



ICC-ES VAR Environmental Report VAR-1017

Reissued January 2024

This report is subject to renewal January 2026.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 12 00—Structural Panels

Section: 06 17 13—Laminated Veneer Lumber

Section: 06 17 33—Wood I-joists

Section: 06 18 13—Glued-Laminated Beams

REPORT HOLDER:

BOISE CASCADE WOOD PRODUCTS, LLC

EVALUATION SUBJECT:

Structural Wood Products:

BCI® Wood I-Joists

ALLJoist® Wood I-Joists

VERSA-LAM® Laminated Veneer Lumber

VERSA-STUD® Laminated Veneer Lumber

BOISE GLULAM® Beams

BOISE CASCADE Sheathing

Software Products:

BOISE CASCADE SOFTWARE SOLUTIONS (BC CALC®, BC FRAMER®, BC CONNECT® AND BC FASTPLAN™)

1.0 EVALUATION SCOPE

Compliance with the following evaluation guidelines:

- ICC-ES Evaluation Criteria for Determination of Biobased Material Content (EC102), dated March 2012
- ICC-ES Evaluation Criteria for Determination of Formaldehyde Emissions of Composite Wood and Engineered Wood Products (EC108), dated March 2012
- ICC-ES Evaluation Criteria for Determination of Certified Wood and Certified Wood Content in Products (EC109), dated March 2012

Compliance eligibility with the applicable sections of the following green building rating systems, standards and codes:

- National Green Building Standard (ICC 700-2020) (See Table 2 for details.)
- National Green Building Standard (ICC 700-2015) (See Table 3 for details.)
- National Green Building Standard (ICC 700-2012) (See Table 3 for details.)

- National Green Building Standard (ICC 700-2008) (See Table 4 for details.)
- LEED v4.1 for Residential BD+C Multifamily (See Table 5 for details.)
- LEED v4.1 for Residential Single Family (See Table 5 for details.)
- LEED v4.1 for Building Design and Construction (BD+C) (See Table 6 for details.)
- LEED v4.1 for Interior Design and Construction (ID+C) (See Table 7 for details.)
- LEED v4 for Homes Design and Construction (See Table 8 for details.)
- LEED v4 for Building Design and Construction (BD+C) (See Table 9 for details.)
- LEED v4 for Interior Design and Construction (ID+C) (See Table 10 for details.)
- LEED for Homes 2008 (See Table 11 for details.)
- LEED 2009 for New Construction and Major Renovations (See Table 12 for details.)
- LEED 2009 for Schools New Construction and Major Renovations (See Table 13 for details.)
- LEED for Core and Shell 2009 (See Table 14 for details.)
- LEED for Commercial Interiors 2009 (See Table 15 for details.)
- LEED for Existing Buildings 2008 (See Table 16 for details.)
- 2019 California Green Building Standards Code (CALGreen), Title 24, Part 11 (See Table 17 for details.)
- ANSI/GBI 01-2021 - Green Building Assessment Protocol for Commercial Buildings (See Table 18 for details.)
- 2018 International Green Construction Code (2018 IgCC) (See Table 19 for details.)
- 2015 and 2012 International Green Construction Code (2015 IgCC and 2012 IgCC) (See Table 20 for details.)
- ANSI/ASHRAE/USGBC/IES Standard 189.1-2017, 2014 and 2011 –Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings (See Table 21 for details.)

2.0 USES

Boise Cascade structural wood products and sheathing panels are used for a variety of interior and exterior framing and sheathing applications. Boise Cascade software assists designers and builders to optimize cut packages and designs as well as customize designs for optimization of resources that assists in the optimal use of materials and minimization of waste.

3.0 DESCRIPTION

3.1 Boise Cascade Structural Wood Products:

Boise Cascade structural wood products are manufactured from various wood species bonded with structural adhesives (where applicable) complying with applicable ICC-ES reports as indicated in Table 1.

3.2 Boise Cascade Software:

BC CALC® software provides single member design and structural solutions to given inputs. The software output provides a ratio of actual design versus allowable design and a selection list of optimal solutions for the given input conditions.

BC FRAMER® and BC FastPlan™ software provides optimized framing layouts to assist in the proper placement of product at the jobsite. The input data is verified through links to the BC CALC® software to verify that the products selected are acceptable structurally for the given load and span conditions.

BC Connect® software allows dealers and builders to integrate design information into pre-cut framing packages, which results in optimization of inventory and minimization of waste.

4.0 CONDITIONS

4.1 Code Compliance:

The Boise Cascade structural products that have been evaluated for compliance with, or otherwise deemed to comply with, the requirements of the International Codes are listed in Table 1 of this report.

The evaluation of the BOISE GLULAM beams and BC CALC®, BC FRAMER®, BC Connect® and BC FastPlan™ optimization software for compliance with the requirements of the International Codes is outside the scope of this evaluation report. Compliance with all applicable code requirements must be demonstrated to the satisfaction of the Authority Having Jurisdiction (AHJ).

4.2 Green Rating Systems, Standards and Code Eligibility:

The information presented in Tables 2 through 16 of this report provides a matrix of areas of evaluation and corresponding limitations and/or additional project-specific requirements, and offer benefit to individuals who are assessing eligibility for credits or points.

The information on Life Cycle Assessment (LCA) is limited to the boundary conditions, the Life Cycle Inventory (LCI) inputs that consist of aggregated data and the methodology contained in the documentation noted in Section 5.7 of this report. The acceptance of this LCA information rests with the end-user. See Appendix A of this report for additional discussion on LCA.

The final interpretation of the specific requirements of the respective green building rating system and/or standard rests with the developer of that specific rating system or standard or the AHJ, as applicable.

Decisions on compliance for those items noted as “Eligible for Points” in Tables 2 through 16 rests with the user of this report, and those items are subject to the conditions noted. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. Rating systems or standards often provide supplemental information as guidance. Compliance for items noted as “Verified Attribute” is also subject to any conditions noted in the tables.

