points | On-site Renewable Energy | OR | Off-site Renewable Energy / Certificates |
|---|---|---|---|
| 1 | 5 % | OR | 25% |
| 2 | 10 % | OR | 50 % |
| 3 | 20 % | OR | 75 % |
| 4 | 30 % | OR | 100% |

## Potential Technologies & Strategies

Design and specify the use of on-site nonpolluting renewable technologies to contribute to the total energy requirements of the project. Consider and employ solar, geothermal, wind, biomass (other than unsustainably harvested wood) and biogas technologies.

Purchase renewable energy or renewable energy tradable certificates to meet some or all of the building's energy requirements. Review historic building electrical consumption trends. Research power providers in the area and select a provider that guarantees that a fraction of its delivered electric power is derived from net nonpolluting renewable technologies. If the project is in an open market state, investigate green power and power marketers licensed to provide power in that state. Grid power that qualifies for this credit originates from solar, wind, geothermal, biomass or low-impact hydro sources.

### Submittals – Initial LEED-EB Certification

- ❑ Provide system schematic diagrams and narrative highlighting on-site renewable energy systems installed in the building.
- ❑ Provide metered energy output of on-site renewable energy system over the performance period.
- ❑ Provide calculations documenting that percentage of the building's total energy requirements were supplied by on-site renewable energy systems for the performance period.

OR

- ❑ Document the percentage of the building's electrical load that was met with renewable power or certificates over the performance period.
- ❑ Provide documentation demonstrating that the supplied renewable power or certificates over the performance period met the referenced Green-e requirements or the equivalent.
- ❑ Provide a letter stating a commitment to continue purchases of renewable power or certificates at the same or higher level over the next performance period.

### Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If there has been no change to the on-site renewable energy systems:
  - Provide metered energy output of on-site renewable energy system over the performance period.
  - Provide calculations documenting the percentage of the building's total energy requirements were supplied by on-site renewable energy systems over the performance period.

OR

If there has been a change to the on-site renewable energy systems:

- ❐ Provide system schematic diagrams and narrative highlighting on-site renewable energy systems installed in the building.
- ❐ Provide metered energy output of on-site renewable energy system over the performance period.
- ❐ Provide calculations documenting the percentage of the building's total energy requirements were supplied by on-site renewable energy systems for the performance period.

OR

- ❑ Document the percentage of the building's electrical load that was met with renewable power or certificates over the performance period.
- ❑ Provide documentation demonstrating that the supplied renewable power or certificates over the performance period met the referenced Green-e requirements or the equivalent.
- ❑ Provide letter stating a commitment to continue purchases of renewable power or certificates at the same or higher level over the next performance period.

# EA Credit 3.1 Building Operation & Maintenance: Staff Education

# 1 Point

## Intent

Support appropriate operation and maintenance of buildings and building systems so that they continue to deliver target building performance goals over the long term.

## Requirements

Have in place over the performance period a building operation and maintenance staff education program that provides each staff person primarily working on building maintenance with at least 24 hours of education each year over the performance period. The education program should provide information on building and building systems operation, maintenance and achieving sustainable building performance. Training must be of high quality and relevant to building operation and maintenance.

## Potential Technologies & Strategies

Arrange on-site or off-site training for building operation and maintenance staff that addresses building and building systems operation, maintenance and achieving sustainable building performance.

## Submittals – Initial LEED-EB Certification

- ❑ Provide for entire performance period documentation of the training received by building operation and maintenance staff.
- ❑ List the course titles and hours and annual total training hours for each staff person and the calculated annual average training hours for all by building operation and maintenance staff.

## Submittals – LEED-EB Re-Certification

- ❑ Provide for entire performance period documentation of the training received by building operation and maintenance staff.
- ❑ List the course titles and hours and annual total training hours for each staff person and the calculated annual average training hours for all by building operation and maintenance staff.

# EA Credit 3.2 Building Operation & Maintenance: Building Systems Maintenance

## 1 Point

### Intent

Support appropriate operation and maintenance of buildings and building systems so that they continue to deliver target building performance goals over the long term.

### Requirements

Have in place over the performance period a comprehensive Best Practices Equipment Preventative Maintenance Program that provides in-house resources or contractual services to deliver post warranty maintenance.

### Potential Technologies & Strategies

Utilize either in-house resources or contractual services to deliver post-warranty equipment maintenance.

### Submittals – Initial LEED-EB Certification

- ❑ Document ongoing operation over the performance period of a Best Practices Equipment Preventative Maintenance Program including documentation of in-house resources or contractual services to deliver post-warranty maintenance.

### Submittals – LEED-EB Re-Certification

- ❑ Document ongoing operation over the performance period of a Best Practices Equipment Preventative Maintenance Program including documentation of in-house resources or contractual services to deliver post-warranty maintenance.

# EA Credit 3.3 Building Operation & Maintenance: Building Systems Monitoring

## 1 Point

### Intent

Support appropriate operation and maintenance of buildings and building systems so that they continue to deliver target building performance goals over the long term.

### Requirements

Have in place over the performance period a system for continuous tracking and optimization of systems that regulate indoor comfort and the conditions (temperature, humidity and $CO_2$) delivered in occupied spaces. The system must include:

- Continuous monitoring of system equipment performance and of the indoor environmental conditions delivered in the building.
- Alarms for performance or conditions that require repair.
- A system in place that delivers prompt repairs to problems identified.

### Potential Technologies & Strategies

Use of automated systems to monitor equipment function and indoor space conditions provides the opportunity to identify system problems automatically and issue an alarm that initiates procedures to fix the problems identified.

### Submittals – Initial LEED-EB Certification

For system descriptions provide:

- ❒ A narrative of the systems employed to continuously monitor equipment function and space conditions. The narrative must describe how these systems are used to identify and resolve equipment problems and to continuously deliver indoor comfort and the conditions delivered in occupied spaces.
- ❒ List of system equipment for which performance is monitored and the number of points monitored.
- ❒ List of the indoor environmental conditions parameters monitored and the number of points monitored for each.
- ❒ List of settings for alarms.
- ❒ Description of system in place for delivering prompt repairs to problems identified.

AND

For performance over the performance period provide:

- ❒ Documentation of alarms that occurred.
- ❒ Percent of time that desired conditions are delivered in the building on a floor area weighted basis.

### Submittals – LEED-EB Re-Certification

Provide update of previous filings.

- ❒ For system descriptions provide:
  - ❒ Update the description of the system in place if there have been any changes.

AND

- ❒ For performance over the performance period provide:
  - ❒ Documentation of alarms that occurred.
  - ❒ Percent of time that desired conditions are delivered in the building on a floor area weighted basis.

# EA Credit 4 Additional Ozone Protection

# 1 Point

### Intent

Reduce ozone depletion and support early compliance with the Montreal Protocol.

### Requirements

- Do not operate base building HVAC, refrigeration or fire suppression systems that contain HCFCs or Halons.

OR

- Reduce emissions of refrigerants from base cooling equipment to less than 3% of charge per year over the performance period using EPA Clean Air Act, Title VI, Rule 608 procedures governing refrigerant management and reporting and reduce the leakage over the remainder of unit life to below 25%.

### Potential Technologies & Strategies

Research and specify all building systems with non-ozone depleting equipment. Building systems to consider include HVAC, refrigeration and fire suppression systems. Common substitutes for HCFCs in HVAC and refrigeration systems are hydrofluorocarbons (HFCs).

### Submittals – Initial LEED-EB Certification

- ❑ Document that the base building HVAC, refrigeration and fire suppression systems do not contain CFCs or HCFCs.

OR

- ❑ Document that emissions of refrigerants from base cooling equipment during over the performance period are less than 3% of charge per year using EPA Clean Air Act, Title VI, Rule 608 procedures governing refrigerant management and reporting.
- ❑ Provide documentation showing that leakage over the remainder of unit life is being maintained below 25%.

### Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ Document that the base building HVAC, refrigeration and fire suppression systems do not contain CFCs or HCFCs.

OR

- ❑ Document that emissions of refrigerants from base cooling equipment during the performance period are less than 3% of charge per year using EPA Clean Air Act, Title VI, Rule 608 procedures governing refrigerant management and reporting.
- ❑ Provide documentation showing that leakage over the remainder of unit life is being maintained below 25%.

# EA Credit 5.1–5.3 Performance Measurement: Enhanced Metering

# 1–3 Points

## Intent

Demonstrate the ongoing accountability and optimization of building energy and water consumption performance over time and add incentives for additional energy reduction.

## Requirement

Have in place over the performance period continuous metering for the following items: (Up to 3 points can be earned — one point is earned for each four actions implemented/maintained)

- ❒ Lighting systems and controls.
- ❒ Separate building electric meters that allow aggregation of all process electric loads (Process electric loads are defined in the LEED-EB Reference Guide).
- ❒ Separate building natural gas meters that allow aggregation of all process natural gas loads (Process natural gas loads are defined in the LEED-EB Reference Guide).
- ❒ Separate meters that allow aggregation of all indoor occupant related water use for required fixtures.
- ❒ Separate meters that allow aggregation of all indoor process water use (Process water uses are defined in the LEED-EB Reference Guide).
- ❒ Separate meters that allow aggregation of all outdoor irrigation water use.
- ❒ Chilled water system efficiency at variable loads (kW/ton) or cooling loads (for non-chilled water systems).
- ❒ Cooling load.
- ❒ Air and water economizer and heat recovery cycle operation.
- ❒ Boiler efficiencies.
- ❒ Building specific process energy systems and equipment efficiency.
- ❒ Constant and variable motor loads.
- ❒ Variable frequency drive (VFD) operation.
- ❒ Air distribution, static pressure and ventilation air volumes.

❒ For each item metered, prepare, implement and maintain a program for using the data gathered to improve building performance over time.

## Potential Technologies & Strategies

Have in place over the performance period continuous metering for the identified categories of energy, water usage and system performance. For each item metered, prepare, implement and maintain a program for using the data gathered to improve building performance over time. International Performance Measurement and Verification Protocol (IPMVP) Volume I: Concepts and Options for Determining Energy Savings can be used to track energy savings of specific energy efficiency measures implemented in buildings.

## Submittals – Initial LEED-EB Certification

- For each item metered provide a description of the performance improvement program implemented using the data gathered to improve system/building performance over time.
- Provide quarterly reports on the metered data gathered and for each item metered a report card of its performance.
- Provide one day of actual output of all data recorded.

## Submittals – LEED-EB Re-Certification

- If there have been any changes to the program implemented for using the data gathered for each item metered to improve building performance over time, provide an updated description of the program.
- Provide quarterly reports on the metered data gathered and for each item metered the resulting achievements in improving building performance.
- Provide one day of actual output of all data recorded.

# EA Credit 5.4 Performance Measurement: Emission Reduction Reporting

## 1 Point

### Intent

Document emission reduction benefits of building efficiency actions, retire a portion of the reductions and reduce emissions in the supply chain.

### Requirements

Identify building performance parameters that reduce energy use and emissions.

