

LEED PROJECT SUBMITTAL TIPS: EXISTING BUILDINGS: O&M 2009

The following document is a collection of informal tips from LEED reviewers based on guidance that has been provided to project teams in review comments. Not all of the tips provided will be applicable to all projects. The tips do not change the credit or submittal requirements; however, some of the supporting documentation referenced in the tips can be helpful for the review. Following the tips does not ensure that a prerequisite or credit will be earned, but it may help to make the review processes smoother.

The content is applicable at the time of publication (12/23/11) and utilizes all publically available resources published by USGBC including, but not limited to, LEED Rating Systems, Reference Guides, LEED Online Forms (LEED 2009 Forms version 3), LEED Interpretations, addenda, errata, supplemental LEED guidance documents & memos such as District & Campus Thermal Energy Treatment. As such, the content of this document may be superseded by subsequent updates to USGBC publications, addenda, errata, and LEED Interpretations. Project teams are responsible for being familiar with all published LEED documents and meeting the requirements of documents published prior to the project's registration date.

ALL Forms

- ☐ Don't forget to verify that the correct signatory has signed all Project Information, Prerequisite, and Credit Forms as necessary.

PIf1 Project Information Form 1

- ☐ Don't forget that the owner must sign the form. The LEED definition of owner refers to the person or entity that holds the legal right to possess and control the real property for the project being registered. Only qualified individuals should be designated this role within the Team Administration and Registration tabs in LEED Online.
- ☐ Remember that the owner signatory requirement may be completed offline by indicating on the active LEED Project Information Form that the Alternative Submittal Path option was taken and providing a brief narrative that confirms that the required documentation has been uploaded to LEED Online v3. The following two documents must be provided in this case:
 1. A copy of the completed LEED Project Information Form that is physically initialed and dated by the owner.
 2. A document with all of the required owner signatory statements, copied directly from the LEED Project Information Form onto owner letterhead, which is then physically signed and dated by the owner.

PIf2 Project Information Form 2

- ☐ Don't forget that the site area, building footprint, and gross square footage listed under PIf2 must be consistent with that reflected in other credits. A narrative should be provided to explain any discrepancies.

PIf3 Project Information Form 3

- ☐ Remember to provide a narrative when indicating that a percentage of the floor area is exempted because it is under separate management control in a way that affects LEED compliance.
- ☐ Don't forget to include visitors. Most building types have visitors.
- ☐ Don't forget to ensure that the occupancy values listed under PIf3 are consistent with those reflected in other credits. Remember to provide a narrative and/or calculations to explain any discrepancies.
- ☐ Be sure to appropriately indicate whether the project was fully occupied for at least the 12 continuous months preceding the LEED-EBOM Certification application submission date. If the project has a low occupancy rate/the tenant list includes several vacancies/the ENERGY STAR SEP indicates that there was vacant space/etc, consider providing a narrative.

PIf4 Project Information Form 4

- ☐ Remember to provide a complete project narrative, including at least three project highlights, as well as any substantial challenges the project team may have faced, as well as an explanation of any special circumstances.
- ☐ Don't forget that the performance period listed on the form should terminate within 30 days of that of all other credits and prerequisites.

Final Reviews

When resubmitting for a final review, ensure that all the appropriate documentation has been provided.

- ❑ Upload a narrative that clearly addresses each of the items listed in the Technical Advice from the preliminary review. If a suitable upload button does not exist within the Credit Form, use the Special Circumstance section of the form.
- ❑ Include any direct correspondence you may have had with USGBC/GBCI (i.e., technical customer service response, conference call minutes, email exchange with GBCI reviewer, etc.) regarding credit-specific issues.

SSc1 LEED Certified Design and Construction

- ❑ Remember to provide a copy of the official USGBC-generated documentation, such as the certificate, letter, or email message, showing that the project building earned LEED certification.

SSc2 Building Exterior and Hardscape Management Plan

- ❑ Be sure that the plan adheres to the Plan Model described on the LEED-EBOM web page (usgbc.org/ebom). Note that the Plan Model differs from the Policy Model outlined in the same document.
- ❑ Remember to specify a responsible party - an individual or team who is accountable for the implementation of the Building Exterior and Hardscape Management Plan. At a minimum, include the name of the individual(s) or job title(s) responsible for overseeing the plan.
- ❑ Remember to describe the quality assurance/quality control processes used to ensure that each element of the plan is being successfully implemented.
- ❑ Be sure to include goals for each aspect of the plan that are quantitative thresholds. For example, the plan could specify the target percentage of paints (measured by volume) used that meet low-VOC criteria.
- ❑ Remember to include performance measurement methods for each aspect of the plan, including how actual outcomes and sustainability performance for each element of the plan will be measured and tracked over time. The selected metrics will allow the project team to quantify the extent to which environmentally preferred practices are used. An example of a performance metric is the amount of GS-11 compliant paint (measured by volume) applied to the building exterior.
- ❑ Remember to use compliant practices for each element of the plan at least 20% of the time during the performance period. Note the following when determining compliance:
 - Sodium chloride and calcium chloride are not compliant deicers, as stated in the LEED Reference Guide.
 - Window washing products must meet the requirements of IEQc3.3 Green Cleaning - Purchase of Sustainable Cleaning Products and Materials.
 - Products used to clean the building exterior must meet the requirements of EQ IEQc3.3 Green Cleaning - Purchase of Sustainable Cleaning Products and Materials
 - Measuring maintenance equipment by equipment count does not allow the project team to determine whether compliant practices were utilized at least 20% of the time during the performance period and thus is not sufficient to document credit compliance.
- ❑ Remember to establish sustainability criteria for cleaning products used on the building exterior based on the requirements of IEQc3.3 Green Cleaning - Purchase of Sustainable Cleaning Products and Materials.

- Remember to include specific VOC limits for paints and sealants in the plan. The plan must specify that paints used on the building exterior comply with the VOC limits of Green Seal's GS-11. Sealants used on the building exterior must comply with SCAQMD Rule #1168, and all sealants used as fillers must comply with Bay Area Air Quality Management District Regulation 8, Rule 51.

Note that specific VOC limits must be included in the plan even if they are not regularly used if it is possible that such products will be used, for example, during building maintenance or re-sealing.

- Be sure to clearly indicate to what extent compliant practices for each aspect of the plan were utilized during the performance period. Note that compliance for this credit is based on the full implementation of an appropriate building exterior and hardscape management plan during the performance period, but allowances are made for project teams to utilize some non-compliant practices if full implementation of a compliant plan is not feasible.
- Don't forget to include a narrative that describes how and to what extent the best management practices employed for each operational element of the plan reduce environmental impacts compared with standard practices.