5.0 BASIS OF EVALUATION

The information in this report, including the “Verified Attribute”, is based upon the following supporting documentation:

- 5.1 ICC-ES EC102. [Evaluation applies to 2020 ICC 700 Sections 606.1 and 11.606.1; 2015 and 2012 ICC 700 Section 606.1, 11.606.1, 12.1(A)606.1; 2008 ICC 700 Section 606.1(2); CALGreen Section A4.405.4 and A5.405.2; ANSI/GBI 01-2010 Section 10.2.1.1; 2018 IGCC Section 901.4.1.3; 2015 and 2012 IGCC Section 505.2.4; ASHRAE 189.1 Section 9.4.1.3.]
- 5.2 ICC-ES EC108. [Evaluation applies to 2020, 2015 and 2012 ICC 700 Sections 901.4(6), 11.901.4(6); 2008 ICC 700 Section 901.4(6); LEED v4.1 Residential BD+C Multifamily EQ Low-emitting Materials; LEED v4.1 Residential Single Family EQ Low-emitting Materials; LEED V4 Homes EQc2; LEED NC Credit EQ 4.4, LEED Schools Credit EQ 4.4; LEED C&S Credit EQ 4.4; LEED CI Credit EQ4.4; LEED EB Credit MR 3; 2018 IGCC Section 801.4.2.4; 2015 and 2012 IGCC Section 806.1; ASHRAE 189.1 Section 8.4.2.4.]
- 5.3 ICC-ES EC109. [Evaluation applies to 2020, 2015, 2012 and 2008 ICC 700 Section 606.2(2); ANSI/GBI 01-2010 Section 10.3.2.1; ASHRAE 189.1 Section 9.4.1.3.1.]
- 5.4 Documentation demonstrating conformance with HUD PATH and DOE recommendations for advanced framing techniques, as summarized in Table 22 of this report. [Evaluation applies to 2020 ICC 700 Sections 601.2 and 11.601.2(1), 2015 and 2012 ICC 700 Sections 601.2, 11.601.2(1), 12.601.2.1(1); 2008 ICC 700 Section 601.2; LEED v4.1 Residential Single Family MR; LEED v4 Homes MR; LEED Homes 2008 Credit MR 1.4; CALGreen Section A5.404.1.]
- 5.5 Software output of the BC CALC and BC FRAMER software with detailed framing or structural plans, material quantity lists and on-site cut lists for framing, structural materials, and sheathing materials, to assist with waste minimization. [Evaluation applies to 2020, 2015 and 2012 ICC 700 Sections 601.4, 11.601.4; 2008 ICC 700 Section 601.4; 2008 LEED Homes Credit MR 1.2, 1.3 & 1.5; CALGreen Section A4.404.1.]
- 5.6 Software output of the BC Connect and BC FastPlan™ software with detailed framing or structural plans, material quantity lists and precut framing packages to assist in waste minimization. [Evaluation applies to 2020, 2015 and 2012 ICC 700 Sections 601.5.1, 11.601.5.1; 2008 ICC 700 Section 601.5(1); LEED v4 Homes MRc6; 2008 LEED Homes Credit MR 1.2, 1.3 & 1.5; CALGreen A4.404.1.]
- 5.7 Consortium for Research on Renewable Industrial Materials (CORRIM) report (available at www.corrim.org), containing an LCA analysis performed in accordance with ISO 14044. [Evaluation

applies to 2020, 2015 and 2012 ICC 700 Sections 601.5(1), 11.601.5(1); 2008 ICC 700 Section 609.1; CALGreen Section A5.409.3; ASHRAE 189.1 Section 9.5.1.]

- 5.8** Documentation establishing that the environmental management system conforms to the requirements of ISO 14001 or equivalent. [Evaluation applies to 2020 ICC 700 Sections 611.1 and 11.612.1; 2015 and 2012 ICC 700 Sections 611.1, 11.611.1, 12.1(A).611.1; 2008 ICC 700 Section 610.1.]

6.0 IDENTIFICATION

Boise Cascade structural wood products are identified with a stamp noting the name or logo of the manufacturer (Boise), the plant number, the product trade name and the

ICC-ES evaluation report number (if applicable), and the name or logo of the inspection or grading agency. The report subjects are also identified on the product and/or packaging with the VAR Environmental Report number (VAR-1017) and the ICC-ES SAVE Mark, as applicable.

7.0 IDENTIFICATION

- 7.1** The report holder's contact information is as follows:

BOISE CASCADE WOOD PRODUCTS, LLC
POST OFFICE BOX 2400
WHITE CITY, OREGON 97503-0400
(541) 826-0209
<http://www.bcewp.com>

**TABLE 1—REFERENCE STANDARD OR EVALUATION REPORT NUMBER FOR
BOISE CASCADE STRUCTURAL WOOD PRODUCTS**

PRODUCT	REPORT NUMBER/ REFERENCE STANDARD
BCI® Wood I-Joists	ESR-1336
ALLJoist® Wood I-Joists	ESR-1144
VERSA-LAM® Laminated Veneer Lumber	ESR-1040
VERSA-STUD® Laminated Veneer Lumber	ESR-1040

