# CALIFORNIA BUILDING STANDARDS COMMISSIONJuly 10, 2025CALGREEN CCRC WORKSHOP #2DRAFT EXPRESS TERMSCALIFORNIA GREEN BUILDING STANDARDS CODE, (CALGreen), PART 11,CALIFORNIA BUILDING STANDARDS CODE,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* Repealed California language appears ~~upright and in strikeout~~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 1Chapter 2, Section 202 Definitions

…

**BIOGENIC CARBON.** The carbon absorbed from the atmosphere by plants as they grow and then released back into the atmosphere through processes such as eating, burning, and decomposition.

…

**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.

…

**SALVAGED MATERIAL OR PRODUCT.** A construction component recovered from existing buildings or construction sites and reused without substantial alteration of its form. Salvaged materials are minimally processed only, such as cleaning, repairing, resurfacing and resizing. Common salvaged materials include structural beams and posts, flooring, doors, cabinetry, brick, and decorative items.

### ITEM 2Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, Section 5.105 Deconstruction and Reuse of Existing Structures

**5.105.1 ~~Scope.~~ Reserved.**

**~~[BSC-CG]~~** ~~Effective July 1, 2024, alteration(s) to existing building(s) where the combined altered floor area is 100,000 square feet or greater shall comply with either Section 5.105.2, 5.409.2, or 5.409.3. Addition(s) to existing building(s) where the total floor area combined with the existing building(s) is 100,000 square feet or greater shall comply with either Section 5.105.2, Section 5.409.2, or Section 5.409.3. Effective January 1, 2026, the combined floor area shall be 50,000 square feet or greater.~~

**~~[DSA-SS] ...~~**

[The following exception is moved to Section 5.409.] **~~Exception [BSC-CG, DSA-SS]:~~** ~~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 5.105.2.~~

**5.105.2 Reuse of existing building.** For reuse of existing buildings embodied carbon reduction requirements see Section 5.409. [The following provisions are moved to Section 5.409.]~~An alteration or addition to an existing building shall maintain at a minimum 45 percent combined of the existing building’s primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes). Window assemblies, insulation, portions of buildings deemed structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.~~

**~~5.105.2.1 Verification of compliance~~**~~. Documentation shall be provided in the construction documents to demonstrate compliance with Section 5.105.2.~~

**~~Note:~~** ~~Sample Worksheet WS-3 in Chapter 8 may be used to assist in documenting compliance with this section.~~

**5.105.3 Deconstruction (Reserved).**

#### REVISED LANGUAGE IF APPROVED

**5.105.1** Reserved.

**5.105.2** Reuse of existing building. For reuse of existing buildings embodied carbon reduction requirements see Section 5.409.

**5.105.3** Deconstruction (Reserved).

#### EXISTING LANGUAGE IN 2025 CALGREEN

**SECTION 5.105—DECONSTRUCTION AND REUSE OF EXISTING STRUCTURES**

**5.105.1 Scope.**

**[BSC-CG]** Effective July 1, 2024, alteration(s) to existing building(s) where the combined altered floor area is 100,000 square feet or greater shall comply with either Section 5.105.2, 5.409.2, or 5.409.3. Addition(s) to existing building(s) where the total floor area combined with the existing building(s) is 100,000 square feet or greater shall comply with either Section 5.105.2, Section 5.409.2, or Section 5.409.3. Effective January 1, 2026, the combined floor area shall be 50,000 square feet or greater.

**[DSA-SS]** …

**Exception [BSC-CG, DSA-SS]:** 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 5.105.2.

**5.105.2 Reuse of existing building.** An alteration or addition to an existing building shall maintain at a minimum 45 percent combined of the existing building’s primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes). Window assemblies, insulation, portions of buildings deemed structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.

**5.105.2.1 Verification of compliance.** Documentation shall be provided in the construction documents to demonstrate compliance with Section 5.105.2.

**Note:** Sample Worksheet WS-3 in Chapter 8 may be used to assist in documenting compliance with this section.

**5.105.3 Deconstruction (Reserved).**

### ITEM 3Chapter 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).**

…

**SALVAGED MATERIAL OR PRODUCT.**

…

### ITEM 4Chapter 5, Section 5.407.1 Weather Protection

**5.407.1** **Reserved ~~Weather protection.~~** ~~Provide a weather-resistant exterior wall and foundation envelope as required by~~ *~~California Building Code~~* ~~Section 1402.2 (Weather Protection), manufacturer’s installation instructions or local ordinance, whichever is more stringent.~~

