



LEED BD+C: Homes v4 LEED BD+C: Multifamily Midrise v4 Verification and Submittal Guidelines

These guidelines summarize the verification and submittal requirements for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4. These verification and submittal requirements are included in the LEED v4 Reference Guide for Homes Design and Construction.

All LEED for Homes Quality Assurance Designees (QADs) must follow the requirements for submitting completed projects as laid out in the LEED for Homes Quality Assurance Manual, 2016 Edition.

Tables 1.1 and 1.2 summarize the documentation that is required to be submitted to GBCI. These are **in addition** to the completed LEED for Homes workbook in Excel format, which is required for every project. When sampling is utilized, a completed sampling tracking sheet must also be included with the certification submittal

As per standard GBCI oversight process, during the GBCI QA review, the reviewer may request to review additional submittals (as per published requirements in table 1.3 below), if they have questions about a particular credit or strategy.

Notes:

- i. **Energy Model Certification Submittal for Multifamily Midrise Projects:**
 - Provide the [Minimum Energy Performance Calculator](#).
 - Provide Mechanical and Plumbing Schedule(s)
 - Provide Mechanical Plan
 - Provide energy model summary reports for the Proposed and Baseline 0 degree buildings including:
 - A sample of the wall, roof, floor, and window assembly inputs showing U-values and window SHGC, as well as the infiltration for a few representative spaces
 - Sample lighting and plug load inputs for a few representative spaces
 - Sample inputs at the thermal zone, system, and plant level (as applicable) for each system type, including the cooling, heating, fans, controls, outside air, and service water heating system
 - Inputs for the utility tariffs, if there is a variance of at least 10% between the baseline and proposed virtual rates
 - Simulation output summary reports for energy consumption by end use and fuel source and total energy consumption and cost by fuel source
 - It is highly encouraged to submit the *Design-case Energy Model* documentation (with the information in the bulleted list above) for *early* review by GBCI to homescertification@gbci.org along with the *Design-case* ventilation calculations. This allows for relevant crosschecks between ventilation calculations and the energy model.

ii. Ventilation Certification Submittal for Multifamily Lowrise and Midrise Projects:

- *As-built* ventilation rate procedure calculations or documentation of compliance with natural ventilation requirements of ASHRAE Standard 62.1-2010 Section 6.4 are required to be submitted for EQ p Ventilation for all non-unit spaces and must meet the requirements of ASHRAE 62.1-2010 or approved alternative standard. ASHRAE 62.1-2010 ventilation rate procedure calculations must be submitted using the [LEED Minimum Indoor Air Quality Performance Calculator](#) or using simulation software outputs that report all relevant ASHRAE 62.1 variables.
- Provide Mechanical and Plumbing Schedule(s)
- Provide Mechanical Plan
- It is highly encouraged to submit the above calculations with the *Design-case Energy Model* for early review by GBCI to homescertification@gbci.org. This allows for relevant crosschecks between ventilation calculations and the energy model.

iii. Credit-specific Verification and Submittals

Table 1.1 and 1.2 outline the specific verification and submittals for each prerequisite and credit. The chart represents what the Project Team is required to submit to the Green Rater and verified by the Verification Team, and the documents the QAD is required to submit to GBCI. LEED Calculators and workbooks should not be converted to a PDF, they must be submitted in the same file type in which they are published by USGBC.

KEY TERMS:

Multifamily: low rise and midrise

Multifamily Midrise: only multifamily midrise projects

Homes: single family and low rise

Single-family: attached and detached

Otherwise: all project buildings

Group Projects: development/subdivision-wide submittals

Summary Table 1.1: LEED BD+C: HOMES
(Single Family and Multifamily Lowrise)

ITEMS TO SUBMIT TO GBCI	
LEED for Homes Workbook (in Excel format)	Per unique building
4 Photos, one from each side of the building	
Floor plans	
Elevations	
Ventilation calculations (multifamily only, refer to page 2 for details)	
Energy rating reports (Building File and LEED for Homes)	
ENERGY STAR for Homes report OR Builder's option package compliance report	
Site Plan	By development OR worst-case lot
WaterSense outdoor water budget tool report (if pursuing WE c Total Water Use)	
COI (if any conflict exists)	

Summary Table 1.2: LEED BD+C: MULTIFAMILY MIDRISE

ITEMS TO SUBMIT TO GBCI	
LEED for Homes Workbook (in Excel format)	Per unique building
4 Photos, one from each side of the building	
Floor plans	
Elevations	
Ventilation Calculations (refer to page 2 for details)	Per Building
Energy model reports (refer to page 1 for details)	
ENERGY STAR MFHR Certificate OR Commissioning results AND in-unit HVAC testing results	Per building OR Development
Site Plan	By development OR worst-case building
WaterSense outdoor water budget tool report (if pursuing WE c Total Water Use)	
COI (if any conflict exists)	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
Integrative Process				
IP c Integrative Project Team	List project team members' names and companies, skill sets (as listed in requirements), and meeting dates.	AND	Verify that listed people are members of project team and that meeting dates are for at least three phases of design and construction process.	None
	Group Project: Credit requirements may be met for entire development.			
IP c Design Charrette	Verification Team member invited to participate in the design charrette.	AND	Participate in design charrette.	None
	OR		OR	
	List charrette participants' names and companies, skill sets (as listed in requirements), and meeting date(s).	AND	Verify charrette date, location, participants, and duration.	
	Group Project: Credit requirements may be met for entire development.			
IP c Trades Training	Verification Team member invited to conduct the trades training.	AND	Conduct trades training.	None
	OR		OR	
	List trainer, trades training participants' names and companies, trades (as listed in requirements), training date(s), and duration.	AND	Verify trades training date, location, participants, and duration.	
	Group Project: Credit requirements may be met for entire development.			
Location and Transportation				
LT p Floodplain Avoidance	Provide floodplain map that demonstrate the project is above floodplain.	AND	Verify that floodplain map is for actual location of building and that building is above floodplain.	Site plan
	OR		OR	
	Provide details (photos/plans) on how the National Flood Insurance Program requirements have been met.	AND	Verify that building meets local flood provisions.	
	OR		OR	
	Provide photo documentation that project is built on foundation of previously developed building.	OR	Verify that building site was previously developed.	
Group Project: Each building must meet requirements, but single floodplain map may be used.				

