

LEED PROJECT SUBMITTAL TIPS: COMMERCIAL INTERIORS 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 As such, the content of this document may be superseded by subsequent updates to USGBC publications, addenda, errata, and LEED Interpretations.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.

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Project Information Forms

Often portions of the Project Information Forms are missing. These are required documents and when omitted from the application can lead to review delays or credits receiving only one round of review.

- ☐ Site plan with LEED project boundary; with the same LEED project boundary shown across the SS credits.
- ☐ Floor plans of all floors.
- ☐ Interior elevations or photographs.
- ☐ Exterior building elevations.
- ☐ Descriptive Project narrative.
- ☐ Description of the HVAC system and pertinent drawings.

General Credit Checklist

Crosschecks should be made by the project team to avoid delay in the award of credits due to these discrepancies.

- ☐ Inconsistent site and building area numbers in the PI Forms sections and across various credits.
- ☐ Inconsistent FTE and visitor numbers across all credits, include average, peak, and transient occupants.
- ☐ Floor plans should be verified to be certain that the most recent is uploaded. Frequently room name discrepancies exist throughout applications.

ALL Forms

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

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 Sustainable Sites

Option 1: Select a LEED Certified Building

- ☐ Don't forget to include a copy of the core building LEED certification document. Project teams may use any formal correspondence from GBCI as proof that the building was previously certified. This includes the auto-email confirming certification acceptance, the certificate, the congratulation letter from GBCI/USGBC, or the certification acceptance form.
- ☐ Remember that if the project is located in a LEED-ND neighborhood it does not qualify for this credit.

Option 2, Path1: Brownfield Redevelopment

- ☐ Don't forget to include the required supporting documentation, such as a copy of the pertinent sections of the ASTM E1903-97 Phase II Environmental Site Assessment or a letter from a local, state or federal regulatory agency confirming the site is classified as a brownfield, and describe the remediation efforts undertaken.

Option 2, Path 2, Case 1, & Case 2

- ☐ Be sure to complete the table on the LEED Credit Form.
- ☐ Don't forget to include a summary of the Stormwater Management Plan, including a narrative and stormwater calculations.

Option 2, Path 3: Stormwater Design, Quality Control

- ☐ Be sure to complete the table on the LEED Credit Form.

Option 2, Path 4: Heat Island Reduction, Non-Roof (shaded)

- ☐ Be sure to complete the calculations on the LEED Credit Form.

Option 2, Path 6: Light Pollution Reduction

- ☐ Remember that the lighting plans must demonstrate that the project meets the credit requirements.

Option 2, Path 7: Water Efficient Irrigation: Reduced Potable Water Consumption (high efficiency irrigation)

- ☐ Don't forget to include the required narrative.
- ☐ Remember that this credit does not apply if the project has no landscaping.

Option 2, Path 8: Water Efficient Irrigation: No Potable Use or No Irrigation

- ☐ Don't forget to include the required narrative and calculations.
- ☐ Remember that this credit does not apply if the project has no landscaping.
- ☐ Be sure that the project demonstrates compliance with SSc1 Path 7 Water Efficient Irrigation: Reduced Potable Water Consumption. At least a 50% reduction through high-efficient irrigation (or no installed irrigation system) must be documented.

Option 2, Path 9: Innovative Wastewater Technologies (municipally provided potable water reduced by 50%)

- ❑ Don't forget to include the required narrative and calculations, especially if graywater is being utilized on the project site.
- ❑ Don't forget that the calculation must include the occupancy for the entire building including the tenant space occupants.

Option 2, Path 10: Water Use Reduction: 20%

- ❑ Remember to include the completed calculations required on the form. Also, consider the following when calculating the project's water use reduction:
 - The water use calculations must include fixture usage rates that correspond to the standard calculation methodology presented in the LEED-CI Reference Guide. Ensure that a standard 50/50 female to male ratio is used or that a detailed narrative and supporting documentation are provided to account for a change in ratio. Please note that current or historic staffing levels are not an acceptable rationale for deviating from the standard 50/50 ratio. Modifications to the 50/50 ratio must be shown to apply for the life of the building. Acceptable special circumstances include:
 1. **Projects specifically designed for an alternative gender ratio:** Examples of this could be a single gender educational facility or any project that can show that flush and flow fixtures have been distributed to account for the modified ratio. Project teams must provide documentation of the code-required plumbing fixture counts per gender, so the review team can verify that the flush-fixture ratio installed in the project supports the alternative gender ratio claimed.
 2. **Projects expected to have alternative gender usage rates for the life of the building:** An example of this could be a military project. For such projects current staffing level or human resource data, alone, is not sufficient to justify a departure from the 50/50 ratio. Supporting documentation must include trend data forecasting forward that shows the unequal gender ratio will likely exist for the life of the building.
 - The lower rate for the dual flow water closets must not be utilized for all uses. Separate rates must be documented for both low and full flushes as needed.
- ❑ Don't forget that the calculation must include the occupancy for the entire building including the tenant space occupants.
- ❑ Don't forget that this credit applies to those tenants who occupy 50% or less of the entire building square footage. Therefore, if the project occupies more than 50% of the building, this credit does not apply.
- ❑ Remember that a narrative must be provided on the Credit Form.

Option 2, Path 11: Onsite Renewable Energy

- ❑ Don't forget to complete the table on the LEED Credit Form.

Option 2, Path 12: Other Quantifiable Environmental Performance

- ❑ For LOv3 projects see the Addenda for a list of applicable credits from other LEED rating systems.

SSc2 Development Density & Community Connectivity

- ☐ Remember that the site vicinity plan must include the required scale as well the one half mile radius or density boundary, based on the pathway selected.

Option 1: Density

- ☐ For the total neighborhood property area, don't forget to include all buildable land within the density radius. Also, remember to complete the neighborhood density calculation in the form and provide information for the site/building area of surrounding sites.

