

CALIFORNIA BUILDING STANDARDS COMMISSION
September 24, 2026
CALGREEN CCRC WORKSHOP #2

DRAFT EXPRESS TERMS
CALIFORNIA GREEN BUILDING STANDARDS CODE,
(CALGreen), PART 11,
TITLE 24, CALIFORNIA CODE OF REGULATIONS

The state agency shall draft the regulations in plain, straightforward language, avoiding technical terms as much as possible and using a coherent and easily readable style. The agency shall draft the regulation in plain English. A notation shall follow the express terms of each regulation listing the specific statutes authorizing the adoption and listing specific statutes being implemented, interpreted, or made specific (Government Code Section 11346.2(a)(1)).

If using assistive technology, please adjust your settings to recognize underline, strikeout and ellipsis.

LEGEND for EXPRESS TERMS (California only codes - Parts 1, 6, 8, 11, 12)

- Existing California amendments appear upright
- Amended or new California amendments appear underlined
- Repealed California language appears ~~upright and in strikeout~~
- Ellipses (...) indicate existing text remains unchanged

DRAFT EXPRESS TERMS

BSC is considering the following proposals under the authority granted by Health and Safety Code Section 18930.5.

ITEM 1

**Chapter 2,
Section 202 Definitions**

...

BIOGENIC CARBON. Greenhouse gas absorbed from the atmosphere by living organisms as they grow and then released back into the atmosphere through natural processes such as decomposition but not fossilized or derived from fossil resources.

...

EMBODIED CARBON BUDGET (ECB). An embodied carbon intensity (ECI) value used as a maximum acceptable limit for determining a project's compliance with embodied carbon reduction requirements and expressed in kgCO₂e/m².

...

EMBODIED CARBON INTENSITY (ECI). The total global warming potential (GWP) of a building per gross floor area and expressed in kgCO₂e/m².

...

STATEMENT OF REASONS

BSC proposes adding these definitions to support amendments to Section 5.409.4 related to a proposed carbon budget method for compliance for the performance option.

ITEM 2 Chapter 5, Section 5.402 Definitions

SECTION 5.402—DEFINITIONS

5.402.1 Definitions. The following terms are defined in Chapter 2.

...

BIOGENIC CARBON.

...

EMBODIED CARBON BUDGET (ECB).

EMBODIED CARBON INTENSITY (ECI).

...

STATEMENT OF REASONS

BSC proposes adding these definitions, as listed in Chapter 2, Section 202.

ITEM 3 Chapter 5, Section 5.409 Embodied carbon reduction

SECTION 5.409— EMBODIED CARBON REDUCTION

5.409.1 Scope.

5.409.1.1 Nonresidential buildings [BSC-CG] Projects consisting of newly constructed building(s) with a combined floor area of 50,000 square feet or greater shall comply with either Section 5.409.3 or 5.409.4. Alteration(s) to existing building(s) where the combined altered floor area is 50,000 square feet or greater shall comply with Section 5.409.2, 5.409.3, or 5.409.4. Addition(s) to existing building(s) where the total floor area combined with the existing building(s) is 50,000 square feet or greater shall comply with Section 5.409.2, 5.409.3, or 5.409.4.

Exceptions:

1. Combined addition(s) to existing building(s) of two times the area or more of the existing building(s) is not eligible to meet compliance with Section 5.409.2.
2. Where compliance with Section 5.409.2, 5.409.3, or 5.409.4 is determined to be not feasible for the project as demonstrated by the project design team and approved by the authority having jurisdiction, compliance shall not be required. The project team must demonstrate that each compliance option is not feasible. Compliance may be demonstrated to be not feasible for reasons including, but not limited to, the following:

- a. Increase of 5% or more in the overall material cost or schedule delay that is attributable to incorporating a lower carbon material compared to the baseline material for which it is a substitute in the project.

[The CBSC is seeking additional input regarding 5% of the overall material cost or schedule delay feasibility criteria. Is 5% too low and whether it should be raised to 10%.]

- b. Lower carbon materials aren't commercially available in the region of the project; they lack similar function, useful life, performance, or durability to the baseline material; they harm the health or safety of those who install the materials or occupy the building; they have been involved in a claim for a construction or design defect, breach of express or implied warranty, fraud, or misrepresentation; other considerations approved by the authority having jurisdiction.

5.409.1.2 *[Reserved for DSA]*

5.409.2 Reuse of existing building option. ...

5.409.3 Product GWP – prescriptive option. ...

STATEMENT OF REASONS

BSC proposes adding exceptions to Section 5.409.1 to address potential issues related to infeasibility of compliance. This proposal is in alignment with AB 2446 language. The inclusion of reasonable exceptions ensures a balance between California's environmental goals and the need to prevent significant economic impact on those regulated by the standards.

ITEM 4
Chapter 5,
Section 5.409.3 Product GWP – prescriptive option

...

