

**FINAL STATEMENT OF REASONS
FOR PROPOSED BUILDING STANDARDS
OF THE DIVISION OF THE STATE ARCHITECT
REGARDING THE 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE,
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11
(DSA-SS 01/22)**

The Administrative Procedure Act requires that every agency shall maintain a file of each rulemaking that shall be deemed to be the record for that rulemaking proceeding. The rulemaking file shall include a Final Statement of Reasons. The Final Statement of Reasons shall be available to the public upon request when rulemaking action is being undertaken. The following are the reasons for proposing this particular rulemaking action:

UPDATES TO THE INITIAL STATEMENT OF REASONS:

Government Code Section 11346.9(a)(1) requires an update of the information contained in the Initial Statement of Reasons. If the update identifies any data or any technical, theoretical or empirical study, report, or similar document on which the state agency is relying that was not identified in the Initial Statement of Reasons, the state agency shall comply with Government Code Section 11347.1.

The Division of the State Architect has not added any data (including technical, theoretical, or empirical studies, reports, or similar documents relied upon) that would necessitate an update of the information contained in the Initial Statement of Reasons.

MANDATE ON LOCAL AGENCIES OR SCHOOL DISTRICTS

Pursuant to Government Code Section 11346.9(a)(2), if the determination as to whether the proposed action would impose a mandate, the agency shall state whether the mandate is reimbursable pursuant to Part 7 of Division 4. If the agency finds that the mandate is not reimbursable, it shall state the reasons for the finding(s).

The Division of the State Architect has determined that the proposed regulatory action **WOULD NOT** impose a mandate on local agencies or school districts.

The proposed regulations further define, support, and enhance the existing California Green Building Standards Code (CALGreen) currently in place for reduction of greenhouse gas emissions through embodied carbon reduction. Studies have shown the most meaningful impact of carbon reduction occurs when buildings 50,000 square feet or greater are renovated or newly constructed. Targeting buildings of this size or greater has the potential to reduce the impact of embodied carbon by 50% while targeting only 6% of buildings. The purpose, need and benefit of these regulations is a first step to address the impact of building materials on carbon emissions, providing defined, alternative pathways to maximize flexibility in achieving the desired reductions.

DSA has added two new code sections 301.4.2.5 and 301.4.2.6 to direct the user the applicable requirements related to EV parking and/or shade trees for alterations and additions to existing parking facilities and alterations and additions to existing buildings. This proposed change is needed because the new added scoping sections reference new proposed code language for alterations and additions to existing parking facilities and existing buildings.

Referenced Section 5.506.3 in the scoping Section 301.4.2.6 directs the code user to the Carbon dioxide (CO₂) monitoring in classrooms requirements which are being proposed for alterations and additions to existing classrooms. Currently only new classrooms require CO₂ monitors; this proposal will require CO₂ monitors be installed in existing classrooms when additions or alterations are made to an existing building. By expanding the requirement to alterations and additions, monitoring of CO₂ levels in all schools will be realized more quickly. The expanded application will also address what would be an equity issue in that often, new construction only occurs in newer more affluent regions. Older schools and school districts that undergo less new construction would be left with not only older facilities without monitoring, but in many cases those older facilities have drastically poorer air quality. The CO₂ monitors required are not costly and would add little to the overall construction cost of even small alterations.

OBJECTIONS OR RECOMMENDATIONS MADE REGARDING THE PROPOSED REGULATION(S).

Government Code Section 11346.9(a)(3) requires a summary of EACH objection or recommendation regarding the specific adoption, amendment, or repeal proposed, and an explanation of how the proposed action was changed to accommodate each objection or recommendation, or the reasons for making no change. This requirement applies only to objections or recommendations specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the action, or reasons for making no change. Irrelevant or repetitive comments may be aggregated and summarized as a group.

The text with proposed changes was made available to the public for a 45-day comment period from March 31, 2023, until May 15, 2023. DSA received the following public comments listed below. Please see below for responses.

The text, with proposed changes, was made available to the public for an additional 15-day comment period from May 25, 2023, through June 9, 2023. DSA received the following public comments listed below. Please see below for responses.

45-day public comments:

ITEM 1

Chapter 2 Definitions, Section 202 Definitions

DSA-SS/CC and (BSC-CG) proposes to add new definitions that are needed for the advancement of new regulations. These new definitions help to clarify new regulations. DSA is also proposing to revise Electric Vehicle Charging Station to align with industry standard definitions more fully.

Carbon related definitions.

BUY CLEAN CALIFORNIA ACT.

CRADLE-TO-GATE.

CRADLE-TO-GRAVE.