1. Track and record emission reductions delivered by energy efficiency, renewable energy and other building emission reduction actions.
2. Report emission reductions using a third-party voluntary certification program.
3. Retire at least 10% of the reported emission reductions through a third-party voluntary certification program. (To meet this requirement, the third-party voluntary emission reduction certification and retirement programs must be programs of credible organizations. Third-party programs shall notify any applicable local or regional emission reduction registries of the reported emission reductions.)
4. Ask the suppliers of good and services for the building to do the same by implementing actions 1, 2 and 3 above.

### Potential Technologies & Strategies

Address all of the significant types of pollutants delivered by energy efficiency. This is important because negative health effects and other environmental impacts result from many of pollutants, including carbon dioxide ($CO_2$), sulfur dioxide ($SO_2$), nitrogen oxides ($NO_x$), mercury (Hg), small particulates (PM2.5), large particulates (PM10) and volatile organic compounds (VOCs). Energy efficiency, renewable energy and other building emission reduction actions make important contributions towards achieving positive health and environmental impacts at a low cost.

### Submittals – Initial LEED-EB Certification

- ❑ Provide reporting of all building performance parameters that reduce energy use and calculate the total savings for each type of energy reduction.
- ❑ Provide reporting of renewable energy use and other emission reduction actions.
- ❑ Calculate and provide a reporting of the resulting reductions for the significant types of environmental emissions resulting from the energy efficiency operations and other emission reduction actions using the emission reduction calculation protocol of a third-party voluntary certification program. Emission reductions to be documented include carbon dioxide ($CO_2$), sulfur dioxide ($SO_2$), nitrogen oxides ($NO_x$), mercury (Hg), small particulates (PM2.5), large particulates (PM10) and volatile organic compounds (VOCs).
- ❑ Provide documentation of the retirement of at least 10% of the reported emission reductions through a third-party voluntary certification program.
- ❑ Provide documentation that the suppliers for the building have been asked to:

- Report energy savings, energy efficiency actions, renewable energy use and other emission reduction actions.
- Report all types of resulting emissions reductions.
- Retire at least 10% of these reductions through a third-party voluntary certification program.
- Asked their suppliers of goods and services to do the same.

❑ Provide documentation that a third-party voluntary certification program has notified any applicable local or regional emission reduction registries of the reported emission reductions.

## Submittals – LEED-EB Re-Certification

❑ Provide reporting of all building performance parameters that reduce energy use and calculate the total savings for each type of energy reduction. Provide reporting of renewable energy use and other emission reduction actions.

❑ Calculate and provide a reporting of the resulting reductions for the significant types of environmental emissions resulting from the energy efficiency operations and other emission reduction actions using the emission reduction calculation protocol of a third-party voluntary certification program. Emission reductions to be documented include carbon dioxide ($CO_2$), sulfur dioxide ($SO_2$), nitrogen oxides ($NO_x$), mercury (Hg), small particulates (PM2.5), large particulates (PM10) and volatile organic compounds (VOCs).

❑ Provide documentation of the retirement of at least 10% of the emission reductions, delivered by the energy efficiency measures, renewable energy and other emission reduction actions, through a third-party voluntary certification program.

❑ Provide documentation that the suppliers for the building have been asked to:

- Report energy savings, energy efficiency actions, renewable energy use and other emission reduction actions.
- Report all types of resulting emissions reductions.
- Retire at least 10% of these reductions through a third-party voluntary certification program.
- Asked their suppliers of goods and services to do the same.

❑ Provide documentation that a third-party voluntary certification program has notified any applicable local or regional emission reduction registries of the reported emission reductions.

# EA Credit 6 Documenting Sustainable Building Cost Impacts

# 1 Point

## Intent

Document sustainable building cost impacts.

## Requirements

Document overall building operating costs for the previous five years (or length of building occupancy, if shorter), and track changes in overall building operating costs over the performance period. Document building operating cost and financial impacts of all of the aspects of LEED-EB implementation on an ongoing basis.

## Potential Technologies & Strategies

Track building operating costs to identify any positive impacts relative to sustainable performance improvements to building and operations.

## Submittals – Initial LEED-EB Certification

- Provide documentation of all building operating costs for the previous five years (or length of building occupancy, if shorter).
- Track changes in overall building operating costs over the performance period relative to sustainable performance improvement initiatives implemented and maintained for the building and the site.
- Document building operating cost and the financial impacts in building operation covering all aspects of LEED-EB implementation on an ongoing basis.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- Provide documenting of all building operating costs for the previous five years (or length of building occupancy, if shorter).
- Track changes in overall building operating costs over the performance period relative to sustainable performance improvement initiatives implemented and maintained for the building and the site.
- Document building operating cost and the financial impacts in building operation covering all aspects of LEED-EB implementation on an ongoing basis.

# Materials & Resources (MR)

## MR Prerequisite 1.1 Source Reduction and Waste Management: Waste Stream Audit

## Required

### Intent

Establish minimum source reduction and recycling program elements and quantify current waste stream production volume.

### Requirements

Conduct a waste stream audit of the ongoing waste stream (not specific upgrade project waste) to establish a current building waste baseline that identifies the types of waste making up the waste stream and amounts of each type of waste in the waste stream. At a minimum, the audit should determine the amounts for paper, glass, plastics, cardboard and metals in the waste stream. Operate over the performance period a procurement/management policy to reduce waste stream through purchasing strategies, collection station equipment and occupant education.

### Potential Technologies & Strategies

Develop a plan for reducing building's waste stream. Start by conducting a waste stream audit to establish a current building waste baseline. Then evaluate how each type of waste identified in the waste stream can be reduced through source reduction, reuse and recycling. Finally develop, implement and maintain waste reduction plan for your building that includes procurement/management policies to reduce waste stream through purchasing strategies, reuse where possible and recycling as well as the collection station equipment and agreements, and occupant education needed for the successful achievement of the waste reduction goals.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the waste stream audit to establish building waste baseline.
- ❑ Provide a copy of the procurement/management policy implemented to reduce waste stream through purchasing strategies, collection station equipment, and occupant awareness notices.

#### Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If there has been no change to the procurement/management policy implemented to reduce waste stream, provide a signed letter documenting its continued existence and implementation.

OR

- ❑ If the procurement/management policy implemented to reduce waste stream has changed, provide a copy of the policy highlighting any changes.

- ❑ Provide a signed letter documenting the revised plan's implementation.

# MR Prerequisite 1.2 Source Reduction and Waste Management: Storage & Collection of Recyclables

# Required

## Intent

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills or through incineration.

## Requirements

Provide an easily accessible area that serves the entire building and is dedicated for the separation, collection and storage of materials for recycling. The recycling area needs to include (at a minimum) space for paper, glass, plastics, cardboard and metals. Recycling area capacity needs to be designed to accommodate at a minimum the potential recycling volumes identified in the waste stream audit for paper, corrugated cardboard, glass, plastics and metals.

If an existing building can document that there are not recycling services available within the region (within 50 miles) for one of the identified materials, the building will be granted an exception to the requirement in this prerequisite for the identified material.

## Potential Technologies & Strategies

Designate an area for recyclable collection and storage that is appropriately sized and located in a convenient area. Identify local waste handlers and buyers for glass, plastic, office paper, newspaper, cardboard, metals and organic wastes. Instruct occupants on building recycling procedures. Consider employing cardboard balers, aluminum can crushers, recycling chutes and other waste management techniques to further enhance the recycling program. Also explore implementing source reduction programs to reduce the amount of waste.

## Submittals – Initial LEED-EB Certification

- ❑ Provide floor plans highlighting collection, storage and separation locations for recycling including (at a minimum) paper, glass, plastics and metals.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If there has been no change to the building-wide recycling collection support systems, provide a signed letter documenting their continued existence and operation.

OR

- ❑ If the building-wide recycling collection support systems have changed, provide floor plans highlighting any changes to the collection, storage and separation locations for recycling.

# MR Prerequisite 2 Toxic Material Source Reduction: Reduced Mercury in Light Bulbs

# Required

## Intent

Establish and maintain a toxic material source reduction program to reduce the amount of mercury brought into buildings through purchases of light bulbs.

## Requirements

- Maintain mercury content of all mercury containing light bulbs below the specified level of light output (picogram/lumen hour), on weighted average, for all mercury containing light bulbs acquired for the existing building and associated grounds.
  - Below 100 picograms per lumen hour
- The weighted average mercury content of these light bulbs is calculated by: 1) adding up the total weight of mercury in all the light bulbs acquired during the performance period (picograms of Hg); and then, 2) dividing total mercury content (picograms of Hg) by the sum of the lumen hour output of all the light bulbs (lumen hours: calculated by multiplying the rated hours (life) of each light bulb by the mean light output in lumens (at 40% of life*)).
  - Rated hours of life are defined as stated by the manufacturer (three hours on, 20 minutes off, linear fluorescents and compact fluorescents; HID lamps 11 hours on) and is based on the design or mean light output of the light bulbs (in lumens, fluorescent lamps measured with a ballast having a ballast factor of 1.0 and measured using instant-start ballasts except for T-5s, which are measured using program start ballasts).
  - The mean light output in lumens is the light output at 40% of light bulb life.
  - These calculations need to show for all acquired light bulbs:
    - The total mercury content in the light bulbs.
    - The total lumen hours of light output for all the light bulbs.
    - The number of lamps of each type.
    - The overall weighted average mercury content in picograms/lumen hour.
  - If the mercury content documentation shows a range of mercury contents in milligrams, use the highest value in the range in these calculations.

## Potential Technologies & Strategies

Establish and follow a lamp purchasing program that keeps the weighted average mercury content below specified level of picograms of mercury per lumen hour.

## Submittals – Initial LEED-EB Certification

- Provide a copy of the organizational policy specifying that all future purchases of mercury-containing light bulbs will be made in such a way that the average mercury content of the light bulbs is less than the specified level in picograms/lumen hour.

- Provide records of all acquisitions during the performance period of mercury-containing light bulbs for use in the building and grounds.
- Include manufacturer Material Safety Data Sheets (MSDS) sheet for each type of light bulb purchased showing mercury content of the light bulbs in milligrams.
- Provide calculations demonstrating that the weighted average mercury content of acquired light bulbs are less than the specified level in picograms per lumen hour. If MSDS sheets show range of mercury contents in milligrams, use the highest value given in these calculations.

## Submittals – LEED-EB Re-Certification

Update previous filings:

- Provide records of all acquisitions during the performance period of mercury-containing light bulbs for use in the building and grounds.
- Include manufacturer MSDS sheet for each type of light bulb purchased showing mercury content of the light bulbs in milligrams.
- Provide calculations demonstrating that the weighted average mercury content of acquired light bulbs are less than the specified level in picograms per lumen hour.

AND EITHER

- If there has been no change to the purchasing policy specifying that the weighted average mercury content of these light bulbs is less than the specified level in picograms/lumen hour, provide a signed letter documenting its continued existence and implementation.

OR

- If the mercury-containing light bulb purchasing policy has changed, provide a copy of the revised plan highlighting any changes to the specified level picograms of mercury/lumen hour policy.