TABLE 5.409.3 - PRODUCT GWP LIMITS

Buy Clean California Materials Product Category	Maximum acceptable GWP value (unfabricated) (GWP _{allowed}) ²	Maximum acceptable GWP value (fabricated) (GWP _{allowed}) ³	Unit of Measurement
Hot-rolled structural steel sections	1.771.26	1.35	MT CO _{2e} /MT
Hollow structural sections	3.002.14	2.29	MT CO _{2e} /MT
Steel plate	2.611.86	1.99	MT CO _{2e} /MT
Concrete reinforcing steel	1.560.94	0.97	MT CO _{2e} /MT
Flat glass	2.501.79	N/A	MT CO _{2e} /MT
Light-density mineral wool board insulation	5.833.35	N/A	kg CO _{2e} /1 m ²
Heavy-density mineral wool board insulation	14.288.53	N/A	kg CO _{2e} /1 m ²

Concrete, Ready-Mixed ¹

Concrete Product Category	Maximum GWP allowed value (GWP _{allowed})	Unit of Measurement
up to 2499 psi	450321	kg CO _{2e} /m ³
2500-3499 psi	489349	kg CO _{2e} /m ³
3500-4499 psi	566404	kg CO _{2e} /m ³
4500-5499 psi	664472	kg CO _{2e} /m ³
5500-6499 psi	704501	kg CO _{2e} /m ³
6500 psi and greater	799571	kg CO _{2e} /m ³

Concrete, Lightweight Ready-Mixed ¹

Concrete Product Category	Maximum GWP allowed value (GWP _{allowed})	Unit of Measurement
up to 2499 psi	875625	kg CO _{2e} /m ³
2500-3499 psi	956683	kg CO _{2e} /m ³
3500-4499 psi	1,039742	kg CO _{2e} /m ³

1. Concrete High Early Strength ready-mixed shall be calculated at 130 percent of the Ready mixed concrete GWP allowed values for each product category.
2. Use this column to determine compliance when an EPD declared unfabricated product GWP.
Compare manufacturer cradle-to-gate GWP (i.e., the sum of information modules A1, A2, and A3) to the limit.
3. Use this column to determine compliance when an EPD declares fabricated product GWP (compare GWP from information module A1 to the limit). These limits are derived from the unfabricated product GWP and account for the waste in the fabrication process.

...

STATEMENT OF REASONS

BSC proposes to reduce maximum GWP levels in the Product GWP Limits Table 5.409.3 to 125% of BCCA 2025 levels and NRMCA 2022 Benchmark levels to achieve California's decarbonization goals, as required by executive orders and legislation.

ITEM 5

Chapter 5,

Section 5.409.4 Whole Building Life Cycle Assessment – performance option

5.409.4 Whole building life cycle assessment – performance option. Projects shall conduct a cradle-to-grave whole building life cycle assessment performed in accordance with ISO 14040 and ISO 14044, excluding operating energy, and shall demonstrate compliance with Section 5.409.4.1 carbon budget method, or Section 5.409.4.2 baseline building method. [The following language is moved to Section 5.409.4.2 with minor modifications.] ~~demonstrating a minimum 10-percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the California Energy Code currently in effect. Software used to conduct the whole building life cycle assessment, including reference baseline building if applicable, shall have a data set compliant with ISO 14044, and ISO 21930 or EN 15804, and the software shall conform to ISO 21931 and/or EN 15978. [The following language is moved to Section 5.409.4.2.] The software tools and data sets shall be the same for evaluation of both the baseline building and the proposed building.~~

Exception: Biogenic carbon shall be excluded from the whole building life cycle assessment calculations.

Notes:

- ~~1. Software for calculating whole building life cycle assessment is available for free at Athena Sustainable Materials Institute (<https://calculatelca.com/software/impact-estimator/>) and OneClick LCA-Planetary (www.oneclicklca.com/planetary). Paid versions include, but are not limited to, Sphera GaBi Solutions (gabi.sphera.com), SimaPro (simapro.com), OneClick LCA (www.oneclicklca.com) and Tally for Revit (apps.autodesk.com).~~
- ~~1.2.~~ ASTM E2921-22 “Standard Practice for Minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes, Standards, and Rating Systems” may be consulted for the assessment.
- ~~2.3.~~ In addition to the required documentation specified in Section 5.409.4.35, Worksheet WS-9 may be required by the enforcing entity to demonstrate compliance with the requirements.

5.409.4.1 Embodied carbon budget method. Demonstrate the building's embodied carbon intensity (ECI) does not exceed the embodied carbon budget (ECB) specified in Table 5.409.4.1.

TABLE 5.409.4.1 – EMBODIED CARBON BUDGET (ECB) LIMITS

<u>Primary Occupancy Group¹</u>	<u>Maximum ECB value (kgCO_{2e}/m²)²</u>
<u>Storage (S)</u>	<u>480</u>
<u>Education (E)</u>	<u>660</u>
<u>Business (B)</u>	<u>660</u>
<u>Assembly (A)</u>	<u>750</u>
<u>Factory and Industrial (F)</u>	<u>750</u>
<u>Hazard (H)</u>	<u>750</u>
<u>Institutional (I)</u>	<u>750</u>
<u>Mercantile (M)</u>	<u>750</u>
<u>Storage (S)</u>	<u>750</u>
<u>Utility and Miscellaneous (U)</u>	<u>750</u>

1. The primary occupancy group is the occupancy classification representing the largest percentage of a building's total floor area.
2. The building's ECB shall be the ECB of its primary occupancy group and shall not be determined using an area-weighted average of multiple occupancies.

5.409.4.1.1 Embodied Carbon Intensity (ECI) Calculation. To determine the Embodied Carbon Intensity (ECI), divide the building's total Global Warming Potential (GWP) by gross floor area (GFA) in square meters (m²).

5.409.4.1.1 EQUATION:

$$\text{GWP/GFA (m}^2\text{)} = \text{ECI (kgCO}_{2e}\text{/m}^2\text{)}$$

[The following language in new Section 5.409.4.2 is moved from Section 5.409.4 with minor modifications.]