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
LT c LEED for Neighborhood Development	Provide documentation (certificate or screenshot from LEED Online) that building is part of LEED for Neighborhood Development community that has achieved Stage 2 or 3 of LEED ND 2009 or Certified Plan or Certified Project in v4.	AND	Verify that documentation is for actual location of buildings.	None
	Group Project: All buildings must be within boundary of LEED ND community.			
LT c Site Selection - Previously Developed	Provide historical documents, maps, or comparable evidence of previous development.	AND	Verify historical documents, maps, or comparable evidence of previous development.	Site plan
	OR		OR	
	Have Green Rater visually verify existing infrastructure (e.g., foundation footings).	AND	Visually verify existing infrastructure (e.g., foundation footings).	
	Group Project: This calc can be performed for entire development, if 75% of buildable land was previously developed. Land previously cleared for development does not qualify as previously developed.			
LT c Site Selection - Avoidance of Sensitive Land	<u>Prime Farmland</u> Provide soil data map with key to demonstrate that development is not on qualifying farmland.	AND	<u>Prime Farmland</u> Verify that soil data map or supporting documentation is for actual location of development.	None
	<u>Parkland</u> If bordering parkland, provide area map or other documentation to demonstrate that land was not previously parkland.	AND	<u>Parkland</u> Visually verify that the development is not next to parkland.	
	OR		OR	
	If land was public parkland, provide documentation that land of equal or greater value is traded by public landowner.	AND	Verify documentation that developed land was not parkland or, if parkland, was traded for land to public landowner.	
	<u>Floodplain</u> Provide floodplain map that demonstrates project is above floodplain.	AND	<u>Floodplain</u> Verify that floodplain map is for actual location of buildings and that building is above floodplain.	
	OR			
Provide photos/plans demonstrating no new hardscapes were developed if in floodplain.				

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
LT c Site Selection - Avoidance of Sensitive Land (continued)	<u>Habitat</u> Provide documentation that demonstrates that project is not land identified as habitat.			
	OR			
	If identified as habitat, provide a list of species that are listed as GH or SH (possibly extinct), G1 or S1 (critically imperiled), or G2 or S2 (imperiled), from NatureServe for the project site.	AND	<u>Habitat</u> Verify that habitat documentation is for actual location of buildings.	
	Provide an explanation for why the project does not disturb any of the relevant habits listed for any listed species.			
	<u>Wetlands</u> If near wetlands, provide photos or plans demonstrating that development is not within 50 feet of wetlands	OR	<u>Wetlands</u> Visually verify that development is not within 50 feet of wetlands	None
	OR		OR	
	Documentation showing it complies with local regulations, if more stringent.	AND	Verify the site complies with local regulations, if more stringent.	
	<u>Waterbodies</u> If near water, provide photos or plans demonstrating that development is not within 100 feet of waterbody.	OR	<u>Waterbodies</u> Visually verify that development is not within 100 feet of waterbody.	
Group Project: Credit can be granted if entire development meets credit requirements.				
LT c Site Selection - Infill Development	Provide map and documentation to demonstrate that 75% of land within ½ mile of project boundary is previously developed land.	AND	Verify map and calculations that development within ½ mile of project boundary is previously developed.	
	OR		OR	
	<u>Small Towns</u> Provide documentation that the project is within city limits of town with population of less than 20,000.	AND	<u>Small Towns</u> Verify the small town documentation and visually verify that at least 75% of lot borders previously developed land.	None
	Provide map and documentation that at least 75% of land surrounding project boundary is previously developed.	OR		
Group Project: Credit can be granted if entire development meets credit requirements.				

