LEED for Homes Project Snapshot

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

52 % Expected Energy Savings
Based on HERS Score

90 % Construction Waste
Diverted from Landfill

Photo Courtesy of: Habitat for Humanity

STRATEGIES AND RESULTS

This new home built by GRCC Tassell M-TEC new construction students and instructor Duane McIntyre is a 5-bedroom two story "Gervais" plan. It is ZeroStep Certified and achieved LEED for Homes Gold Certification. Its 52 Home Energy Rating System score makes it our most energy efficient home to date.

EXEMPLARY PERFORMANCE

- Outstanding community resources, Transit provides 125 rides Per weekday
-95% Drought tolerant plants
- Very small lot .1 Acre lot with 5 bedrooms
- Very high efficiency water fixtures
- Staggered Stud Framing
  - Avoids thermal bridging, more insulation
-Low VOC
- Enhanced Combustion Venting measures
- Mechanical Ventilation
  -Exhausted to the exterior, No garage.

LEED™ Facts
Lee House

LEED for Homes
Certification Awarded March 2011

Gold	**69.5***
Innovation in Design	**3 /11**
Location & Linkages	**8/10**
Sustainable Sites	**7 /22**
Water Efficiency	**4 /15**
Energy & Atmosphere	**24 /38**
Materials & Resources	**11.5 /16**
Indoor Environmental Quality	**11 /21**
Awareness & Education	**1 /3**

**Out of136 possible points*

PROJECT BASICS

Project Type	Affordable
Conditioned Space	2,256 sq ft
Bedrooms	5
Bathrooms	2
Lot Type	Previously Developed
Construction Type	New Construction

KEYS TO SUCCESS

HVAC Efficiency	96% Efficient Furnace
Lighting	CFL's
Small Size	.1 Acre Lot
Wall Insulation	Staggered Stud Framing

THE LEED FOR HOMES DIFFERENCE

Construction Waste Management Plan	☑ YES!
On-Site Performance Tests	☑ YES!
Custom Durability Planning Checklist	☑ YES!
Third-Party Verified Documentation	☑ YES!

About the Project Team

Sponsors --

* PNC Bank
* Tassell-Wisner-Bottrall Foundation
* Grand Rapids Community College

Tassell M-TEC
* HFHI - SHOP Grant
* HFHI - Softwood Lumber Grant

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

LEED™ FOR HOMES

1166 LEE SW

Wyoming, Michigan

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

LEED FOR HOMES

GOLD

March 2011

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

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

LEED for Homes Project Checklist

for Homes

Builder Name:	*Habitat for Humanity of Kent County*
Project Team Leader:	*Bill Moerdyk, Habitat for Humanity of Kent County*
Home Address (Street/City/State):	*1166 Lee SW, Wyoming, Michigan*

Project Description

Building Type: ***Single detached***
# of Bedrooms: ***5***
Project type: ***Affordable***
Floor Area: ***2,256***