DECONSTRUCTION

**ELECTRIC VEHICLE CHARGING STATION (EVCS)
ENVIRONMENTAL PRODUCT DECLARATION.
TYPE III ENVIRONMENTAL PRODUCT DECLARATION (EPD).
PRODUCT-SPECIFIC EPD.
FACTORY-SPECIFIC EPD.
INDUSTRY-WIDE EPD (IW-EPD).
REFERENCE STUDY PERIOD.**

DSA-SS/CC and (BSC-CG) proposes to add the new definitions listed above to support the three carbon reduction compliance paths added to the following items.

1. Commenter(s) and Recommendation:

Rachelle Habchi, SEAOSC Sustainable Design Committee; Hafsa Burt, HB+A Architects; Laura Karnath, Walter P Moore; Lauren Kubiak, Natural Resources Defense Council; Timothy Burroughs, StopWaste; Adrienne Etherton; Ismar Enriquez; Rona Rothenberg; Seth Dunn; Charles Stott, Stott Architects; Pauline Souza, WRNS Studio; Suyama Bo, American Institute of Architects California, Orange County Chapter; Vikas Shrestha; Steinberg Hart; William Leddy, American Institute of Architects California; Mike Malinowski, American Institute of Architects California all provided.

Recommendation to **approve**.

Agency Response:

DSA-SS thanks the commenters for their support of the proposed amendment. DSA-SS is proposing no further changes to this section in response to these comments.

Electric Vehicle (EV) Related Definitions.

2. Commenter(s) and Recommendation:

K. Cunningham, C. Kim, J. Reefe, California Statewide Utility Codes and Standards Team, Definitions:

- a. ELECTRIC VEHICLE (EV) CHARGER
Recommends **disapprove or amend**; delete the proposed definition or amend to read as ELECTRIC VEHICLE (EV) CHARGER. [BSC-CG]. An EVSE.
- b. ELECTRIC VEHICLE CHARGING STATION (EVCS)
Recommends **disapprove and amend**; delete the proposed definition for EVCS and amend the definition for EV Space to read as ELECTRIC VEHICLE CHARGING SPACE (EV SPACE). [HCD]. A space intended for the charging of electric vehicles, that is equipped with an EVSE or equipped as EV Capable or EV Ready.
- c. LEVEL 2 ELECTRIC VEHICLE (EV) CHARGER
Recommends **disapprove or amend**; delete the proposed definition or amend to read as LEVEL 2 ELECTRIC VEHICLE (EV) CHARGER [BSC-CG]. A Level 2 EVSE.

- d. LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT
Recommends **amend** to read as LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE) [BSC-CG]. An EVSE supplied by a 208/240 Volt 40-Ampere minimum branch circuit.
- e. LOW POWER LEVEL 2 ELECTRIC VEHICLE (EV) CHARGING RECEPTACLE.
Recommends **amend** to read as LOW POWER LEVEL 2 ELECTRIC VEHICLE (EV) CHARGING RECEPTACLE. [BSC-CG] A 208/240 Volt 20-Ampere minimum branch circuit breaker, 40-Ampere minimum branch circuit conductors, and a receptacle sized to match the circuit breaker.
- f. ELECTRIC VEHICLE (EV) READY SPACE [HCD].
Recommends **amend**; add an HCD definition and amend to reads as ELECTRIC VEHICLE (EV) READY SPACE. [HCD] A vehicle space which is provided with a branch circuit; any necessary raceways, both underground and/or surface mounted; to accommodate EV charging, terminating in a receptacle or junction box.
- g. LOW POWER LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE)
Recommends **amend**; add a new definition to read as LOW POWER LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). A Level 2 EVSE supplied by a 20-ampere minimum circuit breaker and a 40-ampere minimum branch circuit conductors, where the EVSE is configured to match the circuit breaker.

Agency Response:

DSA appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. Respectfully, DSA is not proposing to make any further changes to the proposed language as the commenter's changes are substantive. Regarding comments "a", "c", "f" and "g"; These four definitions are neither proposed by nor intended to be adopted by DSA. DSA may review and consider adoption in future rulemaking code cycles.

ITEM 3

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, DIVISION 5.1-PLANNING AND DESIGN, SECTION 5.105 DECONSTRUCTION AND REUSE OF EXISTING STRUCTURES

5.105 Deconstruction and Reuse of Existing Structures, (Reserved) This section was previously reserved for future use and this code cycle BSC-CG and DSA are proposing to add new mandatory regulations for the reuse of existing structures.