5.409.4.2 Baseline building method. Demonstrate and demonstrating a minimum 10 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the *California Energy Code* currently in effect. The software tools and data sets shall be the same for evaluation of both the baseline building and the proposed building.

5.409.4.13 Building components. Building enclosure components included in the assessment shall be limited to include, at a minimum, glazing assemblies, insulation, and exterior finishes. Primary and secondary structural members included in the assessment shall be limited to include, at a minimum, footings and foundations, structural columns, beams, walls, roofs, and floors.

5.409.4.3.1 Previously used building materials or products that have been salvaged and then reused without substantial modification of their form shall

have a GWP of zero for life cycle stages A1-A3. Such materials shall be minimally processed only, such as cleaning, repairing, resurfacing and resizing.

5.409.4.2.4 Reference study period. The reference study period of the proposed building shall be equal to the reference baseline building if applicable and shall be 60 years.

5.409.4.3-5 Verification of compliance. A summary of the GWP analysis produced by the software and Worksheet WS-4 signed by the design professional of record shall be provided in the construction documents as documentation of compliance. A copy of the whole building life cycle assessment which includes the GWP analysis produced by the software, in addition to maintenance and training information, shall be included in the operation and maintenance manual and shall be provided to the owner at the close of construction. The enforcing agency may require inspection and inspection reports in accordance with Sections 702.2 and 703.1 during and at completion of construction to demonstrate substantial conformance. Inspection shall be performed by the design professional of record or third party acceptable to the enforcing agency.

REVISED LANGUAGE IF APPROVED

5.409.4 Whole building life cycle assessment – performance option. Projects shall conduct a cradle-to-grave whole building life cycle assessment performed in accordance with ISO 14040 and ISO 14044, excluding operating energy, and shall demonstrate compliance with Section 5.409.4.1 carbon budget method, or Section 5.409.4.2 baseline building method. Software used to conduct the whole building life cycle assessment, including reference baseline building if applicable, shall have a data set compliant with ISO 14044, and ISO 21930 or EN 15804, and the software shall conform to ISO 21931 and/or EN 15978.

Exception: Biogenic carbon shall be excluded from the whole building life cycle assessment calculations.

Notes:

1. ASTM E2921-22 “Standard Practice for Minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes, Standards, and Rating Systems” may be consulted for the assessment.
2. In addition to the required documentation specified in Section 5.409.4.5, Worksheet WS-9 may be required by the enforcing entity to demonstrate compliance with the requirements.

5.409.4.1 Carbon budget method. Demonstrate the building’s embodied carbon intensity (ECI) does not exceed the embodied carbon budget (ECB) specified in Table 5.409.4.1.

TABLE 5.409.4.1 – EMBODIED CARBON BUDGET (ECB) LIMITS

Primary Occupancy Group ¹	Maximum ECB value (kgCO ₂ e/m ²) ²
Storage (S)	480
Education (E)	660
Business (B)	660
Assembly (A)	750
Factory and Industrial (F)	750
Hazard (H)	750
Institutional (I)	750
Mercantile (M)	750
Storage (S)	750
Utility and Miscellaneous (U)	750

1. The primary occupancy group is the occupancy classification representing the largest percentage of a building's total floor area.
2. The building's ECB shall be the ECB of its primary occupancy group and shall not be determined using an area-weighted average of multiple occupancies.

5.409.4.1.1 Embodied Carbon Intensity (ECI) Calculation. To determine the Embodied Carbon Intensity (ECI), divide the building's total Global Warming Potential (GWP) by gross floor area (GFA) in square meters (m²).

5.409.4.1.1 EQUATION:

$$\text{GWP/GFA (m}^2\text{)} = \text{ECI (kgCO}_2\text{e/m}^2\text{)}$$

5.409.4.2 Baseline building method. Demonstrate a minimum 10 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the *California Energy Code* currently in effect. The software tools and data sets shall be the same for evaluation of both the baseline building and the proposed building.

5.409.4.3 Building components. Building enclosure components included in the assessment shall include, at a minimum, glazing assemblies, insulation, and exterior finishes. Primary and secondary structural members included in the assessment shall include, at a minimum, footings and foundations, structural columns, beams, walls, roofs, and floors.

5.409.4.3.1 Previously used building materials or products that have been salvaged and then reused without substantial modification of their form shall have a GWP of zero for life cycle stages A1-A3. Such materials shall be minimally processed only, such as cleaning, repairing, resurfacing and resizing.

5.409.4.4 Reference study period. The reference study period of the proposed building shall be equal to the reference baseline building if applicable and shall be 60 years.

5.409.4.5 Verification of compliance. A summary of the GWP analysis produced by the software and Worksheet WS-4 signed by the design professional of record shall be provided in the construction documents as documentation of compliance. A copy of the whole building life cycle assessment which includes the GWP analysis produced by the software, in addition to maintenance and training information, shall be included in the operation and maintenance manual and shall be provided to the owner at the close of construction. The enforcing agency may require inspection and inspection reports in accordance with Sections 702.2 and 703.1 during and at completion of construction to demonstrate substantial conformance. Inspection shall be performed by the design professional of record or third party acceptable to the enforcing agency.

...

STATEMENT OF REASONS

BSC proposes to amend Whole Building Life Cycle Assessment – Performance Option Section 5.409.4 to provide a second option to the baseline building model, by calculating an assessment using a carbon budget method.

