LEED – Time for Version 4.0

Since its initial launch in 1998, The United States Green Building Council's Leadership in Engineering and Environmental Design (LEED) has become a defacto standard for "green" building designers and engineers across America and in other nations. The problem with this fast growing industry standard is that LEED ratings rely far too heavily on design achievements that are very structure specific and easy to measure, rather than taking on the more difficult challenges of measuring each buildings' energy efficiency, on-site and off-site energy consumption, and overall contributions to global environment health. Essentially, LEED is a rating system that grows environmentally weaker the farther one gets from an evaluated buildings' front door.

Seth Kaplan, director of the Conservation Law Foundation's Clean Energy and Climate Change Program summarizes the problem using an example of a supposed green building built far from any form of convenient public transportation. "A building with a large parking lot that is full—on a fundamental level, it's oxymoronic to call it a green building" (qtd in Bowen). A building that contributes to global warming on this level should not be erroneously labeled as "green" or defined as sustainable.

"The [green] trend opens up a market in sustainable change," says Steve Newcomb, President and CEO of Virgance, a self-proclaimed business incubator for world changing companies. "But it also creates a fertile landscape for 'greenwashing': using mossy eco-rhetoric to camouflage the same old environmental misdeeds. If people are going to live on this planet for 10,000 years, everything has got to change" (qtd in Abraham). Sustainable buildings, by definition, must operate with minimal long-term effects on the environment if they are to be labeled "green".

Currently, designers and architects are earning highly-coveted LEED certifications before buildings are completed and real-world tested for operational performance efficiency. This is equivalent to an actor earning an academy award for a specific movie before that movie is shown to the public. Many limitations within the current scoring structure seriously impact the integrity of the LEED system, and severely limit what global environmental goodness The United States Green Building Council (USGBC) can generate. Green building evaluations and certification processes need to involve an analysis of the entire life cycle of the building from the design and construction phase to energy performance and overall global environmental impact.

Joseph Lsitburek, Ph.D., author of the article "Why Green Can Be Wash", questions the integrity of the current LEED scoring system by stating "If you design and install a controlled ventilation system that meets [common] standards, you get points. You get more points if you keep the rain out and design the building to dry if it becomes wet. And, you get still more points if the occupants are actually comfortable. Shouldn't these be 'the standard of care'?"

Lstiburek's data analysis also revealed that high point earning categories on the LEED scorecard did little to ensure energy savings compared to traditional non-certified buildings. Lstiburek assess this by saying, "Show me a building that meets code and the standard of care and saves energy, and I will show you a green building. A "real" green building, not a social statement. Enough with the awards before a building is built and the performance is verified. Award plaques should come with removable screws. Show me the utility bills. You can't be green if you don't save energy."

As long as certifications continue to get issued based on design and hypothetical performance of proposed buildings, the more the USGBC encourages developers to compete for certifications purely for the marketing value and status of being green, rather than long term building performance and sustainability. LEED cannot continue to allow the status of

"certification achievement" to be the motivating force behind their "green" concept. Significant driving forces behind the certification process need to focus on actual structural performance and efficiency during occupancy and operation, and evaluation of the environmental contribution to global warming.

The LEED standard represents an evolving work in progress. Version 1.0 was adopted in August 1998. Version 2.0, announced in March 2000, improved upon Version 1.0 by introducing additional individual building categories to include: LEED for New Construction, LEED for Existing Buildings, LEED Commercial Interiors, LEED Residential, LEED Core and Shell, and LEED Multiple Buildings (USGBC). However, in their article "Evaluation of LEED Using Life Cycle Assessment Methods," researchers Chris Scheur and Gregory Keoleian, from the Center for Sustainable Systems at the University of Michigan, stated that Version 2.0 "addressed many elements of environmental impacts, but they are often independent of each other and have no interface, which has resulted in poorly integrated solutions of limited effectiveness."

LEED Version 3.0 was officially launched in March of 2009 (USGBC). Scot Horst, chairman of the volunteer LEED Steering Committee (LSC), which leads the technical development of the LEED rating system, says that LEED Version 3.0 incorporates "transparent weightings of LEED credits so the highest-priority credits achieve the most points, a new mechanism for incorporating bioregional credits, and a more nimble framework that supports rapid response to emerging environmental and human-health issues" (qtd in Owens).

Lofty verbiage to be sure, but John Scofield of the Department of Physics & Astronomy at Oberlin College, indicates that LEED primarily measures the "site energy" of their buildings. In his article, "Do LEED-certified buildings save energy? Not Really…" Scofield defines site energy as on-site energy used to operate a building. LEED Versions 1, 2, and 3 place very little

emphasis on a building's consumption of source energy, which Scofield defines as the energy used on-site and the off-site losses associated with the generation and distribution of electric energy (Scofield). Scofield goes on to state that "LEED-certification, on average, is not lowering source energy consumption, and accordingly is not delivering reduction in greenhouse gas emission associated with building operation."