### ITEM 5Chapter 5, Section 5.409 Embodied Carbon Reduction and 5.409.1 Scope

**SECTION 5.409—~~LIFE CYCLE ASSESSMENT~~ EMBODIED CARBON REDUCTION**

**5.409.1 Scope.** Provisions of this section define scope and options for embodied carbon reduction compliance.

**[BSC-CG]** ~~Effective July 1, 2024, projects~~ Projects consisting of newly constructed building(s) with a combined floor area of ~~100,000~~ 50,000 square feet or greater shall comply with either Section 5.409.~~2~~3 or ~~Section~~ 5.409.~~3~~4. Alteration(s) to existing building(s) where the combined altered floor area is ~~100,000~~ 50,000 square feet or greater shall comply with ~~either~~ Section ~~5.105.2~~ 5.409.2, 5.409.~~2~~3 or 5.409.~~3~~4. Addition(s) to existing building(s) where the total floor area combined with the existing building(s) is ~~100,000~~ 50,000 square feet or greater shall comply with ~~either~~ Section ~~5.105.2~~ 5.409.2, ~~Section~~ 5.409.~~2~~3 or ~~Section~~ 5.409.~~3~~4. ~~Effective January 1, 2026, the combined floor area 50,000 square feet or greater.~~

**[DSA-SS]** …

[The following exception is moved here from Section 5.105.1.] **Exception [BSC-CG, DSA-SS]:** Newly constructed buildings, and combined addition(s) to existing building(s) of two times the area or more of the existing building(s), are not eligible to meet compliance with Section ~~5.105.2~~ 5.409.2.

#### REVISED LANGUAGE IF APPROVED

**SECTION 5.409—EMBODIED CARBON REDUCTION**

**5.409.1 Scope.** Provisions of this section define scope and options for embodied carbon reduction compliance.

**[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.

**[DSA-SS]** …

**Exception [BSC-CG, DSA-SS]:** Newly constructed buildings, and combined addition(s) to existing building(s) of two times the area or more of the existing building(s), are not eligible to meet compliance with Section 5.409.2.

#### EXISTING LANGUAGE IN 2025 CALGREEN

**SECTION 5.409—LIFE CYCLE ASSESSMENT**

**5.409.1 Scope.**

**[BSC-CG]** Effective July 1, 2024, projects consisting of newly constructed building(s) with a combined floor area of 100,000 square feet or greater shall comply with either Section 5.409.2, or Section 5.409.3. Alteration(s) to existing building(s) where the combined altered floor area is 100,000 square feet or greater shall comply with either Section 5.105.2, 5.409.2, or 5.409.3. Addition(s) to existing building(s) where the total floor area combined with the existing building(s) is 100,000 square feet or greater shall comply with either Section 5.105.2, Section 5.409.2, or Section 5.409.3. Effective January 1, 2026, the combined floor area 50,000 square feet or greater.

**[DSA-SS] …**

### ITEM 6Chapter 5, Section 5.409.2 Reuse of existing building option

**~~5.105.2~~ 5.409.2 Reuse of existing building option.** An alteration or addition to an existing building shall maintain at a minimum 45 percent combined of the existing building’s primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes). Window assemblies, insulation, portions of buildings deemed structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.

**~~5.105.2.1~~ 5.409.2.1 Verification of compliance**. Documentation shall be provided in the construction documents to demonstrate compliance with Section ~~5.105.2~~ 5.409.2.

**Note:** Sample Worksheet WS-3 in Chapter 8 may be used to assist in documenting compliance with this section.

### ITEM 7Chapter 5,Section 5.409.3 Product GWP – prescriptive option with subsections and Table 5.409.3

**5.409.3 Product GWP ~~compliance~~ - prescriptive ~~path~~ option.** Each product that is permanently installed and listed in Table 5.409.3 shall not exceed the maximum GWP value specified in Table 5.409.3 and shall have a Type III environmental product declaration (EPD), either product-specific or factory-specific.

**~~5.409. 3.1~~** ~~Products shall not exceed the maximum GWP value specified in Table 5.409. 3.~~

**Exceptions:**

1. Salvaged materials and products are not required to have a Type III EPD and shall have a GWP of zero.
2. ~~Concrete may be considered one product category to meet compliance with this section.~~ Concrete mixes may be considered as a ~~A~~ weighted average of the maximum GWP for all concrete mixes installed in the project. The weighted average maximum GWP shall be less than the weighted average maximum GWP allowed per Table 5.409.3 using Exception 2 Equation 5.409.3~~.1~~. Calculations shall be performed with consistent units of measurement for the material quantity and the GWP value. For the purposes of this exception, industry-wide EPDs are acceptable.

**Exception 2 EQUATION 5.409.3~~.1~~**

GWP*n* < GWP*allowed*

where

GWP*n* = Σ (GWPn)(vn)

and

GWPallowed = Σ (GWP*allowed*)(v*n*)