SSc3 Integrated Pest Management, Erosion Control, and Landscape Management Plan

- Be sure that the plan adheres to the Plan Model described on the LEED-EBOM web page (usgbc.org/ebom). Note that the Plan Model differs from the Policy Model outlined in the same document.
- Remember to specify a responsible party, i.e. an individual or team who is accountable for the implementation of the Integrated Pest Management, Erosion Control, and Landscape Management Plan. At a minimum, include the name of individual(s) or job title(s) responsible for overseeing the plan.
- Be sure to include goals for each aspect of the plan that are quantitative thresholds. For example, the plan could specify the target percentage of fertilizers used (measured by weight, volume, or cost) that contain organic ingredients.
- Remember to include performance measurement methods for each aspect of the plan, including how actual outcomes and sustainability performance for each element of the plan will be measured and tracked over time. The selected metrics will allow the project team to quantify the extent to which environmentally preferred practices are used. An example of a performance measurement could be the quantity of fertilizer (measured by weight, volume, or cost) used.
- Remember to describe the quality assurance/quality control processes used to ensure that each element of the plan is being successfully implemented.
- Be sure to describe the types of rodent baits permitted for use at the project building, if applicable. According to the Reference Guide, rodent baits shall only be used if they are solid blocks placed in locked outdoor dispensers. No second-generation (single-feed) rodent baits shall be used if the building is adjacent to parkland, wild areas, or other spaces where wildlife may be unintentionally affected.

- ❑ Remember to specify the circumstances under which an emergency application of pesticides can be conducted and describe the universal notification system in place to notify building occupants of the application of a pesticide.
- ❑ Be sure to include ongoing erosion and sedimentation control measures and measures in the event of future construction projects in the plan. All buildings, even in urban settings, require measures for preventing erosion and sedimentation. This includes ongoing erosion and sedimentation control, including cleaning out storm drains, maintaining sidewalks, removing detritus, etc., as well as erosion and sedimentation control for potential construction projects such as sidewalk construction.
- ❑ Remember to address both the diversion of landscape waste and the measures for minimizing the use of chemical fertilizers in the plan.
- ❑ Don't forget that the erosion and sedimentation control and IPM portions of the plan must be implemented 100% of the time during the performance period. Environmentally preferred practices for chemical fertilizer use and landscape waste diversion must be utilized at least 20% of the time during the performance period.
- ❑ Be sure the IPM portion of the plan includes a definition of least toxic pesticides and references the San Francisco Pesticide Hazard Screening List rather than the San Francisco Reduced Risk Pesticide List. The Pesticide Hazard Screen list contains the [official list of products and chemicals that meet the Tier 3 Hazard Criteria](#).
- ❑ Remember that the IPM portion of the plan must describe integrated pest methods as the first step in eliminating pests. The plan must utilize integrated methods, site or pest inspections, pest population monitoring, evaluation of the need for pest control and one or more pest control methods, including sanitation, structural repairs, mechanical, and living biological controls, and other nonchemical methods as the first step in eliminating pests.
- ❑ Be sure to verify whether the chemicals listed in the IPM portion of the plan as approved are least toxic according to the San Francisco Pesticide Hazard Screening List. If it is unclear or the product is not least toxic, remember to issue universal notification at least 72 hours prior to applying these chemicals. Chemical-based pesticides that do not appear on the Pesticide Hazard Screen List are not automatically assumed to be least toxic.
- ❑ Remember to check the pesticide application log provided for the project to ensure that non-least toxic pesticides were not applied to the building site or grounds during the performance period without Universal Notification.

SSc4 Alternative Commuting Transportation

Option 3: Informal commute reduction program

- ❑ Be sure that the data is technically sound according to the SCAQMD data collection methodology. Note that:
 - Non-respondents must be considered conventional commuters.
 - No bias can be present in the selection of individuals to be surveyed.
 - The evaluation of commute behavior must be for a specific time period (five consecutive business days). Credit compliance cannot be based on the assessment of the occupants' typical modes of transit. Compliance can only be based on actual behavior over a specific five-day period.

- ❑ Be sure that the total number of regular building occupants is consistent between SSc4 and Plf3. Note that the number of building full-time equivalent employees listed under Plf3 may differ from the number of regular building occupants listed under SSc4, but any notable differences should be quantified and explained.
- ❑ Remember to count carpooling employees as having made a fraction of a trip according to the number of other riders in the vehicle rather than zero trips.
- ❑ Don't forget that projects may not extrapolate the commuting behavior of the respondents to the non-respondents unless the response rate is 80% or more of the regular building occupants. Alternatively, compile the results in the EBOM SSc4 Alternative Commuting Survey Results Calculator that is available on LEED-EBOM web page (usgbc.org/ebom) under the Sustainable Sites header. Note that this calculator and the accompanying Alternative Compliance Approach are applicable to both EBOM-2008 and EBOM-2009 projects.
- ❑ Remember that employees who did not commute due to an absence such as a vacation or sick day should not be included in the calculations for those days. Occupants who do not commute to work due to an absence should be noted but not included in the results.
- ❑ Remember that the random sample size, if used, must be calculated using the formula described in the Calculations section of SSc4 in the Reference Guide. The random sample must also be representative of the building population. If feasible, use systematic sampling for subpopulations within the building, stratified by occupant, employer/tenant, or another characteristic believed to be relevant to commuting behavior. If the building population cannot be stratified because data are lacking, systematic sampling based on an alphabetical or other random list is acceptable. Be sure to provide documentation demonstrating the methodology by which the sampling population was selected.

SSc5 Reduced Site Disturbance - Protect or Restore Open Habitat

Operations and Maintenance On-Site Submittal Path

- ❑ Don't forget to verify that the values for the building footprint and site area are consistent between SSc5 and Plf2.
- ❑ Remember that monoculture plantings cannot be included in credit calculations. According to the Reference Guide, monoculture plantings (e.g., turf) cannot contribute to the credit requirements even if they meet the definition of native or adapted.
- ❑ Be sure that the plantings are native or adapted. Adapted plants grow reliably in a given habitat with minimal attention from humans (i.e., winter protection, pest protection, water irrigation, or fertilization) once root systems are established. Adapted plants are considered to be low maintenance and not invasive.

Operations and Maintenance Off-Site Submittal Path

- ❑ Remember to include a list of the native or adapted plants or other ecologically appropriate features present in the off-site area on the contract. In addition, the contract must describe the off-site natural area improvement/maintenance activities that occurred over the performance period as part of the maintenance contract.

SSc6 Stormwater Quantity Control

Operations and Maintenance Submittal Path; Full Documentation Path; Options 1 and 2

- ☐ Remember to verify the stated value for the site area is consistent between SSc6 and Plf2.
- ☐ Remember to provide a copy of the most recent stormwater inspection.
- ☐ Be sure that the narrative describing the stormwater management strategies in place refers to a concise summary rather than lengthy supporting documentation.
- ☐ Be sure that the 2-year, 24-hour design storm rainfall intensity is listed correctly. For example, check what value, in inches, the 2-year, 24-hour design storm rainfall intensity in inches per hour would result in over a 24-hour period to verify that the value seems reasonable.

SSc7.1 Heat Island Reduction - Non-roof

Operations and Maintenance Submittal Path; Full Documentation Path; Option 2 - Parking Under Cover

- ☐ Don't forget that the parking floor plan will show the extents of the parking structure located under the building or other cover.

SSc7.2 Heat Island Reduction - Roof

Operations and Maintenance Submittal Path; Option 1 - High albedo materials covering a minimum of 75% of the roof area

- ☐ Remember to provide documentation for the high SRI material that establishes its SRI value. The example SRI values from Table 6 should not be used as substitutes for actual manufacturer's data because individual product performance varies.

Operations and Maintenance Submittal Path; Option 2 - Vegetated Roof covering a minimum of 50% of the roof area

- ☐ Be sure to avoid counting containerized or potted plants to meet the credit requirements.

