

2007 WBA Remodeling Awards

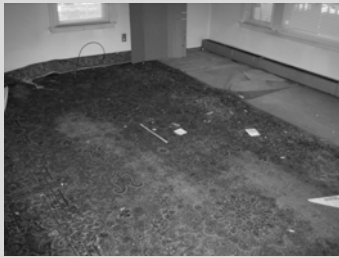
Project Category:
Green Remodeling Project

“Green Built Home Makeover”



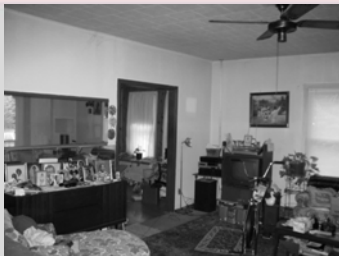
Early this year, the Madison Area Builders Association decided to embark on a philanthropic project that would educate the public about green remodeling and energy efficiency by remodeling a home—the Green Built Home Makeover. With the help of dozens of volunteer companies and donors, two volunteer project managers began demolition on a home in Downtown Madison. After two months, senior citizen Hazel Tookes was given the key to her Green Built Remodeled home – now complete with more than \$100,000 in energy efficient environmentally friendly improvements.

The project included hundreds of hours of volunteer labor and required Tookes to move out of her home for the duration of the project. Nearly a century old, the home had a myriad of problems, including: lack of insulation, pest damage, asbestos, lead paint, fire damage, flood damage, knob and tube wiring, damaged flooring, drafts and poor heat in the homeowners bedroom, and numerous other problems.



Before: The home had not been updated in over 30 years.

After: The home presents a new face: High quality, green finishes and energy efficiency.

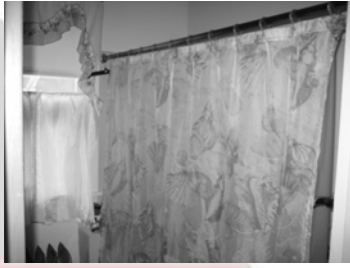


After demolition was complete and wood and metals were recycled, the usual phases of construction followed. But with this project, each part of the work demonstrated the Greenest practices that the process and volunteers could provide.

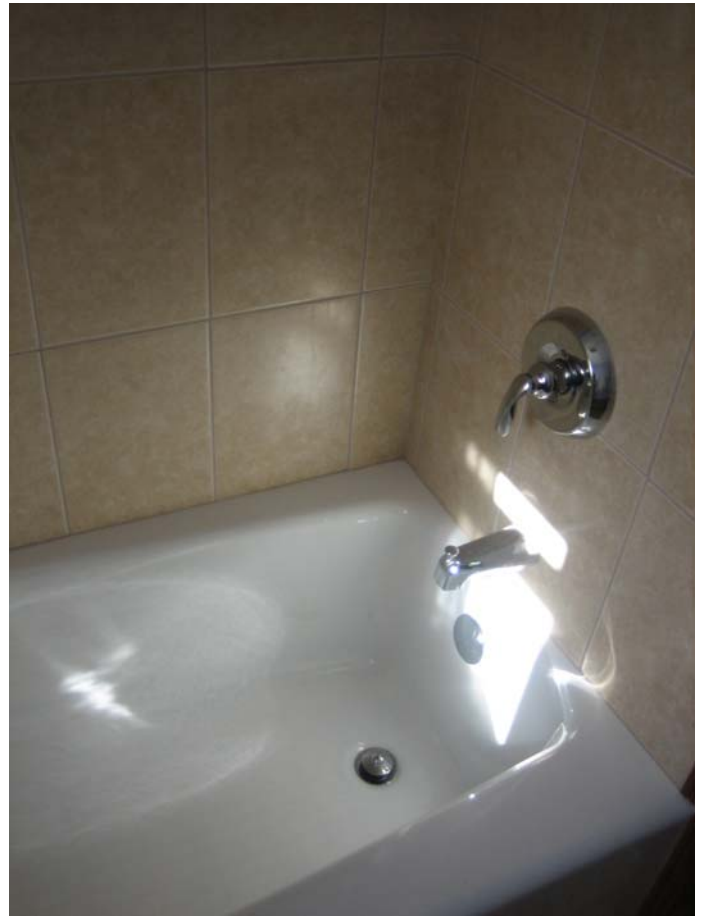


New electric was installed for safety and to bring the dwelling up to code. A hybrid heat pump heats and cools the home, formerly heated by an inefficient steam boiler. Solar hot water collection is installed to capture mid-afternoon sun.

Old galvanized water pipe was removed and PEX water supplies installed. The masonry chimney flue was eliminated, and a new .64 EF power vented water heater provides backup heat for cloudy days. Ring joists and attic penetrations were spray foamed, and R-50 cellulose insulation was installed in the attic and dense-packed in the walls.



