

# LEED for Homes Project Snapshot

**Kent Co. Habitat for Humanity  
Hovey House  
Grand Rapids, Michigan  
LEED GOLD**

**48%** Expected Energy Savings  
Based on HERS Score

**86%** Construction Waste  
Diverted from Landfill



Photo Courtesy of: Habitat for Humanity

## STRATEGIES AND RESULTS

This total gut-rehab project is made possible by the City of Grand Rapids and HUD via the Neighborhood Stabilization Project (NSP). It has achieved the coveted LEED for Homes Gold certification and will offer this hard-working Habitat family a very energy efficient home.

## EXEMPLARY PERFORMANCE

A unique post and beam Generations timber frame porch made from reclaimed power poles will grace the front of this home-- easily the most challenging rehab project HFHKC has undertaken.

## LEED™ Facts Hovey House



LEED for Homes  
Certification Awarded July 2010

**Gold 75\***

Innovation in Design 6/11

Location & Linkages 10/10

Sustainable Sites 11/22

Water Efficiency 4/15

Energy & Atmosphere 21.5/38

Materials & Resources 10.5/16

Indoor Environmental Quality 11/21

Awareness & Education 1/3

\*Out of 136 possible points

## PROJECT BASICS

Project Type	Affordable
Conditioned Space	1,591 sq ft
Bedrooms	4
Bathrooms	2
Lot Type	Previously Developed
Construction Type	Gut Rehab

## KEYS TO SUCCESS

HVAC Type	96% Efficient Gas
Drought Tolerant	95% of Plants
Efficient Fixtures	Shower, Sink & Toilet
Air Filtration	Enhanced HRV
Outstanding Community Resources	

## THE LEED FOR HOMES DIFFERENCE

Construction Waste Management Plan	<input checked="" type="checkbox"/> YES!
On-Site Performance Tests	<input checked="" type="checkbox"/> YES!
Custom Durability Planning Checklist	<input checked="" type="checkbox"/> YES!
Third-Party Verified Documentation	<input checked="" type="checkbox"/> YES!

## About the Project Team

The project team is lead by David Zimmermann, site is supervised by Rick Rottschaffer and design work was created by Eric Hughes of Image Design LLC.

The GRCC Green Remodeling program lead by Keith Ferguson has assisted in the project and students have been a key part of the transformation of this home.

## LEED for Homes Provider

AES

## About LEED for Homes

LEED for Homes is a voluntary, third-party certification program developed by residential experts and experienced builders. LEED promotes the design and construction of high-performance green homes, and encourages the adoption of sustainable practices throughout the building industry.



[www.usgbc.org/homes](http://www.usgbc.org/homes)

The information provided is based on that stated in the LEED® project certification submittals. USGBC does not warrant or represent the accuracy of this information. Each building's actual performance is based on its unique design, construction, operation, and maintenance. Energy efficiency and sustainable results will vary.



1029 HOVEY S.W.  
Grand Rapids, Michigan

HAS SUCCESSFULLY ACHIEVED THE FOLLOWING LEVEL OF CERTIFICATION ESTABLISHED BY THE U.S. GREEN BUILDING COUNCIL  
IN THE LEED GREEN BUILDING RATING SYSTEM™ AS VERIFIED BY AN INDEPENDENT GREEN RATER.

LEED FOR HOMES

**GOLD**

A handwritten signature in black ink, appearing to be "R." with a horizontal line underneath.

S. RICHARD FEDRIZZI, PRESIDENT & CEO  
U.S. GREEN BUILDING COUNCIL

July 2010

A handwritten signature in black ink, appearing to be "T. Cole" with a horizontal line underneath.

TIM COLE, BOARD CHAIRMAN  
U.S. GREEN BUILDING COUNCIL



**LEED**  
for **HOMES**

## LEED for Homes Project Checklist

Builder Name:	Habitat for Humanity of Kent County Inc.
Project Team Leader:	Dave Zimmerman, Habitat for Humanity of Kent County, Inc.
Home Address (Street/City/State):	1029 Hovey SW, Grand Rapids, Michigan

### Project Description

Building Type: **Single detached**

# of Bedrooms: **4**

Project type: **Affordable**

Floor Area: **1,591**

### Adjusted Certification Thresholds

Certified: **35.0** Gold: **65.0**

Silver: **50.0** Platinum: **80.0**

<b>Project Point Total</b>	<b>Final Credit Category Point Totals</b>				
Prelim: 59 + 0 maybe pts	Final: 75	ID: 6	SS: 11	EA: 21.5	EQ: 11
<b>Certification Level</b>		LL: 10	WE: 4	MR: 10.5	AE: 1
Prelim: Silver	Final: Gold				

date last updated :

last updated by :