SSc8 Light Pollution Reduction

Automatic Controls

- ☐ Be sure that the weighted annual after-hours off-time duration is greater than the minimum credit requirement of 2,190 hours per year. The form will automatically calculate this number based on the total after-hours off-time during the performance period, so ensure that the entire duration of the performance period is accounted for and not just one week or month.

Option 2 - Shielded Fixtures

- ☐ Remember that all fixtures must be adequately shielded if greater than 50 Watts. Fixtures are considered adequately shielded if the lower edge of the shield is at or below the centerline of the light source or lamp such that light emission above the horizontal plane is minimized.

Option 3 - Measured Night Illumination Levels

- ☐ Remember to include a scale bar on the site map so that distances between measurements can be verified.

WEp1 Minimum Indoor Plumbing Fixture and Fitting Efficiency

- ☐ Remember to provide a water efficiency policy that accounts for potential water supply and disposal cost savings and maintenance cost savings.

Performance Calculation

- ☐ Remember to verify that the occupancy values listed under WEp1 are consistent with those reflected in Plf3.
- ☐ Don't forget to include visitors in the calculations. Most building types have visitors.
- ☐ Remember that the fixture usage groups will represent sub-populations within the building that use a specific subset of building fixtures. Separate fixture usage groups should NOT be created for each fixture type (toilets, urinals, lavatories, etc.).
- ☐ Remember that the building's gender ratio must be assumed to be 50% male and 50% female unless a different ratio can be demonstrated based on actual occupant numbers, with clear supporting documentation.
- ☐ Remember to include kitchen and break room sinks on the form, if they are present in the building.
- ☐ If urinals are not present in the building, the fixture group occupancy must be set to 100% female.
- ☐ Remember to upload manufacturer's or supplier's data verifying the flush/flow rates for each fixture type that differs from UPC/IPC efficiency requirements, whether the flush/flow rate is higher or lower.
- ☐ Don't forget that only facilities in residencies and apartments, private bathrooms in hotels and hospitals, and restrooms in commercial establishments where the fixtures are intended for the use of a family or an individual are considered private or private-use facilities. All other facilities are considered public or public use. Lavatory sinks in multi-stall restrooms are considered public fixtures.
- ☐ Be sure that the weighted average for the dual flush water closets has been listed correctly. In order to meet the requirements of this credit, the dual flush water closet flush rate must be calculated based on the averaging method described in the [Water Use Reduction: Additional Guidance](#).

WEc1 Water Performance Measurement

- ☐ Remember to provide monthly and annual summaries of water use for the entire building and grounds and for each submeter.
- ☐ Remember that all meters must be read at least weekly during the performance period. Otherwise, this credit cannot be earned.
- ☐ Be sure to provide meter calibration documentation for meters owned by the project building.

WEc2 Additional Indoor Plumbing Fixture and Fitting Efficiency

- ☐ See Water Efficiency Prerequisite 1

WEc3 Water Efficient Landscaping

Non-metered Irrigation; Option 2 - Theoretical Performance Calculation

- ❑ Remember to provide detail on the input values for the Theoretical Irrigation Calculation. Information should be provided to justify the selected values for Species Factor (ks), Density Factor (kd), and Microclimate Factor (kmc), for each different vegetation type.

Option 1 - Submetered Irrigation

- ❑ Be sure that if the design irrigation water use was determined using submetered water use, the baseline water usage is not determined using the theoretical irrigation calculation from Option 2. Because the baseline calculations are determined using the most irrigation intensive month of the year and the submetered water use accounts for the irrigation demands of all of the months of the year, this compliance path does not yield an accurate water savings percentage and may not be pursued.

WEc4.1 Cooling Tower Water Management - Chemical Management

- ❑ Be sure that the cooling tower water management plan adequately addresses staff training, including duration, frequency, and subjects of staff training as it relates to cooling tower maintenance.
- ❑ Don't forget to include a narrative description of the conductivity meter, automatic controls, and setpoints installed on each cooling tower.
- ❑ Remember that the documentation provided must be specific to the project building.

EAp1 Energy Efficiency Best Management Practices: Planning, Documentation, and Opportunity Assessment

ENERGY & ATMOSPHERE

- ❑ Remember to provide all required documents, including the building operating plan, a systems narrative, an excerpt from the sequence of operations, preventive maintenance documentation, a breakdown of the total project building annual energy consumption, a summary of findings relating to the generation of the project building's site Energy Utilization Index, and a list of potential low-cost/no-cost energy efficiency and conservation upgrades.
- ❑ Don't forget that the building operating plan must include, at minimum, an occupancy schedule, equipment run-time schedule, design setpoints for all HVAC equipment, and design lighting levels throughout the building. The Building Operating Plan must identify any changes in schedules for different seasons (i.e. cooling and heating seasons), days of the week (i.e. weekday/weekend schedules), and times of day (i.e. occupied/unoccupied). Be sure to address vacant areas.
- ❑ Don't forget that the systems narrative must include all the systems used to meet the operating conditions stated in the operating plan, including but not limited to heating, cooling, ventilation, lighting, and any building controls systems.
- ❑ Don't forget to include an excerpt from the current Sequence of Operations for at least two different building systems summarized in the Systems Narrative. The systems must be of different types (for example, a chiller and a boiler).
- ❑ Be sure that the building's preventative maintenance plan includes all equipment described in the systems narrative. For example, the preventative maintenance plan will include (but is not limited to) terminal units, chilled water pumps, BAS controls, domestic hot water systems, and lighting.
- ❑ Remember to verify that the summary of findings relating to the generation of the project building's site Energy Utilization Index (EUI) is complete. Include a target index and the potential cost savings that might be met by achieving the target index. Be sure to include a comparison of the building's source energy use intensity (EUI) with similar buildings, including a target EUI value and the potential cost savings that would be observed if the target were met. Note that a target index can be established within ENERGY STAR's Portfolio Manager tool.
- ❑ Be sure that the total project building annual energy consumption has been broken down by major end uses or applications. Note that a breakdown of energy consumption by fuel type does not satisfy this requirement.
- ❑ Remember to verify that within the documentation that lists potential low-cost/no-cost energy efficiency and conservation upgrades, the annual energy consumption savings, energy demand savings, total energy cost savings (consumption + demand), and maintenance cost savings resulting from these improvements have been provided.
- ❑ Don't forget that the results of the ASHRAE Level 1 audit must be from within the two years preceding the project application. Please note that projects that have completed a Level I assessment more than two years preceding the project application submittal and within the last five years are not required to repeat the assessment, but the audit report and findings must be updated.

EAp2 Minimum Energy Efficiency Performance

- Don't forget that calibration reports must be provided for all of the building-owned meters.

Adjusted Benchmark Score (Rating System Case 2, Option 1)

- Don't forget to provide a narrative indicating why the project building is ineligible for an ENERGY STAR rating.

Adjusted Benchmark Score (Rating System Case 2, Option 1) or Alternative Score (Rating System Case 2, Option 2)

- Don't forget that if the building is eligible for an ENERGY STAR rating, Case 1 must be used.
- Don't forget to input the building's source, not site, energy use intensity from Portfolio Manager into the Case 2 Calculator.
- Don't forget to refer to the definitions in the Portfolio Manager help menu on the ENERGY STAR website for additional information about each space type.

ENERGY STAR (Rating System Case 1) - streamlined path

- Don't forget that the date of the ENERGY STAR label and the Statement of Energy Performance or other documentation showing the performance rating achieved in Portfolio Manager must be provided and that the label must be from within the 12 months preceding the application date. Remember that to document a higher ENERGY STAR score that the label was awarded for, the full documentation path (no recent ENERGY STAR labels) must be pursued and all required documentation provided.

