

## *Editor's Urban Development Journal:* Greening The Ratings: Weed LEED & SEED

**Professor Will Macht, Editor**



Sustainable economic and environmental development ratings need revision on the basis of cost-benefit analysis.

While it is gratifying that so many in the development community now seek to develop sustainably, far too few are reaching beyond the superficial indicia of green building. Too many simply seek an award of approval without understanding the limitations and contradictions inherent in the standards by which the awards are measured. The most dominant standards for measuring sustainability, the Leadership in Energy and Environmental Design (LEED) standards, promulgated by the U.S. Green Building Council, as well as the

Portland-based Green Building Initiative's (GBI) Green Globes, are fraught with inconsistent goals and unbalanced priorities.

There are several basic problems impeding a large-scale shift to sustainable development:

1. The standards for measuring sustainability are often internally inconsistent.
2. There is no correlation between point scores and economic costs and benefits.
3. Different rating systems are largely incompatible.
4. Sustainability is about long-term benefits, while developers' timelines are short-term.
5. Mixed-uses maximize sustainability, but single-use zoning is still predominant.

**1. The standards for measuring sustainability are often internally inconsistent.**

Review some contradictions within the LEED standards.

Within a new LEED v 3.0, 110-point scale (formerly 69 points), the Sustainable Sites SS Credit #2 now awards up to five points for development density and community connectivity (formerly it was a single point). Then it further restricts their value by requiring that the site be one that was previously developed, have more than 60,000 square feet per acre, or at least 10 units per acre, plus be within one-half mile of at least ten "Basic Services" defined to include such things as a grocery, pharmacy, bank, library, school, day care center, post office and a park.

And at least eight of those services must already be in operation while the other two must be operational within one year. While highly desirable, these restrictions act as disincentives for suburban developers to attempt to develop mixed-use projects.

But the mixed-use density objective is inconsistent with the open space one. The section on Sustainable Sites (SS Credit #5.2) provides a credit for maximizing open space. And it exacerbates that conflict with the density objective by requiring that as much as 50 percent of the site be in open space, or at least 25 percent more than the local zoning ordinance. The anomaly is that the requirements of the sustainable sites section actually discourage density and encourage sprawl, which by its very nature is not sustainable. It would likely be easier for a developer to get credit for a suburban site with



copious open space than for a dense urban project. Yet the suburban site would generate vastly more vehicle miles traveled (VMT) which certainly does more harm to the environment.

Then the same sustainable sites section grants two points for parking capacity (SS Credit #4.4) and the easiest way to obtain that credit is for a developer to provide no new parking. Or a developer could provide parking for fewer than five percent of the full-time equivalent occupants of the building, and then also allocate at least five percent of that parking for carpools and vanpools.

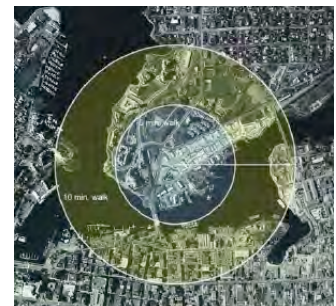


This parking provision conveys a misunderstanding of the relationship between parking and density. The way to increase density is not to limit the absolute number of parking spaces, but rather to maximize the size of development that a number of parking spaces can support. That is done through reducing the relative shared parking ratio between the number of parking spaces and the number of mixed-uses, square feet and units that the parking supports.

Furthermore, to allocate any spaces for a specific class of users, as SS Credit 4.4 does, removes them from a shared parking pool and increases their inefficiency, which is presumably precisely opposite of the intention of the LEED framers. Environmental planners too often do not recognize that greater density of parking leads to greater density of uses, provided uses are mixed and the spaces are not allocated. At \$40,000 to \$50,000 per space, no rational developer wants to build any more parking than is absolutely necessary. Developers make money selling units or office or retail space, not on selling parking. Therefore, planners and developers share an interest in making parking efficient, a fact many planners simply fail to recognize.