Recycled content gypsum board was installed and textured with low-VOC products. Water-based paint and floor finishes were used, and the original maple floors were refinished. Locally-made cabinetry was installed with low-VOC MDF, while the countertop MDF was sealed to prevent outgassing. New Energy Star windows keep the home comfortable and draft-free, summer and winter. The attic was vented properly, while low-maintenance aluminum soffit and fascia were installed to for low-side ventilation. Low-VOC California Closet products were installed in bedrooms and the pantry, and almost all lighting in the home is compact fluorescent. Even the new furniture, donated thanks to the MABA Womens Council, is made primarily of solid wood to avoid typical outgassing from MDF.

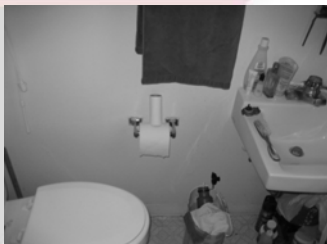


Since the homeowner is a senior citizen, one project manager who is a Certified Graduate Remodeler and Certified Aging-in-Place Specialist, gave consideration to design features – including comfort height countertops, accessible fixtures and door hardware, task lighting and accessible California Closets. Even a linen cabinet was provided in the small bathroom, and grab bars for the shower.



Before: The small bathroom had a small wall-hung sink and no storage.

After: While all fixtures remain in their original location, a small counter top was created for a corner sink and there is a small linen cabinet below the window on the right side of the photo where a radiator used to be placed.





The Green Built Home Makeover (GBHM) was marketed via news media to a wide range of audiences – from first-time homeowners to senior citizens. The message that was sent was that everyone can use green remodeling techniques in their home and take bits and pieces of green remodeling to suit their needs. At an open house for the public, we saw this demonstrated by people who wanted to do something as simple as use low-VOC paint and fluorescent light bulbs, to people inquiring about the solar water collection panels and hybrid heat pump.

Media coverage included series news coverage on local NBC, ABC and CBS TV affiliates – the most substantial was a week-long series leading up to the GBHM finale aired on the 6 o'clock news on NBC.

The culmination of the marketing efforts was a ribbon-cutting ceremony that was broadcast on all three networks locally on Nov. 2. Additionally the GBHM was featured in the Wisconsin State Journal, Capital Times, Sustainable Times, Isthmus, Sauk Prairie Star and www.madison.com – reaching the entire South Central Wisconsin market.



Before: The kitchen cabinetry was dated and the floor deteriorating. The soffit was full of mouse nests and was one of many air leaks in the old home.

After: The new kitchen is functional and green with a built-in table space, Linoleum floor, low-VOC cabinetry and ENERGY STAR appliances.

Above: The dining room has a faux finish using Benjamin Moore Aura low-VOC paint.





Final Assessment & Results:

The project was required to earn 30 points for a remodeling that does not affect the interior of the home. While the most stringent Green remodel to date earned over 100 points, this all-volunteer project earned an amazing 90 points for its energy conservation and green friendly product selections. (Details are shown the attached spreadsheet.)

A Home Performance with ENERGY STAR consultation helped to identify problems at the outset, and quantify the results at completion. The air sealing work reduced the air infiltration by 51%, from 3200 CFM to 1580 CFM, and the owner is expected to save around \$1000 per year on her energy bills. Carbon and sulfur emissions are expected to be reduced by over 20% each.

By all measures the inaugural year of this volunteer project is a success: It was completed on time and under budget, as many volunteer companies stepped up to fill in gaps in labor and material donations even as the project was underway.



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Wisconsin Drywall

Green Built Remodeled Home Points: 90

Section A: Siting, Land Use

- 1. (1) Home located within 0.5 miles of a bus stop, bike route, or transit stop.
- 2. (1) Home located within 0.5 miles of shopping/offices/retail.
- 3. (1) Home located within 0.5 miles of a school.

Section B: Landscape Conservation, Stormwater Management

- 10. (2) Site disturbance limited to within 20 feet of structures and paved areas.
- 19. (1) Provide a list of native, non-invasive plants to homeowners.

Section C: Energy Efficiency *Home Performance w/Energy Star*

- 1. (4) A Home Performance with ENERGY STAR in-home evaluation was conducted prior to work being done.
- 2. (2) A post-performance evaluation and inspection was conducted after construction.

Insulation & Air Sealing

- 15. (1) Gaps between exhaust fan housings and dry-wall caulked.
- 16. (1) All penetrations to the exterior are sealed both inside and outside.
- 18. (3) Temporarily remove attic insulation and seal top plates.
- 21. (4) Fill existing sidewalls to capacity with insulation.
- 25. (1) Insulate attic pull-down or scuttle to min.R-19.

Glazing

- 27. (1) Windows are ENERGY STAR qualified or have a U value ≤ 0.35 (NFRC label).

List manufacturer: Milgard Windows & Doors

- 30. (1) 25% of windows fitted with insulated window coverings.