ENERGY STAR (Rating System Case 1) - No recent labels

- When pursuing this path, be sure to verify all of the following:
 - The monthly energy use summaries must directly correspond to the energy bills provided for the energy source/meter.
 - The building occupancy and square footage must be consistent between the Statement of Energy Performance and other credits and prerequisites.
 - The operating hours must not differ significantly between the Statement of Energy Performance, Plf2, and the Building Operating Plan.
 - Supporting spaces within the building must be categorized correctly within Portfolio Manager.
 - All energy meters serving the building must be accounted for in Portfolio Manager.
 - A summary of the monthly energy use during the performance period must be provided for any excluded areas.
 - If a project is international, a narrative must be provided to explain the rationale for selecting the climate zone most comparable to the building's location.
 - Any space listed as a Data Center must satisfy the definition of a data center space, which was revised as part of the ENERGY STAR updates in June 2010.
 - The number of personal computers (PC's) documented in Portfolio Manager must not be significantly higher than the number of building occupants. Large differences can be explained through a narrative.

EAp3 Fundamental Refrigerant Management

- ❑ Remember to provide documentation listing the refrigerants used within each base building system, including those systems with CFCs and those without.

Full Documentation Path with only non-CFC-based refrigerants selected under "Refrigerant Used"

- ❑ Don't forget to include all commercial refrigeration or supplemental refrigerant-based equipment containing 0.5 or more pounds of refrigerant under EAp3 and EAc5, particularly if the project contains a large commercial kitchen or supplemental air conditioning.

Full Documentation Path with CFC selected under "Refrigerant Used" - Phase-Out Plan

- ❑ Don't forget to include the timeline for CFC phase-out plan. The CFC phase-out plan must have a firm timeline of no more than five years from the end of the LEED-EBOM performance period.

Full Documentation Path with CFC selected under "Refrigerant Used" - Economic Analysis

- ❑ Don't forget that the economic infeasibility of both conversion and replacement must be demonstrated.
- ❑ If CFC-based refrigerants are maintained in the building, don't forget to provide confirmation that the annual leakage rate will be reduced to 5% or less using EPA Clean Air Act, Title VI, Rule 608 procedures governing refrigerant management and reporting and that the total leakage over the remaining life of the unit will be reduced to less than 30% of its refrigerant charge.

EAc1 Optimize Energy Efficiency Performance

- ❑ See Energy & Atmosphere Prerequisite 1

EAc2.1 Existing Building Commissioning - Investigation and Analysis

Option 1 - Commissioning

- ❑ Don't forget to provide a copy of the retrocommissioning plan with all of the required elements, including capital improvements listing the financial attractiveness of each improvement. Be sure that the investigation and analysis phase was completed during the performance period.

Option 2 - ASHRAE Level II Energy Audit

- ❑ Don't forget to include the capital improvements table containing all required elements, including the financial attractiveness of each improvement, a list of capital improvement measures considered but felt to be impractical, and a description of the recommended measurement and verification method(s).

All Options

- ❑ Don't forget that all major energy-using systems in the project building must be included and the total project building annual energy consumption must be broken down by major end uses or applications and must be provided.

EAc2.2 Existing Building Commissioning - Implementation

- ❑ Remember that all no-cost and low-cost energy efficiency measures from EAc2.1 and EAp1 must be implemented, a capital plan must be provided, and that the capital plan must include a timetable for implementation for each measure. A narrative should be provided to address any no-cost or low-cost measures that were not implemented.
- ❑ Be sure to describe any updates or revisions that were made to the Building Operating Plan or confirm that no changes were made.
- ❑ Don't forget to include a training program to build awareness in skills in a broad range of sustainable building operations topics that is targeted at all employees and contractors involved in major aspects of building operations and maintenance.

EAc2.3 Existing Building Commissioning - Ongoing Commissioning

- ❑ Remember to clearly indicate the commissioning cycle frequency. To satisfy LEED requirements, a commissioning cycle frequency of no more than 24 months is required.
- ❑ Don't forget to provide an estimated budget for completion of the overall commissioning cycle and include documentation demonstrating that at least 50% of the scope was completed in the first commissioning cycle.
- ❑ Be sure that the project is not pursuing a preventive maintenance plan as opposed to ongoing commissioning. Ongoing commissioning is a continuous process that methodically identifies and corrects system problems to maintain optimal building performance. The process includes regular measurement, testing, and comparative analysis of building energy data over time. The ongoing commissioning program will include elements of planning, system testing, performance verification, corrective action response, ongoing measurement, and documentation to proactively address operating problems. The documentation must include evidence that rigorous functional testing of equipment (e.g., by changing parameters, setpoints or conditions and observing and documenting the system or equipment response through various modes and conditions over time) is being performed in the project building. Note that system monitoring and preventive maintenance activities alone are not sufficient for achieving this credit, nor are repetition of the energy auditing activities associated with the ASHRAE Level II Audit or the outside air calculations associated with EQp1 Outdoor Air Introduction and Exhaust Systems. Generally, teams that pursue EAc2.1 and EAc2.2 through energy auditing are not positioned to achieve EAc2.3.
- ❑ Be sure that the ongoing commissioning program includes elements of planning, system testing, performance verification, corrective action response, ongoing measurement, and documentation to proactively address operating problems. This includes evidence that rigorous functional testing of equipment (e.g., by changing parameters, setpoints or conditions and observing and documenting the system or equipment response through various modes and conditions over time) is being performed in the project building. Note that system monitoring and preventive maintenance activities alone are not sufficient for achieving this credit, nor are repetition of the energy auditing activities associated with the ASHRAE Level II Audit or the outside air calculations associated with EQp1 Outdoor Air Introduction and Exhaust Systems. Generally, teams that pursue EAc2.1 and EAc2.2 through energy auditing are not positioned to achieve EAc2.3.

EAc3.1 Performance Measurement - Building Automation System

- ☐ Remember that automatic controls must be used to control building interior and exterior lighting systems and automatically turn off all non-emergency lighting during unoccupied hours. This can be via BAS control, or via local automatic controls, including occupancy sensors and/or timers. Manual lighting controls do not fulfill the credit requirements. If any building spaces do not have automatic lighting controls, information should be provided on the use and square footage of these spaces. If a large portion of the overall control system is composed of pneumatic controls, the controls do not provide the level of monitoring and control required by this credit, and the system will not be eligible for this credit.
- ☐ Remember to describe the BAS points list to clearly indicate which points are being monitored.
- ☐ Remember to describe the BAS in sufficient detail, including the function and operation of the building automation system, such as system monitoring, controls, and reporting capabilities. A summary description of the points list representing the BAS's sensors and actuators for each base building system must also be included and the description should comprehensively address heating, cooling, ventilation, and lighting controls.
- ☐ Remember to provide calibration documentation for the BAS. This can take the form of either
 1. A summary report of calibration and system testing performed and dated within the manufacturer recommended interval, as measured from the conclusion of the performance period, or
 2. A maintenance plan outlining procedures that ensure sensor and actuator accuracy and precision, proper operation of the overall system, and repair/replacement of any malfunctioning components.
- ☐ Don't forget to include regular sensor and actuator calibration for a variety of building system components listed in the BAS maintenance plan.

