

## Treasure Coast Builders Association Office LEED GBOM 2009 Certification Assessment

### SUSTAINABLE SITES

#### **SS Credit 2: Building Exterior and Hardscape Management Plan**

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

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

#### SS Credit 3: Integrated Pest Management, Erosion Control and Landscape Management Plan

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

The plan must address all of the following operational elements:

- Outdoor integrated pest management (IPM), defined as managing outdoor pests (plants, fungi, insects, and/or animals) in a way that protects human health and the surrounding environment and that improves economic returns through the most effective, least-risk option. IPM calls for the use of least toxic chemical pesticides, minimum use of the chemicals, use only in targeted locations, and use only for targeted species. IPM requires routine inspection and monitoring. The outdoor IPM plan must address all the specific IPM requirements listed in IEQ Credit 3.6: Green Cleaning: Indoor Integrated Pest Management, including preferred use of nonchemical methods, definition of emergency conditions and universal notification (advance notice of not less than 72 hours under normal conditions and 24 hours in emergencies before a pesticide, other than a leasttoxic pesticide, is applied in a building or on surrounding grounds that the building management maintains). The outdoor IPM plan must also be integrated with any indoor IPM plan for the building, as appropriate.
- Erosion and sedimentation control for ongoing landscape operations (where applicable) and future construction activity. The plan must address both site soil and potential construction materials. The plan must also include measures that prevent erosion and sedimentation, prevent air pollution from dust or particulate matter and restore eroded areas.

Further, the plan must address the following operational elements, if applicable:

- Diversion of landscape waste from the waste stream via mulching, composting or other low-impact means.
- Chemical fertilizer use. The use of artificial chemicals can be minimized by the use of locally adapted plants that need no fertilizer, less-polluting alternatives to artificial chemicals, or other low-impact maintenance practices.

### **SS Credit 3: Integrated Pest Management, Erosion Control and Landscape Management Plan**

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

- Outdoor integrated pest management (IPM), defined as managing outdoor pests (plants, fungi, insects, and/or animals) in a way that protects human health and the surrounding environment and that improves economic returns through the most effective, least-risk option. IPM calls for the use of least toxic chemical pesticides, minimum use of the chemicals, use only in targeted locations, and use only for targeted species. IPM requires routine inspection and monitoring. The outdoor IPM plan must address all the specific IPM requirements listed in IEQ Credit 3.6: Green Cleaning: Indoor Integrated Pest Management, including preferred use of nonchemical methods, definition of emergency conditions and universal notification (advance notice of not less than 72 hours under normal conditions and 24 hours in emergencies before a pesticide, other than a leasttoxic pesticide, is applied in a building or on surrounding grounds that the building management maintains). The outdoor IPM plan must also be integrated with any indoor IPM plan for the building, as appropriate.
- Erosion and sedimentation control for ongoing landscape operations (where applicable) and future construction activity. The plan must address both site soil and potential construction materials. The plan must also include measures that prevent erosion and sedimentation, prevent air pollution from dust or particulate matter and restore eroded areas.

Further, the plan must address the following operational elements, if applicable:

- Diversion of landscape waste from the waste stream via mulching, composting or other low-impact means.
- Chemical fertilizer use. The use of artificial chemicals can be minimized by the use of locally adapted plants that need no fertilizer, less-polluting alternatives to artificial chemicals, or other low-impact maintenance practices.

### **SS Credit 5: Site Development—Protect or Restore Open Habitat**

During the performance period, have in place native<sup>1</sup> or adapted vegetation<sup>2</sup> covering a minimum of 25% of the total site area (excluding the building footprint) or 5% of the total site area (including the building footprint), whichever is greater.

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

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

### **SS Credit 6: Stormwater Quantity Control**

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

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

## WATER EFFICIENCY

### **WE Prerequisite 1: Minimum Indoor Plumbing Fixture and Fitting Efficiency**

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

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

- For a plumbing system substantially completed in 1993 or later throughout the building, the baseline is 120% of the water use that would result if all fixtures met the codes cited above.
- For a plumbing system substantially completed before 1993 throughout the building, the baseline is 160% of the water use that would result if all fixtures met the codes cited above.