Option 2: Community Connectivity

- ☐ For the uploaded map, remember to include the following:
 - A residential district and corresponding density value showing a minimum density of ten units per acre.
 - Labels for the qualifying services within a one half mile radius.
 - Indication that the listed services have pedestrian access from the project site, where appropriate.
- ☐ When identifying basic services, don't forget that:
 - The number of basic services must meet the required minimum of ten services.
 - Restaurants are the only type of basic service that may be counted twice.
 - All but two of the listed services must be existing and operational.
 - All of the community services must be available to the general public and not restricted to only building/campus occupants.

SSc3.1 Alternative Transportation: Public Transportation Access

- ☐ Don't forget to provide a scaled drawing showing the location of the transit stops. The drawing must show the pedestrian route from the main entrance of the project to the bus stops, and the pedestrian route must be less than one half mile in order to meet the credit requirements.

Option 2: Bus lines

- ☐ Remember that the project must be served by more than one bus line within one-quarter mile of the project site. One bus line going in two directions does not meet the credit requirements.

SSc3.2 Alternative Transportation: Bicycle Storage and Changing Rooms

- ☐ Be sure that the occupancy stated for this credit is consistent with SSc3.3 and WEc1.
- ☐ Remember that the occupancy value must include transients/visitors in the total.
- ☐ Don't forget that if the showers are located in a nearby fitness center a copy of the two-year contractual arrangement between the health club and the tenant must be provided.
- ☐ Remember that if the required bicycle-rack capacity cannot be reserved for the tenant space, the quantity must be based on the entire building population.

SSc3.3 Parking Availability

- ❑ Be sure that the designated spaces are located closest to the main entrance of the project, exclusive of spaces designed for handicapped access, as required.
- ❑ Remember to include a copy of the local zoning requirements, where appropriate.

Case 1: Projects with and area less than 75% (with parking)

- ❑ Be sure that the occupancy stated for this credit is consistent with SSc3.2 and WEc1.
- ❑ Remember that if the project is part of a building or campus, the project must demonstrate that the car pool spaces are reserved for this tenant only.
- ❑ Don't forget to include a description (narrative and/or drawings) of parking amenities available to occupants of the project space.
- ❑ Don't forget to incorporate the calculations and zoning regulations for the tenant space.

Case 1: Projects with and area less than 75% (no parking)

- ❑ Remember that if the tenant is permitted to use the existing parking area this compliance path is not applicable to the project.

Case 2: Projects with and area of 75% or more (with parking)

- ❑ Don't forget to incorporate the calculations and zoning regulations for the entire building/campus rather than just the tenant space.

Case 2: Projects with and area of 75% or more (no new parking added)

- ❑ Remember to complete the calculation table for this pathway.

WEp1/c1 Water Use Reduction

- ❑ Be sure that the occupancy stated for this credit is consistent with SSc3.2 and SSc3.3.
- ❑ Remember the following when calculating the project's water use reduction:
 - The water use calculations must include fixture usage rates that correspond to the standard calculation methodology presented in the LEED-CI Reference Guide. Ensure that a standard 50/50 female to male ratio is used or that a detailed narrative and supporting documentation are provided to account for a change in ratio. Please note that current or historic staffing levels are not an acceptable rationale for deviating from the standard 50/50 ratio. Modifications to the 50/50 ratio must be shown to apply for the life of the building. Acceptable special circumstances include:
 1. **Projects specifically designed for an alternative gender ratio:** Examples of this could be a single gender educational facility or any project that can show that flush and flow fixtures have been distributed to account for the modified ratio. Project teams must provide documentation of the code-required plumbing fixture counts per gender, so the review team can verify that the flush-fixture ratio installed in the project supports the alternative gender ratio claimed.
 2. **Projects expected to have alternative gender usage rates for the life of the building:** An example of this could be a military project. For such projects current staffing level or human resource data, alone, is not sufficient to justify a departure from the 50/50 ratio. Supporting documentation must include trend data forecasting forward that shows the unequal gender ratio will likely exist for the life of the building.
 - The water use calculations must include all of the required EPA fixtures (faucets, water closets, showers, and urinals).
 - The EPA of 1992 does not include janitor's sinks in its regulation; therefore, they should not be included in the calculations.
 - The lower rate for the dual flow water closets should not be utilized for all uses. Separate rates should be documented for both low and full flushes as needed.
- ❑ If the project includes graywater and/or stormwater reuse, don't forget to include a narrative describing the installed plumbing systems.
- ❑ Remember that the plumbing fixture and fittings schedule for the project highlighting flush and flow rates must be provided.
- ❑ Also, be sure to include a narrative description on the LEED Credit Form.

EAp1 Fundamental Commissioning

- ☐ Remember that the project name, gross square footage, and principal project space activity for the Commissioning Authorities two representative projects must be provided.
- ☐ Be sure to verify that the party responsible for the documentation of this prerequisite was not also part of the project's design team. Per EAp1 requirements, the project must engage a commissioning team that does not include individuals directly responsible for project design or construction management.
- ☐ Don't forget to include the following systems in the commissioning activities if they are within the LEED CI project scope: Heating, ventilating, air conditioning and refrigeration (HVAC) systems, lighting controls (including day lighting), domestic hot water systems, renewable energy systems (PV, wind, solar, etc.)
- ☐ Remember to provide a copy of the Commissioning Report, and ensure that the credit narrative or report includes the results of the commissioning process.