5.105.1 Scope. The scoping section includes alterations, combined floor area of 50,000 square feet or greater, and additions to existing buildings 50,000 square feet or greater to comply with four options: reuse 45 percent of the building, whole building life cycle assessment, product GWP compliance-weighted average path, product GWP compliance prescriptive path. For more information about the compliance paths, see items [Mia, fill in the item numbers] below.

5.105.1 Reuse of existing building. When an addition or alteration to an existing building occurs a minimum 45 percent of the building primary structural elements such as foundations, columns, beams, walls, floors, and lateral elements shall be maintained. Portions of a building deemed structurally unsound or hazardous, and hazardous material shall not be included in the calculation.

5.105.2.1 Verification of compliance. To ensure consistency in design professional's documents and to assist with enforcement, a verification section is included that requires the construction documents demonstrate compliance. A sample worksheet WS-3 is added to CALGreen Chapter 8 that can be included in the construction documents.

5.105.3 Deconstruction (Reserved). This section is added as a place holder for future use to address the deconstruction portion of the main section.

Commenter(s) and Recommendation:

Rachelle Habchi, SEAOSC Sustainable Design Committee; Hafsa Burt, HB+A Architects; Laura Karnath, Walter P Moore; Lauren Kubiak, Natural Resources Defense Council; Timothy Burroughs, StopWaste; Adrienne Etherton; Ismar Enriquez; Rona Rothenberg; Seth Dunn; Bryce Tanner, Arup; Pauline Souza, WRNS Studio; Suyama Bo, American Institute of Architects, Orange County Chapter; Vikas Shrestha; Steinberg Hart; William Leddy, American Institute of Architects California; Mike Malinowski American Institute of Architects California.

Recommendation to **approve**

Agency Response:

DSA-SS thanks the commenters for their support of this proposed amendment. Respectfully DSA-SS is proposing no further changes to this section in response to these comments.

ITEM 5

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, DIVISION 5.4- MATERIAL CONSERVATION AND RESOURCE EFFICIENCY, SECTION 5.401 GENERAL, SECTION 5.402 DEFINITIONS

5.402.1 Scope. Amendments are proposed to the existing scoping section to include greenhouse gas (GHG) emission reduction and provide clarity.

5.402 Definitions. The appropriate new defined terms are added to the list for consistency in the code. However, the terms' definitions are in Chapter 2.

1. Commenter(s) and Recommendation:

Rachelle Habchi, SEAOSC Sustainable Design Committee; Hafsa Burt, HB+A Architects; Lauren Kubiak, Natural Resources Defense Council; Timothy Burroughs, StopWaste; Adrienne Etherton; Ismar Enriquez; Rona Rothenberg; Seth Dunn; Bryce Tanner, Arup; Charles Stott, Stott Architects; Pauline Souza, WRNS Studio; Suyama Bo, American Institute of Architects Orange County Chapter; Vikas Shrestha, Steinberg

Hart; William Leddy, American Institute of Architects California; Mike Malinowski, American Institute of Architects California.

Recommendation to **approve**

Agency Response:

DSA-SS thanks the commenters for their support of this proposed amendment. Respectfully, DSA-SS is proposing no further changes to this section in response to these comments.

2. Commenter(s) and Recommendation:

Laura Karnath, Walter P Moore structural firm

Recommendation to approve, but comments that a definition for “reference baseline building” has not been provided in the definitions section.

Agency Response:

DSA-SS thanks the commenter for their support of this proposed amendment. DSA-SS notes that the term “reference baseline building” is not included as a specific definition, but is described in detail within Section 5.409.2 Whole building life cycle assessment. Additionally, REFERENCE BASELINE BUILDING was erroneously listed in Section 5.402 instead of REFERENCE STUDY PERIOD as one of the terms defined in Chapter 2. In the 15-day language, DSA proposed to correct this error and replaced REFERENCE BASELINE BUILDING with REFERENCE STUDY PERIOD in Section 5.402 for consistency with Chapter 2 language. This amendment was based on HSC 18930, the nine-point criteria number 1. Respectfully, DSA is proposing no further changes to this section.

ITEM 7

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, DIVISION 5.4 - MATERIAL CONSERVATION AND RESOURCE EFFICIENCY, SECTION 5.409 LIFE CYCLE ASSESSMENT

Section 5.409 Life cycle assessment. This was a section previously reserved for future use and this code cycle BSC-CG and DSA are proposing to add new mandatory regulations for whole building life cycle assessment (WBLCA). WBLCA is one compliance path. Section 5.409.2 below contains a product GWP compliance path, giving the design professionals options.