and

*n* = each concrete mix installed in the project

GWP*n* = the GWP for concrete mix *n* per concrete mix EPD, in kg CO2e/m3

GWP*allowed* = the GWP potential allowed for concrete mix *n* per Table 5.409.3

v*n* = the volume of concrete mix *n* installed in the project, in m3

**TABLE 5.409.3 – PRODUCT GWP LIMITS**

|  |  |  |
| --- | --- | --- |
| **Buy Clean California** **Materials Product Category 1** | **Maximum acceptable GWP value (unfabricated)** **(GWP *allowed*)** | **Unit of Measurement** |
| Hot-rolled structural steel sections | ~~1.77~~ 1.26 | MT CO2e/MT |
| Hollow structural sections | ~~3.00~~ 2.14 | MT CO2e/MT |
| Steel plate | ~~2.61~~ 1.86 | MT CO2e/MT |
| Concrete reinforcing steel | ~~1.56~~ 0.94 | MT CO2e/MT |
| Flat glass | ~~2.50~~ 1.79 | ~~kg CO~~~~2e~~~~/MT~~ MT CO2e/MT |
| Light-density mineral wool board insulation | ~~5.83~~ 3.35 | kg CO2e/1 m2 |
| Heavy-density mineral wool board insulation | ~~14.28~~ 8.53 | kg CO2e/1 m2 |

**Concrete, Ready-Mixed 2, 3**

|  |  |  |
| --- | --- | --- |
| **Concrete Product Category** | **Maximum GWP allowed value** **(GWP *allowed*)** | **Unit of Measurement** |
| up to 2499 psi  | ~~450~~ 321 | kg CO2e/m3 |
| 2500-3499 psi  | ~~489~~ 349 | kg CO2e/m3 |
| 3500-4499 psi | ~~566~~ 404 | kg CO2e/m3 |
| 4500-5499 psi | ~~661~~ 472 | kg CO2e/m3 |
| 5500-6499 psi | ~~701~~ 501 | kg CO2e/m3 |
| 6500 psi and greater | ~~799~~ 571 | kg CO2e/m3 |

**Concrete, Lightweight Ready-Mixed 2**

|  |  |  |
| --- | --- | --- |
| **Concrete Product Category** | **Maximum GWP allowed value** **(GWP *allowed*)** | **Unit of Measurement** |
| up to 2499 psi  | ~~875~~ 625 | kg CO2e/m3 |
| 2500-3499 psi | ~~956~~ 683 | kg CO2e/m3 |
| 3500-4499 psi | ~~1,039~~ 742 | kg CO2e/m3 |

1. The GWP values of the products listed in Table 5.409.3 are based on ~~175~~ 125 percent of Buy Clean California Act (BCCA) GWP values effective January 1, 2025, except for concrete products which are not included in BCCA.
2. For concrete, ~~175~~ 125 percent of the National Ready Mix Concrete Association (NRMCA) 2022 version 3 Pacific Southwest regional benchmark values are used for the GWP allowed, except for High Early strength.
3. Concrete High Early Strength ready-mixed shall be calculated at 130 percent of the Ready mixed concrete GWP allowed values for each product category.

**5.409.3.~~2~~1 Verification of compliance.** Calculations to demonstrate compliance, Type III EPDs for products required to comply, if included in the project, and Worksheet WS-5 signed by the design professional of record shall be provided on the construction documents. Updated EPDs for products used in construction shall be provided to the owner at the close of construction and to the enforcement entity upon request. 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.

### ITEM 8Chapter 5, Section 5.409.4 Whole Building Life Cycle Assessment – performance option

**~~5.409.2~~ 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 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 with minor modifications.] ~~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), One-Click LCA (www.oneclicklca.com), Tangible Materials (www.tangiblematerials.com), and Tally for Revit (apps.autodesk.com).
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.
3. In addition to the required documentation specified in Section ~~5.409.2.3~~ 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.

**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 meters squared (m2).

**5.409.4.1.1 EQUATION:**

GWP/GFA (m2) = ECI (kgCO2e/m2)

**TABLE 5.409.4.1 – EMBODIED CARBON BUDGET (ECB) LIMITS**

|  |  |
| --- | --- |
| **Primary Occupancy Group** | **Maximum acceptable ECB value (kgCO2e/m2)1** |
| Storage (S) | 480 |
| Education (E) & Business (B) | 660 |
| Other occupancy groups  | 750 |

1. The ECB values are based on the 75th percentile of ECI of buildings included in the Carbon Leadership Forum WBLCA Benchmark Study v2.

[The following language is moved from Section 5.409.2 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.

**~~5.409.2.1~~ 5.409.4.3 Building components**. Building enclosure components included in the assessment shall be limited to glazing assemblies, insulation, and exterior finishes. Primary and secondary structural members included in the assessment shall be limited to footings and foundations, ~~and~~ structural columns, beams, walls, roofs, and floors.

**5.409.4.3.1** Salvaged materials and products are not required to have a Type III EPD and shall have a GWP of zero.

**~~5.409.2.2~~ 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.

**~~5.409.2.3~~ 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.

#### 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. 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](https://www.oneclicklca.com/planetary)). Paid versions include, but are not limited to, Sphera GaBi Solutions (gabi.sphera.com), SimaPro (simapro.com), One-Click LCA ([www.oneclicklca.com](https://www.oneclicklca.com/)), Tangible Materials ([www.tangiblematerials.com](https://www.tangiblematerials.com/)), and Tally for Revit (apps.autodesk.com).
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.
3. 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.