EAc3.2 Performance Measurement - System-Level Metering

- ☐ Remember to document that the calibration requirements of this credit have been met, including documentation specifying procedures and the recommended interval for recalibration, and a summary calibration report dated within the manufacturer's recommended interval.
- ☐ Be sure that all energy meters are at the system level and that manually read meters do not contribute to credit compliance. Remember to describe each meter in sufficient detail, including the meter type and location and the meter data recording process or system, including the data logging intervals and schedule.
- ☐ Remember to provide documentation indicating which specific equipment and building systems are monitored by each energy submeter and what percentage of total building energy use is monitored by each submeter. This documentation should enable the reviewer to verify which specific systems and equipment are submetered, whether at least 40% or 80% of the total expected annual energy consumption of the building is metered at the system level, and whether at least 80% of largest energy use categories has been submetered. Verify that information has been reported consistently across all LEED prerequisites and credits. The provided energy use breakdown must not contain a different value for the total annual energy use than EAp2, EAc1, or EAc2.1.

EAc4 On-site and Off-site Renewable Energy

Off-site

- ☐ Remember to verify that the documentation is consistent with EAp2/EAc1.
- ☐ Don't forget that Green-e certified renewable energy equivalence must be provided if the renewable energy is not Green-e certified.
- ☐ Don't forget that green power must be purchased for at least a two-year period.
- ☐ Don't forget that this project must confirm the intent to purchase off-site renewable energy on an ongoing basis beyond the expiration of the current contract.
- ☐ Don't forget that the project's total energy usage must be offset rather than the project's total electricity usage only and that carbon-offsets must be purchased to offset emissions from purchased steam, or from natural gas, propane, or fuel oil combusted on-site.
- ☐ Don't forget that exemplary performance is not available for projects pursuing this option.

On-site

- ☐ Remember to verify that the renewable energy sources listed are compliant with credit standards.

EAc5 Enhanced Refrigerant Management

Full documentation path

- ☐ Be sure that the refrigerant leakage rate for each piece of equipment has been based on actual leakage rates experienced in the project building.
- ☐ Don't forget to include all commercial refrigeration and supplemental air conditioning equipment containing 0.5 or more pounds of refrigerant in the calculations.
- ☐ Be sure that the completed Refrigerant Impact Calculations indicate that the project's total refrigerant impact per ton is less than the maximum allowable value of 100.
- ☐ Don't forget that the minimum refrigerant leakage rate allowable in the credit calculations is 0.5%. Leakage rates of less than 0.5% cannot be used.

EAc6 Emissions Reduction Reporting

- ☐ Remember to provide a summary of emissions reductions measures as required by the Credit Form.
- ☐ Remember that the summary of actions relating to energy efficiency, renewable energy, and other building energy emissions reductions measures must estimate the relative contribution of each action to greenhouse gas emissions reductions in units of CO₂.

MRp1 Sustainable Purchasing Policy

- ❑ Remember that the Sustainable Purchasing Policy must address MRc1 Sustainable Purchasing: Ongoing Consumable and at least one full credit (MRc2, 3, or 4) besides MRc1.
- ❑ Remember that the Policy must follow the LEED-EBOM Policy Model, including a time period, responsible parties, and quantitative purchasing goals and performance metrics for each aspect of the policy. At a minimum, the responsible party portion of the plan should indicate the name of the individual(s) or job title(s) responsible for overseeing the policy.

MRp2 Solid Waste Management Policy

- ❑ Remember to address furniture disposal as part of the “durable goods” category. The durable goods category includes, but is not limited to, both electronics and furniture.
- ❑ Remember that the Policy must follow the LEED-EBOM Policy Model, including a time period, responsible parties, and quantitative purchasing goals and performance metrics for each aspect of the policy. At a minimum, the responsible party portion of the plan should indicate the name of the individual(s) or job title(s) responsible for overseeing the policy. As an example, a goal could be set for a specific percentage of each waste category (by weight or volume) to be diverted.
- ❑ Don’t forget that the policy must have a goal of recycling all of the mercury containing lamps that are discarded.

MRc1 Sustainable Purchasing - Ongoing Consumables

- ❑ Remember to provide cut sheets for at least 20% of the sustainable materials, which clearly confirms the sustainability criteria.
- ❑ Remember that only paper products certified by the Forest Stewardship Council contribute to credit compliance. Alternative certifications cannot be approved without a LEED Interpretation.

MRc2.1 Sustainable Purchasing - Durable Goods, Electric Powered Equipment

- ❑ Remember to provide cut sheets for at least 20% of the sustainable materials, which clearly confirm the sustainability criteria.

MRc3 Sustainable Purchasing - Facility Alterations and Additions

- ❑ Be sure it is clear that the facility alterations/additions meet the minimum requirements for inclusion in LEED-EBOM. The Reference Guide states that for alterations to be included, they must include construction activity by more than one trade specialty, make substantial changes to at least one entire room in the building, and require isolation of the work site from regular building occupants for the duration of construction. For additions, those that increase the total building floor area by at least 5% may be included.
- ❑ Remember that furniture, fixtures, and equipment (FF+E) are not considered base building elements and must be excluded from this credit. Mechanical, electrical, and plumbing components and specialty items such as elevators must be excluded as well.
- ❑ Remember to provide cut sheets for at least 20% of the sustainable materials, which clearly confirm the sustainability criteria.

MRc4 Sustainable Purchasing - Reduced Mercury in Lamps

- ❑ Remember that the lighting purchasing plan must include indoor, outdoor, hard-wired, and portable fixtures.
- ❑ Be sure that the mercury content documentation is consistent with the declared values listed in the form. Please note that the rated life data point must be the 3-hour instant start ballast value (except for T-5 lamps) and that the rated light output per bulb data point must be the mean lumens value. Refer to the Calculations section of MRc4 of the Reference Guide for more information.
- ❑ Remember that any mercury-free lamp types must be at least as energy efficient (in lumens per watt) as their mercury-containing counterparts. Note that incandescent lamps are typically not as energy efficient as fluorescent lamps and so should most likely not be included in credit calculations. Be sure to provide supporting documentation.
- ❑ Don't forget that the purchases made during the performance period must demonstrate that the purchasing plan was implemented. Any lamp that was purchased during the performance period must be included in the purchasing plan. Be sure to provide a narrative to explain any differences between the purchasing plan and the purchases made during the performance period.
- ❑ Remember to provide cut sheets for at least 20% of the sustainable materials that clearly confirm the mercury content, lumen output, and rated life.

MRc5 Sustainable Purchasing - Food

- ❑ Remember that in order to qualify as locally produced food, the raw ingredients of the food must be grown or raised within a 100-mile radius of the project site in order to meet the intent of this credit.

MRc6 Solid Waste Management - Waste Stream Audit

- ❑ Remember to provide a copy of the waste stream audit report, including a description of the audit procedure, a description of the sample of waste audited, and a rationale demonstrating that the audited sample is representative of the building's typical waste stream.
- ❑ Remember that all ongoing consumable waste generated during the audit period (typically one day) must be physically sorted and measured using the methodology described in the Reference Guide.
- ❑ Be sure that the project team used the health and sanitation exemption, such that a portion of the waste was not sorted and weighed, only when appropriate. According to the Reference Guide, the waste stream audit must involve physically sorting the entire building's waste stream into appropriate waste categories, and then measuring the waste by weight or volume. Exemptions for health and sanitation are permitted under the credit requirements, but food waste does not typically merit a health and sanitation exemption. The health and sanitation exemption is more appropriate for items such as diapers or medical waste.