## **2. There is no correlation between point scores and economic costs and benefits.**

To take the sustainable sites category again, a developer can earn one point by not developing in a flood plain, prime farmland, habitat of endangered species or other sensitive sites. [SS Credit #1]. That may have zero cost. But to earn points for density, [SS Credit #2] a developer might need to spend hundreds of thousands, or even millions, of dollars to buy a previously developed site and



to develop it with more than 60,000 square feet per acre. And to earn the one point Brownfield Site credit [SS Credit #3], a developer could spend millions of dollars remediating the brownfield. The LEED brownfield point is 0.9 percent of the total and Green Globes allocates only 2 percent, better but still minimal. A developer might ask why invest the extra dollars to earn the difficult point when one can invest little or nothing for the easy one? This disparity is counter-productive.

Or again in the sustainable sites category, a developer could earn one point for the Heat Island Effect credit [SS Credit #7.2] by using a white roof, or lowering the foot-candle power of exterior lighting to earn the Light Pollution Reduction credit (SS Credit #8). These are marginal costs on a totally different scale of investment than the density or brownfield credits.



Or compare the brownfield credit costs to earn one point with another standard in the sustainable sites category that credits one point for the provision of bicycle racks for five percent of a building's occupants, with a shower in

the building [SS Credit #4.2]. Green Globes awards three points for development in a commercial zone, where property will be significantly more costly, but also three points for development within a quarter mile from a bicycle path, where it will likely be far cheaper. To equate those provisions imbalances priorities between costs and benefits, not only in the strict economic sense, but also with respect to energy and environmental benefits.

In the Water Efficiency category, a developer can earn two LEED points for installing drought-resistant plants that need no irrigation. [WE Credit #1.2] Or the developer could earn two LEED points by treating 50 percent of the sewage wastewater onsite to tertiary standards [WE Credit #2]. LEED loses credibility equating the point scores for these items. The former is very low cost and of marginal benefit. The latter is very high cost and renders substantial benefits. Where is the cost/benefit analysis to justify the priorities in these ratings?

In the Energy category, a developer could increase energy cost savings by 12 percent and earn a single credit [EA Credit #1]. Or one could hire an energy commissioning agent early in the design process and earn double, two points [EA Credit #3]. Or one could earn three points by installing an energy consumption metering device system for one year, [EA Credit #5], something one would have thought would be a pre-requisite for earning any credits. There appears to be no correlation between costs and benefits in this priority system.

One could earn two points by providing at least 35 percent of the building's electricity from renewable sources for two years [EA Credit #6] or earn the same two points by installing onsite renewable energy solar panels that produce only three percent of the building's energy. The wide disparity in renewable energy production and costs required to earn the same two points belies the internal consistency of the standards themselves with respect to costs and benefits.

In the Materials & Resources category, a developer could maintain 55 percent of the walls, floors and roof of a building and earn only a single point. [MR Credit #1.1] Or the developer could take the easy route and also earn one point by simply reusing five percent of the materials. [MR Credit #3.1]. Or s/he could not preserve or reuse any structure or materials at all but simply earn one credit by buying any materials with 10 percent recycled content. [MR Credit #4.1]



Just using concrete can earn one point, since it almost always is extracted or manufactured within 500 miles [805 km] of the site. [MR Credit #5.1] Or the developer could earn one point by using cotton insulation or wheat-board office partitions. [MR Credit #6]. Upon what basis can the USGBC conclude that each of these techniques is of equal value?



In the environmental quality category, a developer could earn one point for installing carbon dioxide meters tied to the HVAC system, [EQ Credit #1] or by day-lighting 75 percent of the floor area, [EQ Credit #8.1], or for providing operable windows, [EQ Credit #6.2], or by buying task lighting. [EQ Credit #6.1] What is the basis upon which these items are determined to be of equal value, either environmentally or economically?

LEED awards one point for hiring a LEED-accredited professional consultant [ID Credit #2] — the same one point score earned for spending millions of dollars to remediate a brownfield. The lack of priorities in scoring points, the failure to incorporate cost/benefit analyses into its awards, and the neglect of economic values and benefits, undermines LEED's seemingly widespread acceptance by the development community.

### **3. Different rating systems are largely incompatible.**

Despite its prevalence in the United States, the LEED rating system promulgated by the U.S. Green Building Council, a Washington, D.C.-based non-profit corporation, is not the only rating system. The federal Environmental Protection Agency (EPA) and the U.S. Department of Energy have formulated the Energy Star rating system.