# MR Credit 1.1 & 1.2 Construction, Demolition and Renovation Waste Management

## 1–2 Points

### Intent

Divert construction, demolition and land clearing debris from landfill and incineration disposal. Redirect recyclable recovered resources back to the manufacturing process. Redirect reusable materials to appropriate sites.

### Requirements

Develop and implement a Waste Management Policy covering any future building retrofit, renovation or modification on the site. Quantify diversions of construction, demolition and land clearing debris from landfill and incineration disposal by weight or volume.

- MR Credit 1.1: Divert at least 50% of construction, demolition and land clearing waste from landfill and incineration disposal. (1 point)
- MR Credit 1.2: Divert at least 75% of construction, demolition and land clearing waste from landfill and incineration disposal. (1 additional point)

### Potential Technologies & Strategies

Develop and adopt a Waste Management Policy to be added as a general requirement for any construction to occur on the site. Identify licensed haulers and processors of recyclable materials. Identify markets for salvaged materials. Employ deconstruction, salvage and recycling strategies and processes. Document the cost for recycling, salvaging and reusing materials. Source reduction on the job site should be an integral part of the plan. Investigate salvaging/recycling lighting fixture pans when retrofitting.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the Waste Management Policy that specifies inclusion of waste management specifications for any future building retrofit, renovation or modification that may occur on the site.
- ❑ Provide documentation that the Waste Management Policy has been followed:
  - For any building retrofit, renovation or modification that has occurred in the building over the performance period, provide calculations on end-of-project waste management rates, salvage rates and landfill rates demonstrating that at least 50% for one point or 75% for two points (by weight or volume) of construction wastes were recycled, salvaged or otherwise diverted from landfill.

  OR

  - Provide a written statement that no building retrofits, renovations or modifications were carried out in the building or on the site during the performance period.

### Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

- ❑ If there has been no change to the Waste Management Policy that specifies inclusion of waste management specifications for any building retrofit, renovation or modification, provide a signed letter documenting its continued existence and implementation.
- ❑ Provide documentation that the Waste Management Policy has been followed:
    - For any building retrofit, renovation or modification that has occurred in the building over the performance period, provide calculations on end-of-project waste management rates, salvage rates, and landfill rates demonstrating that at least 50% for one point or 75% for two points (by weight or volume) of construction wastes were recycled, salvaged or otherwise diverted from landfill.

    OR

    - Provide a written statement that no building retrofits, renovations or modifications were carried out in the building or on the site during the performance period.

OR

- ❑ If there has been a change to the Waste Management Policy that specifies inclusion of waste management specifications for any future building retrofit, renovation or modification, provide a copy of the revised plan highlighting any changes.
- ❑ Provide documentation that the revised Waste Management Policy has been followed:
    - For any building retrofit, renovation or modification that has occurred in the building over the performance period, provide calculations on end-of-project waste management rates, salvage rates, and landfill rates demonstrating that at least 50% for one point or 75% for two points (by weight or volume) of construction wastes were recycled, salvaged or otherwise diverted from landfill.

    OR

    - Provide a written statement that no building retrofits, renovations or modifications were carried out in the building or on the site during the performance period.

# MR Credit 2.1–2.5 Optimize Use of Alternative Materials

# 1–5 Points

## Intent

Reduce the environmental impacts of the materials acquired for use in the operations and maintenance of buildings and in the upgrading of building services.

## Requirements

Maintain a sustainable purchasing program covering at least: office paper, office equipment, furniture, furnishings and building materials for use in the building and on the site. A template calculator will be provided for LEED-EB MR Credit 2.1-2.5. One point (up to a maximum of five) will be awarded for each 10% of total purchases over the performance period (on a dollar basis) that achieve at least one of the following sustainability criteria:

- ❒ Contains at least 70% salvaged material from off site or outside the organization.
- ❒ Contains at least 70% salvaged from on site through an internal organization materials & equipment reuse program.
- ❒ Contains at least 10% post-consumer or 20% post-industrial material.
- ❒ Contains at least 50% rapidly renewable materials.
- ❒ Is FSC-certified wood.
- ❒ Contains at least 50% materials harvested and processed or extracted and processed within 500 miles of the project.

Note: In calculating the percentage of purchases over the performance period conforming to the requirements, each purchase can only receive credit against a single requirement (i.e. a purchase that contains both 10% post-consumer recycled content and is harvested within 500 miles of the project counts only once in this calculation).

## Potential Technologies & Strategies

When purchasing materials, supplies or equipment specify that these must meet one or more of the specified sustainability criteria.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the organizational policy that specifies use of sustainability criteria for purchases of covered materials for use in the building or on the site.
- ❑ Provide documentation of all covered materials purchased and total cost of these purchases over the performance period.
- ❑ Provide documentation of all covered materials purchases that meet one or more of the specified sustainability criteria and the cost of these purchases over the performance period.
- ❑ Provide a calculation of the fraction of covered materials purchased that meet one or more of the specified sustainability criteria (on a cost basis).

## Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

- If the organizational policy that specifies use of environmentally preferable purchasing standards for purchases of covered materials for use in the building or on the site has changed since the previous application for certification under LEED-EB, provide and updated copy of this organizational policy.
- Provide documentation of all covered materials purchased and total cost of these purchases over the performance period.
- Provide documentation of all covered materials purchases that meet one or more of the specified environmentally preferable purchasing standards and the cost of these purchases over the performance period.
- Provide a calculation of the fraction of covered materials purchased that meet one or more of the specified environmentally preferable purchasing standards (on a cost basis).

# MR Credit 3.1 & 3.2 Optimize Use of IAQ Compliant Products

# 2 Points

## Intent

Reduce the indoor air quality (IAQ) impacts of the materials acquired for use in the operations and maintenance of buildings and in the upgrading of building services.

## Requirements

Optimize use of air quality compliant materials inside the building to improve the emission profile of the building. Points shall be awarded for the existence of sustainable product purchasing policies for the building and site addressing these requirements and documentation of purchasing during the performance period in conformance with those policies, as described below. Subsequent re-certification shall be tied to both polices and purchasing performance, with as described below. At a minimum, these policies must include the following product groups: paint and coatings, adhesives, sealants, carpet, composite panels, agrifiber products and building materials used inside the building. The building materials covered include any building materials used for building improvements including upgrades, retrofits, renovations or modifications of the building used inside the building.

One point shall be awarded, up to a maximum of two points, for each 45% of annual purchases calculated on a dollar value that conform with one of the following sustainability criteria:

a. Adhesives and sealants with 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 that meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.

   OR

b. Paints and coatings with VOC emissions that do not exceed the VOC and chemical component limits of Green Seal's Standard GS-11 requirements.

   OR

c. Carpet that meet the requirements of the CRI Green Label Plus Carpet Testing Program.

   OR

d. Carpet cushion that meet the requirements of the CRI Green Label Testing Program.

   OR

e. Composite panels and agrifiber products that contain no added urea-formaldehyde resins.

## Potential Technologies & Strategies

When purchasing materials, supplies or equipment specify that these must meet one or more of the specified sustainability criteria.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the organizational policy that specifies use sustainability criteria for purchases of covered materials for use in the building.

- Provide documentation of all covered materials purchased and total cost of these purchases over the performance period.
- Provide documentation of all covered materials purchases that meet one or more of the specified sustainability criteria and the cost of these purchases over the performance period.
- Provide a calculation of the fraction of covered materials purchased that meet one or more of the specified sustainability criteria (on a cost basis).

## Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

- If the organizational policy that specifies use of sustainability criteria for purchases of covered materials for use in the building or on the site has changed since the previous application for certification under LEED-EB, provide and updated copy of this organizational policy.
- Provide documentation of all covered materials purchased and total cost of these purchases over the performance period.
- Provide documentation of all covered materials purchases that meet one or more of the specified sustainability criteria and the cost of these purchases over the performance period.
- Provide a calculation of the fraction of covered materials purchased that meet one or more of the specified sustainability criteria (on a cost basis).

# MR Credit 4.1–4.3 Sustainable Cleaning Products and Materials

# Points 1–3

## Intent

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

## Requirements

Implement sustainable purchasing for cleaning materials and products, disposable janitorial paper products and trash bags. Cleaning product and material purchases include building purchases for use by in house staff or used by outsourced service providers. Calculate the percentage of the total sustainable material and product purchases that meet at least one of the specified sustainability criteria. The percentage of the total sustainable cleaning product and material purchases determine the number of points earned up to a total of three points. One point will be awarded for each 30% of the total annual purchases of these products (on a cost basis) that meet one of the following sustainability criteria:

- Cleaning products that meet the Green Seal GS-37 standard if applicable, OR if GS-37 is not applicable (e.g., for products such as carpet cleaners, floor finishes or strippers) use products that comply with the California Code of Regulations maximum allowable VOC levels.
- Disposable janitorial paper products and trash bags that meet the minimum requirements of U.S. EPA's Comprehensive Procurement Guidelines.

## Potential Technologies & Strategies

When purchasing materials or supplies, specify that these must meet one or more of the specified sustainability criteria.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the organizational policy that specifies use of sustainability criteria for purchases of covered materials for use in the building or on the site.
- ❑ Provide documentation of all covered materials purchased and total cost of these purchases over the performance period.
- ❑ Provide documentation of all covered materials purchases that meet one or more of the specified sustainability criteria and the cost of these purchases over the performance period.
- ❑ Provide a calculation of the fraction of covered materials purchased that meet one or more of the specified sustainability criteria (on a cost basis).

## Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

- ❑ If the organizational policy that specifies use sustainability criteria for purchases of covered materials for use in the building or on the site has changed since the previous application for certification under LEED-EB, provide an updated copy of this organizational policy.

- Provide documentation of all covered materials purchased and total cost of these purchases over the performance period.
- Provide documentation of all covered materials purchases that meet one or more of the specified sustainability criteria and the cost of these purchases over the performance period.
- Provide a calculation of the fraction of covered materials purchased that meet one or more of the specified sustainability criteria (on a cost basis).

# MR Credit 5.1–5.3 Occupant Recycling

# 1–3 Points

## Intent

Facilitate the reduction of waste and toxins generated by building occupants and building operations that is hauled to and disposed of in landfills.

## Requirements

Have in place over the performance period a building occupant waste reduction and recycling program that addresses the separation, collection and storage of materials for recycling, including (at a minimum) paper, glass, plastics, cardboard/OCC, metals, batteries and fluorescent lamps and diversion from landfill disposal. For reusable architectural panels, each time they are moved and reinstalled they can be counted as part of the total waste stream and included in the recycled component of the waste stream.

Collect and recycle at least 95% of the batteries used, and collect and recycle at least 95% of the fluorescent lamps used.

AND

- ❑ Divert/Recycle 30% of total waste stream (by weight or volume) (1 point)
- ❑ Divert/Recycle 40% of total waste stream (by weight or volume) (2 points)
- ❑ Divert/Recycle 50% of total waste stream (by weight or volume) (3 points)

## Potential Technologies & Strategies

Have in place over the performance period a building occupant waste reduction and recycling program that addresses the separation, collection and storage of materials for recycling, including (at a minimum) paper, glass, plastics, cardboard, metals, batteries and fluorescent lamps and divert from landfill disposal. Encourage a high level of recycling by building occupants.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the organizational recycling policy.
- ❑ Provide quarterly summary reports on the total waste produced by the building along with hauler documentation and calculations of the amount of each type waste that has been recycled over the performance period.

## Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

- ❑ If there has been no change to the organizational recycling policy, provide a signed letter documenting its continued existence and implementation.
- ❑ Provide quarterly summary reports on the total waste produced by the building along with hauler documentation and calculations of the amount of each type waste that has been recycled over the performance period.

OR

- If there has been a change to the organizational recycling policy, provide a copy of the revised plan highlighting any changes.
- Provide quarterly summary reports on the total waste produced by the building along with hauler documentation and calculations of the amount of each type waste that has been recycled over the performance period.

# MR Credit 6 Additional Toxic Material Reduction: Reduced Mercury in Light Bulbs

## 1 Point

### Intent

Establish and maintain a toxic material source reduction program to reduce the amount of mercury brought into buildings through purchases of light bulbs.

### Requirements

- Maintain mercury content of all mercury-containing light bulbs below the specified level of picograms per lumen hour of light output (picogram/lumen hour), on weighted average, for all mercury containing light bulbs acquired for the existing building and associated grounds.
  - ❑ Below 80 picograms per lumen hour
  - ❑ The weighted average mercury content of these light bulbs is calculated as described in MR Prerequisite 2.

### Potential Technologies & Strategies

Establish and follow a lamp purchasing program that keeps the weighted average mercury content below specified level of picograms of mercury per lumen hour.

### Submittals – Initial LEED-EB Certification

❒ Provide a copy of the organizational policy specifying that all future purchases of mercury-containing light bulbs will be made in such a way that the average mercury content of the light bulbs is less than the specified level in picograms/lumen hour.

❑ Provide records of all acquisitions during the performance period of mercury-containing light bulbs for use in the building and grounds.

❑ Include manufacturer MSDS sheet for each type of light bulb purchased showing mercury content of the light bulbs in milligrams.

❑ Provide calculations demonstrating that the weighted average mercury is less than the specified level in picograms per lumen hour for these light bulbs. If MSDS sheets show range of mercury contents in milligrams, use the highest value given in these calculations.

### Submittals – LEED-EB Re-Certification

Provide an update on previous filings:

❑ Provide records of all acquisitions during the performance period of mercury-containing light bulbs for use in the building and grounds.

❑ Include manufacturer MSDS sheet for each type of light bulb purchased showing mercury content of the light bulbs in milligrams.

- ❑ Provide calculations demonstrating that the weighted average mercury content is less than the specified level in picograms per lumen hour for these light bulbs.

AND EITHER

- ❑ If there has been no change to the purchasing policy specifying that the weighted average mercury content of these light bulbs is less than the specified level in picograms/lumen hour, provide a signed letter documenting its continued existence and implementation.

OR

- ❑ If the mercury-containing light bulb purchasing policy has changed, provide a copy of the revised plan highlighting any changes to the specified level picograms of mercury/lumen hour policy.

# Indoor Environmental Quality (IEQ)

## IEQ Prerequisite 1 Outside Air Introduction and Exhaust Systems Required

### Intent

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

- Modify or maintain existing building outside-air (OA) ventilation distribution system to supply at least the outdoor air ventilation rate required by ASHRAE 62.1-2004 (ASHRAE 62.1.1-2001 with all Addenda can be used until ASHRAE 62.1-2004 is published.). If this is not feasible due to the physical constraints of the existing ventilation system, modify or maintain the system to supply at least 10 CFM/person.
- Meet the EPA IAQ guidelines OR SMACNA IAQ guidelines for HVAC System Maintenance to ensure the proper operations and maintenance of HVAC components as they relate to IAQ.
- Test and maintain the operation of all building exhaust systems, including bathroom, shower, kitchen and parking exhaust system.

### Potential Technologies & Strategies

Conduct a visual inspection of OA air vent/dampers and remove any OA air vent/louver obstructions that restrict full OA capacity from entering the distribution system. Conduct airflow monitoring to document OA in terms of CFM. Compare measured flow to designed flow for each unit. Test the operation of each exhaust fan and verify that exhaust airflow meets design requirements/intentions.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a letter and backup tabular information from a mechanical engineer or HVAC system specialist demonstrating that the existing building outside-air (OA) ventilation distribution system supplies at least the outdoor air ventilation rate required by ASHRAE 62.1-2004 (ASHRAE 62.1-2001 with all Addenda can be used until ASHRAE 62.1-2004 is published). If this is not feasible due to the physical constraints of the existing ventilation system, modify or maintain the system to supply at least 10 CFM/person.
- ❑ Provide a letter and backup tabular information from a mechanical engineer or HVAC system specialist demonstrating that the exhaust air HVAC systems serving the building are operating as designed.
- ❑ Provide the results of four quarterly inspections of the building OA/exhaust air system to verify that the system is operating as intended.

### Submittals – LEED-EB Re-Certification

- ❑ Provide the results of four quarterly inspections of the building OA/exhaust air system to verify that the system is operating as intended.

AND EITHER

- ❑ If there has been no change to the HVAC system, provide a letter documenting its continued performance.

OR

- ❑ If there has been a change to the HVAC system, provide the documentation required for initial submittals under LEED-EB.

# IEQ Prerequisite 2 Environmental Tobacco Smoke (ETS) Control Required

## Intent

Prevent or minimize exposure of building occupants, indoor surfaces and systems to Environmental Tobacco Smoke (ETS).

## Requirements

Option 1. Prohibit smoking in the building.

- ❑ Prohibit smoking in the building.
- ❑ Locate any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows.

Option 2. Establish negative pressure in the rooms with smoking.

- ❑ Prohibit smoking in the building except in designated smoking areas.
- ❑ Locate any exterior designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows.
- ❑ Providing one or more designated smoking rooms designed to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room must be directly exhausted to the outdoors with no re-circulation of ETS-containing air to the non-smoking area of the building and enclosed with impermeable deck-to-deck partitions and operated at a negative pressure compared with the surrounding spaces of at least an average of 5 Pa (0.02 inches of water gauge) and with a minimum of 1 Pa (0.004 inches of water) when the door(s) to the smoking room are closed.
- ❑ Performance of the smoking room differential air pressures shall be verified by conducting 15 minutes of measurement, with a minimum of one 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. The testing will be conducted with each space configured for worst case conditions of transport of air from the smoking rooms to adjacent spaces.

Option 3. Reduce air leakage between rooms with smoking and non-smoking areas in residential buildings. Note that Option 3 is for residential buildings only.

- ❑ Prohibit smoking in all common areas of the building.
- ❑ Locate any exterior designated smoking areas at least 25 feet away from 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 vertical chases adjacent to the units. In addition, all doors in the residential units leading to common hallways shall be weather-stripped to minimize air leakage into the hallway. Acceptable sealing of residential units shall be demonstrated by a blower door test conducted in accordance with ANSI/ASTM-779-99, Standard Test Method for Determining Air Leakage Rate By Fan Pressurization, AND use of the progressive sampling methodology defined in Chapter 7 (Home Energy Rating Systems (HERS) Required Verification And Diagnostic Testing) of the California Low Rise Residential Alternative Calculation Method Approval

Manual (http://www.energy.ca.gov/title24/residential_manual/res_manual_chapter4.pdf). Residential units must demonstrate less than 1.25 square inches leakage area per 100 square feet of enclosure area (i.e. sum of all wall, ceiling and floor areas).

## Potential Technologies & Strategies

Prohibit smoking in the building or provide negative pressure smoking rooms. For residential buildings, a third option is to provide very tight construction to minimize ETS transfer among dwelling units.

## Submittals for Initial Certification

- ❑ Provide a declaration signed by the building owner or responsible party, declaring that the building will be operated under a policy prohibiting smoking.

OR

- ❑ Provide the LEED Letter Template, signed by the responsible design professional, declaring and demonstrating that the design criteria described in the credit requirements have been met and performance has been verified using the method described in the credit requirements.

## Submittals for Re-Certification

- ❑ Provide the LEED Letter Template, signed by the building owner or responsible party, declaring that the building will be operated under a policy prohibiting smoking.

OR

- ❐ Provide the LEED Letter Template, signed by the responsible design professional, declaring and demonstrating that the design criteria described in the credit requirements have been met and performance has been verified using the method described in the credit requirements.

# IEQ Prerequisite 3 Asbestos Removal or Encapsulation Required

## Intent

Reduce the potential exposure of building occupants to asbestos and prevent associated harmful effects of asbestos in existing buildings.

## Requirements

Have in place an asbestos management program. Identify the applicable regulatory requirements. Have a current survey that identifies where asbestos is located in the building and on the site so that the asbestos present can be addressed appropriately in the ongoing asbestos management program.

## Potential Technologies & Strategies

Review the current asbestos management program and prepare a description of the program that identifies the applicable regulatory requirements and explains how the program will address asbestos remaining in the building on an ongoing basis.

Review asbestos work done in the building and on the building site and use this data to prepare the history based component of the asbestos survey, collecting the available information on: (1) where asbestos has been removed, (2) where asbestos remains and (3) how the remaining asbestos is being addressed.

Update this survey with current information by: (1) sampling additional likely locations in building and on the site for asbestos and (2) testing samples to see if asbestos in present. If the survey identifies any new locations with asbestos, add these to the description of how the asbestos management program is addressing asbestos remaining in the building on an ongoing basis.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a letter from an asbestos-accredited inspector stating that asbestos-containing materials are not present in the building, on the building exterior or on the site.

OR

- ❑ Provide a description of the current asbestos management program that identifies the applicable regulatory requirements and explains how the program is addressing asbestos remaining in the building on an ongoing basis.
- ❑ Review the past asbestos work done on the building and on the building site and use this data to prepare the history based component of the asbestos survey for the building and the site by collecting the available information on: (1) where asbestos has been removed, (2) where asbestos remains and (3) how the remaining asbestos is being addressed.
- ❑ Update the asbestos survey for the building and the site with current information by: (1) sampling additional likely locations in building and on the site for asbestos and (2) testing samples to see if asbestos is present.
- ❑ If the survey identifies any new locations with asbestos, add these to the description of how the asbestos management program is addressing asbestos remaining in the building on an ongoing basis.

## Submittals – LEED-EB Re-Certification

Provide a description of the asbestos work done since the previous application for certification and provide any updates needed to the information submitted for the previous application for certification.

# IEQ Prerequisite 4 Polychlorinated Biphenyl (PCB) Removal Required

## Intent

Reduce the potential exposure of building occupants to PCBs and PCB combustion by-products in case of fire in the building.

## Requirements

Have in place a PCB management program. Identify the applicable regulatory requirements. Have a current survey that identifies where PCBs are located in the building and on the site so that the PCBs present can be addressed appropriately in the ongoing PCB management program.

## Potential Technologies & Strategies

Review the current PCB management program, and prepare a description of the program that identifies the applicable regulatory requirements and explains how the program will address PCBs remaining in the building on an ongoing basis.