**Max Pts. Preliminary Rating**

**Available**

Y / Pts Maybe No

Notes

**Project**

**Points**

Innovation & Design Process (ID)	(Minimum 0 ID Points Required)	Max: 11	Y:3	M:0	Final: 6
<b>1. Integrated Project Planning</b>					
1.1 Preliminary Rating	Prereq.				Y
Target performance tier:	<b>Silver</b>				
1.2 Integrated Project Team (meet all of the following)		1	0	0	1
<input checked="" type="checkbox"/> a) Individuals or organizations with necessary capabilities	<input checked="" type="checkbox"/> c) Regular meetings held with project team				
<input checked="" type="checkbox"/> b) All team members involved in various project phases					
1.3 Professional Credentialed with Respect to LEED for Homes		1	0	0	unavailable until further notice 0
1.4 Design Charrette		1	0	0	0
1.5 Building Orientation for Solar Design (meet all of the following)		1	0	0	0
<input type="checkbox"/> a) Glazing area on north/south walls 50% greater than on east/west walls	<input type="checkbox"/> c) At least 450 sq. ft. of south-facing roof area, oriented for solar applications				
<input type="checkbox"/> b) East-west axis is within 15 degrees of due east-west	<input type="checkbox"/> d) 90% of south-facing glazing is shaded in summer, unshaded in winter				
<b>2. Quality Management for Durability</b>					
2.1 Durability Planning (meet all of the following)	Prereq.				Y
<input checked="" type="checkbox"/> a) Durability evaluation completed	<input checked="" type="checkbox"/> d) Durability strategies incorporated into project documentation				
<input checked="" type="checkbox"/> b) Strategies developed to address durability issues	<input checked="" type="checkbox"/> e) Durability measures listed in durability inspection checklist				
<input checked="" type="checkbox"/> c) Moisture control measures from Table 1 incorporated					
2.2 Durability Management (meet one of the following)	Prereq.				Y
<input checked="" type="checkbox"/> Builder has a quality management process in place	<input type="checkbox"/> Builder conducted inspection using durability inspection checklist				
2.3 Third-Party Durability Management Verification		3	3	0	3

<b>3. Innovative or Regional Design</b>						
3.1	Innovation 1 (ruling #):		1	0	0	1
3.2	Innovation 2 (ruling #):	<b>MR 2.2 Exemplary Performance</b>	1	0	0	1
3.3	Innovation 3 (ruling #):		1	0	0	0
3.4	Innovation 4 (ruling #):		1	0	0	0
<b>Location &amp; Linkages (LL)</b> (Minimum 0 LL Points Required)			<b>Max: 10</b>	<b>Y:5</b>	<b>M:0</b>	<b>Final: 10</b>
<b>1. LEED for Neighborhood Development</b>						
1	LEED for Neighborhood Development		10	0	0	0
<b>2. Site Selection</b>						
2	Site Selection ( <i>meet all of the following</i> )		2	0	0	2
	<input checked="" type="checkbox"/> a) Built above 100-year floodplain defined by FEMA					
	<input checked="" type="checkbox"/> b) Not built on habitat for threatened or endangered species					
	<input checked="" type="checkbox"/> c) Not built within 100 ft of water, including wetlands					
	<input checked="" type="checkbox"/> d) Not built on land that was public parkland prior to acquisition					
	<input checked="" type="checkbox"/> e) Not built on land with prime soils, unique soils, or soils of state significance					
<b>3. Preferred Locations</b>						
3.1	Edge Development		1	0	0	0
OR	3.2	Infill	2	2	0	2
AND/OR	3.3	Previously Developed	1	0	0	1
<b>4. Infrastructure</b>						
4	Existing Infrastructure		1	1	0	1
<b>5. Community Resources / Transit</b>						
5.1	Basic Community Resources / Transit ( <i>meet one of the following</i> )		1	1	0	0
	<input type="checkbox"/> a) Within 1/4 mile of 4 basic community resources					
	<input type="checkbox"/> b) Within 1/2 mile of 7 basic community resources					
	<input type="checkbox"/> c) Within 1/2 mile of transit services providing 30 rides per weekday					
OR	5.2	Extensive Community Resources / Transit ( <i>meet one of the following</i> )	2	0	0	0
	<input type="checkbox"/> a) Within 1/4 mile of 7 basic community resources					
	<input type="checkbox"/> b) Within 1/2 mile of 11 basic community resources					
	<input type="checkbox"/> c) Within 1/2 mile of transit services providing 60 rides per weekday					
OR	5.3	Outstanding Community Resources / Transit ( <i>meet one of the following</i> )	3	0	0	3
	<input type="checkbox"/> a) Within 1/4 mile of 11 basic community resources					
	<input checked="" type="checkbox"/> b) Within 1/2 mile of 14 basic community resources					
	<input type="checkbox"/> c) Within 1/2 mile of transit services providing 125 rides per weekday					
<b>6. Access to Open Space</b>						
6	Access to Open Space		1	1	0	John Ball Park Zoological Garden 1