**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 meters squared (m2).

**5.409.4.1.1 EQUATION:**

GWP/GFA (m2) = ECI (kgCO2e/m2)

**TABLE 5.409.4.1 – EMBODIED CARBON BUDGET (ECB) LIMITS**

|  |  |
| --- | --- |
| **Primary Occupancy Group** | **Maximum acceptable ECB value (kgCO2e/m2)1** |
| Storage (S) | 480 |
| Education (E) & Business (B) | 660 |
| Other occupancy groups  | 750 |

1. The ECB values are based on the 75th percentile of ECI of buildings included in the Carbon Leadership Forum WBLCA Benchmark Study v2.

**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 be limited to glazing assemblies, insulation, and exterior finishes. Primary and secondary structural members included in the assessment shall be limited to footings and foundations, structural columns, beams, walls, roofs, and floors.

**5.409.4.3.1** Salvaged materials and products are not required to have a Type III EPD and shall have a GWP of zero.

**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 …

#### EXISTING LANGUAGE IN 2025 CALGREEN

**5.409.2 Whole building life cycle assessment.** 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 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 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 data sets shall be the same for evaluation of both the baseline building and the proposed building.

**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](https://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](https://www.oneclicklca.com/)) and Tally for Revit (apps.autodesk.com).
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.
3. In addition to the required documentation specified in [Section 5.409.2.3](https://codes.iccsafe.org/lookup/CAGBC2022P3_Ch05_SubCh5.4_Sec5.409.2.3/3352), Worksheet [WS-9](https://codes.iccsafe.org/lookup/CAGBC2022P3_Ch08_WS_9/3352) may be required by the enforcing entity to demonstrate compliance with the requirements.

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

**5.409.2.2 Reference study period.** The reference study period of the proposed building shall be equal to the reference baseline building and shall be 60 years.

**5.409.2.3 Verification of compliance**. A summary of the GWP analysis …

### ITEM 9Chapter 8 COMPLIANCE FORMS, WORKSHEETS AND REFERENCE MATERIALWorksheet (WS-3) Section 5.409.2 REUSE OF EXISTING BUILDING

**WORKSHEET (WS-3)
~~5.105.2~~ Section 5.409.2** **REUSE OF EXISTING BUILDING ~~REUSE~~**

**DOCUMENTATION OF COMPLIANCE OF EXISTING BUILDING REUSE**

**Area of Existing Building(s) \_\_\_\_\_ SF**

**Area of Aggregate Addition(s) (if applicable) \_\_\_\_\_ SF**

|  |  |  |  |
| --- | --- | --- | --- |
|   | **EXISTING TOTAL AREA(A)** | **RETAINED TOTAL AREA(B)** | **% OF RETAINED STRUCTURE (B)/(A)** |
| **Primary Structural Elements of Existing Building(s)** (foundations; columns, beams, walls, and floors; and lateral elements) | \_\_\_\_\_ SF | \_\_\_\_\_ SF | \_\_\_\_\_ ~~SF~~% |
| **Building Enclosure of Existing Building(s)** (roof framing, wall framing and exterior finishes only) | \_\_\_\_\_ SF | \_\_\_\_\_ SF | \_\_\_\_\_ ~~SF~~% |

**Total % Reuse of Required Elements ≥ 45% \_\_\_\_\_ %**

### ITEM 10Chapter 8,Worksheet (WS-4) Section 5.409.4 WHOLE BUILDING LIFE CYCLE ASSESSMENT

**WORKSHEET (WS-4)
Section ~~5.409.2~~ 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 ~~5.409.2~~ 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 10 percent reduction in global warming potential (GWP) is thereby secured.

…

#### REVISED LANGUAGE IF APPROVED

**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 10 percent reduction in global warming potential (GWP) is thereby secured.

…

### ITEM 11Chapter 8,Worksheet (WS-5) Section 5.409.3 PRODUCT GWP – PRESCRIPTIVE OPTION

**WORKSHEET (WS-5)**
**Section 5.409.3 PRODUCT GWP ~~COMPLIANCE~~ – PRESCRIPTIVE OPTION ~~PATH~~**

Responsible Designer’s Declaration Statement:

I attest that each product listed in Table 5.409.3 and intended to be permanently installed complies with ~~prescriptive compliance has been performed according to~~ the requirements of Section 5.409.3 and does not exceed the maximum ~~products have met the minimum 10 percent reduction in~~ global warming potential (GWP) value ~~as~~ specified in Table 5.409.3.

Furthermore, I will ensure during construction that all ~~the~~ material specifications and substitutions will be reviewed for substantial conformance with the requirements of Section 5.409.3 ~~global warming potential limits indicated on the approved plans~~ so at the close of construction compliance with the maximum GWP values ~~the minimum 10 percent reduction in global warming potential~~ is thereby secured.

