



A bridge linking housing research and practice

volume 5, number 9

## Healthier Homes, Healthier Children

The 2005 American Housing Survey found that more than 6.1 million housing units were in substandard condition because of moderate or severe physical problems. Although establishing causal relationships is difficult, the Centers for Disease Control and Prevention recognize links between childhood disease and substandard housing conditions that significantly affect public health. Poor housing also has an economic impact. According to a research-based estimate by the North Carolina Housing Coalition, in one year, the "total costs of substandard housing attributable to childhood illnesses, injuries, diseases, and disabilities among North Carolina children is nearly \$95 million."<sup>1</sup>

About 10 years ago, HUD launched its Healthy Homes Initiative (HHI) in response to concerns regarding

1. David Chenoweth and Chris Estes, "The Economic Cost of Substandard Housing Conditions Among North Carolina Children." North Carolina Housing Coalition, May 2007, pp. 4, 11.



Credit: FEMA/Andrea Booher

*HHI works to reduce housing-related health and safety hazards, such as mold, to produce healthier indoor environments for children and their families.*

children's environmental health. HHI's mission is to protect children and their families from housing-related health and safety hazards such as mold, lead, allergens, carbon monoxide, pesticides, and radon. The program funds grants for research, demonstration, and public education that help mitigate these home-based hazards. Annually, Healthy Home demonstration and technical study awards go to nonprofit and for-profit organizations, state and local governments, federally recognized Indian tribes, and institutions of higher learning. In 2005, the number of housing units receiving HHI interventions totaled 4,476.

### Healthy Homes Demonstration and Technical Studies

Healthy Homes Demonstration (HHD) grantees are encouraged to collaborate with community and faith-based organizations to address healthy home issues in a target area of low- and very-low-income

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families. Funded activities include remediation (in situations where housing-related hazards may contribute to children's diseases), education and outreach activities to protect children from these hazards, and capacity building to ensure the sustainability of the projects.

To illustrate the accomplishments achieved through these HHD projects, HUD points to Ohio's Cuyahoga County Department of Development, which addressed pulmonary hemorrhaging, asthma, and lead poisoning by controlling environmental factors—particularly moisture and mold problems—in high-risk-area homes in Cleveland. The grantee provided outreach, environmental assessment of the units, clinical assessment of the families, cost-effective home hazard remediation, post-remediation environmental testing, follow-up environmental and clinical testing, and comprehensive education of families and foster parents. Researchers found that asthmatic children showed a reduction of symptoms after the housing interventions were performed.

In a second example, the Department of Health in Erie County, New York adopted a primary prevention practice that targeted one- and two-family homes built before 1950, correcting specific health hazards before residents moved into the units. Low-cost interventions reduced the number of hazards and households with health risks. Residents reporting "no or very little limitations due to physical problems" increased from 67 to 81 percent at follow up, and those reporting "somewhat limited or quite a lot" of limitations fell from 33 percent to 18 percent.<sup>2</sup> In another demonstration project, the Children's Health Environmental Coalition (CHEC) used virtual reality software to develop a web-based "electronic house" that allows visitors to "walk" from room to room to identify health hazards and exposure pathways, as well as to view alternatives that minimize potential health risks. CHEC's virtual HealtheHouse is located at <http://healthychild.org/programs/healthehouse/>.

HHI's Technical Studies (HHTS) grant program seeks to improve methods of detecting and controlling housing-related health and safety hazards. Objectives of particular interest to HUD include developing

validated assessment tools; improving protocols for environmental sampling and residential integrated pest management; improving indoor air quality; and creating strategies for efficient, cost-effective mitigation of high-priority residential health and safety hazards.

One HHTS award to Boston's Healthy Public Housing Initiative helped underwrite a multiyear community project designed to improve the health of public housing residents, especially asthmatic children. Key components of the project were an environmental assessment survey of 238 households; health and housing interventions that targeted 60 asthmatic children; pre- and post-intervention health assessments for these asthmatic children; and the training and use of 20 public housing residents as surveyors, unit inspectors, and environmental health data collectors.