Review PCB work done in the building and on the building site and use this data to prepare the history based component of the PCB survey by collecting the available information on: (1) where PCBs have been removed, (2) where PCBs remain and (3) how the remaining PCBs are being addressed.

Update this survey with current information by: (1) sampling additional likely locations in building and on the site for PCBs and (2) testing samples to see if PCBs are present. If the survey identifies any new locations with PCBs, add these to the description of how the PCB management program is addressing PCBs remaining in the building on an ongoing basis.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a letter stating that PCB containing materials are not present in the building or on the site.

OR

- ❑ Provide a description of the current PCB management program that identifies the applicable regulatory requirements and explains how the program is addressing PCBs remaining in the building on an ongoing basis.
- ❑ Review the past PCB work done on the building and on the building site and use this data to prepare the history based component of the PCB survey for the building and the site collecting the available information on: (1) where PCBs have been removed, (2) where PCBs remain and (3) how the remaining PCBs are being addressed.
- ❑ Update the PCB survey for the building and the site with current information by: (1) sampling additional likely locations in building and on the site for PCBs and (2) testing samples to see if PCBs are present.
- ❑ If the survey identifies any new locations with PCBs, add these to the description of how the PCBs management program is addressing PCBs remaining in the building on an ongoing basis.

## Submittals – LEED-EB Re-Certification

- Provide a description of the PCB work done since the previous application for certification and provide any updates needed to the information submitted for the previous application for certification.

# IEQ Credit 1 Outdoor Air Delivery Monitoring

# 1 Point

## Intent

Provide capacity for ventilation system monitoring to help sustain long-term occupant comfort and well being.

## Requirements

Install permanent monitoring systems that provide feedback on ventilation system performance to ensure that ventilation systems maintain minimum ventilation rates.

For mechanical ventilation systems that predominantly serve densely occupied spaces (spaces with a design occupant density greater than or equal to 25 people per 1,000 square feet (40 square feet per person)), provide the following:

- Provide a $CO_2$ sensor or sampling location for each densely occupied space, and compare with outdoor ambient $CO_2$ concentrations.
- $CO_2$ sensors must be tested and calibrated to have an accuracy of no less than 75 ppm or 5% of the reading; whichever is greater. Sensors must be tested and calibrated no less frequently than once every five years.
- Monitor $CO_2$ sensors by a system capable of and configured to trend $CO_2$ concentrations on no more than 30 minute intervals.
- Configure system capability to generate an alarm visible to the system operator 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 (see IEQ Prerequisite 1).
- $CO_2$ sensors may be used for demand controlled ventilation provided the control strategy complies with ASHARE Standard 62 (see IEQ Prerequisite 1), including maintaining the area-based component of the design ventilation rate.

For all other mechanical ventilation systems, provide the following:

- 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.
- The outdoor airflow measurement device shall be monitored by a control system capable of and configured to trend outdoor airflow on no more that 15 minute intervals for a period of no less than six months.
- The control system shall be capable and 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.

For natural ventilation systems, provide the following:

- $CO_2$ sensors located in the breathing zone of every densely populated room.
- $CO_2$ sensors located in the breathing zone of each natural ventilation zone.
- $CO_2$ sensor(s) located outdoors.
- $CO_2$ sensors shall provide an audible or visual alarm to the occupants in the space and building management if $CO_2$ conditions are greater than 530 parts per million above outdoor $CO_2$ levels or 1,000

parts per million absolute. The alarm signal should indicate that ventilation adjustments (i.e. opening windows) are required in the affected space.

- Operable windows areas must meet the requirements of ASHRAE 62.1-2004, section 5.1. ASHRAE 62.1-2001 with all Addenda can be used until ASHRAE 62.1-2004 is published.

## Potential Technologies & Strategies

Install/maintain permanent monitoring systems that provide feedback on ventilation system performance to ensure that those ventilation systems maintain minimum ventilation rates.

## Submittals for Initial Certification

- ❑ Provide documentation that the requirements for this credit have been met.

## Submittals for Re-Certification

- ❑ If building systems and building operating practices have not changed since the previous LEED-EB certification filing, provide a statement to this effect.

OR

- ❑ If building systems or building operating practices have changed since the previous LEED-EB certification filing, provide documentation that the requirements for this credit have been met.

# IEQ Credit 2 Increased Ventilation

# 1 Point

## Intent

Provide additional outdoor air ventilation to improve indoor air quality for improved occupant comfort, well being and productivity.

## Requirements

For Mechanically Ventilated Spaces:

- Increase outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum required by ASHRAE 62.1-2004. ASHRAE 62.1-2001 with all Addenda can be used until ASHRAE 62.1-2004 is published.

For Naturally Ventilated Spaces:

- Design natural ventilation systems for occupied spaces to meet the recommendations set forth in the CIBSE (Chartered Institution of Building Services Engineers) "Good Practice Guide 237" [1998]. Determine that natural ventilation is an effective strategy for the project by following the flow diagram process shown in Figure 1.18 of the CIBSE Applications Manual 10: 1997, "Natural ventilation in non-domestic buildings."

And either of the following;

- Use diagrams and calculations to show that the design of the natural ventilation systems meets the recommendations set forth in the CIBSE Applications Manual 10: 1997, "Natural ventilation in non-domestic buildings."
- Use a macroscopic, multi-zone, analytic model to predict that room-by-room airflows will effectively naturally ventilate at least 90% of occupied spaces.

## Potential Technologies & Strategies

For Mechanically Ventilated Spaces: Design ventilation systems to provide ventilation rates at least 30% larger than the minimum rates prescribed by the referenced standard.

For Naturally Ventilated Spaces: Follow the eight design steps described in CIBSE "Good Practice Guide 237": 1) develop design requirements, 2) plan airflow paths, 3) identify building uses and features that might require special attention, 4) determine ventilation requirements, 5) estimate external driving pressures, 6) select types of ventilation devices, 7) size ventilation devices and 8) analyze the design. Use public domain software, such as NIST's CONTAM, Multizone Modeling Software, along with LoopDA, Natural Ventilation Sizing Tool, to analytically predict room-by-room airflows.

## Submittals – Initial LEED-EB Certification

- ❑ For mechanical ventilation systems:
    - Provide measurements demonstrating that actual ventilation rates exceed the minimum rates required by ASHRAE 62.1-2004 by at least 30%. ASHRAE 62.1-2001 with all Addenda can be used until ASHRAE 62.1-2004 is published.

- ❑ For natural ventilation systems:
  - Provide documentation that natural ventilation is an effective strategy for the project and follows the design recommendations established by CIBSE.
  - And either of the following;
    (a) Provide diagrams and calculations based on CIBSE Applications Manual 10.
    (b) Provide diagrams and calculations based on results provided by a multi-zone analytical model.

## Submittals – LEED-EB Re-Certification

- ❑ If there has been no change since the previous filing, provide a statement to this effect.

OR

- ❑ If these have been changes since the previous filing, provide the same information as is required for initial filings.

# IEQ Credit 3 Construction IAQ Management Plan

# 1 Point

## Intent

Prevent indoor air quality problems resulting from any construction/renovation projects in order to help sustain the comfort and well being of construction workers and building occupants.

## Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and occupancy phases of the building as follows:

- During construction meet or exceed the recommended Design Approaches of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings Under Construction, 1995, Chapter 3.
- Protect stored on-site or installed absorptive materials from moisture damage.
- If 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 grill, as determined by ASHRAE 52.2-1999.
- Replace all filtration media immediately prior to occupancy.
- Remove contaminants that may be remaining at the end of the construction period.
  - ❒ Conduct a minimum two week building flush out with new filtration media with 100% outside air after construction ends and prior to occupancy of the affected space. After the flush-out, replace the filtration media with new media, except for filters solely processing outside air.

  OR

  - ❒ After construction ends conduct a baseline indoor air quality testing procedure for the affected space in the building that demonstrates that the concentration levels for the chemical air contaminants are below specified levels. For each sampling point where the maximum concentration limits are exceeded conduct a partial building flush-out, for a minimum of two weeks, then retest the specific parameter(s) that were exceeded to indicate the requirements are achieved. Repeat procedure until all requirements have been met.

| **Chemical Contaminate** | **Maximum Concentration** |
|---|---|
| Formaldehyde | 0.05 parts per million |
| Particulates (PM10) | 20 micrograms per cubic meter above outside air conditions |
| Total Volatile Organic Compounds (TVOC) | 500 micrograms per cubic meter |
| 4-Phenylcyclohexene (4-PCH) | 3 micrograms per cubic meter |
| Carbon Monoxide (CO) | 9 part per million |

$CO_2$ measurements are only required if the building is regularly occupied during the testing. The ventilation rate is the outdoor air requirement per person, and the $CO_2$ measurement is the differential between indoor and outdoor conditions based on occupancy type as defined by ASHRAE 62-2001. The MET Rate is as defined in ASHRAE 55.

The air sample testing shall be conducted as follows:

- ❒ Air samples collected for every 25,000 square feet, or for each contiguous floor area, whichever is greater.
- ❒ Measurements to be conducted with the building ventilation system starting at normal daily start time and operated at the minimum outside air flow rate for the occupied mode throughout duration of the air testing.
- ❒ Building shall be fully finished and unoccupied. Furniture can be included in the testing if desired but it is not required.
- ❒ Test with time weight values of four hours with data logging.
- ❒ When re-testing non-complying building areas, take samples from the same locations as in first test.
- ❒ Copies of the IAQ testing results should describe the contaminant sampling and analytical methods, the locations and duration of contaminant samples, the field sampling log sheets and laboratory analytical data and the methods and results utilized to determine that the ventilation system was started at the normal daily start time and operated at the minimum outside air flow rate for the occupied mode through the duration of the air testing.

## Potential Technologies & Strategies

- ❒ Specify containment control strategies including protecting the HVAC system, controlling pollutant sources, interrupting pathways for contamination, enforcing proper housekeeping and coordinating schedules to minimize disruption.
- ❒ Specify the construction sequencing to install absorptive materials after the prescribed dry or cure time of wet finishes to minimize adverse impacts on IAQ Materials directly exposed to moisture through precipitation, plumbing leaks or condensation from the HVAC system are susceptible to microbial contamination.
- ❒ Use protective covers and sequencing of installation to protect absorptive materials including insulation, carpeting, ceiling tiles and gypsum products.
- ❒ Appoint an IEQ Manager with owner’s authority to inspect IEQ problems and require mitigation as necessary.
- ❒ Sequence the application of building materials so that materials that may be significant sources of contaminants (e.g., composite wood products, wet products (adhesives, paints and coatings, glazing)), significantly dissipate their emissions prior to the introduction of products that have capacity to absorb or trap contaminants (e.g., carpet and padding, fabric wall covering, acoustic tiles, upholstered furniture). Where protection cannot be provided by sequence of installations, protect adsorbing surfaces with vapor barriers and provide air exchange through temporary or permanent ventilation systems.
- ❒ For IAQ testing consider using a recognized measurement protocol such as the EPA "Compendium of Methods for the Determination of Air Pollutants in Indoor Air."

