LEED PROJECT SUBMITTAL TIPS: COMMERCIAL INTERIORS v2

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 Submittal Templates, 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 As such, the content of this document may be superseded by subsequent updates to USGBC publications, addenda, errata, and LEED Interpretations.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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GENERAL INFORMATION

General Documents

Often portions of the general documents (Documents Tab in LOv2) 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; 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 documents section and across various credits.
- ☐ Inconsistent FTE and visitor numbers across 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.

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.
- ☐ 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.

SUSTAINABLE SITES

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, Option A: 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, Option B: Stormwater Management: Rate and Quantity (less than or equal to 50% imperviousness)

- ☐ Don't forget to provide a narrative describing the project's approach to this credit and accompanying stormwater calculations.
- ☐ To meet the full intent of this credit, remember that calculation results are required for both stormwater rate AND stormwater quantity.

Option 2, Option B, Case 1: Sites with existing imperviousness 50% or less

- ☐ Be sure to complete the table on the LEED Submittal Template.

Option 2, Option C: Stormwater Management: Treatment

- ☐ Don't forget to provide a narrative describing the project's approach to this credit.

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

- ☐ Remember to include the landscape/site plan.
- ☐ Be sure to complete the calculations on the LEED Submittal Template.

Option 2, Option E: Heat Island Reduction, Roof (SRI less than or equal to 2:12 - low sloped)

- ☐ Remember to include the required roof plan.
- ☐ Be sure to complete the calculations and table on the LEED Submittal Template.

Option 2, Option F: Light Pollution Reduction

- ☐ Remember to include the photometric site plan.

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

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

Option 2, Option H: 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.

Option 2, Option I: 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, Option J: Water Use Reduction: 20%

- ☐ Remember to include the completed calculations required on the template. 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 rational 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 incorporate all of the required EPAct fixtures (faucets, water closets, showers, and urinals), including the kitchen sinks in the tenant spaces. This calculation is based on all EPAct fixtures used by the occupancy 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.
- ☐ Be sure to provide a copy of the building owner's on-going plan that requires future occupants to comply with the 20% reduction in water use requirement for the tenant spaces.
- ☐ 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.

SUSTAINABLE SITES

Option 2, Option K: Onsite Renewable Energy

- ☐ Don't forget to include the required narrative and to complete the table on the LEED Submittal Template.

Option 2, Option L: Other Quantifiable Environmental Performance

- ☐ For LOv2 projects, remember to view 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, based on the pathway selected, as well the one half mile radius or density boundary.

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 template 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 three times.
  - 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.

SUSTAINABLE SITES

- ☐ 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 A 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.
- ☐ Don't forget to incorporate the calculations and zoning regulations for the tenant space.
- ☐ 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 that if parking is indicated on the site plan without designation for the tenant space, then the calculations and zoning regulations for the entire building/campus must be provided.
- ☐ Be sure to include a copy of the tenant's lease highlighting the number of parking spaces guaranteed by the lease.
- ☐ Don't forget to include a description (narrative and/or drawings) of parking amenities available to occupants of the project space.

CASE A 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 B Projects with and area of 75% or more (with parking)

- ☐ Be sure that the credit submission includes a copy of the tenant lease highlighting the number of parking spaces guaranteed by the lease.
- ☐ Don't forget to include a description of the parking amenities available to occupants of the project.
- ☐ Don't forget to incorporate the calculations and zoning regulations for the entire building/campus rather than just the tenant space.

CASE B Projects with and area of 75% or more (no new parking added)

- ☐ Remember to complete the calculation table for this pathway.
- ☐ Be sure that the credit submission includes a copy of the tenant lease highlighting the number of parking spaces guaranteed by the lease.
- ☐ Don't forget to include a description of the parking amenities available to occupants of the project.
- ☐ Don't forget to incorporate the calculations and zoning regulations for the entire building/campus rather than just the tenant space.

WATER EFFICIENCY

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 rational 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 EPAct fixtures (faucets, water closets, showers, and urinals).
  - The EPAct 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.

ENERGY & ATMOSPHERE

EAp1 Fundamental Commissioning

- ☐ Remember to provide the HVAC narrative and supporting diagrams.
- ☐ 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

- ☐ Don't forget that if the project was registered after June 26, 2007 it must earn the required two points in the EAc1 suite of credits (EAc1.1 – EAc1.4).
- ☐ 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 90.1-2004.