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
LT c Site Selection - Open Space	Provide maps and calculations of publicly accessible open space of at least ¼ acre within ½ mile of home.	OR	Visually verify publicly accessible open space of at least ¼ acre within ½ mile of home.	None
			OR	
		AND	Verify maps and calculations of publicly accessible open space of at least ¼ acre within ½ mile of home.	
Group Project: Walking distance can be measured from center of community, provided distance from center of community to farthest building does not exceed ¼ mile.				
LT c Site Selection - Street Network	Provide Walk Score report that lists number of intersections.	AND	Verify that documentation is for actual location of development and that required intersection density has been met.	None
	OR			
	<u>Site Smaller than 2 Acres</u> Provide map with ¼-mile radius drawn around project boundary; circle and count qualifying intersections.			
	OR			
	<u>Site Larger than 2 Acres</u> Provide map with ¼-mile radius drawn around project boundary; calculate area of land within ¼ mile of project boundary, circle and count qualifying intersections, and calculate intersection density.			
Group Project: Calculations are for area immediately surrounding entire development's project boundary.				
LT c Site Selection - Bicycle Storage - Single-Family	Provide drawings or plans to demonstrate that adequate secure, covered space is available.	OR	Verify that adequate bicycle storage is installed on site.	None
	Group Project: Each building must meet bicycle storage requirements.			
LT c Site Selection - Bicycle Storage - Multifamily	Provide drawings or plans to demonstrate that adequate secure, covered space is available.	OR	Verify calculations and that adequate bicycle storage is installed on site.	None
	Provide calculations for number of building occupants and number of required short-term and long-term bicycle storage spaces.	AND		
	Group Project: Each building must meet bicycle storage requirements.			

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
LT c Site Selection - Bicycle Network	Provide map or other documentation showing community resources, school, employment center, or transit stops within 3-mile bicycling distance of project boundary.	AND	Verify documentation that qualifying resources are on bicycle network.	None
	Provide map or other documentation showing that qualifying resources are on bicycle network.			
	Group Project: 3-mile bicycling distance is measured from entire development's project boundary.			
LT c Compact Development	Provide documentation of buildable land area and number of dwelling units.	AND	Verify calculations of average housing density.	Site plan
	Calculate density.			
	Group Project: Single calculation may be done for entire development, using total building land area for development and total number of dwelling units.			
LT c Community Resources - Single- Family	Provide map or other documentation showing community resources and resource category within ½-mile walking distance from building entrance.	OR	Visually verify that the community resources qualify and are within walking distance.	None
	Group Project: Walking distance can be measured from center of community, provided distance from center of community to farthest building does not exceed ¼ mile.			
LT c Community Resources - Multifamily	Provide map or other documentation showing community resources and resource category within ½-mile walking distance from building entrance. (Up to half of qualifying community resources may be within project boundary.)	OR	Visually verify that community resources qualify and are within walking distance.	None
	Group Project: Walking distance can be measured from center of community, provided distance from center of community to farthest building does not exceed ¼ mile.			
LT c Access to Transit	Provide transit schedules and calculations of transit rides within ¼ mile or ½ mile of building.	AND	Verify transit schedules, transit stop locations, and calculations of transit rides within ¼ mile or ½ mile of building.	None
	Provide a map with transit stops circled that shows walk distance.			
	Group Project: Walking distance can be measured from center of community, provided distance from center of community to farthest building does not exceed ¼ mile.			

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
Sustainable Sites				
SS p Construction Activity Pollution Prevention	Provide copy of construction-related pollution prevention plans, if available.	OR	Visually verify that all applicable erosion and pollution control measures are installed.	None
	Provide photos of all pollution control measures.			
	Group Project: Single plan that meets prerequisite requirements may be used for entire development.			
SS p No Invasive Plants	Provide plant list and identify resources used to confirm that no plants are invasive.	AND	Compare list of installed plants with list of local invasive plants from third-party entity (e.g., cooperative extension service).	None
			Visually verify that listed plants are installed on site.	
	Group Project: Single plant list that meets prerequisite requirements may be used for entire development.			
SS c Heat Island Reduction	Provide site plan with trees and other plantings to show shading of hardscapes.	OR	Visually verify shade trees or other plantings.	None
	AND/OR		AND/OR	
	Provide nonabsorptive product name(s) and installed area.	AND	Verify that nonabsorptive materials meet credit requirements and are located on site.	
	Provide calculation showing percentage of area with shading and/or nonabsorptive materials.	AND	Verify calculations or estimates related to shaded and/or nonabsorptive areas.	
Group Project: Single calculation can be performed for entire development. Common parking areas must be included in calculation; common roads and alleys may be excluded.				
SS c Rainwater Management	Provide Rainfall Events Calculator.	AND	Verify calculations identifying percentile storm or 2 year, 24 hour storm.	None
	OR			
	Provide calculations for the chosen percentile storm.			
	OR	AND	Visually verify that GI/LID elements (e.g., permeable paving, designed infiltration features) match what was included in plans.	
	Provide calculations of the 2 year, 24 hour storm.			
	Provide plan detailing hardscape area, total lot area, and any GI/LID locations.			
	Provide calculations for volume of rainwater managed by GI/LID measures.	AND	Verify calculations of percentage permeable elements.	
Calculate total permeable area plus hardscape area directing water to be managed on site.	AND			
Group Project: Single calculation can be performed for entire development.				