If indoor plumbing systems were substantially completed at different times (because the plumbing renovations occurred at different times in different parts of the building), Set a whole-building average baseline by prorating between the above limits. Prorate based on the proportion of plumbing fixtures installed during the plumbing renovations in each date period, as explained in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition. Pre-1993 buildings that have had only minor fixture retrofits (e.g., aerators, showerheads, flushing valves) but no plumbing renovations in or after 1993 may use the 160% baseline for the whole building.

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

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

### **WE Credit 1: Water Performance Measurement**

OPTION 1. (1 point)

Have in place permanently installed water metering that measures the total potable water<sup>1</sup> use for the entire building and associated grounds. Meter data must be recorded on a regular basis and compiled into monthly and annual summaries. Applicants are also encouraged to meter gray or reclaimed water supplied to the building.

OR

**OPTION 2. (2 points)**

Meet the requirements for Option 1 and have in place permanently installed metering for 1 or more of the following water subsystems:

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

Meters must measure potable water use, but gray or reclaimed water use may also be measured to meet the requirements of this credit. Metering must be continuous and data-logged to allow for an analysis of time trends. The project must compile monthly and annual summaries of results for each subsystem metered.

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

**WE Credit 2: Additional Indoor Plumbing Fixture and Fitting Efficiency**

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

**WE Credit 3: Water Efficient Landscaping**

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

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

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

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

Choose 1 of the following options:

#### OPTION 1

Calculate the mid-summer baseline irrigation water use by determining the water use that would result from using an irrigation system typical for the region and compare this with the building's actual irrigation potable water use, which can be determined through submetering. Use the baseline and actual water use values to calculate the percentage reduction in potable water or other natural surface or subsurface resource use. More detail about completing this calculation is available in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

OR

#### OPTION 2

Calculate the estimated mid-summer irrigation water use by determining the landscape area for the project and sorting this area into the major vegetation types. Determine the reference evapotranspiration rate (ET<sub>0</sub>) for the region and determine the species factor (ks), density factor (kd) and microclimate factor (kmc) for each vegetation type. Use this information to calculate the landscape coefficient (KL) and irrigation water use for the design case. Calculate the baseline case irrigation water use by setting the above factors to average values representative of conventional equipment and design practices. Use the estimated and baseline case to determine the percentage reduction in potable water or other natural surface or subsurface resource use. Factor values and other resources for completing these calculations are available in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

OR

#### OPTION 3

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

## **ENERGY & ATMOSPHERE**

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

Document the current sequence of operations for the building.

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

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

Create a narrative of the preventive maintenance plan for equipment described in the systems narrative and document the preventive maintenance schedule during the performance period.

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

### **EA Prerequisite 2: Minimum Energy Efficiency Performance Required Intent**

#### **CASE 1. Projects Eligible for Energy Star Rating**

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

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

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

#### **CASE 2. Projects Not Eligible for Energy Star Rating**

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

##### **OPTION 1**

Demonstrate energy efficiency at least 19% better than the average for typical buildings of similar type by benchmarking against national average source energy data provided in the Portfolio Manager tool as an alternative to

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

OR

**OPTION 2**

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

AND

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

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

Use the Portfolio Manager tool available on the ENERGY STAR website to benchmark the project even if it is not eligible for an EPA rating: <http://www.energystar.gov/benchmark>

### **EA Prerequisite 3: Fundamental Refrigerant Management**

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

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

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

### **EA Credit 1: Optimize Energy Efficiency Performance**

**CASE 1. Projects Eligible for Energy Star Rating**

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

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

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

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

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

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

**CASE 2. Projects Not Eligible for Energy Star Rating**

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

**OPTION 1**

Demonstrate energy efficiency at least 21% better than the average for typical buildings of similar type by benchmarking against national average source energy data provided in the Portfolio Manager tool as an alternative to energy performance ratings. Follow the detailed instructions in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

OR

**OPTION 2**

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

AND

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

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

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

Use the Portfolio Manager tool available on the ENERGY STAR website to benchmark the project even if it is not eligible for an EPA rating: <http://www.energystar.gov/benchmark>.

