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SUSTAINABILITY IN PRACTICE

What Happens After the LEED Plaque Goes Up: Post-Certification Activities for LEED Projects.

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The Leadership in Energy and Environmental Design (LEED) process starts early in the project design phase and continues through substantial completion and the post-construction/LEED certification phase. The certification process may continue for several years, and when the LEED plaque is finally installed, the Owner rightfully takes pride in the environmentally sustainable building program. However, under LEED for New Construction (LEED-NC) Version 2009 (and other rating systems), the LEED process does not stop there. LEED certification is generally awarded for the completed building project, and LEED does not address operational activities during occupancy. For example, project design must include space allocation for collection and storage of recyclables (Materials and Resources prerequisite MRp1), but LEED does not have a program in place to monitor operations-phase recycling activities or to evaluate the results. There are, however, post-certification requirements that include data sharing with the Green Building Certification Institute (GBCI). Also, LEED project scoresheets may include elective credits such as enhanced commissioning that continue in the post-certification phase. The mandatory and elective post-certification LEED activities may include:

1. Energy performance data sharing required with USGBC/GBCI after LEED project certification (Per USGBC Minimum Program Requirements).

Starting with LEED Version 2009, LEED projects are subject to Minimum Program Requirements (MPRs) that projects must meet to be eligible for certification. One of the important MPR requirements is sharing of energy and water usage data. One of the MPRs states that the Owner "Must commit to sharing whole-building energy and water usage data," and that:

"All certified projects must commit to sharing with USGBC and/or GBCI all available actual whole-project energy and water usage data for a period of at least 5 years. This period starts on the date that the LEED project begins typical physical occupancy if certifying under LEED for New Construction, Core & Shell, Schools, or Commercial Interiors...Sharing this data includes supplying information on a regular basis in a free, accessible, and secure online tool or, if necessary, taking any action to authorize the collection of information from service or utility providers. This commitment must carry forward if the building or space changes ownership or the lessee."¹

In summary, the Owner is responsible for providing the energy and water use data to USGBC/GBCI for a five-year period after physical occupancy of the project; these requirements carry forward in the event of change of ownership or lessee.

2. Enhanced commissioning by owner, commissioning agent, and operations and maintenance staff (Energy and Atmosphere credit EAc3 Enhanced Commissioning).

Fundamental building commissioning is a prerequisite for LEED projects. LEED projects may opt to include enhanced building commissioning, which requires that the commissioning agent (CxA) is on board early in project design and remains active up to ten (10) months after project completion. The CxA must be under contract to the Owner or its representative for this period. The full scope of enhanced commissioning is included in the LEED-NC Version 2009 Reference Guide. The CxA is involved with the operations and maintenance staff and building occupants, and implements post-occupancy commissioning. The CxA provides a systems manual to operating staff with the information needed to operate the commissioned systems; verifies that training of operating systems personnel and building occupants has been completed; reviews the operation of the building with O&M staff and occupants ten (10) months after substantial completion; and provides a plan for resolving outstanding commissioning-related issues.²

In summary, the Owner, CxA, O&M staff, and occupants all participate in the enhanced commissioning activities; the Owner and CxA are the key responsible parties for assuring that these activities are carried out when included on a LEED project.

3. Measurement and Verification Plans (Energy and Atmosphere credit EAc5 Measurement and Verification Plan).

LEED projects that include M&V plans use one of two options: Option 1 complies with the International Performance Measurement Protocol (IPMVP), Option D: Calibrated Simulation (Savings Estimation Method 2). Option 2 complies with Option B: Energy Conservation Measure Isolation as specified in the IPMVP. The complete requirements for M&V plans are included in the LEED-NC Version 2009 Reference Guide.