Adjusted Certification Thresholds

Certified: ***39.0*** Gold: ***69.0***
Silver: ***54.0*** Platinum: ***84.0***

Project Point Total
Prelim: ***67.5 + 17 maybe pt*** Final: ***69.5***

Certification Level
Prelim: ***Silver*** Final: ***Gold***

Final Credit Category Point Totals

ID: 3	***SS: 7***	***EA: 24***	***EQ: 11***
LL: 8	***WE: 4***	***MR: 11.5***	***AE: 1***

Date Most Recently Updated: *Updated by:*

✍ ***Indicates that an Accountability Form is required.***

	Max Pts. Available	Preliminary Rating Y / Pts	Maybe	No	Notes	Project Points
Innovation & Design Process (ID) (Minimum 0 ID Points Required)	***Max: 11***	***Y:4***	***M:0***		***Notes***	***Final: 3***
1. Integrated Project Planning						
1.1 Preliminary Rating	*Prereq.*					*Y*
Target performance tier: ***Silver***						
1.2 Integrated Project Team *(meet all of the following)*	*1*	*1*	*0*			*0*
☑ a) Individuals or organizations with necessary capabilities		☑ c) Regular meetings held with project team				
☑ b) All team members involved in various project phases						
1.3 Professional Credentialed with Respect to LEED for Homes	*1*	*0*	*0*		*please see ID 01-06 for details*	*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*
☐ a) Glazing area on north/south walls 50% greater than on east/west walls		☐ c) At least 450 sq. ft. of south-facing roof area, oriented for solar applications				
☐ b) East-west axis is within 15 degrees of due east-west		☐ d) 90% of south-facing glazing is shaded in summer, unshaded in winter				
2. Quality Management for Durability						
2.1 Durability Planning *(meet all of the following)*	*Prereq.*					*Y*
☑ a) Durability evaluation completed		☑ d) Durability strategies incorporated into project documentation				
☑ b) Strategies developed to address durability issues		☑ e) Durability measures listed in durability inspection checklist				
☑ c) Moisture control measures from Table 1 incorporated						
2.2 Durability Management *(meet one of the following)*	*Prereq.*					*Y*
☑ Builder has a quality management process in place		☐ Builder conducted inspection using durability inspection checklist				
2.3 Third-Party Durability Management Verification	*3*	*3*	*0*			*3*

3. Innovative or Regional Design

3.1	✍ Innovation 1 (ruling #):		1	0	0	0
3.2	✍ Innovation 2 (ruling #):		1	0	0	0
3.3	✍ Innovation 3 (ruling #):		1	0	0	0
3.4	✍ Innovation 4 (ruling #):		1	0	0	0

Location & Linkages (LL) (Minimum 0 LL Points Required)

Max: 10 | Y:9 | M:0 | Notes | Final: 8

1. LEED for Neighborhood Development

1	LEED for Neighborhood Development		10	0	0	0

2. Site Selection

2	✍ Site Selection *(meet all of the following)*		2	2	0	2

- ☑ a) Built above 100-year floodplain defined by FEMA
- ☑ b) Not built on habitat for threatened or endangered species
- ☑ c) Not built within 100 ft of water, including wetlands
- ☑ d) Not built on land that was public parkland prior to acquisition
- ☑ e) Not built on land with prime soils, unique soils, or soils of state significance

3. Preferred Locations

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	0

4. Infrastructure

4	Existing Infrastructure		1	1	0	1

5. Community Resources / Transit

5.1	Basic Community Resources / Transit *(meet one of the following)*		1	0	0	0

- ☐ a) Within 1/4 mile of 4 basic community resources
- ☐ b) Within 1/2 mile of 7 basic community resources
- ☐ c) Within 1/2 mile of transit services providing 30 rides per weekday

OR 5.2	Extensive Community Resources / Transit *(meet one of the following)*		2	0	0	0

- ☐ a) Within 1/4 mile of 7 basic community resources
- ☐ b) Within 1/2 mile of 11 basic community resources
- ☐ c) Within 1/2 mile of transit services providing 60 rides per weekday

OR 5.3	Outstanding Community Resources / Transit *(meet one of the following)*		3	3	0	3

- ☐ a) Within 1/4 mile of 11 basic community resources
- ☐ b) Within 1/2 mile of 14 basic community resources
- ☑ c) Within 1/2 mile of transit services providing 125 rides per weekday

6. Access to Open Space

6	Access to Open Space		1	1	0	0

Sustainable Sites (SS) (Minimum 5 SS Points Required)	Max: 22	Y:8	M:5.5	Notes	Final: 7

1. Site Stewardship

		Prereq.			Y
1.1	Erosion Controls During Construction *(meet all of the following)*				

- ☑ a) Stockpile and protect disturbed topsoil from erosion.
- ☑ b) Control the path and velocity of runoff with silt fencing or equivalent.
- ☑ c) Protect sewer inlets, streams, and lakes with straw bales, silt fencing, etc.
- ☑ d) Provide swales to divert surface water from hillsides
- ☑ e) Use tiers, erosion blankets, compost blankets, etc. on sloped areas.