## EA Credit 2.1: Existing Building Commissioning—Investigation and Analysis

### OPTION 1. Commissioning Process

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

OR

### OPTION 2. ASHRAE Level II Energy Audit

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

## EA Credit 2.2: Existing Building Commissioning—Implementation

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

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

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

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

## **EA Credit 5: Enhanced Refrigerant Management**

### OPTION 1

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

OR

### OPTION 2

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

## **MATERIALS & RESOURCES**

### **MR Prerequisite 1: Sustainable Purchasing Policy**

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

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

- MR Credit 2: Sustainable Purchasing—Durable Goods
- MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions
- MR Credit 4: Sustainable Purchasing—Reduced Mercury in Lamps

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

### **MR Prerequisite 2: Solid Waste Management Policy**

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

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

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

### **MR Credit 1: Sustainable Purchasing—Ongoing Consumables**

Maintain a sustainable purchasing program covering materials with a low cost per unit that are regularly used and replaced through the course of business. These materials include at a minimum, paper (printing or copy paper, notebooks, notepads, envelopes), toner cartridges, binders, batteries and desk accessories. Food and beverages are excluded from this credit but are covered under MR Credit 5. Sustainable Purchasing - Food. . For materials that may be considered either ongoing consumables or durable goods (see MR Credit 2), the project team is free to decide which category to put them in as long as consistency is maintained with MR Credit 2, with no contradictions, exclusions or double-counting. Consistency must also be maintained with MR Credit 7.

A template calculator for MR Credit 1 is available in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition. One point is awarded to projects that achieve sustainable purchases of at least 60%, of total purchases (by cost) during the performance period. Sustainable purchases are those that meet one or more of the following criteria:

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

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

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

## MR Credit 2: Sustainable Purchasing—Durable Goods

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

### OPTION 1. Electric-Powered Equipment (1 point)

Achieve sustainable purchases of at least 40% of total purchases of electric-powered equipment (by cost) during the performance period. Sustainable purchases shall meet 1 of the following criteria:

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

OR

### OPTION 2. Furniture (1 point)

Achieve sustainable purchases of at least 40% of total purchases of furniture (by cost) during the performance period. Sustainable purchases shall meet 1 or more of the following criteria:

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

- Purchases contain at least 50% material harvested and processed or extracted and processed within 500 miles of the project.

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

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

OR

OPTION 3. Combination (2 points)

Achieve the requirements of both Option 1 & Option 2.

### **MR Credit 3: Sustainable Purchasing—Facility Alterations and Additions**

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

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

- Purchases contain at least 10% postconsumer and/or 20% postindustrial material.
- Purchases contain at least 70% material salvaged from off-site or outside the organization.
- Purchases contain at least 70% material salvaged from on-site, through an internal organization materials and equipment reuse program.
- Purchases contain at least 50% rapidly renewable material.
- Purchases contain at least 50% Forest Stewardship Council certified wood.
- Purchases contain at least 50% material harvested and processed or extracted and processed within 500 miles of the project.
- Adhesives and sealants have a VOC content less than the current VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule #1168, or sealants used as fillers meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.
- Paints and coating have VOC emissions not exceeding the VOC and chemical component limits of Green Seal's Standard GS-11 requirements.
- Noncarpet finished flooring is FloorScore-certified and constitutes a minimum of 25% of the finished floor area.
- Carpet meets the requirements of the CRI Green Label Plus Carpet Testing Program.
- Carpet cushion meets the requirements of the CRI Green Label Testing Program.
- Composite panels and agrifiber2 products contain no added urea-formaldehyde resins.

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

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

#### **MR Credit 4: Sustainable Purchasing—Reduced Mercury in Lamps**

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

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

A template calculator to aid in documenting performance for this credit is available in the LEED Reference Guide for Green Building Operations & Maintenance, 2009 Edition.

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

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

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

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

#### **MR Credit 5: Sustainable Purchasing—Food**

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

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

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

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

### **MR Credit 6: Solid Waste Management—Waste Stream Audit**

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

### **MR Credit 7: Solid Waste Management—Ongoing Consumables**

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

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

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

### **MR Credit 8: Solid Waste Management—Durable Goods**

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

Reuse or recycle 75% of the durable goods waste stream<sup>1</sup> (by weight, volume or replacement value) during the performance period.