…

####  REVISED LANGUAGE IF APPROVED

**WORKSHEET (WS-5)**
**Section 5.409.3 PRODUCT GWP – PRESCRIPTIVE OPTION**

Responsible Designer’s Declaration Statement:

I attest that each product listed in Table 5.409.3 and intended to be permanently installed complies with the requirements of Section 5.409.3 and does not exceed the maximum global warming potential (GWP) value specified in Table 5.409.3.

Furthermore, I will ensure during construction that all material specifications and substitutions will be reviewed for substantial conformance with the requirements of Section 5.409.3 so at the close of construction compliance with the maximum GWP values is thereby secured.

…

#### EXISTING LANGUAGE IN 2025 CALGREEN

**WORKSHEET (WS-5)**
**Section 5.409.3 PRODUCT GWP COMPLIANCE – PRESCRIPTIVE PATH**

Responsible Designer’s Declaration Statement:

I attest that prescriptive compliance has been performed according to the requirements of Section 5.409.3 and products have met the minimum 10 percent reduction in global warming potential as specified in Table 5.409.3. Furthermore, I will ensure during construction that the material specifications will be reviewed for substantial conformance with the global warming potential limits indicated on the approved plans so at the close of construction the minimum 10 percent reduction in global warming potential is thereby secured.

…

### ITEM 12Chapter 8,Worksheet (WS-6) Section A5.409.2 REUSE OF EXISTING BUILDING

**WORKSHEET (WS-6) [BSC-CG]
Section ~~A5.105.2~~ A5.409.2** **REUSE OF EXISTING BUILDING ~~REUSE~~ TIER 1 AND TIER 2**

**DOCUMENTATION OF COMPLIANCE OF EXISTING BUILDING REUSE**

**Area of Existing Building(s) \_\_\_\_\_ SF**

**Area of Aggregate Addition(s) (if applicable) \_\_\_\_\_ SF**

…

### ITEM 13Chapter 8,Worksheet (WS-7) Section A5.409.4 WHOLE BUILDING LIFE CYCLE ASSESSMENT – PERFORMANCE OPTION

**WORKSHEET (WS-7) [BSC-CG]**
**Section ~~A5.409.2~~ 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 A~~5.409.2~~ 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.

…

### ITEM 14Chapter 8,Worksheet (WS-8) Section A5.409.3 PRODUCT GWP – PRESCRIPTIVE OPTION

**WORKSHEET (WS-8) [BSC-CG]**
 **Section A5.409.3 PRODUCT GWP ~~COMPLIANCE~~—PRESCRIPTIVE OPTION ~~PATH~~**

Designer’s Declaration Statement:

I attest that each product listed in Table A5.409.3 and intended to be permanently installed complies with ~~prescriptive compliance has been performed according to~~ the requirements of Section A5.409.3 and ~~products have met~~ does not exceed the maximum ~~acceptable~~ global warming potential (GWP) value ~~for the products listed~~ specified in Table A5.409.3 for either Tier 1 or Tier 2.

Furthermore, I will ensure during construction that all ~~any~~ material specifications and substitutions will be reviewed for substantial conformance with the requirements of Section A5.409.3 so at the close of construction compliance with the maximum GWP values ~~the minimum 15 percent reduction in global warming potential~~ is thereby secured.

…

### ITEM 15Chapter 8,Worksheet (WS-9) Section 5.409.4 and Section A5.409.4 WHOLE BUILDING LIFE CYCLE ASSESSMENT – PERFORMANCE OPTION

**WORKSHEET (WS-9)
Section 5.409.4~~2~~ and Section A5.409.4~~2~~ WHOLE BUILDING LIFE CYCLE ASSESSMENT – PERFORMANCE OPTION**



#### REVISED LANGUAGE IF APPROVED

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



### ITEM 16Appendix A5 NONRESIDENTIAL VOLUNTARY MEASURES,Section A5.105 Deconstruction and Reuse of Existing Structures

**SECTION A5.105—DECONSTRUCTION AND REUSE OF EXISTING STRUCTURES**

**A5.105.1 Reserved. ~~Scope.~~** ~~Projects with the area limits specified shall comply with Section A5.105.2 to achieve Tier 1 or Tier 2 compliance.~~

1. ~~Alteration(s) to existing building(s) where the combined altered floor area is 50,000 square feet or greater shall comply with either Section A5.105.2, Section A5.409.2, or Section A5.409.3.~~
2. ~~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 either Section A5.105.2, Section A5.409.2, or Section A5.409.3~~

**~~Exception:~~** ~~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 A5.105.2.~~

1. ~~Alteration(s) to existing building(s) where the aggregate floor area is less than 50,000 square feet shall comply with either Section 5.105.2, Section 5.409.2 or Section 5.409.3 for Tier 1 compliance, and either Section A5.105.2.1, Section A5.409.2.1, or A5.409.3 Tier 1 requirements for Tier 2 compliance.~~
2. ~~Addition(s) to an existing building where the total floor area combined with the existing building(s) is less than 50,000 square feet shall comply with either Section 5.105.2, Section 5.409.2 or Section 5.409.3 for Tier 1 compliance, and either Section A5.105.2.1, Section A5.409.2.1, or A5.409.3 Tier 1 requirements for Tier 2 compliance.~~

