

Affordable Housing Research

Presented by the AIA Residential Knowledge Community

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Future Programs

September 12 - Research in Practice

September 26 - Greening Housing Research

October 10 - Researching Resiliency

October 24 - Affordable Housing Research

November 7 - Healthy Homes Research

December 5 - ENERGY STAR v3 - Best Practice for the Future of Environmental Design for Homes and Apartments

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Affordable Housing Research



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Submit a question to the moderator via the “chat” box. They will be answered as time allows.



Speaker

Assistant Secretary Dr. Raphael W. Bostic

Assistant Secretary for Policy Development and Research (PD&R)

U.S. Department of Housing and Urban Development

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Speaker

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Course Description

This is the fourth in a series of web seminars sponsored by the AIA Residential Knowledge Community that will explore the ways that architects use research to enhance the health, safety, social, economic and environmental performance of buildings as well as the experiences of housing residents.

There are a new series of resources to support evidence-based design of affordable housing and public and private initiatives to improve the quality of work-force housing. Participants will learn about informational resources being developed by HUD and other federal agencies and the way in which national intermediaries and leading practitioners are applying research to their work.



Learning Objectives

1. Participants will learn to identify various types and methods of research applicable to affordable housing.
2. Participants will learn about current trends in evidence-based design and resources for accessing this research.
3. Participants will gain an understanding of various strategies for applying research to their own practices in affordable housing.
4. Participants will gain an understanding of ways in which housing research is being conducted in the field and in the academy.



Speaker: Dr. Raphael Bostic



Assistant Secretary for
Policy Development and
Research (PD&R)

U.S. Department of Housing
and Urban Development



HUD's Agenda for Affordable Housing Research

Dr. Raphael W. Bostic

Assistant Secretary for Policy Development & Research

U.S. Department of Housing and Urban Development

October 24, 2011



Previous Research in Building Technologies

- Development and support for PATHnet and ToolBase websites – combined 400,000 visits per month at peak.
- Basic research in cooperation with National Institute of Standards and Technology and the National Science Foundation.
- The PATH Concept Home gained the attention of the national media.
- Cooperatively developed prescriptive methods for steel framing, structural insulated panels, and insulated concrete forms providing greater opportunities for use in homes.



Support for New Technologies



PD&R

The HUD Concept Home

Project objective:

Demonstrate design and material choices that make homes (1) adaptable, (2) efficient, and (3) durable.

Outreach designed to provide designers, builders and homeowners with the information they need to replicate this concept.



Omaha, Nebraska

Sample article:

www.housingzone.com/flooring/path-concept-home-demonstrates-flexible-floorplan-construction



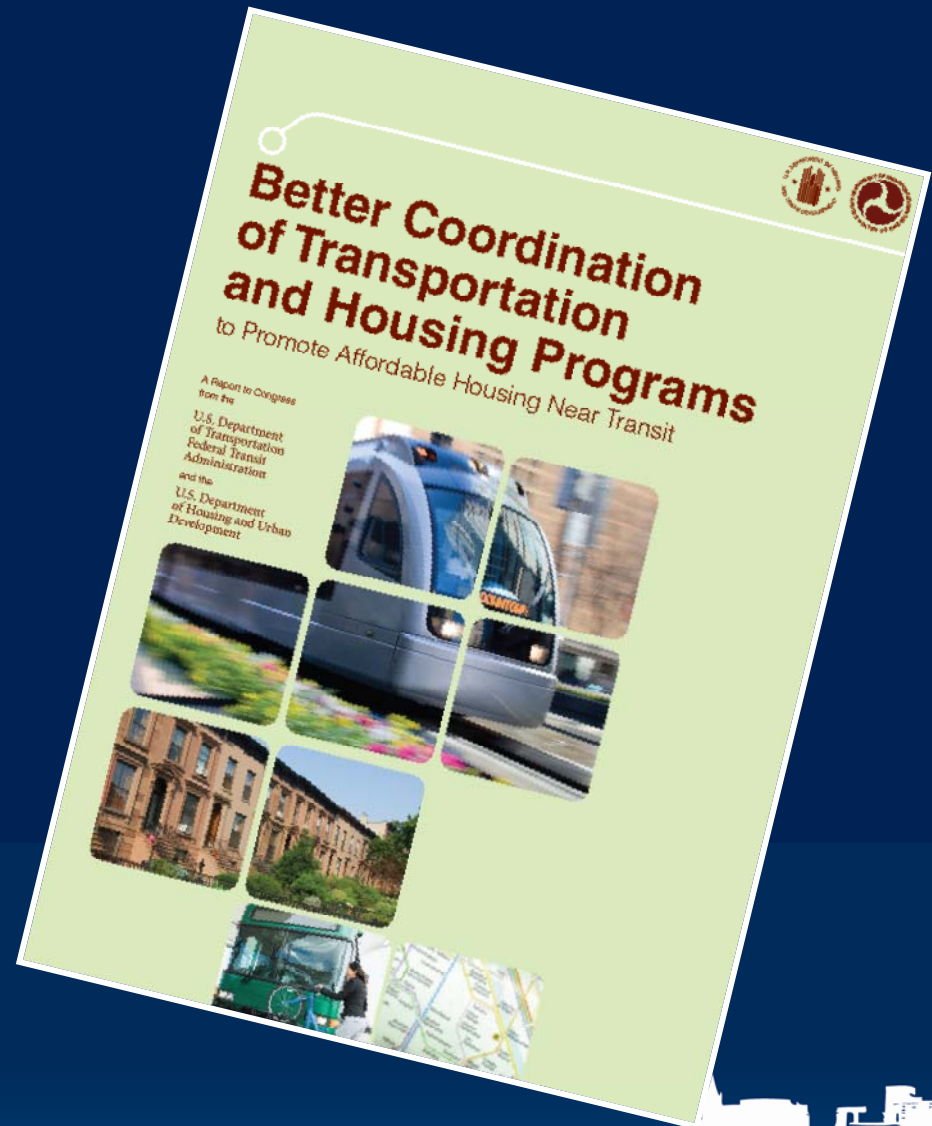
Previous Research in Affordable Housing & Sustainability