- 31. (1) No metal frame windows in house, including basements, unless thermally broken.

- 32. (1) East facing glass NFRC label solar heat gain coefficient (SHGC) less than 0.40.

List manufacturer: Milgard Windows & Doors

- 33. (1) West facing glass NFRC label solar heat gain coefficient (SHGC) less than 0.40.

List manufacturer: Milgard Windows & Doors

Mechanical Systems

- 38. (2) 95% or higher efficiency furnace (ENERGY STAR label encouraged).

List manufacturer & model #: Bryant Evolution Series 355

- 39. (2) Furnace is equipped with an electronically commutated motor (ECMs) - (variable speed motor). List manufacturer & model #: Bryant Evolution Series 355

- 40. (1) High efficiency air conditioner (Minimum SEER



14). Manufacturer & model #: Bryant Evolution Series 286, SEER 15.5

- 41. (1) No newly added ductwork located in unconditioned space or exterior walls.
- 45. (1) Two properly supported ceiling fans installed (ENERGY STAR label encouraged).
- 57. (1) High efficiency fireplace such as direct vent gas, Rumford, or masonry heater or no fireplace installed.

Appliances

Lighting & Electrical Systems

- 75. (1) Light-colored interior walls, ceiling and soffit. Mid tone to light color flooring/carpet (min. 75%).
- 76. (1) Install ENERGY STAR qualified light fixtures (min 4 fixtures).
- 77. (1) Furnish five compact fluorescent light bulbs to homeowner. (ENERGY STAR labeled encouraged).
- 78. (1) Halogen or compact fluorescent lighting in place of incandescent down-lights.
- 80. (1) Motion detector activators or photocells/ timers on all exterior lighting.
- 85. (3) No can lights added in insulated ceiling.

Envelope, Walls, Ceiling

- 45. (1) Continuous drainage plane installed behind siding.
- 46. (2) Drywall with 90+% recycled-content gypsum. List product: National Gypsum Proform
- 55. (2) Utilize an approach not listed that meets the goals of this section. List approach: Reused wood siding on exterior

Insulation

- 56. (1) Recycled content insulation (min. 25% recycled content and min. 50% of insulation used). List product: Cellulose
- 57. (2) Blown/sprayed-in insulation used at walls.

Finish Floor

- 80. (2) No vinyl flooring or base trim.
- 81. (2) Reuse existing flooring materials (min. 50% of flooring in areas affected by remodeling).

Door, Cabinetry, Trim

- 84. (1) Domestically grown interior wood panel doors.

Section E: Indoor Air Quality

- 7. (1) Operable windows on two walls for rooms with two exterior wall surfaces.
- 17. (1) Bath fans installed with smooth ducting with short, straight runs.
- 19. (2) Whole house dehumidification system installed.
- 24. (1) Install CO detector(s).

IAQ Materials

- 30. (2) Formaldehyde-free insulation.
- 36. (3) Use of hard surface floors such as wood, concrete, tile or linoleum (min. 90% of floor area).
- 37. (2) Natural linoleum with low toxic adhesives and backing in place of vinyl flooring.

IAQ Finishes, Adhesives



- 45. Low V.O.C paints (<250 g/l for water based, <380 g/l for solvent based) used throughout. One point each:
 - 1 interior primer,
 - 1 interior finish,
- 48. (1) Water-based urethane finishes on wood floors.

Section F: Plumbing, Water Conservation

- 11. (1) All showers are equipped with only one showerhead.
- 69. (4) Active solar domestic hot water heating system installed (min. 50% of water heating load).

SECTION G: WASTE REDUCTION, RECYCLING AND DISPOSAL

- 1. (1) Posted job site recycling plan.
- 2. (1) Recycle or reuse job site waste, 1 point for each material category:
 - glass, aluminum cans and plastic bottles (required by state law, no point)
 - cardboard (required by state law, no point)
 - 1 wood scraps (75% landfill diversion)
 - 1 metal (75% landfill diversion)
- 3. Salvage or reuse old building materials (on or off site), 1 point for each material category:
 - 1 cabinets, millwork, or trim (75% reuse)
- 6. (2) Require subcontractors (contract language) to participate in waste reduction and recycling efforts.
- 14. (2) Design for disassembly, reuse, and recyclability.
- 15. (1) Donate excess or salvaged materials to a non-profit organization or charity.

SECTION H: BUILDER OPERATIONS

- 2. (1) At least one recent action taken to visibly market Green Built Home program.
- 3. (1) Conduct homeowner orientation during final walkthrough (point out Green Built features, how to maintain them, operate them, etc).
- 6. (1) Builder attendance at one recent green building related educational event.
List event, sponsor, and date: Green Remodel, Engergy Center of Wisconsin, 5-22-07; Greening the Heartland, USGBC, 7-13-07 and 7-14-07
- 15. (1) Homeowner provided with an operations and maintenance manual.

