

GETTING STARTED WITH GREEN PRESERVATION

An Introduction to
Issues and Resources for
Greening Existing
Affordable Housing



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This guide was written by Kimberly Vermeer, Principal of Urban Habitat Initiatives, with contributions by Michelle McDonough Winters, Program Director of the Local Initiatives Support Corporation's (LISC's) Affordable Housing Preservation Initiative. The authors are grateful to Vince O'Donnell, Vincent Reina, and Callie Seltzer of LISC's Affordable Housing Preservation Initiative, Madeline Fraser Cook of LISC's Green Development Center, and Cathy Craig and Jennifer Somers of Bay Area LISC for their guidance and editorial assistance. Marc Richmond of Practica Consulting, Rodger Brown at Preservation of Affordable Housing, and Kevin McMahan and his colleagues at the Federal Practice Group, LLC, also provided valuable insight on earlier drafts.

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LISC'S GREEN APPROACH

At LISC, our perspective on green is decidedly local and grounded in real-world impact. Our green efforts are part of a broad-based strategy to revitalize distressed neighborhoods and improve the quality of life for those who live there. The strategy is called Building Sustainable Communities, and it includes five fundamental goals: 1) expanding investment in real estate; 2) increasing family income and wealth; 3) stimulating economic development; 4) improving access to quality education; and 5) supporting healthy environments and lifestyles.

To date, LISC and its National Equity Fund (NEF) affiliate have invested \$440 million in grants, loans, and equity to a wide range of green projects that help achieve all five goals, including training for green jobs; construction of new affordable housing and retrofit of existing homes; urban farms and farmers markets; green schools and environmental education programs; and parks and city street clean-up efforts.

This guide is the result of collaboration among three programs at LISC:

- LISC's *Affordable Housing Preservation Initiative* (AHPI) provides technical assistance and financing to affordable housing preservation projects, and it produces information resources to help build the capacity of the field in technical preservation issues. AHPI is making green principles an integral part of its strategy to improve the physical, economic, and financial sustainability of existing affordable housing.
- The *Green Development Center* (GDC) is LISC's clearinghouse for green information, providing consulting and policy advocacy to help ensure that low-income communities are part of federal, state, and local green conversations. Green is not an add-on—it is intertwined into all five of our Building Sustainable Communities goals. GDC provides support to projects and programs to make this happen.
- The Bay Area LISC *Green Connection* program offers a wide range of services to the San Francisco Bay Area region to support all affordable housing practitioners in making healthier and greener choices for the design and ongoing maintenance of both privately and publicly held housing for low-income residents. The program offers tools, services, peer learning, workshops, technical assistance, financial incentives, and leadership in green affordable housing.



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FOREWORD

The preservation of affordable multifamily housing is now a mature field, having progressed far beyond its origin as a response to a series of crises over the past thirty years. First was the need to address widespread foreclosure of assisted multifamily properties in extreme physical and financial distress. This was followed by concerns about prepayment of subsidized mortgages and the expiration of long-term Section 8 contracts. During this time, affordable housing preservation work has highlighted the fundamental importance of existing affordable housing to our communities.

Today, affordable housing preservation involves a broad coalition of stakeholders committed to the long-term sustainability of the affordable housing stock, regardless of what the precipitating issues are. It is a long-standing LISC position that preservation is inherently beneficial to the environment, embodying a “fix it first” approach and a reduction in energy demand. However, until now there has been little recognition of how to attain the best environmental outcome in a systematic and integrated way for preservation transactions. LISC, in partnership with HUD and others, is now taking concrete steps toward this goal, and this guide is an outgrowth of that effort.

Preservation transactions are also inherently complex, particularly when federal subsidy programs are involved. As with all affordable housing projects, resources for preservation are limited and time is often tight. As a result, adding “green” goals to these transactions may seem like an option that cannot be pursued without sacrifices in other areas. However, with proper planning from the outset, preservation and greening can go hand-in-hand to improve the physical, economic, and environmental sustainability of existing affordable housing.

LISC’s *Green Rehabilitation of Multifamily Rental Properties: A Resource Guide*, published in Spring 2008, was the first publication of its kind to assist affordable housing developers in the green rehabilitation of existing properties. A joint project of Bay Area LISC and Build It Green, a California based nonprofit organization promoting healthy and energy-efficient housing, the guide was developed to help affordable housing owners and their consultants integrate green building and energy efficiency into the upgrades of their multifamily properties. Known as the *Green Guide for Rehab*, it offers technical guidance on how to analyze a multifamily building’s capital needs from a green perspective.

Getting Started with Green Preservation: An Introduction to Issues and Resources for Greening Existing Affordable Housing aims to take one more essential step toward green preservation by focusing on the overall redevelopment process within the context of regulatory and financing issues presented by preservation transactions. This guide serves as an introduction for owners and preservation purchasers who have little exposure to green building concepts and for those with basic exposure to technical issues who may benefit from a framework for organizing the process. The resources section offers additional information for those with the desire to learn about greening concepts and practices in more depth.

Vincent F. O’Donnell

Vice President

Affordable Housing Preservation Initiative

Local Initiatives Support Corporation

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PART I

INTRODUCTION

Substantial progress has been made during the past decade to move the building industry, including the affordable housing community, toward adopting green building practices—practices that address resource conservation, healthy housing, and environmental impact. While much of the focus of the green building movement has been on new construction, the next frontier in adopting green building practices in affordable housing is the greening of existing affordable properties. The U.S. Department of Housing and Urban Development (HUD) supports nearly 2 million units of private housing through subsidized mortgages and Section 8 project-based rental assistance. Most of this housing was built between the mid-1960s and the early 1980s and requires significant upgrades to meet current housing standards. In addition, the federal Low-Income Housing Tax Credit (LIHTC) has produced 1.5 million units in the twenty years since it began, and the oldest of these properties are in need of repairs and recapitalization.

Even before the recent increase in energy costs, utilities averaged 30 percent of total operating costs in the HUD-assisted portfolio.¹ As a result, rapid increases in utility and operating costs for these projects can threaten their physical and financial viability. Beyond these practical impacts, outdated building systems can harm residents' health and the environment. Using green building practices to update these properties makes sense in an era of climate change and energy and resource depletion. The green building movement also has made the case that better environmental practices inherently contribute to the long-term physical and financial health of properties and their residents. Thus, actions to improve *environmental sustainability* are integral parts of meeting the traditional goals of affordable housing preservation—*physical and economic stability* for properties and the *long-term sustainability of affordability*.

OPPORTUNITIES IN PRESERVATION TRANSACTIONS

Existing properties have two entry points for greening—either implementing incremental measures through ongoing operations and replacements, or rehabilitation of the property at the time of a preservation transaction. Many important improvements can be made through ongoing operations. Even though some of these improvements will be paid back through reduced operating costs, they often require an influx of resources upfront. As a result, green opportunities implemented through operations may be limited to low-cost measures, or “low-hanging fruit,” that can be covered by cash flow or reserves. A preservation transaction that occurs either at the time of a property transfer or through a refinance and recapitalization by an existing owner can offer an opportunity to carry out a more comprehensive rehab plan that can be leveraged to achieve environmental sustainability goals.

A preservation transaction can make it easier to green an existing property when compared with an incremental approach. Advantages offered by a preservation transaction include:

¹ This figure is available only for properties with owner-paid utilities. See *Implementing HUD's Energy Strategy*, p.10, U.S. Department of Housing and Urban Development Office of Policy Development and Research, December 2008, www.huduser.org/publications/destech/energyefficiency_08.html.

- **More money for hard costs.** A preservation transaction usually involves a recapitalization, refinancing, or restructuring of existing debt that offers access to more funds than are available in the operating budget. In addition, rent levels provided through certain Section 8 contracts can be increased to market or budget-based levels to support capital improvements.
- **More money for planning.** With a recapitalization, the budget is more likely to support hiring expert help and conducting the higher level of due diligence investigation needed for a successful green rehab. An up-front investment in the planning process increases the likelihood of a successful green outcome.
- **An opportunity to do more all at once.** With more funding and a larger scope of work, it is easier to accomplish a balanced and comprehensive green agenda of greater operational efficiencies, healthier housing, and reduced environmental impact. In addition to better balance, doing many things at one time makes it easier to measure impacts and support ongoing and future green operations.
- **Other financial incentives.** New resources, such as those made available by the American Recovery and Reinvestment Act (ARRA) are becoming available for affordable housing projects undergoing green rehabilitation. Existing resources, such as the LIHTC program, already have incorporated green into their competitive criteria. In addition, more and more state and local governments and utilities provide incentives for energy efficiency and other green building practices. It is easier to make green a priority when funding depends on it.

To be successful, green rehab of any kind requires a new approach to the analysis and planning process, the addition of new team members such as a green expert, and additional due diligence measures. A green rehab plan carried out as part of a preservation transaction does not necessarily differ from a typical green rehab plan, although the complexities of preservation—timing, regulatory procedures and constraints, and the use of multiple financing sources—may complicate the process. Such complexity and the resulting challenges may be particularly relevant for preservation purchases involving distressed properties at risk of regulatory action or foreclosure or situations involving an uncooperative seller. In these circumstances, an upfront investment in the planning process can be crucial for ensuring a successful green outcome.

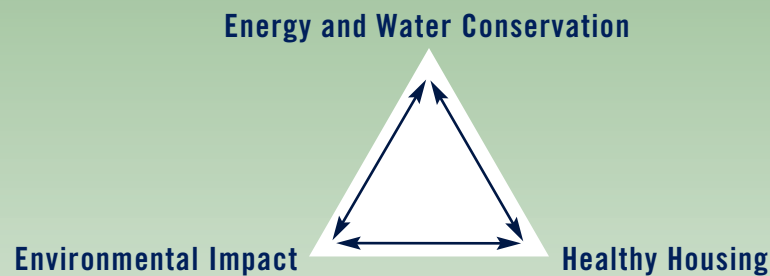
PRESERVATION IS INHERENTLY GREEN

In many ways, the preservation of and reinvestment in existing properties are inherently green actions. Existing properties already have sunk energy costs in the materials and resources used to build them, are part of the existing infrastructure and utility grids, and often are located in areas with good access to public transportation. Rehabilitating existing properties as part of a preservation transaction decreases the overall environmental impact of buildings by making them more energy and resource efficient. Even if some materials are replaced with new materials during a renovation, the net environmental impact of renovating tends to be lower than the impact of building new. In addition, when rehabilitation is planned using explicit green goals and guidelines, it is possible to significantly improve building health and environmental dimensions as well as a building's energy and water conservation performance.