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

- ☐ Be sure to include the lighting compliance documentation and calculations based on the ASHRAE/IESNA Standard 90.1-2004 User's Manual.
- ☐ 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.
- ☐ Don't forget that the LEED-CI v2.0 Reference Guide requires that projects in California use ASHRAE 90.1-2004 in determining performance in EAc1.1. Supporting documentation based on California Title 24 cannot be accepted to verify compliance for this credit.

EAc1.2 Optimize Energy Performance, Lighting Controls

- ☐ Don't forget to include a narrative, plans, and relevant schedules, as required.
- ☐ Remember that all areas must have the required daylight responsive controls, or a detailed narrative describing reasons for the exclusion of certain spaces must be provided.

EAc1.3 Optimize Energy Performance, HVAC

- ☐ Don't forget to include a narrative, plans, and relevant schedules, as required.

Option 1: Prescriptive Path: Efficient Equipment

- ☐ Don't forget to include a summary of the mechanical system design calculations.
- ☐ 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.

Option 2: Performance Path: ASHRAE 90.1

- ☐ 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.
- ☐ Don't forget to complete the Energy Cost Budget tables.

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 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' 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 the mandatory controls of ASHRAE 90.1 Section 9: Lighting.
- ☐ Don't forget, that if 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 that the interior lighting demand of the baseline and proposed case does 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 that 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.
- ☐ Be sure 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.

ENERGY & ATMOSPHERE

- ☐ When modeling fans, be sure to note the following:
  - Don't forget 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 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 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 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 VAV terminal units have been modeled in accordance with ASHRAE 90.1 Sections G3.1.3.13 and G3.1.3.14.

Exceptional Calculation Method - General

- ☐ If using an exception calculation, be sure that a narrative is provided describing all 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.

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.

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.

EAc1.4 Optimize Energy Performance, Equipment & Appliances

- ☐ Be sure to include the narrative and schedule of equipment, as indicated on the template.
- ☐ Remember that the calculations must include all eligible appliances, electronics, and commercial food service equipment installed at the time of occupancy. The calculations should not include only the office equipment.

EAc2 Enhanced Commissioning

- ☐ Be sure to include the supplemental documentation, as indicated on the template. Additionally, please provide documentation that indicates that all system deficiencies have been addressed, or provide a narrative indicating the plan for addressing any deficiencies. Also, confirm that the systems manual has been completed, or provide a narrative indicating the outstanding sections of the systems manual that have not been completed and the anticipated schedule for completing these sections.
- ☐ 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.

ENERGY & ATMOSPHERE

EAc3 Energy Use, Measurement & Payment Accountability

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

- ☐ Don't forget that the documentation verifying sub-metering must include all of the required energy sources, fuel, or utilities.
- ☐ 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 a narrative describing the metering equipment installed for each end use.
- ☐ Don't forget that the credit submission must contain a copy of the applicable portion of the lease.

Measurement and Payment Accountability (case B 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.

ENERGY & ATMOSPHERE

EAc4 Green Power

- ☐ Don't forget to include a copy of the two-year electric utility purchase contract.
- ☐ Remember that if the tenant is purchasing green electricity from the building owner, the tenant must provide documentation from the building owner confirming that the project has entered into a purchase agreement that meets the credit requirements.
- ☐ If the project's electricity is provided by a power supply that meets the Green-e renewable power definition but is not green-e certified, remember to provide documentation that confirms that the project's renewable supplier has 1) met the Green-e criteria, and 2) properly accounted for the eligible renewable resources sold.
- ☐ Be sure that the documentation confirms how the amount of green power was calculated. The choices are Design Energy Cost calculation, Actual Electricity Consumption, or Default Electricity Consumption.
- ☐ Remember that the gross square footage value must be consistent with other LEED credit submissions

MATERIALS & RESOURCES

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.
- ☐ Don't forget to upload a plan showing the area(s) dedicated to recycled material collection and storage OR a letter from the landlord outlining the building's recycling program.

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 and 3.2 Resource Reuse (without furniture and furnishings)

- ☐ Remember that the furniture cost information must be consistent with the furniture 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.