The Boston initiative produced a number of useful results. For example, the initiative showed that the usual approaches to controlling pests—especially cockroaches—were often ineffective. Consequently, homes had high levels of pest infestation, allergen levels that exceeded asthma sensitivity tolerances, and evidence of the use of dangerous pesticides. Eighty percent of the children tested positive to at least one common allergen. After the interventions, including repairs, application of safer pest control products, and resident education, allergen levels fell and remained low for some months. Another intervention—new dust mite-resistant mattresses—reduced dust mite allergen levels from 78 percent to less than 3 percent.

In tandem with health education, these interventions have proven highly productive. Whereas 76 percent of the children reported wheezing, chest tightness, or coughing in preassessments, only 40 percent reported these respiratory symptoms at the end of the study. Asthma sufferers reported similar reductions in wakefulness at night (from 64 percent to 30 percent) and in interruptions of play due to asthma (64 percent to 26 percent). After assessing building conditions and health, and comparing survey data from renovated and unrenovated developments, researchers concluded that the improved building conditions have contributed to better health.

As part of HHI, HUD offers a series of background information papers on key topics: asthma, carbon

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2. Family Medicine Research Institute, "Healthy Homes Initiative Final Report," May 25, 2004. Unpublished report provided by the Erie County Department of Health.

The Clara White Mission's (CWM's) transitional housing program, winner of the 2008 HUD Secretary's Empowerment and Opportunity Award, is a nonprofit venture that began in 2003 to help homeless individuals move from the streets to permanent housing and employment. For more than 100 years, CWM has worked to restore and rebuild the lives of homeless and disadvantaged people in Jacksonville, Florida.

"We look at our program not as a homeless assistance program, but as an economic development program," said Ju'Coby Pittman-Peele, CWM CEO and president. "We're housing people, providing clients with supportive services, and our culinary training program provides the workforce training our clients need to move out into the community."

In the beginning, approximately 50 percent of program participants were veterans and ex-offenders, and almost all were men, said Pittman-Peele. "Clients initially came to the program for a bed. We soon realized that we needed to provide mental health counseling and personal and behavioral counseling, so we turned to the community to get partners who would work with us." CWM has developed partnerships with local businesses, nonprofit groups, and faith-based organizations.

### Supportive Housing + Workforce Training = A More Promising Future

The 36-bed transitional housing/culinary arts training program is open to homeless individuals, many of whom are referred by CWM's nonprofit community partners. All clients must be drug-free for 30 days before they are admitted, and they must be able to



Credit: Clara White Mission

*Clara White Mission's culinary arts program trains formerly homeless men and women for careers in food service.*

read. A two-week probationary period allows both clients and staff to ensure that the program is a good fit. CWM provides clients with a full physical and mental health assessment at enrollment. Because 50 percent of the clients report mental health issues and 75 percent have drug and alcohol problems, the program offers various supportive services. CWM conducts random drug tests throughout the program; clients who relapse can go to one of the center's local partners for drug rehabilitation. Once rehabilitation is complete, the individual is welcome to return to CWM if a bed is available.

Twice each year, CWM offers a rigorous, 460-hour residential training program in the culinary arts. Clients must achieve in both the classroom and in the kitchen to graduate from the program, which prepares them for careers in food service. The four-part curriculum includes basic food preparation, commercial food production, front- and back-of-the-house skills, and specialty cooking and service testing. Culinary students produce 400–500 meals each day for CWM's feeding program and cater meetings and special events. Students are also responsible for an upscale luncheon offered each Friday at Clara's at the Cathedral, located in St. John's Episcopal Church. The luncheon is open to the public, and all proceeds benefit the culinary program.

To date, 270 people have graduated. Program graduates work at approximately 35 businesses; 10 graduates currently work for nonprofit feeding programs in Jacksonville, and 6 have joined the CWM staff. CWM's placement specialist works with graduates to find employment and then provides 30-, 60-, and 90-day follow up. An alumni group holds two special events each year, and a 2-year apprenticeship program allows graduates already working in the culinary field to acquire additional training to advance their careers.

In addition to its daily meals program, CWM also operates a drop-in center, which Pittman-Peele refers to as "the country club in the 'hood.'" This one-stop shop provides a place for homeless individuals to shower, wash their clothes, access a phone or computer, and have a snack. If they need a mailing address, they can use the Mission's address.