**~~Exception:~~** ~~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 5.105.2 or Section A5.105.2.~~

**A5.105.2 Reuse of existing building.** For reuse of existing buildings embodied carbon reduction requirements see Section A5.409. [The following provisions are moved to Section 5.409.]~~Projects that include the reuse of an existing building shall meet the minimum requirements of Section A5.105.2.~~

**~~A5.105.2.1 Tier 1:~~** ~~An alteration or addition to an existing building shall maintain at least 75 percent~~ ~~combined of the existing building’s primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes). Window assemblies, insulation, portions of buildings deemed structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.~~

**~~A5.105.2.2 Tier 2:~~** ~~An alteration or addition to an existing building shall maintain at least 75 percent combined of the existing building’s primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes). In addition, an alteration to an existing building shall maintain 30% of~~ ~~existing interior nonstructural elements (interior walls, doors, floor coverings, ceiling systems). Window assemblies, insulation, portions of buildings deemed structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.~~

**~~A5.105.2.3 Verification of compliance.~~** ~~Documentation shall be provided in the construction documents to demonstrate compliance with Section A5.105.2.~~

**~~Note:~~** ~~Sample Worksheet WS-6 in Chapter 8 may be used to assist in documenting compliance with this section.~~

**A5.105.3 Deconstruction (reserved)**

### ITEM 17Appendix 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).**

…

**SALVAGED MATERIAL OR PRODUCT.**

…

### ITEM 18Appendix A5, Section A5.409 Embodied Carbon Reduction and A5.409.1 Scope

**SECTION A5.409—~~LIFE CYCLE ASSESSMENT~~ EMBODIED CARBON REDUCTION**

**A5.409.1 Scope.** Projects with the area limits specified shall comply with Section A5.409.1 to achieve Tier 1 or Tier 2 compliance. ~~Projects of any size shall comply with A5.409.5 to achieve Tier 2 compliance.~~

1. Projects consisting of newly constructed building(s) with a combined floor area of 50,000 square feet or greater shall comply with either Section ~~A5.409.2~~ A5.409.3 or Section ~~A5.409.3~~ A5.409.4.
2. Alteration(s) to existing building(s) where the combined altered floor area is 50,000 square feet or greater shall comply with either Section ~~A5.105.2~~ A5.409.2, Section ~~A5.409.2~~ A5.409.3 or Section ~~A5.409.3~~ A5.409.4.
3. 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 either Section ~~A5.105.2~~ A5.409.2, Section ~~A5.409.2~~ A5.409.3 or Section ~~A5.409.3~~ A5.409.4.

**Exception:** 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 ~~A5.105.2~~ A5.409.2.

1. Projects consisting of newly constructed building(s) with a combined floor area of less than 50,000 square feet shall comply with either Section ~~5.409.2~~ 5.409.3 or Section ~~5.409.3~~ 5.409.4 for Tier 1 compliance, and either Section ~~A5.409.2.1~~ A5.409.3 or ~~A5.409.3~~ A5.409.4 Tier 1 requirements for Tier 2 compliance.
2. Alteration(s) to existing building(s) where the aggregate floor area is less than 50,000 square feet shall comply with either Section ~~5.105.2~~ 5.409.2, Section ~~5.409.2~~ 5.409.3, or Section ~~5.409.3~~ 5.409.4 for Tier 1 compliance, and either Section ~~A5.105.2.1~~ A5.409.2.1, Section ~~A5.409.2.1~~ A5.409.3, or Section ~~A5.409.3~~ A5.409.4 Tier 1 requirements for Tier 2 compliance.
3. Addition(s) to an existing building where the total floor area combined with the existing building(s) is less than 50,000 square feet shall comply with either Section ~~5.105.2~~ 5.409.2, Section ~~5.409.2~~ 5.409.3, or Section ~~5.409.3~~ 5.409.4 for Tier 1 compliance, and either Section ~~A5.105.2.1~~ A5.409.2.1, Section ~~A5.409.2.1~~ A5.409.3, or Section ~~A5.409.3~~ A5.409.4 Tier 1 requirements for Tier 2 compliance.

**Exception:** 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 ~~5.105.2~~ 5.409.2 or Section ~~A5.105.2~~ A5.409.2.

#### REVISED LANGUAGE IF APPROVED

**SECTION A5.409—EMBODIED CARBON REDUCTION**

**A5.409.1 Scope.** Projects with the area limits specified shall comply with Section A5.409.1 to achieve Tier 1 or Tier 2 compliance.

1. Projects consisting of newly constructed building(s) with a combined floor area of 50,000 square feet or greater shall comply with either Section A5.409.3 or Section A5.409.4.
2. Alteration(s) to existing building(s) where the combined altered floor area is 50,000 square feet or greater shall comply with either Section A5.409.2, Section A5.409.3 or Section A5.409.4.
3. 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 either Section A5.409.2, Section A5.409.3 or Section A5.409.4.