Three Dimensions of a Balanced Green Building Strategy:

True green approaches address all three components simultaneously.



GREEN PRESERVATION REQUIRES A NEW APPROACH

Planning a green preservation rehab is multidimensional: energy and water conservation, healthy housing, and the environmental impacts of decisions are considered interactively rather than in isolation so that planned solutions can balance a wide range of objectives. A green rehab process differs from a traditional rehab in several other ways:

- **Performance-based.** A performance-based approach uses data about utility consumption, rather than just cost, to set targets and make rehab decisions. This approach evaluates whether existing systems are appropriately sized and installed and identifies operational issues to address in the rehab to reduce consumption and improve performance.
- **Life-cycle focused.** Life-cycle analysis takes into account both capital investment and long-term costs and savings through operations and replacement. Green alternatives often have more expensive initial costs, however the operating and maintenance savings help repay the investment, and the durability of many green items means less frequent replacement.
- **Synergistic.** A green rehab planning process looks for synergies that maximize intended outcomes. Specifically, the process takes into account the fact that buildings are systems. This systems-based approach recognizes the close connection between high-performance and healthy buildings and encourages consideration of both elements as decisions are made. For example, meeting energy reduction goals involves a building's envelope, not just a simple boiler replacement. Sometimes, this approach requires accelerating the replacement of items before the end of their useful life for greater total impact.
- **Health-focused.** Existing projects often have healthy housing problems stemming either from original construction standards or maintenance practices. Green rehab addresses these issues and goes beyond code requirements to incorporate best practices for healthy homes, resulting in a better living environment for residents. Building codes vary across localities, and codes sometimes lag behind best practices. Research increasingly suggests that reducing exposure to indoor environmental hazards such as formaldehyde, volatile organic compounds (VOCs), and combustion by-products leads to better health outcomes for residents and to lower liability issues for owners and operators.
- **Environmentally aware.** Green rehab benefits not just the property, but also the neighborhood and the greater environment. For instance, green rehab can improve ground water retention

and reduce the load on overstressed storm drain systems. Site improvements can improve community safety and bicycle and public transit connections. In addition, green rehab choices can reduce the use of virgin materials and of limited resources by including recycled content and rapidly renewable resources.

- **Transformational.** The goal of greening an existing property is not simply to complete the rehab and then return to business as usual. With a successful green rehab, more fundamental changes occur, including training residents and property management staff about maintaining a green property for the long run.

The following sections offer guidance on how to restructure the planning process and access additional resources that will help lead to a successful green outcome.



Green Project Profile:

Lorington Apartments, Chicago, Illinois

When the project's Section 8 contract expired, the owner of the Lorington Apartments, located in Chicago, planned to convert the building to condominiums. With assistance from two nonprofit organizations—Chicago LISC and the Logan Square Neighborhood Association (LSNA)—The Community Builders, Inc. (TCB) agreed to purchase the building and renew the Section 8 contract using HUD's Mark Up to Market program. LISC helped by providing funding for pre-development and other early costs, and the project was completed using tax-exempt bonds with 4 percent LIHTC.

Early in the process, meetings with the newly formed tenants' association revealed that tenants were most concerned about their extremely high energy costs—monthly utility bills sometimes exceeded rent payments. In response, TCB developed the rehab plan using as many energy efficiency measures as possible.

The project's green features included:

- Energy-efficient furnaces, hot water heaters, and air conditioning units, as well as ENERGY STAR appliances and new thermostats for the units.
- New low-emittance argon-filled windows.
- Landscaping using urban hardy plants, which are low maintenance, use less water, and are more durable.
- Cabinetry made from sustainable rubberwood trees, which are fast-growing trees used only for rubber and cabinetry.
- Low-VOC (volatile organic compounds) paints.
- Fluorescent lighting in units and timed lighting in public areas.
- Air sealing at floors, base of walls, and around doors, and installation of storm doors.
- Increased attic insulation to prevent heat loss in the winter, and reflective roof coating to reduce heat absorption in the summer.
- Reuse of bathtubs, doors, and drywall wherever possible, and use of local distributors and manufacturers to reduce transportation costs for deliveries.



DEVELOPING A GREEN REHAB PLAN

Incorporating green goals into a preservation rehab plan requires a new approach to the process that may require expertise and possibly new team members. One of the key lessons affordable housing developers have learned during the past few years is that to achieve green goals cost effectively, they must make green objectives fundamental to every part of the project, including planning, design, construction, operations, and occupancy. Opportunities for a “holistic” design approach may be missed and costs can increase rapidly when green goals or methods are considered late in the process. This is as true for rehab as it is for new construction.

THE GREEN PLANNING PROCESS

The key steps described here include setting goals, assembling the team, selecting program guidance, establishing a baseline, and developing initial budgets. These steps are not necessarily a linear process, but all steps are necessary for success. Goals, baselines, and budgets are developed and refined throughout the process, and new expertise may be introduced at different stages depending on the experience of other team members.

Defining Green Goals Early

The earlier green goals are established and the more specific they are, the more likely they are to be achieved. A basic understanding of the property conditions, financing programs likely to be used, and preliminary budget expectations can establish parameters for setting initial goals. Once the project has undergone additional due diligence, these goals will be revisited and may be revised. Tenants are a very good source of information on a building’s needs, and meetings with residents should play a role in shaping early project goals (for example, see the Lorington project profile on page 6).

A project’s green goals should encompass all three dimensions of green design and building: energy and water conservation, healthy housing, and environmental impact. Typical green rehab goals in each category are described below.

Energy and Water Conservation

- Reduce energy consumption for heating, cooling, and hot water by 20 to 25 percent by reducing energy loss and upgrading to more efficient appliances and building systems.
- Implement renewable energy sources where possible.
- Reduce water consumption by 20 to 30 percent through replacement fixtures, plumbing system enhancements, and drought tolerant landscaping.

Healthy Housing








- Minimize exposure to combustion by-products through external exhaust ventilation and use of sealed combustion heating and cooling units where possible.
- Improve moisture management to prevent mold and mildew.

- Use integrated pest management practices in rehab and operations to limit use of chemicals and exposure to disease.
- Reduce exposure to volatile organic compounds (VOCs) through materials selections.
- Implement smoke-free policies.

Environmental Impact

- Target at least 20 percent recycled content for any new materials used.
- Improve resident recycling efforts through new recycling and dumpster facilities.
- Maximize use of materials manufactured by local suppliers.
- Divert 50 percent of demolition and construction waste from landfills through reuse, salvage, and recycling practices, both during construction and through the ongoing replacement process.
- Minimize total water run-off from the property through improved retention and infiltration.

■ ■ **The National Center for Healthy Housing (NCHH)** is a nonprofit organization dedicated to healthy, green, and safe homes for families of all income levels. NCHH promotes the following seven goals for healthy housing, and these can provide a starting point for developing green project goals:

 Dry	 Ventilated	 Pest-free	 Safe
 Clean	 Contaminant-free	 Maintained	

Adding New Expertise to the Team

All green rehab teams will need a “green champion” to make the project’s green goals a priority. Projects often face competing pressures, and the champion is responsible for keeping the team focused on maximizing the green outcomes as competing goals are balanced. Most project teams, particularly those that are new to the greening process, also will need a “green expert” to provide technical advice about incorporating green goals into the process. In some cases, the champion and the expert will be the same person. Determine whether there is a green champion in the organization or on the development team (such as the project architect) who can drive the process. If there is no clear choice readily available, consider bringing in a champion as a consultant. Even if the project architect is experienced in green design and is able to be the champion, the team may need a green expert who also understands how green goals relate to the project’s funding and program issues, not just the design issues, to guide and support project efforts. This type of green expert also can help keep an eye on the balance between the upfront costs and expected savings through improved operations. In any team, when new members or roles are introduced, conflict can arise. The project leader will need to define clearly all roles and responsibilities, especially those of the champion, the expert, and the architect. In addition, a mentor—a peer who has completed a green project before or a LISC technical assistance specialist—may be able to offer support and suggestions for managing this new set of relationships.



Integrated Design

According to the *Roadmap for the Integrated Design Process*, "...the integrated design process is an approach to building design that seeks to achieve high performance on a wide variety of well-defined environmental and social goals while staying within budgetary and scheduling constraints. It relies upon a multidisciplinary and a collaborative team whose members make decisions together based on a shared vision and a holistic understanding of the project. It follows the design through the entire project life, from pre-design through occupancy and into operation."

Quoted from Busby Perkins+Will and Stantec Consulting, *Roadmap for the Integrated Design Process*, developed for the British Columbia Green Building Roundtable, 2007.

Once assembled, the team should be shaped to support an integrated design process. The integrated design approach aims to improve coordination among team members, identify problems and potential conflict early, and to highlight synergies among rehab elements, all of which should help to reduce the cost increment of green goals. Ideally, early team meetings will include all design team members, including the engineers, property management and maintenance staff, and tenants, and will identify key problems and coordination issues. The green expert and architect should be able to support and direct this process by leading "green charrettes," or intense working sessions that bring together a diverse group of stakeholders in an effort to integrate sustainable green design principles in the process. One objective of a green charrette is to have team members go outside of their traditional roles to help augment the integrated design process and to identify goals that will guide every team member throughout the process.