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
SS c Nontoxic Pest Control - Single- Family	Provide list of products used to meet credit requirements.	OR	Visually verify that credit requirements are met.	None
	For any measure that is design related (rather than product), provide narrative on what was designed and how it meets the requirements.	AND		
SS c Nontoxic Pest Control - Multifamily	Provide list of products used to meet credit requirements.	OR	Visually verify that credit requirements are met.	None
	Develop and provide integrated pest management policy and include in operations and maintenance manual.	AND		
	For any measure that is design related (rather than product), provide narrative on what was designed and how it meets the requirements.			
Water Efficiency				
WE p Water Metering	Include details on tracking water bills and sharing data with USGBC in operations and maintenance manual.	AND	Visually verify that water meter(s) are installed.	None
	Provide written details on what kind of meter or meters are installed.	OR		

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
WE c Total Water Use - Single-Family	Complete water calculator.	AND	Visually verify that listed indoor fixtures were installed and that water calculator’s inputs match installed fixtures’ performance criteria.	WaterSense water budget tool report
	Provide details on water pressure.	OR	Test water pressure and record pressure.	
	List all fixtures, clothes washers, and dishwashers in the building, and flow rates/water usage.	AND	Test for water leaks.	
	Complete WaterSense water budget tool.	AND	Visually verify that outdoor water use calculator’s inputs match installed fixtures’ performance criteria.	
	Provide list of plants and landscape plan.	AND	For any drought-tolerant plants, compare list of installed plants with list of regional drought-tolerant plants created by a third-party entity (e.g., cooperative extension service).	
	If using captured rainwater, provide sizing calculation and product details.	AND	Visually verify any water-saving items identified in calculation, including high-efficiency irrigation measures and high-low shading conditions.	
	If using high-efficiency irrigation or smart scheduling technology, provide product details.			
	Group Project: Outdoor water calculation using WaterSense water budget tool can be averaged for multiple single-family homes only if entire development is owned by one organization or all landscaping is managed collectively and landscaping is similar for all homes. Otherwise, calculation must be performed for each lot.			

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
WE c Total Water Use - Multifamily	Complete water calculator.	AND	Visually verify that listed indoor fixtures were installed and that water calculator's inputs match installed fixtures' performance criteria.	WaterSense water budget tool report
	List all fixtures, clothes washers, and dishwashers in the building, and flow rates/water usage.	AND	Test for water leaks.	
	Complete WaterSense water budget tool.	AND	Visually verify that outdoor water use calculator's inputs match installed fixtures' performance criteria.	
	Provide list of plants and landscape plan.	AND	For any drought-tolerant plants, compare list of installed plants with list of regional drought-tolerant plants created by a third-party entity (e.g., cooperative extension service).	
	If using captured rainwater, provide sizing calculation and product details.	AND	Visually verify any water-saving items identified in calculation, including high-efficiency irrigation measures and high-low shading conditions.	
	If using high-efficiency irrigation or smart scheduling technology, provide product details.			
WE c Indoor Water Use - Single-Family	Provide product literature and WaterSense label for all installed toilets, showerheads, faucets, and/or clothes washers.	OR	Visually verify that high-efficiency toilets, showerheads, faucets, and/or clothes washer(s) are installed, comparing installed items with manufacturers' specification sheets where necessary; ensure all items are WaterSense labeled (for clothes washers, ENERGY STAR labeled).	None
	Provide details on water pressure.	AND	Test building for water leaks.	
		OR	Test for water pressure to ensure it is below 60 psi.	
WE c Indoor Water Use - Multifamily	Provide product literature and WaterSense label for all installed toilets, showerheads, faucets, and/or clothes washers.	OR	Visually verify that high-efficiency toilets, showerheads, faucets, and/or clothes washer(s) are installed, comparing installed items with manufacturers' specification sheets where necessary; ensure all items are WaterSense labeled (for clothes washers, ENERGY STAR labeled).	None
		AND	Test building for water leaks.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
WE c Outdoor Water Use	Provide list of plants and landscape plan. List the third-party resource(s) used to verify that plants are native or adapted.	AND	For all native or adapted plants, compare list of installed plants with list of regional native and adapted plants created by third-party entity (e.g., Cooperative Extension Service).	None
	Calculate turf grass area, native or adapted plant area, and total landscaped area.	AND	Visually verify that area calculations match what was installed.	
Energy & Atmosphere				
EA p Minimum Energy Performance - Homes	Provide ENERGY STAR for Homes label or certificate (if applicable).	OR	Visually verify all required ENERGY STAR for Homes inspections.	Energy rating file reports: LEED for Homes and Building File Report.
				ENERGY STAR for Homes report demonstrating that the project meets ENERGY STAR for Homes requirements.
	Provide details on ENERGY STAR label for refrigerator, dishwasher, or clothes washer.	OR	Visually verify the ENERGY STAR label on all applicable appliances.	OR
	Group Project: Worst-case energy models following USGBC and EPA protocols may be performed for specific units in multifamily buildings.			Builders' option package to demonstrate compliance with prescriptive ENERGY STAR for Homes requirements.