EAp2 Minimum Energy Performance

- ☐ For local codes, remember to include documentation, such as a comparison summary table, demonstrating that the local energy code is equivalent to or more stringent than ASHRAE/IESNA Standard 90.1-2007.
- ☐ When calculating lighting loads, remember the following:
 - The ["Lighting Compliance Documentation" Interactive Compliance Form](#) must be provided. It is optional to complete the "Interior Lighting Power Allowance" Table on the ASHRAE forms. Completing the remaining sections is required.
 - The Lighting Compliance table on the LEED Credit Form must be provided.
 - The ballast power consumption and/or task lighting (as defined by the referenced standard) must be included in the calculation.
 - The Code Allowed Lighting Power Density (watts/sf) values used in the calculation must not exceed the ASHRAE 90.1 allowable values.
- ☐ Remember that the ENERGY STAR Rated Equipment Table for all spaces in the LEED project scope must be completed.
- ☐ Remember that the calculations must include all eligible appliances, electronics, and commercial food service equipment. The calculations should not include only the office equipment.
- ☐ Be sure that the calculation indicates a square footage value that is consistent with other credit submittals.

EAp3 CFC Reduction in HVAC&R Equipment

- ☐ Don't forget that if systems were installed by the owner on behalf of the tenant project, they are included in this prerequisite.

EAc1.1 Optimize Energy Performance, Lighting Power

- ☐ Don't forget to include the ballast power consumption and/or task lighting in the calculations. The Allowed Lighting Power Density (watts/sf) values used in the calculation must not exceed the ASHRAE 90.1 allowable values.
- ☐ Remember to double-check the square footage value utilized in the calculation for consistency with other credit submittals and Project Information Forms.

EAc1.2 Optimize Energy Performance, Lighting Controls

- ☐ Remember to complete the lighting controls table for the credit submission.
- ☐ Also, don't forget to provide representative floor plans.

EAc1.3 Optimize Energy Performance, HVAC

- ☐ Don't forget to upload plans, specifications, and/or an HVAC equipment schedule that shows the equipment within the space and lists the type and function of controls.

Option 1: Prescriptive Path: Efficient Equipment

- ☐ Don't forget to include a summary of the mechanical system design calculations. Also, the mechanical systems design information must be completed on the LEED Credit Form.
- ☐ Be sure the scope mechanical system is adequate to meet the credit criteria. The following two paths would be sufficient to document that the scope is adequate to meet the credit criteria:
 1. All HVAC equipment installed as part of the scope of work satisfies the relevant Core Performance Guide requirements AND the project scope of work includes either of the following:
 - a) Air handlers with Variable Speed Controls complying with the requirements of the Core Performance Guide Section 3.10 and supply at least 60% of the total supply air volume used within the project scope,
 - OR
 - b) Mechanical equipment complying with the prescriptive efficiency requirements of the Core Performance Guide Section 2.9 that provides at least 60% of the cooling or heating capacity for the project scope.
 2. The relevant criteria from the Core Performance Guide has been met for all HVAC systems serving the area within the project scope, whether or not the HVAC systems are installed as part of the tenant scope of work.
- ☐ Remember that active controls capable of sensing space use, and modulating in response to space demand such as occupancy sensors or demand-controlled ventilation must be provided for each private office and specialty occupancy. These controls may not be grouped for a block of private offices but must include a distinct control per private office or specialty occupancy.
- ☐ Remember to complete the Variable Speed Control Table for all individual pumps serving variable flow systems and VAV fans having a motor horsepower of 5 hp or larger.

Option 2: Performance Path: ASHRAE 90.1

- ☐ Don't forget to provide the ASHRAE [Interactive Energy Cost Budget Compliance Report](#).
- ☐ Be sure to include more than just the project space and model the whole building segment that is served by a central heating or cooling equipment, such as a cooling tower.
- ☐ If there are no modifications to the central plant and the Alternative baseline case is not modeled, be sure to change only those items within the project area to the mandatory and prescription requirements of ASHRAE 90.1 in the baseline case.

- ❑ Be sure to include the HVAC energy use tables for both the design and baseline cases.

Option 2: Performance Path: ASHRAE 90.1, Appendix G, Envelope

- ❑ Be sure that the total building area is consistent with other credits.
- ❑ Be sure that the proposed case U-values are consistent with the various wall and roof construction assemblies listed in Appendix A of ASHRAE 90.1.
- ❑ Don't forget to model the baseline case exterior wall, roof, floor/slab constructions and reflective roof as required by ASHRAE 90.1 Table G3.1-5 and Table 5.5. Additionally, be sure that the baseline case slab-on-grade is modeled with an F-factor of 0.73.
 - Title 24: Be sure that the slab-on-grade areas have been included in the energy model and confirm that the building footprint area indicated on the PERF-1 report accurately reflects the actual slab-on-grade areas.
- ❑ Be sure that the window U-values used for the proposed case account for the impact of the window frames on the whole window assembly.
- ❑ Don't forget, that the existing envelope conditions for the baseline case should be modeled per the requirements of ASHRAE 90.1 Table G3.1-5(f).
- ❑ Be sure to model infiltration rates identically between the baseline and proposed case.

Option 2: Performance Path: ASHRAE 90.1, Appendix G, Interior Lighting

- ❑ Don't forget that the interior lighting power density calculation method used should be either Space-by-Space or Building Area, for the proposed and baseline case and use that method for the project.
- ❑ Be sure to model additional lighting in the baseline case using only the standard allowances provided for the Space-by-Space Method or indicate the specific exception that applies to the lighting. If using an exception, don't forget to model the additional lighting identically in the baseline and proposed case.
- ❑ Don't forget to check the baseline model lighting equivalent full load hours (determined by dividing the total annual lighting consumption by the total lighting power) and confirm that the model contains all of the mandatory controls of ASHRAE 90.1 Section 9: Lighting.
- ❑ Don't forget, when modeling occupancy sensors or day lighting controls in the proposed case, to include occupancy sensors in the baseline case according to ASHRAE 90.1-9.4.1.2 and model day lighting controls per ASHRAE Table G3.1-6(f).
- ❑ Be sure the interior lighting demand of the baseline and proposed cases do not exceed the baseline lighting power allowance for the baseline case and the proposed lighting power.