### **MR Credit 9: Solid Waste Management—Facility Alterations and Additions**

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

## **INDOOR ENVIRONMENTAL QUALITY**

### **IEQ Prerequisite 1: Minimum Indoor Air Quality Performance**

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

Modify or maintain each outside air intake, supply air fan and/or ventilation distribution system to supply at least the outdoor air ventilation rate required by ASHRAE Standard 62.1–2007 Ventilation Rate Procedure under all normal operating conditions.

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

If meeting ASHRAE Standard 62.1–2007 ventilation rates is infeasible because of the physical constraints of the existing ventilation system, modify or maintain the system to supply at least 10 cubic feet per minute (cfm) of outdoor air per person under all normal operating conditions. Demonstrate through design documentation, measurements or other evidence that the current system cannot provide the flow rates required by ASHRAE Standard 62.1-2007 under any operating condition even when functioning properly.

Each air-handling unit in the building must comply with either Case 1 or Case 2. If some air-handling units can provide the outside air flow required by ASHRAE Standard 62.1-2007 and others cannot, those that can must do so. Buildings must provide at least 10 cfm per person of outside air at each air-handling unit under all normal operating conditions to earn this prerequisite.

#### AND

- Show compliance with the applicable requirement above (Case 1 or Case 2) through measurements taken at the system level (i.e., the air-handling unit). For variable air volume systems, the dampers, fan speeds, etc. must be set during the test to the worst-case system conditions (minimum outside air flow) expected during normal ventilation operations. Each air-handler must be measured; sampling or grouping of air-handlers is prohibited.
- Implement and maintain an HVAC system maintenance program to ensure the proper operations and maintenance of HVAC components as they relate to outdoor air introduction and exhaust.
- Test and maintain the operation of all building exhaust systems, including bathroom, shower, kitchen and parking exhaust systems.

Naturally ventilated buildings must comply with ASHRAE Standard 62.1-2007, paragraph 5.1.

### **IEQ Prerequisite 2: Environmental Tobacco Smoke (ETS) Control**

#### CASE 1. Non-Residential Projects

##### OPTION 1

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

#### OR

##### OPTION 2

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

### IEQ Prerequisite 3: Green Cleaning Policy

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

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

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

## **IEQ Credit 1.1: Indoor Air Quality Best Management Practices—Indoor Air Quality Management Program**

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

## **IEQ Credit 1.2: Indoor Air Quality Best Management Practices—Outdoor Air Delivery Monitoring**

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

AND

### **CASE 1. Mechanical Ventilation Systems**

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

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

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

### **CASE 2. Mechanical Ventilation Systems that Predominantly Serve Densely Occupied Spaces<sup>1</sup>**

Have a CO<sub>2</sub> sensor or sampling location for each densely occupied space and compare it with outdoor ambient CO<sub>2</sub> concentrations. Each sampling location must be between 3 and 6 feet above the floor.

Test and calibrate CO<sub>2</sub> sensors to have an accuracy of no less than 75 parts per million (ppm) or 5% of the reading, whichever is greater. Sensors must be tested and calibrated at least once every 5 years or per the manufacturer's recommendation, whichever is shorter.

Monitor CO<sub>2</sub> sensors with a system configured to trend CO<sub>2</sub> concentrations in intervals no longer than 30 minutes. The system must generate an alarm visible to the system operator and, if desired, to building occupants if the CO<sub>2</sub> concentration in any zone rises more than 15% above that corresponding to the minimum outdoor air rate required by ASHRAE Standard 62.1-2007 (with errata but without addenda<sup>2</sup>) (see IEQ Prerequisite 1: Energy Efficiency Best Management Practices).

## **IEQ Credit 1.4: Indoor Air Quality Best Management Practices—Reduce**

Have in place filtration media with a minimum efficiency reporting value (MERV) of 13 or greater for all outside air intakes and inside air recirculation returns during the performance period. Establish and follow a regular schedule for maintenance and replacement of these filtration media according to the manufacturer's recommended interval.