As regards Option 1, calibrated simulation, operational phase energy performance is compared with the energy model prepared during the LEED design phase. LEED projects must meet the Minimum Energy Performance prerequisite (EApr2) by demonstrating compliance with one of three compliance paths. Option 1 includes whole building energy simulation that demonstrates an improvement in the building's performance (design case) compared to the baseline case of the ANSI/ASHRAE/IESNA Standard 90.1-2007. Details on the fundamental energy performance and optimized energy performance are included in the LEED-NC Version 2009 Reference Guide. In the case of Option 1, calibrated simulation, the energy model is re-calculated, using real-time energy usage data to compare building performance with project's design case energy modeling. M&V plans may add significant costs for the Owner in terms of post-occupancy measurement and verification procedures, but the benefit to the Owner is the ability to identify issues with excess energy usage and opportunities to make systems adjustments, which may lower operational costs over the life cycle of the building.

In summary, the Owner, commissioning agent, and energy modeling consultant are responsible for implementing the measurement and verification plan for at least one-year period after building occupancy. The energy model is re-simulated using the real-time performance data. A process of corrective action must be provided if the results of the M&V plan indicate that energy savings are not being achieved.

3. Innovation in Design:

LEED projects have the option to pursue Innovation in Design (ID) credits, which are available for Exemplary performance over base LEED credits (such as 95% construction waste recycling, high recycled content products, and 95% FSC-certified wood). Other ID credits are programmatic, or based on unique design and construction, or

innovative project achievements. Programmatic ID credits that require post-certification activities by the LEED team may include:

- **Sustainable Building Public Education Programs.** LEED projects can often act as teaching tools about sustainable design and construction. Projects that may communicate sustainability include university and college buildings, museums, libraries and similar civic buildings. Typically, ID credits for green building education buildings must include two of three options: project case studies or websites, ongoing tours, and a comprehensive signage program. Projects that have been awarded an ID credit for green building public education will require follow up by the Owner, its O&M staff, and building occupants to assure that ongoing tours are conducted, that websites are maintained, or printed case studies are available on a continuous basis.

- **Green Cleaning Products.** ID credits are awarded for use of environmentally-sustainable cleaning products during the occupancy phase. Product manufacturers can assist Owners and its O&M staff with selection and use of green cleaning products, as well as how to meeting the ID requirements during submittal. The Owner and its facilities management staff must buy in on the products and implement the green cleaning program on a continuous basis during occupancy.

- **Sustainable Landscape Management.** As with green cleaning products, ID credits are awarded for projects that include a program for sustainable landscape maintenance and integrated pest management. The intent is to avoid the use of harmful pesticides by incorporating environmentally sustainable measures. The Owner, its facilities management, and landscape maintenance staff must be educated about the products and how to implements procedures on a continuous basis after building occupancy.

Conclusion: USGBC and GBCI do not have resources to monitor projects during the occupancy phase. GBCI does have ethics standards for LEED Accredited Professionals, and the LEED team has a responsibility to uphold the integrity of the project certification. If a project does not meet the Minimum Program Requirements, the MPRs state officially that GBCI may stop the certification process or retract a building certification: "If GBCI learns that a LEED project is or was in violation of an MPR, certification may be revoked or the certification process may be halted. These situations will be handles on a case by case basis according to the GBCI's challenge policy, which is within the Certification Policy Manual..."³

The project LEED Accredited Professional (LEED AP) is responsible for guiding the LEED team through the project certification phases, oversees the Letter Template and backup documentation, and manages the GBCI certification process. However, unless there are special contractual provisions, the LEED AP may not be able to control what happens after the certification is completed and LEED plaque is installed. The Owner, commissioning agent, O&M staff, facilities management team, and building users are responsible for following up on required and elective LEED credits. It is important to make sure that the responsible parties are aware and have signed on to the post-certification requirements and activities, and that ongoing plans are in place for follow up.

¹ U.S. Green Building Council: *LEED 2009 Minimum Program Requirements*, January 2011.

² *LEED Reference Guide for Green Building Design and Construction*, 2009 Edition and Addenda, pp. 299-303.

³ U.S. Green Building Council: *LEED 2009 Minimum Program Requirements*, Revision 3 September 2011, p. 7.

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