

Occupant Education for Healthy and Energy Efficient Housing

Materials, Tools and Strategies

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Home Owner Education

Materials, Tools and Strategies

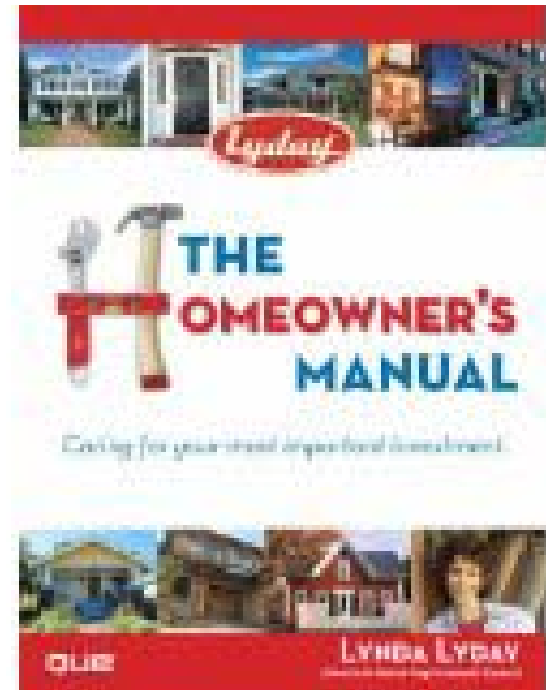
Now that you've created an energy efficient and healthy home, how do you work with the home owner to operate it and maintain it to keep it that way?

- What does this mean to the home repair project?
- What does this mean to the sustainable building initiative?

***The Key to these questions and more is
Home Owner Education***

Home Owners Operations and Maintenance Manual

This type of manual will help to minimize the problems that the home owner may encounter after the remodel and/or during the course of ownership



Home Owners Operations and Maintenance Manual

- It may provide the homeowner with the necessary information, tools and resources to help provide a safe, healthy, energy efficient and environmentally friendly home for the family
- A well maintained home can extend the life of the components and may and can possibly increase the health benefits of the occupants

Operations & Maintenance Manual

Following are a suggested list of the components of the manual:

- Monthly Maintenance Calendar for all components for both new and existing systems such as:
 - CO and smoke detectors as well as fire extinguishers
 - HVAC systems including filters, etc.
- Seasonal Maintenance Calendar
 - Fireplace and Chimney's
 - Basement and/or Crawlspace
 - Decking, Patios and Fencing, etc.

Operations & Maintenance Manual

- And during the course of the building or repair of the structure, a list of all suppliers, installers, contractors, date of services performed and specific manufacturing information (serial numbers, etc.) should be part of the manual
- However, the manual is *only* effective if the home owner is educated in the many components of their new or renovated home

Home Owner Education *Strategies*

- There are numerous scientific studies that have demonstrated the importance of this homeowner education, such as the *Breathe Easy Homes* in King County, Washington



Breath Easy Homes

These homes were designed and built specifically for asthmatic clients utilizing many 'healthy and energy efficient home' components such as:

- Positive pressure house ventilation systems with air filtering, tempered fresh air supply, and heat recovery to improve indoor air quality
- Linoleum flooring in living areas and bedrooms, recycled content vinyl flooring in bathrooms and kitchens, and low-pile carpeting in stairs and halls to reduce allergens
- Low/no off-gas trim and millwork to reduce urea formaldehyde bonding agents

Home Owner Education *Strategies*

During the post occupancy evaluation, many of the ‘energy efficient and healthy home components’ were found to be in serious disrepair and subsequently ineffective

- This was mostly due to:
 - Lack of any one-on-one personal education and/or interaction with the client in their primary language
 - Lack of client education on the proper operations and maintenance of the components

Home Owner Education *Strategies*

- It is this *one-on-one* client education that has made programs so successful in creating positive change in the home environment
- And it is this one-on-one education that results in significant behavior changes – changes that can affect the health and performance of the home as well as the health of the family