MRc7 Solid Waste Management - Ongoing Consumables

- ☐ Remember that if waste diversion has not been tracked over the performance period, this credit cannot be earned. Extrapolation based on the waste audit or other indirect measurements of ongoing consumables are not acceptable for demonstrating credit compliance.
- ☐ Don't forget to provide a narrative description of the quality control program that is in place to ensure that ongoing consumables are not leaving the project building or associated grounds in uncontrolled or unmonitored channels of the waste stream.
- ☐ Don't forget to provide a description of the battery recycling program and the methods used to estimate battery diversion performance.

MRc8 Solid Waste Management - Durable Goods

- ☐ Be sure to note on the form whether furniture waste was generated during the Performance Period.
- ☐ Don't forget to provide a narrative description of the quality control program that is in place to ensure that durable goods, including both electronics and furniture, are not leaving the project building or associated grounds in uncontrolled or unmonitored channels of the waste stream.

MRc9 Solid Waste Management - Facility Alterations and Additions

- ☐ Be sure that the facility alterations/additions included in the form meet the minimum requirements for inclusion in LEED-EBOM. For alterations to be included, they must include construction activity by more than one trade specialty, make substantial changes to at least one entire room in the building, and require isolation of the work site from regular building occupants for the duration of construction. For additions, those that increase the total building floor area by at least 5% may be included.
- ☐ Remember that furniture, fixtures, and equipment (FF+E) are not considered base building elements and must be excluded from this credit. Mechanical, electrical, and plumbing components and specialty items such as elevators must be excluded as well.

EQp1 Minimum Indoor Air Quality Performance

- ☐ Remember to provide an exhaust system testing report for each separate type of exhaust system, including restroom exhaust systems. All exhaust systems are required to be tested. The test must include verification of each exhaust fan's operation (will the fan operate?), proper function (voltage or amperage), controls (to ensure the fan is under control), and sequence of operations (to ensure that either manual or digital controls are operating according to the desired schedule).
- ☐ Don't forget to provide a maintenance log for all ventilation components.
- ☐ Remember to verify that the total square footage and occupancy listed in the calculations do not differ significantly from the values listed in Plf2 and Plf3. Some differences in square footage are reasonable, given that only occupiable space is included in EQp1, but a narrative description is required to address large square footage differences.
- ☐ Be sure to verify that the outside airflows listed on the form and those listed on the supporting documentation are consistent.
- ☐ Remember that the outdoor air supply at the system level must be individually measured.
- ☐ Remember to identify a sufficient number of potentially critical zones in the supporting Option A Ventilation Rate Procedure (VRP) calculations. Zone level data must be used to calculate the required outdoor air at the system level. The documentation must include sufficient information to show that all potentially critical occupiable zones have been accounted for in the calculations.
- ☐ Remember that ASHRAE 62.1-2004 requires the breathing zone outdoor airflow (V_{bz}) ventilation rates to be met at all of the operating conditions. For variable air volume (VAV) systems that provide both heating and cooling functions, the worst-case ventilation design scenario often occurs in heating mode when the zone primary airflow, (V_{pz}) is at its minimum setting and the supply air temperature is at its highest setting. Typically under these conditions, the zone air distribution effectiveness (E_z) is required to be 0.8 per ASHRAE 62.1-2004, Table 6.2 and the D_s value must represent the ratio of the flow at the worst-case condition analyzed (typically the minimum supply for each zone and the minimum supply airflow at the system level) for the flow at design conditions.

These requirements are especially important for the critical zone, since this zone drives the design of the system level ventilation flow rates. Be sure that it is apparent which zone, for each unit serving multiple zones, is the critical zone and is therefore driving the design outdoor air intake flow (V_{ot}) at the air handler.

- ☐ Remember that all values of occupancy used to define minimum outside airflow requirements must be based on the maximum occupancy expected during normal facility operation and not on design occupancy, minimum occupancy, or unusual or emergency conditions. According to the Reduced Occupancy Guidance for LEED for Existing Buildings, the default values for occupancy listed in ASHRAE standard 62.1-2007 should be used only for completely vacant spaces.
- ☐ Remember, that if the systems are incapable of providing the required airflow, to provide sufficient documentation to demonstrate that building AHUs are incapable of supplying the outdoor airflow required by 62.1-2007.

IEQp2 Environmental Tobacco Smoke (ETS) Control

- ❑ Be sure to include sufficient information on the methods used to communicate to building occupants and visitors the exterior smoking policy.

IEQp3 Green Cleaning Policy

- ❑ Remember to follow the LEED-EBOM Policy Model, including a time period, responsible parties, and quantitative goals and performance metrics for each aspect of the policy. As an example, a goal could be set for a specific percentage of cleaning product purchases (by cost) to satisfy the criteria of IEQc3.3 Green Cleaning: Purchase of Sustainable Cleaning Products and Materials. The responsible party portion would include the name of the individual(s) or job title(s) responsible for overseeing the policy.
- ❑ Don't forget to include sufficient information on the established guidelines surrounding staffing and training of maintenance personnel including the training of maintenance personnel in the hazards of use, disposal, and recycling of cleaning chemicals, dispensing equipment, and packaging, including the subjects and frequency of the training sessions.
- ❑ Don't forget to address the establishment of standard operating procedures for the cleaning system, including procedures for how an effective cleaning and hard floor and carpet maintenance system will be consistently utilized, managed, and audited.
- ❑ Don't forget to address guidelines regarding the safe handling and storage of cleaning chemicals, including the safe handling and storage of cleaning chemicals used in the building and a plan for managing hazardous spills or mishandling incidents.
- ❑ Be sure to include provisions for collecting occupant feedback and continuous improvement to evaluate new technologies, procedures, and processes.
- ❑ Remember to include standard operating procedures that specifically address cleaning to protect vulnerable building occupants. These procedures may identify likely occupants who are disproportionately affected by cleaning practices and propose methods to minimize impacts on those groups. These methods may include adjustments to cleaning procedures, frequencies, or timing.

IEQc1.1 IAQ Best Management Practices - IAQ Management Program

- ❑ Remember that the project must have in place protocol to address at least two significant pollutant sources.
- ❑ Remember to describe the IAQ inspection program in sufficient detail, including a description of how the IAQ manager executes a periodic inspection program to uncover new IAQ issues. The documentation should describe the inspection procedures, schedule, and how any issues are addressed subsequent to the inspection.
- ❑ Don't forget a narrative describing the procedures for receiving and responding to IAQ complaints from building occupants. The documentation should include an explanation of how occupants are made aware of the complaint protocol, the procedures for investigating and diagnosing the issue, and the record keeping procedures for logging the complaint, investigation, and resolution.
- ❑ Don't forget a copy of the IAQ audit report. A full I-BEAM audit must be conducted as described in the [EPA I-BEAM Baseline IAQ Audit forms](#).

- ☐ Remember to provide a list of IAQ-related issues and documentation of their resolution.
- ☐ Be sure that if the audit results indicate that if issues have been found, it is clear that any issues that can be resolved at no cost have been remedied and that a timeline or strategy for addressing each issue that requires cost to resolve has been provided.