Unlike LEED, only 32 percent of which is devoted to energy conservation, Energy Star is 100 percent based on energy efficiency. Its ratings are awarded relative to energy consumption based on a database of peer buildings that are similar with respect to size, use, occupancy, hours of operation and location. To achieve an Energy Star rating, a building must reach a benchmark that makes it more efficient than 75 percent of its peers. So only the top quartile of buildings may display an Energy Star. Licensed engineers must certify the accuracy of the energy consumption information submitted. Energy Star focuses more on existing buildings, whereas LEED concentrates more on new buildings, and architects have more familiarity with LEED.

Essentially the main compatibility between the LEED and Energy Star systems is that in the LEED ratings for existing buildings, named LEED-EB, a building must achieve an Energy Star rating of at least 69, meaning that it is more energy efficient than 69 percent of its peers. Otherwise, these rating systems are not compatible or competitive.

The only directly competitive system, more or less, is the Green Globes system, based on a 1,000-point scale, versus the 110-point LEED-NC scale. The categories, while somewhat similar, are weighted differently.

Credits	LEED	LEED	LEED	LEED	Green	Green
	v 2.2	v 2.2	v 3.0-2009	v 3.0-2009	Globes	Globes
	Points	Percentage	Points	Percentage	Points	Percentage
Sustainable Sites	14	20%	26	24%	120	12%
Water Efficiency	5	7%	10	9%	130	13%
Energy & Atmosphere	17	25%	35	32%	300	30%
Materials & Resources	13	19%	14	13%	145	14.5%
Indoor Environment	15	22%	15	14%	160	16%
Innovation & Design	5	7%	6	5%	-	-
Regional Priorities	0	0%	4	3%	-	-
Project Management	-	-	-	-	100	10%
Emissions	-	-	-	-	45	4.5%
<b>Totals</b>	<b>69</b>	<b>100%</b>	<b>110</b>	<b>100%</b>	<b>1,000</b>	<b>100%</b>

The Green Building Initiative (GBI) that sponsors Green Globes had its genesis in Toronto in 1996 by the Canadian Standards Association. Now, the American National Standards Institute (ANSI) has accredited the GBI as a standards developer. The ANSI process is consensus-based and involves a committee of users, producers, interested parties and non-governmental organizations. Green Globes is an online-based interactive system where point scores are known as the design proceeds, unlike LEED whose results are not known until the project is completed, commissioned and certified. Green Globes does require third-party verification. Because its categories, credits and points are different from LEED's, making cost-effective comparisons and judgments is difficult. But it does not appear that cost/benefit analysis is endemic to standards setting of either ratings system.



#### **4. Sustainability is about long-term benefits while developers' timelines are short-term.**

One of the major impediments to wide-scale adoption of green building has little to do with the rating systems but much more to do with the timelines of developers, which have become shorter and shorter due to the:

- securitization of real estate markets,
- rise of merchant developers,
- conversion of private developers to traded real estate investment trusts (REITs), and
- proliferation of hedge funds operating in the real estate sector.

The Wall Street virus of its short-term attention span on quarterly earnings reports has spread to developers as well as to lenders, especially as secondary mortgage markets morphed into derivatives with mortgage pools, sliced and diced into more arcane tranches, leading to the implosion of those markets during the last year.

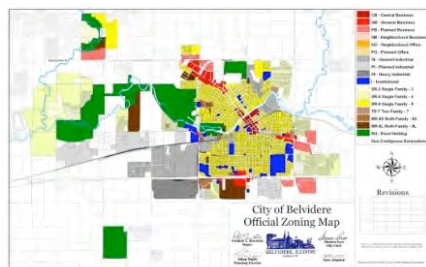
There was a time when visionary developers thought in terms of quarter centuries, not three-month quarters. When John D. Rockefeller, Jr. built Rockefeller Center, it was to hold, not to be sold. The great real estate fortunes of John Jacob Astor, Henry Huntington and Henry Flagler, the Durst, Shorenstein and Ashforth families, and many others, were built on the premise of building for the long term. Such a family will be very concerned about building using solid materials and quality systems that have longer lives and lower operating expenses over extended periods.