Home Owner Education *Strategies*

- You must work with the family and assess what they are capable of doing
 - Physically
 - Financially
- What are they willing to do?
- Are your suggestions culturally appropriate?
- But more importantly it is important to instill a sense of empowerment – that they can create and maintain a home that is safe, energy efficient and most of all healthy for their family and especially for their children

Home Owner Education *Tools and Strategies*

- Using some kind of checklist or assessment, areas of concern are identified
- These concerns and needs are prioritized
- And then low cost and/or no cost solutions are identified and suggested



Home Owner Education

Materials, Tools and Strategies

Healthy Housing doesn't necessarily depend on the 'built' quality of the home environment

A high quality "Green and Sustainable home" *can* be the foundation for a healthy home

However, creating and maintaining a healthy home more often depends on the resident and what that resident does to and in their home – this is the **critical** part of home owner education

Questions?

Thank you!
Aileen Gagney



**National Center for
Healthy Housing**

Creating healthy and safe homes for children through practical and proven steps.

Energy+Health for Volunteer Home Repair Programs



**National Center for
Healthy Housing**

Creating healthy and safe homes for children
through practical and proven steps.

The Goal

Integrate energy efficiency and healthy homes strategies into volunteer home repair programs

- Designed to meet local programs' needs
- Basic, low-cost measures





**National Center for
Healthy Housing**

Creating healthy and safe homes for children
through practical and proven steps.

Project Partners

National Center for Healthy Housing

- Advanced Energy -- Arnie Katz
- Livable Housing -- Armand Magnelli

Habitat for Humanity International

Rebuilding Together

CLEARCorps



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through practical and proven steps.

Local Partners

Rebuilding Together

- Philadelphia
- Montgomery County, MD
- Roanoke
- Omaha

Habitat

- Roanoke Valley
- Council Bluffs

CLEARCorps

- Omaha Health Kids Alliance





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through practical and proven steps.

Energy+Health Training

- 2-day training in modules
- Target audience is local construction managers
- And those who assess homes





Local Staff Want “How To” Info & Tools

Assessing Homes’ Needs

- Checklist for visual assessment
- Limited environmental sampling

Energy+Health Interventions

- Specifications
- Instructional worksheets



Visual Assessment Checklist

- Complements current checklists used to select homes
- Consolidated checklist – repairs, energy, health, safety
- Solution-based – Identifies work needed room by room
- Paper-based checklist for the field – w/ database option

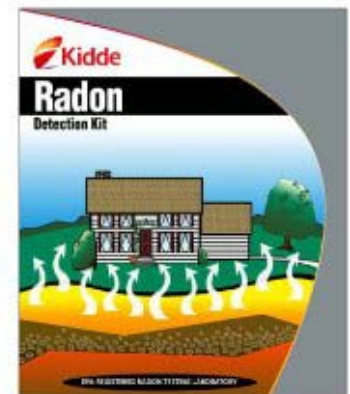


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Checking for Health Hazards

- Ambient CO detector (\$150)
- Gas leak detector (\$200)
- Moisture meter (\$150)
- Radon test kit (\$15)





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through practical and proven steps.

Specifications Define

Specs for 50+ Energy+Health measures

Especially helpful for work contracted out

Generic cost estimates

Must Be Done



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through practical and proven steps.

