

BLUEPRINT FOR

GREENING

AFFORDABLE HOUSING



GLOBAL GREEN USA

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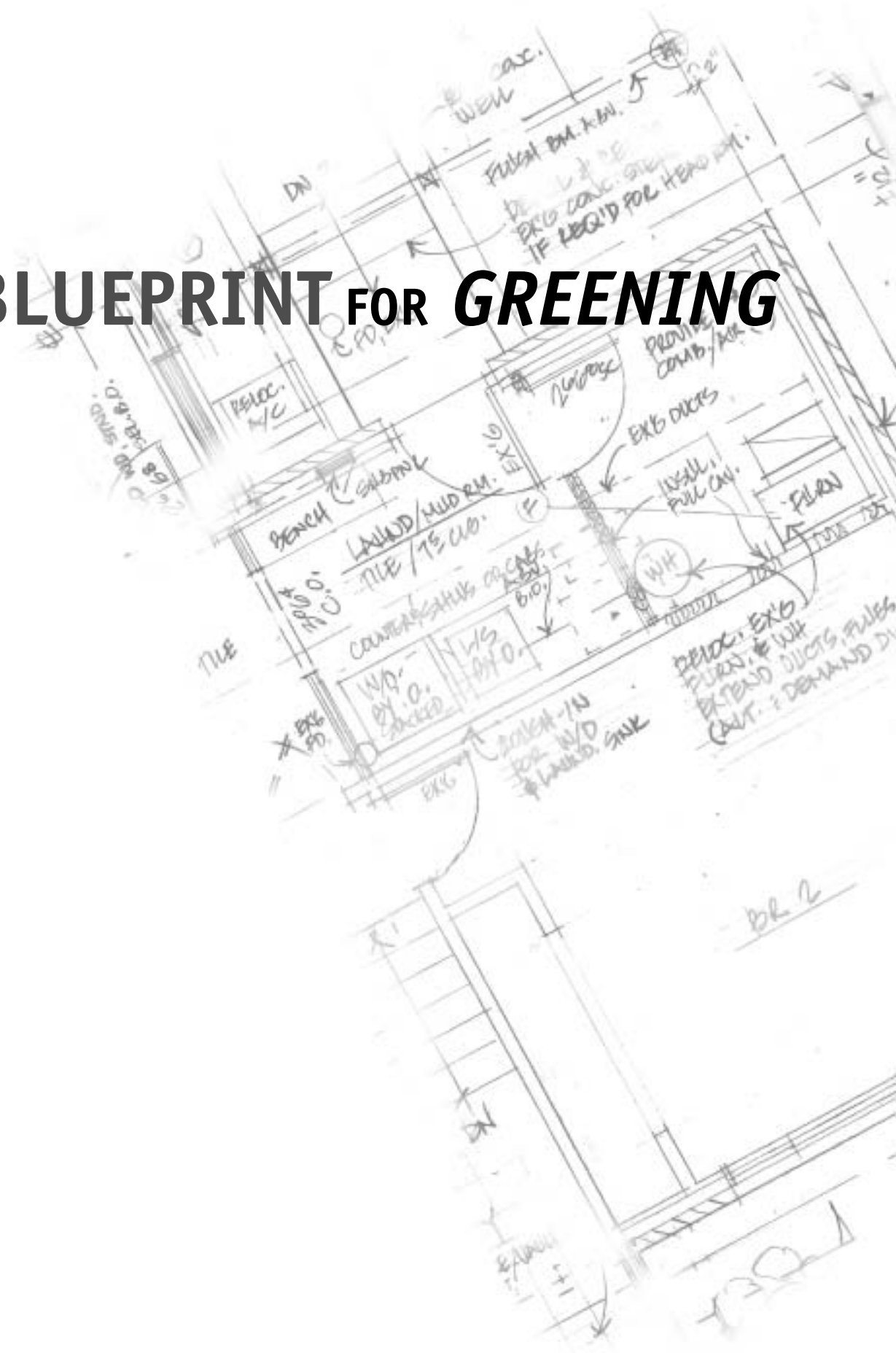
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GLOBAL GREEN USA

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FOREWORD

These are exciting times for green building. Over a decade ago, when the first edition of this book was published, a number of designers and builders were starting to embrace resource-efficient or “green” building, yet precious few of their efforts focused on affordable housing.