5.409.1 Scope. The new scoping section requires a newly constructed building 50,000 square feet or greater to comply with any of the two carbon reduction paths: Section 5.409.2 Whole building life-cycle assessment (WBLCA), 5.409.3 Product GWP compliance path. Alterations to existing buildings where the combined floor area is 50,000 square feet or greater, may comply with the two paths listed above or 5.105.2 Reuse of existing buildings.

5.409.2 Whole-building life-cycle assessment. This section requires a cradle-to-grave WBLCA be performed in accordance with ISO 14044 reference standard, excluding the

operating energy, and to demonstrate a 10 percent reduction in global warming potential (GWP) as compared to similar structures. Projects must exclude operating energy analysis in the WBLCA because energy efficiency savings over a building's lifecycle are captured by the California Energy Code (Title 24, Part 6). ISO 14044 is the foremost standard that addresses the assessment of the environmental aspects of a building for all life cycle stages. WB LCA modeling programs use ISO 14040 as the trusted source to compare products and projects across all four phases of LCA. Excluding operational energy from the calculation eliminates teams' ability to trade operational energy savings for embodied carbon. Further, other sections of Title 24 address requirements for operational energy.

NOTES: The notes include software options for performing the GWP analysis. Some are free of charge, others for fee.

5.409.2.1 Building components. This section clarifies which building components are included in the whole building life cycle analysis. The scope is limited to primary and secondary structural elements.

5.409.2.2 Reference study period. This subsection specifies that 60 years is the assumed building lifespan and study period for the WBLCA assessment.

5.409.2.3 Verification of compliance. This subsection specifies that the GWP analysis shall be included in the construction documents. Including the GWP analysis in the project documents will make verification of compliance simpler and allow building owners to review the environmental impacts of their project material choices, leading to greater awareness of embodied carbon impacts throughout the design and construction industry. Designers must include the product selection considerations as identified from the WBLCA to ensure that the modeled products are included in the final building. Since the code specifies the requirements that WBLCA software must comply, the reporting will be consistent when the code is followed.

1. Commenter(s) and Recommendation:

Rachelle Habchi, SEAOSC Sustainable Design Committee; Hafsa Burt, HB+A Architects; Lauren Kubiak, Natural Resources Defense Council; Charles Rea, California Construction and Industrial Materials Association (CALCIMA); Kurt Hurley, City of Berkeley-Building and Safety Division; Timothy Burroughs, StopWaste; Adrienne Etherton; Ismar Enriquez; Rona Rothenberg; Sara Neff; Seth Dunn; Bryce Tanner, Arup; Charles Stott, Stott Architects; Pauline Souza, WRNS Studio; Suyama Bo, American Institute of Architects, Orange County Chapter; Vikas Shrestha, Steinberg Hart; William Leddy, American Institute of Architects, California; Mike Malinowski, American Institute of Architects California.

Recommendation to **approve**.

Agency Response:

DSA thanks the commenter for their support of this proposed amendment.

2. Commenter(s) and Recommendation:

Michael F. Malinowski – AIA California.

In addition to expressed support for all proposed compliance pathways related to Carbon Reduction proposals, the commenter recommends **approve as amended** for Section 5.409.2.3 to reference Sections 702.2 and 703.1 as provisions that may be required by the enforcing agency and to add compliance forms or worksheets for signature by the design professional of record.

Agency Response:

DSA thanks the commenter for their support and comment. DSA added the recommended information and references into Section 5.409.2.3 in the Additional 15 Day Express Terms.

The worksheet reference was included in the version that went before the GREEN Code Advisory Committee; however, it was removed prior to the 45-day comment period. After further review and based on this public comment, DSA added the worksheet reference back into the section in the 15-day language to provide clear direction to the design professional and enforcement agency.

The 15-day language also proposed referencing Sections 702.2 and 703.1 which authorize the enforcing agency to require inspection and inspection reports. Sections 702.2 and 703.1 have been in CALGreen for multiple code cycles and is not a new code change, nor is it a requirement. At any time, the enforcement agency can invoke this section. Adding this language to Section 5.409.2.3 removes ambiguity and provides clarity and is based on HSC 18930 nine-point criteria 6.

3. Commenter(s) and Recommendation:

Jeff Bradley, American Wood Council

Recommendation to **approve as amended** for Section 5.409.2 to delete the type of construction and material specification from all sections on Whole Building Life Cycle Assessments (WBLCA) and include ASTM E2921-22 "Standard Practice for minimum Criteria for Comparing Whole Building Life Cycle Assessments for Use with Building Codes, Standards and Rating Systems.

Agency Response:

DSA thanks the commenter for their support and comment. DSA proposed to include ASTM E2921-22 in notes to Section 5.409.2 in the Additional 15 Day Express Terms. Respectfully, DSA is not proposing to make further changes during the current cycle to delete the type of construction and material specification as it would be substantive. DSA may consider this proposal in a future code cycle.