7012 COMMODE, REPLACE, 1.28-GPF, 2008 [GREEN SPEC] EA \$350.00

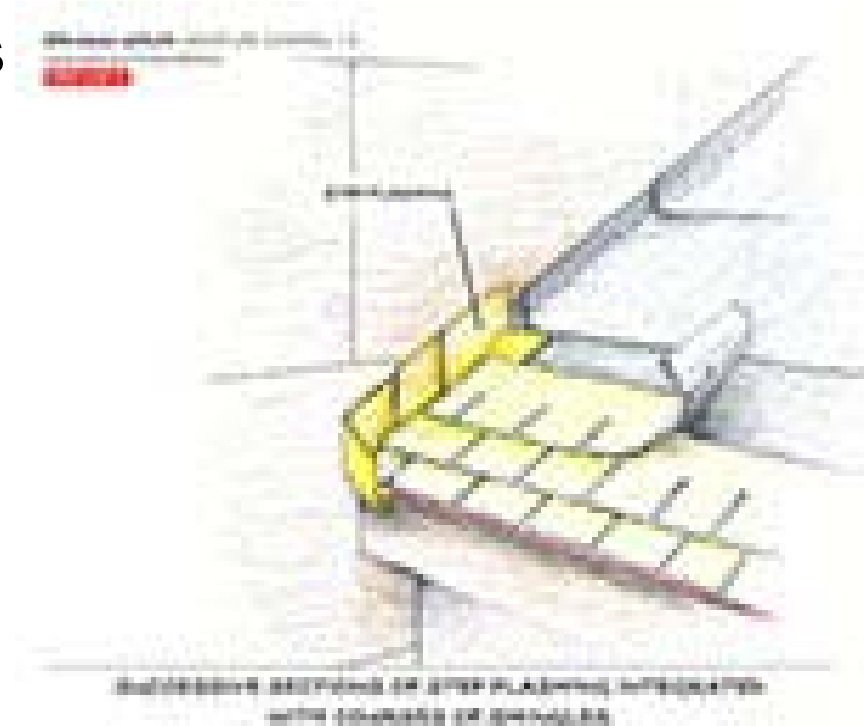
Install a 1.28 GPF close coupled, white, vitreous china commode such as an American Standard FloWise Compact Cadet 3 EL 2403.128, or any commode tested through the latest "Maximum Performance" (MaP) testing sponsored by Canadian Water and Wastewater Association (CWWA), the California Urban Water Conservation Council (CUWCC), the U.S.-Canadian Alliance for Water Efficiency (AWE) and Veritec Consulting Inc. that has shown to score 800 or better on the MaP Flush Performance test (grams of solid waste removed in a single flush). See the following link for the latest report.

<http://www.cuwcc.org/MaPTesting.aspx> Include a manufacturer's approved plastic or pressed wood white seat, supply pipe, shut-off valve, and wax seal.



“How To” Instructional Worksheets

- Step-by-step instructions
- Easy to follow illustrations
- Will assist house captains and volunteers





Energy+Health Interventions

56 E+H interventions identified

Only basic energy measures that can be
done without combustion safety testing

Healthy Homes interventions are organized
by the 7 Healthy Homes Principles



Taking Energy+Health to Scale

- Refine tools and materials based on feedback from pilot training
- Implementation by “early adopter” affiliates
- Make tools, training and materials widely available





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For More Information

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Rebuilding Together's Safe and Healthy Homes Model

Amanda Walz





Mission : Bringing volunteers and communities together to improve the homes and lives of homeowners in need.

Vision: A safe and healthy home for every person.



Green Housing



- Home Rehab is inherently “green”
- By reducing energy use we are decreasing expenses for homeowners
- Tasks volunteers can easily complete and learn from



Safe at Home



- Elder falls prevention and key home safety interventions
- Supported through occupational therapists who volunteer
- Standardized curriculum/program for all affiliates



Energy+Health and Rebuilding Together

- Continues our holistic approach to home rehab
- Provides tools we can share with volunteers to more fully integrate the concepts of health and energy efficiency





Healthy Habitat Homes

Mike Welch

Habitat for Humanity International

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What is a **Healthy** Home?

Healthy Homes are ...