Last year, 85 people used the transitional housing units, 65 received job placements and remained

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An initiative has been launched wherein 238 Leadership in Energy and Environmental Design Neighborhood Development (LEED-ND) pilot projects are being carried out in 39 states and 6 countries. Although diverse in size, design, and setting (rural, urban, and suburban), they share the objective of pioneering a national standard for neighborhoods that focuses on smart growth, New Urbanism, and eco-efficient design. Three LEED-ND projects that exemplify these principles are the Storrs Center in Mansfield, Connecticut; Thornton Place in Seattle, Washington; and Helensview in Portland, Oregon.

The Storrs Center in Mansfield, which abuts the University of Connecticut, will feature 47-plus acres of residential and mixed-use components, including a new town center and a market square. In addition to retail, restaurant, commercial, and residential uses, the development will include civic and community spaces. About 30 acres will be placed in a conservation set-aside.

Thornton Place is a 6-acre, mixed-use development with 50,000 square feet of retail space, a 14-screen movie theatre, 109 condominiums, and 278 apartments. The developer's goal is to transform an auto-centric shopping magnet into a vibrant, livable, pedestrian-friendly neighborhood with entertainment, housing, public art, walking paths, and nearly three acres of green space around a new waterway. Rental apartments for older adults will also be developed at the site.



Homes in Helensview, Portland's first affordable housing project built to LEED-ND standards, are close to public transit and feature energy-efficient technologies.

Credit: Portland Office of Sustainable Development

Helensview is an affordable, single-family development of 41 homes and 12 condominiums that cost between \$196,000 and \$248,000 – significantly less than the median home price in both the surrounding county and the Portland metropolitan area (\$286,000 and \$339,900, respectively). The homes, which are close to public transit, feature energy-efficient technologies, granite counters, gas fireplaces, and home warranties. The development also offers a children's play area. Qualified homebuyers have access to closing cost assistance and tax abatements.

Officially still in the pilot stage, LEED-ND is a project of the U.S. Green Building Council (USGBC), the Natural Resources Defense Council, and the Congress for the New Urbanism. LEED-ND builds on USGBC's experience with developing green certification systems for commercial buildings, schools, and homes. With LEED-ND, green certification enters a new era of attempting to measure not just the green aspects of individual buildings, but also the green benefits for neighborhoods. When fully vetted and voted on by USGBC membership in mid-2009, LEED-ND will become the first-ever national set of standards for neighborhood location and design based on the combined principles of smart growth, New Urbanism, and green building.

According to USGBC's report *Pilot Version: LEED for Neighborhood Development Rating System*, the LEED-ND rating system is designed to be flexible, with a few mandatory requirements plus many optional items that can earn credits. A minimum of 49 points is required for certification; higher scores will gain a silver, gold, or platinum LEED-ND certification.

Elements of the rating system include the following:

- **Location-related goals (30 possible points).** Reduce dependence on cars; encourage walking and bicycle use. Place homes close to schools and jobs. Redevelop brownfields. Conserve agricultural land, wetlands, and proximate bodies of water. Preserve imperiled species and ecological communities. Provide for restoration and conservation of habitat or wetlands, protect steep slopes, and avoid floodplains.
- **Neighborhood pattern and design goals (39 possible points).** Promote livability and transportation efficiency. Provide walkable streets and sidewalks,

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## Local Transitional Housing Effort Wins Award continued from page 3

employed for at least 6 months, and 31 acquired permanent housing. Students in the culinary arts program are allowed to stay in the transitional housing for up to 6 months after graduation before moving on to permanent housing.

### Making It Happen

"The Board of Directors and the staff are the driving force behind the success of the Clara White Mission," states Pittman-Peele. "Our staff grew quickly from 5 to 25, and we developed specific skill sets to provide needed services to our clients."

Funding for CWM comes from various sources, and fundraising activities are ongoing. CWM has received government funding, but as those grants diminish, it is exploring other areas. The catering company, staffed by culinary arts students, brings in revenue, as does the Friday luncheon at Clara's at the Cathedral. CWM holds four major fundraisers each year. Several members of the Jacksonville Jaguars football team actively fundraise for the Mission. Pittman-Peele notes that she keeps the media involved, so the community is aware of CWM's accomplishments.