Green Building Guidance and Certification

There are hundreds of green building programs or guides available in the United States. Most are intended for new construction and apply to single-family or commercial properties, but a few can also provide good guidance for multifamily rehab projects or have rehab elements or sub-programs. Provided an appropriate program can be identified, going through a formal certification process may have some advantages, especially for first-time green rehab efforts. Certification provides an objective standard to guide team members when tough decisions need to be made. Also, most certification programs offer some level of technical assistance such as a plan review, as well as third-party testing for performance-based measures such as air sealing, duct sealing, and ventilation system functioning.

The main argument against certification programs is the current lack of appropriate certification standards specifically tailored to rehabilitation, although this is changing as new programs are developed. Programs originally developed for new construction may not allow the flexibility needed for a rehab project that faces cost, program, and physical or structural constraints. In addition, the time involved in becoming certified, the fees for program participation, and the cost of documenting certification requirements are drawbacks. Even if a participant does not ultimately complete the certification program, however, the guidelines and resources provided by such programs can provide valuable direction.

The following are the major national programs currently available. The single-family programs may be relevant to townhouse or duplex style multifamily projects, while the commercial programs may have guidance that is helpful for larger multifamily properties:

- The most well-known national certification programs for new construction are the U.S. Green Building Council's (USGBC's) Leadership in Energy and Environmental Design (LEED) programs, especially *LEED for Homes*. *LEED for Homes* provides four levels of

certification (Certified, Silver, Gold, and Platinum) for single-family and multifamily new construction projects. The USGBC's *REGREEN* guidelines focus on single-family housing rehab, and the *LEED for Existing Buildings* program focuses on operations and maintenance improvements, primarily for nonresidential buildings.

- The U.S. Environmental Protection Agency's (EPA's) *ENERGY STAR® Qualified Homes* program is well-established and offers excellent standards and techniques for energy efficiency. The current program focus is new construction for single-family and low-rise multifamily projects, but retrofitted buildings can also obtain certification.
- The Enterprise Community Partners' *Green Communities Initiative* was developed with a focus on new affordable housing, although it has incorporated options for rehab projects as well.
- In January 2009, the National Association of Homebuilders released the *National Green Building Standard* for single-family and multifamily new construction projects, as well as home remodeling. Similar to LEED, this program provides four levels of certification (Bronze, Silver, Gold, and Emerald), the lowest of which is aligned with the *ENERGY STAR Qualified Homes* standard.
- The *Green Globes* standard for commercial buildings, an online guidance tool with an assessment and certification program, was developed initially in Canada but is now available in the United States.

Strong regional programs also are increasingly available. Build It Green's *GreenPoint Rated* program is available in California, and the *EarthCraft House™* program from Southface is widely used and supported in the Southeast. The *EarthCraft Multifamily* program offers separate standards for renovations that take into account the amount of rehab taking place. *GreenPoint Rated for Existing Multifamily Homes* will commence development in 2009 and will be designed specifically for existing multifamily housing.



Green Building Certification Programs Overview

PROGRAM	COVERAGE	PROJECT TYPE	PROPERTY TYPE
USGBC: Leadership in Energy and Environmental Design® (LEED) for Homes	Nationwide	New construction	Commercial Single family and multifamily
USGBC: LEED for Existing Buildings	Nationwide	Operations and maintenance	Commercial
USGBC: REGREEN	Nationwide	Rehab	Single family
EPA: ENERGY STAR Qualified Homes	Nationwide	New construction Rehab	Single family Manufactured and modular Low-rise multifamily
EPA: Home Performance with ENERGY STAR	Participating areas—currently less than half the states	Rehab	Single family Low-rise multifamily
Enterprise Community Partners: Green Communities	Nationwide	New construction Two levels of rehab	Single family and multifamily
NAHB: National Green Building Standard	Nationwide	New construction Residential remodeling	Single family and multifamily
The Green Building Initiative: Green Globes	Nationwide	New construction Rehabilitation	Commercial
Southface Institute: EarthCraft House™	Southeastern states	New construction Four levels of rehab	Single family and multifamily
Build It Green: GreenPoint Rated	California	New construction Rehabilitation forthcoming	Single family and multifamily

To fill the gap in green building programs for existing multifamily properties, Bay Area LISC and Build It Green released the *Green Guide for Rehab* in Spring 2008. This guide describes strategies and methods appropriate for rehab in existing affordable multifamily housing. It can be helpful in considering initial goals and provides essential information for developing the final rehab plan.

Once appropriate guidance is identified, it is helpful to review the project using the guidance as a scorecard. Knowing how current practices fit with green building expectations and learning where changes need to be made will inform the process. Practitioners often are surprised to learn that many of their current practices already are meeting green building standards and criteria.



ENERGY STAR® and ENERGY STAR® Qualified Homes

The EPA developed the ENERGY STAR program in 1992 to promote energy conservation and reduce greenhouse gas emissions. The U.S. Department of Housing and Urban Development (HUD) has adopted ENERGY STAR as its program of choice in implementing many of its energy efficiency strategies.

People often confuse the ENERGY STAR Label and the ENERGY STAR Qualified Homes programs. The ENERGY STAR Label program offers manufacturers of appliances, equipment, and building materials the right to use the ENERGY STAR logo and promote products as energy efficient if they meet energy performance standards established by the program. EPA and HUD encourage the use of ENERGY STAR labeled products in HUD-assisted housing. For example, HUD has established the Quantity Quotes Web site (www.quantityquotes.net) for bulk purchasing of ENERGY STAR rated appliances and equipment by multifamily housing owners and managers.

EPA also has two ENERGY STAR programs for housing.

- 1. The Home Performance with ENERGY STAR Program** promotes energy-focused rehabilitation of single-family and low-rise multifamily housing; availability of and support for this program vary widely from state to state.
- 2. The ENERGY STAR Qualified Homes Program** provides guidance, performance standards, and certification for single-family and low-rise multifamily housing to achieve energy performance at least 15 percent better than the International Residential Code. A variant of this program, **ENERGY STAR Homes with Indoor Air Package** offers energy conservation plus indoor air quality measures. EPA has a pilot **ENERGY STAR Homes** program for mid-rise multifamily residential new construction in development and testing, but it is not scheduled for a national rollout for several more years.

Establishing a Baseline

To conduct a good analysis of the costs and benefits of green building approaches, it is essential to establish a baseline of the building conditions and project budget. In rehab, the best baseline will be based on the existing conditions and current property operating budget. In many cases, particularly in preservation purchase transactions, the complete picture of the baseline may not be known until due diligence is completed. Whatever information is available at the outset will be the starting point for establishing initial project goals and for determining desired outcomes. As the process moves forward, both the baseline and the related goals and outcomes will be updated.

In addition, the baseline should have both a capital costs component and an operating cost component, which will keep life-cycle cost impacts in the forefront during the analysis phase. Documenting the baseline is important not only for the planning process, but also for tracking the success of conservation efforts.

Initial Budgets

There are two important differences between a green rehab project budget and a conventional budget. First, as much as possible, green rehab budgets focus on life-cycle costs, not just up-front costs, thereby considering durability and long-term replacement needs as well as ongoing maintenance needs. The life-cycle cost concept is not unique to a green project. However, focusing on true life-cycle costs and the interplay between the capital and operating budgets will tend to favor more green alternatives in developing the rehab plan. At the most basic level, green projects should have a mechanism that links the capital budgets and operating budgets so they are always evaluated in relation to each other. This long-term approach will help to reduce the impulse to cut capital budgets, because it will make clear how much operating costs will go up as a result of such upfront cuts.



Calculating Life-Cycle Costs

Life-Cycle Cost = Present Value of:

Capital Costs + Operational Costs + Maintenance Cost + Replacement Cost +
Tenant and Occupancy Impacts + Disposal and Salvage at Replacement

Adapted from *The Affordable Housing Energy Efficiency Handbook*, Affordable Housing Energy Efficiency Alliance.

The second difference between a green rehab project budget and a conventional project budget is that the capital budget is likely to be somewhat higher for a green project than for a conventional project. Specifically, the green project budget is likely to have higher soft costs for the new experts on the team or for more involvement from the project design team. Many green project approaches are different, but they are not necessarily more expensive. Some green elements may offer cost offsets; for example, additional spending on insulation may reduce the costs of mechanical systems. Some elements, on an individual basis, are more expensive—healthier, less environmentally harmful flooring, usually is more expensive than conventional product choices. It can be difficult to get detailed information early in the process, but the more these cost issues are identified, and then linked in an iterative process with the operating budget and life-cycle analysis, the more the budget can support the design process.



The Green Premium—Is It Real?

Many people are reluctant to consider a green approach because of a perceived “green premium,” or higher costs. Green advocates, however, argue that going green costs less, at least on a life-cycle cost basis. What is the reality? For most projects, there is some cost premium associated with green choices. Interestingly, the hard costs (e.g., of materials) may be the least problematic, with established green approaches costing typically less than 5 percent more than a conventional approach, according to a number of studies.² As green building becomes more common, these hard costs should begin to come down even more. Soft costs, including those for expert assistance and a more inclusive design process, can be much higher for green projects, especially for the first few projects an organization undertakes. The expectation, however, is that such investments pay off in a high-value, high-performance end result. Other real costs that are more difficult to quantify include the learning curve for the organization, the project manager, and other team members. The bottom line is that the green premium goes down as organizations and teams gain experience with the process.

² For example, see *Costs and Benefits of Green Affordable Housing*, a study conducted by New Ecology, Inc., and the Tellus Institute (www.newecology.org).

NEW AND BETTER DUE DILIGENCE

The conventional due diligence approach for the preservation process relies heavily on the capital needs assessment (CNA) to determine the three-level assignment of rehab work: what work will be done in the immediate rehab plan, what work will be done through replacement reserves, and what repairs can be completed during ongoing operations. The analysis is based on observation and on the condition and expected useful life of individual building elements and systems. The primary goals for implementing a green preservation approach are to achieve a higher value end result and to meet high-performance building standards cost-effectively. To achieve this, individual rehab elements are not assigned to the three levels of work in isolation. Instead, the synergies among elements are explicitly considered based on a new set of due diligence findings.