TABLES 2 THROUGH 21

Section #	Section Intent	Possible Points	Conditions of Use to Qualify for Points	BCI Wood I-Joist ALLJoist Wood I-Joists	VERSA-LAM LVL VERSA-STUD LVL	Boise GLULAM Beams	Boise Sheathing Panels	BC CALC	BC FRAMER	BC Connect	BC FastPlan
TABLE 2—SUMMARY OF AREAS OF ELIGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700—2020)											
601.2(1)	Minimum structural member or element sizes necessary for strength & stiffness in accordance with advanced framing techniques that optimize material usage	3	To earn 3 points the framing methods listed in Table 17 must be used for floor, wall or roof framing. To earn 9 points they must be used for all floor, wall & roof framing	○	○	○	○				
601.4	Detailed framing or structural plans, material quantity lists & on-site cut lists for framing, structural materials & sheathing materials are provided	4	To earn 4 points the software generated plans/lists must be on site						○		○
601.5(1)	Precut or preassembled components, or panelized or precast assemblies are used for a minimum of 90% of the floor system	4	To earn 4 points the precut package must be used for 90% or more of the floor system						○		
606.1(2)	Two types of biobased materials are used, each for more than 1% of the project's projected building material cost	6	To earn 6 points products must be at least 1% of the construction material cost & another bio-based product at 1% of material cost must be used. 1 or 3 points are available for greater than 0.5%	●	●	●	●				
606.2(2)	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof	4	To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●				
608.1	Products containing fewer materials are used to achieve the same end-use requirements as conventional products	3 each 9 max	To earn 3 points framing products used in the building are Boise Cascade products	●	●	●	●				
610.1	A Life Cycle Assessment (LCA) tool complying with ISO 14044 or other recognized standards is used to select environmentally preferable products or assemblies based on comparison of the environmental impact of building materials, assemblies or the whole building	3 each 15 max	To gain 15 points an ISO 14044-complaint LCA must be done on a whole building basis. 3 points may be earned where comparative LCA is done for individual products or systems using 5 impact measures and show improvement on the environmental impact measures by an average of 15%	●	●	●	●				
611.1	Product manufacturer's operations & business practices include environmental management system concepts & the production facility is ISO 14001 certified or equivalent	1 per % 10 max	1 point may be earned for each building products used that equals 1 percent or more of the estimated total building materials cost. Material cost breakdown to be verified & points adjusted to reflect actual percentage of all products from ISO 14001 facilities	●	●	●	●				

901.4(1)	Structural plywood for floor, wall and/or roof sheathing complies with DOC PS 1 and/or DOC PS 2. The panels are made with moisture-resistant adhesives & the trademark indicates the adhesives are Exposure 1 or Exterior (plywood).	Mandatory	To meet this, a minimum of 85% of plywood in the building must consist of Boise Cascade product.				●				
901.4(6)	Non-emitting products, which can include structural wood framing	4	A minimum of 85% of product in the building are the identified Boise Cascade products	●	●	●	●				
11 601.2(1)	Minimum structural member or element sizes necessary for strength & stiffness in accordance with advanced framing techniques that optimize material usage	3	To earn 3 points the framing methods listed in Table 17 must be used for floor, wall or roof framing. To earn 9 points they must be used for all floor, wall and roof framing	○	○	○	○				
11 601.4	Detailed framing or structural plans, material quantity lists & on-site cut lists for framing, structural materials, & sheathing materials are provided	4	To earn 4 points the software generated plans/lists must be on site						○		○
11. 601.5(1)	Precut or preassembled components, or panelized or precast assemblies are used for a minimum of 90% of the floor system	4	To earn 4 points the precut package must be used for 90% or more of the floor system						○		
11.606.1(b)	Two types of biobased materials are used, each for more than 1% of the project's projected building material cost	6	To earn 6 points products must be at least 1% of the construction material cost & another bio-based product at 1% of material cost must be used. 1 or 3 points are available for more than 0.5%	●	●	●	●				
11.606.2(2)	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof	4	To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●				
○	= Eligible for compliance										
●	= Verified attribute										
	= This provision does not apply to this product/service										

Note: Footnotes are located after Table 21.

TABLES 2 THROUGH 21 (Continued)

Section #	Section Intent	Possible Points	Conditions of Use to Qualify for Points	BCI Wood I-Joist ALLJoist Wood I-Joists	VERSA-LAM LVL VERSA-STUD LVL VERSA-RIM LVL	Boise GLULAM Beams	Boise Sheathing Panels	BC CALC	BC FRAMER	BC Connect	BC FastPlan
TABLE 2—SUMMARY OF AREAS OF ELIGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700—2020) (Continued)											
11.608.1	Products containing fewer materials are used to achieve the same end-use requirements as conventional products	3 each 9 max	To earn 3 points framing products used in the building are Boise Cascade products	●	●	●	●				
11.610.1	A Life Cycle Assessment (LCA) tool complying with ISO 14044 or other recognized standards is used to select environmentally preferable products or assemblies based on comparison of the environmental impact of building materials, assemblies or the whole building	3 each 15 max	To gain 15 points an ISO 14044-compliant LCA must be done on a whole building basis. 3 points may be earned where comparative LCA is done for individual products or systems using 5 impact measures and show improvement on the environmental impact measures by an average of 15%	●	●	●	●				
11.611.1	Product manufacturer's operations & business practices include environmental management system concepts & the production facility is ISO 14001 certified or equivalent	1 per % 10 max	1 point may be earned for each building products used that equals 1 percent or more of the estimated total building materials cost. Material cost breakdown to be verified & points adjusted to reflect actual percentage of all products from ISO 14001 facilities	●	●	●	●				
11.901.4(1)	Structural plywood for floor, wall and/or roof sheathing complies with DOC PS 1 and/or DOC PS 2. The panels are made with moisture-resistant adhesives & the trademark indicates the adhesives are Exposure 1 or Exterior (plywood).	Mandatory	To meet this, a minimum of 85% of plywood in the building must consist of Boise Cascade product.				●				
11.901.4(6)	Non-emitting products, which can include structural wood framing	4	A minimum of 85% of product in the building are the identified Boise Cascade products	●	●	●	●				
TABLE 3—SUMMARY OF AREAS OF ELIGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700—2015 & 2012)											
601.2(1)	Minimum structural member or element sizes necessary for strength & stiffness in accordance with advanced framing techniques that optimize material usage	3	To earn 3 points the framing methods listed in Table 17 must be used for floor, wall or roof framing. To earn 9 points they must be used for all floor, wall & roof framing	○	○	○	○				
601.4	Detailed framing or structural plans, material quantity lists & on-site cut lists for framing, structural materials & sheathing materials are provided	4	To earn 4 points the software generated plans/lists must be on site						○		○
601.5(1)	Precut or preassembled components, or panelized or precast assemblies are used for a minimum of 90% of the floor system	4	To earn 4 points the precut package must be used for 90% or more of the floor system						○		