- PD&R has performed urban growth, neighborhood improvement, energy efficiency, and regulatory barriers research since the 1970s.
- There was robust research on growth management, urban revitalization, including brownfields, and regulatory barriers in the 1990s.
- This focus narrowed to regulatory barriers and congressionally-mandated initiatives in energy efficiency and housing and transportation from 2001-2008.

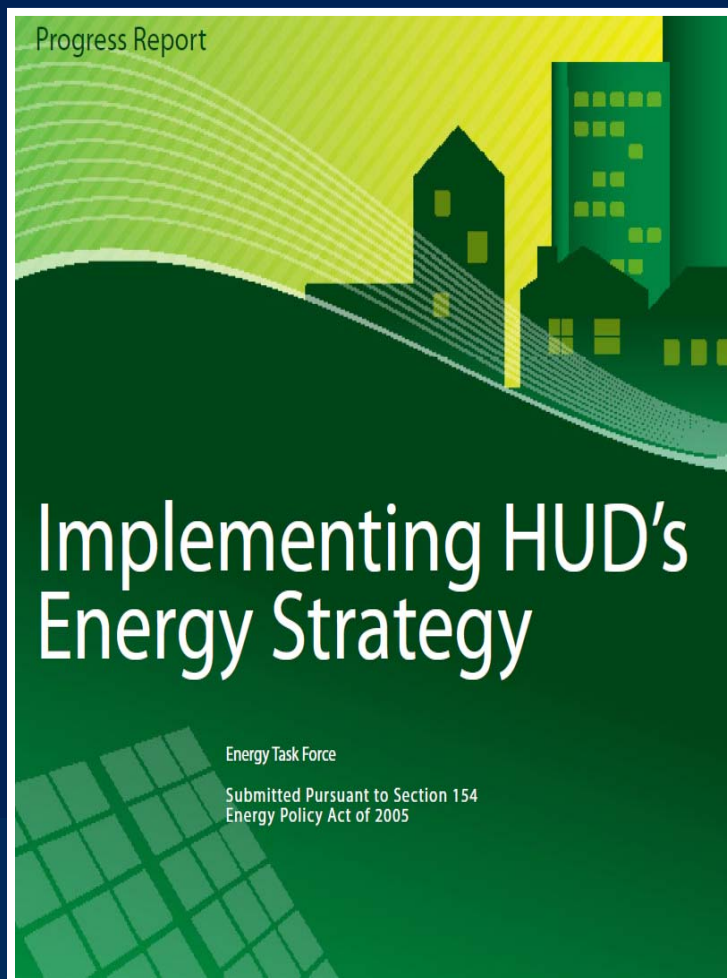


Coordinated Housing and Transportation

- According to several noted scholars, the average American household now spends almost 60 percent of their income on combined housing and transportation costs.
- Congress directed HUD to conduct this study in collaboration with the Federal Transit Administration (FTA) on expanding affordable housing opportunities near transit.



HUD's Energy Action Plan



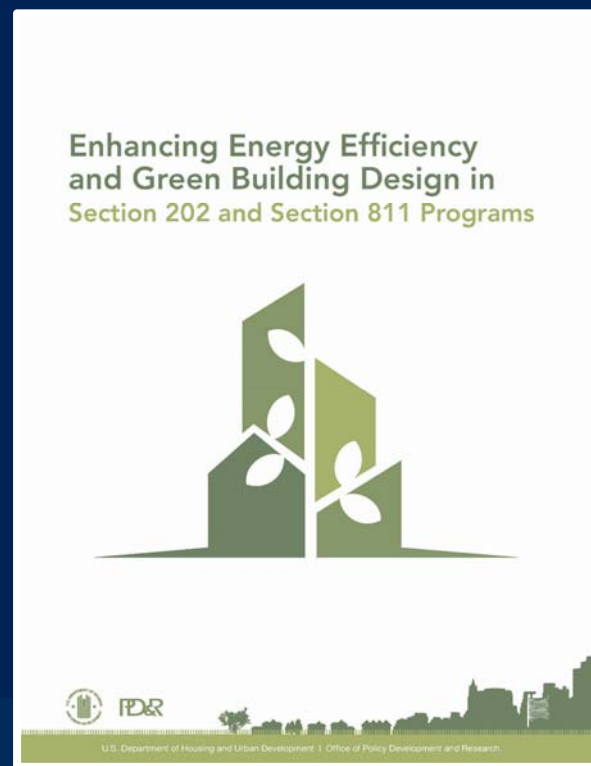
Published in 2008, this action plan identifies 23 policy items to strengthen HUD's commitment to reducing energy consumption and creating a healthier environment. Among these priorities are:

- ✓ Continue to provide policy and program support for greening HUD stock
- ✓ Provide technical support on energy retrofit financing, protocols, guidelines.
- ✓ Provide support for the establishment of energy and green performance measures /metrics



“Green,” energy-efficiency practices

- Enhancing Energy Efficiency and Green Building Design in Section 202 and Section 811 Programs
 - Federal and other programs that support energy efficiency and green building in multifamily housing
 - Technical recommendations
 - Case studies



The Costs and Benefits of Going Green

- PD&R will soon publish *An Evaluation of Affordable Housing Using the National Green Building Standard*.
- This study shows that the incremental costs of bringing recent designs of affordable housing can be affordably and cost-effectively brought into full compliance with a national green building standard.
- It also demonstrates that retrofitting older rental housing to full compliance with a green standard is also affordable and cost effective.



Disaster Planning and Management: FEMA Alternative Housing Evaluation

- Assess technical and human aspects of FEMA Alternative Housing Pilot Program in Gulf Coast states



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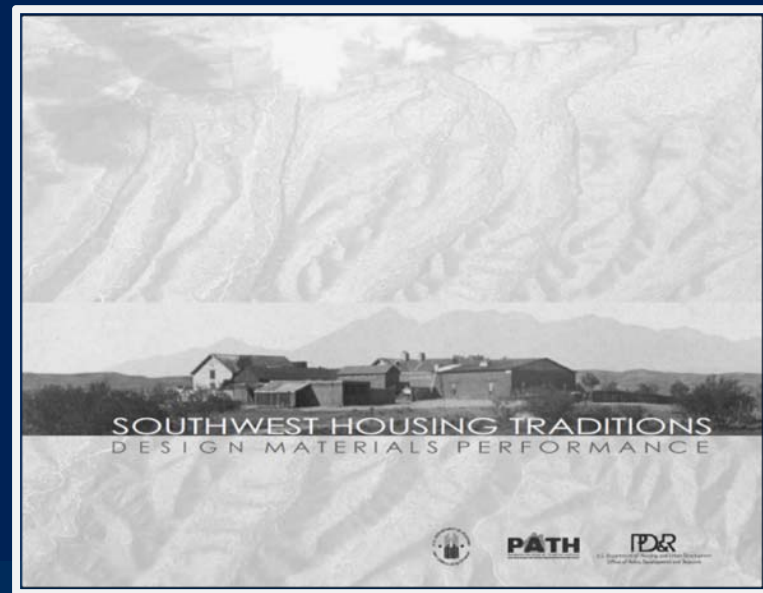
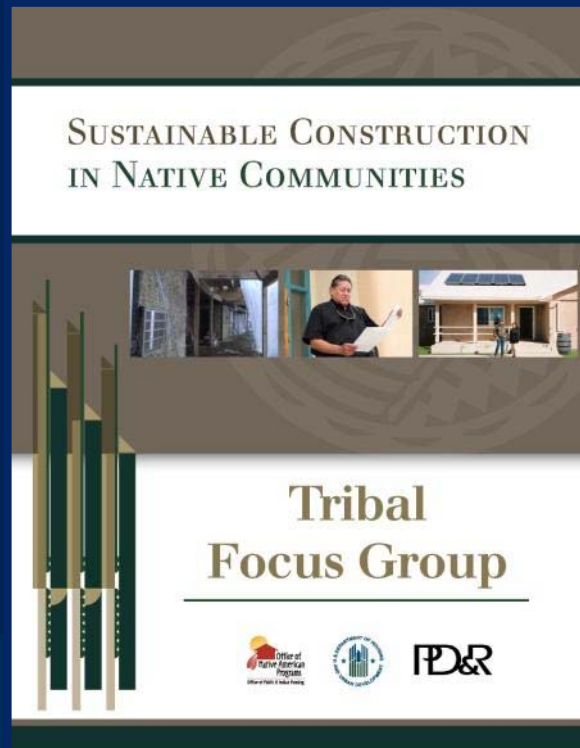
Current Demonstrations:

“Green” Energy-Efficiency Practices

	Power Saver Energy Performance	Green and Energy Retrofit Assessment
<i>Purpose</i>	To support the creation of an alternative financing option that focuses on residential energy improvements	To support HUD’s efforts to modernize the homes of families and communities with energy-efficient improvements
<i>Evaluation focus</i>	The mortgage pilot’s ability to lower residential energy consumption	The building energy performance improvements completed in HUD public and assisted housing funded by the American Recovery and Reinvestment Act (ARRA)
<i>Affiliated program areas</i>	FHA Single Family Housing	Public Housing Capital Fund, FHA Multifamily Housing