**1. Site Stewardship**

1.1	Erosion Controls During Construction <i>(meet all of the following)</i>	<i>Prereq.</i>			<b>Y</b>
	<input checked="" type="checkbox"/> a) Stockpile and protect disturbed topsoil from erosion.			<input checked="" type="checkbox"/> d) Provide swales to divert surface water from hillsides	
	<input checked="" type="checkbox"/> b) Control the path and velocity of runoff with silt fencing or equivalent.			<input checked="" type="checkbox"/> e) Use tiers, erosion blankets, compost blankets, etc. on sloped areas.	
	<input checked="" type="checkbox"/> c) Protect sewer inlets, streams, and lakes with straw bales, silt fencing, etc.				
1.2	Minimize Disturbed Area of Site <i>(meet the appropriate requirements)</i>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>
	Where the site is not previously developed, meet all the following:				
	<input type="checkbox"/> a) Develop tree / plant preservation plan with "no-disturbance" zones				
	<input type="checkbox"/> b) Leave 40% of buildable lot area, not including area under roof, undisturbed				
	OR Where the site is previously developed, meet all the following:				
	<input type="checkbox"/> c) Develop tree / plant preservation plan with "no-disturbance" zones AND				
	<input checked="" type="checkbox"/> Rehabilitate lot; undo soil compaction and remove invasive plants AND				
	<input type="checkbox"/> Meet the requirements of SS 2.2				
	OR <input checked="" type="checkbox"/> d) Build on a lot of 1/7 acre or less, or 7 units per acre.				

**2. Landscaping**

2.1	No Invasive Plants	<i>Prereq.</i>			<b>Y</b>
2.2	Basic Landscaping Design <i>(meet all of the following)</i>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>
	<input checked="" type="checkbox"/> a) Any turf must be drought-tolerant.			<input checked="" type="checkbox"/> d) Add mulch or soil amendments as appropriate.	
	<input checked="" type="checkbox"/> b) Do not use turf in densely shaded areas.			<input checked="" type="checkbox"/> e) All compacted soil must be tilled to at least 6 inches.	
	<input checked="" type="checkbox"/> c) Do not use turf in areas with slope of 25%				
AND/OR	2.3 Limit Conventional Turf	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<input type="text" value="75%"/> Percentage of designed landscape softscape area that is turf				
AND/OR	2.4 Drought-Tolerant Plants	<b>2</b>	<b>2</b>	<b>0</b>	<b>2</b>
	<input type="text" value="95%"/> Percentage of installed plants that are drought-tolerant				
OR	2.5 Reduce Overall Irrigation Demand by at Least 20%	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<input type="text"/> Percentage reduction in estimated irrigation water demand			<a href="#">(calculate)</a>	

**3. Reduce Local Heat Island Effects**

3	Reduce Local Heat Island Effects <i>(meet one of the following)</i>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<input type="checkbox"/> a) Locate trees / plantings to provide shade for 50% of hardscapes			<input type="checkbox"/> b) Install light-colored, high-albedo materials for 50% of hardscapes	

<b>4. Surface Water Management</b>				
4.1	Permeable Lot	4	0 0	2
	<input type="text" value="85%"/> vegetative landscape			
	<input type="text" value="0%"/> permeable paving			
	<input type="text" value="0%"/> impermeable surfaces directed to infiltration features			
	<input type="text" value="15%"/> other impermeable surfaces			
4.2	Permanent Erosion Controls ( <i>meet one of the following</i> )	1	1 0	1
	<input type="checkbox"/> a) For portions of lot on steep slope, use terracing and retaining walls			
	<input checked="" type="checkbox"/> b) Plant trees, shrubs, or groundcover			
4.3	Management of Runoff from Roof ( <i>meet any, see Rating System for pts</i> )	2	0 0	0
	<input type="checkbox"/> a) Install permanent stormwater controls to manage runoff from the home			
	<input type="checkbox"/> b) Install vegetated roof to cover 50% of roof area			
	<input type="checkbox"/> c) Install vegetated roof to cover 100% of roof area			
	<input type="checkbox"/> d) Have lot designed by professional to manage runoff from home on-site			
<b>5. Nontoxic Pest Control</b>				
5	Pest Control Alternatives ( <i>meet any of the following, 1/2 pt each</i> )	2	1 0	1
	<input type="checkbox"/> a) Keep all wood at least 12" above soil			
	<input checked="" type="checkbox"/> b) Seal external cracks, joints, etc. with caulking and install pest-proof screens			
	<input type="checkbox"/> c) Include no wood-to-concrete connections, or separate connections with dividers			
	<input checked="" type="checkbox"/> d) Install landscaping so mature plants are 24" from home			
	e) In 'moderate' to 'very heavy' termite risk areas:			
	<input type="checkbox"/> f) Treat all cellulosic material with borate product to 3' above foundation			
	<input type="checkbox"/> g) Install sand or diatomaceous earth barrier			
	<input type="checkbox"/> h) Install steel mesh barrier termite control system			
	<input type="checkbox"/> i) Install non-toxic termite bait system			
	<input type="checkbox"/> j) Use noncellulosic wall structure			
	<input type="checkbox"/> k) Use solid concrete foundation walls or pest-proof masonry wall design			
<b>6. Compact Development</b>				
6.1	Moderate Density	2	0 0	2
	<input type="text" value="1"/> # of total units on the lot			
	<input type="text" value="0.1"/> lot size (acres)			
	<input type="text" value="8.8"/> density (units/acre)			
OR	6.2 High Density	3	0 0	0
OR	6.3 Very High Density	4	0 0	0
<b>Water Efficiency (WE) (Minimum 3 WE Points Required)</b>				
		<b>Max: 15</b>	<b>Y:6</b>	<b>M:0</b>
				<b>Final: 4</b>
<b>1. Water Reuse</b>				
1.1	Rainwater Harvesting System	4	0 0	0
	<input type="text"/> Percentage of roof area used for harvesting			
	<input type="text"/> Application			
AND/OR	1.2 Graywater Reuse System	1	0 0	0
OR	1.3 Use of Municipal Recycled Water System	3	0 0	0