- **Dry**
- **Pest-free**
- **Ventilated**
- **Safe**
- **Clean**
- **Maintained**
- **“Free” of Known Health Risks,** including:
 - Lead, mercury, asbestos,
 - Tobacco smoke,
 - Radon,
 - CO, NO_x, & other combustion pollutants
 - Formaldehyde & other VOC's
 - Asthma triggers (mold & other biologicals, particles, pesticides, and other chemicals)

Indoor airPLUS and Habitat for Humanity

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Safe and Healthy Housing: Design, Construction, Renovation and Work Site Practices

Healthy housing for homeowners

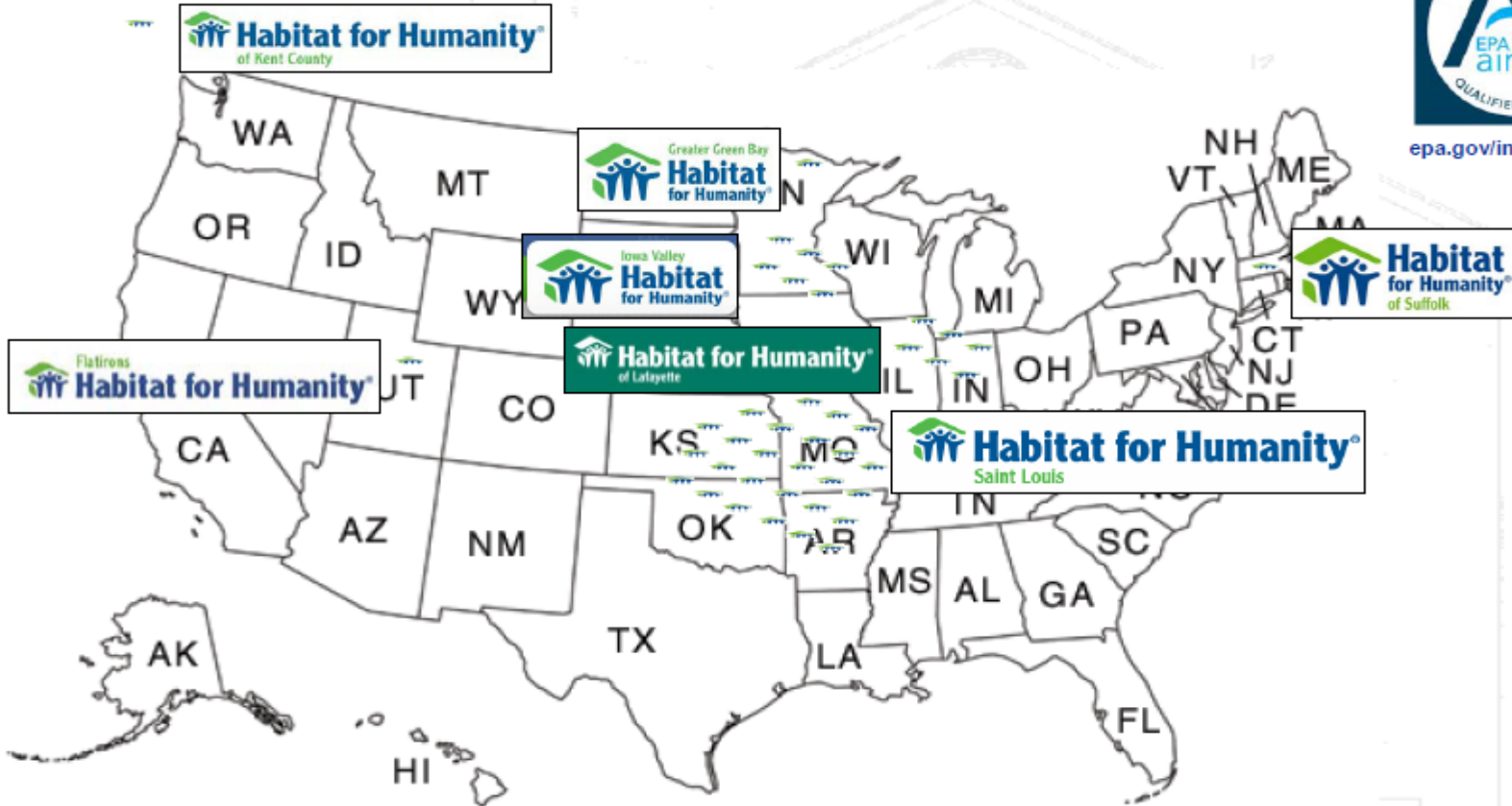
The first stage in building healthy housing is addressing key indoor air quality issues in the design and construction process. The most critical of these key issues are moisture and mold, proper intentional ventilation, radon, and carbon monoxide.