Current Demonstration: Sustainable Construction in Underserved Communities



Current Initiatives: Disaster Housing and Mitigation Strategies

- Studying strategies for accessibility and accelerated reconstruction of damaged homes
- Member of Joint Housing Solutions Group, Alternative Housing Pilot Program and National Disaster Housing Task Force



PD&R

Current Initiative: Sustainable Communities Research Grant Program

- **Purpose:** To support efforts by the research community to build on existing evidence-based scholarship in the broad area of sustainability
- **Funding:** \$2.5 million
- **Research Focus:** (1) expanding housing affordability and choice; (2) improving access to community assets through effective transportation systems; (3) healthy community design; (4) energy-efficient, “green” building standards and practices; and a (5) miscellaneous category.
- **Applicants:** \$150,000-\$500,000. Up to 15 awards.
- **Winners:** Six award recipients were announced in September.

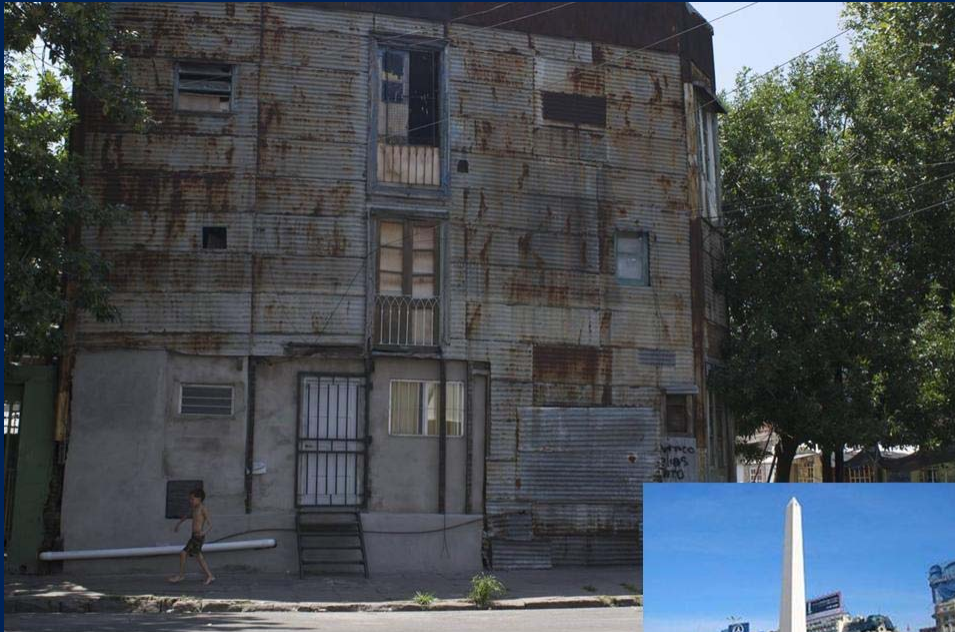


Current Initiative: Partnership for Sustainable Communities

- The Partnership is a collaboration of HUD with the Department of Transportation and the Environmental Protection Agency
 - The Office of Sustainable Housing and Communities (OSHC) is HUD's Partnership representative, and PD&R advises
 - Successor to prior interagency working groups, such as the FTA-HUD Interagency Group for Affordable Housing and Transportation
- OSHC is the HUD lead for efforts to develop Sustainability Performance Measures and Aligning Federal Planning Requirements
- PD&R actively invites staff from HUD program offices (CPD, PIH, Housing, etc.) to participate in Sustainability efforts



Sustainable Urban Housing Competition Winner: Developing Real Estate for Squatters and Tenants of Buenos Aires



One of the largest cities in the world, with 14 million inhabitants, Buenos Aires is a city of stark contrasts



Where over
400,000 people
pay a market rate
rent
to squat in
derelict buildings



Recycling Urban Homes

Habitat for Humanity Argentina
Buenos Aires, Argentina



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Sustainable Urban Housing Competition Winner: Zero Waste, Sustainable Architecture, Renewable Energy



Transforming Waste Into
Renewable Construction Materials

Curadores da Terra (Earth Curators)
Brazil, Sao Paulo



PD&R

Sustainable Urban Housing Competition Winner: Green Development Zone



Green housing, energy, jobs training,
and agriculture

People United for Sustainable Housing
Buffalo, USA



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Cities in Transition: Unterneustadt in Kassel, Germany



Contemporary architecture infill



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Cities in Transition: Unterneustadt in Kassel, Germany



Historic remains incorporated into new Kassel



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HUD Resources

<u>Resource</u>	<u>Site</u>
HUD User	www.huduser.org
Using HUD Datasets	www.huduser.org/portal/pdrdatas_landing.html
Office of Sustainable Housing and Communities	www.hud.gov/sustainability
Regulatory Barriers Clearinghouse	www.huduser.org/portal/rbc
Sustainable Communities Research Highlights	www.huduser.org/portal/rbc/sustainable_community.html
Evidence Matters	www.huduser.org/portal/evidence.html



Speaker: Yianice Hernandez



Deputy Director
of Green Communities

Enterprise Inc.