		1	1	0	0
1.2	Minimize Disturbed Area of Site *(meet the appropriate requirements)*				

Where the site is not previously developed, meet all the following:

- ☐ a) Develop tree / plant preservation plan with "no-disturbance" zones
- ☐ b) Leave 40% of buildable lot area, not including area under roof, undisturbed

OR Where the site is previously developed, meet all the following:

- ☐ c) Develop tree / plant preservation plan with "no-disturbance" zones AND
- ☐ Rehabilitate lot; undo soil compaction and remove invasive plants AND
- ☐ Meet the requirements of SS 2.2

OR ☑ d) Build on a lot of 1/7 acre or less, or 7 units per acre.

2. Landscaping

		Prereq.			Y
2.1	✍ No Invasive Plants				

		2	0	2	0
2.2	✍ Basic Landscaping Design *(meet all of the following)*				

- ☑ a) Any turf must be drought-tolerant.
- ☑ b) Do not use turf in densely shaded areas.
- ☑ c) Do not use turf in areas with slope of 25%
- ☐ d) Add mulch or soil amendments as appropriate.
- ☐ e) All compacted soil must be tilled to at least 6 inches.

		3	0	1	0
AND/OR 2.3	✍ Limit Conventional Turf				

73% Percentage of designed landscape softscape area that is turf

		2	2	0	2
AND/OR 2.4	✍ Drought-Tolerant Plants				

95% Percentage of installed plants that are drought-tolerant

		6	0	0	0
OR 2.5	✍ Reduce Overall Irrigation Demand by at Least 20%				

[ ] Percentage reduction in estimated irrigation water demand *(calculate)*

3. Reduce Local Heat Island Effects

		1	1	0	0
3	✍ Reduce Local Heat Island Effects *(meet one of the following)*				

- ☐ a) Locate trees / plantings to provide shade for 50% of hardscapes
- ☐ b) Install light-colored, high-albedo materials for 50% of hardscapes

4. Surface Water Management

4.1	✍ Permeable Lot	4	1	1		2

81% vegetative landscape

permeable paving

impermeable surfaces directed to infiltration features

19% other impermeable surfaces (areas not counted towards credit)

4.2	Permanent Erosion Controls *(meet one of the following)*	1	0	1		0

☐ a) For portions of lot on steep slope, use terracing and retaining walls ☐ b) Plant trees, shrubs, or groundcover

4.3	✍ Management of Runoff from Roof *(meet any, see Rating System for pts)*	2	0	0		0

☐ a) Install permanent stormwater controls to manage runoff from the home ☐ c) Install vegetated roof to cover 100% of roof area

☐ b) Install vegetated roof to cover 50% of roof area ☐ d) Have lot designed by professional to manage runoff from home on-site

5. Nontoxic Pest Control

5	Pest Control Alternatives *(meet any of the following, 1/2 pt each)*	2	1	0.5		1

☐ a) Keep all wood at least 12" above soil

☑ b) Seal external cracks, joints, etc. with caulking and install pest-proof screens

☐ c) Include no wood-to-concrete connections, or separate connections with dividers

☑ d) Install landscaping so mature plants are 24" from home

e) In 'moderate' to 'very heavy' termite risk areas:

☐ i) Treat all cellulosic material with borate product to 3' above foundation

☐ ii) Install sand or diatomaceous earth barrier

☐ iii) Install steel mesh barrier termite control system

☐ iv) Install non-toxic termite bait system

☐ v) Use noncellulosic wall structure

☐ vi) Use solid concrete foundation walls or pest-proof masonry wall design

6. Compact Development

6.1	Moderate Density	2	2	0		2

1 # of total units on the lot *0.1* lot size (acres) *8.3* density (units/acre)