606.1(2)	Two types of biobased materials are used, each for more than 1% of the project's projected building material cost	6	To earn 6 points products must be at least 1% of the construction material cost & another bio-based product at 1% of material cost must be used. 1 or 3 points are available for greater than 0.5%	●	●	●	●				
606.2(2)	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof	4	To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●				
608.1	Products containing fewer materials are used to achieve the same end-use requirements as conventional products	3 each 9 max	To earn 3 points framing products used in the building are Boise Cascade products	●	●	●	●				
610.1	A Life Cycle Assessment (LCA) tool complying with ISO 14044 or other recognized standards is used to select environmentally preferable products or assemblies based on comparison of the environmental impact of building materials, assemblies or the whole building	3 each 15 max	To gain 15 points an ISO 14044-complaint LCA must be done on a whole building basis. 3 points may be earned where comparative LCA is done for individual products or systems using 5 impact measures and show improvement on the environmental impact measures by an average of 15%	●	●	●	●				
611.1	Product manufacturer's operations & business practices include environmental management system concepts & the production facility is ISO 14001 certified or equivalent	1 per % 10 max	1 point may be earned for each building products used that equals 1 percent or more of the estimated total building materials cost. Material cost breakdown to be verified & points adjusted to reflect actual percentage of all products from ISO 14001 facilities	●	●	●	●				
901.4(1)	Structural plywood for floor, wall and/or roof sheathing complies with DOC PS 1 and/or DOC PS 2. The panels are made with moisture-resistant adhesives & the trademark indicates the adhesives are Exposure 1 or Exterior (plywood).	Mandatory	To meet this, a minimum of 85% of plywood in the building must consist of Boise Cascade product.				●				
901.4(6)	Non-emitting products, which can include structural wood framing	4	A minimum of 85% of product in the building are the identified Boise Cascade products	●	●	●	●				
11 601.2.1(1)	Minimum structural member or element sizes necessary for strength & stiffness in accordance with advanced framing techniques that optimize material usage	3	To earn 3 points the framing methods listed in Table 17 must be used for floor, wall or roof framing. To earn 9 points they must be used for all floor, wall and roof framing	○	○	○	○				
11 601.4	Detailed framing or structural plans, material quantity lists & on-site cut lists for framing, structural materials, & sheathing materials are provided	4	To earn 4 points the software generated plans/lists must be on site						○		○
11. 601.5.1(1)	Precut or preassembled components, or panelized or precast assemblies are used for a minimum of 90% of the floor system	4	To earn 4 points the precut package must be used for 90% or more of the floor system						○		
11.606.1(b)	Two types of biobased materials are used, each for more than 1% of the project's projected building material cost	6	To earn 6 points products must be at least 1% of the construction material cost & another bio-based product at 1% of material cost must be used. 1 or 3 points are available for more than 0.5%	●	●	●	●				
11.606.2(2)	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof	4	To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●				

○	= Eligible for compliance
●	= Verified attribute
	= This provision does not apply to this product/service

Note: Footnotes are located after Table 21.

TABLES 2 THROUGH 21 (Continued)

Section #	Section Intent	Possible Points	Conditions of Use to Qualify for Points	BCI Wood I-Joist ALLJoist Wood I-Joists	VERSA-LAM LVL VERSA-STUD LVL VERSA-RIM LVL	Boise GLULAM Beams	Boise Sheathing Panels	BC CALC	BC FRAMER	BC Connect	BC FastPlan
TABLE 3—SUMMARY OF AREAS OF ELIGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700—2015 & 2012) (Continued)											
11.608.1	Products containing fewer materials are used to achieve the same end-use requirements as conventional products	3 each 9 max	To earn 3 points framing products used in the building are Boise Cascade products	●	●	●	●				
11.610.1	A Life Cycle Assessment (LCA) tool complying with ISO 14044 or other recognized standards is used to select environmentally preferable products or assemblies based on comparison of the environmental impact of building materials, assemblies or the whole building	3 each 15 max	To gain 15 points an ISO 14044-compliant LCA must be done on a whole building basis. 3 points may be earned where comparative LCA is done for individual products or systems using 5 impact measures and show improvement on the environmental impact measures by an average of 15%	●	●	●	●				
11.611.1	Product manufacturer's operations & business practices include environmental management system concepts & the production facility is ISO 14001 certified or equivalent	1 per % 10 max	1 point may be earned for each building products used that equals 1 percent or more of the estimated total building materials cost. Material cost breakdown to be verified & points adjusted to reflect actual percentage of all products from ISO 14001 facilities	●	●	●	●				
11.901.4(1)	Structural plywood for floor, wall and/or roof sheathing complies with DOC PS 1 and/or DOC PS 2. The panels are made with moisture-resistant adhesives & the trademark indicates the adhesives are Exposure 1 or Exterior (plywood).	Mandatory	To meet this, a minimum of 85% of plywood in the building must consist of Boise Cascade product.				●				
11.901.4(6)	Non-emitting products, which can include structural wood framing	4	A minimum of 85% of product in the building are the identified Boise Cascade products	●	●	●	●				