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the Construction IAQ Management Plan that specifies inclusion of Construction IAQ Management specification provisions for any construction projects that may occur in the building.
- ❑ Application of management plan to any construction projects carried out in the building in the performance period.

- If there have not been any construction projects during the performance period, provide a statement to this effect.
- If there have been any construction projects carried out in the building during the performance period provide:
  - A list of the construction projects implemented during the performance period and for each one provide:
    - A copy of the construction IAQ Management Plan highlighting the six requirements of SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3.
    - Photographs of construction IAQ management measures such as protection of ducts and on-site stored or installed absorptive materials.
    - Technical information on filtration media used during construction and installed immediately prior to occupancy with MERV values highlighted.
  - Documentation of post construction flush-out or measurement of contaminant concentrations.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ Construction IAQ Management Plan that specifies inclusion of Construction IAQ Management specification provisions for the any construction projects that may occur in the building.
  - If there has been no change to the, provide a statement to this effect.
  - If there has been a change, provide the updated plan.
- ❑ Application of IAQ Management Plan to any construction projects carried out in the building during the performance period.
  - If there were no construction projects during the performance period, provide a statement to this effect.
  - If there were construction projects during the performance period, list these project and document that the IAQ Management Plan was followed for each project.

# IEQ Credit 4.1 Documenting Productivity Impacts: Absenteeism and Health Care Cost Impacts

## 1 Point

### Intent

Document absenteeism, health care cost and productivity impacts of sustainable building performance improvements.

### Requirements

Document the history of absenteeism and health care costs for building occupants for the previous five years (or length of building occupancy with a minimum of 12 months) and track changes in absenteeism and health care costs (claim costs must be provided and any reductions in premium costs should be provide if available) for building occupants over the performance period relative to sustainable building performance improvements.

### Potential Technologies & Strategies

Track absenteeism and health care costs for building occupants to identify any positive impacts relative to sustainable performance improvements to building IEQ and operations.

### Submittals – Initial LEED-EB Certification

- ❑ Provide documentation of the history of absenteeism and health care costs for building occupants for the previous five years (or length of building occupancy with a minimum of 12 months).
- ❑ Track changes in absenteeism and health care costs (claim costs must be provided and any reductions in premium costs should be provided if available) for building occupants over the performance period relative to sustainable building performance improvements.

### Submittals – LEED-EB Re-Certification

- ❑ Provide documentation of the history of absenteeism and health care costs for building occupants for the previous five years (or length of building occupancy with a minimum of 12 months)
- ❑ Track changes in absenteeism and health care costs (claim costs must be provided and any reductions in premium costs should be provided if available) for building occupants over the performance period relative to sustainable building performance improvements.

# IEQ Credit 4.2 Documenting Productivity Impacts: Other Productivity Impacts

## 1 Point

### Intent

Documentation of the other productivity impacts (beyond those identified in IEQ Credit 4.1) of sustainable building performance improvements.

### Requirements

Document the other productivity impacts (beyond those identified in IEQ Credit 4.1) of sustainable building performance improvements for building occupants. Address and track changes in the impact on the amount of work done and errors made or other productivity impacts for building occupants over the performance period relative to sustainable building performance improvements. This documentation needs to be provided for the previous five years (or length of building occupancy with a minimum of 12 months).

### Potential Technologies & Strategies

Set up a system to track changes in the impacts on amount of work done and errors made by building occupants over the performance period relative to sustainable building performance improvements (beyond those identified in IEQ Credit 4.1).

### Submittals – Initial LEED-EB Certification

- Provide documentation of the other productivity impacts for building occupants (beyond those identified in IEQ Credit 4.1) of sustainable building performance improvements. The documentation needs to address the impact on the amount of work done and errors made by building occupants relative to sustainable building performance improvements. This documentation also needs to be provided for the previous five years (or length of building occupancy with a minimum of 12 months).

### Submittals – LEED-EB Re-Certification

- Provide updated documentation over the performance period of the other productivity impacts for building occupants (beyond those identified in IEQ Credit 4.1) of sustainable building performance improvements. The documentation needs to address the impact on the amount of work done and errors made by building occupants relative to sustainable building performance improvements. This documentation also needs to be provided for the previous five years (or length of building occupancy with a minimum of 12 months).

# IEQ Credit 5.1 Indoor Chemical and Pollutant Source Control: Non-Cleaning System – Reduce Particulates in Air Distribution

## 1 Point

### Intent

Reduce exposure of building occupants and maintenance personnel to potentially hazardous particle contaminants, which adversely impact air quality, health, building finishes, building systems and the environment.

### Requirements

Have in place over the performance period filters with particle removal effectiveness MERV 13 or greater for all outside air intakes and for the returns for the re-circulation of inside air. Establish and follow a regular schedule for maintenance and replacement of these filters.

### Potential Technologies & Strategies

Install and maintain in place filters with a particle removal effectiveness MERV 13 or greater for all outside air intakes and for the returns for the re-circulation of inside air. Establish and follow a regular schedule for maintenance and replacement of these filters.

### Submittals – Initial LEED-EB Certification

- ❑ Document that the building has had in place over the performance period filters with particle removal effectiveness MERV 13 or greater for all outside air intakes and for the returns for the re-circulation of inside air.
- ❑ Document that a regular schedule for maintenance and replacement of these filters has been established and followed over the performance period.

### Submittals – LEED-EB Re-Certification

- ❑ Document that the building has had in place over the performance period filters with particle removal effectiveness MERV 13 or greater for all outside air intakes and for the returns for the re-circulation of inside air.
- ❑ Document that a regular schedule for maintenance and replacement of these filters has been established and followed over the performance period.

# IEQ Credit 5.2 Indoor Chemical and Pollutant Source Control: Non-Cleaning – Isolation of High Volume Copying/Print Rooms/Fax Stations

## 1 Point

### Intent

Reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants, which adversely impact air quality, health, building finishes, building systems, and the environment.

### Requirements

Have in place over the performance period structural deck-to-deck partitions with separate outside exhausting, no air re-circulation and negative pressure to contain and isolate high volume copying/print rooms/fax stations. High volume means a copy machine with a monthly copy usage of more than 40,000 pages. This credit can also be earned by putting all copiers exceeding a lower capacity or usage threshold (selected by the building owner) in isolated separately ventilated rooms.

### Potential Technologies & Strategies

Have in place over the performance period structural deck-to-deck partitions with separate outside exhausting, no air re-circulation and negative pressure to contain and isolate high volume copying/print rooms/fax stations. Develop a plan to minimize unnecessary use of convenience printers and copiers by moving larger copying and printing jobs currently being done on convenience copiers and printers to high volume printers and copiers in isolated spaces meeting the requirements of this credit.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a building plan showing all locations of high volume copying/print rooms/fax stations and photographs/drawings of structural deck-to-deck partitions.
- ❑ Provide documentation of separate outside exhausting, no air re-circulation and negative pressure relative to surrounding occupied areas and isolation of high volume copying/print rooms/fax stations.

### Submittals – LEED-EB Re-Certification

- ❑ If the building systems pertaining to high volume copying/print rooms/fax stations have not been changed, provide a letter documenting their continued existence and use.

OR

- ❑ If the systems pertaining to high volume copying/print rooms/fax stations have been changed, provide a building plan showing all locations of high volume copying/print rooms/fax stations and photographs/drawings of structural deck-to-deck partitions.
- ❑ Provide documentation of separate outside exhausting, no air re-circulation and negative pressure relative to surrounding occupied areas and isolation of high volume copying/print rooms/fax stations.

# IEQ Credit 6.1 Controllability of Systems: Lighting

# 1 Point

## Intent

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

## Requirement

Provide lighting controls, for at least 50% of building occupants, enabling adjustments to suit individual task needs and preferences, or those of a group sharing a multi-occupant space or workgroup area.

## Potential Technologies & Strategies

Implement system and occupant control of lighting, employing ambient and task lighting that provide for basic space lighting with occupant controls for preference and to suit the needs of their specific tasks.

## Submittals - Initial LEED-EB Certification

- ❒ Provide documentation signed by the responsible party, demonstrating and declaring that the required lighting controls are provided.
- ❒ Provide drawings showing location of lighting controls.

## Submittals - LEED-EB Re-Certification

- ❒ If there has been no change to the occupant lighting control strategy or related occupant use of the building since the previous LEED-EB filing, provide a statement that the system continues to deliver required occupant control.

OR

- ❒ If there has been a change to this information since previous LEED-EB filing, provide an updated documentation, signed by the responsible party, demonstrating the changes made and declaring that the required lighting controls are provided.

# IEQ Credit 6.2 Controllability of Systems: Temperature & Ventilation

# 1 Point

## Intent

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

## Requirement

Provide individual temperature and ventilation controls for at least 50% of the building occupants, enabling adjustments to suit individual needs and preferences, or those of a group sharing a multi-occupant space or workgroup area. Operable windows may be used in lieu of individual controls for occupants in spaces near the windows (20 feet inside of and 10 feet to either side of the operable part of the window), and where the operable windows meet the requirements of ASHRAE 62.1-2004 paragraph 5.1. ASHRAE 62.1-2001 with all Addenda can be used until ASHRAE 62.1-2004 is published.

## Potential Technologies & Strategies

Provide occupant controls for temperature and ventilation. Consider strategies to include under-floor HVAC systems with individual diffusers, displacement ventilation systems with control devices, operable windows at perimeter spaces, ventilation walls and mullions.

## Submittals - Initial LEED-EB Certification

Provide documentation, signed by the responsible party, demonstrating and declaring that the required ventilation and temperature controls are provided.

## Submittals - LEED-EB Re-Certification

- ❒ If there has been no change to the temperature and ventilation control strategy or related occupant use of the building since the previous LEED-EB filing, provide statement that the system continues to deliver required occupant control.

OR

- ❒ If there has been a change to this information since previous LEED-EB filing, provide an updated documentation, signed by the responsible party, demonstrating the changes made and declaring that the required temperature and ventilation controls are provided.

# IEQ Credit 7.1 Thermal Comfort: Compliance

# 1 Point

## Intent

Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

## Requirement

Comply with ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy.

## Potential Technologies & Strategies

Establish comfort criteria per ASHRAE Standard 55-2004 to ensure that building and systems design have the capability of providing performance to meet the comfort criteria.

## Submittals - Initial LEED-EB Certification

- ❒ Provide documentation that the project complies with ASHRAE Standard 55-2004.
- ❒ Provide trend logging of temperature and humidity or psychromentric analysis that supports the statement that these requirements have been met.

## Submittals - LEED-EB Re-Certification

Provide update of previous filings:

- ❑ For current building occupancy, provide trend logging of temperature and humidity or psychromentric analysis that supports the statement that the HVAC system has adequate capacity to meeting the heating, cooling and humidity management requirements of the building as specified in ASHRAE 55-2004.

AND EITHER

- ❒ If there have been no changes to comfort criteria, building systems or related occupant use of the building since the previous LEED-EB filing, provide a statement that the building continues to comply with the specified standard per the original submittal.