OR 6.2	High Density	3	0	0		0
OR 6.3	Very High Density	4	0	0		0

Water Efficiency (WE) (Minimum 3 WE Points Required)

Max: 15 *Y:4* *M:4* *Notes* *Final: 4*

1. Water Reuse

1.1	Rainwater Harvesting System	4	0	3		0

Percentage of roof area used for harvesting

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

2. Irrigation System

	2.1	✍ High-Efficiency Irrigation System *(meet any of the following, 1 pt each)*	*3*	*0*	*0*	*0*
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*

- ☐ a) Irrigation system designed by EPA Water Sense certified professional
- ☐ b) Irrigation system with head-to-head coverage
- ☐ c) Install central shut-off valve
- ☐ d) Install submeter for the irrigation system
- ☐ e) Use drip irrigation for 50% of planting beds
- ☐ f) Create separate zones for each type of bedding
- ☐ g) Install timer or controller for each watering zone
- ☐ h) Install pressure-regulating devices
- ☐ i) High-efficiency nozzles with distribution uniformity of at least 0.70.
- ☐ j) Check valves in heads
- ☐ k) Install moisture sensor or rain delay controller

☐ Percentage reduction in estimated irrigation water demand *(calculate)*

3. Indoor Water Use

	3.1	High-Efficiency Fixtures and Fittings *(meet any of the following, 1 pt each)*	*3*	*0*	*1*	*0*
	3.2	Very High-Efficiency Fixtures and Fittings *(meet any, 2 pts each)*	*6*	*4*	*0*	*4*

- ☐ a) Average flow rate of lavatory faucets is ≤ 2 gpm
- ☐ b) Average flow rate for all showers is ≤ 2.0 gpm per stall
- ☐ c) Average flow rate for all toilets is ≤ 1.3 gpf; OR
  - ☐ Toilets are dual-flush; OR
  - ☐ Toilets meet the EPA Water Sense specification

- ☑ a) Average flow rate of lavatory faucets is ≤ 1.5 gpm; OR
  - ☐ Lavatory faucets meet the EPA Water Sense specification
- ☑ b) Average flow rate for all showers ≤ 1.75 gpm per stall
- ☐ c) Average flow rate for all toilets is ≤ 1.1 gpf

Energy & Atmosphere (EA) (Minimum 0 EA Points Required)

Max: 38 Y:24 M:4 **Notes** *Final: 24*

1. Optimize Energy Performance

	1.1	Performance of ENERGY STAR for Homes	*Prereq.*			*Y*
	1.2	Exceptional Energy Performance	*34*	*22*	*2*	*22*

5 IECC climate zone *52* HERS Index

7. Water Heating

	7.1	✍ Efficient Hot Water Distribution System *(meet one of the following)*	*2*	*0*	*2*	*0*
	7.2	Pipe Insulation	*1*	*1*	*0*	*1*

- ☐ a) Structured plumbing system
- ☐ b) Central manifold distribution system
- ☐ c) Compact design of conventional system

11. Residential Refrigerant Management

	11.1	Refrigerant Charge Test	*Prereq.*			*Y*
	11.2	Appropriate HVAC Refrigerants *(meet one of the following)*	*1*	*1*	*0*	*1*

- ☑ a) Use no refrigerants
- ☐ b) Use non-HCFC refrigerants
- ☐ c) Use refrigerants that complies with global warming potential equation

Materials & Resources (MR) (Minimum 2 MR Points Required)

Max: 16 Y:7.5 M:3.5 **Notes** **Final: 11.5**

1. Material-Efficient Framing

1.1	Framing Order Waste Factor	*Prereq.*				*Y*
1.2	Detailed Framing Documents	*1*	*0*	*0*		*0*
1.3	Detailed Cut List and Lumber Order	*1*	*0*	*0*		*0*