AIA Residential Knowledge Community Webinar

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Leading with Ideas

DEMONSTRATION THROUGH ACTION

Transforming with Capital

SUSTAINING THROUGH POLICIES AND PARTNERSHIP



Enterprise Green Communities



In 2004, Enterprise launched *Green Communities* with a bold aspiration to prove that:

- Green affordable housing can deliver significant benefits to residents.
- Green and affordable can be one and the same.



2011 Enterprise Green Communities Criteria

Intent of Evaluation Efforts



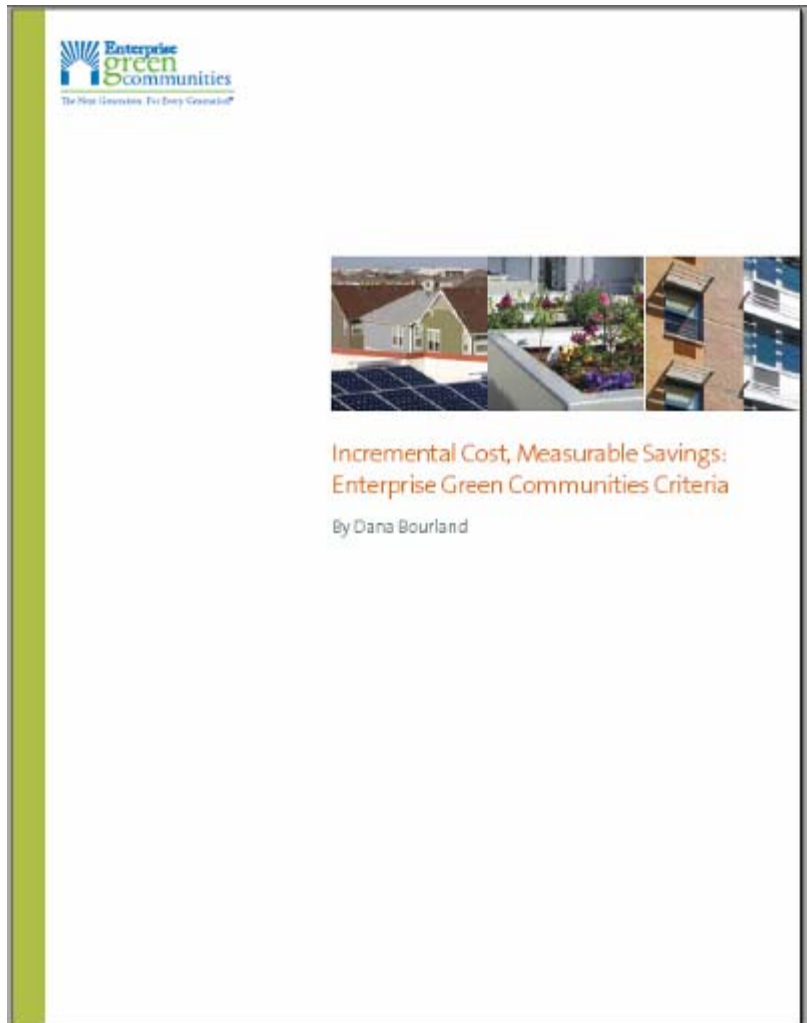
- Assist developers understand costs of going green;
- Share methods to go greener; and
- Ensure the realization of health, economic and environmental benefits.

Methodology

To measure the financial benefit from reduced utility costs over the life of the housing, Enterprise:

- Developed and administered survey to collect data points on costs and utility savings
- Shared results with property managers to quality assure results
- Worked with property owners and various utility companies to collect actual utility data of a subset of projects to verify energy and water savings