Maximizing the green outcomes for a preservation rehab requires a departure from traditional due diligence practices. Traditionally, due diligence begins with a physical inspection and CNA as well as a review of project budgets and operations. A green process calls for more information to be gained from these steps and also requires additional investigation. Energy and water audits and indoor environmental quality assessments, such as integrated pest management audits, are new levels of investigation unfamiliar to most preservation project sponsors. Deeper operations analysis requires more information and new thinking. Unfortunately, no one person or process will provide all of the desired information.

This section will describe how to get better information from conventional tools and how to use new investigations to identify potential concerns to be addressed by the project team.

Preliminary Physical Needs Analysis

Be proactive in directing the early information gathering process. Initial investigations can identify many issues and potential action items that will inform the rest of the due diligence process, and later, the rehab plan. Use a tool such as the “Building Walk-through Checklist” from the Green Guide for Rehab during the initial walk-through. The checklist encourages the project team to consider what changes should be done up front as part of the rehab plan and which ones can become part of the ongoing replacement schedule. Another useful approach is to do a preliminary benchmarking against the scoring system provided by a green building program. At a minimum, these steps help identify key questions to be answered during the due diligence process.

Operations and Budget Analysis

The due diligence process typically includes a review of budgets and operations. Several key differences in approach provide better information for a green rehab plan. First, utility analysis should always drill down to consumption rather than focusing only on cost, because cost is a function of consumption and price. Good data on consumption and prices will result in better conservation planning.



Reducing Water Consumption

The best analysis of a project's water consumption translates the information from utility bills, usually in cubic feet, to gallons consumed per person per day³ so that the property can be compared to widely available benchmarks. For example, if no previous water conservation measures have been implemented, a typical apartment resident will use 75 gallons per person per day (not including landscaping water use). With basic conservation efforts, a property can achieve consumption in the 50–60 gallons per person per day range. More concerted conservation efforts, which are highly recommended if resources are available, can reduce consumption to as low as 40 gallons per person per day.

Second, when analyzing operations, focus on resident health and comfort issues. Remember that resident discomfort and complaints almost always indicate building condition issues. If possible, arrange meetings or focus groups with residents to hear their concerns and listen to their suggestions for improvements. A work order analysis—though not always feasible in an acquisition situation—can be a rich source of information. For example, a review of work order requests for moisture and odor complaints could signal the need for attention to ventilation, while patterns in heating and cooling complaints could mean that heating and cooling systems need to be redesigned or upgraded.

Third, consider where current management practices could be affected or would need to be changed when the green rehab plan is implemented and how such changes could be sustained through operations. A seemingly simple goal of expanding recycling actually involves attention to multiple details during rehab planning; how trash and recycling areas are designed in apartments, buildings, trash rooms, and dumpster areas can make or break the success of implementing this new practice.

Green Capital Needs Assessments

Traditional CNAs, while useful planning tools in many respects, have not provided good guidance for thinking about going green. A conventional CNA uses the original building condition as the baseline and assesses current age and condition of individual components to determine immediate repair needs, a mid- to long-term replacement schedule, and replacement reserve deposit requirements. As such, a conventional CNA is limited for green planning in several ways. First, the item-by-item approach to building components is in direct contrast to the synergistic, integrated approach of green planning. Second, because inspections are observational rather than heavily analytical, CNAs usually do not investigate or address fundamental flaws such as poorly designed or oversized systems. Energy audits and comparisons of alternative solutions have never been part of the CNA process. Third, the CNA cost analysis tends to focus on the capital costs of maintaining a given property in its original condition. Operations budget impacts are rarely, if ever, considered and never quantified. Fourth, typical CNAs do not offer action recommendations that reflect a basic understanding of good green practices.

The *Green Guide for Rehab* was developed in response to this critical void in the due diligence process for greening existing properties. LISC works with capital needs assessors and green building organizations to promote the use of green capital needs assessments and to increase the industry's capacity to perform them. The growing emphasis on energy efficiency by the federal

³ There are 7.48 gallons per cubic foot of water.

government is accelerating the expansion of industry capacity and expanded green practices. Nevertheless, until green CNAs are widely available, developers need to make the current CNA process work better to inform green plans by requesting additional information from the inspector, while minimizing any duplication of efforts. CNA inspectors are skilled observers and reporters, so take advantage of their skills. Do not expect them to recommend green solutions, but use their observation and reporting skills to identify action items.

If the project sponsor has commissioned the CNA there is more flexibility to request specific information from the inspector. If the CNA has been ordered by a lender, it may be more difficult to request that the CNA address the project team's specific concerns, but always ask. The "Additional Information Requirements for CNAs" box offers suggestions for supplemental information rarely reported in a conventional CNA but critical for determining rehab priorities that will meet common green building goals and program requirements.



Additional Information Requirements for CNAs

When no green CNA provider is available, consider asking the selected provider to address the following questions as part of the inspection and report. These questions target areas of concern for green rehabilitation and ask for observation of systems or conditions not typically reported in a standard CNA.

Energy and Water

1. Provide size and rated efficiency information for all heating, cooling, and hot water equipment in addition to age and expected useful life.
2. If the heating and/or cooling system has ductwork, indicate whether the ductwork is in conditioned or unconditioned space. Also, indicate whether and how the ductwork is sealed (not sealed, sealed with tape, or sealed with mastic).
3. Indicate the current gallons per flush or gallons per minute flow rates of all water fixtures.

Healthy Housing

1. Kitchen ventilation: Do kitchens have exhaust fans? Do they exhaust to the exterior?
2. Bath ventilation: Do baths have exhaust fans? Do they exhaust to the exterior? What is the noise level? Are they in good working order? Is there any evidence of mold or lingering moisture?
3. Combustion exposure: Indicate whether any of the following sources of combustion by-products are present in the living space: atmospheric gas/oil/propane furnaces; boilers or hot water heaters; or gas ranges with or without electric ignition.
4. Evidence of poor moisture management: Indicate whether there is any evidence of condensation, leaks (from exterior or from interior fixture), and mold (try to identify moisture source).

Environmental Impact

1. Identify any stormwater run-off and erosion problems.
2. Identify solar orientation, heat islands, and opportunities to add shading to buildings or paving.
3. Identify building elements that are degrading fast or that require large maintenance efforts.

Other

Offer an assessment of potential synergies or efficiencies that would result if some work items were to be done "out of order" or prior to the expected useful life.

Essential Tools: Energy Audits

Improved energy performance is a priority for any green rehab, but a conventional due diligence process does not include the essential tool for evaluating and improving performance: a comprehensive energy audit. Some funders and green building programs have recognized the need for this step in the evaluation and rehab planning process, and they include requirements for energy audits and energy modeling. For example, energy audits are part of the required property evaluation process in the Mark to Market Green (M2M Green) Initiative. Even if it is not required, however, an energy audit will provide critical information for the rehab plan. The additional CNA information from the list in the “Additional Information Requirements for CNAs” box will provide key information for the energy audit process.

The cost of an energy audit and modeling can range from about \$2,500 for a simple building with straightforward energy conservation options to more than \$10,000 for a complicated property (multiple buildings or complex systems) and multiple options. While such costs are significant, HUD-assisted properties may be able to obtain HUD approval to pay for the audit out of residual receipts or reserves. In addition, some ENERGY STAR Qualified Homes programs and utility-sponsored conservation programs offer financial support to cover the costs of the audit and modeling.

Types of Energy Audits

- Utility company-sponsored audits often are free but they can provide less information than needed to develop a rehab plan. Typically, an inspector does a visual inspection, but no testing of building performance or equipment functioning. The recommended measures tend to focus on simple low-cost items, such as lighting changes or programmable thermostats. Of course, the effectiveness of such audits vary from place to place, and this type of audit may be a good place to start for preliminary due diligence.
- Vendor-sponsored audits are free or available at a low cost. Vendors usually are focused on the product or service being offered: for example, co-generation, water conservation, or equipment replacement. The analysis of the particular system can be useful, but does not consider the building as a whole.
- Comprehensive audits are offered by independent companies and conducted by trained and certified auditors. A comprehensive audit includes an inspection and a review of all energy and water consuming systems, including heating, cooling, ventilation, hot water, lighting, appliances, equipment, and the building envelope. Comprehensive audit inspectors typically conduct a blower door test and use tools such as smoke pencils to evaluate the air flow and infiltration of the building. Inspectors have been trained to balance energy and health concerns and to pay special attention to ventilation systems and minimum air flow requirements. A comprehensive audit also should include the use of an energy modeling software program to compare the property to national averages and offer recommendations for performance upgrades. This type of audit report provides information about current performance and the potential for improvement, including cost estimates and payback periods.

Finding a Qualified Energy Auditor

Invest in a qualified auditor who has experience in multifamily housing. Recommended qualifications include persons or companies with Home Energy Rating System (HERS) certifications, which is a training program and professional qualification managed by the Residential Energy Services Network (RESNET). In 2009, RESNET will begin offering a RESNET Green Rater Certification. In addition, the Building Performance Institute (BPI) offers a “Certified Building Analyst” certification and is expanding its program nationwide. Organizations that are certified to rate buildings for ENERGY STAR Homes and LEED for Homes also have the requisite training

and understanding of energy conservation and good building science to provide high-quality audits, energy modeling, and reports. Another good credential is the Association of Energy Engineers' Certified Energy Manager. States such as New York and California that have active multifamily energy conservation programs offer approved provider lists.

Maximizing the Value of the Audit

To maximize the usefulness of the auditor's inspection, analysis, and report, provide the auditor with as much information as possible from the initial team assessment and the CNA regarding existing conditions, desired performance outcomes, and possible rehab alternatives. Compared with the information in a conventional CNA, energy audits and modeling add value because they explicitly evaluate the interaction of capital investments and energy cost impacts. The analysis will calculate return on investment and paybacks for energy efficiency investments—very useful information for planning.