**Exception:** 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 A5.409.2.

1. Projects consisting of newly constructed building(s) with a combined floor area of less than 50,000 square feet shall comply with either Section 5.409.3 or Section 5.409.4 for Tier 1 compliance, and either Section A5.409.3 or A5.409.4 Tier 1 requirements for Tier 2 compliance.
2. Alteration(s) to existing building(s) where the aggregate floor area is less than 50,000 square feet shall comply with either Section 5.409.2, Section 5.409.3, or Section 5.409.4 for Tier 1 compliance, and either Section A5.409.2.1, Section A5.409.3, or Section A5.409.4 Tier 1 requirements for Tier 2 compliance.
3. Addition(s) to an existing building where the total floor area combined with the existing building(s) is less than 50,000 square feet shall comply with either Section 5.409.2, Section 5.409.3, or Section 5.409.4 for Tier 1 compliance, and either Section A5.409.2.1, Section A5.409.3, or Section A5.409.4 Tier 1 requirements for Tier 2 compliance.

**Exception:** 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 or Section A5.409.2.

### ITEM 19Appendix A5, Section 5.409.2 Reuse of existing building option

**~~A5.105.2~~ A5.409.2 Reuse of existing building option.** Projects that include the reuse of an existing building shall meet the minimum requirements of Section A~~5.105.2~~ A5.409.2.

**~~A5.105.2.1~~ A5.409.2.1 Tier 1:** An alteration or addition to an existing building shall maintain at least 75 percent combined of the existing building’s primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes). Window assemblies, insulation, portions of buildings deemed structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.

**~~A5.105.2.2~~ A5.409.2.2 Tier 2:** An alteration or addition to an existing building shall maintain at least 75 percent combined of the existing building’s primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes). In addition, an alteration to an existing building shall maintain 30% of existing interior nonstructural elements (interior walls, doors, floor coverings, ceiling systems). Window assemblies, insulation, portions of buildings deemed structurally unsound or hazardous, and hazardous materials that are remediated as part of the project shall not be included in the calculation.

**~~A5.105.2.3~~ A5.409.2.3 Verification of compliance.** Documentation shall be provided in the construction documents to demonstrate compliance with Section A~~5.105.2~~ A5.409.2.

**Note:** Sample Worksheet WS-6 in Chapter 8 may be used to assist in documenting compliance with this section.

### ITEM 20Appendix A5,Section A5.409.3 Product GWP – prescriptive option with subsections and Table A5.409.3

**A5.409.3 Product GWP ~~compliance~~ - prescriptive ~~path~~ option.** Each product that is permanently installed and listed in Table A5.409.3, shall not exceed the maximum GWP value specified in Table A5.409.3 for Tier 1 or Tier 2 compliance and shall have a Type III environmental product declaration (EPD), either product-specific or factory-specific.

**~~A5.409.3.1.~~** ~~Products shall comply with the requirements for product GWP performance in accordance with Section A5.409.3 using for the maximum acceptable GWP value for the product category listed in Table A5.409.3 for Tier 1 or Tier 2 compliance for the verified reduction calculation resulting in a minimum 15 percent reduction in total GWP.~~

**Exceptions:**

1. Salvaged materials and products are not required to have a Type III EPD and shall have a GWP of zero.
2. ~~Concrete may be considered one product category to meet compliance with this section.~~ Concrete mixes may be considered as a ~~A~~ weighted average of the maximum GWP for all concrete mixes installed in the project. The weighted average maximum GWP shall be less than the weighted average maximum GWP allowed per Table A5.409.3 using Exception 2 Equation A5.409.3~~.1~~. Calculations shall be performed with consistent units of measurement for the material quantity and the GWP value. For the purposes of this exception, industry wide EPD’s are acceptable.

**Exception 2 EQUATION 5.409.3~~.1~~**

GWP*n* < GWP *allowed*

*where*

GWPn = Σ (GWP*n*)(v*n*) *and* GWP *allowed* = Σ (GWP *allowed*)(v*n*)

*and*

*n* = each concrete mix installed in the project

GWP*n* = the GWP for concrete mix *n* per concrete mix EPD, in kg CO2e /m3

GWP *allowed* = the GWP potential allowed for concrete mix *n* per Table 5.409.3

v*n* = the volume of concrete mix *n* installed in the project, in m3

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Buy Clean California Product Category 1** | **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 | ~~1.52~~ 1.01 | ~~1.01~~ 0.91 | MT CO2e/MT |
| Hollow structural sections | ~~2.57~~ 1.71 | ~~1.71~~ 1.54 | MT CO2e/MT |
| Steel plate | ~~2.24~~ 1.49 | ~~1.49~~ 1.34 | MT CO2e/MT |
| Concrete reinforcing steel | ~~1.34~~ 0.76 | ~~0.89~~ 0.68 | MT CO2e/MT |
| Flat glass | ~~2.15~~ 1.43 | ~~1.43~~ 1.29 | ~~kg CO2e/MT~~MT CO2e/MT |
| Light-density mineral wool board insulation | ~~5.00~~ 2.68 | ~~3.33~~ 2.41 | kg CO2e/1 m2 |
| Heavy-density mineral wool board insulation | ~~12.24~~ 6.82 | ~~8.16~~ 6.14 | kg CO2e/1 m2 |