Our Habitat for Humanity affiliates strive to build quality, healthy houses with our homeowner partners. However, new homeowners fill the other critical part of having a healthy home; they complete the whole picture with healthy home maintenance. Additional healthy indoor air quality issues can only be addressed by homeowners themselves, such as: (1) the effects of second-hand tobacco smoke on family members; (2) the impact of household pesticides and harsh chemicals on our water sources and general health; and (3) the proper maintenance of a home to reduce its impact on asthma sufferers.

HFHI Affiliates on the Map!



epa.gov/indoorairplus



Indoor Air Quality (IAQ)

ENERGY EFFICIENCY AND SUSTAINABLE BUILDING

[Summary of LEED Homes](#) [Going Green](#)

Habitat for Humanity Saint Louis is very proud of its efforts and best practices using a holistic approach to building an energy efficient and sustainable home for the end user, the community and the environment.

Habitat for Humanity International, in partnership with the Home Depot Foundation Sustainable Building Program, provided training, resources and financial support towards our 2008 LEED Platinum Certification. The [2008 Case Study](#) provides a synopsis of the project.

It's not easy being green

[Summary of LEED Homes](#) : An explanation of the specifics of building a LEED Home.

[Going Green](#) : Practical ways to green your life.



Our Green Partners



The [USGBC](#) (US Green Building Council) certifies our homes, via third party verifiers, using the LEED (Leadership in Energy and Environmental Design) criteria for an energy and water efficient and environmentally friendly.



To earn the [ENERGY STAR](#) and Indoor airPLUS designations, our homes must meet strict guidelines for energy efficiency set by the U.S. EPA, have additional features designed to help protect indoor air pollutants and is also third party verified.

**We're leading
the way in
Green building.**



Home Ownership & Construction

How We're Building Green

Energy Efficient Benefits

2010 Builds

Paying It Forward

Education

Mobile Home Study

Energy Conservation Tips

Recycling Programs

Community Partnerships



Help Families
Donate Now



Volunteer Today
Get Involved



Start the Process
Apply for a Home

[How We Help](#) > [Home Ownership & Construction](#) > [Energy Efficient Benefits](#)

Energy Efficient Benefits

Because of the building materials and techniques used by Iowa Valley Habitat, our homes meet the following energy-efficient standards:



Home Energy Rating Systems

The HERS Index is a scoring system established by the Residential Energy Services Network (RESNET) in which a home built to the specifications of the HERS Reference Home (based on the 2006 International Energy Conservation Code) scores a HERS Index of 100, while a net zero energy

home scores a HERS Index of 0. The lower a home's HERS index, the more energy efficient it is in comparison to the HERS Reference Home.

Existing homes today typically score between 120-150. Iowa Valley Habitat's most recent energy efficient home received a 53 HERS index, meaning the home is 47% more energy efficient than the HERS Reference Home.



EPA Indoor airPLUS

A partnership between EPA, builders, raters and other allies, the Indoor airPLUS program improves indoor air quality by including more than 30 additional home design and construction features to help protect homeowners from a host of health problems associated with poor indoor air quality, including eye irritation, allergies, headaches and respiratory problems such as asthma. Iowa Valley Habitat homes offer moisture control, radon control, pest barriers, improved heating, ventilation and air conditioning (HVAC) systems, combustion pollutant

control, low emission materials and third party verification.



ENERGY STAR

ENERGY STAR is the government-backed symbol for energy efficiency. The

A New Model



New Partners

- The National Center for Healthy Housing (NCHH) is working with national and local partners to develop tools, training, and technical materials to help local volunteer-based organizations integrate healthy homes and basic energy efficiency measures into their home repair projects. In addition to working with three national networks – Rebuilding Together, Habitat for Humanity International, and CLEARCorps