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EA p Minimum Energy Performance - Multifamily Midrise	Provide energy model documentation for GBCI review.		Verify that all construction documents included required air-sealing details.	Energy model reports
		AND	Verify that all inputs in energy model represent actual features of what was installed in the building.	ENERGY STAR Multifamily Highrise certificate.
		AND	Conduct required commissioning activities.	
			OR	OR
		AND	Verify commissioning test results from commissioning agent.	Commissioning test results and in-unit HVAC testing results.
		AND	Verify thermal enclosure inspection checklist.	
Group Project: Worst-case energy models following USGBC and EPA protocols may be performed for specific units in multifamily buildings.				
EA p Energy Metering	Include details on tracking energy bills via third-party tracking group in operations and maintenance manual.	AND	Visually verify that all applicable utility meter(s) are installed.	None
	Provide written details on what kind of meter or meters are installed and where.	OR		
EA p Education of Homeowner, Tenant, or Building Manager	Provide copy of operations and maintenance manual.	AND	Verify that operations and maintenance manual includes required elements.	None
			Verify that building walkthrough was performed.	
EA p Home Size - Homes	Provide architectural plans and basis for calculating size of each home or unit.	OR	Verify building area for each building.	None
		AND	Verify home size adjustment calculation (including ensuring that only appropriate rooms are counted as bedrooms).	
			OR	
		OR	Perform home size adjustment calculation for each building.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EA c Annual Energy Use	Provide architectural plans and basis for calculating size of each home or unit.	AND	Verify building area for each building.	None
		AND	Verify home size adjustment calculation (including ensuring that only appropriate rooms are counted as bedrooms).	
		OR	Perform home size adjustment calculation for each building.	
	LEED Energy Budget report.	AND	Verify energy model output demonstrating energy savings from energy model.	
	OR			
Calculations demonstrating annual energy use.	AND			
EA c Efficient Hot Water Distribution	<u>Efficient Hot Water Distribution</u> Provide details on the type of system installed and length/diameters of longest plumbing run.	OR	<u>Efficient Hot Water Distribution</u> Visually verify that installed hot water distribution system meets requirements for plumbing run lengths and pipe diameter.	None
		AND	Visually verify that installed recirculating system includes push-button controls and automatic pump shut-off controls.	
			<u>Performance Test</u> Conduct test to determine volume of water in hot water plumbing runs.	
	<u>Pipe Insulation</u> Provide insulation R-value and product details.	AND	<u>Pipe Insulation</u> Visually verify that installed hot water distribution system meets requirements for pipe insulation.	
EA c Advanced Utility Tracking	<u>Electric and Water</u> Provide details on energy monitoring system or irrigation system meter.	OR	<u>Electric and Water</u> Visually verify that irrigation meter or energy monitoring system that meets credit requirements is installed.	None
	<u>Third-Party Utility Reporting</u> Demonstrate that each applicable utility account has been set up in third-party utility tracking and reporting program, per credit requirements.	OR	<u>Third-Party Utility Reporting</u> Verify that each applicable utility account has been set up in third-party utility tracking and reporting program.	
EA c Active Solar- Ready Design - Homes	Provide completed solar ready inspection checklists.	OR	Visually verify that all EPA solar-ready specifications are met.	None

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Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EA c HVAC Start-Up Credentialing - Homes	Provide information on HVAC contractor who performs start-up tests, including participation in H-QUITO organization or NATE.	AND	Verify that contractor who performed start-up work and completed installation checklists meets credit requirements.	None
EA c Building Orientation for Passive Solar - Homes	Provide calculations showing glazing areas and window shading.	AND	Verify calculations or simulations for glazing area, south-facing roof area, building orientation, and seasonal shading.	None
			Verify installed elements used to satisfy credit requirements (e.g., window area, overhangs, awnings).	
EA c Air Infiltration - Homes	None		Conduct on-site testing of air infiltration using a blower door.	None
			OR	
			Verify envelope leakage test results conducted by a qualified energy rater or USGBC-approved alternative, according to HERS procedures.	
EA c Envelope Insulation - Homes	Provide list of insulation types and values for each relevant location (i.e., walls, ceiling, roof, floor, basement).	OR	Verify that the insulation levels meet or exceed R-value requirements of IECC 2012, using either prescriptive list or calculation (REScheck).	None
	OR			
	Provide REScheck or similar calculation methodology, if using tradeoffs.	AND	Visually verify that insulation is installed to HERS Grade I specifications.	
EA c Windows - Homes	Calculate window-to-floor area to determine required window performance values.	AND	Verify calculation of window-to-floor area ratio.	None
	Provide list of windows installed and include their performance values (SHGC and U-value).	OR	Visually verify that installed windows meet required U-value and SHGC specifications.	
EA c Space Heating and Cooling Equipment - Homes	Provide list of HVAC equipment to be installed and include its efficiency rating.	OR	Verify that installed HVAC equipment meets efficiency requirements, using product literature or labels.	None
		AND	Visually verify that insulation for all piping carrying water or refrigerant meets or exceeds credit requirements.	