When asked how other organizations could replicate CWM's programs, Pittman-Peele said, "Do your homework. Be politically astute and get local politicians and legislators on your side by marketing yourself as an economic development paradigm for the community. Include organizations that can provide programs that will complement what you offer. And be sure to run your nonprofit like a business."

### Looking to the Future

Later this year, continuing its long tradition of helping the homeless restore and rebuild their lives, CWM will begin a janitorial program to train people for work as housekeepers and janitors in the hospitality industry. Plans are also underway to build 100 units of permanent housing with supportive services. CWM recently acquired a nearby house that can hold up to 10 people that will be used as a demonstration site when the new permanent housing is built.

For more information about CWM, visit [www.clarawhitemission.org](http://www.clarawhitemission.org) or contact Ju'Coby Pittman-Peele at [jpittman@clarawhitemission.org](mailto:jpittman@clarawhitemission.org). **HJ**

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## A New Formula for Greening Neighborhoods continued from page 4

as well as safe and comfortable transit facilities. Design for diversity of land uses and compact development (for example, seven dwellings per acre of residential land). Include affordable housing (both rental and sale units). Reduce the parking footprint to no more than 20 percent of total development; include carpool spaces and bicycle parking. Situate dwellings close to public spaces and sports facilities, providing handicapped accessibility. Promote community gardens and farmers markets. Encourage community involvement in project planning.

- **Green construction and technology (31 possible points).** Plan energy-efficient buildings and infrastructure using green building practices. Include adaptive and historic structure reuse. Strive to minimize site disturbance (dust, sedimentation, and topsoil loss); reduce water use; and recycle content in infrastructure. Manage construction waste and stormwater runoff. Encourage design that takes advantage of solar orientation and reduces heat island effects. Incorporate onsite energy generation and renewable energy sources. Encourage water

reuse, district heating, and cooling. Reduce light pollution.

- **Innovation and design process (6 possible points).** This part of the rating system invites participants to receive additional points for exceptional performance in the above categories or innovative performance in categories that are unspecified but consistent with LEED-ND objectives.

Although still in the pilot stage, the LEED-ND rating system is on its way to promoting diverse and environmentally friendly neighborhoods. In the meantime, USGBC is tracking the questions, concerns, and progress of these pilot projects in preparation for the program's full launch next year.<sup>1</sup> Those interested in obtaining additional information on the LEED-ND rating system can find it at [www.usgbc.org/DisplayPage.aspx?CMSPageID=148](http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148). **HJ**

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1. Stefanie Young, *The New Frontier of LEED®: Piloting LEED for Neighborhood Development*. Presented at the Fifth Annual Greening the Heartland Conference, St. Louis, Missouri, June 2008, [www.greeningtheheartland.org/Presenters08/4website/Young\\_GC1-B.pdf](http://www.greeningtheheartland.org/Presenters08/4website/Young_GC1-B.pdf).

Garden roofs are gaining visibility as a cost-effective, energy-efficient, and environmentally friendly feature in affordable residential construction. The two common types of garden roofs — extensive and intensive — both consist of four basic components: a water barrier, a drainage and filtering system, the growing medium, and vegetation. Extensive gardens are shallow (typically between 1 and 6 inches deep) and require little maintenance. These garden roofs are usually planted with local, drought-resistant moss, sedum, and herbs. By contrast, intensive roof gardens are typically 8 to 24 inches deep. The grasses, flowers, trees, and shrubs planted in these gardens need more maintenance than the vegetation in extensive gardens, and may require irrigation and root retention systems.

These alternative rooftops conserve energy, water, and materials. According to the U.S. Environmental Protection Agency (EPA), on a hot summer day, a traditional rooftop might be 90°F warmer than the ambient air, whereas a vegetated rooftop surface can be cooler than the surrounding air temperature. Because vegetated rooftops absorb less heat, the "heat island" effect caused by buildings that retain the sun's warmth is reduced, particularly in cities. The cooling effect of the vegetation also means that less heat is transferred to the building interior. In winter, the vegetation provides insulation that improves a building's heat retention. The impact on energy bills varies with local conditions, roof type, and other green building features. In Silver Spring, Maryland, the intensive roof garden atop Eastern Village Cohousing contributes to an overall estimated energy savings of 25 percent.<sup>1</sup> This mixed-income condominium complex reduces water consumption by collecting water runoff from the roof in rain barrels and using it to irrigate plantings at ground level.

