

Preface

The first decade of the new century has been a difficult one for America. The dangerous implications to our climate of the American way-of-life have become manifest. Many of our most critical mineral resources continue to degrade and deplete. Energy prices have vacillated wildly as our dependence on fossil fuels grows while supplies shrink. Inequity has reached its worst point since the 1920s. An economy based upon continued consumerism and consumption teeters on the brink of collapse. And worst of all, we've made little real progress in addressing these converging threats. Our government, our financial institutions, and our car companies, to name a few, have led us deeper into the crisis by offering us little in the way of viable solutions and much in the way of greenwash.

One ray of light was the idea of green building. Championed by the media and building industry alike, it seemed to address one of the largest energy consumers of modern society – our homes and buildings – which consume about 50% of all energy in the country (40% in operations and 10% in construction, maintenance and demolition). The U.S. Green Building Council (USGBC) brought us the popular Leadership in Energy and Environmental Design (LEED) program which purported to save large amounts of energy in addition to benefiting the environment. From its first building certification in the year 2000 to the release of its most recent version in 2009, LEED, now at the end of its tenth year in business, has touted itself as a beacon for sustainability, health, and energy savings. But all is not as it appears.

In early 2008 a study, commissioned by USGBC and the EPA and performed by the New Buildings Institute (NBI), suddenly questioned LEED's basic principle – that it saves significant amounts of energy. Energy is the first area of “leadership” implied in the LEED name. The doubts about LEED buildings' energy performance emerged as early as 2004. Yet in spite of the studies, the USGBC continues to market the program as a way to save significant amounts of energy. This energy concern has been on the table for most of the LEED decade and now the long-needed answers are challenging the basic premise of LEED's green building energy performance.

At least LEED building's energy use can be measured and has been to some extent, much to the collective disappointment of those concerned with climate change and declining fossil fuel resources. Many LEED advocates respond to those exposing the weakness of the energy component by making hopeful statements that the environmental component will offset the energy weakness. But not only are the energy components inadequate, the same holds true for its environmental components of water, indoor air quality, sites, reused materials, etc. These have not had even a cursory analysis. Could it be that the whole basic design concept is flawed – that there has only been and will only be minimal savings of all resources including energy? Is it possible that both the areas of energy (fossil fuel use and CO₂ generation) and environment (land, water, toxins, etc.) have been compromised to promote the fundamental messages perpetuated by the green building movement – “it's easy to be green” and “it doesn't have to cost any more to be green.”

The science of green building is more related to alchemy than physics. The LEED system can be summarized by a vague equation:

$$\text{Green points} = a_1 \times \text{cubic feet of insulation} + a_2 \times \text{number of low flow toilets} + a_3 \times \text{square feet of PV} + a_4 \times \text{distance to nearest bus stop} + a_5 \times \text{length of the bike rack} + a_6 \times \text{parts per million of toxins} + \dots a_n \times (\text{other green features})$$

There may be any number of green elements in this general equation. But the critical values are the a_1, a_2, \dots, a_n multipliers. These do not come from the world of science which provides formulas such as distance = speed multiplied by time, or area equals the product of width and height. Or that heat loss is a function of the U factors of the components of a wall assembly. Science recognizes numerical values for π or the speed of light. But the “green” values are set by the USGBC, which is more of a trade organization than an objective research institute.

Unfortunately the situation can get worse – and has been doing so! We are now faced with a movement to adopt LEED as part of our building codes. An over-marketed standard that is under serious attack for its poor energy performance is being proposed *and accepted* by cities as a requirement for our buildings. This is happening at a time when energy and CO₂ have become our most critical national problems. The idea of accepting as law an inadequate standard that has been developed by the building industry – thereby allowing

that industry to usurp the long-established methodology of setting building standards by government policy – is absurd and dangerous. It threatens to compound the tragedy of LEED’s lost decade indefinitely into the future.

This book is intended to expose the false solution of LEED. It calls for more stringent energy requirements and argues that human survival is dependent on lowering CO₂ emissions, not garnering green points. It describes an alternative building standard from the one industrial nation that has been successful in reducing its CO₂ emissions – Germany. And it calls for rapid government action to adopt similar deep-energy-reduction building standards for the United States.