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Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EA c Heating and Cooling Distribution Systems - Homes	None		<u>Forced-Air Systems:</u> <u>Option 1: Ductwork in Conditioned Space</u> Visually verify that installed forced-air system is ductless or all ducts are within conditioned space.	None
			Verify envelope leakage test results conducted by a qualified energy rater or USGBC-approved alternative.	
		AND/OR	<u>Option 2: Ductwork in Unconditioned Space</u> Verify duct leakage test results conducted by a qualified energy rater or USGBC-approved alternative, according to HERS procedures.	
		AND/OR	<u>Hydronic Systems:</u> Visually verify that entire system, including all distribution pipes, is within conditioned space.	
			Visually verify that outdoor reset control is installed.	
		EA c Efficient Domestic Hot Water Equipment - Homes	Provide information on equipment type and efficiency.	
For solar water systems, calculate percentage of hot water loads met by solar system.	AND		For solar water heater, verify calculation of percentage of hot water load met by solar system.	
EA c Lighting - Homes Single-Family	<u>Option 1: Indoor Lighting</u> Complete indoor lighting calculation and provide details on lighting type and watts for each fixture.	AND	<u>Option 1: Indoor Lighting</u> Visually verify that lighting calculation matches what was installed.	None
	<u>Option 2: Exterior Lighting</u> Provide details on lighting type, watts, and Dark Sky qualification for each fixture.	AND	<u>Option 2: Exterior Lighting</u> Visually verify that exterior lighting is Dark Sky qualified and has motion sensors, photovoltaic cells, or astronomic time-clock operation.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EA c Lighting - Homes - Multifamily	<u>Option 1: Indoor Lighting</u> Complete ENERGY STAR lighting calculation and provide details on lighting type and watts for each fixture.	AND	<u>Option 1: Indoor Lighting</u> Visually verify that lighting calculation matches what was installed.	None
	<u>Option 2: Exterior Lighting</u> Complete ENERGY STAR lighting calculation and provide details on lighting type, watts, and Dark Sky qualification for each fixture.	AND	<u>Option 2: Exterior Lighting</u> Visually verify that exterior lighting is Dark Sky qualified and that lighting calculation matches what was installed.	
EA c High-Efficiency Appliances - Homes	Provide product material to demonstrate that refrigerator, ceiling fans, and/or dishwashers are ENERGY STAR qualified.	OR	Visually verify that all installed appliances are ENERGY STAR qualified and that qualified ceiling fans are installed in each bedroom plus living or family room.	None
EA c Renewable Energy - Homes	Provide documentation or calculation demonstrating estimated annual energy production of renewable energy system.	AND	Verify calculations related to annual electric load supplied by renewable system.	None
	Provide documentation that RECs have been retained by building owner.	AND	Visually verify that renewable energy system has been installed. Verify that RECs have been retained by building owner.	
Materials & Resources				
MR p Certified Tropical Wood	Provide FSC chain of custody and other documentation to demonstrate that any tropical woods (other than reclaimed) are FSC certified.	AND	Verify that no wood used in project comes from tropical country unless reclaimed or FSC certified, using information provided by suppliers and vendors.	None
MR p Durability Management	None		Visually verify that all indoor moisture control measures are installed.	None
MR c Durability Management Verification			Visually verify each measured listed in ENERGY STAR for Homes water management system checklist.	None
	If a 3rd party verifier is used, provide name and details.	AND	OR Verify that qualified energy rater signed off on each measure.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
MR c Environmentally Preferable Products	<u>Local Production</u> Provide documentation that installed components meet credit requirements for local sourcing.	AND	<u>Local Production</u> Verify that installed components meet definition of local production, using product literature, letters from manufacturers or suppliers, or other documentation.	None
	<u>Environmentally Preferable Products</u> Provide product literature that demonstrates installed products meet credit requirements.	AND	<u>Environmentally Preferable Products</u> Verify that installed components satisfy specific credit requirements, using product literature, labels, or other documentation.	
MR c Construction Waste Management	Provide waste slips.	AND	Verify that calculations of construction waste rate are based on waste hauling documents.	None
	Calculate project construction waste following credit requirements.			
MR c Material-Efficient Framing	None		Visually verify that framing was installed per credit requirements.	None
Indoor Environmental Quality				
EQ p Ventilation - Single-Family	<u>Local Exhaust</u> Provide product literature for bathroom and kitchen fans, showing flow rate and (for bath fans) ENERGY STAR qualifications.	OR	<u>Local Exhaust</u> Verify that bathroom and kitchen fans meet prerequisite requirements for sound and performance.	None
		AND	Test exhaust fans to ensure they are exhausting sufficient airflow to meet prerequisite requirements, and verify that exhaust goes directly to outdoors.	
		AND	If exhaust hood can exhaust more than 400 cfm, visually verify that makeup air source is installed with damper that opens when exhaust fan is turned on.	
	<u>Whole-House Mechanical Ventilation</u> Calculate required whole-house mechanical ventilation rate and provide product literature for whole-house mechanical ventilation system.	OR	<u>Whole-House Mechanical Ventilation</u> Verify that whole-house mechanical ventilation rate, and that the ventilation system is installed and meets requirements for flow rate and sound.	
		OR	Verify that house has earned EPA Indoor airPLUS label.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EQ p Ventilation - Multifamily	<u>Local Exhaust</u> Provide product literature for bathroom and kitchen fans, showing flow rate and (for bath fans) ENERGY STAR qualifications.	OR	<u>Local Exhaust</u> Verify that bathroom and kitchen fans meet prerequisite requirements for sound and performance.	ASHRAE 62.1 calculations for all non-unit spaces.
		AND	Test exhaust fans to ensure they are exhausting sufficient airflow to meet prerequisite requirements, and verify that exhaust goes directly to outdoors.	
		AND	If exhaust hood can exhaust more than 400 cfm, visually verify that makeup air source is installed with damper that opens when exhaust fan is turned on.	
	<u>Mechanically Ventilated Spaces</u> Provide ASHRAE 62.1 calculations (LEED Minimum Indoor Air Quality Performance Calculator listing the required outdoor air intake flow and design outdoor intake flow for each ventilation system), including all assumptions for each variable in the calculation.	AND	<u>Mechanically Ventilated Spaces</u> Verify that ASHRAE 62.1 calculations are correct and that installed systems meet calculation requirements.	
	Provide product literature for the mechanical ventilation system.			
	<u>Nonunit Spaces</u> Provide product literature and design details for nonunit ventilation systems.	AND	Verify that whole-unit air is provided directly from outdoors, not through pressurized corridor.	
		OR	Verify that house has earned EPA Indoor airPLUS label.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team	Verification Team	Submittal to GBCI at Certification
EQ p Combustion Venting	None	Visually verify that no unvented combustion appliances are installed.	None
		Visually verify that carbon monoxide monitors or sensors are installed on each floor and in every unit.	
		Visually verify that any combustion space- or water- heating equipment is installed with closed combustion or power-vented exhaust or is located in a detached building or open-air facility.	
		Visually verify that any fireplace or woodstove has doors or seal.	
		For any fireplaces or woodstoves that are not closed- combustion or power-vented, conduct combustion appliance zone depressurization to ensure depressurization of zone is less than 5 Pa.	
EQ p Garage Pollutant Protection	None	Visually verify that all air-handling equipment and ductwork are located outside fire-rated envelope of garage.	None
		Visually verify that surfaces between garage and conditioned spaces are sealed and weather-stripped.	