MRc3.3 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

- ☐ Remember that the material and furniture cost information must be consistent with the cost information in other MR credits.
- ☐ Don't forget to subtract the values for MR Credits 3.1, 3.2, and 3.3 at the top of the calculator.
- ☐ Be sure that the manufacturers' data supports the values used in the template calculations.
- ☐ Remember to avoid grouping items in a single line unless providing supporting calculations in a separate document.
- ☐ Don't forget that mechanical and electrical 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 has 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 that the material and furniture cost information is consistent with the cost information in other MR credits.
- ☐ Don't forget that mechanical and electrical 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 are not listed with the same manufacture and harvest distance in the template.

MRc6 Rapidly Renewable Materials

- ☐ Be sure that the material and furniture cost information is consistent with the cost information in other MR credits.
- ☐ Don't forget that mechanical and electrical materials must not be included in the calculations.

MRc7 Certified Wood

- ☐ In addition to listing the certified wood products and chain of custody numbers for each product, remember that for projects registered after 4/7/2008, the vendor invoices for all wood products, both FSC-certified and not, must be provided.
- ☐ 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 the 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

- ☐ Be sure to complete the LEED Submittal Template.

Naturally Ventilated

- ☐ Remember to include the required calculations, which are similar to Table 2 for this credit in the LEED-CI v 2.0 Reference Guide.
- ☐ If documenting natural ventilation, don't forget to include plans and tables to demonstrate that the ratio of operable opening area to floor area meets the requirements of ASHRAE 62.1 Section 5.1 and that the occupied areas are all within the allowable distance from the openings.

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 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, be sure to upload a copy of the letter to the client with supporting documentation, such as photographs, specifications or cut sheets of the 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.
- ☐ Remember to upload the applicable summary of calculation.

IEQp2 Environmental Tobacco Smoke (ETS) Control

Non-Smoking Building

- ☐ Be sure to include a narrative as well as plans highlighting the outdoor smoking areas and confirming that they are at least 25 feet from the building entries, operable windows, outdoor intakes. Include information to describe how ETS is controlled to ensure that the adjacent, non-smoking, areas are not affected.

Designated Smoking Rooms

- ☐ Remember that the following items must be provided: drawings and a narrative to confirm that the performance of the smoking rooms was verified by conducting 15 minutes of measurement of the differential pressure in the smoking room with respect to adjacent areas.

Residential Non-Pressurize Hallways

- ☐ Be sure to include a narrative regarding the results of the required blower door testing to confirm that smoking units have been appropriately sealed to minimize unit-to-unit transfer of ETS.
- ☐ Remember that the credit submission must contain documentation showing that the weather stripping has minimized air leakage into the hallway.

Residential Pressurized Hallways

- ☐ Be sure to include a narrative regarding the results of the required blower door testing to confirm that smoking units have been appropriately sealed to minimize unit-to-unit transfer of ETS.
- ☐ Remember that drawings and a narrative must be provided to confirm the ETS transfer control for residential units.

IEQc1 Outdoor Air Delivery Monitoring

- ☐ Remember that the alarm system must be noted in the documentation.

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).
- ☐ Be sure to include the narrative describing the carbon dioxide monitoring system and applicable supporting documentation.

Case 1: Mechanically Ventilated Spaces - No Densely Occupied Spaces/Outdoor Airflow Measurement Device

- ☐ Remember that the plans and controls drawing sample(s) must indicate that outdoor airflow measurement devices have been installed in all applicable areas (i.e. spaces with less than 25 people per 1000 square feet). Ensure that all mechanical systems serving non-densely occupied spaces have a direct outdoor airflow monitor installed and that the narrative and drawings are provided to document the device(s).

- ☐ Be sure to include the narrative describing the carbon dioxide monitoring system and applicable supporting documentation.

Case 2: Naturally Ventilated Spaces

- ☐ Don't forget to include a narrative describing the carbon dioxide monitoring system and to upload applicable supporting documentation.
- ☐ 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 to include the calculations, as indicated on the template.
- ☐ 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.
  - Diagrams and calculations based on results provided by a macroscopic, multi-zone, analytic model to predict that room-by-room airflows will effectively naturally ventilate at least 90% of occupied spaces.

IEQc3.1 Construction IAQ Management Plan During Construction

- ☐ Remember that the documentation provided must indicate that all of the five SMACNA Design Approaches were used on the project.
- ☐ Don't forget: The project must provide documentation confirming the MERV Rating of the filters and that all filtration media were replaced immediately prior to occupancy.
- ☐ Be sure to provide either the 18 photographs or narrative describing the SMACNA approaches take for the project.