Option 2: Performance Path: ASHRAE 90.1, Appendix G, HVAC

- ❑ Be sure all conditioned areas have been modeled as heated and cooled according to ASHRAE 90.1 Table G3.1-1 and note the following:
 - Secondary HVAC systems should only be included in the baseline case if Section G3.1.1 exceptions are applicable.
 - If modeling two sources of heating for the baseline case, ASHRAE 90.1 Exception G3.1.1 (a) must be applicable.
 - Be sure, if the energy Simulation Software automatically calculates the baseline, that it does so in accordance with ASHRAE 90.1.

- ❑ Don't forget to include pumps in the baseline model if the baseline case HVAC System Type includes an HVAC circulation loop.
- ❑ When modeling fans, be sure to note the following:
 - Don't forget that the sum of the supply, return, exhaust and relief fans for each baseline case HVAC system should be set equal to the power calculated in G3.1.2.9, where CFM refers to the supply CFM for each HVAC system. The baseline case fan power should be calculated using only the supply fan CFM. This calculated fan power can then be distributed among supply, return, exhaust, and relief fans as necessary, such that the total fan power does not exceed that calculated using only the supply fan CFM.
 - Be sure that the baseline fan power has been calculated correctly in simulation software with automated baseline calculated in accordance with ASHRAE 90.1 Section G3.1.2.9.
 - Don't forget that the baseline case fan air flow rates must be sized based on a 20 deg. F supply-air-to-room-air temperature difference for each baseline system in accordance with ASHRAE 90.1 Section G3.1.2.8, and the proposed case air flow rates should be modeled as designed.
 - Don't forget to check the baseline model fan equivalent full load hours (determined by dividing the total annual fan consumption by the total fan power). The HVAC systems modeled should reflect all mandatory controls from ASHRAE 90.1 Section 6 and the anticipated schedule of operation for the building.
 - Be sure that the interior fan demand reported for the baseline case and the proposed case does not exceed the baseline fan power allowance for the baseline case and the proposed fan power reported in the template/form."
- ❑ Be sure that the baseline equipment capacities are based on sizing runs, and oversized by 25% for heating and 15% for cooling in accordance with ASHRAE 90.1 Section G3.1.2.2, and the proposed case equipment capacities are modeled as designed.
- ❑ Don't forget that the proposed case unitary efficiencies should be modeled at ARI-rated conditions, and the part-load performance curves should appropriately reflect the part-load performance of the installed equipment at the temperature range that the system is anticipated to operate at.
- ❑ Don't forget to model the fan energy and components separately to determine the baseline equipment cooling efficiencies in accordance with ASHRAE 90.1 Section G3.1.2.1.
- ❑ Be sure to model each thermal block in the baseline case with a single packaged single zone system (System Types #1-4) as required by ASHRAE 90.1 Table G3.1-7.
- ❑ Be sure that packaged rooftop heat pumps in the baseline model have been modeled according to ASHRAE Section G3.1.3.1.
- ❑ Be sure that the quantity and type of chillers and/or boilers modeled in the baseline case complies with ASHRAE 90.1 Section G3.1.3.7 and G3.1.3.2 respectively.
- ❑ Don't forget to model reset controls in the baseline case as required by ASHRAE 90.1 Sections G3.1.3.9, G3.1.3.4, G3.1.3.11, and G3.1.3.12 respectively.
- ❑ Be sure to model the hot/chilled/condenser water loop and pump parameters in the baseline system in accordance with ASHRAE 90.1 G3.1.3.3, G3.1.3.5, G3.1.3.9, G1.3.10, and G3.1.3.11 and the proposed systems as designed.

- ❑ Don't forget, when modeling Demand Control Ventilation to note the following:
 - Model the baseline case in accordance with ASHRAE 90.1 Section 6.4.3.8.
 - Model minimum outside air rates identically in the baseline and proposed case for all zones not having Demand Control Ventilation in the proposed case.
 - If Demand Control Ventilation credit is taken in the proposed case, the baseline case should be modeled using minimum ASHRAE 62.1 rates and the proposed case minimum rates should be modeled as designed.
- ❑ Don't forget to model all outdoor air systems in both the baseline and proposed case with zero outside air flow when fans are cycled on to meet unoccupied setback temperatures unless health or safety regulations mandate an alternate minimum flow during unoccupied periods (in which case, the unoccupied outside air rates should be modeled identically in the baseline and proposed case).
- ❑ Don't forget to model exhaust air energy recovery in the baseline case per ASHRAE 90.1 Section G3.1.2.10 and indicate the bypass mechanism used to bypass the energy recovery during mild conditions if energy recovery is modeled for credit in the proposed case.
- ❑ Be sure that VAV terminal units have been modeled in accordance with ASHRAE 90.1 Sections G3.1.3.13 and G3.1.3.14.

Option 2: Performance Path: ASHRAE 90.1, Appendix G, Exceptional Calculation Method - General

- ❑ If using an exception calculation, be sure to include a narrative describing all of the baseline and proposed case assumptions included for this measure and the calculation methodology used to determine the projected savings. The narrative and energy savings should be reported separately from the other efficiency measures. The baseline case description should verify that the efficiency measure is not standard practice for a similar newly constructed facility by referencing a recently published document, utility incentive program that incentivizes the equipment installed, or by documenting systems used to perform the same function in other newly constructed facilities. Savings associated with the proposed case measure should also be justified with published or monitored data.

Option 2: Performance Path: ASHRAE 90.1, Appendix G, Simulation Outputs

- ❑ Be sure that the energy and cost savings reported have been substantiated based on the energy inputs and outputs reported in the template/form.

Option 2: Performance Path: ASHRAE 90.1, Appendix G, Unmet Load Hours

- ❑ Be sure that the number of unmet load hours reported is in accordance with ASHRAE 90.1 Section G3.1.2.2.

EAc2 Enhanced Commissioning

- ❑ Be sure to include the completion dates of commissioning activities.
- ❑ Don't forget to include verification that the party responsible for the documentation of this credit was not also part of the project's design team. The project must engage a commissioning team that does not include individuals directly responsible for project design or construction management.