		Visually verify that carbon monoxide monitors are installed in all rooms that share door with garage.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EQ p Radon-Resistant Construction	For existing building without radon-resistant construction techniques, provide test results that show radon levels are below 4 pCi/L.	OR	Visually verify that radon-resistant construction elements are installed, including the following:	None
	Provide design documents or photos showing radon-resistant construction techniques.		gas-permeable layer (e.g., gravel)	
			capillary break (e.g., plastic sheeting)	
			electrical outlet near vent piping	
	3- or 4-inch (approximately 80- or 100-millimeter) vent piping that meets requirements.			
EQ p Air Filtering	Provide product literature listing MERV ratings for filters installed on all forced-air heating and cooling systems and supply ventilation systems.	OR	OR	None
			Visually verify that building is elevated at least 2 feet (600 millimeters), with open air space between building and ground, or built over the garage.	
			Visually verify that air filters of MERV 8 or higher are installed on all forced-air heating and cooling systems, using product literature or labels.	
EQ p Environmental Tobacco Smoke - Multifamily	Provide copy of building rental or lease agreements or condo or co-op association covenants and restrictions, indicating provision that prohibits smoking in all common areas of building.	AND	Visually verify that air filters of MERV 6 or higher are installed on all supply ventilation systems with at least 10 feet (3 meters) of ductwork, using product literature or labels.	None
			Visually verify that mechanical air filters are installed on all nonducted forced air heating and cooling systems in air-handling unit.	
			Visually verify that any smoking areas are at least 25 feet (7.5 meters) away from entries, outdoor air intakes, and operable windows.	
			Visually verify signage indicating smoking and nonsmoking areas.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EQ p Compartmentaliza- tion	None		Conduct on-site testing of compartmentalization using a blower door.	None
			OR	
			Verify compartmentalization test results conducted by qualified energy rater or USGBC-approved alternative, according to HERS procedures.	
EQ c Enhanced Ventilation	<u>Enhanced Local Exhaust</u> Provide ventilation system controller product details.	OR	<u>Enhanced Local Exhaust</u> Visually verify that each full bathroom has exhaust fan that either is controlled by occupancy sensor, humidistat, or delay timer that operates fan for at least 20 minutes, or runs continuously.	None
			<u>Enhanced Whole-House Ventilation</u> Provide ventilation system product details.	
		Visually verify that ventilation system is programmed to not exceed ASHRAE 62.2 by more than 10%.		
EQ c Contaminant Control	<u>Preoccupancy Flush</u> Provide description of preoccupancy flush and include dates and duration.	AND	<u>Preoccupancy Flush</u> At midconstruction site visit, visually verify that ducts are sealed.	None
			At final site visit, conduct swipe of duct interiors and verify that ducts are clean.	
	<u>Air Testing</u> Provide indoor air contamination test results.		<u>Walk-Off Mats</u> Visually verify that permanent, cleanable, walk-off mats at least 4 feet (1.2 meters) long are installed at each entry (for common exterior entryways in multifamily buildings, at least 10 feet, or 3 meters, long).	
			<u>Shoe Removal and Storage</u> Visually verify that uncarpeted shoe removal and storage space is installed near primary entryway (of each unit in multifamily buildings).	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team	Verification Team	Submittal to GBCI at Certification
EQ c Balancing of Heating and Cooling Distribution Systems	None	<p align="center"><u>Forced-Air Systems:</u> <u>Multiple Zones</u></p> <p>Visually verify that at least two space-conditioning zones with independent thermostatic controls are installed.</p>	None
		OR	
		<p>Verify that single-family home is less than 800 square feet (74 square meters) or average unit in multifamily building is less than 1,200 square feet (110 square meters).</p>	
		<p align="center"><u>Supply Air-Flow Testing</u></p> <p>Verify that ductless heating and cooling system is installed.</p>	
		OR	
		<p>Test supply air-flow rates for each room and verify that air-flow rates are within 20% or 25 cfm (11 lps) of design.</p>	
		<p align="center">OR</p> <p>Verify that supply air-flow rates, as tested by third-party, are within 20% or 25 cfm (11 lps) of design.</p>	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team	Verification Team	Submittal to GBCI at Certification
EQ c Balancing of Heating and Cooling Distribution Systems (continued)	None	<u>Pressure Balancing</u> Test pressure difference between each bedroom and main part of house and verify that pressure difference is less than 3 Pa.	None
		OR	
		Verify that pressure differences between each bedroom and main part of house, as tested by third-party, are less than 3 Pa.	
		<u>Radiative Systems:</u> <u>Multiple Zones</u> Visually verify that at least two space-conditioning zones with independent thermostatic controls are installed.	
		OR	
		Verify that single-family home is less than 800 square feet (74 square meters) or average unit in multifamily building is less than 1,200 square feet (110 square meters).	
EQ c Enhanced Compartmentalization	None	<u>Room-by-Room Controls</u> Verify that each room has thermostatic control.	None
		OR	
		Conduct on-site testing of compartmentalization using blower door. Verify compartmentalization test results conducted by qualified energy rater or USGBC-approved alternative, according to HERS procedures.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EQ c Enhanced Combustion Venting			Verify on site that no fireplace or woodstove is installed.	None
			OR	
	Provide label or product details demonstrating that any wood or pellet stove is EPA qualified.	AND	Verify that any wood or pellet stove is EPA qualified and power or direct vented.	
	OR		OR	
	Provide label or product details demonstrating that any gas, propane, or alcohol stove has been listed by a safety testing facility.	AND	Verify that any gas, propane, or alcohol stove has been listed by a safety testing facility, has a glass door and electronic pilot, and is power or direct vented.	
EQ c Enhanced Garage Pollutant Protection - Single- Family	None		<u>Exhaust Fan in Garage</u> Visually verify that exhaust fan in garage is rated at least 75 cfm (35 lps) and meets ENERGY STAR performance requirements.	None
			Visually verify that fan is linked to occupant sensor, garage opening-closing mechanism, CO sensor, or similar automatic timer.	
			<u>No Garage, Detached Garage, or Carport</u> Visually verify that there is no garage attached to home.	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EQ c Enhanced Garage Pollutant Protection - Multifamily	<p align="center"><u>Exhaust Fan in Multicar Garage</u> Provide calculations or plans demonstrating that garage will be negatively pressurized.</p>	AND	<p align="center"><u>Exhaust Fan in Multicar Garage</u> Visually verify that exhaust fans in garage are installed per plans.</p>	None
			<p>Visually verify that garage is fully air-sealed from rest of building and has hard-lid ceiling and self-closing doors.</p>	
			<p>Visually verify that fans either are linked to CO sensor or run continuously.</p>	
	OR	<p>Test pressure difference between garage and surrounding spaces when exhaust fans are on and verify that garage is depressurized by at least 5 Pa.</p>		
		AND	<p align="center"><u>Exhaust Fan in Small Garage</u> Visually verify that exhaust fan in garage is rated at least 100 cfm (47 lps) (nonducted) or 130 cfm (61 lps) (ducted) and meets ENERGY STAR performance requirements.</p>	
<p>Visually verify that fan is linked to occupant sensor, garage opening-closing mechanism, CO sensor, or similar automatic timer.</p>				
EQ c Enhanced Garage Pollutant Protection - Multifamily Midrise	<p align="center"><u>Exhaust Fan on Controls in Garage</u> Provide calculations or plans demonstrating that garage will be negatively pressurized.</p>	AND	<p align="center"><u>Exhaust Fan on Controls in Garage</u> Visually verify that exhaust fans in garage are installed per plans.</p>	None
			<p>Visually verify that garage is fully air-sealed from rest of building and has hard-lid ceilings and self-closing doors.</p>	
			<p>Visually verify that fans either are linked to CO sensor or run continuously.</p>	
	OR	<p>Test pressure difference between garage and surrounding spaces when exhaust fans are on and verify that garage is depressurized by at least 5 Pa.</p>		
			<p align="center"><u>No Garage, Detached Garage, or Carport</u> Visually verify that there is no garage attached to building, either next to or below building.</p>	