As to conserving water, the EPA compares a garden roof to a sponge; the vegetation simply absorbs and uses rainwater. The Michigan State University (MSU) green roof research program finds that the plants absorb between 60 to 100 percent of storm water, thus preventing excessive runoff, averting pollution

1. Sandra Leibowitz Earley, "Writing Green Specs: Approaches, Considerations, Resources," [www.aiadc.com/committees/cote/pdf/May%20presentation%20-%20Green%20Specs.pdf](http://www.aiadc.com/committees/cote/pdf/May%20presentation%20-%20Green%20Specs.pdf).



Credit: American Society of Landscape Architects. All rights reserved.

*This intensive roof garden helps block heat gain in summer and heat loss in winter, thereby reducing monthly utility costs.*

of streams and lakes, and reducing demand placed on storm water drainage and water treatment systems.<sup>2</sup>

It should be noted that the initial costs of garden roofs are relatively high. The city of Portland, Oregon estimates that a garden roof installation there costs from \$10 to \$25 per square foot, compared with \$3 to \$9 per square foot for a conventional roof. Unless built to specification (with a garden roof part of the original design), many buildings must have their roofs retrofitted to support this feature, thus adding to upfront costs.<sup>3</sup> This was the case with Artists' Housing, an affordable complex in Mount Rainier, Maryland. Its extensive roof garden, the first in Prince George's County to be installed over an existing wood frame, required additional joists to support its weight.

Portland's Hamilton West Apartments, available to those with incomes at 40–60 percent of the area median income, has a garden roof that cost \$10.50 per square foot. Funded by the city, the Portland Housing Authority, and the Portland Development Commission, this garden roof is part of a citywide attempt to resolve a storm water runoff problem that is contaminating rivers and streams. Like all garden roofs, the one at Hamilton West required a larger initial investment for material and labor, but it will last two to three times longer than a conventional roof, because vegetative roofs have natural protection

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2. Michigan State University, "Benefits of Green Roofs," [www.hrt.msu.edu/greenroof/](http://www.hrt.msu.edu/greenroof/).

3. City of Portland Ecoroof Program, "Ecoroof Questions Et Answers," [www.portlandonline.com/shared/cfm/image.cfm?id=88545](http://www.portlandonline.com/shared/cfm/image.cfm?id=88545).

## Healthier Homes, Healthier Children *continued from page 2*

monoxide, preventable home injuries, mold and moisture, and pesticides. HUD periodically updates these papers, which are useful to anyone interested in a healthy home approach. The paper on pesticides, for example, describes the hazards associated with home use, as well as methods for assessing and lowering the risks involved. Guidelines outline integrated pest management procedures and additional resources that

are available. The document also identifies information gaps and needs for further research. The link to "Pesticides in the Home – Use, Hazards, and Integrated Pest Management," which can be downloaded along with the other background papers, is located online at [www.hud.gov/offices/lead/hhi/hhts.cfm](http://www.hud.gov/offices/lead/hhi/hhts.cfm). HHI's home website is [www.hud.gov/offices/lead/hhi](http://www.hud.gov/offices/lead/hhi). **HI**

## In the Garden... On the Roof! *continued from page 6*

from the ultraviolet radiation and extreme temperature fluctuations that cause roofing materials to deteriorate.<sup>4</sup> According to the EPA, the upfront costs of garden roofs can eventually be recovered through energy savings and reduced expenses for repairs and replacement, making the price over time comparable to that of a conventional roof.