IEQc1.2 IAQ Best Management Practices - Outdoor Air Delivery Monitoring

- ☐ **If project building has mechanical ventilation systems that predominantly serve densely occupied spaces:** Be sure to account for densely occupied spaces. Remember that this case must be documented in addition to case 1. Conference and meeting areas are typically found in office buildings and are often considered to be densely occupied spaces (serving 25 people or more per 1,000 square feet). According to the Reference Guide, the project is only exempt from the requirements of case 2 if the total square footage of all dense space is less than 5% of total occupiable square footage.
- ☐ **If project building has mechanical ventilation systems that predominantly serve densely occupied spaces:** Remember to verify that the CO₂ monitors that are mounted in each space are located within the breathing zone. The breathing zone is between 3 and 6 feet above the floor. CO₂ monitors mounted outside the breathing zone, such as in the return air ducts, do not count towards credit compliance.
- ☐ **If project building has mechanical ventilation systems that predominantly serve densely occupied spaces:** Remember to configure the control system to generate an alarm visible to the system operator if the minimum outdoor air rate falls more than 15% below the design minimum rate.
- ☐ **If project building has mechanical ventilation systems that predominantly serve densely occupied spaces:** Remember to verify that any CO₂ monitors are mounted in each space in the breathing zone, between 3 and 6 feet above the floor.

IEQc1.3 IAQ Best Management Practices - Increased Ventilation

Mechanically ventilated spaces

- ☐ Remember that each air handler must provide outdoor air ventilation flow rates exceeding ASHRAE 62.1-2007 by at least 30% based on the zone level calculations; a building or project-wide average is not permitted. Nor is it acceptable to multiply the system level values calculated in IEQp1 by 130%. The 30% increase in OA for mechanically ventilated spaces for compliance of this credit must be provided at the zone level. These values can be calculated by increasing the OA flow rate per person and per unit area (Ra and Rp) by 30% individually, by increasing the total breathing zone OA flow (Vbz) by 30%, or by increasing the uncorrected OA intake (Vou) at the system level and increasing the breathing zone OA flow (Vbz) at the critical zone by 30%. Alternatively, the revised offline calculator, provided as a resource for IEQp1, calculates the system level OA flow required automatically based on the zone level IEQp1 inputs.

IEQc1.4 IAQ Best Management Practices- Reduce Particulates in Air Distribution

- ☐ Don't forget to specify the manufacturer's recommended replacement interval for each MERV 13 filter used in the project building.

IEQc1.5 IAQ Best Management Practices- IAQ Management for Facility Alterations & Additions

- ☐ Don't forget to include the IAQ Management Plan, including all required components.

One or more facility alterations or additions occurred during the performance period

- Remember to describe the building flush-out in sufficient detail, including data regarding outdoor airflow, the duration of the flush-out, and the size of the space flushed, such that it can be verified that the flush out was implemented according to the credit requirements.

IEQc2.1 Occupant Comfort- Occupant Survey

- Remember to verify that the total number of regular building occupants does not differ significantly between EAc2.1 and Plf3.
- Be sure that the number of regular building occupants has been calculated correctly for this credit. Regular building occupants in a commercial building are workers who either have a permanent office or workstation or typically spend a minimum of 10 hours per week in the project building. As such, the number of regular building occupants is likely to be similar to the number of peak building occupants (excluding visitors) listed under Plf3 rather than to the number of average building occupants.
- Remember that the survey must address all the required elements, including thermal comfort, acoustics, indoor air quality, lighting levels, building cleanliness, and/or overall satisfaction with building performance.
- Don't forget that if at least 20% of occupants are dissatisfied with one or more aspects of building comfort (thermal comfort, acoustics, indoor air quality, lighting levels, building cleanliness, and/or overall satisfaction with building performance) corrective actions for this element of occupant comfort must be described.
- Be sure that the survey is designed to analyze occupant dissatisfaction per element rather than in terms of overall satisfaction. Also, make sure that the collected survey responses are anonymous.

IEQc2.2 Controllability of Systems – Lighting

Option 1 - Occupant controlled lighting

- Remember that lighting controls for group multi-occupant spaces must be adjustable to suit group activities and allow flexibility in lighting for different uses. Therefore, compliant controls for multi-occupant spaces must have more than two levels of lighting. Various switches for different lighting levels, dimmer switches, or an on/off switch accompanied by blinds or glare control devices on windows to the outside are examples of acceptable lighting controls for multi-occupant spaces. Don't forget to include all conference rooms (large or small) in the list of shared multi-occupant spaces.

Simple on/off control may be sufficient in some multi-occupant spaces, such as small conference rooms not anticipated for making presentations; however, a narrative shall clearly document that the lighting controls are adequate for accomplishing the intended functions of the space, as a single simple on/off control may not be adequate for all types of multi-occupant spaces.

Note that on/off switches for task lighting are acceptable controls for individual workstations.

- ☐ Be sure that the number of individual workstations is not significantly higher than the occupancy reported under Plf3. A narrative can be provided to explain substantial differences.
- ☐ Don't forget to check whether the number of individual workstations with lighting controls exceeds the total number of individual workstations.

IEQc2.3 Occupant Comfort- Thermal Comfort Monitoring

- ☐ Remember to explain how data points are analyzed against thermal comfort criteria.
- ☐ Be sure that humidity, radiant temperature, and air speed are being monitored in the project building. Note that radiant temperature and air speed are typically measured manually, not automatically, and that air speed must be measured in occupied spaces and not within the HVAC system.

IEQc2.4 Daylight & Views

- ☐ Remember to clarify whether cubicles listed in the calculations have access to views at 42". Only cubicles with access to views at 42" can contribute towards credit compliance.
- ☐ Remember to provide sufficient documentation for each floor. Since the individual suites represent separate businesses with their own tenant improvement requirements and cubicle configurations, variation typically exists between floors. The documentation should be representative of all building floors and account for variations due to differing Tenant Improvement requirements and cubicle configurations.

IEQc3.1 Green Cleaning - High Performance Cleaning Program

- ☐ Remember to establish quantitative goals and performance metrics for each applicable aspect of the program, in particular for cleaning products and equipment. As an example, a goal could be set for a specific percentage of cleaning product purchases (by cost) to satisfy the criteria of IEQc3.3 Green Cleaning: purchase of Sustainable Cleaning Products and Materials.
- ☐ Be sure to specify a responsible party - an individual or team who is accountable for the implementation of the program. At a minimum, include the name of the individual(s) or job title(s) responsible for overseeing the program.
- ☐ Don't forget to establish quality assurance/quality control processes used to ensure that each element of the program is being successfully implemented.
- ☐ Don't forget to address the staffing plan, including the number of custodial/maintenance staff that are working at any given time during operating hours. Demonstrate that this number of staff is sufficient to cover the specific needs of the project building.

IEQc3.2 Green Cleaning - Custodial Effectiveness Assessment

- ☐ Be sure that the total square footage of space included in the calculations does not differ significantly from the building square footage reported in Plf2. Some differences in square footage are reasonable, given that not all space types (mechanical rooms, for example) are required to be included in the APPA audit, but significant differences in square footage should be explained in greater detail.
- ☐ Remember to audit a sufficient number of rooms. Rooms equivalent to at least 10% of the number of rooms each space type and 10% of total floor area cleaned must be audited. For any space types where 10% consists of fewer than five rooms, include all of the rooms.

