



## LEED for Homes Verification & Submittal Guidelines For Project Teams

These guidelines summarize the verification and submittal requirements for LEED for Homes. These verification and submittal requirements are included in the LEED for Homes Reference Guide, First Edition; where discrepancies exist, the guidelines below supersede the guidelines within the Reference Guide.

### **Roles and Responsibilities:**

One of the core strengths of the LEED for Homes program is that the “green” components are all verified by a third-party. Third-party verification is essential to the integrity of the program, as it gives prospective home buyers confidence and reassurance.

These verification and submittal guidelines are for Project Teams. Although verification is primarily performed by a third-party team (i.e., the Green Rater and LEED for Homes Provider), the project team plays a critical role. A separate set of verification and submittal guidance is available for Green Raters (in a companion document).

Key stakeholders in the LEED for Homes program each have unique roles in the delivery of verification services to LEED for Homes projects, including:

#### *Provider QAD*

- ✓ Review and approve all work performed by Green Rater
- ✓ Make final decisions on all verification tasks

#### *Green Rater / qualified energy rater*

- ✓ Complete all in-field verification steps
- ✓ Complete all performance tests
- ✓ Complete all energy modeling (if needed for HERS Index in EA 1)
- ✓ Complete LEED for Homes Project checklist
- ✓ Compile all additional info from project team

#### *Project Team*

- ✓ Notify LEED for Homes Provider and/or Green Rater when project is ready for verification,
- ✓ Complete all accountability forms, the durability risk evaluation form, and the durability inspection checklist, and
- ✓ Provide the information described below to the Green Rater, and any additional information requested by the Green Rater.

## **Supporting Verification Materials**

Although some elements of a green home can be easily verified through simple observation, many of the specific LEED for Homes requirements are difficult to verify without additional information – product specifications, contractor calculations, etc.

The term “supporting verification materials” refers to the additional information that Green Raters may need in order to fully verify that the home has met the criteria for LEED certification.

Supporting verification materials are not formal submittals, and no outside consultant should be needed to assist with the compilation of these materials.

The materials described below describe what is typically required by the verification team. In some cases, these materials may not be required; in other cases, additional information may be requested, subject to the discretion of the verification team.

## **Accountability Forms**

There are various LEED for Homes requirements – especially those that include a significant design element or rely on professional expertise – that cannot be fully verified by a Green Rater through observation, even with supporting verification materials. For these measures, an Accountability Form is required.

An Accountability Form is signed by the responsible party (e.g. HVAC engineer, landscape professional, PV installer) to indicate that all elements of the prerequisite or credit have been met. Accountability Forms should be signed after installation or construction of the relevant measure.

Fewer than one-third of the prerequisites and credits in LEED for Homes require an Accountability Form, and they are all identified below.

## **Durability Risk Evaluation Form and Durability Inspection Checklist**

The project team is also responsible for completing and submitting the durability risk evaluation form and durability inspection checklist to the Green Rater before the final verification is completed.

Prereq / Credit	Supporting Verification Materials	Submittals	AF?
<b>Innovative Design</b>			
ID 1.1. Preliminary Rating	- None	- None	
ID 1.2. Integrated Project Team	- List of project team members, capabilities, and meeting dates.	- None	
ID 1.3. Prof. Credentialed with Respect to LEED-H	- Evidence that a principal member of the project team earned the LEED AP Homes credential <i>prior</i> to the preliminary rating.	- None	
ID 1.4. Design Charrette	- Charrette date, location, participants, and duration.	- None	
ID 1.5. Building Orientation for Solar Design	- Calculations or simulations for glazing area, east-west axis orientation, south-facing roof area, and seasonal shading.	- None	
ID 2.1. Durability Planning	- Contract documents (specifications, scopes of work) with all relevant durability measures indicated	- Completed Durability Risk Evaluation Form, prior to construction	
ID 2.2. Durability Management	- None	- Completed, signed durability inspection checklist or quality mgmt plan, prior to construction	
ID 2.3. Third- Party Durability Mgmt Verification	- None	- None	
ID 3. Innovative Design	-	- Detailed Innovative Design Request; <b>AND</b> - Signed Accountability Form	Yes
<b>Location &amp; Linkages</b>			
LL 1. LEED for Neighborhood Developments	- Evidence that the home has successfully passed Stage 2 of the LEED for Neighborhood Developments certification.	- None	
LL 2. Site Selection	- Site plan, floodplain maps, soil data maps.	- Signed Accountability Form	Yes
LL 3.1. Edge Development	- Calculation of development area along site perimeter.	- None	
LL 3.2. Infill	- Calculations of development area along site perimeter.	- None	
LL 3.3. Previously Developed	- Historical documents, maps, or comparable evidence of previous development.	- None	
LL 4. Existing Infrastructure	- Maps or comparable evidence of water and sewer infrastructure within ½ mile of the home.	- None	
LL 5. Community Resources	- Lists or maps of community resources within ¼ mile or ½ mile walking distance of the home. <b>OR</b> - Transit schedules and calculations of transit rides.	- None	
LL 6. Access to Open Space	- Maps and calculations of publicly accessible open space of at least ¾ acre within ½ mile of the home.	- None	
<b>Sustainable Sites</b>			
SS 1.1. Erosion Controls	- None	- None	
SS 1.2. Minimize Disturbed Area of Site	- Tree and plant preservation plan and/or site drawings; <b>AND</b> - For part (b), calculations of buildable lot area left undisturbed;	- None	