The USGBC needs to make two structural changes to the current LEED scorecard system in order to make LEED certifications a more meaningful measure of a buildings' energy efficiency, energy consumption on-site and off-site, and the impact on global environmental health. First, the USGBC needs to create high point-earning categories for proven building performance in terms of verifiable contributions to environmental health of our "big picture" global ecology.

The first step in implementing this requirement involves forming an entirely new LEED high-point scorecard category called "Full-Fuel Cycle" performance. According to the article, "Review of Site (Point-of-Use) and Full-Fuel-Cycle Measurement Approaches…", the American Gas Association (AGA) and the Natural Resources Defense Council (NRDC) have long supported efforts to improve U.S. energy efficiency, recognizing that energy efficiency is the fastest, cheapest, and cleanest energy resource we have. Efficiency saves consumers and businesses money on their energy bills, reduces global warming pollution and keeps energy dollars here in America. Consistent with that view, the AGA and NRDC fully support the recommendations of the NRC to get the Department of Energy to move toward the use of a "full-fuel cycle" measure of energy consumption for assessment of national and environmental impacts, especially levels of greenhouse gas emissions (Committee on Point-of-Use and Full-Fuel-Cycle Measurement). If the AGA, NRDC, and NRC, welcome this concept, then the USGBC should embrace it as well.

Secondly, the USGBC needs to implement a two-part certification process that factors in initial building design goals, and accurate energy outcomes based on post-occupancy, real-world operational energy performance. A building would receive an initial certification based on design and construction goals. This certification could then be improved upon, maintained, or lowered based on real-world building operational assessments 12-24 months after initial occupancy. This would not be difficult from an operational standpoint since all buildings and systems undergo various evaluations and routine equipment maintenance checks post construction. This two-part process would more accurately assign a certification level that would reflect a buildings true environmental impact and operational efficiency. Measuring and evaluating efficiencies, and documenting and correcting any deficiencies, would also be beneficial in providing valuable information and a significant learning tool to help advance knowledge and expertise for creating greener buildings in the future.

Restructuring the LEED point system to measure the "full-fuel cycle" of a building and instituting a two-part certification process based on initial design and construction and real-world performance would certainly provide a more authentic assessments of overall building efficiency and global impact. However, USGBC proponents are very likely to present multiple arguments to these ideas. USGBC proponents could contend that it is not the USGBC's purpose to assess buildings beyond design and engineering and they could argue that "full-fuel cycle" performance is essentially covered in LEED Version 3.0. Other arguments could arise while attempting to convince designers, engineers, and building owners to forego the many financial, marketing, and public relations advantages associated with being awarded a LEED certification before a building is built and occupied. The proposed "full-fuel-cycle" assessment and the two-part certification process will undoubtedly require more time, money and diligence on behalf of the building industry and convincing everyone that this is a legitimate solution to fixing global environmental

issues might prove even more difficult given that the LEED system was generated by a parent company (USGBC) that is heavily influenced by a constituency that has placed the words "engineering" and "design" in their widely accepted acronym: LEED. Now may be the time to redefine the meaning of LEED and its goals and mission.

Until we see high point-earning LEED categories for "life-cycle" or "full-fuel cycle" building efficiencies and a logical two-part certification process, LEED is aiming far lower than it should. Any proponent that chooses to argue against these proposed changes needs to be reminded that the Chairman of the LEED Steering Committee, Scot Horst, has claimed that LEED Version 3.0 "supports rapid response to emerging environmental and human-health issues"(qtd in Owens). With this claim, it makes logical sense that LEED's responsibilities need to go well beyond design and engineering concepts alone. The reality is, hypothetical building performance based on drawing board concepts do not support this claim. Environmental and human-health issues are well documented and problematic and any solutions that address these issues must be real-world tested and verifiable in order to promote significant change in our environmental and energy futures. When the objectives are as life and world altering as the USGBC's objectives, there is no room for unproven, unverified building performance and lack of awareness involving global environmental impact.

For a moment, consider yourself a limb of a bamboo tree in heavily polluted Beijing, China. The designer for a supposedly "green" office building in Seattle, Washington wants you to become part of a beautiful lobby floor in his new building. The designer could choose to leave you alone so that you can provide a natural and positive environmental contribution towards controlling carbon emissions in your homeland, or he could choose to negatively contribute to global warming by consuming a lot of unnecessary energy to cut, shape, finish, and ship you over 6,500 miles from Beijing to Seattle. Did the designer of your potential new home even think to

calculate the long-term environmental impact associated with your journey from being a pollution-reducing tree in China to your future as a lobby floor in Washington, or was he just thinking about how stylish and beautiful you would look in his "green" certified building?

Don't be the designer or engineer of a building that is prematurely awarded a "green" certification before your drawings become a reality. Don't allow certifications to be assessed based on very limited definitions of energy consumption and environmental impact. The reality is that your post-construction contribution to overall global environmental health may not be any healthier than when you initially started drawing up your plans…in fact, your contributions could very likely have a negative environmental impact. Focusing on the overall global impact of all resources and materials must come together to turn your drawing board dreams into a truly successful "green" reality. Plainly put, some battles need to be won on the battle field, not in the bunker.

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