4. Commenter(s) and Recommendation:

Laura Karnath, Walter P Moore structural firm

Recommendation to **approve as amended**, and requests that in Section 5.409.2.1 wall framing and sheathing materials should be included with the building enclosure, which is currently proposed to limit the building enclosure components to glazing, insulation and exterior finishes and also requests that the language be clarified to indicate that

framing elements such as curtainwall, storefront or window framing is included with glazing.

Agency Response:

DSA thanks the commenter for their support and comment. DSA notes that wall framing and sheathing are considered to be structural components within the structural primary and secondary structural members outlined in the proposed language. DSA included additional language as outlined in the Additional 15 Day Express Terms for clarity to ensure “glazing” includes components that hold the glazing in place, provided by the manufacturer in glazing assemblies, and are relevant to the applicable data sets in the whole building life cycle assessment. Adding this language to Section 5.409.2.1 removes ambiguity and provides clarity and is based on HSC 18930 nine-point criteria 6.

5. Commenter(s) and Recommendation:

Tien Peng, National Ready Mixed Concrete Association

Recommendation to **approve as amended** with the following statement added to Section 5.409.2 as follows: “the life-cycle assessment software tool and data sets to evaluate both the baseline building and the proposed building shall be the same.”

Agency Response:

DSA thanks the commenter for their support and comment. DSA proposed to add language as outlined in Section 5.409.2 in the Additional 15 Day Express Terms to ensure a relevant comparison can be made by using the same software and data sets. Adding this language to the Section removes ambiguity and clarity and is based on HSC 18930 nine-point criteria 6.

6. Commenter(s) and Recommendation:

Simon Rees, Arup

Recommendation to **approve** with the comment that his belief is that the Initial Express Terms are not sufficiently ambitious to leverage current industry capabilities and that should be addressed during next code cycle.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment. DSA notes that the proposed language is intended to be introductory in nature and may become more encompassing and stringent in future code cycles.

7. Commenter(s) and Recommendation:

Kurt Hurley, City of Berkeley-Building and Safety Division, Hoi-Fei-Mok, City of San Leandro and Timothy Burroughs, StopWaste.

Recommendation to **approve**. In addition to expressing support for the various Carbon Reduction related proposals the commenters request that State Agencies work closely

with local governments to ensure that the code enforcement processes and requirements, particularly in field verification, are consistent with the capacity of existing staff and resources in the building departments; and, Further request that State agencies provide centralized training resources, worksheet or project teams and standardized tools to ease compliance verification and minimize the impact on building departments.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment and for their comments. Worksheets have been provided as standard tools available to local jurisdictions and design professionals. Respectfully, DSA is not making changes to this proposal which would include training to local government this would not be considered a building regulation. It is noteworthy that DSA does have a centralized Learning Management System (LMS) which is used for the purpose of Educational webinars available to the public including school administrators and school design professionals. Learning content will be made available for these purposes on the DSA LMS.

ITEM 8

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, DIVISION 5.4- MATERIAL CONSERVATION AND RESOURCE EFFICIENCY, SECTION 5.409 LIFE CYCLE ASSESSMENT

5.409.3 Product GWP compliance-prescriptive path and 5.409.3.1. The new section offers an additional compliance path, utilizing specific product categories and maximum acceptable GWP values listed in Table 5.409.3. This approach provides project teams a prescriptive option to purchase lower carbon materials based on product purchasing and procurement during construction. The target materials are based on the Buy Clean California Act (BCCA) and represents 175 percent BCCA GWP values, except for concrete products which are not included in BCCA. The Concrete ready mixed and lightweight ready-mixed values are based on 175% of the National Ready Mix Concrete Association (NRMCA) 2021 version 3 Pacific Southwest regional benchmark values. Concrete high-early strength concrete is not included in the benchmark values it should be calculated at 130 percent of the ready-mixed values in the table.

Concrete, being a unique regional product, is allowed a weighted average calculation for all concrete mixes used on a project. Project teams can choose for each mix to comply the GWP value in the table, or they can use the calculation provided to illustrate that, collectively, the concrete mixes do not exceed the allowed GWP value. This approach was considered after the California Construction and Industrial Material Associate, California Nevada Cement Association, National Ready Mixed Concrete Association, and American Concrete Institute (referred to below as the Concrete Industry) provided the recommendation to use an average approach.