Table 1.3: Verification and Submittal Guidelines for LEED BD+C: Homes v4 and LEED BD+C: Multifamily Midrise v4

Prerequisite/ Credit	Verification Submittals Provided by Project Team		Verification Team	Submittal to GBCI at Certification
EQ c Low-Emitting Products	Provide product literature showing that installed products meet requirements.	AND	Verify that installed components satisfy requirements, using product literature or labels.	None
EQ c No Environmental Tobacco Smoke - Multifamily Midrise	Provide a copy of building rental or lease agreements or condo or co-op association covenants and restrictions indicating provision that prohibits smoking in building.	AND	Visually verify that any smoking areas are at least 25 feet (7.5 meters) from entries, outdoor air intakes, and operable windows.	None
			Visually verify signage indicating smoking and nonsmoking areas.	
Innovation				
IN p Preliminary Rating	None		Participate in preliminary rating.	None
IN c Innovation	<u>Innovation</u> Submit Innovation request and present any USGBC- approved requests to Verification team.	AND	<u>Innovation</u> Verify that all components listed in USGBC-approved Innovation request are installed.	None
	<u>Pilot</u> Sign up for pilot credit and present completed and USGBC-approved pilot credit to Verification team.	AND	<u>Pilot</u> Verify that all components listed in USGBC-approved pilot credit are installed.	
IN c LEED Accredited Professional	Provide details on project team member who has LEED AP Homes credential.	OR	Verify that principal member of project team is LEED AP Homes.	None
Regional Priority				
RP c Regional Priority	Select regional priority credits that project team achieved.		None	None