<b>2. Irrigation System</b>			
2.1	High-Efficiency Irrigation System ( <i>meet any of the following, 1 pt each</i> )	3	0 0 0
	<input type="checkbox"/> a) Irrigation system designed by EPA Water Sense certified professional <input type="checkbox"/> b) Irrigation system with head-to-head coverage <input type="checkbox"/> c) Install central shut-off valve <input type="checkbox"/> d) Install submeter for the irrigation system <input type="checkbox"/> e) Use drip irrigation for 50% of planting beds <input type="checkbox"/> f) Create separate zones for each type of bedding	<input type="checkbox"/> g) Install timer or controller for each watering zone <input type="checkbox"/> h) Install pressure-regulating devices <input type="checkbox"/> i) High-efficiency nozzles with distribution uniformity of at least 0.70. <input type="checkbox"/> j) Check valves in heads <input type="checkbox"/> k) Install moisture sensor or rain delay controller	
AND/OR	2.2 Third-party Inspection	1	0 0 0
OR	2.3 Reduce Overall Irrigation Demand by at Least 45%	4	0 0 0
	<input type="checkbox"/> Full points earned in SS 2.5 <input type="text"/> Percentage reduction in estimated irrigation water demand		<a href="#">(calculate)</a>
<b>3. Indoor Water Use</b>			
3.1	High-Efficiency Fixtures and Fittings ( <i>meet any of the following, 1 pt each</i> )	3	3 0 0
	<input type="checkbox"/> a) Average flow rate of lavatory faucets is $\leq 2$ gpm <input type="checkbox"/> b) Average flow rate for all showers is $\leq 2.0$ gpm per stall	<input type="checkbox"/> c) Average flow rate for all toilets is $\leq 1.3$ gpf; OR <input type="checkbox"/> Toilets are dual-flush; OR <input type="checkbox"/> Toilets meet the EPA Water Sense specification	
3.2	Very High-Efficiency Fixtures and Fittings ( <i>meet any, 2 pts each</i> )	6	6 0 4
	<input checked="" type="checkbox"/> a) Average flow rate of lavatory faucets is $\leq 1.5$ gpm; OR <input type="checkbox"/> Lavatory faucets meet the EPA Water Sense specification	<input checked="" type="checkbox"/> b) Average flow rate for all showers $\leq 1.75$ gpm per stall <input type="checkbox"/> c) Average flow rate for all toilets is $\leq 1.1$ gpf	
<b>Energy &amp; Atmosphere (EA)</b> (Minimum 0 EA Points Required)		<b>Max: 38 Y:21.5 M:0</b>	
<b>Final: 21.5</b>			
<b>1. Optimize Energy Performance</b>			
1.1	Performance of ENERGY STAR for Homes	Prereq.	Y
1.2	Exceptional Energy Performance	34	19.5 0 19.5
	<input type="text" value="5"/> IECC climate zone	<input type="text" value="58"/> HERS Index	
<b>7. Water Heating</b>			
7.1	Efficient Hot Water Distribution System ( <i>meet one of the following</i> )	2	0 0 0
	<input type="checkbox"/> a) Structured plumbing system <input type="checkbox"/> b) Central manifold distribution system	<input type="checkbox"/> c) Compact design of conventional system	
7.2	Pipe Insulation	1	1 0 1
<b>11. Residential Refrigerant Management</b>			
11.1	Refrigerant Charge Test	Prereq.	Y
11.2	Appropriate HVAC Refrigerants ( <i>meet one of the following</i> )	1	1 0 1
	<input checked="" type="checkbox"/> a) Use no refrigerants <input type="checkbox"/> b) Use non-HCFC refrigerants	<input type="checkbox"/> c) Use refrigerants that complies with global warming potential equation	