LEED PROJECT SUBMITTAL TIPS: COMMERCIAL INTERIORS 2009

ENERGY & ATMOSPHERE

- ❑ Remember that the systems manual (or draft if it is pending completion of Commissioning) that covers the commissioned systems and provides future operating staff with information needed to understand and optimally operate the commissioned systems must be provided.
- ❑ Don't forget to upload the contract between owner and CxA ensuring CxA involvement post-construction.

EAc3 Energy Use, Measurement & Payment Accountability

Measurement and Payment Accountability (case 1 less than 75%) - for both sub-metering and payment accountability

- ❑ Don't forget that the documentation must indicate that all of the required energy sources, fuel, or utilities are sub-metered.
- ❑ Remember that if the utilities are prorated, documentation such as a letter from the building manager and a copy of the written record of utility quantities used, must be provided to demonstrate that the heating and cooling are a proration of the true quantities used.
- ❑ Be sure to include installation records or a typical floor plan to document the location of the sub-metering equipment.
- ❑ Don't forget to upload a copy of the lease documenting the energy cost agreement.

Measurement and Payment Accountability (case 2 75% +)

- ❑ Be sure to include a copy of the project's Measurement and Verification plan. An itemized list of suggested components of a comprehensive M and V plan may be found in Section 3.2 of the IPMVP.
- ❑ When pursuing Option D of the IPMVP, be sure to verify and include the following:
 - How the baseline and as-built models have been calibrated, describe weather data used for the calibration simulations, and what the calibration results were. Refer to Section 3.2 and 4.5 of IPMVP Volume III for guidance.
 - How the inputs of the calibrated model are determined including the inputs for schedules. Provide further evidence that whole building metering alone is sufficient to develop the baseline, and that no submetering or data logging is required (in most cases, at least some submetering or data logging is necessary in order to appropriately identify operating schedules, and to verify that the other building energy model inputs (such as lighting power density, HVAC fan operation, etc.) accurately represent the as-built operation.
 - The Monitoring and Verification period (dates, triggers, etc.), and the means of collecting data and frequency of data collection.
 - The acceptable range(s) of error (generally there is a different range allowable for both monthly and annual data)
 - Parties responsible for completing the Monitoring and Verification.
 - The corrective action plan that will be applied if Monitoring and Verification determines that the building does not perform as anticipated.
 - The means for ongoing accountability.

- ❑ If Option B is pursued, be sure to provide a justification narrative describing why Option B of the IPMVP is appropriate for this project. Additionally, explain how the affect of interactive ECMs will be accounted for. Refer to Section 4.3 of the IPMVP for information regarding the applicability of Option B.

EAc4 Green Power

- ❑ Remember to complete the Green Power Provider Summary Table.
- ❑ Don't forget that the proof of purchase and/or contract to purchase off-site renewable energy must be provided.
- ❑ Be sure to complete the Design Electricity Consumption and Actual Electricity Consumption calculations on the LEED Credit Form.
- ❑ Remember that the gross square footage value must be consistent with the other credit submissions

MRp1 Storage and Collection of Recyclables

- ☐ Remember that the credit submission must indicate that all of the materials cited in the prerequisite requirements are collected and stored on-site. Per Reference Guide requirements, the project must provide collection and storage areas for the recycling of cardboard, paper, plastic, glass, and metals.
- ☐ Be sure to include a narrative describing the dedicated recycling storage areas in the project space. It must include the size of the area, accessibility, and expected volume for the project space, as well as collection frequency. Also, it must be demonstrated that recycling storage areas are appropriately sized and located.
- ☐ Don't forget to upload the representative floor plan highlighting the recycling storage areas.

MRc1 Tenant Space, Long-Term Commitment

Owner

- ☐ Remember to provide the affidavit of ownership, notarized deed, or other document as evidence of ownership.

Ten-Year Lease Agreement

- ☐ Don't forget to include an excerpt of the lease agreement highlighting the 10-year commitment.

MRc1.2-1.3 Building Reuse, Maintain Interior Nonstructural Components

- ☐ Be sure that the data in the exterior windows and doors row are subtracted instead of added in the calculation. Please note that the LEED Online calculator automatically subtracts the values in that row; adding a "minus sign" adds the value back into the calculation.

MRc2 Construction Waste Management

- ☐ Remember that materials, including mixed waste, must be listed separately, by type, or project specific diversion rates of commingled debris must be provided.

MRc3.1 Resource Reuse (without furniture and furnishings)

- ☐ Remember that the material cost information must be consistent with the cost information in the other MR credits.
- ☐ Be sure to complete the table in order to document the materials used and values for each tracked item.
- ☐ Don't forget that certain items listed in the credit calculation should not be included in this credit but rather must be included in the credit calculation for MR Credits 1.2 and 1.3 Building Reuse; exclude the doors, flooring, wall partitions, and case goods salvaged from the space prior to remodeling.

MRc3.2 Resource Reuse - Furniture and Furnishings

- ☐ Remember that the furniture cost information must be consistent with the cost information in the other MR credits.
- ☐ Be sure to complete the table in order to document the products used and values for each tracked item.

MRc4 Recycled Content

- ☐ Be sure to include the required cut sheets for 20% of the materials listed in the credit submission.
- ☐ Be sure that the manufacturers' data supports the values used in the Credit Form calculation.
- ☐ Remember to avoid grouping items in a single line unless providing supporting calculations in a separate document.
- ☐ Don't forget that mechanical, electrical, and plumbing materials must not be included in the calculations.
- ☐ Be sure that all furniture installed as part of the project scope is included in the calculations.
- ☐ Remember to double-check the supporting documentation and ensure that materials are correctly listed as having the appropriate proportion of either post-consumer recycled content or pre-consumer recycled content.
- ☐ Don't forget to exclude from contributing calculations the recycled content of a product containing materials reclaimed from the same process.