ITEM 6 Chapter 8, Worksheet (WS-4)

WORKSHEET (WS-4)

Section 5.409.4 WHOLE BUILDING LIFE CYCLE ASSESSMENT – PERFORMANCE OPTION

Responsible Designer's Declaration Statement:

I attest that the Whole Building Life Cycle Analysis has been performed according to the requirements of Section 5.409.4 and has complied with one of the following options:

1. The building's embodied carbon intensity (ECI) does not exceed the embodied carbon budget (ECB) specified in Table 5.409.4.1.
2. The building has met the minimum 10 percent reduction in global warming potential as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the California Energy Code currently in effect.

Furthermore, I will ensure during construction that the material specifications will be reviewed for substantial conformance with the life cycle assessment indicated on the approved plans so at the close of construction the project's ECB compliance or minimum reduction in global warming potential (GWP) is thereby secured.

STATEMENT OF REASONS

BSC proposes to amend Worksheet WS-4 to address the proposed amendments in Section 5.409.4.

ITEM 7
Chapter 8,
Worksheet (WS-7)

WORKSHEET (WS-7) [BSC-CG]
Section A5.409.4 WHOLE BUILDING LIFE CYCLE ASSESSMENT –
PERFORMANCE OPTION

Responsible Designer's Declaration Statement:

I attest that the Whole Building Life Cycle Analysis has been performed according to the requirements of Section A5.409.4 and has complied with one of the following options:

1. The building's embodied carbon intensity (ECI) does not exceed the embodied carbon budget (ECB) specified in Table A5.409.4.1.
2. The building has met the minimum 15 percent (Tier 1) or 20 percent (Tier 2) reduction in global warming potential as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the California Energy Code currently in effect.

Furthermore, I will ensure during construction that the material specifications will be reviewed for substantial conformance with the life cycle assessment indicated on the approved plans so at the close of construction the project's ECB compliance or minimum reduction in global warming potential (GWP) is thereby secured.

...

STATEMENT OF REASONS

BSC proposes to amend Worksheet WS-5 to address the proposed amendments in Section A5.409.4.

ITEM 8
Chapter 8,
Worksheet (WS-9)

WORKSHEET (WS-9)
Section 5.409.4 and Section A5.409.4 WHOLE BUILDING LIFE CYCLE
ASSESSMENT – PERFORMANCE OPTION

CALGreen Whole Building LCA Reporting Template																	
LCA model run		<i>User input</i>	<i>Units</i>	Overall scope included (select all that apply)													
LCA Modeler (company) [private]				Structure (required)	☐ IE												
Date of Model Run (mm/yyyy)				Enclosure (required)	☐ IE												
Project Phase at Model Run				Interiors (optional)	☐ IE												
Reference Study Period (years)				MEP (optional)	☐ SE												
Software and Version Used*				Site/Landscaping (optional)	☐ SE												
Biogenic Carbon Included* (Y/N)				FFE (optional)	☐ SE												
Model Floor Area			m2														
Mandatory Scope Items																	
Please break out the following in per element emissions by life cycle in kgCO2e. Leave blank any sections that were not calculated separately from Whole Building GWP																	
	<table border="1"> <thead> <tr> <th colspan="3">Upfront Carbon</th> <th>Use Phase</th> <th>End of Life</th> <th>Total</th> </tr> <tr> <th>A1-3</th> <th>A4</th> <th>A5</th> <th>B1-5</th> <th>C1-4</th> <th></th> </tr> </thead> </table>			Upfront Carbon			Use Phase	End of Life	Total	A1-3	A4	A5	B1-5	C1-4			
Upfront Carbon			Use Phase	End of Life	Total												
A1-3	A4	A5	B1-5	C1-4													
[Table Relocated from below]																	
Proposed Structure GWP (kgCO2e):																	
Proposed Enclosure GWP (kgCO2e):																	
Proposed Whole Building GWP (kgCO2e):																	
Complete for Baseline Building Option Only																	
Baseline Structure GWP (kgCO2e):																	
Baseline Enclosure GWP (kgCO2e):																	
Baseline Whole Building GWP (kgCO2e):																	
	<table border="1"> <thead> <tr> <th>Percent Reduction</th> <th></th> </tr> </thead> <tbody> <tr> <td>Mandatory</td> <td></td> </tr> <tr> <td>Tier 1</td> <td></td> </tr> <tr> <td>Tier 2</td> <td></td> </tr> </tbody> </table>				Percent Reduction		Mandatory		Tier 1		Tier 2						
Percent Reduction																	
Mandatory																	
Tier 1																	
Tier 2																	
Proposed Structure GWP (kgCO2e):																	
Proposed Enclosure GWP (kgCO2e):																	
Proposed Whole Building GWP (kgCO2e):																	
Complete for Carbon Budget Option Only																	
	<table border="1"> <tbody> <tr> <td>ECI: Proposed Whole Building GWP/GFAM²</td> <td></td> </tr> <tr> <td>ECB - Mandatory</td> <td></td> </tr> <tr> <td>ECB - Tier 1</td> <td></td> </tr> <tr> <td>ECB - Tier 2</td> <td></td> </tr> </tbody> </table>				ECI: Proposed Whole Building GWP/GFAM ²		ECB - Mandatory		ECB - Tier 1		ECB - Tier 2						
ECI: Proposed Whole Building GWP/GFAM ²																	
ECB - Mandatory																	
ECB - Tier 1																	
ECB - Tier 2																	
Legend																	
A1-A3* (A1) Raw Material Supply, (A2) Transport to Factory, and (A3)			B1-B5* (B1) Use, (B2) Maintenance, (B3) Repair, (B4) Replacement, (B5)														
A4* (A4) Transportation to site			C1-C4* (C1) Deconstruction/Demolition, (C2) Transport to Waste														
A5* (A5) Construction Installation or "on-site energy use". Leave			D* (D) Reuse-Recovery & Recycling Potential														
Optional Items — Proposed Design ONLY																	
Please break out the following in per element emissions by life cycle in kgCO2e. Leave blank any sections that were not calculated separately from Whole Building GWP																	
	<table border="1"> <thead> <tr> <th colspan="3">Upfront Carbon</th> <th>Use Phase</th> <th>End of Life</th> <th>Total</th> </tr> <tr> <th>A1-3</th> <th>A4</th> <th>A5</th> <th>B1-5</th> <th>C1-4</th> <th></th> </tr> </thead> </table>			Upfront Carbon			Use Phase	End of Life	Total	A1-3	A4	A5	B1-5	C1-4			
Upfront Carbon			Use Phase	End of Life	Total												
A1-3	A4	A5	B1-5	C1-4													
Interiors GWP (kgCO2e):																	
MEP GWP (kgCO2e):																	
Site/Landscaping GWP (kgCO2e):																	
FF&E GWP (kgCO2e):																	