When I joined the newly formed Global Green in the mid-nineties, we had a mandate from President Mikhail S. Gorbachev, founder of our international parent organization Green Cross International: to foster a value shift in patterns of consumption to help create a sustainable future. It was clear to me then, and it remains so now, that in looking at environmental solutions, we must address poverty. But I cannot tell you how many times I’ve heard that sustainable building practices are luxuries for the virtuous and wealthy few. Or the other refrain, “Why should we experiment on the poor?”

In fact, the opposite, could not be truer: If we can lower energy costs for low-income families, improve their indoor air quality, and connect them to mass transit, we can improve the lives of those who need it most. We simply do not have time to perpetuate the misperception that sustainable building practices are luxuries for the virtuous and wealthy few. By making green building *affordable* we make it *accessible*—if you can build green affordable housing, every building can be green.

But allow me to back up. When I was four years old, or so my father tells me, I saw some trash in the park, left over from a busy weekend, and said “Dad, we have to take care of our planet!” Growing up in Modesto, California, I watched agricultural land and open space disappear for suburban developments. It disturbed me, yet I knew people needed a decent place to live.

In 1991, I began what has become a long relationship with Habitat for Humanity when I volunteered for the organization after moving to Los Angeles for graduate school. Amongst my public administration course readings, I self-selected Paul Hawken’s seminal work, *The Ecology of Commerce*—I still have the worn copy full of highlighted passages. Not only did Paul highlight green building, at its core was a message that struck a cord: Whole systems thinking instead of linear solutions to problems! Of course!

Around that time, I joined the Steering Committee for Habitat’s Jimmy Carter Work Project in Los Angeles. You can imagine my thrill at being appointed chair of the “green team”! It was a committee of one, and I appointed myself, but it was an important start.

Despite my best efforts and enthusiasm, barriers abounded in trying to “green” the weeklong blitz build. The materials committee would only use a green product if it was donated, the architecture committee had aesthetic objections, the construction committee’s volunteers were used to building a certain way, and so on. I took green building pioneer John Picard to meet with the committee chairs. Still, there was little progress until I met David Snell, who was in charge of education at the Jimmy Carter Work Project at Habitat’s world headquarters in Georgia. I talked to David about how the Carter project might work differently, and he was intrigued.

In 1994, Diane Meyer Simon asked me to join the newly formed Global Green USA, providing a professional platform from which to pursue an endeavor with Habitat. Not surprisingly, when the organization’s first work plan was presented to the board in 1995, it included the goal of influencing Habitat for Humanity and focusing on affordable housing. The plan was approved and Global Green took its first steps toward greening affordable housing.

Reconnecting with David Snell, we quickly identified two opportunities for collaboration between Global Green and Habitat for Humanity. First was a work site recycling plan for the July 1995 Jimmy Carter Work Project. Working with our consultants April Smith and Sid Wales, we insured that everything such as food, construction waste, and hazardous materials was properly disposed of, recycled, composted, or sent to the wood shop at a local high school.

Second, we announced a partnership between Habitat for Humanity International and Global Green USA to identify ways to incorporate green practices into both the design and construction of Habitat projects nationally. The first step in our partnership was holding the Habitat for Humanity and Global Green USA Environmental Initiative Symposium in December 1995. It was said we had one most impressive gathering of green building and sustainability experts in one room at the time: Bob Berkebile, William McDonough, Bill Browning, Gail Lindsay, Steve Loken, John Knott, Dennis Creech, Lynn Simon, and so many others.

The event’s goal was to create a plan for Habitat to be good stewards for God’s gifts, and improve the lives of the homeowners. I believed we could improve lives and make housing truly affordable and that lower energy costs and significant health benefits could

help to transform neighborhoods. The result of the event was the formation of the Habitat Green Team and commitment by Habitat for Humanity International to support green in the work of the many affiliates. This commitment is being borne out today in the way energy efficiency and healthy building practices are integrated into the ambitious Operation Home Delivery for the rebuilding of hurricane-damaged Gulf Coast communities.

Our focus then turned to Los Angeles, where, in 1997, we invited experts in affordable housing design, community development, and green building to participate in a Green Affordable Housing Symposium. At the Symposium four teams explored how to green several affordable projects that were midway through design, including developments led by the Los Angeles Community Design Center, the Housing Authority of the City of Los Angeles, Habitat, and the Lee Group (whose project evolved into the Village Green, where President Clinton launched the PATH Initiative). A concurrent policy team produced recommendations for leaders in local, state, and federal government. The discussion, ideas, and recommendations generated at that event were the foundation for the first edition of this book.