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

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

- During construction, meet or exceed the recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).
- If the building undergoes a tenant improvement, develop and implement an IAQ management plan for the preoccupancy phases. Perform a flush-out procedure as follows: After construction ends and all interior finishes have been installed, install new filtration media and flush out the affected space. The flush out must be done by supplying a total outdoor air volume of 14,000 cubic feet per square foot of floor area while maintaining an internal temperature of at least 60° F and maintaining a relative humidity no higher than 60% where cooling mechanisms are operated. The affected space may be occupied only after the delivery of at least 3,500 cubic feet of outdoor air per square foot of floor area and the space has been ventilated at a minimum rate of 0.30 cfm per square foot of outdoor air or the design minimum outside air rate (whichever is greater) for at least 3 hours prior to occupancy until the total of 14,000 cubic feet per square foot of outdoor air has been delivered to the space. The flush-out may continue during occupancy.
- Protect stored on-site or installed absorptive materials from moisture damage.
- If permanently installed air-handlers must be used during construction, filtration media with a minimum efficiency reporting value (MERV) of 8 must be used at each return air grille, as determined by ASHRAE Standard 52.2-1999. Replace all filtration media immediately prior to occupancy.
- Upon the completion of construction, HVAC and lighting systems must be returned to the designed or modified sequence of operations.

## **IEQ Credit 2.1: Occupant Comfort—Occupant Survey**

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

## **IEQ Credit 2.2: Controllability of Systems—Lighting**

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

### **IEQ Credit 2.3: Occupant Comfort—Thermal Comfort Monitoring**

Have in place a system for continuous tracking and optimization of systems that regulate indoor comfort and conditions (air temperature, humidity, air speed and radiant temperature) in occupied spaces. Have a permanent monitoring system to ensure ongoing building performance to the desired comfort criteria as determined ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy.

The building must establish the following:

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

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

### **IEQ Credit 2.4: Daylight and Views**

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

#### OPTION 1. Daylight

##### PATH 1. Simulation

Demonstrate through computer simulations that 50% or more of all regularly occupied spaces areas achieve daylight illuminance levels of a minimum of 25 footcandles (fc) and a maximum of 500 fc in a clear sky condition on September 21 at 9 a.m. and 3 p.m.; areas with illuminance levels below or above the range do not comply. However, designs that incorporate view-preserving automated shades for glare control may demonstrate compliance for only the minimum 25 fc illuminance level.

OR

##### PATH 2. Prescriptive

Use a combination of side-lighting and/or top-lighting to achieve a total daylighting zone (the floor area meeting the following requirements) that is at least 50% of all the regularly occupied spaces. For the Sidelighting Daylight Zone (see diagram below):

- Achieve a value, calculated as the product of the visible light transmittance (VLT) and window-to-floor area ratio (WFR) of daylight zone, of between 0.150 and 0.180. The window area included in the calculation must be at least 30 inches above the floor.

$$0.150 < \text{VLT} \times \text{WFR} < 0.180$$

- The ceiling must not obstruct a line in section that:
  - Joins the window-head to a line on the floor that is parallel to the plane of the window ;
  - Is twice the height of the window-head above the floor in distance from the plane of the glass as measured perpendicular to the plane of the glass
- Provide sunlight redirection and/or glare control devices to ensure daylight effectiveness.

For Toplighting Daylight Zone:

- The daylight zone under a skylight is the outline of the opening beneath the skylight, plus in each direction the lesser of:
  - 70% of the ceiling height
  - OR
  - 1/2 the distance to the edge of the nearest skylight, or the distance to any permanent opaque partition (if transparent show VLT) farther away than 70% of the distance between the top of the partition and the ceiling.
- Achieve skylight roof coverage between 3% and 6% of the roof area with a minimum 0.5 VLT for the skylights.
- The distance between the skylights must not be more than 1.4 times the ceiling height
- A skylight diffuser, if used, must have a measured haze value of greater than 90% when tested according to ASTM D1003. Avoid direct line of sight to the skylight diffuser.

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

OR

#### PATH 3. Measurement

Demonstrate through records of indoor light measurements that a minimum daylight illumination level of 25 fc has been achieved in at least 50% of all regularly occupied areas. Measurements must be taken on a 10-foot grid for all occupied spaces and must be recorded on building floor plans.

