

A GreenSource BOOK

# LEED-New Construction Project Management

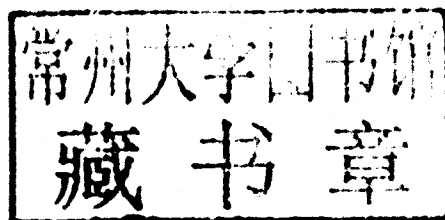


Vijaya Yellamraju, LEED AP

# LEED-NEW CONSTRUCTION PROJECT MANAGEMENT

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**VIJAYA YELLAMRAJU, LEED AP**



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*To Sai, my parents, and my family.*

## About the Author

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**Vijaya Yellamraju, LEED AP**, is Principal at Green Potential, a multinational *green building* and LEED consulting firm based in Austin, Texas. She is responsible for leading the technical and operational aspects of the business, providing direction to developers, architects, contractors, and other project team members for successful integration of green strategies into the design process. Ms. Yellamraju has worked on numerous green and LEED projects, with a focus on multifamily and commercial buildings. She is a trained architect and earned an M.S. in architecture, specializing in *Energy and Sustainable Design*. She has several years of experience in the architecture and construction industries and has managed many multimillion-dollar projects in the United States and India.

The **U.S. Green Building Council®** is committed to a prosperous and sustainable future for our nation through cost-efficient and energy-saving green buildings. With a community comprising 78 local affiliates, more than 20,000 member companies and organizations, and more than 140,000 LEED® Professionals™, USGBC® is the driving force of an industry that is projected to contribute \$554 billion to the U.S. gross domestic product from 2009 to 2013. USGBC leads an unlikely diverse constituency of builders and environmentalists, corporations and nonprofit organizations, elected officials and concerned citizens, and teachers and students. USGBC is the developer of the LEED green building certification program and the convenor of the Greenbuild® International Conference & Expo.

**LEED®**—an acronym for the phrase “Leadership in Energy and Environmental Design”—is a registered trademark of the U.S. Green Building Council. The LEED green building certification program is the nationally accepted benchmark for the design, construction, and operation of green buildings.

# FOREWORD

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**JERRY YUDELSON, PE, MS, MBA, LEED AP BD+C/O+M**

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In the second half of the 1990s, the nascent U.S. Green Building Council (USGBC) began to formulate a new rating system that would define a *green building* so that building teams could actually design and construct one. That system, piloted in 1998 and 1999, was introduced in March 2000 as LEED for New Construction (LEED-NC), version 2.0. In the annals of sustainable design, this date will be remembered for a long time. It was a revolution in green building thinking and a major incentive for progressive architects, engineers, and contractors to push forward with new initiatives in creating sustainable buildings.

Within the span of a decade, the product of that group effort, the LEED®—Leadership in Energy and Environmental Design—green building rating system, had become by 2010 the de facto national sustainable design standard in the United States and had been formally adopted as the national certification standard by green building councils in Canada, India, Italy, and several other countries. By insisting on a rigorous, third-party-verified minimum standard, LEED effectively took the guesswork out of designing and certifying a green building, one that would use fewer scarce natural resources and generate less waste than a conventional building and be more *user friendly* in the process.

LEED defined a major challenge to the conventional practice of architecture, engineering, and construction. It said, effectively, that a *standard* building, one built merely to meet building code minimums, was *not good enough* to prevent unnecessary resource depletion and environmental contamination. As uncomfortable as this was initially for the construction industry professions, by 2005 many large architecture, engineering, and building firms had begun to compete on the basis of how many LEED-registered projects they had begun and how many LEED Accredited Professionals they employed.<sup>1</sup> By 2010, it was impossible for most design and construction firms to compete for sustainable design projects without having completed a substantial number of



LEED-certified projects. Effectively, within 10 years, LEED certification had overwhelmed most initial opposition from building owners, developers, architects, engineers, and builders to become the widely expected outcome of a high-performance construction project.

I first became aware of the USGBC during 1997, helped organize the first USGBC chapter in the Pacific Northwest in 1998, and attended my first USGBC national meeting in 1999. At that time, all attendees could introduce themselves to each other during the course of a few hours, and they did. In 2000, I visited my first LEED-certified project, the LEED Platinum Chesapeake Bay Foundation headquarters in Annapolis, Maryland. By 2001, it had become impossible for LEED members to self-introduce themselves at national meetings, as the USGBC enjoyed the beginnings of a decade of rapid growth that reached 20,000 corporate members by 2008. Contrast those early meetings of a small cabal of green building zealots to the USGBC's 2009 annual *Greenbuild* conference and expo, attended by more than 25,000 people, and you will see that what was a fringe movement 15 years ago has become the *new normal* for the work of designing, constructing, owning, and operating commercial buildings and homes.

In 2000, I helped organize a green building consulting group, one of the first in the country, within a large electric utility in the Pacific Northwest. Our group managed the certification application for the first LEED Gold project in the western United States (and only the second in the country) and the first LEED-certified project in Oregon. In 2001, I became one of the original ten national LEED trainers for the USGBC. At the time, we had a rating system that included requirements for achieving various credits, but no detailed manual on how to proceed and very little in the way of organized procedures. All LEED project documentation was submitted in hard-copy form, in very large three-ring binders, to the USGBC and was then sent to outside reviewers, who were not identified to project participants or allowed to communicate with anyone on the design/construction team. By the end of 2004, only 118 projects had been officially certified, and many professionals complained about the cost and complexity of LEED certification.<sup>2</sup>

Starting in 2001, the USGBC began certifying LEED Accredited Professionals (LEED APs), who had to demonstrate knowledge of one of the four major LEED rating systems, particularly LEED-NC, laying the groundwork for the rapid expansion of the LEED certification process. Mighty oaks from little acorns grow—by 2010, more than 150,000 LEED APs!