Over the past decade our work has grown to encompass a broad spectrum of research, technical assistance, education, and policy development endeavors. Through the leadership and contributions of Lynn Simon, Mary Luevano, Ted Bardacke, and in particular Walker Wells, Global Green has become a national leader in greening affordable housing and sustainable community development.

But more importantly others have joined us in our commitment to transform communities including Enterprise Community Partners, LISC, NeighborWorks, the U.S. Green Building Council, Habitat for Humanity–International, Southface Energy Institute, AIA Housing Committee, the cities of Los Angeles, San Francisco and Santa Monica, and the States of California and Louisiana. The funding community has also provided essential support and we are grateful for the support of The Home Depot Foundation, the Oak Hill Fund, Blue Moon Fund, Marisla, Turner, David & Lucille Packard, and San Francisco foundations, the U.S. Department of Energy, and United Technology Corporation’s Sustainable Cities Program.

In the early days of the Green Affordable Housing Initiative, we faced a great learning curve; thankfully today it is more broadly understood that the construction and

maintenance of buildings accounts for 40 percent of the world's energy use, a major portion of overall resource use, and is a major contributor to climate change.

As the case studies in this volume demonstrate, the concept of green affordable housing is not an oxymoron; but rather, it is at the core of a new axiom for community development. To make affordable housing truly affordable, we must embrace green building in all affordable housing. To make green building truly accessible, we must learn to apply it universally in affordable housing.

Green affordable housing also provides us with the unique opportunity to engage an entirely new constituency—designers, developers, community advocates, and policy makers—in the broader, all-encompassing challenge of global warming. We can and must embrace this chance to tackle the enormous challenge of global warming while improving a sizable corner of the world—our communities and our most at-risk citizens—if we are to turn it around for the sake of future generations.

MATT PETERSEN

President and CEO, Global Green USA

CHAPTER 1

Making the Case for Green Affordable Housing

The greening of affordable housing forges a strong link between social justice and environmental sustainability, and connects the well-being of people with the well-being of the environment, thus building on the core social and economic values of affordable housing development.

Housing is a basic human necessity—one that is explicitly identified in the United Nations Universal Declaration of Human Rights.¹

AFFORDABLE HOUSING

One of the most pressing issues facing communities throughout the United States is the lack of safe, decent, and affordable housing. As wages stay stagnant while housing costs rise,² a growing number of low-income men, women, and families³ are unable to find a place to live that meets the conventional definition of affordability—housing for which residents pay no more than 30 percent of their gross income toward rent or mortgage payments.⁴

In response to the unmet need for housing accessible to low-income individuals and families, a community of nonprofit and for-profit developers, social service organizations, neighborhood and charity organizations, lenders, financiers, and government agencies has emerged over the past forty years to produce and operate what is now commonly referred to as “affordable housing.” As a broadly used term, affordable housing includes rental, for-sale, co-, and transitional housing that is income restricted and usually developed through one or more forms of public subsidy. Affordability is achieved by setting the monthly rent or mortgage payment in accordance with the resident’s income, rather than at market rates.

The most common types of affordable housing are:

- Rental housing for very low-, low-, and moderate-income individuals and families
- For-sale housing for very low-, low-, and moderate-income individuals and families
- Housing for people with special physical or mental health needs

- Housing for people transitioning out of homelessness or medical or psychiatric institutions, or for emancipated foster youth leaving the family foster care system
- Housing for seniors
- “Sweat-equity” or self-help homes

Affordable housing developers rely on a variety of financial programs administered by federal, state, and local public agencies financial institutions and philanthropic organizations to realize their projects. This assistance is often in the form of tax credits, debt with preferential rates or terms, mortgage guarantees, and grants. While this book outlines a green building process and recommended practices that apply to all types of affordable housing, we emphasize the most common type of affordable housing developed in the United States—income-restricted rental housing funded through a combination of tax credits, preferential debt, grants, and other public subsidies.

WHAT IS GREEN BUILDING?

Green building is the process of creating buildings and supportive infrastructure that reduce the use of resources, create healthier living environments for people, and minimize negative impacts on local, regional, and global ecosystems.