12 601.2.1(1)	Minimum structural member or element sizes necessary for strength & stiffness in accordance with advanced framing techniques that optimize material usage	Mandatory	To earn 3 points the framing methods listed in Table 17 must be used for floor, wall or roof framing. To earn 9 points they must be used for all floor, wall and roof framing	○	○	○	○				
12.1(A).606.1	Two types of biobased materials are used, each for more than 1% of the project's projected building material cost		To earn 6 points products must be at least 1% of the construction material cost & another bio-based product at 1% of material cost must be used. 1 or 3 points are available for more than 0.5%	●	●	●	●				
12.1(A).606.2	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof		To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●				
12.1(A).608.1	Products containing fewer materials are used to achieve the same end-use requirements as conventional products		To earn 3 points framing products used in the building are Boise Cascade products	●	●	●	●				
12.1(A).610.1	A Life Cycle Assessment (LCA) tool complying with ISO 14044 or other recognized standards is used to select environmentally preferable products or assemblies based on comparison of the environmental impact of building materials, assemblies or the whole building		To gain 15 points an ISO 14044-compliant LCA must be done on a whole building basis. 3 points may be earned where comparative LCA is done for individual products or systems using 5 impact measures and show improvement on the environmental impact measures by an average of 15%	●	●	●	●				
12.1(A).611.1	Product manufacturer's operations & business practices include environmental management system concepts & the production facility is ISO 14001 certified or equivalent		1 point may be earned for each building products used that equals 1 percent or more of the estimated total building materials cost. Material cost breakdown to be verified & points adjusted to reflect actual percentage of all products from ISO 14001 facilities	●	●	●	●				
12.1.901.4(1)	Structural plywood for floor, wall and/or roof sheathing complies with DOC PS 1 and/or DOC PS 2. The panels are made with moisture-resistant adhesives & the trademark indicates the adhesives are Exposure 1 or Exterior (plywood).	Mandatory	To meet this, a minimum of 85% of plywood, in the building, must consist of Boise Cascade product.				●				

TABLE 4—SUMMARY OF AREAS OF ELIGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700—2008)

601.2	Building-code-compliant structural systems or advanced framing techniques are implemented that optimize material usage	3 each 9 max	To earn 3 points the framing methods listed in Table 16 must be used for floor, wall or roof framing. To earn 9 points they must be used for all floor, wall and roof framing	○	○	○	○				
○	= Eligible for compliance										
●	= Verified attribute										
	= This provision does not apply to this product/service										

Note: Footnotes are located after Table 21.

TABLES 2 THROUGH 21 (Continued)

Section #	Section Intent	Possible Points	Conditions of Use to Qualify for Points	BCI Wood I-Joist ALLJoist Wood I-Joists	VERSA-LAM LVL VERSA-STUD LVL	Boise GLULAM Beams	Boise Sheathing Panels	BC CALC	BC FRAMER	BC Connect	BC FastPlan
TABLE 4—SUMMARY OF AREAS OF ELIGIBILITY WITH THE NATIONAL GREEN BUILDING STANDARD (ICC 700—2008) (Continued)											
601.4	Detailed framing or structural plans, material quantity lists and on-site cut lists for framing, structural materials, and sheathing materials are provided	4	To earn 4 points the software generated plans/lists must be on site						○		○
601.5(1)	Precut or preassembled components, or panelized or precast assemblies are utilized for a minimum of 90 percent of the floor system	4	To earn 4 points the precut package must be used for 90% or more of the floor system						○		
606.1(2)	Two types of biobased materials are used, each for more than 1 percent of the project's projected building material cost	6	To earn 6 points products must be at least 1% of the construction material cost AND another bio-based product at 1% of material cost must be used. 1 or 3 points are available for greater than 0.5%	●	●	●	●				
606.2(2)	Two certified wood-based products are used for major elements of the building, such as all walls, floors or roof	4	To earn 4 points a second certified wood product must also be used as a major element ¹	●	●	●	●				
607.1	Products containing fewer materials are used to achieve the same end-use requirements as conventional products	3 each 9 max	To earn 3 points framing products used in the building are Boise Cascade products	●	●	●	●				
609.1	A more environmentally preferable product or assembly is selected for an application based on the use of a Life Cycle Assessment (LCA) tool complying with ISO 14044 or other recognized standards that compares environmental impact of building materials, assemblies, or the whole building	3 each 15 max	To gain 15 points an ISO 14044-compliant LCA must be done on a whole building basis, such as that contained in the CORRIM report at www.corrim.org . 3 points may be earned where comparative LCA is done for individual products or systems	●	●	●	●				
610.1	Product manufacturer's operations and business practices include environmental management system concepts, and the production facility is ISO 14001 certified or equivalent	1 per % 10 max	1 point may be earned for each building products used that equals 1 percent or more of the estimated total building materials cost. Material cost breakdown to be verified and points adjusted to reflect actual percentage of all products from ISO 14001 facilities	●	●	●	●				
901.4(6)	Non-emitting products, which can include structural wood framing	4	A minimum of 85% of product in the building are the identified Boise Cascade products	●	●	●	●				

TABLE 5—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S v4.1 LEED FOR RESIDENTIAL**BD+C MULTIFAMILY**

MR	Environmentally Preferable Products (Option 2) - FSC certified wood	Prerequisite	All wood must be nontropical or certified by FSC or USGBC-approved equivalent ³	3	3	3	3				
MR	Material-efficient framing	0.5 min 2 max	To earn points verify that advanced framing measures in Table 17 are used for floors, walls and/or roof framing for at least 90% of each component. To earn points, off-site panelized or modular, prefabricated construction must comply with the requirements of this credit. ²	○	○	○	○				
EQ	Low emitting products	1	To earn 1 point use composite wood products containing no-added urea-formaldehyde resins	●	●	●	●				

SINGLE FAMILY

MR	Environmentally Preferable Products (Option 2) - FSC certified wood	Prerequisite	All wood must be nontropical or certified by FSC or USGBC-approved equivalent ³	3	3	3	3				
MR	Material-efficient framing	0.5 min 2 max	To earn points verify that advanced framing measures in Table 17 are used for floors, walls and/or roof framing for at least 90% of each component. To earn points, off-site panelized or modular, prefabricated construction must comply with the requirements of this credit. ²	○	○	○	○				
EQ	Low emitting products	1	To earn 1 point use composite wood products containing no-added urea-formaldehyde resins	●	●	●	●				

TABLE 6—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED v4.1 FOR BUILDING DESIGN + CONSTRUCTION (BD+C)

MR	Sourcing of raw materials - Certification of new wood products	1	Use wood products certified by FSC or USGBC-approved equivalent ³	3	3	3	3				
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TABLE 7—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED v4.1 FOR INTERIOR DESIGN + CONSTRUCTION (ID+C)