Another benefit of garden roofs is the simple pleasure of being outdoors. Eastern Village Cohousing's rooftop has a gazebo and patio, walkways of concrete pavers, a play area, and trellises with vines, creating the feel of an outdoor haven in an urban area. The affordable Gold Dust Apartments in Missoula, Montana combine a garden roof with vegetable gardening boxes. Gold Dust residents without gardening experience can consult with a gardening intern and sign up for organic gardening workshops. The Cascade Senior Apartments in Seattle, Washington is a new development financed with HUD Section 202 funds and 9 percent Low Income Housing Tax Credits. Cascade's low-income senior residents will be able to enjoy the view while growing vegetables in planters incorporated into their green roof design.<sup>5</sup>

Overall, communities that recognize the benefits of roof gardens are multiplying. Green Roofs for Healthy Cities, an industry association, reported that in North America, total garden roof square footage



Credit: Housing Initiative Partnership, Inc

*This extensive roof garden atop Artists' Housing is planted with local, drought-resistant moss, sedum, and herbs and requires little maintenance.*

grew 30 percent overall in 2007.<sup>6</sup> Vegetative roofs are also providing benefits that improve quality of life, such as absorbing sound, reducing dust and smog pollution, providing a natural habitat for butterflies and birds, and beautifying cities. These advantages suggest that communities will increasingly consider green roofs as an appropriate investment for durable, high-quality affordable housing.

Details about Eastern Village Cohousing, Artists' Housing, and Gold Dust Apartments are available through the Affordable Housing Design Advisor's "Gallery of High Quality Affordable Housing" at [www.designadvisor.org](http://www.designadvisor.org). Additional information on roof gardens is available from the EPA ([www.epa.gov/hiri/strategies/greenroofs.html](http://www.epa.gov/hiri/strategies/greenroofs.html)) and the Partnership for Advancing Technology in Housing's Technology Inventory ([www.toolbase.org/Technology-Inventory/Roofs/green-roofs](http://www.toolbase.org/Technology-Inventory/Roofs/green-roofs)). **HI**

4. Portland Bureau of Environmental Services, "Hamilton West Apartments Ecoroof," [www.portlandonline.com/shared/cfm/image.cfm?id=78405](http://www.portlandonline.com/shared/cfm/image.cfm?id=78405); Portland Housing Authority, "Affordable Housing Portfolio 2008," [www.hapdx.org/Programs/pdfs/Afford.pdf](http://www.hapdx.org/Programs/pdfs/Afford.pdf).

5. South Lake Union Friends & Neighbors Community Council, [www.slufan.org/](http://www.slufan.org/).

6. Green Roofs for Healthy Cities, "Final Report: Green Roof Industry Survey 2007," April 2007, [www.greenroofs.org/resources/2007%20Green%20Roof%20Survey%20Results.pdf](http://www.greenroofs.org/resources/2007%20Green%20Roof%20Survey%20Results.pdf).

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In the Next Issue of... <sup>research</sup> **works**

- Bike & Build annually raises awareness of affordable housing needs in the U.S. by organizing fundraising cycling trips that serve as catalysts to building affordable homes. In the past five years, Bike & Build has raised and donated \$1.14 million to local affordable housing groups. *ResearchWorks* explores this group's efforts, including annual cross-country cycling events, stopping to help with building along the cycling route, increasing awareness of affordable housing issues in host communities, and awarding grants to community groups for affordable housing-related activities.
- Is the traditional "housing affordability" standard of a household paying no more than 30% of its income in housing costs still relevant? A new HUD study examines this question as it looks at trends in housing-related costs over the past two decades for homeowners with mortgages, homeowners without mortgages, and renters. Trends in Housing Costs: 1985-2005 and the 30-Percent-of-Income Standard, weighs two approaches to testing the adequacy of the 30%-of-income standard. *ResearchWorks* will review this research and its results.
- In the first seven months of 2008, the President designated federal disaster areas located in 25 states. Presidential declarations triggered access to assistance for recovery from severe floods, tornadoes, landslides, mudslides, ice and snowstorms, straight-line winds, and hurricanes. Recovery resources that HUD is able to extend to victims of disasters include the Section 203 (h) and Section 203 (k) loan programs, which make insurance available for both mortgages and home rehabilitation. *ResearchWorks* will discuss these programs and their benefit to homeowners who have experienced loss of, or damage to, their homes.
- The Housing and Economic Recovery Act of 2008 includes measures to encourage the expanded use of energy-efficient mortgages (EEMs). EEMs allow people to purchase or refinance a principal residence and incorporate the cost of energy-efficient improvements into the mortgage. This article will look at how EEMs can help homeowners improve energy efficiency and reduce home energy expenses in a time of rapidly rising energy costs. We'll also look at provisions of the Act that increase the limits for cost-effective energy-efficiency improvements.

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