5.409.3.1, Exception and Equation. During the CCRC meetings the concrete/cement industry provided feedback that various regions in California may not be able to comply with prescriptive maximum acceptable GWP value in Table 5.409.3, so the exception allows concrete to be considered one product category, rather than several, and calculate a

weighted average maximum GWP equation. The weighted average approach also allows more flexibility by allowing projects the ability to trade-off concrete mixes in situations where certain applications may fall outside the prescriptive limits but that are necessary for the project.

5.409.3.2 Verification of compliance. This subsection specifies that calculations to demonstrate compliance and PDF copies or links to Type III EPDs referenced in the calculations shall be included in the construction documents. Also, any updated EPD that were subsisted after the construction permit was issued shall be provided to the owner at the close of construction. Updated EPDs may be submitted to the enforcement agency, if requested. Including the GWP analysis in the project documents will make verification of compliance simpler and allow building owners to review the environmental impacts of their project material choices, leading to greater awareness of embodied carbon impacts throughout the design and construction industry.

Table 5.409.3 Product GWP limits, is based on the Buy Clean California Act (BCCA) and represents 175 percent BCCA GWP values, except for concrete products which are not included in BCCA. The Concrete values are based on Industry-Wide Environmental Product Declaration (IW-EPD) regional concrete values and represents 130 percent of the ready-mix concrete GWP values. The Concrete ready mixed and lightweight ready-mixed values are based on 175% of the National Ready Mix Concrete Association (NRMCA) 2021 version 3 Pacific Southwest regional benchmark values. Concrete high-early strength concrete is not included in the benchmark values. It should be calculated at 130 percent of the ready-mixed values in the table.

1. Commenter(s) and Recommendation:

Hafsa Burt, HB+A Architects; Lauren Kubiak, Natural Resources Defense Council; Adrienne Etherton; Ismar Enriquez; Rona Rothenberg; Sara Neff; Seth Dunn; Charles Stott, Stott Architects; Pauline Souza, WRNS Studio; Suyama Bo, American Institute of Architects, Orange County Chapter; Vikas Shrestha, Steinberg Hart; William Leddy, American Institute of Architects, California; Mike Malinowski, American Institute of Architects California.

Recommendation to **approve**.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment.

2. Commenter(s) and Recommendation:

Michael F. Malinowski – AIA California.

In addition to expressed support for all proposed compliance pathways related to Carbon Reduction proposals, the commenter recommends **approve as amended** for Section 5.409.3.2 to reference Sections 702.2 and 703.1 as provisions that may be required by the enforcing agency and to add compliance forms or worksheets for signature by the design professional of record.

Agency Response:

DSA thanks the commenter for their support and comment. DSA added the recommended information and references into Section 5.409.3.2 in the Additional 15 Day Express Terms.

The worksheet reference was included in the version that went before the GREEN Code Advisory Committee; however, it was removed prior to the 45-day comment period. After further review and based on this public comment, DSA added the worksheet reference back into the section in the 15-day language to provide clear direction to the design professional and enforcement agency.

The 15-day language also proposed referencing Sections 702.2 and 703.1 which authorize the enforcing agency to require inspection and inspection reports. Sections 702.2 and 703.1 have been in CALGreen for multiple code cycles and is not a new code change, nor is it a requirement. At any time, the enforcement agency can invoke this section. Adding this language to Section 5.409.3.2 removes ambiguity and provides clarity and is based on HSC 18930 nine-point criteria 6.

3. Commenter(s) and Recommendation:

Tien Peng, National Ready Mixed Concrete Association,

Recommendation to **approve as amended** with the request to revise the Table 5.409.3 Product GWP Limits for Concrete Ready Mixed, footnote 2 values to accurately reflect 175% of the NRMCA Benchmark Values or revise the footnote (easier) to the range of percentages (166-189%) of the listed allowable values.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment and for their comments. DSA proposed to correct the year for the referenced values upon which the 175% of National Ready Mix Concrete Association benchmark values established in the table are determined as outlined in the Additional 15 Day Express Terms. This correction removes ambiguity and provides clarity.

4. Commenter(s) and Recommendation:

Rachelle Habchi, SEAOSC Sustainable Design Committee.

Recommendation to **approve as amended** and requests that the GWP material limits be reduced to a more reasonable percent of BCCA GWP values of 100% with a tiered reduction plan for future dates.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment and for their comments. DSA notes that the proposed language is based on the current accepted GWP values accorded to the materials listed in the BCCA. DSA does not adopt voluntary tiered plans in the California Green Building Codes. Respectfully DSA is not proposing to make further changes based on this comment.