**1. Material-Efficient Framing**

1.1	Framing Order Waste Factor	<i>Prereq.</i>			<b>Y</b>
1.2	Detailed Framing Documents	1	0	0	0
1.3	Detailed Cut List and Lumber Order	1	0	0	0
	<input type="checkbox"/> Requirements of MR 1.2 have been met	<input type="checkbox"/> Detailed cut list and lumber order corresponding to framing plans or scopes			
AND/OR	1.4 Framing Efficiencies ( <i>meet any of the following, see Rating System for pts</i> )	3	2	0	0
	<input type="checkbox"/> Precut framing packages	<input type="checkbox"/> Stud spacing greater than 16" on center			
	<input type="checkbox"/> Open-web floor trusses	<input type="checkbox"/> Ceiling Joist spacing greater than 16" on center			
	<input type="checkbox"/> Structural insulated panel walls	<input type="checkbox"/> Floor Joist spacing greater than 16" on center			
	<input type="checkbox"/> Structural insulated panel roof	<input type="checkbox"/> Roof rafter spacing greater than 16" on center			
	<input type="checkbox"/> Structural insulated panel floors	<input type="checkbox"/> Two of the following: Size headers for loads; ladder blocking; drywall clips; 2-stud cor			
OR	1.5 Off-site Fabrication ( <i>meet one of the following</i> )	4	0	0	0
	<input type="checkbox"/> a) Panelized construction	<input type="checkbox"/> b) Modular, prefabricated construction			

**2. Environmentally Preferable Products**

2.1	FSC Certified Tropical Wood ( <i>meet both of the following</i> )	<i>Prereq.</i>			<b>Y</b>
	<input checked="" type="checkbox"/> a) Provide suppliers with a notice of preference for FSC products; AND	<input checked="" type="checkbox"/> b) All purchased wood is either not tropical, FSC-certified, or reclaimed			
	<input checked="" type="checkbox"/> Request country of manufacture for each wood product				
2.2	Environmentally Preferable Products ( <i>meet any, 1/2 pt each</i> )	8	1.5	0	8
	<b>Assembly : component</b>	<b>(a) EPP</b>	<b>(b) Low emission</b>	<b>(c) Local production</b>	
	Exterior wall: framing	<input checked="" type="checkbox"/> type: 95% reused		<input checked="" type="checkbox"/>	
	Exterior wall: siding or masonry	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Floor: flooring	<input checked="" type="checkbox"/> (45%) type: recycled carpet	<input type="checkbox"/> 90% hard flooring	<input type="checkbox"/> (45%)	
	Floor: flooring	<input checked="" type="checkbox"/> (90%) type: recycled laminate	<input type="checkbox"/> SCS FloorScore	<input type="checkbox"/> (90%)	
	Floor: carpet		<input type="checkbox"/> Green Label Plus	<input type="checkbox"/>	
	Floor: framing	<input checked="" type="checkbox"/> type: 100% reused		<input checked="" type="checkbox"/>	
	Foundation: aggregate			<input checked="" type="checkbox"/>	
	Foundation: cement	<input checked="" type="checkbox"/> type: 100% reused		<input checked="" type="checkbox"/>	
	Interior wall: framing	<input checked="" type="checkbox"/> type: 95% reused		<input checked="" type="checkbox"/>	
	Interior wall, ceiling: gypsum board			<input checked="" type="checkbox"/>	
	Interior wall, ceiling, millwork: paint	<input type="checkbox"/> type: _____	<input checked="" type="checkbox"/> type: Low VOC		
	Landscape: decking or patio	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Other: cabinet	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Other: counter	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Other: door	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Other : trim	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Other : adhesive, sealant		<input checked="" type="checkbox"/> type: 2% VOC		
	Other : window frame	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Roof: framing	<input checked="" type="checkbox"/> type: 95% reused		<input checked="" type="checkbox"/>	
	Roof: roofing	<input type="checkbox"/> type: _____		<input type="checkbox"/>	
	Roof, floor, wall: insulation	<input checked="" type="checkbox"/> type: re-cycled (cellulose)	<input type="checkbox"/> type: _____	<input checked="" type="checkbox"/>	
	Roof, floor, wall (2 of 3): sheathing	<input checked="" type="checkbox"/> type: 95% reused		<input checked="" type="checkbox"/>	