Prereq / Credit	Supporting Verification Materials	Submittals	AF?
	- For part (d), calculations of average housing density.		
SS 2.1. No Invasive Plants	- List of installed trees and plants; <b>AND</b> - List of invasive trees and plants created by a third-party entity (e.g. agricultural cooperative extension).	- Signed Accountability Form	Yes
SS 2.2. Basic Landscape Design	- If turf is installed, list of drought-tolerant turf species.	- Signed Accountability Form	Yes
SS 2.3. Limit Conventional Turf	- Site plans or calculations of percentage turf installed.	- Signed Accountability Form	Yes
SS 2.4. Drought Tolerant Plants	- Site plans or calculations of drought-tolerant plants installed; <b>AND</b> - List of installed plants; <b>AND</b> - List of drought-tolerant plants created by a third-party entity (e.g. agricultural cooperative extension).	- Signed Accountability Form	Yes
SS 2.5. Reduce Overall Irrigation Demand by at Least 20%	- Site plans delineating zones, and calculations of zone areas; <b>AND</b> - List of installed plants; <b>AND</b> - If drought-tolerant plants are claimed (i.e., a zone is described with a species factor [Ks] less than 0.4), list of drought-tolerant plants created by a third-party entity (e.g. agricultural cooperative extension); <b>AND</b> - Product literature, labels, etc. for any high-efficiency irrigation system components; <b>AND</b> - Credentials for qualified landscape professional (e.g., certifications, licenses, higher education).	- Outdoor water use calculation, using LEED for Homes methodology and calculator; <b>AND</b> - Signed Accountability Form	Yes
SS 3. Reduce Local Heat Island Effects	- For part (b), specifications or test results demonstrating the SRI value (if applicable). - Calculations or estimates related to shaded and/or high-albedo areas.	- Signed Accountability Form	Yes
SS 4.1. Permeable Lot	- Calculations of percent permeable elements.	- Signed Accountability Form	Yes
SS 4.2. Permanent Erosion Controls	- For part (b), site plans or list of trees, shrubs, and groundcover area.	- <i>None</i>	
SS 4.3. Management of Runoff from Roof	- <i>None</i>	- For part (d), signed Accountability Form	Part (d) ONLY
SS 5. Pest Control Alternatives	- <i>None</i>	- <i>None</i>	
SS 6. Compact Development	- Calculations of average housing density.	- <i>None</i>	
<b>Water Efficiency</b>			
WE 1.1. Rainwater Harvesting System	- Calculations related to rainwater harvest area and storage system capacity.	- <i>None</i>	
WE 1.2. Graywater Reuse System	- If graywater is collected from faucets and other sources, calculations related to graywater collection.	- <i>None</i>	
WE 1.3. Use of Municipal Recycled Water System	- <i>None</i>	- <i>None</i>	
WE 2.1. High-Efficiency Irrigation System	- For part (a), information about the EPA Water Sense certified pro. - For parts (b), (d), (e), (f), irrigation system design plans; - For parts (g), (i), and (k), product literature, labels, etc.	- Signed Accountability Form	Yes
WE 2.2. Third- Party Inspection	- <i>None</i>	- <i>None</i>	Yes, if not