The energy audit process also recognizes that energy conservation is a two-part equation:

1) *reducing demand* as much as possible first, for example, by considering building envelope problems such as air sealing and insulation levels; and 2) by *meeting demand* as efficiently as possible, for example with a high-efficiency boiler or ENERGY STAR appliances. Auditors will look at both elements of the equation and offer recommendations to address all the variables. Unlike a CNA, an energy audit report may recommend replacement of building elements or systems before the end of their remaining useful life to reduce demand, and such recommendations should be implemented before other changes to building elements that improve efficiency.

Through the energy modeling process, energy auditors can take the project's initial goals (e.g., reduce energy consumption by at least 20 percent) and test alternatives to achieve them. Given a preliminary list of proposed improvements, energy modeling can illustrate how specific improvements will affect energy consumption. Energy auditors also can provide technology upgrade or alternatives advice if asked to do so. Ideally, the project team works interactively with the auditor in the energy modeling process to test strategies during early design and planning.

Additional Tools: Pest Audits

Pest infestations pose a serious quality of life issue and are a known contributor to the epidemic levels of asthma in urban children. Chronic infestations and pesticide-heavy approaches to pest control are pervasive in existing affordable housing, which is why green building for affordable housing makes better pest management practices a priority. A goal of any green project should be to use Integrated Pest Management (IPM), an approach to pest management that focuses on prevention, monitoring, and treatment of identified problems using the least toxic pesticides necessary to reduce both the incidence of pest infestations and human exposure to pesticides.

A comprehensive IPM program addresses building conditions and operations practices as well as pest contractor practices and resident behavior. Rehabilitation offers the opportunity to address all four keys to pest management: pest access, shelter, water, and food. An experienced IPM practitioner can identify problem areas and recommend solutions to be incorporated into the rehab plan.

HUD's Office of Affordable Housing Preservation (OAHP) M2M Green Initiative has made better pest management practices a priority for the program and requires an IPM audit as part of the due diligence process. The program Web site has numerous resources on IPM and requirements for qualified inspectors.



How Green Due Diligence Changes the Thinking about Preservation Rehab

- Insulation and air sealing—these are now analyzed in relation to resident comfort concerns and the impact on energy demand.
- Heating and cooling systems—evaluated as part of a whole building solution, not just an equipment replacement.
- Water conserving fixtures—tied to consumption reduction goals.
- Ventilation—not optional; essential for meeting healthy housing goals.
- Moisture management/mold prevention or mitigation—part of the ventilation strategy and the pest management strategy.
- Indoor environmental quality—expanded from a focus on lead and asbestos remediation to include radon, combustion by-products, pests and VOCs.

DEVELOPING A REHABILITATION PLAN

One expectation of an investment in the green process is that the additional due diligence and integrated approach to planning will identify cost-effective ways to accomplish more within the available capital budget. As noted previously, in a preservation project, green improvements can be made through three avenues: in the rehab plan (i.e., initial construction scope), through systematic replacement reserve scheduling, and through operations. The due diligence, analysis, and planning processes focus on determining how to maximize the impact and on the best ways to spend available resources as well as determining the allocation of improvements to the capital, reserves, and operating budgets.

The rehab plan and operating budget always go hand in hand. One planning consideration is whether projected operating cost savings can and will be used toward increased debt service to support higher-cost elements in the capital budget. Some practitioners caution against doing this because of the unpredictability of prices—if utility prices go up, even with conservation, absolute costs may increase and threaten the project's financial stability. The M2M Green Initiative offers an interesting model of using half of the projected savings in the budget, while leaving the other half as a cushion against actual performance and future energy price increases.

A traditional preservation rehab typically focuses on physical and functional obsolescence—replacing boilers, updating kitchens and baths, adding community rooms and computer centers—and bringing housing to good quality standards that will support use for another twenty to thirty years. In the conventional approach, the CNA identifies broken, obsolete, and health and safety concerns for the capital budget; items with remaining useful life for the replacement reserve budget; and other items as things to be addressed in operations.

This approach is insufficient for a green rehab plan. Here are some guiding principles, informed by the green due diligence process, for forming an action plan:

- Implement the synergistic elements as a package—Always address energy demand first (e.g., envelope, heating, and cooling loads), then meet the demand efficiently.

- Make resident health and comfort a priority—Ensure that changes will not have a negative impact on healthy housing and actively seek to fix or mitigate known issues.
- Use payback analysis to evaluate options and set priorities—Usually the shorter the payback for an item, the more likely it should be included.

Finally, determine *what* will be done *when*. The integrated design approach from the due diligence and the payback analysis will help to guide this process. For example, if an item has a long-term payback, it probably belongs in the capital budget. Reserves may be a good place for flooring or cabinets—such items may have a “green cost premium” and may be easier to absorb a few units at a time. Lastly, identify the no- and low-cost “no-brainer” green items such as low-VOC paint and basic water conservation that should be routine whether the work is included in the capital reserves or operating budgets. Interestingly, when the property to be preserved is distressed, the level of rehabilitation can approach that of new construction, and the holistic approach described here is relatively easier to incorporate.

OPERATIONS AND MAINTENANCE: PLANNING AHEAD

In an ideal green planning process, property management is involved at the beginning and throughout the process. That way, goals such as improved recycling or installing and successfully operating new equipment can be considered by all involved parties and increases the likelihood of successful implementation. The Bay Area LISC’s *Green Operations & Maintenance Toolkit and Buyer’s Guide*, written for multifamily housing property management and maintenance staff, covers topics such as painting, cleaning, lighting, paper products, and flooring options, and it outlines steps to take during rehab to support implementation of green operations and maintenance practices. Including operations staff in the planning will keep the team focused on ascertaining options to improve operating budgets through capital investments and identifying opportunities for lower operating costs to offset higher initial costs. Ongoing education and training needs for staff and residents should be identified early in the process and included in the management and operations plans as well. OAHP’s green programs require Green Operations and Maintenance plans, including tenant outreach and training, as part of the owners’ commitment. Property management staff also are required to maintain a green certification to help ensure the property management follows through on its green operations plans.

Preservation can be an opportunity to revamp pest management practices and implement stricter anti-smoking policies to protect residents’ health. Additional information on both of these approaches can be found in the Resources section.



FUNDING OPPORTUNITIES FOR GREEN PRESERVATION

Preservation transactions involve a complex set of program rules, financing mechanisms, and subsidies. Before starting a green preservation project, it is important to understand how greening fits into the programs you plan to use and whether there are other financial resources that may help achieve the project's green goals. A program reality check of whether and how preservation program requirements and project green goals are aligned, and strategies for addressing any misalignments, must be part of the early planning process and continue to be re-evaluated as plans progress.

Existing preservation financing tools that allow for rehab remain helpful for green preservation projects, although navigating the programs to get the best green outcome may take persistence. Some financing sources prioritize green projects, so adding green goals may help a project compete more favorably for scarce funds. New types of resources specifically targeted to green buildings—grants, loans, tax credits—also may be available to help offset the costs of greening efforts.

Preservation Financing Tools

Several traditional preservation financing tools can provide funds for a green preservation project. With the exception of the U.S. Department of Housing and Urban Development's (HUD's) Mark to Market Green (M2M Green) Initiative, described below, these programs do not have any special provisions that specifically incorporate green elements. However, the additional capital and cash flow provided by such programs often enable property owners to undertake at least a minor rehabilitation, and often make moderate to substantial improvements. Such improvements and green efforts are consistent with the primary goal of preservation, which is to help ensure the long-term sustainability and affordability of the property.

Section 8 Contract Renewals

A substantial portion of the 1.6 million project-based Section 8 units have rents below comparable market levels. During a preservation transaction, these rental assistance contracts can be renewed with higher rents that can help facilitate rehabilitation of the property. The “Mark Up to Market” and “Mark Up to Budget” Section 8 renewal options (described in more detail in LISC's handbook, *Recapitalizing Affordable Rental Housing*), provide owners with new contracts with terms of up to 20 years. While neither of these programs is specifically designed to enable green rehabilitation, the funds made available through the increased rents can be leveraged and combined with other resources described in the following sections.

- **Mark Up to Market**—Enables owners to increase contract rents up to market levels, not to exceed 150 percent of the HUD Fair Market Rent. Eligibility restrictions apply to this option, however nonprofit organizations have additional flexibilities.⁴ Rent levels must be based on rents for comparable properties without considering planned rehabilitation; so, in weaker markets, this option is best for properties in need of moderate capital repairs and green improvements.

⁴ See LISC's Program Summary, *Section 8 Contract Renewals*, by Emily Achtenberg, January 2009, available on LISC's Web site.

- **Mark Up to Budget**—Allows nonprofit purchasers and owners, or nonprofit-controlled partnerships, to increase contract rents to account for acquisition and rehabilitation costs, subject to as-rehabilitated comparable market levels. The funds available from the rent increase may be used for capital repairs, replacement reserve contributions, and debt service on any new project loans. This option allows for moderate to substantial rehabilitation of the property, including the purchase of energy-efficient equipment and other upgrades.

HUD-financed Section 8 projects with rents above comparable market levels also are eligible for renewal under the Mark to Market program. Mark to Market reduces the rents on the Section 8 contract, but restructures the debt so the project remains viable. The Mark to Market program currently is the only preservation program that explicitly contains a Green option. For more information about the M2M Green Initiative, see the “Green Mark to Market” box below.



Green Mark to Market Program

One notable HUD program is the Office of Affordable Housing Preservation’s (OAHP) Mark to Market Green Pilot Initiative (M2M Green). This initiative, which began in late 2007, has a well-structured approach for incentivizing project sponsors to implement green approaches to rehabilitation and property restructuring. Most of the constraints and challenges that can create problems for adopting a green approach in a Mark to Market transaction have been addressed in the program’s design and guidance. Owners also receive incentives to encourage the inclusion of more green options. As a result, the program option has been popular, and nearly 100 projects, and 7,000 units, are currently using the M2M Green option. OAHP’s Green Retrofits program for assisted housing will closely follow the model established by M2M Green.