MR	Sourcing of raw materials - Certification of wood products	1	Use wood products certified by FSC or USGBC-approved equivalent ³	3	3	3	3				
EQ	Low-emitting materials	1	To earn 1 point use composite wood products containing no-added urea-formaldehyde resins	●	●	●	●				

TABLE 8—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S v4 LEED FOR HOMES DESIGN & CONSTRUCTION

MR	Environmentally Preferable Products (Option 2) - FSC certified wood	Prerequisite	All wood must be nontropical or certified by FSC or USGBC-approved equivalent ³	3	3	3	3				
MR	Material-efficient framing	0.5 min 2 max	To earn points verify that advanced framing measures in Table 17 are used for floors, walls and/or roof framing for at least 90% of each component. To earn points, off-site panelized or modular, prefabricated construction must comply with the requirements of this credit. ²	○	○	○	○				
EQ	Low emitting products	1	To earn 1 point use composite wood products containing no-added urea-formaldehyde resins	●	●	●	●				

TABLE 9—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED v4 FOR BUILDING DESIGN + CONSTRUCTION (BD+C)

MR	Sourcing of raw materials (Option 1)	1/2	Option 1: Use at least 20 different permanently installed products from at least 5 different manufacturers. Boise Cascade has self-declared reports for their products & are eligible for 1/2 of a product credit.	○	○	○	○				
	Sourcing of raw materials (Option 2) - Certification of new wood products	1	Option 2: Use wood products certified by FSC or USGBC-approved equivalent ³	3	3	3	3				

TABLE 10—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED v4 FOR INTERIOR DESIGN + CONSTRUCTION (ID+C)

MR	Sourcing of raw materials (Option 2) - Certification of new wood products	1	Option 2: Use wood products certified by FSC or USGBC-approved equivalent ³	3	3	3	3				
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TABLE 11—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED FOR HOMES 2008

MR 1.2	Detailed framing documents	1	Visually verify detailed framing plans and/or scopes of work							○		○
MR 1.3	Detailed cut list and lumber order	1	To earn 1 point verify that detailed framing cut list and lumber order are used								○	
MR 1.4	Framing efficiencies	3 max	To earn 1 point verify that advanced framing measures in Table 17 are used for floors, walls OR roof framing	○	○	○	○					

○ = Eligible for compliance

● = Verified attribute

= This provision does not apply to this product/service

Note: Footnotes are located after Table 21.

TABLES 2 THROUGH 21 (Continued)

Section #	Section Intent	Possible Points	Conditions of Use to Qualify for Points	BCI Wood I-Joist ALL Joist Wood I-Joists	VERSA-LAM LVL VERSA-STUD LVL	Boise GLULAM Beams	Boise Sheathing Panels	BC CALC	BC FRAMER	BC Connect	BC FastPlan
TABLE 11—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED FOR HOMES 2008 (Continued)											
MR 2.1	FSC certified tropical wood	0.5 each 8 max	To earn 0.5 point per component use FSC-certified tropical wood ³	3	3	3	3				
MR 2.2(a)	Environmentally preferable products for roof, wall and floors; interior and exterior framing and sheathing	0.5 each 8 max	To earn points use Boise FSC-certified products for wall, floor and/or roof framing.	○	○	○	○				

TABLE 12—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED 2009 FOR NEW CONSTRUCTION AND MAJOR RENOVATIONS

MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ³	3	3	3	3				
EQ 4.4	Low emitting materials	1	To earn 1 point use wood composite wood products containing no-added urea-formaldehyde resins	●	●	●	●				

TABLE 13—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED 2009 FOR SCHOOLS NEW CONSTRUCTION AND MAJOR RENOVATIONS

MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ³	3	3	3	3				
EQ 4.4	Low emitting materials	1	Based on the LEED for Schools PIECAP, it is permissible to substitute LEED 2009 for New Construction EQ 4 Low-Emitting Materials credits in place of corresponding LEED 2009 for Schools EQ 4 Low-Emitting Materials credits.	●	●	●	●				

TABLE 14—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED 2009 FOR CORE AND SHELL DEVELOPMENT

MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ³	3	3	3	3				
EQ 4.4	Low emitting materials	1	To earn 1 point use wood composite wood products containing no-added urea-formaldehyde resins	●	●	●	●				

TABLE 15—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED 2009 FOR COMMERCIAL INTERIORS

MR 7	Certified wood	1	To earn 1 point use a minimum 50% (based on cost) of wood-based materials/products certified to FSC requirements ³ . Furniture material value is also included in determination of certified wood content	3	3	3	3				
EQ 4.4	Low emitting materials	1	To earn 1 point use wood composite wood products containing no-added urea-formaldehyde resins	●	●	●	●				

TABLE 16—SUMMARY OF AREAS OF ELIGIBILITY WITH USGBC'S LEED FOR EXISTING BUILDING 2008


	Certified wood	1	Maintain a sustainable purchasing program where the purchase of products contain a minimum 50% (by cost) of wood-based materials/products certified to FSC requirements ³	3	3	3	3				
	Low emitting materials	1	Maintain a sustainable purchasing program where the purchase of wood composite wood products are those that contain no-added urea-formaldehyde resins	●	●	●	●				

TABLE 17—SUMMARY OF AREAS OF ELIGIBILITY WITH 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)

4.504.5, 5.504.4.5	Composite wood product emissions	Mandatory	EWP and lumber products do not apply to the composite wood product definition ⁶								
A4.404.3	Products containing fewer materials are used to achieve the same end-use requirements as conventional products	Residential Elective	Use premanufactured building systems as a substitute for solid lumber	●	●	●					

○ = Eligible for compliance

● = Verified attribute

 = This provision does not apply to this product/service

Note: Footnotes are located after Table 21.