<b>3. Waste Management</b>				
3.1	Construction Waste Management Planning <i>(meet both of the following)</i>	<i>Prereq.</i>		Y
	<input checked="" type="checkbox"/> a) Investigate local options for waste diversion		<input checked="" type="checkbox"/> b) Document diversion rate for construction waste	
3.2	Construction Waste Reduction <i>(use one of the following methods)</i>	3	1	0
	<input type="text"/> a) pounds waste / square foot			
	<input type="text"/> cubic yards waste / 1,000 square feet			
	<input type="text" value="86%"/> b) percentage of waste diverted			
<b>Indoor Environmental Quality (EQ)</b> (Minimum 6 EQ Points Required) <span style="float:right;"><b>Max: 21 Y:13 M:0</b></span> <span style="float:right;"><b>Final: 11</b></span>				
<b>1. ENERGY STAR with Indoor Air Package</b>				
1	ENERGY STAR with Indoor Air Package	13	0	0
<b>2. Combustion Venting</b>				
2.1	Basic Combustion Venting Measures <i>(meet all of the following)</i>	<i>Prereq.</i>		Y
	<input checked="" type="checkbox"/> a) no unvented combustion appliances		<input type="checkbox"/> d) space, water heating equipment designed with closed combustion; OR	
	<input checked="" type="checkbox"/> b) carbon monoxide monitors on each floor		<input checked="" type="checkbox"/> space and water heating equipment has power-vented exhaust; OR	
	<input checked="" type="checkbox"/> c) no fireplace installed, OR		<input type="checkbox"/> space and water heating equipment located in detached or open-air facility; OR	
	<input type="checkbox"/> all fireplaces and woodstoves have doors		<input type="checkbox"/> no space- or water-heating equipment with combustion	
2.2	Enhanced Combustion Venting Measures <i>(meet one of the following)</i>	2	2	0
	<b>Type of Fireplace or stove</b>	<b>Better practice (1 pt)</b>	<b>Best practice (2 pts)</b> <i>(must also meet Better Practice)</i>	
	None		<input checked="" type="checkbox"/> granted automatically	
	Masonry wood-burning fireplace	<input type="checkbox"/> masonry heater	<input type="checkbox"/> back-draft potential test	
	Factory-built wood-burning fireplace	<input type="checkbox"/> listed by testing lab and meets EPA standards	<input type="checkbox"/> back-draft potential test	
	Woodstove and fireplace insert	<input type="checkbox"/> listed by testing lab and meets EPA standards	<input type="checkbox"/> back-draft potential test	
	Natural gas, propane, or alcohol stove	<input type="checkbox"/> listed, power- or direct-vented, fixed doors	<input type="checkbox"/> electronic pilot	
	Pelle stove	<input type="checkbox"/> EPA certified or meets safety requirements	<input type="checkbox"/> power- or direct-venting	
<b>3. Moisture Control</b>				
3	Moisture Load Control <i>(meet one of the following)</i>	1	0	0
	<input type="checkbox"/> a) Additional dehumidification system		<input type="checkbox"/> b) Central HVAC system equipped with additional dehumidification mode	
<b>4. Outdoor Air Ventilation</b>				
4.1	Basic Outdoor Air Ventilation <i>(meet one of the following)</i>	<i>Prereq.</i>		Y
	<input type="checkbox"/> a) Located in a climate with $\leq 4,500$ infiltration degree days		<input checked="" type="checkbox"/> c) Intermittent ventilation	
	<input type="checkbox"/> b) Continuous ventilation		<input type="checkbox"/> d) Passive ventilation	
4.2	Enhanced Outdoor Air Ventilation <i>(meet one of the following)</i>	2	2	0
	<input type="checkbox"/> a) In climates with $\leq 4,500$ infiltration degree days, install active ventilation system		<input checked="" type="checkbox"/> b) Install heat recovery system	
4.3	Third-Party Performance Testing	1	0	0

5. Local Exhaust						
5.1	Basic Local Exhaust ( <i>meet all of the following</i> )	Prereq.			Y	
	<input checked="" type="checkbox"/> a) Bathroom and kitchen exhaust meets ASHRAE Std. 62.2 air flow requirement		<input checked="" type="checkbox"/> c) Air exhausted to outdoors			
	<input checked="" type="checkbox"/> b) Fans and ducts designed and installed to ASHRAE Std. 62.2		<input checked="" type="checkbox"/> d) ENERGY STAR labeled bathroom exhaust fans			
5.2	Enhanced Local Exhaust ( <i>meet one of the following</i> )	1	1	0	1	
	<input type="checkbox"/> a) Occupancy sensor		<input checked="" type="checkbox"/> c) Automatic timer tied to switch			
	<input type="checkbox"/> b) Automatic humidistat controller		<input type="checkbox"/> d) Continuously operating exhaust fan			
5.3	Third-Party Performance Testing	1	1	0	0	
6. Distribution of Space Heating and Cooling						
6.1	Room-by-Room Load Calculations	Prereq.			Y	
6.2	Return Air Flow / Room-by-Room Controls ( <i>meet one of the following</i> )	1	1	0	0	
	A. Forced-Air Systems		B. Nonducted HVAC Systems			
	<input type="checkbox"/> a) Return air opening of 1 sq. inch per cfm of supply		<input type="checkbox"/> Flow control valves on every radiator			
	<input type="checkbox"/> b) Limited pressure differential between closed room and adjacent spaces					
6.3	Third-Party Performance Test / Multiple Zones ( <i>meet one of the following</i> )	2	0	0	0	
	A. Forced-Air Systems		B. Nonducted HVAC Systems			
	<input type="checkbox"/> Have supply air flow rates in each room tested and confirmed		<input type="checkbox"/> Install at least two distinct zones with independent thermostat control			
7. Air Filtering						
7.1	Good Filters	Prereq.			MERV 10	Y
7.2	Better Filters	1	0	0	1	
OR	7.3	Best Filters	2	2	0	0
8. Contaminant Control						
8.1	Indoor Contaminant Control during Construction	1	1	0	1	
8.2	Indoor Contaminant Control ( <i>meet any of the following, 1 pt each</i> )	2	0	0	0	
	<input type="checkbox"/> a) Design and install permanent walk-off mats at each entry		<input type="checkbox"/> c) Install central vacuum system with exhaust to outdoors			
	<input type="checkbox"/> b) Design shoe removal and storage space near primary entryway					
8.3	Preoccupancy Flush	1	0	0	1	
9. Radon Protection						
9.1	Radon-Resistant Construction in High-Risk Areas	Prereq.			EPA Radon Zone 2	Y
9.2	Radon-Resistant Construction in Moderate-Risk Areas	1	0	0	0	