REVISED LANGUAGE IF APPROVED

WORKSHEET (WS-9)
Section 5.409.4 and Section A5.409.4 WHOLE BUILDING LIFE CYCLE
ASSESSMENT – PERFORMANCE OPTION

CALGreen Whole Building LCA Reporting Template

LCA model run	User input	Units	Overall scope included (select all that apply)
LCA Modeler (company) [private]			Structure (required) ☐ IE
Date of Model Run (mm/yyyy)			Enclosure (required) ☐ IE
Project Phase at Model Run			Interiors (optional) ☐ IE
Reference Study Period (years)			MEP (optional) ☐ SE
Software and Version Used*			Site/Landscaping (optional) ☐ SE
Model Floor Area		m2	FFE (optional) ☐ SE

Mandatory Scope Items

Please break out the following in per element emissions by life cycle in kgCO₂e. Leave blank any sections that were not calculated separately from Whole Building GWP

	Upfront Carbon			Use Phase	End of Life	Total
	A1-3	A4	A5	B1-5	C1-4	
Proposed Structure GWP (kgCO ₂ e):						
Proposed Enclosure GWP (kgCO ₂ e):						
Proposed Whole Building GWP (kgCO ₂ e):						

Complete for Baseline Building Method only

Please break out the following in per element emissions by life cycle in kgCO₂e. Leave blank any sections that were not calculated separately from Whole Building GWP

	Upfront Carbon			Use Phase	End of Life	Total
	A1-3	A4	A5	B1-5	C1-4	
Baseline Structure GWP (kgCO ₂ e):						
Baseline Enclosure GWP (kgCO ₂ e):						
Baseline Whole Building GWP (kgCO ₂ e):						

Percent Reduction	
Mandatory	
Tier 1	
Tier 2	

Complete for Carbon Budget Method only

ECI: Proposed Whole Building GWP/GFam ²	
ECB - Mandatory	
ECB - Tier 1	
ECB - Tier 2	

Legend

A1-A3*

(A1) Raw Material Supply, (A2) Transport to Factory, and (A3)

A4*

(A4) Transportation to site

A5*

(A5) Construction Installation or "on-site energy use". Leave

B1-B5*

(B1) Use, (B2) Maintenance, (B3) Repair, (B4) Replacement, (B5)

C1-C4*

(C1) Deconstruction/Demolition, (C2) Transport to Waste

D*

(D) Reuse-Recovery & Recycling Potential

STATEMENT OF REASONS

BSC proposes amending Worksheet WS-9 to address the proposed amendments in Sections 5.409.4 and A5.409.4.

ITEM 9

Chapter 5,

Section A5.105 Deconstruction and reuse of existing structures

SECTION A5.105— DECONSTRUCTION AND REUSE OF EXISTING STRUCTURES

A5.105.1 Reserved.

A5.105.2 Reuse of existing building. For reuse of existing buildings embodied carbon reduction requirements see Section A5.409.

A5.105.3 Deconstruction-(Reserved).

A5.105.3.1 Salvage assessment. For salvage assessment requirements for an existing building or portion of a building where the scope of work includes removal of existing building materials, products, components, or assemblies see Section A5.408.2.

ITEM 10

Appendix A5,

Section A5.402 Definitions

SECTION A5.402—DEFINITIONS

A5.402.1 Definitions. The following terms are defined in Chapter 2.

...

BIOGENIC CARBON.

...

EMBODIED CARBON BUDGET (ECB).

EMBODIED CARBON INTENSITY (ECI).

...

STATEMENT OF REASONS

BSC proposes adding these definitions, as listed in Chapter 2, Section 202.

ITEM 11

Chapter 5,

Section 5.408 Construction waste reduction, salvage, disposal and recycling

SECTION A5.408— CONSTRUCTION WASTE REDUCTION, SALVAGE, DISPOSAL AND RECYCLING

A5.408.1 ...

A5.408.2 Salvage assessment elective. A salvage assessment of an existing building

or portion of a building that evaluates materials, products, components, and assemblies within the scope of removal for their potential recovery and reuse before demolition or removal shall be completed for projects specified in Section A5.408.2.1 to achieve Tier 1 compliance and Section A5.408.2.2 to achieve Tier 2 compliance.

Exceptions:

1. Emergency demolition ordered by the enforcing agency.
2. Areas that cannot safely be entered or assessed, or materials that cannot reasonably be evaluated because of hazardous contamination or other unsafe conditions.
3. Projects where completing a salvage assessment is disproportionately burdensome due to overly onerous cost or timeline impacts, as determined by the local enforcing agency.