☐ Requirements of MR 1.2 have been met ☐ Detailed cut list and lumber order corresponding to framing plans or scopes

AND/OR	1.4 Framing Efficiencies *(meet any of the following, see Rating System for pts)*	*3*	*2.5*	*0.5*		*3*

☐ Precut framing packages ☑ Stud spacing greater than 16" on center
☑ Open-web floor trusses ☑ Ceiling joist spacing greater than 16" on center
☐ Structural insulated panel walls ☐ Floor joist spacing greater than 16" on center
☐ Structural insulated panel roof ☑ Roof rafter spacing greater than 16" on center
☐ Structural insulated panel floors ☐ Two of the following: Size headers for loads; ladder blocking; drywall clips; 2-

OR	1.5 Off-site Fabrication *(meet one of the following)*	*4*	*0*	*0*		*0*

☐ a) Panelized construction ☐ b) Modular, prefabricated construction

2. Environmentally Preferable Products

2.1	✍ FSC Certified Tropical Wood *(meet all of the following)*	*Prereq.*				*Y*

☑ a) Provide suppliers with a notice of preference for FSC products; AND ☑ b) All purchased wood is either not tropical, FSC-certified, or reclaimed
☑ Request country of manufacture for each wood product

2.2	✍ Environmentally Preferable Products *(meet any, 1/2 pt each)*	*8*	*3.5*	*1.5*	*Added 0.5 for Pex*	*5.5*

Assembly : component	*(a) EPP*			*(b) Low emission*		*(c) Local production*	
Exterior wall: framing	☐		type:			☐	
Exterior wall: siding or masonry	☐		type:			☐	
Floor: flooring	☑	(45%)	type: Recycle content	☐	90% hard flooring	☐	(45%)
Floor: flooring	☑	(90%)	type: Recycle content	☐	SCS FloorScore	☐	(90%)
Floor: carpet				☑	Green Label Plus	☐	
Floor: framing	☐		type:			☐	
Foundation: aggregate						☑	
Foundation: cement	☐		type:			☑	
Interior wall: framing	☐		type:			☐	
Interior wall, ceiling: gypsum board						☑	
Interior wall, ceiling, millwork: paint	☐		type:	☑	type: Low VOC		
Landscape: decking or patio	☐		type:			☐	
Other: cabinet	☐		type:			☐	
Other: counter	☐		type:			☐	
Other: door	☐		type:			☐	
Other : trim	☐		type:			☐	
Other : adhesive, sealant				☑	type: Low VOC		
Other : window frame	☐		type:			☐	
Roof: framing	☐		type:			☐	
Roof: roofing	☐		type:			☐	
Roof, floor, wall: insulation	☑		type: 85% Recycled	☐	type:	☑	
Roof, floor, wall (2 of 3): sheathing	☐		type:			☐	

3. Waste Management

3.1	Construction Waste Management Planning *(meet both of the following)*	*Prereq.*				*Y*

☑ a) Investigate local options for waste diversion ☑ b) Document diversion rate for construction waste

3.2	Construction Waste Reduction *(use one of the following methods)*	*3*	*1.5*	*1.5*		*3*

0.6 a) pounds waste / square foot

cubic yards waste / 1,000 square feet

b) percentage of waste diverted

Indoor Environmental Quality (EQ) (Minimum 6 EQ Points Required)

Max: 21 *Y:10* *M:0* **Notes** *Final: 11*

1. ENERGY STAR with Indoor Air Package

1	ENERGY STAR with Indoor Air Package	*13*	*0*	*0*		*0*

2. Combustion Venting

2.1	Basic Combustion Venting Measures *(meet all of the following)*	*Prereq.*				*Y*

☑ a) no unvented combustion appliances ☑ d) space, water heating equipment designed with closed combustion; OR

☑ b) carbon monoxide monitors on each floor ☑ space and water heating equipment has power-vented exhaust; OR