<b>10. Garage Pollutant Protection</b>					
	10.1	No HVAC in Garage	<i>Prereq.</i>		Y
	10.2	Minimize Pollutants from Garage ( <i>meet all of the following</i> )	2	0	0
		a) In conditioned spaces above garage:			
		<input type="checkbox"/> Seal all penetrations and connecting floor and ceiling joist bays			
		<input type="checkbox"/> Paint walls and ceilings of shared walls, including garage			
		b) In conditioned spaces next to garage			
		<input type="checkbox"/> Weather-strip all doors			
		<input type="checkbox"/> carbon monoxide detectors in rooms that share a door with garage			
		<input type="checkbox"/> Seal all penetrations and cracks at the base of walls			
AND/OR	10.3	Exhaust Fan in Garage ( <i>meet one of the following</i> )	1	0	0
		<input type="checkbox"/> a) Fan runs continuously			
		<input type="checkbox"/> b) Fan designed with automatic timer control			
OR	10.4	Detached Garage or No Garage	3	3	0
<b>Awareness &amp; Education (AE)</b> (Minimum 0 AE Points Required)			<b>Max: 3</b>	<b>Y:1</b>	<b>M:0</b>
			<b>Final: 1</b>		
<b>1. Education of the Homeowner or Tenant</b>					
	1.1	Basic Operations Training ( <i>meet both of the following</i> )	<i>Prereq.</i>		Y
		<input checked="" type="checkbox"/> a) Operations and training manual			
		<input checked="" type="checkbox"/> b) One-hour walkthrough with occupant(s)			
	1.2	Enhanced Training	1	1	0
	1.3	Public Awareness ( <i>meet three of the following</i> )	1	0	0
		<input type="checkbox"/> a) Open house on at least four weekends			
		<input type="checkbox"/> b) Website about features and benefits of LEED homes			
		<input type="checkbox"/> c) Newspaper article on the project			
		<input type="checkbox"/> d) Display LEED signage on the exterior of the home			
<b>2. Education of the Building Manager</b>					
	2	Education of the Building Manager ( <i>meet both of the following</i> )	1	0	0
		<input type="checkbox"/> a) Operations and training manual			
		<input type="checkbox"/> b) One-hour walkthrough with building manager			

## LEED for Homes Project Checklist

### Addendum: Prescriptive Approach for Energy and Atmosphere (EA) Credits

Points cannot be earned in both the Prescriptive (below) and the Performance paths of the EA section.

**Max Pts. Available**    **Preliminary Rating**  
 Y / Pts    Maybe    No

Notes

**Project Points**

<b>Energy &amp; Atmosphere (EA)</b> (Minimum 0 EA Points Required)	<b>Max: 38</b>	<b>Y:21.5</b>	<b>M:0</b>	<b>Final: 21.5</b>
<b>2. Insulation</b>				
2.1 Basic Insulation (meet both of the following) <span style="float: right;"><i>Prereq.</i></span>				
<input type="checkbox"/> a) Insulation meets R-value requirements of IECC	<input type="checkbox"/> b) Insulation meets HERS Grade II specifications for installation			
2.2 Enhanced Insulation (meet both of the following)	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
<input type="checkbox"/> a) Insulation exceeds R-value requirements of IECC by 5%	<input type="checkbox"/> b) Insulation meets HERS Grade I specifications for installation			
<b>3. Air Infiltration</b>				
3.1 Reduced Envelope Leakage <span style="float: right;"><i>Prereq.</i></span>				<b>0</b>
<input style="width: 50px; height: 15px; border: 1px solid black;" type="text"/> Air leakage rate in ACH50				
3.2 Greatly Reduced Envelope Leakage	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OR</b> 3.3 Minimal Envelope Leakage	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>4. Windows</b>				
4.1 Good Windows (meet all of the following) <span style="float: right;"><i>Prereq.</i></span>				
<input type="checkbox"/> a) Windows and glass doors meet ENERGY STAR BOP window specifications	<input type="checkbox"/> b) Skylight glazing area is ≤ 3% of floor area AND			
	<input type="checkbox"/> Skylights meet ENERGY STAR requirements for skylights			
4.2 Enhanced Windows	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>OR</b> 4.3 Exceptional Windows	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>5. Heating and Cooling Distribution System</b>				
5.1 Reduced Distribution Losses (meet all of the following, as appropriate) <span style="float: right;"><i>Prereq.</i></span>				
A. Forced-Air Systems	B. Nonducted HVAC Systems			
<input type="checkbox"/> a) Duct leakage of ≤ 4.0 CFM at 25 Pascals per 100 sq.ft.	<input type="checkbox"/> At least R-3 Insulation around pipes in unconditioned spaces			
<input type="checkbox"/> b) No ducts in exterior walls unless extra insulation is added				
<input type="checkbox"/> c) At least R-6 insulation around ducts in unconditioned spaces				
5.2 Greatly Reduced Distribution Losses (meet the following, as appropriate)	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
A. Forced-Air Systems	B. Nonducted HVAC Systems			
<input type="checkbox"/> Duct leakage of ≤ 3.0 CFM at 25 Pascals per 100 sq.ft.	<input type="checkbox"/> Keep the boiler and pipes entirely within conditioned envelope			
<b>OR</b> 5.3 Minimal Distribution Losses (meet one of the following, as appropriate)	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>
A. Forced-Air Systems	B. Nonducted HVAC Systems			
<input type="checkbox"/> a) Duct leakage of ≤ 1.0 CFM at 25 Pascals per 100 sq.ft.	<input type="checkbox"/> Outdoor reset control to set distribution temp. based on outdoor temp.			
<input type="checkbox"/> b) Air-handler and all ductwork is within conditioned envelope and EA 3.3 is met				
<input type="checkbox"/> c) Air-handler and all ductwork visibly within conditioned spaces (not in walls, etc.)				