A5.408.2.1 Tier 1 scope.

1. Demolition of entire building(s) with a combined floor area of 10,000 square feet or greater.
2. Alteration(s) to existing building(s) where the combined altered floor area is 25,000 square feet or greater, and where the scope of work includes removal of existing building materials, products, components, or assemblies.
3. Additions(s) to existing building(s) where the total floor area combined with the existing building(s) is 25,000 square feet or greater, and where the scope of work includes removal of existing building materials, products, components, or assemblies.

A5.408.2.2 Tier 2 scope.

1. Demolition of entire building(s) that requires a demolition permit.
2. Alteration(s) to existing building(s) subject to requirements of Section 301.3 where the scope of work includes removal of existing building materials, products, components, or assemblies.
3. Additions(s) to existing building(s) subject to requirements of Section 301.3 where the scope of work includes removal of existing building materials, products, components, or assemblies.

[The CBSC is seeking additional input regarding proposed thresholds to determine if they are acceptable.]

A5.408.2.3 Salvage assessor qualifications. The assessment shall be completed by a qualified salvage assessor, which may include the owner, owner's representative, contractor, design professional, or other person with demonstrated knowledge or experience in building materials, construction, deconstruction, salvage, or reuse, including the feasibility of selective removal or deconstruction, or other criteria as determined by the local enforcing agency.

[The CBSC is seeking additional input regarding specifics for the salvage assessor qualifications by the local enforcing agency. Whether it should be left open, narrowed down and defined, or required that local enforcing agency develops

acceptance criteria if they adopt these provisions.]

A5.408.2.4 Assessment content and identification. The salvage assessment shall evaluate the major building materials, products, components, assemblies and systems within the scope of removal and identify those that based on their condition at the time of assessment and their ability to be removed using selective removal or deconstruction methods reasonably available for the project, are suitable for use again for the same or another purpose without being processed into a new raw material or manufactured product.

[The CBSC is seeking additional input regarding major building materials, products, components, assemblies and systems that shall be included in the assessment. Whether it should be left open or narrowed down and defined.]

Where the assessment identifies no reusable materials or products, the assessment documentation shall state the basis for that determination. The absence of an identified recipient or reuse destination shall not, by itself, be a basis for determining that a material or product is not reusable. Materials that are only recyclable and are not suitable for direct reuse need not be identified as reusable materials.

A5.408.2.5 Materials recovered for reuse. Recovery for reuse involves diverting a material or product that would otherwise have been discarded to a reuse outcome, such as on-site reuse, direct transfer to another project, or delivery to a reuse facility. Completion of a salvage assessment does not require identified materials or products to be recovered for reuse.

A5.408.2.6 Documentation. Documentation shall be provided in the construction documents to demonstrate compliance with Section 5.408.2.

For each identified material or product, the assessment documentation shall include the following:

1. Material or product type.
2. Location.
3. Approximate quantity of the identified material or product, using a practical unit appropriate to the material, such as weight, count, linear feet, square feet, volume, or other appropriate unit.
4. Potential reuse pathways if known, including in-situ reuse, on-site reuse, direct transfer to another project, or delivery to an identified reuse facility.

The salvage assessment documentation shall be updated as necessary with the following information and shall be accessible during and at the completion of construction for examination by the enforcing agency.

1. Quantity of the identified material or product recovered for reuse, using a practical unit appropriate to the material, such as weight, count, linear feet, square feet, volume, or other appropriate unit.
2. Reason for non-recovery of the material or product identified as reusable but not recovered for reuse.

...

STATEMENT OF REASONS

BSC proposes ...

ITEM 12 Appendix A5, Section A5.409.3 Product GWP – prescriptive option

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TABLE A5.409.3 PRODUCT GWP LIMITS TIER 1 AND TIER 2

GWP value (unfabricated) ²

Buy Clean California Product Category	TIER 1 Maximum acceptable GWP value (unfabricated) (GWP_{allowed})	TIER 2 Maximum acceptable GWP value (unfabricated) (GWP_{allowed})	Unit of Measurement
Hot-rolled structural steel sections	4.52 <u>1.01</u>	4.04 <u>0.91</u>	MT CO2e/MT
Hollow structural sections	2.57 <u>1.71</u>	1.71 <u>1.54</u>	MT CO2e/MT
Steel plate	2.24 <u>1.49</u>	1.49 <u>1.34</u>	MT CO2e/MT
Concrete reinforcing steel	1.34 <u>0.76</u>	0.89 <u>0.68</u>	MT CO2e/MT
Flat glass	2.15 <u>1.43</u>	1.43 <u>1.29</u>	MT CO2e/MT
Light-density mineral wool board insulation	5.00 <u>2.68</u>	3.33 <u>2.41</u>	kg CO2e/1 m2
Heavy-density mineral wool board insulation	12.24 <u>6.82</u>	8.16 <u>6.14</u>	kg CO2e/1 m2

GWP value (fabricated) ³

[BSC is calculating the values and will add them later.]