The construction and operation of affordable housing projects, like other building types, consume large quantities of resources, resulting in adverse effects on the natural environment. For example, the annual impacts of building construction and operation in the United States include the following⁵:

- 40 percent of U.S. energy use
- 35 percent of U.S. carbon dioxide production, a major contributor to global warming
- 30 percent of wood and raw materials
- 25 percent of water use
- 20–40 percent of solid waste

In addition, over 30 percent of buildings have poor indoor air, which is cause for concern given that people spend about 90 percent of their time indoors.⁶ Many building products have negative impacts on human health through the release of toxins, either during the manufacturing process or after installation. Volatile organic compounds (VOCs), many of which are known carcinogens, are common in pressed wood products, paints, solvents, and adhesives. One of the most common VOCs, formaldehyde, is present in most particleboard, melamine, medium-density fiberboard, and plywood

used for cabinetry and trim. Other VOCs, such as acetone, benzene, toluene, and perchloroethylene, can impact the nervous and respiratory systems, especially in vulnerable populations such as children and the elderly, and alone or in combination with mold, dust, and pet dander, be a trigger for asthma.⁷ Building operation also has health implications. For example, burning coal to generate electricity releases mercury into the atmosphere; which eventually finds its way into the oceans, then into fish, and finally into our bodies when we eat the fish. Elevated mercury levels in pregnant women harm brain development in hundreds of thousands of unborn children annually.⁸ Conventional building often burdens low-income families and property managers with high monthly utility bills and significant ongoing maintenance and replacement expenses.

As affordable housing developers across the country become aware of these environmental, health, and economic issues, they are turning to green building as a way to lower operating costs, create healthier living environments, and minimize local, regional, and global environmental impacts. Examples of a diverse range of affordable housing projects from across the country can be seen in the photographs in this chapter.

Green building addresses five core issue areas: (1) smart land use; (2) water efficiency and management; (3) energy efficiency; (4) resource-efficient materials; and (5) healthy indoor environmental quality. See chapter 3, where these core issues are discussed in more detail. Some specific strategies include the following:

- Building in communities with existing services and infrastructure
- Reusing centrally located land and rehabilitating historic buildings
- Locating projects close to public transit and community amenities to reduce car dependency
- Producing the most compact and efficient units possible to reduce material use and the amount of space needing heating and cooling
- Reducing construction waste through materials reuse or recycling
- Reducing energy consumption through well-designed buildings and efficient appliances and fixtures
- Reducing water consumption both indoors and in landscaping
- Improving the quality and reducing the volume of stormwater
- Using materials that do minimal harm to people and the environment during manufacture, use, and disposal
- Increasing durability by minimizing moisture penetration.
- Improving indoor air quality through good ventilation and use of nontoxic materials and finishes



1.1



1.2



1.3



1.4

FIGURE 1.1. Faison Mews Historic Rehabilitation (Camden, NJ). *Photo courtesy of Darren Molnar-Port, NJDCA-NJ Green Homes Office* **FIGURE 1.2.** Cambridge Co-Housing (Cambridge, MA). *Photo courtesy of Bruce M. Hampton, AIA* **FIGURE 1.3.** Colorado Court (Santa Monica, CA). *Photo courtesy of Pugh + Scarpa Architects* **FIGURE 1.4.** El Paseo Studios (San Jose, CA). *Photo courtesy of First Community Housing*

- Reducing the heat island effect through reflective roof and paving and planting trees.
- Establishing maintenance practices that reduce use of pesticides, fertilizers, and harmful cleaning chemicals.

THE BENEFITS OF GREEN BUILDING TO AFFORDABLE HOUSING

Sustainability has three core components—economics, social equity, and the environment. Affordable housing directly addresses two of those aspects: economic stability and social equity. Integrating green building enables developers to address the third environ-



1.5



1.6



1.7



1.8

FIGURE 1.5. PVC-Free House (New Orleans, LA). *Photo courtesy of Bruce M. Hampton, AIA* **FIGURE 1.6.** Riverview Homes (Camden, NJ). *Photo courtesy of Darren Molnar-Port, NJDCA-NJ Green Homes Office* **FIGURE 1.7.** Betty Ann Gardens (San Jose, CA). *Photo courtesy of First Community Housing* **FIGURE 1.8.** Magnolia Circle (South DeKalb, GA). *Photo courtesy of Southface Energy Institute*

mental component that has not traditionally been seen as an integral part of affordable housing development.

A green building approach is consistent with the mission of most affordable housing developers, and most community development corporation mission statements include language about ensuring that low-income people have access to safe, decent, and affordable housing. For example, Mercy Housing California gives its mission as “to create and strengthen healthy communities through the provision of quality, affordable, service-enriched housing for individuals and families who are economically poor.” California’s Eden Housing states its mission as “to build and maintain high-quality, well-managed, service-enriched affordable housing commu-