Report Findings

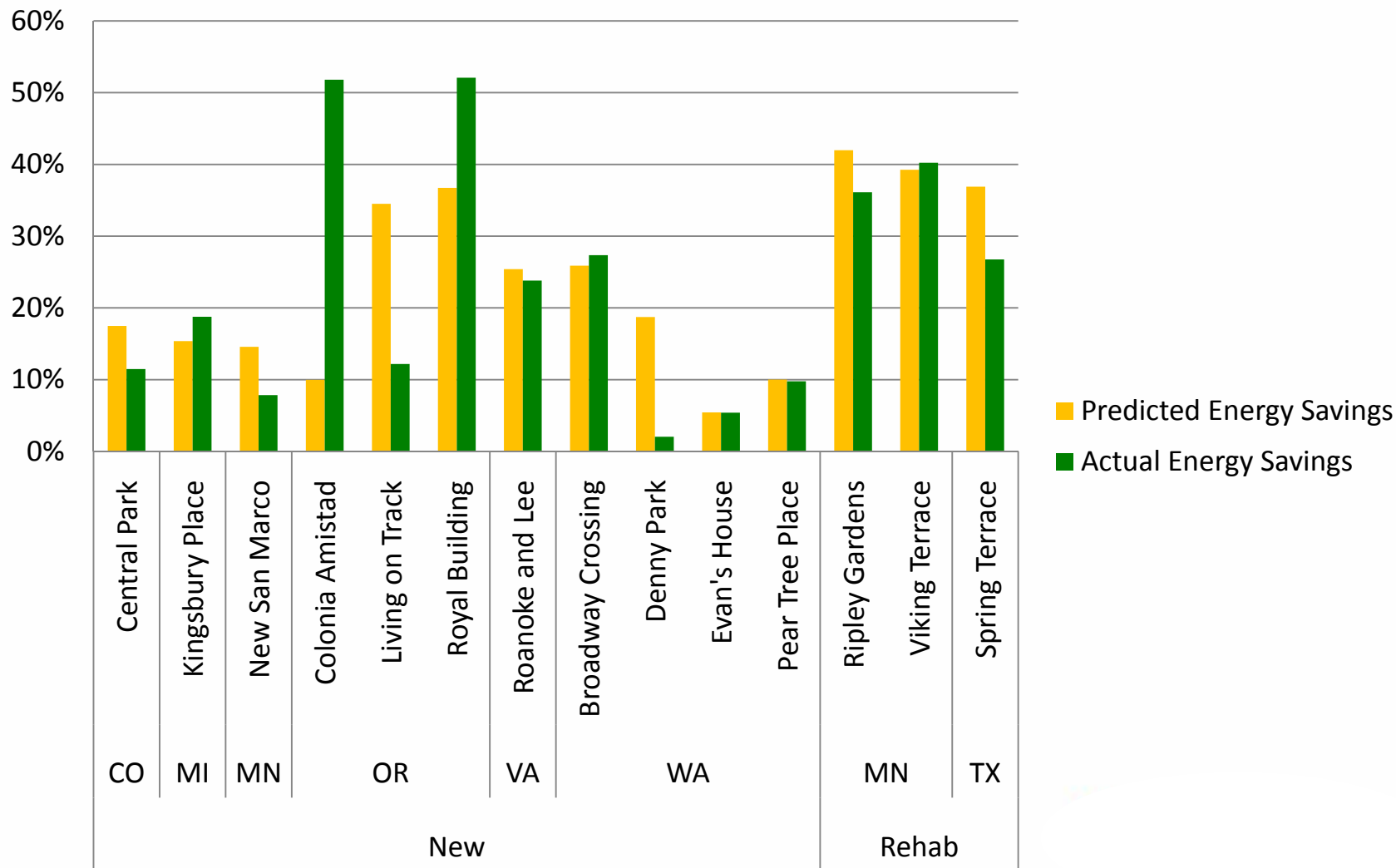


Estimated lifetime savings exceed the initial investment of incorporating Green Communities Criteria into affordable housing

Key Findings

Cost to incorporate the Green Criteria	Projected “Lifetime” Utility Cost Savings
\$4,524 per dwelling unit	\$4,851 per dwelling unit

Predicted and Actual Energy Savings



Quickest Payback = Water Conservation



Installing water-conserving fixtures and appliances result in a very high returns on investment in terms of utility cost savings.

- Savings range from **\$352 to \$935** per home, compared to average cost premium of **\$80** per home.
- In simple payback terms, the investment is recouped in **2 to 3 years**.

Ongoing Evaluation

New Evaluation Report to be released in early 2012

- **Data Set:**
30 affordable housing projects = 2,200 housing units
- **Preliminary analysis:**
Incremental cost ~ 2.7% of TDC (\$4,200 per unit)
- *Davis Langdon will perform financial analysis of the properties*