<u>Buy Clean California Product Category</u>	<u>TIER 1 Maximum acceptable GWP value (fabricated) (GWP_{allowed})</u>	<u>TIER 2 Maximum acceptable GWP value (fabricated) (GWP_{allowed})</u>	<u>Unit of Measurement</u>
<u>Hot-rolled structural steel sections</u>			<u>MT CO2e/MT</u>
<u>Hollow structural sections</u>			<u>MT CO2e/MT</u>
<u>Steel plate</u>			<u>MT CO2e/MT</u>
<u>Concrete reinforcing steel</u>			<u>MT CO2e/MT</u>

Concrete, Ready-Mixed ¹

Concrete Product Category	TIER 1 Maximum acceptable GWP value (unfabricated) (GWP _{allowed})	TIER 2 Maximum acceptable GWP value (unfabricated) (GWP _{allowed})	Unit of Measurement
up to 2499 psi	386 <u>257</u>	257 <u>231</u>	kg CO2e/m3
2500-3499 psi	449 <u>279</u>	279 <u>251</u>	kg CO2e/m3
3500-4499 psi	485 <u>323</u>	323 <u>291</u>	kg CO2e/m3
4500-5499 psi	567 <u>378</u>	378 <u>340</u>	kg CO2e/m3
5500-6499 psi	604 <u>401</u>	401 <u>361</u>	kg CO2e/m3
6500 psi and greater	685 <u>456</u>	456 <u>410</u>	kg CO2e/m3

Concrete, Lightweight Ready-Mixed ¹

Concrete Product Category	TIER 1 Maximum acceptable GWP value (unfabricated) (GWP _{allowed})	TIER 2 Maximum acceptable GWP value (unfabricated) (GWP _{allowed})	Unit of Measurement
up to 2499 psi	750 <u>500</u>	500 <u>450</u>	kg CO2e/m3
2500-3499 psi	849 <u>546</u>	546 <u>491</u>	kg CO2e/m3
3500-4499 psi	894 <u>594</u>	594 <u>535</u>	kg CO2e/m3

1. Concrete High Early Strength ready-mixed shall be calculated at 130 percent of the Ready mixed concrete GWP allowed values for each product category.
2. Use this table to determine compliance when an EPD declared unfabricated product GWP. Compare manufacturer cradle-to-gate GWP (i.e., the sum of information modules A1, A2, and A3) to the limit.
3. Use this table to determine compliance when an EPD declares fabricated product GWP (compare GWP from information module A1 to the limit). These limits are derived from the unfabricated product GWP and account for the waste in the fabrication process.

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STATEMENT OF REASONS

BSC proposes to reduce maximum GWP levels in the Product GWP Limits Table 5.409.3 to 100% and 90% of BCCA 2025 levels and NRMCA 2022 Benchmark levels for Tier 1 and Tier 2, respectively, to achieve California's decarbonization goals, as required by executive orders and legislation.

ITEM 13

Appendix A5,

Section A5.409.4 Whole Building Life Cycle Assessment – performance option

A5.409.4 Whole building life cycle assessment – performance option. Projects shall meet the minimum requirements of Section A5.409.4 for Tier 1 or Tier 2 compliance.

A5.409.4.1 Tier 1. Projects shall conduct a cradle-to-grave whole building life cycle assessment meeting the requirements of Sections 5.409.4, 5.409.4.3 and 5.409.4.4 and performed in accordance with ISO14040 and 14044, excluding operating energy, and

shall demonstrate compliance with Section A5.409.4.1 carbon budget method, or Section A5.409.4.2 baseline building method. [The following language is moved to Section A5.409.4.2.1 with minor modifications.] ~~demonstrating a minimum 15 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the California Energy Code currently in effect. Software used to conduct the whole building life cycle assessment, including reference baseline building if applicable, shall have a data set compliant with ISO 14044, and ISO 21930 or EN 15804, and the software shall conform to ISO 21931 and/or EN 15978. [The following language is moved to Section A5.409.4.2.] The software tools and datasets shall be the same for evaluation of both the baseline building and the proposed building.~~

Exception: ~~For projects that include building reuse, the reference baseline building shall exclude the reused elements. The percent reduction in GWP shall be achieved through the design and construction of new project elements.~~

A5.409.4.1 Carbon budget method. Demonstrate the building's embodied carbon intensity (ECI) does not exceed the embodied carbon budget (ECB) specified in Table A5.409.4.1.

TABLE A5.409.4.1 – EMBODIED CARBON BUDGET (ECB) LIMITS TIER 1 AND TIER 2

<u>Primary Occupancy Group¹</u>	<u>TIER 1 Maximum ECB value (kgCO₂e/m²)²</u>	<u>TIER 2 Maximum acceptable ECB value (kgCO₂e/m²)</u>
<u>Storage (S)</u>	<u>370</u>	<u>310</u>
<u>Education (E)</u>	<u>550</u>	<u>450</u>
<u>Business (B)</u>	<u>550</u>	<u>450</u>
<u>Assembly (A)</u>	<u>610</u>	<u>480</u>
<u>Factory and Industrial (F)</u>	<u>610</u>	<u>480</u>
<u>Hazard (H)</u>	<u>610</u>	<u>480</u>
<u>Institutional (I)</u>	<u>610</u>	<u>480</u>
<u>Mercantile (M)</u>	<u>610</u>	<u>480</u>
<u>Storage (S)</u>	<u>610</u>	<u>480</u>
<u>Utility and Miscellaneous (U)</u>	<u>610</u>	<u>480</u>

1. The primary occupancy group is the occupancy classification representing the largest percentage of a building's total floor area.
2. The building's ECB shall be the ECB of its primary occupancy group and shall not be determined using an area-weighted average of multiple occupancies.

A5.409.4.1.1 Embodied Carbon Intensity (ECI) Calculation. To determine the Embodied Carbon Intensity (ECI), divide the building's total Global Warming Potential (GWP) by gross floor area (GFA) in square meters (m²).