Single audit

- ❑ Don't forget that if using a single auditor, the person must be independent from the project. If a single audit takes place, it must be conducted by an independent third party; an employee of the owning organization (or building management organization) does not qualify.

IEQc3.3 Green Cleaning - Purchase of Sustainable Cleaning Products and Materials

- ❑ Remember to provide cut sheets for at least 20% of the sustainable materials, which clearly confirm the sustainability criteria.
- ❑ Remember to account for all of the cleaning material and product purchases that were made during the performance period. If only one or two items were purchased during the performance period, provide a narrative to clarify that all applicable purchases have been included.

IEQc3.4 Green Cleaning - Sustainable Cleaning Equipment

- ❑ Remember to confirm the date of purchase for all pieces of cleaning equipment utilized during the performance period. Estimated dates may be used for equipment purchased before the performance period.
- ❑ Remember to provide a list of all janitorial equipment within the Credit Form. All equipment available for use during the performance period must be included, even if owned by a cleaning vendor.
- ❑ Remember to provide a maintenance log. This credit requires that project teams demonstrate that all of the cleaning equipment utilized in the project building, regardless of owner, was properly maintained during the performance period. This can include but is not limited to bag replacement, cleaning of filters, and inspection of mechanical and electrical elements.
- ❑ Be sure that all of the necessary sustainability criteria have been met for each piece of equipment. For example, vacuum cleaners must meet this credit's noise minimization requirement, which requires that the vacuum operate with a sound level of less than 70 dBA and must also meet the CRI "Green Label" Testing criteria. During the performance period, 100% of the equipment purchased must meet the sustainability criteria. At the end of the performance period, at least 20% of all of the equipment in the project's inventory must meet the applicable sustainability criteria.

IEQc3.5 Green Cleaning - Indoor Chemical and Pollutant Source Control

- ❑ Remember to label all entries and exits from the project building. Please note that entryway systems are required at building service and loading dock entrances and at building entrances from attached or underground parking garages. Entryways that do not have installed entryway systems should be clearly marked as emergency exits or entries to private offices, as applicable. Please note that in order to meet the requirements of this credit, all building entrances that are in use must have a compliant entryway system in place.
- ❑ In the provided floor plans, remember to confirm the lengths of the entryways systems on the floor plans. Each must be at least ten feet in length in the primary direction of travel.

- ❑ Don't forget that typical building carpeting does not satisfy the requirements of IEQc3.5, as it is not designed to effectively capture dirt, dust, pollen, and other particles entering the building.

IEQc3.9 Green Cleaning - Indoor Integrated Pest Management

- ❑ Be sure that the pesticide application log provided is legible. If needed, provide a legible, transcribed copy of the pesticide log.
- ❑ Be sure that the pesticide application log includes all of the information required to demonstrate credit compliance, such as pesticide names, active ingredients, and EPA numbers, along with application date(s) and information on the specific location(s) in each space where the pesticide was applied (i.e. crack and crevice application vs. general spray). This log must also describe how and when Universal Notification requirements were met for any non-least toxic pesticides, including pesticide applications in emergency situations.
- ❑ Don't forget to describe the Universal Notification System to notify building occupants of the application of a pesticide. These Universal Notification procedures will require notice of not less than 72 hours before application (under normal conditions) and 24 hours after application (in emergency conditions) of a pesticide other than a least-toxic pesticide.
- ❑ Remember to specify the circumstances under which an emergency application of pesticides can be conducted.
- ❑ Remember to describe the integrated methods, site or pest inspections, pest population monitoring, evaluation of the need for pest control and one or more pest control methods, including sanitation, structural repairs, mechanical, and living biological controls, and other nonchemical methods as the first step in eliminating pests.
- ❑ Remember that if rodent baits are used, the plan should describe the types of rodent baits permitted for use at the project building. According to the Reference Guide, rodent baits shall only be used if they are solid blocks placed in locked outdoor dispensers. No second-generation (single-feed) rodent baits shall be used if the building is adjacent to parkland, wild areas, or other spaces where wildlife may be unintentionally affected.
- ❑ Remember to verify that the plan's definition of least toxic pesticide is consistent with the definition outlined in the Reference Guide. According to the Reference Guide, least toxic pesticides are considered to be products that meet San Francisco's Tier III hazard criteria as shown in the San Francisco Pesticide Hazard Screening List.
- ❑ Be sure to verify whether the chemicals listed in the IPM portion of the plan as approved are least toxic according to the San Francisco Pesticide Hazard Screening List (note, the plan should not refer to the San Francisco Reduced Risk Pesticide List). If it is unclear or the product is not least toxic, remember to issue universal notification at least 72 hours prior to applying these chemicals. Chemical-based pesticides that do not appear on the Pesticide Hazard Screen List are not assumed to be least toxic.
- ❑ If any non-least toxic pesticides were used during the performance period, provide evidence that Universal Notification took place. If pesticides other than least toxic pesticides are used, the project team must exercise Universal Notification.

IOc1 Innovation in Operations

- ❑ Be sure that the strategy meets the basic criteria listed in the Reference Guide that need to be addressed for achieving an IO point. Provide the following: identify the intent of the proposed innovation credit, explain the environmental benefits delivered by meeting the intent of the credit, define the proposed requirements for compliance and proposed performance metrics to demonstrate compliance, describe how the proposed innovation rises significantly above standard building operations and maintenance practices, clearly indicate how the proposed innovation leads to the environmental and other benefits cited, estimate the magnitude of the environmental benefits achieved at the project building, and demonstrate how a comprehensive, whole building approach is taken. These are requirements for Innovation credits.
- ❑ Be sure that the strategy is not already included in a LEED-EBOM credit. Innovation in Operations credits are not awarded when the strategy aids in the achievement of an existing LEED credit (even if the credit was not applied in the project).
- ❑ Don't forget to check for acceptable strategies within the LEED for Schools rating system. The following LEED for Schools credits are allowed in LEED-EBOM as ID credits: SSc9 Site Master Plan, EQc4 Low-Emitting Materials, Option 6 - Ceilings and Walls, and EQc10 Mold Prevention (if project team has control over all relevant aspects of HVAC design).
- ❑ Remember to check the LEED Pilot Credits in the [Pilot Credit Library](#). Strategies that are too similar to LEED Pilot Credits but do not follow the Pilot Credit requirements may not be awarded.

IOc1 Public Education

- ❑ Don't forget that two actively instructional components must be documented: the development of a manual, guideline, or case study (pdf of the hardcopy), the development of an outreach program (description / website print screens) or guided tour (a script and a tour stop description drawing), and / or electronic examples of the comprehensive signage program.

IOc1 Employee Wellness

- ❑ Remember to provide documentation demonstrating occupant participation in a comprehensive employee wellness program that provides regular access to and participation in health and fitness amenities as required in the Reference Guide.

IOc2 LEED Accredited Professional

- ❑ Remember to provide a copy of the LEED AP certificate. The exam scorecard is not sufficient to demonstrate compliance.

IOc3 Documenting Sustainable Building Cost Impacts

- ❑ Remember that if the building occupancy period is less than five years, or if the building management has changed during the last five years, less data can be provided, provide an explanatory narrative. Otherwise, data must be provided for five years.
- ❑ Remember that data must be provided on an annual basis. Where the LEED-EBOM Performance Period was less than a year, extrapolate costs based on trends visible in historic data or as otherwise appropriate.