TABLES 2 THROUGH 21 (Continued)

Section #	Section Intent	Possible Points	Conditions of Use to Qualify for Points	BCI Wood I-Joist ALL Joist Wood I-Joists	VERSA-LAM LVL VERSA-STUD LVL	Boise GLULAM Beams	Boise Sheathing Panels	BC CALC	BC FRAMER	BC Connect	BC FastPlan
TABLE 17—SUMMARY OF AREAS OF ELIGIBILITY WITH 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN) (Continued)											
A4.404.4	Detailed cut list and material order	Residential Elective	Material lists are included in the plans which specify material quantity and provide direction for on-site cuts.							○	
A4.405.4 (3) & (5)	Renewable sources	Residential Elective	Materials from renewable sources (such as engineered wood and solid wood products)	●	●	●	●				
A5.404.1	Advanced wood framing techniques	Commercial Elective	Advanced framing methods shall not conflict with structural framing methods or fire-rated assemblies required by the California Building Code. (See Table 17)	○	○	○	○				
A5.405.2	Bio-based materials	Commercial Elective	All Boise Cascade wood products are qualified as biobased	●	●	●	●				
A5.405.2.1	Certified wood	Commercial Elective	Under review by California Building Standards Commission ⁵	N/A	N/A	N/A	N/A				
A5.409.1	Life cycle assessment	Commercial Elective	Select materials or assemblies based on an LCA done in accordance with ISO 14044, such as that contained in the CORRIM report at www.corrim.org	○	○	○	○				
TABLE 18—SUMMARY OF AREAS OF ELIGIBILITY WITH ANSI/GBI 01-2021—GREEN BUILDING ASSESSMENT PROTOCOL FOR COMMERCIAL BUILDINGS											
10.4.1	Biobased Products %	eligible	All Boise Cascade wood products are qualified as biobased	○	○	○	○				
10.4.1	Certified wood %	eligible	Between 10% and 60% or more of wood-based products used in the building are third party certified	○	○	○	○				
TABLE 19—SUMMARY OF AREAS OF ELIGIBILITY WITH 2018 INTERNATIONAL GREEN CONSTRUCTION CODE (IGCC)											
901.4.1.3	Biobased products	N/A	All Boise Cascade wood products are labeled in accordance with the SFI Standard fiber procurement system. Manufacturer's fiber procurement systems is audited by an accredited third-party	●	●	●	●				
801.4.2.4	Formaldehyde emissions	N/A	Boise Cascade sheathing panels products comply with US DOC PS1 & are exempt from formaldehyde emissions testing				●				

		N/A	Boise Glulam beams do not use urea-formaldehyde resins and qualify under the exception 1 to Section 806.1			●						
		N/A	Boise Wood I-Joists comply with ASTM D 5055 (See Table 1 of this report) and meet the requirements of Table 806.1	●								
		N/A	Boise LVL products comply with ASTM D 5456 (See Table 1 of this report) and meet the requirements of Table 806.1		●							

TABLE 20—SUMMARY OF AREAS OF ELIGIBILITY WITH 2015 & 2012 INTERNATIONAL GREEN CONSTRUCTION CODE (IGCC)

505.2.4	Biobased products	N/A	All Boise Cascade wood products are labeled in accordance with the SFI Standard fiber procurement system. Manufacturer's fiber procurement systems is audited by an accredited third-party	●	●	●	●					
806.1	Formaldehyde emissions	N/A	Boise Cascade sheathing panels products comply with US DOC PS1 & are exempt from formaldehyde emissions testing				●					
		N/A	Boise Glulam beams do not use urea-formaldehyde resins and qualify under the exception 1 to Section 806.1				●					
		N/A	Boise Wood I-Joists comply with ASTM D 5055 (See Table 1 of this report) and meet the requirements of Table 806.1	●								
		N/A	Boise LVL products comply with ASTM D 5456 (See Table 1 of this report) and meet the requirements of Table 806.1		●							

TABLE 21—SUMMARY OF AREAS OF ELIGIBILITY WITH ASHRAE STANDARD 189.1—2017, 2014 & 2011

8.4.2.4	Composite wood product emissions	Prescriptive option	EWP and lumber products exempt from the composite wood product emissions requirements ⁶									
9.3.2	Extracting, harvesting and manufacturing	Mandatory	Wood products containing wood from endangered species shall conform to trade requirement of CITES	●	●	●	●					
9.4.1.3	Biobased products	Prescriptive option	All Boise Cascade wood products are qualified as biobased	●	●	●	●					

○ = Eligible for compliance

● = Verified attribute

= This provision does not apply to this product/service

Note: Footnotes are located after Table 21.

TABLES 2 THROUGH 21 (Continued)

Section #	Section Intent	Possible Points	Conditions of Use to Qualify for Points	BCI Wood I-Joist ALL Joist Wood I-Joists	VERSA-LAM LVL VERSA-STUD LVL	Boise GLULAM Beams	Boise Sheathing Panels	BC CALC	BC FRAMER	BC Connect	BC FastPlan
TABLE 21—SUMMARY OF AREAS OF ELIGIBILITY WITH ASHRAE STANDARD 189.1—2017, 2014 & 2011 (Continued)											
9.4.1.3.1	Wood Building Components	Prescriptive option	Chain of custody compliance is through one of three available options: 1) an on-product chain of custody label, 2) chain of custody paperwork, or 3) vendors may supply to the AHJ a statement that the annual average amount of certified content of the total annual wood products purchased by the vendor is 60% or greater, for which they have chain of custody verification not older than two years ⁴	○ ⁴	○ ⁴	○ ⁴	○ ⁴				
9.5.1	Life cycle assessment	Performance option	Select materials or assemblies based on an LCA done in accordance with ISO 14044, such as that contained in the CORRIM report at www.corrim.org	○	○	○	○				
○	= Eligible for compliance										
●	= Verified attribute										
	= This provision does not apply to this product/service										

¹Certification is required of the manufacturer only. Vendor Chain of Custody is not required to qualify for this point.

²Applicable only when a third-party prefabricates the framing package prior to arrival on the site. BC Connect allows for either prefabrication off-site or assembly on-site using materials labeled and cut to precision-end-trim dimensions off-site.