Only the square footage associated with the portions of rooms or spaces meeting the minimum illumination requirements can be counted in the calculations.

For all projects pursuing this path, provide daylight redirection and/or glare control devices to avoid highcontrast situations that could impede visual tasks. Exceptions for areas where tasks would be hindered by daylight will be considered on their merits.

OR

#### PATH 4. Combination

Any of the above calculation methods may be combined to document the minimum daylight illumination in at least 50% of all regularly occupied spaces. The different methods used in each space must be clearly recorded on all building plans.

In all cases, only the square footage associated with the portions of rooms or spaces meeting the requirements may be applied toward the 50% of total area calculation required to qualify for this credit.

In all cases, provide glare control devices to avoid high-contrast situations that could impede visual tasks. Exceptions for areas where tasks would be hindered by the use of daylight will be considered on their merits.

#### OPTION 2. For Views

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

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

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

### **IEQ Credit 3.1: Green Cleaning—High-Performance Cleaning Program**

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

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

### **IEQ Credit 3.2: Green Cleaning—Custodial Effectiveness Assessment**

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

- The facility must score 3 or less.

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

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

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

- The cleaning products meet 1 or more of the following standards for the appropriate category:
  - Green Seal GS-37, for general-purpose, bathroom, glass and carpet cleaners used for industrial and institutional purposes.
  - Environmental Choice CCD-110, for cleaning and degreasing compounds.
  - Environmental Choice CCD-146, for hard surface cleaners.
  - Environmental Choice CCD-148, for carpet and upholstery care.
- Disinfectants, metal polish, floor finishes, strippers or other products not addressed by the above standards meet 1 or more of the following standards for the appropriate category:
  - Green Seal GS-40, for industrial and institutional floor care products.
  - Environmental Choice CCD-112, for digestion additives for cleaning and odor control.
  - Environmental Choice CCD-113, for drain or grease traps additives.
  - Environmental Choice CCD-115, for odor control additives.
  - Environmental Choice CCD-147, for hard floor care.
  - California Code of Regulations maximum allowable VOC levels for the specific product category.
- Disposable janitorial paper products and trash bags meet the minimum requirements of 1 or more of the following programs for the applicable product category:
  - Environmental Protection Agency (EPA) Comprehensive Procurement Guidelines for Janitorial Paper and Plastic Trash Can Liners.
  - Green Seal GS-09, for paper towels and napkins.
  - Green Seal GS-01, for tissue paper.
  - Environmental Choice CCD-082, for toilet tissue.
  - Environmental Choice CCD-086, for hand towels.
  - Janitorial paper products derived from rapidly renewable resources or made from tree-free fibers.
- Hand soaps meet 1 or more of the following standards:
  - No antimicrobial agents (other than as a preservative) except where required by health codes and other regulations (e.g., food service and health care requirements).
  - Green Seal GS-41, for industrial and institutional hand cleaners.
  - Environmental Choice CCD-104, for hand cleaners and hand soaps.

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

### IEQ Credit 3.4: Green Cleaning—Sustainable Cleaning Equipment

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

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

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

### **IEQ Credit 3.5: Green Cleaning—Indoor Chemical and Pollutant Source Control**

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

Provide containment drains plumbed for appropriate disposal of hazardous liquid wastes in places where water and chemical concentrate mixing occurs for laboratory purposes.

### **IEQ Credit 3.6: Green Cleaning—Indoor Integrated Pest Management**

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

- Integrated methods, site or pest inspections, pest population monitoring, evaluation of the need for pest control and 1 or more pest control methods, including sanitation, structural repairs, mechanical and living biological controls, other nonchemical methods, and if nontoxic options are unreasonable and have been exhausted, a least-toxic pesticide.

- Specification of the circumstances under which an emergency application of pesticides in a building or on surrounding grounds being maintained by building management can be conducted without complying with the earlier provisions.
- A communications strategy directed to building occupants that addresses universal notification, which requires advance notice of not less than 72 hours before a pesticide under normal conditions and 24 hours after application of a pesticide in emergencies, other than a least-toxic pesticide, is applied in a building or on surrounding grounds that the building management maintains.

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