OR

- ❑ If there have been changes to comfort criteria, building or building systems, or occupant use of the building, update the documentation to reflect comfort criteria and compliance as the building is currently configured and used.

# IEQ Credit 7.2 Thermal Comfort: Permanent Monitoring System

# 1 Point

## Intent

Provide a comfortable thermal environment that supports the productivity and well-being of building occupants.

## Requirement

Provide a permanent monitoring system to ensure building performance to the desired comfort criteria as determined by IEQ Credit 7.1, Thermal Comfort: Compliance.

## Potential Technologies & Strategies

Implement systematic monitoring of the actual performance of the building to the comfort criteria defined by IEQ Credit 7.1.

- ❒ As appropriate, monitoring may include measurement and trending of temperatures, relative humidity, $CO_2$ or air speed at locations selected according to their variability and impact on occupant comfort.
- ❒ Systematic monitoring may be implemented by annual validation of continued performance to the selected comfort criteria conducted per ASHRAE Standard 55, Section 7 Evaluation of the Thermal Environment.

## Submittals - Initial LEED-EB Certification

Provide documentation signed by the engineer or responsible party that identifies the comfort criteria, the strategy for ensuring performance to the comfort criteria, a description of the permanent monitoring system implemented and the process for corrective action as may be appropriate.

## Submittals - LEED-EB Re-Certification

Provide update of previous filings:

- ❒ Provide performance documentation to the comfort criteria as generated by the permanent monitoring system, indicating performance compliance and/or exceptions experienced with corrective actions taken for the period since the last LEED-EB certification.

# IEQ Credit 8.1 & 8.2 Daylighting and Views: Daylighting

# 2 Points

## Intent

Provide a connection between indoor spaces and the outdoor environment through introduction of sunlight and views into the occupied areas of the building.

## Requirements

Achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetration) in space occupied for critical visual tasks, not including copy rooms, storage areas, mechanical, laundry and other low-occupancy support areas. Exceptions include those spaces where tasks would be hindered by the use of daylight or where accomplishing the specific tasks within a space would be enhanced by the direct penetration of sunlight. Provide glare control for all windows where direct penetration of sunlight would interfere with normal occupant activities.

Achievement of a 2% daylight factor in:

- IEQ Credit 8.1: 50% of all spaces occupied for critical visual tasks. (1 point)
- IEQ Credit 8.2: 75% of all spaces occupied for critical visual tasks. (1 point)

## Potential Technologies & Strategies

Work to achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetration) in 50% to 75% of all space occupied for critical visual tasks.

## Submittals – LEED-EB Certification

- ❑ Provide building floor plan copies and calculations indicating where the space plan has been implemented on percentage of the total building area. Include area calculations defining the daylighting and daylight prediction calculations demonstrating a minimum Daylight Factor of 2% in these areas.
- ❑ Provide documentation of glare control features for all windows where direct penetration of sunlight would interfere with normal occupant activities.

## Submittals - LEED-EB Re-Certification

Provide update of previous filings:

- ❑ Provide documentation of glare control features for all windows where direct penetration of sunlight would interfere with normal occupant activities.

AND EITHER

- ❑ If there has been no change to the amount of daylighting since the previous LEED-EB filing, provide statement that the required daylighting percentages are achieved.

OR

- ❑ If there has been a change to the amount of daylighting since previous LEED-EB filing, provide building floor plan copies and calculations indicating where the space plan has been implemented on percentage

of the total building area. Include area calculations defining the daylighting and daylight prediction calculations demonstrating a minimum Daylight Factor of 2% in these areas.

# IEQ Credit 8.3 & 8.4 Daylighting and Views: Views

# 2 Points

## Intent

Provide a connection between indoor spaces and the outdoor environment through introduction of sunlight and views into the occupied areas of the building.

## Requirements

- Develop and adopt a space churn renovation plan and policy that specifies the goal of achieving direct line of sight to vision glazing from 90% of all regularly occupied spaces (not including copy rooms, storage areas, mechanical, laundry and other low-occupancy support areas).

AND

- IEQ Credit 8.3: Achieve direct line of sight to vision glazing from 45% of regularly occupied spaces (not including copy rooms, storage areas, mechanical, laundry and other low-occupancy support areas). (1 point)
- IEQ Credit 8.4: Achieve direct line of sight to vision glazing from 90% of regularly occupied spaces (not including copy rooms, storage areas, mechanical, laundry and other low-occupancy support areas). (1 point)

## Potential Technologies & Strategies

Develop and implement a space renovation plan and policy that specifies the goal of achieving direct line of sight to vision glazing from 90% of all regularly occupied spaces. Utilize opportunities created by churn to gradually implement this plan over time.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the building space churn renovation plan and policy that specifies the goal of achieving direct line of sight to vision glazing from 90% of all regularly occupied spaces, (not including copy rooms, storage areas, mechanical, laundry and other low-occupancy support areas).
- ❑ Provide building floor plan copies and calculations indicating where the space plan has been implemented:
  - On 45% of the floor area of all regularly occupied spaces.
  - On an additional 45% (90% total) of the floor area of all regularly occupied spaces.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If there has been no change to the occupant views achievements since previous LEED-EB filing, provide statement that the building continues to meet the credit requirements.

OR

- If there has been a change to occupant views achievements since previous LEED-EB filing, provide a copy of the building space churn renovation plan and policy that specifies the goal of achieving direct line of sight to vision glazing from 90% of all regularly occupied spaces, (not including copy rooms, storage areas, mechanical, laundry and other low-occupancy support areas).
- Provide building floor plan copies and calculations indicating where the space plan has been implemented:
  - On 45% of the floor area of all regularly occupied spaces.
  - On an additional 45% (90% total) of the floor area of all regularly occupied spaces.

# IEQ Credit 9 Contemporary IAQ Practice

# 1 Point

## Intent

Enhance IAQ performance 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

Develop and implement on an ongoing basis an IAQ management program for buildings based on the EPA document "Building Air Quality: A Guide for Building Owners and Facility Managers," EPA Reference Number 402-F-91-102, December 1991, and it is available on the EPA Web site, www.epa.gov/iaq/largebldgs/graphics/iaq.pdf.

## Potential Technologies & Strategies

Operate over the performance period, a program to enhance IAQ performance by optimizing practices to prevent the development of indoor-air quality problems in buildings, maintaining the well being of the occupants. Survey building and evaluate systems to identify potential IEQ problems and implement an ongoing program to prevent these problems from occurring and maintain a high level of IAQ on an ongoing basis. Include in the program a plan for preventing moisture accumulation and mold in the building. For additional information see the EPA Web site, www.epa.gov/iaq/largebldgs/baqtoc.html.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the IAQ management program for your building based on the EPA document "Building Air Quality: A Guide for Building Owners and Facility Managers."
- ❒ Provide documentation of the ongoing implementation over the performance period of the IAQ management program for your building.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If there has been no change to the IEQ management program for the building since previous LEED-EB filing, provide statement that there has been no change.

OR

- ❑ If there has been a change to the IEQ management program for the building since previous LEED-EB filing, provide updated information. Provide an updated copy of the IAQ management program for your building based on the EPA document "Building Air Quality: A Guide for Building Owners and Facility Managers."
- ❑ Provide documentation of the ongoing implementation over the performance period of the IAQ management program for your building.

# IEQ Credit 10.1 Green Cleaning: Entryway Systems

# 1 Point

## Intent

Reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants, which adversely impact air quality, health, building finishes, building systems, the environment, and reduced deposition of contaminants in the buildings.

## Requirements

Utilize over the performance period entryway systems (grills, grates, mats etc.) to reduce the amount of dirt, dust, pollen and other particles entering the building at all entryways, and develop the associated cleaning strategies to maintain those entryway systems, as well as the exterior walkways.

## Potential Technologies & Strategies

- ❒ Design all exterior entrances with entryway systems (grills, grates, mats etc.) to catch and hold dirt particles and to prevent contamination of the building interior.
- ❒ Design exterior stone, brick or concrete surfaces to drain away from building entrances.
- ❒ Utilize low-maintenance vegetation in building entrances within the landscape design.
- ❒ Avoid plants, trees and bushes in building entrance areas that are varieties that yield berries, flowers and leaves that are likely to be tracked into the building.
- ❒ Base plant selection on an IPM approach to eliminate pesticide applications that have the potential to track into the building.
- ❒ Provide a water spigot and electrical outlet at entryways for maintenance and cleaning activities.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a building plan showing all high volume entryways and photos of installed entryway systems (grills, grates, mats, etc.) and the procedures for cleaning and maintaining these entryway systems.
- ❑ Provide quarterly reports over performance period documenting that these entryway systems have been effectively used, cleaned and maintained on a regular basis.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If the building entryway systems have not been changed and the procedures for cleaning and maintaining these entryway systems have not been changed, provide a letter documenting this.
- ❑ Provide quarterly reports over performance period documenting that these entryway systems have been effectively used, cleaned and maintained on a regular basis.

OR

- ❑ If the building entryway systems have been changed or the procedures for cleaning and maintaining these entryway systems have been changed, provide a building plan showing all high volume entryways

and photos of installed entryway systems (grills, grates, mats, etc.) and the procedures for cleaning and maintaining these entryway systems have not been changed. Highlight the changes that have been made.

- ❑ Provide quarterly reports over performance period documenting that these entryway systems have been effectively used, cleaned and maintained on a regular basis.

# IEQ Credit 10.2 Green Cleaning: Isolation of Janitorial Closets

# 1 Point

## Intent

Reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants, which adversely impact air quality, health, building finishes, building systems, the environment and reduced deposition of contaminants in the buildings.

## Requirements

Have in place over the performance period structural deck-to-deck partitions with separate outside exhausting, no air re-circulation and negative pressure in all janitorial closets. Provide hot and cold water and drains plumbed for appropriate disposal of liquid waste in areas where janitorial equipment and chemicals are stored and/or water and cleaning chemical concentrate mixing occurs.

## Potential Technologies & Strategies

- ❒ Have in place over the performance period structural deck-to-deck partitions with separate outside exhausting, no air re-circulation and negative pressure in all janitorial closets.
- ❒ Provide hot and cold water and drains plumbed for appropriate disposal of liquid waste in areas where water and cleaning chemical concentrate mixing occurs and janitorial equipment are stored.
- ❒ Implement policies, procedures and mixing systems that minimize exposure of cleaning staff to concentrated cleaning chemicals.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a building plan showing all areas where janitorial closets are located where cleaning chemical storage, janitorial equipment storage and/or water and cleaning chemical concentrate mixing occurs.
- ❑ For janitorial closets, provide photos or drawings of structural deck-to-deck partitions, and documentation of separate outside exhausting, no air re-circulation, negative pressure relative to surrounding occupied areas and drains plumbed for appropriate disposal of liquid waste.
- ❑ Provide a copy of the cleaning chemical storage guidelines and policy adopted by your organization.
- ❑ Provide a written description of how the janitorial closets were used for cleaning chemical storage over the performance period.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If the building systems pertaining to cleaning chemical mixing and storage have not been changed, provide a letter documenting their continued existence and use.
- ❑ Provide a written description of how the janitorial closets were used over the performance period.