MRc5 Regional Materials

- ☐ Be sure to include the required cut sheets for 20% of the materials listed in the credit submission.
- ☐ Don't forget that mechanical, electrical, and plumbing materials must not be included in the calculations.
- ☐ Remember that if materials listed in MRc5.2 are assemblies, the individual raw material components of the product must be separated by weight of the material.
- ☐ Be sure that, where appropriate, materials/products with different processing locations do not list the same manufacture and harvest distance in the form.

MRc6 Rapidly Renewable Materials

- ☐ Be sure to include the required cut sheets for 20% of the materials listed in the credit submission.
- ☐ Don't forget that mechanical, electrical, and plumbing materials must not be included in the calculations.

MRc7 Certified Wood

- ☐ Be sure to provide the vendor invoices for all permanently installed wood products on a line item basis. The dollar value of each product as well as vendor's COC certificate numbers must be included for all FSC certified wood.
- ☐ Remember to include either none or all of the non-permanent wood-based components, and consider including those appearing in other credits.
- ☐ Be sure to include applicable wood products that are listed in IEQc4.4 Low-Emitting Materials-Composite Wood.
- ☐ Don't forget that products eligible to be listed as having FSC recycled content material in both MRc4 Recycled Content and MRc7 Certified can only contribute to one credit or the other.

IEQp1 Minimum Indoor Air Quality Performance

- Don't forget to complete the LEED Credit Form table.

Naturally Ventilated

- Remember to include the required calculations, which are similar to the tables for this credit in the LEED-CI Reference Guide.

Mechanically Ventilated

- If the ventilation system(s) serving the project space also serves other spaces outside the project scope, don't forget to take into account the total floor area and population served by the system(s) in the ventilation calculation to demonstrate compliance, but the critical zone may be assumed to be within the project scope.
- Remember to include the required calculations. It is recommended that the project team use the new V04 form or ASHRAE 62MZCalc, downloadable from LEED Online for this prerequisite through Credit Resources. It also includes the 30% increased ventilation calculations required for compliance with IEQc2.
- Be sure that the calculations have been performed for the worst-case conditions. Generally, worst-case conditions are during heating mode.
- Be sure that the values used for zone air distribution effectiveness (Ez) are substantiated based on the type of system, and the mode of operation.
- Be sure that the total peak occupancy and square footage documented for this credit is reported consistently across all credits.
- Be sure to include sufficient information to confirm that the critical zone has been correctly determined. Critical zones generally include conference rooms, training rooms, or other high density spaces with variable occupancy, although office spaces or other spaces may be the critical zone if the volume of air supplied to the space is limited.
- Don't forget that the Ventilation Efficiency (Ev) at the system level is based on the critical zone parameters.
- Be sure that the percentage of design airflow at the condition analyzed (Ds) was determined at both the zone and system level for the project.

Mechanically Ventilated but Non-Compliant

- If documenting that the project cannot meet the outside air requirements, remember to upload a copy of the letter to the client with supporting documentation, such as photographs, specification or cut sheets of mechanical equipment, as-built mechanical plans, or single line drawing as-builts of all space constrained aspects in the system, etc. Remember to justify that constraints make the modification impossible.

IEQp2 Environmental Tobacco Smoke (ETS) Control

- Be sure to upload drawings or photographs confirming the communication of the exterior smoking policy.

Designated Smoking Rooms

- ❑ Remember to complete the differential air pressure test report for each designated smoking room in the project space. The differential air pressure in the smoking rooms must be measured with respect to each adjacent area and in each adjacent vertical chase. The test spaces must be configured for worst-case conditions of transport of air from the smoking rooms (with closed doors) to adjacent spaces and include 15 minutes of measurement with a minimum of 1 measurement every 10 seconds.
- ❑ Don't forget to provide mechanical plans/drawings highlighting the location of smoking room(s), designated area separations, and dedicated ventilation systems.
- ❑ Also, be sure to upload drawings or photographs confirming the communication of the exterior smoking policy.

Residential Pressurized Hallways

- ❑ Be sure to provide the blower door test results for the residential units demonstrating less than 1.25 square inches of leakage area per 100 square feet of enclosure area.

IEQc1 Outdoor Air Delivery Monitoring

- ❑ Don't forget to complete the LEED Credit Form table.

Case 1: Mechanically Ventilated Spaces - Densely Occupied Spaces

- ❑ Don't forget that the plans must indicate that CO2 sensors have been installed within each densely occupied space and within the vertical constraints of the breathing zones of the area as defined in ASHRAE Standard 62.1-2004 (between three feet and six feet above the floor).

Case 2: Naturally Ventilated Spaces

- ❑ Don't forget to include the floor plan or drawing that highlights the location and size of the naturally ventilated zones and associated windows and the location of CO2 sensors.
- ❑ Also, be sure that the plans indicate that CO2 sensors have been installed within the vertical constraints of the breathing zones of the area as defined in ASHRAE Standards 62.1-2004.

IEQc2 Increased Ventilation

Case 1: Mechanically Ventilated Spaces

- ❑ Remember that if one or more AHUs are unable to meet ASHRAE Standard 62.1-2007, this credit is not applicable to this project.
- ❑ Don't forget to include a detailed narrative describing the project's ventilation system, including the outside air intake volumes to demonstrate that the design exceeds the referenced standard by 30% at the zone level. Demonstration at the system level is insufficient. There is a new form (V04) and ASHRAE 62 MZ calculator, available as a credit resource that calculates these required values automatically.