☑ c) no fireplace installed, OR ☐ space and water heating equipment located in detached or open-air facility

☐ all fireplaces and woodstoves have doors ☐ no space- or water-heating equipment with combustion

2.2	Enhanced Combustion Venting Measures *(meet one of the following)*	*2*	*2*	*0*		*2*

Type of Fireplace or stove	*Better practice (1 pt)*	*Best practice (2 pts) (must also meet Better Practice)*
None		☑ granted automatically
Masonry wood-burning fireplace	☐ masonry heater	☐ back-draft potential test
Factory-built wood-burning fireplace	☐ listed by testing lab and meets EPA standards	☐ back-draft potential test
Woodstove and fireplace insert	☐ listed by testing lab and meets EPA standards	☐ back-draft potential test
Natural gas, propane, or alcohol stove	☐ listed, power- or direct-vented, fixed doors	☐ electronic pilot
Pellet stove	☐ EPA certified or meets safety requirements	☐ power- or direct-venting

3. Moisture Control

3	Moisture Load Control *(meet one of the following)*	*1*	*0*	*0*		*0*

☐ a) Additional dehumidification system ☐ b) Central HVAC system equipped with additional dehumidification mode

4. Outdoor Air Ventilation

4.1	✍ Basic Outdoor Air Ventilation *(meet one of the following)*	*Prereq.*				*Y*

☐ a) Located in a climate with ≤ 4,500 infiltration degree days ☑ c) Intermittent ventilation

☐ b) Continuous ventilation ☐ d) Passive ventilation

4.2	✍ Enhanced Outdoor Air Ventilation *(meet one of the following)*	*2*	*2*	*0*		*2*

☐ a) In climates with ≤ 4,500 infiltration degree days, install active ventilation system ☑ b) Install heat recovery system

4.3	Third-Party Performance Testing	*1*	*0*	*0*		*0*

5. Local Exhaust

5.1	✍ Basic Local Exhaust *(meet all of the following)*	*Prereq.*				*Y*
	☑ a) Bathroom and kitchen exhaust meets ASHRAE Std. 62.2 air flow requirement		☑ c) Air exhausted to outdoors			
	☑ b) Fans and ducts designed and installed to ASHRAE Std. 62.2		☑ d) ENERGY STAR labeled bathroom exhaust fans			
5.2	Enhanced Local Exhaust *(meet one of the following)*	*1*	*1*	*0*		*1*
	☐ a) Occupancy sensor		☑ c) Automatic timer tied to switch			
	☐ b) Automatic humidistat controller		☐ d) Continuously operating exhaust fan			
5.3	Third-Party Performance Testing	*1*	*0*	*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 *(meet one of the following)*	*1*	*0*	*0*		*1*
	A. Forced-Air Systems		B. Nonducted HVAC Systems			
	☐ a) Return air opening of 1 sq. inch per cfm of supply		☐ Flow control valves on every radiator			
	☑ b) Limited pressure differential between closed room and adjacent spaces					
6.3	Third-Party Performance Test / Multiple Zones *(meet one of the following)*	*2*	*0*	*0*		*0*
	A. Forced-Air Systems		B. Nonducted HVAC Systems			
	☐ Have supply air flow rates in each room tested and confirmed		☐ 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*	*0*	*0*		*0*
8.2	Indoor Contaminant Control *(meet any of the following, 1 pt each)*	*2*	*0*	*0*		*0*
	☐ a) Design and install permanent walk-off mats at each entry		☐ c) Install central vacuum system with exhaust to ourdoors			
	☐ 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.*				*N/A*
9.2	✍ Radon-Resistant Construction in Moderate-Risk Areas	*1*	*0*	*0*		*0*