6. Space Heating and Cooling Equipment					
6.1	Good HVAC Design and Installation ( <i>meet all of the following</i> )	Prereq.			
	<input type="checkbox"/> a) Design and size HVAC equipment using ACCA Manual J or equivalent		<input type="checkbox"/> c) Install ENERGY STAR programmable thermostat OR		
	<input type="checkbox"/> b) Install efficient heating AND cooling equipment (see Table)		<input type="checkbox"/> Heat pump or hydronic installed and exempted from part (c)		
	<input type="text"/> Type of cooling	<input type="text"/> Type of heating			
	<input type="text"/> Cooling efficiency (SEER / EER)	<input type="text"/> Heating Efficiency (AFUE / HSPF / COP)			
6.2	High-Efficiency HVAC	2	0	0	
OR	6.3 Very High Efficiency HVAC	4	0	0	
7. Water Heating					
7.1	Efficient Hot Water Distribution System ( <i>meet one of the following</i> )	2	0	0	
	<input type="checkbox"/> a) Structured plumbing system		<input type="checkbox"/> c) Compact design of conventional system		
	<input type="checkbox"/> b) Central manifold distribution system				
7.2	Pipe Insulation	1	0	0	
7.3	Efficient Domestic Hot Water Equipment	3	0	0	
	<input type="text"/> Type of DHW system				
	<input type="text"/> Efficiency	<input type="text"/> Solar: Percentage of annual DHW load			
8. Lighting					
8.1	ENERGY STAR Lights	Prereq.			
8.2	Improved Lighting ( <i>meet one of the following, see Rating System for pts</i> )	1.5	0	0	
	<input type="checkbox"/> a) Indoor lighting - 3 additional ENERGY STAR lights in high-use rooms		<input type="checkbox"/> b) Exterior lighting - motion sensor controls or integrated PV		
OR	8.3 Advanced Lighting Package ( <i>meet one of the following</i> )	3	0	0	
	<input type="checkbox"/> a) 60% of fixtures are ENERGY STAR fixtures		<input type="checkbox"/> b) 80% of lamps are ENERGY STAR CFLs		
9. Appliances					
9.1	High-Efficiency Appliances ( <i>meet any, see Rating System for pts</i> )	2	0	0	
	<input type="checkbox"/> a) ENERGY STAR labeled refrigerator		<input type="checkbox"/> c) ENERGY STAR labeled dishwasher using 6.0 gallons per cycle or less		
	<input type="checkbox"/> b) ENERGY STAR labeled ceiling fans in living/family room and all bedrooms		<input type="checkbox"/> d) ENERGY STAR clothes washer		
9.2	Water-Efficiency Clothes Washer	1	0	0	
10. Renewable Energy					
10	Renewable Energy System	10	0	0	
	<input type="text"/> Reference electric load, kWh/yr (based on HERS model)	<input type="text"/> Electricity supplied by renewable system, kWh/yr			
	<input type="text"/> 0.0% Percentage of annual reference electric load met by renewable system				
11. Residential Refrigerant Management					
11.1	Refrigerant Charge Test	Prereq.			
11.2	Appropriate HVAC Refrigerants ( <i>meet one of the following</i> )	1	0	0	
	<input type="checkbox"/> a) Use no refrigerants		<input type="checkbox"/> c) Use refrigerants that complies with global warming potential equation		
	<input type="checkbox"/> b) Use non-HCFC refrigerants				