Case 2: Naturally Ventilated Spaces

- ❑ Don't forget that specific information to explain the method utilized in determining the natural ventilation design for the project must be provided.
- Also, remember to include the following items:
- Diagrams and calculations showing that the design of the natural ventilation systems meet the recommendations set forth in the CIBSE "Applications Manual 10: 2005, Natural Ventilation in Non-domestic Buildings."
 - Documentation demonstrating that the design of the natural ventilation systems meet the recommendations set forth in CIBSE AM 13:2000, Mixed Mode Ventilation.
 - Documentation demonstrating that the flow diagram process in figure 2.8 of the CIBSE Application Guide 10: 2005, Natural Ventilation in non-domestic buildings used to determine that natural ventilation is an effective strategy for the project.
- ❑ Be sure to provide the graphic and numeric summary of the airflow analysis performed. It must include the boundary conditions used for the analysis, simulation algorithm, solution variables, temperatures, airflow volumes, and mean age of air for the spaces modeled. The documentation must support the claims in Table IEQc2-2.
 - ❑ Don't forget to complete the LEED Credit Form table.

IEQc3.1 Construction IAQ Management Plan During Construction

- ❑ Remember that the documentation provided must indicate that all of the SMACNA Design Approaches were used on the project.
- ❑ Don't forget to include the IAQ Management Plan for the project, including highlighted IAQ management practices implemented during construction and preoccupancy phases.
- ❑ Also, remember to provide a description of the methods by which absorptive materials were protected from moisture damage during construction and preoccupancy phases.
- ❑ Remember that if permanently installed air handling units were operated during construction the LEED Credit Form table must be completed.

IEQc3.2 Construction IAQ Management Plan Before Occupancy

- ❑ Remember that the date of occupancy in the IEQc3.2 credit submission must correspond to the date listed in the Project Summary.
- ❑ Don't forget to include the IAQ Management Plan for the project, including highlighted IAQ management practices implemented during construction.

Option 1: Pre-Occupancy Flush-Out & Flush-Out During Occupancy

- ❑ Don't forget that data regarding the flush-out parameters (the temperature, airflow, and duration of the flush-out) must be provided; likewise, calculations must demonstrate that the total air volumes and minimum ventilation volumes and rates have been delivered.

Option 2: Air Testing

- ❑ Don't forget that the test report must indicate that tests were conducted for all of the required contaminants. Also, when required, the project must provide secondary test results confirming that the contaminant concentration levels are acceptable.

IEQc4.1 Low-Emitting Materials-Adhesives and Sealants

- ☐ Don't forget that if the product list indicates that one or more of the installed materials exceeds the allowable VOC limits for that product category, a VOC budget must be provided for all materials in the credit to confirm that the overall installed VOC level is equal to or below allowable VOC limits.
- ☐ Be sure that the product list is comprehensive and includes all relevant materials. The following items are included in this credit: construction adhesives, floor covering adhesives and sealants, basecove/molding adhesives, wall covering adhesives, plumbing adhesives, painter's caulk, acoustic-lined ductwork/mechanical/HVAC equipment, protective sealants, adhesives used for surface mounting items such as signage or mirrors, and fire-related adhesives.
- ☐ Don't forget to upload the required cut sheets for 20% of the materials.

IEQc4.2 Low-Emitting Materials-Paints and Coatings

- ☐ Don't forget that if the product list indicates that one or more of the installed materials exceeds the allowable VOC limits for that product category, a VOC budget must be provided for all materials in the credit to confirm that the overall installed VOC level is equal to or below allowable VOC limits.
- ☐ Be sure that when the project includes wood materials, that stains and clearcoats are listed in this credit.
- ☐ Don't forget to upload the required cut sheets for 20% of the materials.

IEQc4.3 Low-Emitting Materials-Carpet Materials

- ☐ Verify that the documentation confirms that the carpet is CRI Green Label Plus certified rather than CRI Green Label certified.
- ☐ Remember that the product list must be comprehensive. The following items are included in this credit: carpet, carpet cushion, hard surface flooring, mineral-based finish flooring, and flooring adhesives, grouts, finishes, and sealers.
- ☐ Don't forget to upload the required cut sheets for 20% of the materials.

IEQc4.4 Low-Emitting Materials-Composite Wood and Laminate Adhesives

- ☐ Be sure that the product list is comprehensive. The following items are included in this credit: particleboard, medium density fiberboard, plywood, wheatboard, strawboard, panel substrates, bamboo flooring, and door cores. Additionally, laminate adhesives must contain no added urea-formaldehyde.
- ☐ Be sure that relevant items listed in the MR credits (such as plywood and agrifiber doors) are listed in this credit submission.
- ☐ Don't forget to upload the required cut sheets for 20% of the materials.

IEQc4.5 Low-Emitting Materials-Systems Furniture and Seating

- ☐ Don't forget that the table must indicate that the furniture was certified during the manufacturing period for this project. Sometimes the entire time that the product line has been manufactured by the furniture company is listed incorrectly on the table. This credit requires that the furniture be certified during the period of manufacturing for the project.
- Don't forget to upload the required cut sheets for 20% of the materials.

IEQc5 Indoor Chemical and Pollutant Control

- ☐ Be sure to include a scaled floor plan showing the entryway systems in their locations with measurements.
- ☐ Don't forget to upload the mechanical drawing highlighting the location of chemical/hazardous gas usage areas, room separations, self-closing doors, and associated exhaust systems.
- ☐ Remember to complete the LEED Credit Form table.
- ☐ Remember that the mechanical schedule(s) (or similar documentation) listing the MERV rating for all air handling units installed in the project must be provided.

IEQc6.1 Controllability of Systems-Lighting

- ☐ Don't forget that the documentation provided must demonstrate that at least 90% of occupants are provided with lighting adjustments (such as task lights) for the individual workstations. Individual workstations include private offices and open office plans with workstations.
- ☐ Be sure that the documentation indicates that all shared multi-occupant spaces have adequate shared lighting controls.
- ☐ Remember to complete the LEED Credit Form Individual Controls and Shared Multi-Occupant Controls Tables.
- ☐ Don't forget to upload the representative drawings/floor plans identifying the lighting controls declared.
- ☐ Be sure that the quantity of individual workstations and the list of multi-occupant spaces reported are consistent with those listed in EQc6.2.