10. Garage Pollutant Protection

10.1	No HVAC in Garage	*Prereq.*			*Y*
10.2	Minimize Pollutants from Garage *(meet all of the following)*	*2*	*0*	*0*	*0*

a) In conditioned spaces above garage:
- ☐ Seal all penetrations and connecting floor and ceiling joist bays
- ☐ Paint walls and ceilings of shared walls, including garage

b) In conditioned spaces next to garage
- ☐ Weather-strip all doors
- ☐ carbon monoxide detectors in rooms that share a door with garage
- ☐ Seal all penetrations and cracks at the base of walls

AND/OR 10.3	Exhaust Fan in Garage *(meet one of the following)*	*1*	*0*	*0*	*0*

- ☐ a) Fan runs continuously
- ☐ b) Fan designed with automatic timer control

OR 10.4	Detached Garage or No Garage	*3*	*3*	*0*	*3*

Awareness & Education (AE) (Minimum 0 AE Points Required)

Max: 3 *Y:1* *M:0* *Notes* *Final: 1*

1. Education of the Homeowner or Tenant

1.1	✍ Basic Operations Training *(meet both of the following)*	*Prereq.*			*Y*

- ☑ a) Operations and training manual
- ☑ b) One-hour walkthrough with occupant(s)

1.2	✍ Enhanced Training	*1*	*1*	*0*	*1*
1.3	Public Awareness *(meet three of the following)*	*1*	*0*	*0*	*0*

- ☐ a) Open house on at least four weekends
- ☐ b) Website about features and benefits of LEED homes
- ☐ c) Newspaper article on the project
- ☐ d) Display LEED signage on the exterior of the home

2. Education of the Building Manager

2	✍ Education of the Building Manager *(meet both of the following)*	*1*	*0*	*0*	*0*

- ☐ a) Operations and training manual
- ☐ 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*
Energy & Atmosphere (EA) (Minimum 0 EA Points Required)	***Max: 38***	***Y:24***	***M:4***		***Notes***	***Final: 24***
2. Insulation						
2.1 Basic Insulation *(meet both of the following)*	*Prereq.*					
☐ a) Insulation meets R-value requirements of IECC		☐ b) Insulation meets HERS Grade II specifications for installation				
2.2 Enhanced Insulation *(meet both of the following)*	*2*	*0*	*0*			*0*
☐ a) Insulation exceeds R-value requirements of IECC by 5%		☐ b) Insulation meets HERS Grade I specifications for installation				
3. Air Infiltration						
3.1 Reduced Envelope Leakage	*Prereq.*					
☐ Air leakage rate in ACH50						
3.2 Greatly Reduced Envelope Leakage	*2*	*0*	*0*			*0*
OR 3.3 Minimal Envelope Leakage	*3*	*0*	*0*			*0*
4. Windows						
4.1 Good Windows *(meet all of the following)*	*Prereq.*					
☐ a) Windows and glass doors meet ENERGY STAR BOP window specifications		☐ b) Skylight glazing area is ≤ 3% of floor area AND ☐ Skylights meet ENERGY STAR requirements for skylights				
4.2 Enhanced Windows	*2*	*0*	*0*			*0*
OR 4.3 Exceptional Windows	*3*	*0*	*0*			*0*
5. Heating and Cooling Distribution System						
5.1 Reduced Distribution Losses *(meet all of the following, as appropriate)*	*Prereq.*					
A. Forced-Air Systems		B. Nonducted HVAC Systems				
☐ a) Duct leakage of ≤ 4.0 CFM at 25 Pascals per 100 sq.ft.		☐ At least R-3 insulation around pipes in unconditioned spaces				
☐ b) No ducts in exterior walls unless extra insulation is added						
☐ c) At least R-6 insulation around ducts in unconditioned spaces						
5.2 Greatly Reduced Distribution Losses *(meet the following, as appropriate)*	*2*	*0*	*0*			*0*
A. Forced-Air Systems		B. Nonducted HVAC Systems				
☐ Duct leakage of ≤ 3.0 CFM at 25 Pascals per 100 sq.ft.		☐ Keep the boiler and pipes entirely within conditioned envelope				
OR 5.3 Minimal Distribution Losses *(meet one of the following, as appropriate)*	*3*	*0*	*0*			*0*
A. Forced-Air Systems		B. Nonducted HVAC Systems				
☐ a) Duct leakage of ≤ 1.0 CFM at 25 Pascals per 100 sq.ft.		☐ Outdoor reset control to set distribution temp. based on outdoor temp.				
☐ b) Air-handler and all ductwork is within conditioned envelope and EA 3.3 is met						
☐ 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 *(meet all of the following)*	*Prereq.*			
	☐ a) Design and size HVAC equipment using ACCA Manual J or equivalent	☐ c) Install ENERGY STAR programmable thermostat OR			
	☐ b) Install efficient heating AND cooling equipment (see Table)	☐ Heat pump or hydronic installed and exempted from part (c)			
	Type of cooling system	Type of heating system			
	Cooling efficiency (SEER / EER)	Heating Efficiency (AFUE / HSPF / COP)			
6.2	High-Efficiency HVAC	*2*	*0*	*0*	*0*
OR 6.3	Very High Efficiency HVAC	*4*	*0*	*0*	*0*