³LEED 2009 forest certification credit resources FSC. Forest certification credit for LEED v4 resources either FSC, ASTM D7612 Responsible or Certified Sources, or USGBC-approved equivalent. Contact USGBC for a list of approved equivalent program. The specific BOISE products and manufacturing locations that are FSC certified can be viewed at www.bc.com/sustainability/certification.html and by reviewing FSC License Codes: FSC-C084674, FSC-C019369 and FSC-C041295 at <http://info.fsc.org>. Credit for products or plants listed under other certification schemes is at the discretion of the verifier.

⁴The specific BOISE products and manufacturing locations that are FSC, SFI and/or PEFC certified can be viewed at www.bc.com/sustainability/certification.html.

⁵CALGreen recognizes importance of use of certified forest products however the specific requirements are currently under development.

⁶This area is not be confused with the provisions of EQ 4.4 in LEED because the California Air Resources Board (CARB) does not regulate engineered wood product emissions, and they are exempt in ASHRAE 189.1.

N/A = Not applicable

TABLE 22—ADVANCED FRAMING TECHNIQUES

	RATING SYSTEM/CODES ¹		
	ICC-700	LEED-HOMES 2008, v4 & v4.1	CALGREEN
PRESCRIPTIVE-BASED COMPLIANCE CRITERIA			
19.2- or 24-inch OC floor framing	✓	✓	✓
19.2- or 24-inch OC bearing walls	✓	✓	✓
24-inch OC roof framing	✓	✓	✓
24-inch OC interior partitions	✓	✓	✓
Single top plate walls	✓	See footnote 3	✓
Right sized or insulated headers (where required)	✓	✓	✓
Eliminate headers in non-bearing walls	✓	✓	✓
Doubling rim joist in lieu of header (2x6 or deeper wall)	✓	See footnote 3	See footnote 4
Ladder blocking at interior wall-to-exterior wall intersections	✓	✓	See footnote 4
Two stud corner framing	✓	✓	✓
Doubling rim joist in lieu of header (2x6 or deeper wall)	✓	See footnote 3	See footnote 4
Other measures that reduce material usage	See footnote 2	See footnote 3	See footnote 4
PERFORMANCE-BASED COMPLIANCE CRITERIA			
Optimized design per Wood Frame Construction Manual	✓	See footnote 3	See footnote 4
Optimized design per National Design Specification for Wood Construction	✓	See footnote 3	See footnote 4
Precut framing packages	N/A	✓	See footnote 4

For **SI**: 1 inch = 25.4 mm.

¹✓ represents that the criteria is deemed to comply when conditions are met.

²In ICC 700 Section 601.2, 3 points may be gained for each advanced framing technique used in the building up to 9 points maximum. See references in 601.2 commentary for additional details on prescriptive-based compliance criteria.

³In LEED for Homes Section MR 1.4, Table 23, alternative measures to Table 23 are eligible for points if they save comparable amounts of framing material.

⁴Other framing techniques as permitted by the U.S. Department of Energy's Office of Building Technology, State and Community Programs, subject to approval by the AHJ.

Appendix A

Discussion Related to Life-Cycle Assessment

A1.0 GENERAL

The following information is intended to provide some general background on LCA provisions in existing rating systems and standards. Users are advised that the science of LCA is still evolving and there are no standardized procedures for such an analysis. It must be noted that Section 609.1 of ICC 700, Section A5.409.1 of CALGreen, Section 9.5.1 of ASHRAE 189.1, and Section 10.1.1 of Green Globes encourage the use of comparative LCA as means of selecting preferable materials, systems or building assemblies. However, LCA results should not be interpreted beyond the scope of the boundary limits used in performing the LCA.

This VAR indicates that Boise products may be eligible for points related to LCA by use of the information contained in the documentation noted in Section 5.8 of this report. This appendix discusses additional information required by the user of this report related to achieving points or demonstrating compliance based on LCA output.

A2.0 DISCUSSION RELATED TO ICC 700

As indicated in the ICC 700 Commentary, points can be obtained based on the results of an analysis based on an LCA. For the purpose of compliance with the intent of ICC 700, the following steps (as a minimum) are recommended:

- Fully define the benchmark material, product, assembly, or structure
- Fully define the product or assembly proposed as more environmentally friendly
- Fully define the endpoints or boundaries of the analysis (so-called cradle-to-gate, cradle-to-grave, cradle-to-cradle, gate-to-gate, etc.). For analyses that go beyond cradle-to-gate, a separate report is recommended for each application or use category. Such reports are also recommended to include a discussion of the sensitivity of the analysis to major assumptions for major parameters.
- Employ an LCA method complying with ISO 14044.
- Report all applicable attributes of the benchmark analysis and the proposed product/assembly analysis that are relevant to the LCA.
- The involvement of an individual with experience in the field of LCA and who is knowledgeable in the latest research and standards related to LCA, from the earliest planning stages through completion of the final assessment, is recommended.
- An independent peer review of the entire LCA methodology and its conclusions by an individual knowledgeable in LCA is recommended.

Examples of an LCA that meets these requirements can be found in the series of CORRIM reports (www.corrim.org) that address a broad range of wood-based building materials.

A3.0 DISCUSSION RELATED TO CALGREEN AND ASHRAE 189.1

Similar to the requirements of ICC 700, Section A5.409.1 of CALGreen and Section 9.5.1 of ASHRAE 189.1 allows the use of selected materials or assemblies based on LCA done in accordance with ISO 14044.

A4.0 DISCUSSION RELATED TO ANSI/GBI 01-2010

Although life-cycle assessment in its broad sense is too complex for standardization at this time, the use of a specific tool (e.g., Green Globes LCA Credit Calculator) in strict accordance with the rating system intent of comparative analysis of specific components of the building is reasonable. However, users are advised to consult with persons familiar with LCA tools when conducting this analysis. Additional guidance regarding the Green Globes LCA Credit Calculator is provided in Appendix N of the Green Globes document.