IEQc6.2 Controllability of Systems-Temperature and Ventilation

- ☐ Remember to complete the LEED Credit Form Individual Controls and Shared Multi-Occupant Controls Tables.
- ☐ Be sure to include the representative drawings/floorplans identifying the thermal comfort controls declared.
- ☐ Be sure that the quantity of individual workstations and the list of multi-occupant spaces reported are consistent with those listed in EQc6.1.

IEQc7.1 Thermal Comfort-Compliance

- ☐ Be sure to complete the tables and data sections in the LEED Credit Form.

Mechanical System

- ☐ Remember that supporting documentation must be provided, such as PMV/PPD calculations, ASHRAE comfort tool results, and/or a copy of ASHRAE 55 Figure 5.2.1.1 indicating that all conditions fall within acceptable ranges.

Natural Ventilation System

- ☐ Don't forget that documentation with inputs and results of calculations or simulations must be provided. Worst-case design outdoor conditions and worst case predicted indoor conditions for each month (per Figure 5.3 of ASHRAE Standard 55-2004) must be included.

IEQc7.2 Thermal Comfort-Monitoring

- ☐ Please note that credit achievement for EQc7.1 must be demonstrated prior to EQc7.2 being awarded.
- ☐ Don't forget to fill out the LEED Credit Form date of occupancy and date of initial survey administration.
- ☐ Remember to provide the narrative describing the party/parties responsible for administering the survey including those responsible for setting up the survey, sending invitations, and collecting and analyzing survey results.
- ☐ Be sure to include a sample of the surveys to be distributed to building occupants, and confirm that the surveys to be collected are anonymous.

IEQc8.1 & 8.2 Daylight and Views-Daylight

- ☐ Remember to include representative floor plans as part of the credit submission.

Glazing Factor Calculation (Prescriptive)

- ☐ Don't forget that if some of the project's interior spaces are receiving daylight using borrowed light strategies (i.e. sidelights, glazed transoms, etc.) that the results of a daylight simulation model or actual light meter readings for those spaces must be provided to demonstrate credit achievement.
- ☐ Be sure that the calculation spreadsheet and/or drawings indicate that the circulation space around the workstations has not been excluded in the Open Office square footage (and therefore is excluded from the daylight calculations). Only support areas such as copy rooms, storage, mechanical rooms, laundry, and restrooms may be excluded from the calculation.
- ☐ Be sure to include a narrative detailing why any regularly occupied spaces were excluded from the calculations. Include supporting LEED Interpretation references, if applicable. Only non-regularly occupied spaces such as corridors, hallways, lobbies, break rooms, copy rooms, storage rooms, kitchens, restrooms, and stairwells, etc., may be excluded from calculations.
- ☐ Don't forget that interior elevations/sections must be provided.

Daylight Simulation

- ☐ Remember to include the output summary from the daylight computer simulations.

Daylight Measurement

- ☐ Don't forget to upload the project drawings with the recorded daylight measurements.

IEQc8.3 Daylight and Views- Views

- ❑ Be sure to include a narrative detailing why any regularly occupied spaces were excluded from the calculations. Include supporting LEED Interpretation references, if applicable. Only non-regularly occupied spaces such as corridors, hallways, lobbies, break rooms, copy rooms, storage rooms, kitchens, restrooms, and stairwells, etc., may be excluded from calculations.
- ❑ Remember to include the required calculations and ensure that the view calculation methodology was performed correctly.
- ❑ Don't forget to upload the following documents: Plan view drawings, photographs, or other documentation demonstrating the lines of sight; interior elevations/sections.

IDc1 General Criteria

- ❑ Be sure that the strategy meets the basic criteria listed in the reference guide for achieving an ID point:
 1. Quantitative performance improvements (comparing a baseline and design case).
 2. A comprehensive strategy (more than one product or process).
 Additionally, the ID strategy must be significantly better than standard sustainable design practices.
- ❑ Remember to check if the strategy is already included in a LEED credit within the rating system to which the project applied. Innovation in Design 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 EBOM rating system. The following LEED EBOM credits are allowed in LEED CI as ID credits: MRp1 Sustainable Purchasing Policy, MRp2 Solid Waste Management Policy, IEQp3 Green Cleaning Policy/IEQc3 Green Cleaning Program, IEQc3.4 Sustainable Cleaning Equipment (all cleaning equipment purchased for initial occupancy must be included), and IEQc3.6 Green Cleaning-Indoor Integrated Pest Management. The LEED EBOM Credit Form and all documentation that it requires must be provided (the performance period is not relevant).
- ❑ 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 CI as ID credits: SSc10 Joint Use of Facilities, EQc4 Low-Emitting Materials, Option 6 - Ceilings and Walls, EQc10 Mold Prevention (if tenants have control over all relevant aspects of HVAC design), and IDc3 School as a Teaching Tool (if the project is an educational facility).
- ❑ Also, don't forget to check the strategies listed in the [LEED Pilot Credit library](#).

IDc1 Green Housekeeping

- ❑ Remember that the project must document the IEQp3 Green Cleaning Policy/IEQc3 Green Cleaning Program. The LEED EBOM Credit Form and all documentation that it requires must be provided (the performance period is not relevant).

IDc1 Public Education

- ❑ Remember that two distinct educational 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.

IDc1 Transportation Management Program

- ❑ Don't forget that the documentation must be complete; the credit submission must contain all necessary documentation to determine compliance (envisioned programs, ridership figures, etc.). Additionally, the project must provide official documentation for at a least a five-year commitment to the programs, documentation for the number of employees that are initially provided program information, and documentation of the policies/procedures that ensure the same service for new employees.
- ❑ Remember that the project must earn at least two SSc3 points to be eligible for this pathway.

LEED PROJECT SUBMITTAL TIPS: COMMERCIAL INTERIORS 2009

IDc2 LEED Accredited Professional

- ☐ Don't forget that the LEED AP certificate for the identified project team member must be provided.

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