Prereq / Credit	Supporting Verification Materials	Submittals	AF?
			by Rater
WE 2.3. Reduce Overall Irrigation Demand by at Least 45%	<ul style="list-style-type: none"> <li>- Site plans delineating zones, and calculations of zone areas; <b>AND</b></li> <li>- List of installed plants; <b>AND</b></li> <li>- If drought-tolerant plants are claimed (i.e., low species factors are claimed), list of drought-tolerant plants created by a third-party entity (e.g. agricultural cooperative extension); <b>AND</b></li> <li>- Product literature, labels, etc. for any high-efficiency irrigation system components; <b>AND</b></li> <li>- Credentials for qualified landscape professional (e.g., certifications, licenses, higher education).</li> </ul>	<ul style="list-style-type: none"> <li>- Outdoor water use calculation, using USGBC methodology and calculator; <b>AND</b></li> <li>- Signed Accountability Form</li> </ul>	Yes
WE 3. High- / Very High-Efficiency Fixtures	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for toilets, showerheads, and/or lavatory faucets.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
<b>Energy &amp; Atmosphere</b>			
EA 1. Optimize Energy Performance of	<ul style="list-style-type: none"> <li>- <i>None, although supporting verification materials may be needed for ENERGY STAR for Homes.</i></li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 2. Insulation	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for insulation products.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 3. Air Infiltration	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 4. Windows	<ul style="list-style-type: none"> <li>- Calculations related to skylight and window area; <b>AND</b></li> <li>- Product literature, labels, etc. for skylights (if applicable); <b>AND</b></li> <li>- Product literature, labels, etc. for windows.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 5. Heating and Cooling Distribution System	<p><u>Forced-Air Systems</u></p> <ul style="list-style-type: none"> <li>- Product literature, labels, etc. for ductwork insulation.</li> </ul> <p><u>Radiative Systems</u></p> <ul style="list-style-type: none"> <li>- Product literature, labels, etc. for pipe insulation.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 6. Space Heating and Cooling Equipment	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for HVAC equipment; <b>AND</b></li> <li>- Product literature, labels, etc. for programmable thermostats.</li> </ul>	<ul style="list-style-type: none"> <li>- Calculations related to HVAC sizing and design (e.g. Manual J); <b>AND</b></li> <li>- Signed Accountability Form</li> </ul>	Yes, for prescriptive pathway
EA 7.1. Efficient Hot Water Distribution	<ul style="list-style-type: none"> <li>- Plumbing layout plans.</li> </ul>	<ul style="list-style-type: none"> <li>- Signed Accountability Form</li> </ul>	Yes
EA 7.2. Pipe Insulation	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for pipe insulation.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 7.3. Efficient DHW Equipment	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for water heater; <b>AND</b></li> <li>- Calculations related to percentage of hot water loads met by the solar system (if applicable).</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 8.1. ENERGY STAR Lights	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for lighting fixtures or lamps.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 8.2. Improved Lighting	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for lighting fixtures or lamps.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 8.3. Advanced Lighting Package	<ul style="list-style-type: none"> <li>- Calculations related to the number / percentage of ENERGY STAR lights in the home; <b>AND</b></li> <li>- Product literature, labels, etc. for lighting fixtures or lamps.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	
EA 9. Appliances	<ul style="list-style-type: none"> <li>- Product literature, labels, etc. for appliances.</li> </ul>	<ul style="list-style-type: none"> <li>- <i>None</i></li> </ul>	

<b>Prereq / Credit</b>	<b>Supporting Verification Materials</b>	<b>Submittals</b>	<b>AF?</b>
EA 10. Renewable Energy System	<ul style="list-style-type: none"> <li>- Calculations related to the percentage of the annual reference electric load supplied by the renewable system; <b>AND</b></li> <li>- Product literature, labels, etc. for renewable energy system.</li> </ul>	- Signed Accountability Form	Yes
EA 11.1. Refrigerant Charge Test	- Startup checklist or other materials provided by HVAC contractor related to refrigerant charge test.	- <i>None</i>	
EA 11.2. Appropriate HVAC Refrigerants	- For parts (b) and (c), product literature, labels, etc. for cooling system(s).	- <i>None</i>	
<b>Materials &amp; Resources</b>			
MR 1.1. Framing Order Waste Factor Limit	- Calculations related to the framing order waste factor.	- <i>None</i>	
MR 1.2. Detailed Framing Documents	- Detailed framing documents that include the specific location, spacing, and sizes of all framing members.	- <i>None</i>	
MR 1.3. Detailed Cut List & Lumber Order	<ul style="list-style-type: none"> <li>- Detailed framing cut list.</li> <li>- Detailed framing lumber order.</li> </ul>	- <i>None</i>	
MR 1.4. Framing Efficiencies	- <i>None</i>	- <i>None</i>	
MR 1.5. Off-site Fabrication	- <i>None</i>	- <i>None</i>	
MR 2.1. FSC Certified Tropical Wood	<ul style="list-style-type: none"> <li>- Written notice to wood suppliers and vendors; <b>AND</b></li> <li>- Information from suppliers and vendors on the origin of wood products.</li> </ul>	- Signed Accountability Form	Yes
MR 2.2. Environmentally Preferable Products	<ul style="list-style-type: none"> <li>- For parts (a) and (b), product literature, labels, etc. for each installed component; <b>AND/OR</b></li> <li>- For part (c), product literature, letters from manufacturers or suppliers, etc. for each installed component indicating that materials were harvested/extracted, processed, and manufactured within 500 miles of the project.</li> </ul>	- Signed Accountability Form	Yes
MR 3.1. Construction Waste Management Planning	<ul style="list-style-type: none"> <li>- Calculations of construction waste diversion rates <b>AND</b></li> <li>- Waste hauling tags or tickets.</li> </ul>	- <i>None</i>	
MR 3.2. Construction Waste Reduction	<ul style="list-style-type: none"> <li>- Calculations of construction waste diversion rates; <b>AND</b></li> <li>- Waste hauling tags or tickets.</li> </ul>	- <i>None</i>	
<b>Indoor Environmental Quality</b>			
IEQ 1. ENERGY STAR w/ Indoor Air Package	- <i>None, although supporting verification materials may be needed for ENERGY STAR for Homes with Indoor Air Package.</i>	- <i>None</i>	
IEQ 2.1. Basic Combustion Venting Measures	- Product literature, labels, etc. for stoves and fireplaces (if applicable).	- <i>None</i>	
IEQ 2.2. Enhanced Combustion Venting Measures	<ul style="list-style-type: none"> <li>- If masonry heater installed, information on the design of the unit.</li> <li>- Product literature, labels, etc. for wood stoves and fireplaces (if applicable).</li> </ul>	- Signed Accountability Form, if masonry heater is installed	Yes, for masonry heaters only
IEQ 3. Moisture Load Control	- Calculations related to latent capacity to maintain relative humidity at or below 60%.	- <i>None</i>	
IEQ 4.1. Basic Outdoor Air	- For part (a), calculations demonstrating that the site has fewer than	- Signed Accountability Form	Yes