IAQ Control Strategies

1. Remove Pollutants

Materials with low toxicity, smoke-free building

2. Seal or Isolate

Radon Mitigation, garage isolation

3. Ventilate

Local exhaust, whole-building ventilation

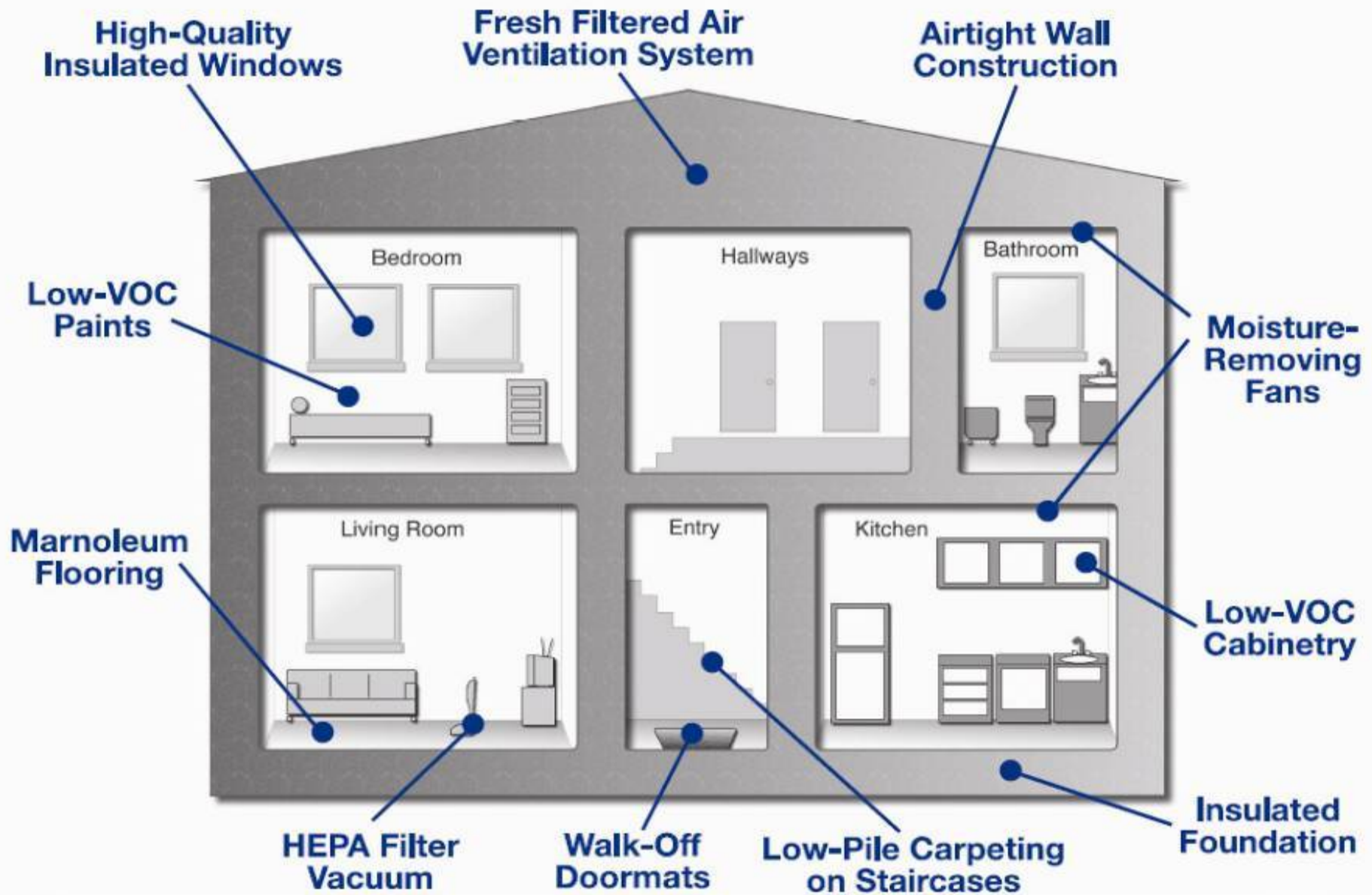
4. Filter



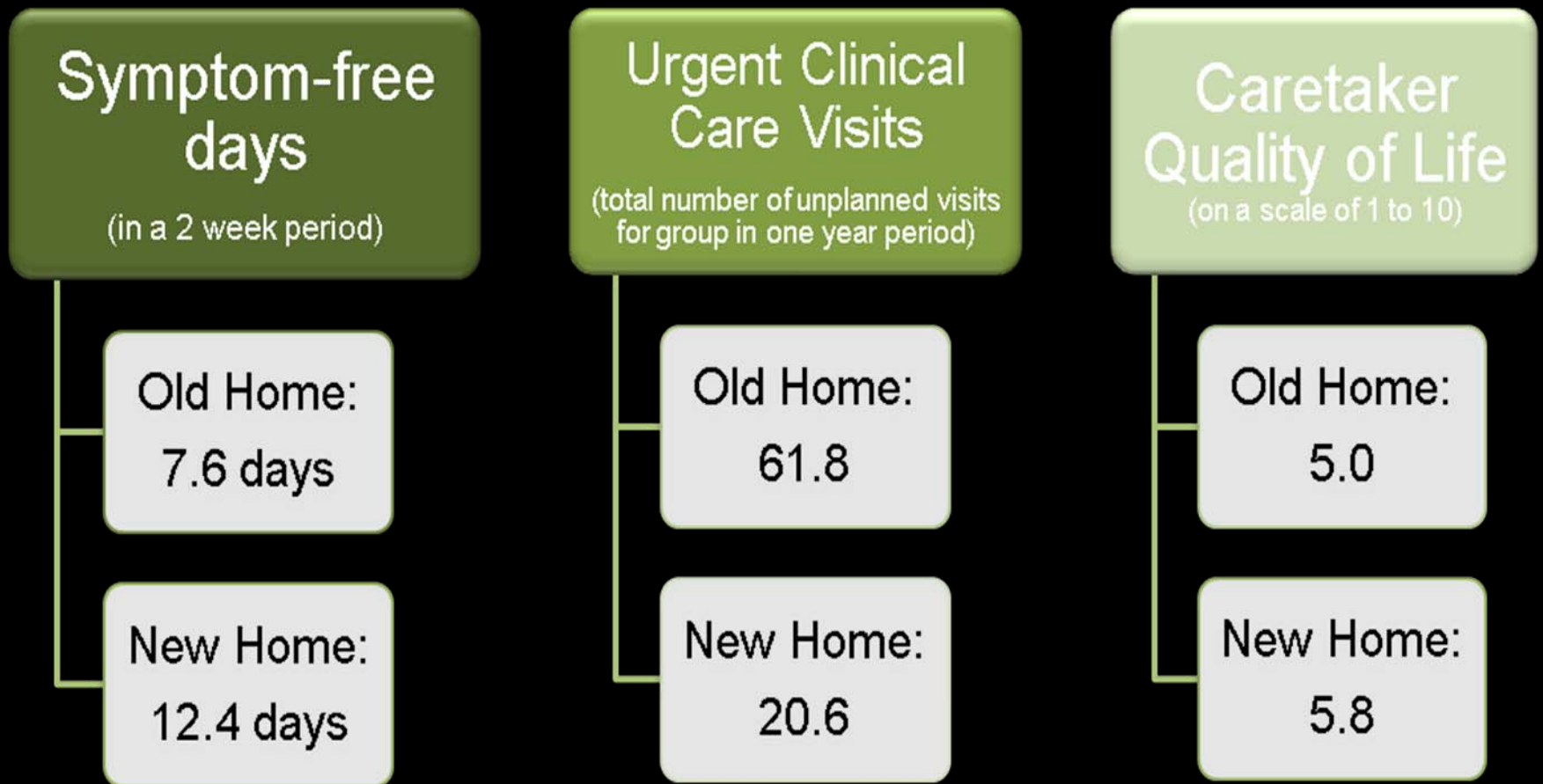
Health Improvements



High Point Community Seattle,
WA February, 2010



Slides Courtesy of Tom Phillips, Seattle Housing Authority
Breathe Easy Homes



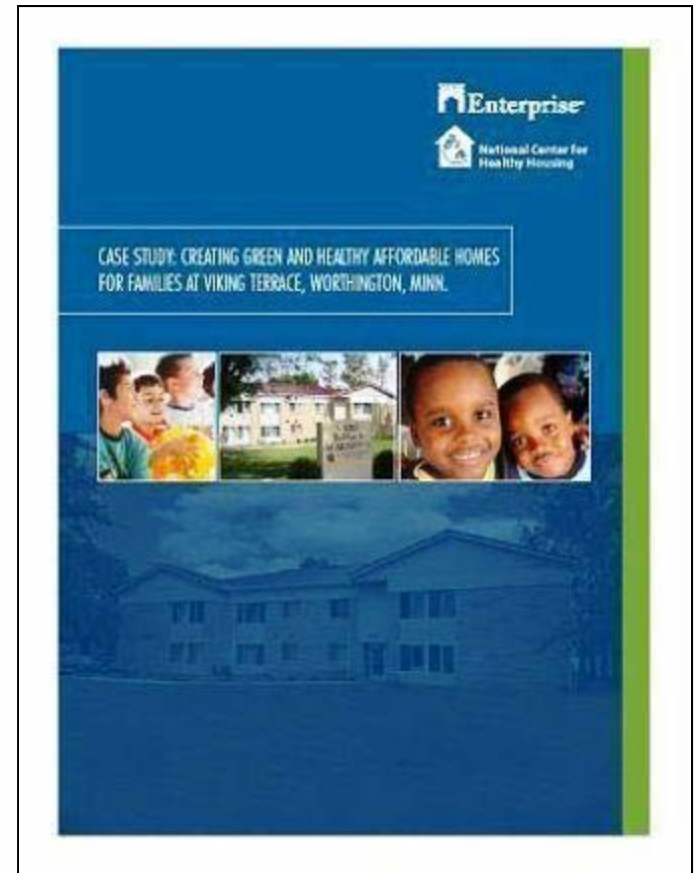
Slides Courtesy of Tom Phillips, Seattle Housing Authority
Results - Breath Easy Homes Study

Green Health Research

National Center for Healthy Housing (NCHH) conducted a 3-year evaluation of residents to assess how green rehabilitation practices can promote health.

Results:

- Significant improvements in general adult health, chronic bronchitis, hay fever, sinusitis, and asthma.
- Improvements in children's general health, respiratory allergies, ear infections, comfort, and safety.



Green Health Research

Watts to Well-Bring: Do Residential Energy Conservation Upgrades Improve Health?

Purpose of Study:

Characterize effect of energy efficiency upgrades on resident health in homes in Boston, Chicago, NYC.



Sponsored by HUD

In collaboration with:

- National Center for Healthy Housing
- Action for Boston Community Development
- Center for Neighborhood Technology
- Tohn Environmental Strategies
- Enterprise Community Partners

Intent of Green Health Research



- **OBJECTIVE:** To measure environmental exposures and to study the health effects of living in green housing.
- **HYPOTHESIS:** Living in a green apartment building will decrease exposure to air pollutants and allergens, and will positively impact health.

Anticipated Outcomes

- ☐ Decreases in the concentrations of environmental asthma triggers.
- ☐ Improvement in air pollutant levels.
- ☐ Improvement in asthma control and quality of life.
- ☐ Improvement in rhinoconjunctivitis symptoms.
- ☐ Improvements in general physical and mental health.
- ☐ Improvements in objective health parameters such as blood pressure, spirometry measurements and inflammatory markers.



Thank you!



For more information:

Website: www.greencommunitiesonline.org

Mailbox: greencommunities@enterprisecommunity.org

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Thank you for joining us!

This concludes the AIA/CES Course #R11004.

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