The M2M Green program improves and expands the initial property assessment to evaluate green opportunities and recommend a green rehab scope of work. The Physical Conditions Assessment (PCA) provider is instructed to look beyond the traditional schedule of item-by-item expected useful life relative to current age and condition and consider improved efficiency opportunities, including accelerated replacements. Additional property assessments are required, including an energy audit and an integrated pest management inspection. The PCA provider completes a report that offers “traditional” and “green” scopes of work and includes payback analysis of the green elements related to energy and water conservation. Health and safety items either are required or can be included without payback analysis. Owners are offered both sets of recommendations to review and can opt for none, some, or all of the recommendations, although incentives are available for those opting for at least half of the green recommendations. Incentives include reducing owner contributions from 20 percent to as little as 3 percent of costs for the green elements, with an increase in the incentive fees paid to owners by as much as 50 percent. The program requires a green operations and maintenance (O&M) plan so that green elements are maintained and expanded over time. Finally, M2M Green expects property managers to employ new property management techniques that reflect best practices for healthy housing, including integrated pest management.

The following table shows how M2M Green differs from the traditional M2M program, and how it supports the move to green.



Traditional vs. Green Approach to the Mark to Market Program

	TRADITIONAL M2M	M2M GREEN	GREEN IMPACT
PHYSICAL CONDITION ASSESSMENTS (PCAs)	Standard approach of inspecting and documenting health and safety violations, immediate repairs, and developing a schedule for replacement reserves including initial deposit requirements based on expected useful life of components using Fannie Mae guidance.	Green PCA provider assesses green opportunities, including energy and water conservation, better pest management practices, and improved indoor air quality. Requires an energy audit and integrated pest management inspection. Report must identify energy and water efficiency opportunities, including cost-efficient accelerated replacement items.	<ul style="list-style-type: none"> ■ Forces consideration of efficiency, not only condition, in PCA review of energy and water components. ■ Requires items that improve indoor air quality and resident health, such as ventilation and pest management practices that may not have a monetary payback. ■ Supports consideration of early component replacement if energy efficiency or improved healthy housing conditions result.
TYPE/ LEVEL OF REPAIRS	Standard M2M typically involves modest repairs focused on safety and code violations. Other repairs are managed through replacement reserves spending over time.	Owners are encouraged to expand the scope of work and consider upgrades that improve energy and water performance and increase healthy housing parameters.	<ul style="list-style-type: none"> ■ Payback analysis supports accelerating and upgrading replacements to improve performance. ■ Resident health and improved indoor air quality are called out for consideration or required.
RENTS/ BUDGETS/ OPERATING COSTS	Generally the goal of M2M is to reduce rents and restructure financing if necessary.	M2M Green allows for 50 percent of projected savings to be included in the operating budget. Pest management costs can be increased for IPM implementation. There is some flexibility in setting rents to allow for owner incentives and green costs.	<ul style="list-style-type: none"> ■ Allocating a share of savings to the budget supports implementation of cost-saving measures. ■ Rent flexibility supports inclusion of health and safety items with no direct payback and encourages owners to participate.
OWNER CONTRIBUTIONS	Owners are required to contribute 20 percent of the initial rehab cost.	Owner contributions toward green elements reduced to 10 percent or 3 percent depending on the level of green efforts undertaken.	<ul style="list-style-type: none"> ■ Keeps the incremental up-front cost of the green approach reasonable.
OWNER INCENTIVES	Owners are allowed to receive an incentive performance fee up to 3 percent of effective gross income.	Incentive performance fees can be increased by 25 percent or 50 percent depending on the level of green efforts undertaken.	<ul style="list-style-type: none"> ■ Incentivizes owners to try the new approaches and expand the scope of work.
OWNER REQUIREMENTS	Complete the repairs and manage the property according to new use agreements and management agreements.	<ul style="list-style-type: none"> ■ Agree to some or all of the green recommendations. ■ Develop a green O&M plan and agree to manage the property using the plan. ■ Agree to implement an IPM approach for pest management. ■ Agree to monitor utilities consumption and temperature and humidity levels in units. 	<ul style="list-style-type: none"> ■ Requires substantial investments in a green approach to participate. ■ O&M plan ensures that green practices will be implemented in property management and maintains health and utility benefits over time. ■ Utility tracking helps to manage costs and measure impacts and benefits.

Interest Reduction Payment Decoupling

For projects with subsidized mortgages under the Section 236 Interest Reduction Payment (IRP)⁵ program, “decoupling” the IRP at the time of project refinancing can provide a stream of income to help finance capital repairs. These projects receive an IRP payment from HUD that reduces the effective interest rate on the original mortgage to 1 percent. When the original mortgage is refinanced, a nonprofit or limited dividend owner can retain the IRP stream of funding through the original mortgage maturity date. For any project-based Section 8 units in the property, the new project rents are typically limited to comparable market levels, reduced by the value of the IRP. However, projects that need significant repairs possibly can justify higher budget-based rents. Non-Section 8 units are limited to a 10 percent rent increase. Decoupling transactions often take advantage of additional project funding sources such as Low-Income Housing Tax Credits (LIHTC). For these projects, IRP retention is not considered a federal grant or subsidy that would reduce tax credit basis.⁶

Section 202 Refinancing

Owners of elderly housing developed under HUD’s Section 202 direct loan program⁷ can refinance the original mortgages to recapitalize and rehabilitate the property. Refinancing of these mortgages was not practical until 2004, when HUD provided explicit guidance implementing the American Homeownership and Economic Opportunity Act of 2000’s provisions providing authority to prepay Section 202 direct loans. Recent temporary legislation⁸ and proposed policy changes are intended to make this option even more viable. In addition, although the rents on Section 202 properties are also frequently above market levels, Section 202 projects with Section 8 project-based rental assistance contracts are exempt from the Mark to Market mortgage restructuring and market comparability requirements and are therefore able to keep the higher rent levels after Section 8 contracts are renewed. Even after refinancing, most projects are able to remain exempt from the Mark to Market requirements.⁹

The LIHTC Program

The basic structure of the LIHTC program, administered by the U.S. Treasury Department and the Internal Revenue Service, provides few specific opportunities for federal greening incentives. However, at the state level, many LIHTC Qualified Application Plans (QAPs) have energy conservation and green building requirements as threshold criteria for applying or they offer bonus points for proposed rehab projects that plan for energy efficiency, healthy housing, and environmentally responsive elements. Energy efficiency criteria are now specifically required, as a result of the Housing and Economic Recovery Act of 2008. It may be surprising to learn how green a project must be just to be competitive in 9 percent tax credit funding rounds in each state’s QAP.¹⁰ In a highly competitive market for tax credit investors, green projects also may have a competitive edge.

⁵ See LISC’s Program Summary, *Section 236 Decoupling*, by Emily Achtenberg, January 2009, available on LISC’s Web site.

⁶ The Housing and Economic Recovery Act of 2008 eliminated longstanding ambiguity on this issue.

⁷ The 202 program began as a low-interest direct loan program with no Section 8 assistance. Currently, the program is a capital grant combined with project-based rental assistance.

⁸ See Section 234 of the Omnibus Appropriations Act of 2009, Public Law 111-8.

⁹ See Chapter 3 of LISC’s *Recapitalizing Affordable Rental Housing: A Handbook for Nonprofit Owners*, available on LISC’s Web site.

¹⁰ See Global Green annual study on green QAP elements, *Green Building Criteria in State Low Income Housing Tax Credit Programs*, www.globalgreen.org.



Energy-efficient Utility Allowances

Managing utility allowances is one of the toughest programmatic issues for greening existing affordable housing because of the mismatch between who pays and who benefits—owners pay upfront capital costs and residents benefit from lower utility costs. This conundrum distorts many owners' decision making about energy use and efficiency measures. Fortunately, policy makers are beginning to pay more attention to this issue. With current program rules it has been difficult for owners to obtain “energy-efficient” utility allowances to enable the owner to pay for efficiency investments on behalf of residents. Historically, most utility allowances in private HUD-assisted multifamily housing have been obtained from a local housing authority, based on its jurisdiction-wide allowances for the Section 8 voucher program. Individual energy-efficient property improvements typically are not taken into account, or such improvements require a negotiation process. Some local housing authorities have adopted methods for determining energy-efficient utility allowances, but this is far from standard practice.

Some programmatic efforts are under way to allow energy efficiency to be reflected in utility allowances. For example, the IRS recently provided more flexible guidance on energy-efficient utility allowances for LIHTC properties.¹¹ This change includes a new option allowing building owners to retain the services of a qualified third-party professional to calculate utility allowances based on an energy consumption model that takes into account specific information about the design and location of the building.

Program Reforms to Support Greening

Current HUD program regulations, mostly by default or silence on the issue, have until recently seemed to work against implementing green improvements in both ongoing operations and in preservation transactions.¹² However, as noted below, several new administrative and statutory initiatives are making it possible to address these constraints without a fundamental restructuring of existing programs. Until recently, most green program reforms have been focused on individual funding programs, but interagency program coordination—particularly between HUD and U.S. Department of Energy (DOE)—is now under way.

HUD Energy Action Plan—Multifamily Incentives

HUD established its Energy Task Force in 2001 to develop recommendations for improving energy efficiency in all HUD programs. HUD's focus on energy issues was strengthened after the Energy Policy Act of 2005 required the HUD Secretary to develop an “integrated strategy” to improve energy efficiency in public and assisted housing. HUD's resulting Energy Strategy was issued in 2006, and it includes 25 action items addressing the following topics:

- Interagency partnership with DOE and Environmental Protection Agency (EPA) focusing on ENERGY STAR® and the Weatherization Assistance Program
- Information, training, and technical assistance for HUD customers and clients
- Rewards and incentives for energy efficiency through HUD programs
- Energy standards and program requirements
- Management and monitoring of HUD energy programs
- Policy analysis and research on energy efficiency technologies

¹¹ *Federal Register*, Section 42 Utility Allowance Regulations Update, vol. 73, no. 146, July 29, 2008, p. 43863.