7. Water Heating

7.1	✍ Efficient Hot Water Distribution System *(meet one of the following)*	*2*	*0*	*0*	*0*
	☐ a) Structured plumbing system	☐ c) Compact design of conventional system			
	☐ b) Central manifold distribution system				
7.2	Pipe Insulation	*1*	*0*	*0*	*0*
7.3	Efficient Domestic Hot Water Equipment	*3*	*0*	*0*	*0*
	Type of DHW system				
	Efficiency	Solar: Percentage of annual DHW load			

8. Lighting

8.1	ENERGY STAR Lights	*Prereq.*			
8.2	Improved Lighting *(meet one of the following, see Rating System for pts)*	*1.5*	*0*	*0*	*0*
	☐ a) Indoor lighting - 3 additional ENERGY STAR lights in high-use rooms	☐ b) Exterior lighting - motion sensor controls or integrated PV			
OR 8.3	Advanced Lighting Package *(meet one of the following)*	*3*	*0*	*0*	*0*
	☐ a) 60% of fixtures are ENERGY STAR fixtures	☐ b) 80% of lamps are ENERGY STAR CFLs			

9. Appliances

9.1	High-Efficiency Appliances *(meet any, see Rating System for pts)*	*2*	*0*	*0*	*0*
	☐ a) ENERGY STAR labeled refrigerator	☐ c) ENERGY STAR labeled dishwasher using 6.0 gallons per cycle or less			
	☐ b) ENERGY STAR labeled ceiling fans in living/family room and all bedrooms	☐ d) ENERGY STAR clothes washer			
9.2	Water-Efficiency Clothes Washer	*1*	*0*	*0*	*0*

10. Renewable Energy

10	✍ Renewable Energy System	*10*	*0*	*0*	*0.0*
	Reference electric load, kWh/yr (based on HERS model)	Electricity supplied by renewable system, kWh/yr			
	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 *(meet one of the following)*	*1*	*0*	*0*	*0*
	☐ a) Use no refrigerants	☐ c) Use refrigerants that complies with global warming potential equation			
	☐ b) Use non-HCFC refrigerants				

LEED for Homes Project Checklist, Project Notes

This section was created to give project teams additional space to make internal notes on the progress of the project. It does not need to be used and it **should not** be submitted to USGBC. This section is unlocked, so project teams are welcome to make changes to the format as necessary. Any comments or directions provided below have not been created or endorsed by the US Green Building Council.

Date project began:	
Initiated by:	

Credits		*Responsible Party*	*Last Updated*	*Additional Notes*
ID 1. Integrated Project Planning				
	1.1			
	1.2			
	1.3			
	1.4			
	1.5			
ID 2. Quality Mgmt for Durability				
	2.1			
	2.2			
	2.3			