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.

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.
- ☐ Be sure to include the required narrative describing the project's pre-occupancy flush-out process.

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
- ☐ Be sure that the required narrative describing the project's early occupancy IAQ testing procedure and testing results from sampling points through the project is provided.

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.

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.

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.

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.
- ☐ Don't forget that supporting documentation for all composite wood, agrifiber products, and laminate adhesives must be provided.

- ☐ Remember that if plastic laminate was used on the project, the laminate adhesive must be listed on the IEQc4.4 template.
- ☐ Be sure that relevant items listed in the MR credits (such as plywood and agrifiber doors) are listed in this credit submission.

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.
- ☐ Be sure to provide the required certification data for all furniture.

IEQc5 Indoor Chemical and Pollutant Control

- ☐ Don't forget to complete the LEED Submittal Template.
- ☐ Also, be sure to include the following documentation in the credit submittal:
  - A scaled floor plan showing the entryway systems in their locations with measurements. In cases where roll out/carpeted systems have been used, confirmation of required contracted maintenance must be provided.
  - Mechanical drawings highlighting the location of chemical/hazardous gas usage areas, room separations, self-closing doors, and associated exhaust systems.
  - Mechanical schedules (or similar documentation) listing the MERV rating for all air handling units installed in the project.
- ☐ Remember that the credit submission must contain documentation to confirm that drains in the facility cleaning and maintenance areas within the tenant space are plumbed for environmentally appropriate disposal of hazardous liquid wastes (following local codes).
- ☐ Be sure that the template confirms that MERV 13 filtration media has been installed in all HVAC systems prior to occupancy.
- ☐ Don't forget to include the required narrative describing independent exhaust system requirements.

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 that on/off switches are not sufficient for shared multi-occupant spaces.
- ☐ Remember to upload the floor plan and schedule, as indicated on the template.
- ☐ 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

- ☐ Don't forget that the documentation provided must demonstrate that at least 50% of the space occupants have the ability to make adjustments to suit individual needs and preferences.
- ☐ Be sure that the documentation indicates that all shared multi-occupant spaces have adequate shared thermal comfort controls.
- ☐ Remember that the credit submission must provide documentation to confirm that operable windows meet ASHRAE 62.1-2004 Section 5.1 requirements.
- ☐ Be sure to include the required narrative and plans, as indicated on the template.
- ☐ 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 include the required narrative, documentation, and calculations, as indicated on the template.

Mechanical System

- ☐ Don't forget that the documentation and narrative provided must confirm compliance with ASHRAE 55-2004 Section 6.1.1.

Natural Ventilation System

- ☐ Remember to double-check for any errors in the calculations or the calculation methodology.

IEQc7.2 Thermal Comfort-Monitoring

- ☐ Remember to include the narrative, as indicated on the template.
- ☐ Please note that credit achievement for EQc7.1 must be demonstrated prior to EQc7.2 being awarded.

IEQc8.1 & 8.2 Daylight and Views-Daylight

- ☐ 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.

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.

Daylight Simulation

- ☐ Remember that the credit submission must contain the project's simulation model results or supporting graphics.

Daylight Measurement

- ☐ Be sure that the credit submission includes copies of applicable project drawings that document the illumination measurement procedures or location results.
- ☐ Ensure that the daylight simulation model is performed correctly. The model must comply with the following requirements: Measuring footcandles at 30" above the floor; projecting the daylighting at noon on the equinox under clear sky conditions; and meeting the requirement for 25 footcandles in 75% of the regularly occupied spaces.

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.
- ☐ Don't forget that the credit submission must contain copies of applicable project drawings highlighting the direct line of sight through exterior windows. The plan drawings must correctly show a direct line of sight.
- ☐ Remember to include the required calculations and ensure that the view calculation methodology was performed correctly.

INNOVATION IN DESIGN

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 following are required to be documented for this credit: A statement of purpose, demonstration of custodial training, the contractual or procedural requirements for operations staff, a clear set of acceptable performance standards by which to measure, and documentation of the program's housekeeping and environmental cleaning solution specifications.

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.

INNOVATION IN DESIGN

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.

IDc2 LEED Accredited Professional

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