¹² These program constraints were discussed in the Center for American Progress's December 2008 white paper *Green Affordable Housing: Within our Reach*, by David Abromowitz, www.americanprogress.org/issues/2008/12/green_housing_report.html.

In December 2008, HUD issued a progress report, *Implementing HUD's Energy Strategy*,¹³ outlining achievements to date and outstanding actions. The multifamily initiatives outlined in the report include actions to promote energy efficiency within the HUD-assisted and HUD-insured portfolios. According to the report, the following are among the changes approved by the Federal Housing Administration (FHA) Commissioner to be implemented by the end of 2009.

Asset management incentives for new FHA mortgages or refinances of existing mortgages:

- Application or inspection fees can be reduced by 50 percent for properties using energy conservation techniques or ENERGY STAR certification.
- The mortgage term can be extended to up to 50 years for ENERGY STAR certification.
- ENERGY STAR efforts can be considered a “major building component” for determining substantial rehab in order to use 221(d)(4) mortgage insurance instead of 223(f) insurance. This allows a 90 percent loan to value (LTV) ratio instead of 85 percent.
- A new Multifamily Accelerated Processing (MAP) loan program to finance energy-efficient systems in properties that are master-metered and currently insured by HUD.

Asset management incentives for existing properties:

- Increased owner distribution by reflecting the cost of the energy upgrades in the amount of initial equity used to calculate allowable returns. Distributions can be accrued if funds are not available to pay them in the current year.
- Nonprofit owners may be allowed a distribution based on the energy efficiency of property.
- A management company can share in the energy savings through a management fee add-on.
- A management company can share in the savings for reducing the total utility usage.
- Owners may request delegated authority from DOE to income-certify tenants for DOE Weatherization funds.
- Owners may pay for an energy audit from surplus cash (at owners discretion), residual receipts (with HUD approval), or with reserve for replacements (with HUD approval).

New and Targeted Green Resources

Some green resources are time-limited programs created through the American Recovery and Reinvestment Act (ARRA) of 2009. Although they may be one-time programs, they will no doubt have an impact on improving the energy efficiency and greening of assisted properties either directly or through the lessons to be learned from their implementation.

Assisted Housing Green Retrofits

ARRA included \$250 million for a new Green Retrofit Program (GRP) for multifamily housing. Although currently time limited, this program will provide important resources for certain project-based Section 8, Section 202 properties, and Section 811 properties, and will likely be a model for future HUD programs. The program is administered by HUD's Office of Affordable Housing Preservation, which also manages the M2M Green Initiative. Grants and loans of up to \$15,000 per unit can be used for the purpose of reducing ongoing utility consumption and benefiting resident health and the environment. Project owners receiving retrofit assistance through the GRP will be required to extend the project's affordability period for at least fifteen years.

¹³ See *Implementing HUD's Energy Strategy*, U.S. Department of Housing and Urban Development Office of Policy Development and Research, December 2008, www.huduser.org/publications/destech/energyefficiency_08.html.

Neighborhood Stabilization Program

HUD's Neighborhood Stabilization Program (NSP), originally enacted as part of the Housing and Economic Recovery Act of 2008 (HERA) and expanded under ARRA, provides nearly \$6 billion for the purchase, rehabilitation, and redevelopment of foreclosed properties. The statute specifies that NSP grantees—state and local governments and nonprofit organizations—may use NSP funds to implement energy-efficiency and conservation practices and to add renewable energy sources. Generally, NSP is thought to apply only to single-family properties; however, the funds also can be used for the purchase and rehabilitation of multifamily properties. In fact, the NSP statute requires each recipient to use 25 percent of grant funds (totaling \$1.5 billion in the aggregate) to benefit families at or below 50 percent of area median income (AMI). Thus, many grantees are likely to focus on affordable rental housing to meet this requirement. Green preservation of a foreclosed multifamily property is an ideal use of these funds, because many of these foreclosed properties are physically deteriorated, and a substantial rehab scope could include many opportunities for greening.

Weatherization Assistance Program

The Weatherization Assistance Program, run by the DOE since the early 1970s, often focuses its resources on single-family housing, but the program can provide resources for multifamily properties as well. ARRA, which provides a one-time appropriations boost of \$5 billion for the program, has made important permanent changes to the program that makes its use in multifamily projects more feasible and attractive. These changes include an increase in the per-unit subsidy amount from \$2,500 to \$6,500, and higher income targeting caps, from 150 percent of the poverty threshold to 200 percent.¹⁴ Most importantly, HUD and DOE recently have announced plans to pre-qualify certain multifamily HUD-assisted, LIHTC, and public housing properties. While this is welcome news, the usefulness of this resource for preservation transactions depends on the focus and implementation of the program at the state and local levels as well as increasing the capacity of groups performing weatherization work.

Energy Efficiency and Conservation Block Grant (EECBG)

DOE's EECBG, which is modeled after HUD's Community Development Block Grant program, was authorized by the 2007 Energy Independence and Security Act. The program, which was funded for the first time with a \$3.2 billion appropriation through ARRA, provides flexible grants to state and local governments, territories, and Indian tribes, who in turn can provide grants to nonprofit organizations to perform energy retrofits of existing housing in addition to other non-housing uses. In general, eligible activities include the cost of energy audits, local incentive or rebate programs, technical consultant services, and energy retrofit expenses. Block grant recipients are required to develop energy efficiency and conservation strategies within a year of receiving funds. As with other block grants, the program is subject to state and local implementation rules, so the usefulness of this program will vary from place to place.

State Energy Program (SEP)

DOE's SEP program, which received a boost of \$3.1 billion through ARRA, provides funding and technical assistance to states to help them promote energy conservation in a variety of areas, including residential buildings. Each state's energy office is required to create an annual plan identifying project opportunities for these funds.

¹⁴ States also may apply a 60 percent of AMI income ceiling.

Business Energy Investment Tax Credit

Energy Investment Tax Credits (ITCs) are available for up to 30 percent of the cost of any new solar energy system, including solar hot water or photovoltaic installation. The credit also is available for other renewable energy systems including small wind farms and fuel cells, with a smaller 10 percent credit for geothermal, microturbine, and combined heat and power systems. ITCs may be combined with LIHTC to boost the overall equity for a qualifying project. Originally set to expire in 2009, the credit was expanded to projects placed in service through 2016.¹⁵



Green Project Profile:

Crescent Park, Richmond, California

Crescent Park, located in Richmond, Calif., is the largest solar-powered affordable housing community in the United States. EAH, a nonprofit housing corporation, added the photovoltaic system during its substantial renovation of the 378-unit project, which was originally built in 1968 under the HUD 221(d)(3) Below Market Interest Rate loan program. EAH acquired Crescent Park Apartments in 1994 with the goal of maintaining affordability of units for low-income households.

EAH's recent rehabilitation of the property, initiated in 2007, also included updating the interior and exterior of the twenty-four residential buildings and the expansion of the community spaces for service and outreach programs. In addition to the photovoltaic system, EAH implemented conservation measures, including energy-efficient appliances, windows, furnaces, water heaters, and light fixtures.

EAH used a line of credit from Bay Area LISC to conduct predevelopment activities. Permanent sources of funding include tax-exempt bonds and 4 percent LIHTC equity, syndicated through the National Equity Fund. The project also was able to take advantage of energy investment tax credits for 30 percent of the value of the solar installation.

State and Local Incentives

States and localities have developed an array of incentives and regulations to encourage energy efficiency and green building. The incentives provided by these programs may make the difference for a green preservation project on the edge of feasibility. The Database for State Incentives for Renewables and Efficiency (www.DSIREUSA.org) provides detailed information about federal, state, and local incentives and programs, including:

- ***Property Tax Exemptions:*** Some states and localities provide tax exemptions or special assessments for properties with renewable energy systems.
- ***Utility Programs:*** Utility companies may offer rebates and rate discounts for energy-efficient buildings as well as offering technical assistance, grants, and loans to assist property owners in the design and installation of energy efficient systems.
- ***Leasing Programs:*** Some utility companies and other organizations offer to lease a renewable energy system, such as a photovoltaic system, to a property to avoid having to pay up-front purchase costs.
- ***Sales Tax Incentives:*** Some states have established sales tax exemptions or sales tax holidays for the purchase of renewable energy systems, energy-efficient appliances, and other energy-efficient products.

¹⁵ This change was authorized by the Energy Improvement and Extension Act of 2009, enacted October 2008.

Accessing these local programs, particularly those run by utility companies, can be difficult in some areas. Many utility companies offer programs because they are required to do so, and the implementation of such programs can be complicated. A green expert can help owners understand and apply for the programs, but the most cost-effective way to learn about such programs is to solicit advice from other housing owners or developers in the area that have used the programs. Local LISC offices can provide assistance in making these connections.

Product Rebates

One of the most basic resources that can help defray the costs of adding green components to a rehab plan is manufacturers' rebates for ENERGY STAR products. A searchable database of product rebates is available on the ENERGY STAR Web site.

Innovative Financing Tools

Net Metering

Properties implementing renewable energy sources may have the options of either selling any excess energy produced by these sources back to the utility company or receiving excess energy credit to be applied to future energy bills. For projects with individually metered utilities, a "virtual net metering" approach allows the tenants to receive energy from a central renewable energy installation while still receiving the benefits of a net metering system. Most states currently allow net metering. Up-to-date information about net metering programs is available through the DSIRE database.

Energy Performance Contracting (EPC)

EPC provides packaged solutions for energy efficiency and renewable energy installation and financing. An Energy Service Company (ESCO) enters into an agreement with a private owner to finance, install, and provide long-term maintenance and training for energy efficiency measures. The ESCO often guarantees a portion of the savings produced by the measures in return for a share of the savings. EPC is feasible in properties in which the owner pays all or most of the utilities and therefore has access to the utility savings. It works best where little or no previous water or energy conservation efforts have been made, and in larger properties (greater than 100 units) that can benefit from economies of scale. For these reasons, HUD has focused on EPC primarily for public housing, but it also has developed pilot programs for assisted properties with owner-paid utilities.