By early 2010, LEED certification had grown tremendously! More than 5,000 projects had already been certified, and more than 25,000 had registered to receive eventual certification.<sup>3</sup> LEED Platinum (the highest rating) projects now span the globe, from the United States and Canada, to Dubai (UAE), India, Australia, Brazil, China, Spain, Korea, Saudi Arabia, Sweden, and Germany.<sup>4</sup> Leading U.S. multinationals routinely request LEED-certified office space in other countries and often build their own U.S. headquarters now to LEED Gold and Platinum standards.<sup>5</sup>

In 2009, my firm helped to certify the first LEED retail project in Arizona, using the LEED for Core & Shell (LEED-CS) rating system, one that I had helped develop dur-

ing my tenure on the national *core committee* for LEED-CS from 2004 to 2006. By 2009, certifying a project under a LEED system had become a well-organized process, and the USGBC had spun off the Green Building Certification Institute to manage the system for project certification and LEED AP accreditation.

LEED version 3, introduced in 2009, contained many upgrades and adjustments that have made LEED a workable method for certifying green building performance claims. Nevertheless, based on my own experience, LEED certification is still an intricate dance, one with its own melodies, lyrics, scales, steps, and rules of engagement. Even as more than 150,000 LEED APs have joined the roster since the first 100 (of which I was one) were accredited in 2001, the process of communicating LEED requirements to building teams remains one of hands-on engagement.

So, the question remains: how do you actually make the LEED certification process work? My firm is currently managing the LEED certification for a new 250,000-ft<sup>2</sup> corporate headquarters building in Arizona, and I can attest to the fact that the system is still cumbersome in actual application, requiring continual monitoring and management through the entire design, construction, and start-up process.

That's why a book such as this one is badly needed.

Each project team struggles with managing the design, construction, and certification process, as LEED requirements and submittals are laid on top of an already intricate building process. Even when teams are using BIM (building information modeling) tools such as Revit®, the LEED process is not well integrated with the balance of the building team's work. For this reason, many building teams find it useful to hire specialists to manage the LEED certification process, just as they might hire experts in geotechnical analysis, vertical transportation, code compliance, and cost estimating. Even when the work is done *in-house* at larger architectural firms, the LEED project management specialist has typically been hired just to perform that function.

In 2008, I wrote *Green Building Through Integrated Design* (McGraw-Hill) as an attempt to show how to manage an integrated design process through asking the right question at the right time, so as not to preclude good solutions from consideration. I've also written extensively on the use of project *eco-charrettes* as an early-stage design tool to bring sustainable design considerations to the forefront early enough in the process to have an influence on architectural and engineering choices. But nowhere in my research and writing have I tackled how to manage the LEED process in such detail and so carefully laid out a manner as in *LEED—New Construction Project Management*, a masterful effort by the Texas-based expert Vijaya Yellamraju.

Judging by the numbers, most of the 155,000-plus LEED Accredited Professionals have yet to take a project all the way to LEED certification (5,000 projects certified by April 2010), so they truly need a good guide to LEED project management.<sup>6</sup> This book should fill that requirement for the foreseeable future. It's worth a place on every LEED management professional's bookshelf.

# ACKNOWLEDGMENTS

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This book would not have been possible without the guidance, contribution, advice, and encouragement of many friends, family members, peers, and colleagues.

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I am also deeply indebted to my family—parents, parents-in-law, siblings, and siblings-in-law—for their support throughout the book-writing process. They were my *cheerleaders*. I am also thankful to my husband, Kaushik Valluri, for his unconditional support, love, advice, encouragement, and belief in me.

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Last but not least, it is a privilege to have the book open with a Foreword by renowned green building authority Jerry Yudelson. I am very thankful to Jerry for his kind words.

Vijaya Yellamraju, LEED AP

## Notes

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<sup>1</sup> See, for example, my book, *Marketing Green Buildings: Guide for Engineering, Construction and Architecture*, 2006 (Taunton, GA: The Fairmont Press), 128.

<sup>2</sup> USGBC LEED Matrix, personal communication, USGBC staff, June 2010.

<sup>3</sup> Ibid.

<sup>4</sup> [www.usgbc.org/LEED/Project/CertifiedProjectList.aspx](http://www.usgbc.org/LEED/Project/CertifiedProjectList.aspx) (accessed June 3, 2010).

<sup>5</sup> [www.environmentalleader.com/2009/04/22/mcdonalds-hq-achieves-leed-platinum-status/](http://www.environmentalleader.com/2009/04/22/mcdonalds-hq-achieves-leed-platinum-status/) describes how McDonald's built its own LEED Platinum headquarters building in Oak Brook, IL in 2009 (accessed June 3, 2010).

<sup>6</sup> [http://www.gbci.org/org-nav/announcements/10-04-11/GBCI\\_Certifies\\_5\\_000th\\_LEED\\_Project.aspx](http://www.gbci.org/org-nav/announcements/10-04-11/GBCI_Certifies_5_000th_LEED_Project.aspx) (accessed June 3, 2010).

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