OR

- If the systems pertaining to cleaning chemical mixing and storage have been changed, provide a building plan showing all areas where janitorial closets are located where chemical storage, janitorial equipment storage, and/or water and chemical concentrate mixing occurs.
- For cleaning chemical mixing and storage areas, provide photos or drawings of structural deck-to-deck partitions, and documentation of separate outside exhausting, no air re-circulation, negative pressure relative to surrounding occupied areas and drains plumbed for appropriate disposal of liquid waste.
- Provide a copy of the cleaning chemical storage guidelines and policy adopted by your organization.
- Provide a written description of how the janitorial closets were used for cleaning chemical storage over the performance period.

# IEQ Credit 10.3 Green Cleaning: Low Environmental Impact Cleaning Policy

# 1 Point

## Intent

Reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants, which adversely impact air quality, health, building finishes, building systems, the environment, and reduced deposition of contaminants in the buildings.

## Requirements

Have in place over the performance period a low-impact environmental cleaning policy addressing:

1. Sustainable cleaning systems.
2. Use of sustainable cleaning products.
3. Use of chemical concentrates and appropriate dilution systems.
4. Proper training of maintenance personnel in the hazards, use, maintenance and disposal of cleaning chemicals, dispensing equipment, and packaging.
5. Use of hand soaps that do not contain antimicrobial agents (other than as a preservative system), except where required by health codes and other regulations (i.e., food service and health care requirements).
6. Use of cleaning equipment that reduces impacts on IAQ.

## Potential Technologies & Strategies

Have in place over the performance period a low-impact environmental cleaning products and housekeeping policy that addresses sustainable cleaning and hard flooring coating systems products and utilization of concentrated cleaning products. Floor coating products that are free of zinc are preferred.

## Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the low environmental impact cleaning policy adopted by your organization.
- ❑ Provide documentation that this policy has been followed over the performance period.
  - Provide documentation/specifications on the chemical and cleaner dispensing and dilution equipment used.
  - Provide documentation identifying the date and activities associated with floor maintenance.
  - Provide documentation of cleaning worker training.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If the low environmental impact cleaning policy has not been changed, provide a letter documenting its continued existence and implementation.

- Provide documentation that this policy has been followed over the performance period.
- Provide documentation identifying the date and activities relative to floor care maintenance.
- Provide documentation of cleaning worker training.
- Provide documentation/specifications on the chemical and cleaner dispensing and dilution equipment used.
- Provide documentation identifying the date and activities associated with floor maintenance.

OR

❑ If the low environmental impact cleaning policy has been changed, provide a copy of the low environmental impact cleaning policy adopted by your organization highlighting all changes.

- ❑ Provide documentation that this policy has been followed over the performance period.
- ❒ Provide documentation of cleaning worker training.
- ❒ Provide documentation identifying the date and activities associated with floor maintenance.
- ❒ Provide documentation/specifications on the chemical and cleaner dispensing and dilution equipment used.

# IEQ Credit 10.4 & 10.5 Green Cleaning: Low Environmental Impact Pest Management Policy

## 2 Points

### Intent

Reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants, which adversely impact air quality, health, building finishes, building systems, the environment, and reduced deposition of contaminants in the buildings.

### Requirement

Develop, implement and maintain a low environmental impact integrated indoor pest management policy. The policy must specify the use of cleaning products that meet the requirements identified in MR credit 4.1–4.3.

### Potential Technologies & Strategies

Evaluate current indoor pest management actions and develop a plan for upgrading the approach used to be a low environmental impact integrated indoor pest management approach.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the low environmental impact pest management policy adopted by your organization:
  - The plan shall promote safer alternatives to chemical pesticides while preventing economic and health damage caused by pests. The plan shall implement the use of IPM techniques to reduce the need for reliance on chemical pesticides. When pesticides may be necessary, the plan shall ensure that clear and accurate notification concerning the use of pesticides be made available so that measures may be taken to prevent and address pest problems effectively without endangering occupants, janitorial workers or visitors.
  - The plan should address:
    - Integrated methods.
    - Site or pest inspections.
    - Pest population monitoring.
    - An evaluation of the need for pest control.
    - One or more pest control methods, including sanitation, structural repairs, mechanical and living biological controls, other non-chemical methods and, if nontoxic options are unreasonable and have been exhausted, a least toxic pesticide.
  - The plan shall include a communication strategy to provide notification of the IPM system. This shall include information and notice to tenants or directly to occupants in an owner occupied building. The notice shall include a description of the integrated pest management system and a list of all pesticides, including any least toxic pesticide that may be used in the building as part of the integrated pest management system; the name, address, and telephone number of the contact person of the building; and a statement that the contact person maintains the product label and material

safety data sheet (MSDS) of each pesticide used by the building, that the label or MSDS is available for review upon request, and that the contact person is available for information and comment.

- The communications strategy shall address "Universal Notification" which requires that not less than 72 hours before a pesticide, other than a least toxic pesticide, is applied in a building or on surrounding grounds that the building maintains.
- The plan shall address under what circumstances an emergency application of pesticides in a building or on surrounding grounds being maintained by the building can be conducted without complying with the earlier provisions. In addition, the plan shall address notification strategies to insure that occupants and janitorial workers are notified within 24 hours of the pesticide application.

❑ Provide documentation that the Low Environmental Impact Pest Management Policy has been followed during the performance period.

## Submittals – LEED-EB Re-certification

Provide update of previous filings:

❑ Provide documentation that the Low Environmental Impact Pest Management Policy has been followed during the performance period.

AND EITHER

❑ If there has been no change to this policy since previous LEED-EB filing, provide statement that there has been no change.

OR

❑ If there has been a change to this policy since previous LEED-EB filing, provide updated policy.

# IEQ Credit 10.6 Green Cleaning: Low Environmental Impact Cleaning Equipment Policy

## 1 Point

### Intent

Reduce exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological and particle contaminants, which adversely impact air quality, health, building finishes, building systems the environment, and reduced deposition of contaminants in the buildings.

### Requirement

Develop/adopt/maintain a policy for the use of janitorial equipment that maximizes effective reduction of building contaminants with minimum environmental impact:

Cleaning equipment policy needs to specify that:

- Vacuum cleaners meet the requirements of the Carpet & Rug Institute Green Label Program and are capable of capturing 96% of particulates 0.3 microns in size and operate with a sound level less than 70dBA.
- Hot water extraction equipment for deep cleaning carpets are capable of removing sufficient moisture such that carpets can dry in less than 24 hours.
- Powered maintenance equipment including floor buffers, burnishers and automatic scrubbers are equipped with vacuums, guards and/or other devices for capturing fine particulates, and shall operate with a sound level less than 70dBA.
- Propane-powered floor equipment have high-efficiency, low-emissions engines.
- Automated scrubbing machines are equipped with variable-speed feed pumps to optimize the use of cleaning fluids.
- Battery-powered equipment are equipped with environmentally preferable gel batteries.
- Where appropriate, active micro fiber technology are used to reduce cleaning chemical consumption and prolong life of disposable scrubbing pads.
- Powered equipment are ergonomically designed to minimize vibration, noise and user fatigue.
- Equipment has rubber bumpers to reduce potential damage to building surfaces.
- A log will be kept for all powered housekeeping equipment to document the date of equipment purchase and all repair and maintenance activities and include vendor cut sheets for each type of equipment in use in the logbook.

### Potential Technologies & Strategies

Develop, implement and maintain a policy for the use of janitorial equipment that maximizes effective reduction of building contaminants with minimum environmental impact. Evaluate the janitorial equipment currently being used and make a plan for upgrading to janitorial equipment that maximizes effective reduction of building contaminants with minimum environmental impact.

### Submittals – Initial LEED-EB Certification

- ❑ Provide a copy of the low environmental impact janitorial equipment policy adopted by your organization.

- ❑ Provide a record of the janitorial equipment used in the building and a log of the maintenance of each piece of equipment over the performance period. Include vendor specifications for each type of equipment in use.

## Submittals – LEED-EB Re-Certification

Provide update of previous filings:

- ❑ If there has been no change to the low environmental impact janitorial equipment policy since previous LEED-EB filing, provide statement verifying its continued existence and operation.
- ❑ Provide a record of the janitorial equipment used in the building and a log of the maintenance of each piece of equipment over the performance period. Include vendor specifications for each type of equipment in use.

OR

- ❑ If there has been a change in the low environmental impact janitorial equipment policy provide a copy of the plan highlighting any changes.
- ❒ Provide a record of the janitorial equipment used in the building and a log of the maintenance of each piece of equipment over the performance period. Include vendor specifications for each type of equipment in use.

# Innovation in Upgrades, Operations and Maintenance

## IUOM Credit 1 Innovation in Upgrades, Operations and Maintenance

## 1–4 Points

### Intent

To provide building operation, design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED-EB Rating System and/or innovative performance in Green Building categories not specifically addressed by LEED-EB Rating System.

### Requirements

Credit 1.1 (1 point) Provide documentation of each proposed innovation credit, including a description of the action, the additional environmental benefits of the action, and the performance in delivering these additional environmental benefits over the performance period.

Credit 1.2 (1 point) Same as Credit 1.1

Credit 1.3 (1 point) Same as Credit 1.1

Credit 1.4 (1 point) Same as Credit 1.1

### Potential Technologies & Strategies

Implement and maintain over the performance period actions that provide added environmental benefits. These can either be actions that substantially exceed an existing LEED-EB performance credit requirement or actions not addressed in LEED-EB that provide substantial added environmental benefits.

### Submittals – Initial LEED-EB Certification

- Provide documentation of each proposed innovation credit, including a description of the action, the additional environmental benefits of the action, and the performance in delivering these additional environmental benefits over the performance period.

### Submittals – LEED-EB Re-Certification

- Provide documentation of each proposed innovation credit, including a description of the action, the additional environmental benefits of the action, and the performance in delivering these additional environmental benefits over the performance period.

# IUOM Credit 2 LEED Accredited Professional

# 1 Point

### Intent

To support and encourage the operation, upgrade and project team integration required for LEED-EB implementation in buildings and to streamline the application and certification process.

### Requirements

At least one principal participant of the project team is a LEED Accredited Professional.

### Potential Technologies & Strategies

- ❒ Engage a LEED Accredited Professional within your organization.
- ❒ Have someone in your organization study the LEED-EB Rating System and the LEED-EB Reference Guide and take the LEED Accreditation exam. Consider having this person also take the LEED-EB specialization portion of the LEED Accreditation exam.
- ❒ Hire a LEED Accredited Professional to support your project. Consider selecting a LEED Accredited Professional experienced with LEED-EB that has also taken the LEED-EB specialization portion of the LEED Accreditation exam.

### Submittals – Initial LEED-EB Certification

- ❑ Provide documentation stating the LEED Accredited Professional's name, title, company and contact information.

### Submittals – LEED-EB Re-Certification

- ❑ Provide the documentation stating the LEED Accredited Professional's name, title, company and contact information.