A5.409.4.1.1 EQUATION:

$$\text{GWP/GFA (m}^2\text{)} = \text{ECI (kgCO}_2\text{e/m}^2\text{)}$$

[The following language in new Sections A5.409.4.2 and A5.409.4.2.1 is moved

from Section A5.409.4.1 with minor modifications.]

A5.409.4.2 Baseline building method. Projects shall meet the minimum requirements of this section and Section A5.409.4.2.1 for Tier 1 compliance or Section A5.409.4.2.2 for Tier 2 compliance. The software tools and data sets shall be the same for evaluation of both the baseline building and the proposed building.

Exception: For projects that include building reuse, the reference baseline building shall exclude the reused elements. The percent reduction in GWP shall be achieved through the design and construction of new project elements.

A5.409.4.2.1 Tier 1. Demonstrate and demonstrating a minimum 15 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the *California Energy Code* currently in effect.

A5.409.4.2.2 Tier 2. Projects shall conduct a cradle-to-grave whole building life cycle assessment meeting the requirements of Section 5.409.2 and performed in accordance with ISO 14040 and ISO 14044, excluding operating energy, demonstrating Demonstrate a minimum 20 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the *California Energy Code* currently in effect. Software used to conduct the whole building life cycle assessment, including reference baseline building, shall have a data set compliant with ISO 14044, and ISO 21930 or EN 15804, and the software shall conform to ISO 21931 and/or EN 15978. The software tools and datasets shall be the same for evaluation of both the baseline building and the proposed building.

Exception: For projects that include building reuse, the reference baseline building shall exclude the reused elements. The percent reduction in GWP shall be achieved through the design and construction of new project elements.

A5.409.4.3 Verification of compliance. A summary of the GWP analysis produced by the software and Worksheet WS-7 signed by the design professional of record shall be provided in the construction documents as documentation of compliance. A copy of the whole building life cycle assessment which includes the GWP analysis produced by the software, in addition to maintenance and training information, shall be included in the operation and maintenance manual and shall be provided to the owner at the close of construction. The enforcing agency may require inspection and inspection reports in accordance with Sections 702.2 and 703.1 during and at completion of construction to demonstrate substantial conformance. Inspection shall be performed by the design professional of record or third party acceptable to the enforcing agency.

REVISED LANGUAGE IF APPROVED

A5.409.4 Whole building life cycle assessment – performance option. Projects shall conduct a cradle-to-grave whole building life cycle assessment meeting the requirements of Sections 5.409.4, 5.409.4.3 and 5.409.4.4 and performed in accordance with ISO14040 and 14044, excluding operating energy, and shall demonstrate compliance with Section A5.409.4.1 carbon budget method, or Section A5.409.4.2 baseline building method. Software used to conduct the whole building life cycle assessment, including reference baseline building if applicable, shall have a data set compliant with ISO 14044, and ISO 21930 or EN 15804, and the software shall conform to ISO 21931 and/or EN 15978.

A5.409.4.1 Carbon budget method. Demonstrate the building’s embodied carbon intensity (ECI) does not exceed the embodied carbon budget (ECB) specified in Table A5.409.4.1.

TABLE A5.409.4.1 – EMBODIED CARBON BUDGET (ECB) LIMITS TIER 1 AND TIER 2

Primary Occupancy Group ¹	TIER 1 Maximum ECB value (kgCO ₂ e/m ²) ²	TIER 2 Maximum acceptable ECB value (kgCO ₂ e/m ²)
Storage (S)	370	310
Education (E)	550	450
Business (B)	550	450
Assembly (A)	610	480
Factory and Industrial (F)	610	480
Hazard (H)	610	480
Institutional (I)	610	480
Mercantile (M)	610	480
Storage (S)	610	480
Utility and Miscellaneous (U)	610	480

1. The primary occupancy group is the occupancy classification representing the largest percentage of a building’s total floor area.
2. The building’s ECB shall be the ECB of its primary occupancy group and shall not be determined using an area-weighted average of multiple occupancies.

A5.409.4.1.1 Embodied Carbon Intensity (ECI) Calculation. To determine the Embodied Carbon Intensity (ECI), divide the building’s total Global Warming Potential (GWP) by gross floor area (GFA) in meters squared (m²).

A5.409.4.1.1 EQUATION:

$$\text{GWP/GFA (m}^2\text{)} = \text{ECI (kgCO}_2\text{e/m}^2\text{)}$$

A5.409.4.2 Baseline building method. Projects shall meet the minimum requirements of this section and Section A5.409.4.2.1 for Tier 1 compliance or Section A5.409.4.2.2 for Tier 2 compliance. The software tools and data sets shall be the same for evaluation of both the baseline building and the proposed building.

For projects that include building reuse, the reference baseline building shall not be

of new construction and shall retain existing materials. The percent reduction in GWP shall be achieved through the design and construction of new project elements.

A5.409.4.2.1 Tier 1. Demonstrate a minimum 15 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the *California Energy Code* currently in effect.

A5.409.4.2.2 Tier 2. Demonstrate a minimum 20 percent reduction in global warming potential (GWP) as compared to a reference baseline building of similar size, function, complexity, type of construction, material specification, and geographic location that meets the requirements of the *California Energy Code* currently in effect.

A5.409.4.3 Verification of compliance. A summary of the GWP analysis ...

STATEMENT OF REASONS

BSC proposes to amend Whole Building Life Cycle Assessment – Performance Option Section A5.409.4 to provide a second option to the baseline building model, by calculating an assessment using a carbon budget method.