According to *Implementing HUD's Energy Strategy*, HUD developed an Aggregated Energy Performance Pilot in Southern California, in which 40 LIHTC and HUD-assisted properties in need of substantial energy efficiency upgrades are attempting to leverage \$12 to \$15 million in capital investments. The pilot program also is exploring other potential initiatives, such as resetting rents and utility allowances to help fund the investment.



PART IV

ADDITIONAL RESOURCES AND LINKS

This section provides links to key resources for green building and rehabilitation practices, including resources for technical guidance, professional services, and financing resources.

NATIONAL ORGANIZATIONS AND RESOURCES

Local Initiatives Support Corporation (LISC) www.lisc.org

LISC provides financing, information resources, and technical assistance for affordable housing preservation and green community development projects. LISC provides services primarily through a network of twenty-nine local offices, including Bay Area LISC.

Green Development Center www.lisc.org/green

Affordable Housing Preservation Initiative www.lisc.org/preservation

Bay Area LISC www.lisc.org/bay_area

Selected LISC Resources:

- Pre-development, acquisition, and mini-permanent financing for green development and affordable housing preservation projects
- Online Guide to ENERGY STAR® Qualified Homes in Partnership with the Environmental Protection Agency (EPA)
- Ongoing and archived webcasts on green building and preservation topics
- *Stemming the Tide: A Handbook on Preserving Subsidized Multifamily Housing*
- *Recapitalizing Affordable Rental Housing: A Handbook for Nonprofit Owners*
- Program Summaries: Section 8 Renewal Options, IRP Decoupling, Assisted Housing Green Retrofits
- *Green Rehabilitation of Multifamily Housing: A Resource Guide*
- *Green Operations and Maintenance: A Toolkit and Buyers Guide*

Enterprise Community Partners www.greencommunitiesonline.org

The Green Communities Initiative at Enterprise Community Partners offers a certification program and some funding for new construction and moderate rehabilitation.

Green Globes www.greenglobes.com

Green Globes is an online design and management tool for greening commercial buildings.

National Affordable Housing Management Association (NAHMA) www.nahma.org/content/greencred.html

NAHMA provides a credential program for green property management (CGPM) that has been approved by OAHP for the M2M Green Initiative.

National Apartment Association (NAA) www.naahq.org/green

NAA launched its Green Communities initiative to provide information, tools, and resources for green apartment owners and managers.

National Association of Home Builders (NAHB) www.nahbgreen.org

NAHB offers the National Green Building Standard as well as other green building guides and resources.

National Center for Healthy Housing (NCHH) www.nchh.org

NCHH offers specialized training and technical assistance programs to help housing agencies adopt cost-effective green and healthy housing practices that improve the quality of housing and the health of residents. The Healthy Housing Clearinghouse provides the latest research and information resources on how to maximize green building's health impacts.

National Housing Trust (NHT) www.nhtinc.org

NHT produced a summary of green initiatives in each state, focusing on LIHTC allocation plans. It also provides case studies of green preservation projects and other helpful resources.

NeighborWorks® America www.nw.org

The NeighborWorks® Training Institute is offered four times a year and has several green building and healthy housing courses as well as a green professional certificate program.

Federal, State, and Local Incentives for Renewable Energy www.dsireusa.org

The best source for information on federal and state energy-related tax credits, other tax incentives, federal and state programs, and utility programs is the Database of State Incentives for Renewable Energy (DSIRE) Web site, which is maintained by the North Carolina Solar Center at NC State. The Web site has national and state-by state links to program descriptions and program contact information.

Tax Incentives Assistance Project (TIAP) www.energytaxincentives.org

TIAP is an information clearinghouse on federal business and consumer tax credits for energy-efficient technologies and products.

U.S. Green Building Council (USGBC) www.usgbc.org

USGBC is the home of the LEED green building certification programs. In addition to resource guides and scoring systems that support the various LEED ratings, the Web site has substantial resources as well as links to other sites. The Chapters section of the Web site provides links to local USGBC chapters, which are good resources for local green building resources.

REGIONAL ORGANIZATIONS

Build It Green www.builditgreen.org

Build It Green is based in Northern California and offers the Green Point Rated system, with options for single-family and multifamily projects and a new guide for multifamily rehabilitation scheduled to be released in 2009.

Global Green www.globalgreen.org

Global Green sponsors affordable housing initiatives and is active in policy making and technical assistance, especially in California. The organization's guide, Blueprint for Greening Affordable Housing, and its annual study rating the green elements of state LIHTC plans are both useful.

New Ecology, Inc. www.newecology.org

New Ecology, based in Boston, Massachusetts, provides technical assistance, consulting, training, and information resources to nonprofit and community-based organizations, governments, and the private sector to help them adopt sustainable development practices. They produced the

Costs and Benefits of Green Affordable Housing Study with the Tellus Institute, as well as an online “Energy Tracker” tool to help track and analyze energy usage in single family and multi-family housing.

Southface Institute www.southface.org

Based in Atlanta, Southface has a growing presence throughout the South and Southeast. Southface’s EarthCraft House program (www.earthcrafthouse.com) has single-family and multifamily options.

FEDERAL GOVERNMENT

U.S. Department of Housing and Urban Development (HUD) www.hud.gov

In addition to standard program information, HUD provides other resources for green building, energy efficiency, and healthy housing:

Energy Task Force www.hud.gov/energy

The Task Force is charged with improving energy performance in all HUD programs, and it works closely with the Department of Energy (DOE). The Web site has contact information for each regional office’s Energy Efficiency Coordinator, who can be a resource for developing local partnerships and pilot initiatives.

Office of Affordable Housing Preservation www.hud.gov/offices/hsg/omhar

OAHP administers the Mark to Market Green (M2M Green) Initiative and the Green Retrofits program. Its Web site offers extensive Green resources, including information about integrated pest management practices.

Mark to Market Green Initiative Resource Page

www.hud.gov/offices/hsg/omhar/paes/green/resource.cfm

Green Retrofit Program for Multifamily Housing

portal.hud.gov/pls/portal/url/page/recovery/programs/green

Neighborhood Stabilization Program (NSP)

www.hud.gov/offices/cpd/communitydevelopment/programs/neighborhoodspg/

The NSP administrator for each direct grantee can provide information about the grantee’s plan to meet the very low-income targeting requirement. HUD’s Web site provides contact information for all direct grantees.

Office of Healthy Homes and Lead Hazard Control

www.hud.gov/offices/lead/index.cfm

This office administers healthy homes and lead hazard control grant programs. The Web site has links to other resources.

Partnership for Advancing Technology in Housing (PATH)

rehabadvisor.pathnet.org

This joint initiative of HUD and the National Association of Home Builders (NAHB) offers extensive guidance on cost-effective best practices for energy-efficient healthy housing. The Energy Efficient Rehab Advisor is a good online tool for developing initial estimates of payback schedules for green rehab plans.

U.S. Department of Energy (DOE) www.eere.energy.gov

DOE’s Office of Energy Efficiency and Renewable Energy provides information about technologies and renewable energy options. It also administers the Weatherization Assistance

Program, the Energy Efficiency and Conservation Block Grant program, and the State Energy Program through grants to state and local governments.

U.S. Environmental Protection Agency (EPA) www.epa.gov

EPA directs two key programs for green housing, the ENERGY STAR® Homes program and the Water Sense® program.

ENERGY STAR www.epa.gov/energystar

The ENERGY STAR Rating offers equipment and materials that meet high energy-efficiency standards. Look for states that have an active Home Performance with ENERGY STAR program, the option for housing rehabilitation. The ENERGY STAR Web site also has an extensive database of green building professionals in a variety of disciplines.

Water Sense www.epa.gov/watersense

Water Sense is a partnership and labeling program to help consumers and professionals identify water-efficient products and programs.

ENERGY AUDITORS AND OTHER GREEN PROFESSIONALS

Association of Energy Engineers (AEE) www.aeecenter.org

AEE offers several applicable professional certifications, including a Certified Energy Manager and a new credential, Certified Sustainable Development Professional.

Building Performance Institute (BPI) www.bpi.org

BPI offers training, certification, and accreditation for energy efficiency auditors, contractors, and installers. Find accredited companies and certified professionals through the searchable database.

Residential Energy Services Network (RESNET) www.resnet.us

The Residential Energy Services Network maintains a listing of certified raters.

INTEGRATED PEST MANAGEMENT STANDARDS AND CERTIFICATION

Ecowise www.ecowisecertified.org

Green Shield www.greenshieldcertified.org

Quality Pro Green www.qualityprogreen.com

SMOKE-FREE HOUSING RESOURCES

Smoke-free housing is a rapidly growing advocacy area for multifamily housing. Several strong state-wide programs are listed here, but look for other organizations and resources in your state.

California Clean Air Project www.ccap.etr.org

**Massachusetts Smoke Free Housing Project
makesmokinghistory.org/secondhandsmoke/housing.html**

Michigan Smoke Free Environments Law Project www.mismokefreeapartment.org

Smoke-Free Housing Coalition of Maine www.smokefreeforme.org

ABOUT THE AUTHOR

KIMBERLY VERMEER, LEED-AP FOUNDER AND PRINCIPAL OF URBAN HABITAT INITIATIVES

Ms. Vermeer founded her Boston-based company, Urban Habitat Initiatives, to help bring green building principles into practice in multifamily housing. She has a special focus on affordable housing and works with both for-profit and non-profit owners and developers to implement energy efficiency, renewable energy, healthy housing and environmentally responsible practices in new and existing multifamily housing. In addition to a busy consulting practice, Ms. Vermeer regularly teaches green building and healthy housing courses that she developed at the NeighborWorks® Training Institutes.



Local Initiatives Support Corporation

501 Seventh Avenue, 7th Floor

New York, NY 10018

www.lisc.org