5. Commenter(s) and Recommendation:

Bryce Tanner, Arup

Recommendation to **approve as amended** with the request that the language in Section 5.409.3.1 be corrected to place the summation symbol outside the parenthesis in the exception equation. Also, there is a request for Section 5.409.3.2 be changed to read "...Type III EPDs referenced in the calculations shall be included in the as-built documents" rather than requiring the inclusion into the construction documents along with a suggestion that all concrete forms should be included, at least by the 2025 edition of the code cycle, and GWP limits for steel and concrete should be dropped precipitously in future years.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment and for their comments. DSA proposed to correct the equation outlined in Equation 5.409.3.1 as outlined in the Additional 15 Day Express Terms for accuracy. The summation symbol have been placed outside of the parentheses. Requiring documents in the as-built drawings in lieu of in the contract documents removes the ability for a local jurisdiction to ensure compliance. DSA is a regulatory agency enforcing the building codes through review and approval of construction documents and does not review post-construction as-built drawings. Verification of the documentation used to determine compliance to carbon reduction regulations would be required to be done at the review of construction documents rather than at close of construction; therefore, relevant Type III EPD documentation would be required at that time.

6. Commenter(s) and Recommendation:

Simon Rees, Arup

Recommendation to **approve** with the comment that the belief is that the Initial Express Terms are not sufficiently ambitious to leverage current industry capabilities and align with California's overall climate change strategy.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment and for their comments. The proposed language for these amendments are intended to be introductory in nature to allow industry familiarize with the requirements in a measured way.

7. Commenter(s) and Recommendation:

Kurt Hurley, City of Berkeley-Building and Safety Division, Hoi-Fei-Mok, City of San Leandro and Timothy Burroughs, StopWaste.

Recommendation to **approve**. In addition to expressing support for the various Carbon Reduction related proposals the commenters request that State Agencies work closely with local governments to ensure that the code enforcement processes and requirements, particularly in field verification, are consistent with the capacity of existing staff and resources in the building departments; and, Further request that State

agencies provide centralized training resources, worksheet or project teams and standardized tools to ease compliance verification and minimize the impact on building departments.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment and for their comments. Worksheets have been provided as standard tools available to local jurisdictions and design professionals. Respectfully, DSA is not making changes to this proposal which would include training to local government this would not be considered a building regulation. It is noteworthy that DSA does have a centralized Learning Management System (LMS) which is used for the purpose of Educational webinars available to the public including school administrators and school design professionals. Learning content will be made available for these purposes on the DSA LMS.

8. Commenter(s) and Recommendation:

Josh Jacobs, WAP Sustainability Consulting

Recommendation to **approve as amended** and questions why a single type of insulation is listed on Table 5.409.3 rather than all types of insulation.

Agency Response:

DSA notes that the materials in the Table 5.409.3 are based on the current materials indicated in Buy Cleans California Act (BCCA) language and will not be expanded in this intervening code cycle.

9. Commenter(s) and Recommendation:

Charles Rea, California Construction and Industrial Materials Association (CALCIMA)

Recommendation to **approve**, but requests that consideration be made to update code with region-specific data for California as it becomes available.

Agency Response:

DSA thanks the commenter for their support of this proposed amendment and will consider the allowance for region-specific data in future code cycles. For this proposal a weighted average for concrete is proposed to accommodate the complexities involved in the production of concrete. The use of a weighted average for concrete mixes takes into account the variety of mixes and types of concrete available throughout the state and addresses any variations in materials due to regionality.

10. Commenter(s) and Recommendation:

Laura Karnath, Walter P Moore structural firm.

Recommendation to **approve as amended**, but comments that in Section 5.409.3.1 there is an error in the unit of volume which should be expressed in m³ rather than kg³ and comments on Table 5.409.3 that processed glass should be included in the table to achieve the intents of setting limits on GWP of glass products installed in buildings per

the National Glass Association's FAQ about the BCCA. The exception in 5.409.3.1 allows to use industry wide EPD's for concrete, but they do not provide sufficient information, so product-specific EPDs would be needed to demonstrate compliance.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment and for their comments. DSA corrected the unit of measurement as outlined in the Additional 15 Day Express Terms. This change provides for accuracy. DSA notes that use of a weighted average for concrete mixes takes into account the variety of mixes and types of concrete available throughout the state and addresses any variations in materials or due to regionality. Additionally, DSA notes that the proposed language is based on the current accepted GWP values accorded to the materials listed in the BCCA. Respectfully DSA is not proposing further changes to the materials indicated in Table 5.409.3.

ITEM 9

Chapter 6 REFERENCED ORGANIZATIONS AND STANDARDS, AND MATERIALS, SECTION 601.1 GENERAL

EN EUROPEAN STANDARD, EN 1504 AND EN 15978-2011 are added to the reference standards table since these standards are referenced in the new CCRC regulations.