But a merchant developer, who will flip a building upon completion, if not before, will not absorb short-term pain for long-term gain that would accrue to future owners. And as residential markets have been overtaken by condominiums, where the developer, who enjoys none of the savings in energy operating expenses, but rather sells upon completion, will spend little time and money on building well unless there is a short-term premium upon sale. With a glut of condominiums on the market as a result the national binge on short-term credit, that is very unlikely to happen anytime soon.

Unfortunately, build and hold has been a strategy few developers have been either willing or able to follow. If the business of development is the creation of value, which it is, green building creates long-term values, especially as energy prices rise. And with those rising energy prices, buildings that are not green will become functionally obsolescent, analogous to the way that energy-consuming sports utility vehicles (SUVs) have witnessed values that have depreciated more quickly than in previous years. So the risks of not building green will rise.

### **5. Mixed-uses maximize sustainability, but single-use zoning is still predominant.**

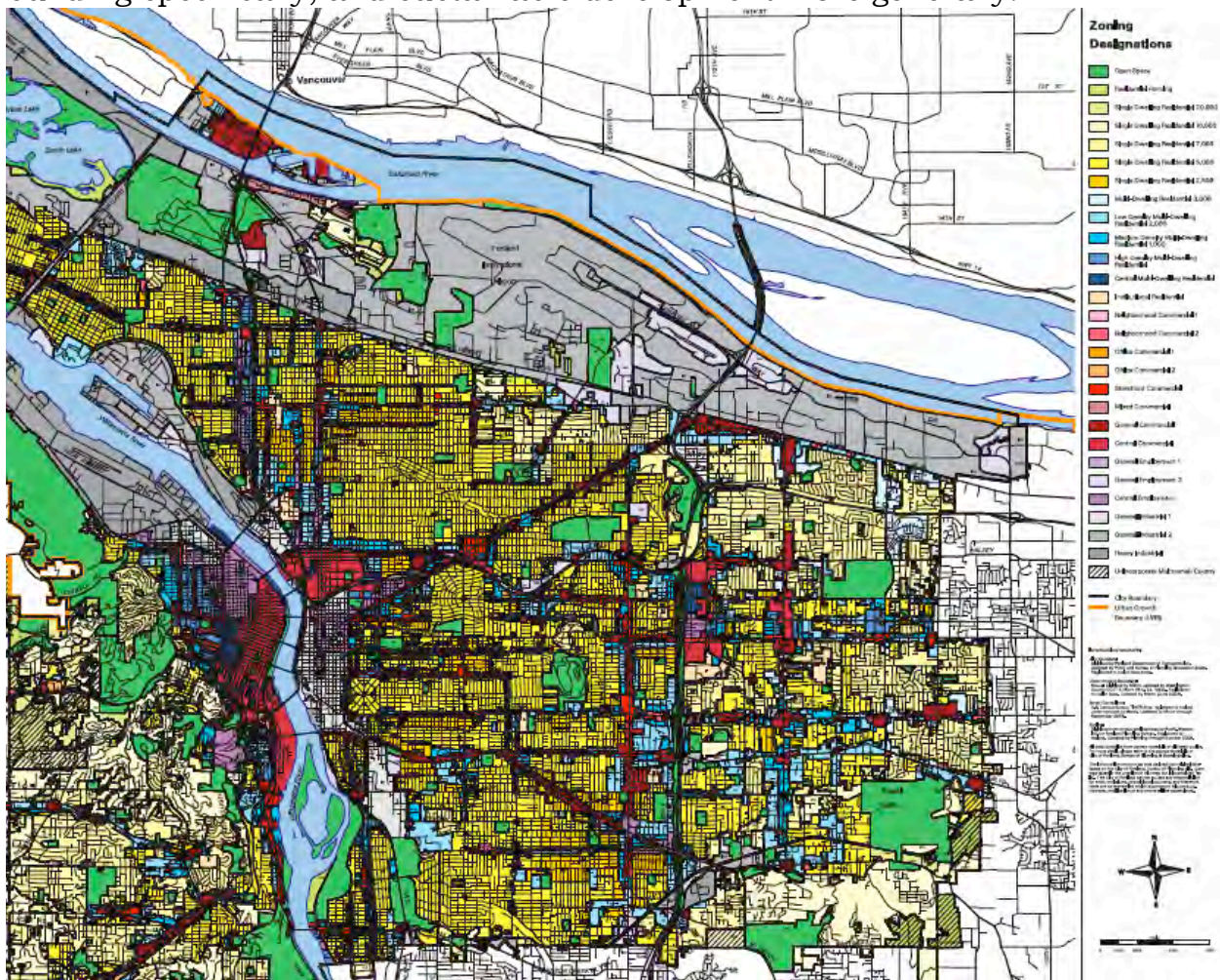
While some shortsighted private developers have been slow to adopt green building, public planners are often locked into outmoded land use planning models. The United States is still, for the most part, ossified in single-use zoning — the very antithesis of green building and vital mixed-use urbanity. While many planners decry cars and seek universal mass transit, and LEED planners award credits for projects without cars, the very single-use zones in which the lion's share of new buildings are constructed actually create demand for the very cars they abhor. Shared parking is impossible without mixed uses,