Prereq / Credit	Supporting Verification Materials	Submittals	AF?
Ventilation	4,500 infiltration degree days. - For parts (b) and (c), calculations related to ventilation air flows. - For part (d), calculations, modeling results, on-site test results, or something equivalent that demonstrates that the proposed design will meet the ventilation air flow requirements in ASHRAE Std. 62.2, above and beyond natural infiltration rates assumed by the Standard.		
IEQ 4.2. Enhanced Outdoor Air Ventilation	- For part (a), calculations demonstrating that the site has fewer than 4,500 infiltration degree days; <b>AND</b> - For part (a), calculations related to ventilation air flows. - For part (b), product literature, labels, etc. for ERV or HRV.		Yes, for part a) only
IEQ 4.3. Third-party Performance Testing	- <i>None</i>	- <i>None</i>	
IEQ 5.1. Basic Local Exhaust	- Product literature, labels, etc. for bathroom exhaust fans.	- Signed Accountability Form	Yes
IEQ 5.2. Enhanced Local Exhaust	- <i>None</i>	- <i>None</i>	
IEQ 5.3. Third-Party Testing	- <i>None</i>	- <i>None</i>	
IEQ 6.1. Room-by-Room Load Calculations	- <i>None</i>	- Calculations related to HVAC distribution design (e.g. Manual D); <b>AND</b> - Signed Accountability Form	Yes
IEQ 6.2. Return Air Flow / Room by Room Controls	- <i>None</i>	- <i>None</i>	
IEQ 6.3. Third-Party Testing / Multiple Zones	- <i>None</i>	- <i>None</i>	
IEQ 7. Air Filtering	- Product literature, labels, etc. for air filters.	- <i>None</i>	
IEQ 8.1. Indoor Contaminant Control During Construction	- <i>None</i>	- Signed Accountability Form	Yes
IEQ 8.2. Indoor Contaminant Control	- <i>None</i>	- <i>None</i>	
IEQ 8.3. Pre-Occupancy Flush	- Dates, duration, and methods used to conduct the preoccupancy flush.	- Signed Accountability Form	Yes
IEQ 9. Radon Protection	- <i>None</i>	- Signed Accountability Form	Yes
IEQ 10.1. No HVAC in Garage	- <i>None</i>	- <i>None</i>	
IEQ 10.2. Minimize Pollutants from Garage	- <i>None</i>	- <i>None</i>	
IEQ 10.3. Exhaust Fan in Garage	- <i>None</i>	- <i>None</i>	
IEQ 10.4. Detached Garage or No Garage	- <i>None</i>	- <i>None</i>	
<b>Awareness &amp; Education</b>			
AE 1.1. Basic Operations Training	- Operations and maintenance manual that includes the prescribed elements; <b>AND</b>	- Signed Accountability Form	Yes

<b>Prereq / Credit</b>	<b>Supporting Verification Materials</b>	<b>Submittals</b>	<b>AF?</b>
	- Proposed procedures and practices for training occupants.		
AE 1.2. Enhanced Training	- Proposed procedures and practices for training occupants, homebuyer DVD, or other training materials.	- Signed Accountability Form	Yes
AE 1.3. Public Awareness	- List of open-house dates and durations; <b>AND/OR</b> - Website pages; <b>AND/OR</b> - Newspaper article.		
AE 2. Education of Building Manager	- Building manager operations and maintenance that includes the prescribed elements. - Proposed procedures and practices for training building manager.	- Signed Accountability Form	Yes