**Concrete, Ready-Mixed 2, 3**

|  |  |  |  |
| --- | --- | --- | --- |
| **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~~ 257 | ~~257~~ 231 | kg CO2e/m3 |
| 2500-3499 psi | ~~419~~ 279 | ~~279~~ 251 | kg CO2e/m3 |
| 3500-4499 psi | ~~485~~ 323 | ~~323~~ 291 | kg CO2e/m3 |
| 4500-5499 psi | ~~567~~ 378 | ~~378~~ 340 | kg CO2e/m3 |
| 5500-6499 psi | ~~601~~ 401 | ~~401~~ 361 | kg CO2e/m3 |
| 6500 psi and greater | ~~685~~ 456 | ~~456~~ 410 | kg CO2e/m3 |

**Concrete, Lightweight Ready-Mixed 2**

|  |  |  |  |
| --- | --- | --- | --- |
| **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~~ 500 | ~~500~~ 450 | kg CO2e/m3 |
| 2500-3499 psi | ~~819~~ 546 | ~~546~~ 491 | kg CO2e/m3 |
| 3500-4499 psi | ~~891~~ 594 | ~~594~~ 535 | kg CO2e/m3 |

1. The GWP values of the products listed in Table A5.409.3 are based on ~~150~~ 100% for Tier 1 and 90% for Tier 2 of Buy Clean California Act (BCCA) GWP values effective January 1, 2025, except for concrete products which are not included in BCCA.
2. For concrete, Tier 1 is ~~150~~ 100%, Tier 2 is ~~100~~ 90% of the National Ready Mixed Concrete Association (NRMCA) 2022 version 3 Pacific Southwest regional benchmark values are used for the GWP allowed, except for High Early strength.
3. Concrete High Early Strength ready-mixed shall be calculated at 130% of the Ready mixed concrete GWP allowed values for each product category.

**A5.409.3.~~2~~1 Verification of compliance.** Calculations to demonstrate compliance, Type III EPDs for products required to comply if included in the project, and Worksheet WS-8 signed by the design professional of record shall be provided on the construction documents. Updated EPDs for products used in construction shall be provided to the owner at the close of construction and to the enforcement entity upon request. 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.

### ITEM 21Appendix A5, Section A5.409.4 Whole Building Life Cycle Assessment – performance option

**~~A5.409.2~~ A5.409.4 Whole building life cycle assessment – performance option.**~~Projects shall meet the minimum requirements of Section A5.409.2 for Tier 1 or Tier 2 compliance.~~

**~~A5.409.2.1 Tier 1.~~** Projects shall conduct a cradle-to-grave whole building life cycle assessment meeting the requirements of Sections ~~5.409.2~~ 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 location that meets the requirements of all parts of the~~ *~~California Building Standards 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.

**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:**

GWP/GFA (m2) = ECI (kgCO2e/m2)

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

|  |  |  |
| --- | --- | --- |
| **Primary Occupancy Group** | **TIER 1****Maximum acceptable ECB value (kgCO2e/m2)1** | **TIER 2****Maximum acceptable ECB value (kgCO2e/m2)1** |
| Storage (S) | 370 | 310 |
| Education (E) & Business (B) | 550 | 450 |
| Other occupancy groups | 610 | 480 |

1. The ECB values are based on the [insert percentile once determined] percentile of ECI of buildings included in the Carbon Leadership Forum WBLCA Benchmark Study v2.

[The following language is moved from Section A5.409.2.1 with minor modifications.] **A5.409.4.2 Baseline building method.** Projects shall meet the minimum requirements of 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 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 ~~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.

**~~A5.409.2.2~~ A5.409.4.2.2 Tier 2.** Demonstrate ~~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 ISO14040 and ISO 14044, excluding operating energy, demonstrating~~ a minimum 20 percent reduction in 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 all parts of the *California Building Standards 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 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.~~

**A5.409.2.3 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.

**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:**

GWP/GFA (m2) = ECI (kgCO2e/m2)

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

|  |  |  |
| --- | --- | --- |
| **Primary Occupancy Group** | **TIER 1****Maximum acceptable ECB value (kgCO2e/m2)1** | **TIER 2****Maximum acceptable ECB value (kgCO2e/m2)1** |
| Storage (S) | 370 | 310 |
| Education (E) & Business (B) | 550 | 450 |
| Other occupancy groups | 610 | 480 |

1. The ECB values are based on the [insert percentile once determined] percentile of ECI of buildings included in the Carbon Leadership Forum WBLCA Benchmark Study v2.

**A5.409.4.2 Baseline building method.** Projects shall meet the minimum requirements of 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 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 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 all parts of the *California Building Standards Code* currently in effect.

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