yet in very few areas can a developer build a mixture of uses as of right. And when s/he can, different building codes apply separately to each use, thereby raising costs.

In many ways, single-use zoning is a 20<sup>th</sup> Century solution leading to the sprawled land-use patterns that exacerbate climate change and segregate society by income, class, age, infirmity, and formerly by race. What is needed is a 21<sup>st</sup> Century solution based on universal mixed-use land use patterns. The provisions of single-use zoning are in turn aggravated by outmoded concepts of maximum lot coverage, minimum setback requirements, maximum floor area ratios and maximum heights that help to ensure sprawling land-use patterns.

To see that the LEED standards can reinforce those outmoded concepts, as outlined above, should give pause to every planner who seeks to advance green building specifically, and sustainable development more generally.



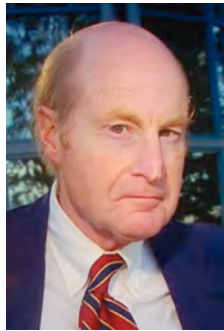
To provide, as do LEED ratings, that a bicycle rack can earn equal credit to brownfield redevelopment, that dual-flush toilets are equally creditable as the reuse of an entire building, with all its embodied energy, is to alienate those whom the USGBC most wants to convince to adopt its standards.

### **SEEDing Green Building**

One might consider some positive prescriptions for change to a newer set of standards based upon a model of cost/benefit analysis of both economic and environmental benefits. To encapsulate the cost/benefit concept, for purpose of discussion, one might call this system Sustainable Enviro-Economic Development (SEED) ratings. Within each category, individual items would be ranked according to the impact each would have on energy consumption and environmental benefit relative to life-cycle cost. Those with the highest cost/benefit ratios would be given the most points.

Rather than be complacent with LEED, or Green Globes, one can suggest that if the ratings were adjusted to become balanced by cost/benefit analyses, like the SEED ratings proposed, vastly more developers would buy into the ratings system and save enormous amounts of energy, while they satisfy pent-up demand for green buildings, which can lead to premiums for green building sales, occupancy and rent.

Moreover, developers and building owners who do not build green will likely see their buildings experience functional obsolescence and declining values. To achieve more universal adoption of its rating system, the U.S. Green Building Council, and GBI's Green Globes, should weed and overhaul its LEED and Green Globes ratings and truly plant a SEED for widespread green building.



Respectfully yours,

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I want to especially acknowledge the financial contributions for this journal from the Oregon Association of Realtors and the RMLS.



In addition, we greatly appreciate the assistance of each of the following in the preparation of this journal:

- CB Richard Ellis
- City of Portland
- Colliers Multifamily Investment
- Cushman Wakefield
- Dundon Company
- Grubb & Ellis
- KPMG
- Mark Barry Associates
- Metro
- Norris Beggs & Simpson
- Powell Valuation
- Realty Trust
- Scanlan Kemper Bard
- Sperry Van Ness Commercial Advisors
- State of Oregon
- TMT Development
- Willamette Valley MLS