ISO INTERNATIONAL ORGANIZATION FOR STANDARDIZATION, ISO 14044-2006, ISAO 21930-2017, ISO 21931-2017 are added to the reference standards table since these standards are referenced in the new CCRC regulations and are nationally recognized

Commenter(s) and Recommendation:

Charles Stott, Stott Architects; Pauline Souza, WRNS Studio; Rona Rothenberg; Vikas Shrestha, Steinberg Hart; William Leddy, American Institute of Architects California; Mike Malinowski, American Institute of Architects California.

Recommendation to **approve**.

Agency Response:

DSA thanks the commenters for their support of this proposed amendment. In the additional 15-day Express Terms, DSA, in coordination with BSC, proposed to add ASTM E2921 to the referenced standards as this standard have been referenced in notes to Section 5.409.2. This addition is based on HSC 18930 nine-point criteria 7.

ITEM 10

Chapter 8 COMPLIANCE FORMS, WORKSHEETS AND REFERENCE MATERIALS

WORKSHEET (WS-3) Building reuse is added to the Chapter 8 to support Section 5.105.1 Verification of compliance for building reuse. Use of the worksheet is not mandatory; however, it is provided to assist in showing compliance. The worksheet includes the area of the existing building, area of aggregate addition if applicable, and

various options for calculating structural and nonstructural elements to show a reuse of 45 percent minimum primary structural elements (foundations; columns, beams, walls, and floors; and lateral elements) and existing building enclosure (roof framing, wall framing and exterior finishes).

WORKSHEET (WS-4) Whole Building Life Cycle Assessment is added to the Chapter 8 to support Section 5.409.2 Verification of compliance for whole building life cycle assessment. Use of the worksheet is not mandatory; however, it is provided to assist in showing compliance.

WORKSHEET (WS-5) Product GWP Compliance - Prescriptive Path is added to the Chapter 8 to support Section 5.409.3 Verification of compliance for GWP Compliance. Use of the worksheet is not mandatory; however, it is provided to assist in showing compliance.

1. Commenter(s) and Recommendation:

Rachelle Habchi, SEAOSC Sustainable Design Committee; Hafsa Burt, HB+A Architects; Laura Karnath; Walter P Moore; Lauren Kubiak, Natural Resources Defense Council; Kurt Hurley, City of Berkeley-Building and Safety Division; Adrienne Etherton; Ismar Enriquez; Rona Rothenberg; Seth Dunn; Charles Stott; Stott Architects; Pauline Souza, WRNS Studio; Suyama Bo, American Institute of Architects, Orange County Chapter; Vikas Shrestha; Steinberg Hart; William Leddy, American Institute of Architects, California, Mike Malinowski, American Institute of Architects California.

Recommendation to **approve**.

Agency Response:

DSA-SS thanks the commenters for their support of this proposed amendment.

2. Commenter(s) and Recommendation:

Michael F. Malinowski – AIA California.

In addition to expressed support for all proposed pathways related to Carbon Reduction proposals, the commenter recommends Approve as Amended to add compliance forms or worksheets for signature by the design professional of record for Section 5.409.2 (Life Cycle Assessment) and Section 5.409.3 (Product GWP Compliance prescriptive path).

Agency Response:

DSA appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. DSA proposed to add Worksheets 4, 5 and 9 in the Additional 15 Day Express Terms.

After further review and based on a 45-day public comment, BSC developed the worksheets and DSA proposed to co-adopt Worksheets 4 and 5 during the 15-day comment period. All worksheets are similar and require the design professional to attest that the work has been performed in accordance with the code requirements. The signed worksheet is also required to be included in the construction documents pursuant to the verification of compliance sections. The proposed worksheets are

intended to remove ambiguity and provide clarity and are based on HSC 18930 nine-point criteria number 6.

15-day public comments:

ITEMS 5, 7, 8, 9 and 10

Chapter 5, Sections 5.401, 5.402 and 5.409

Chapter 6 REFERENCED ORGANIZATIONS AND STANDARDS,

Chapter 8 COMPLIANCE FORMS, WORKSHEETS AND REFERENCE MATERIAL,

Additional 15-day changes to Carbon Reduction related measures in Chapters 5, 6 and 8.

Commenter(s) and Recommendation:

Michael F. Malinowski – AIA California, recommends **Approval**.

Agency Response:

DSA appreciates the commenters for their support.

DETERMINATION OF ALTERNATIVES CONSIDERED AND EFFECT ON PRIVATE PERSONS

Government Code Section 11346.9(a)(4) requires a determination with supporting information that no alternative considered would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective and less burdensome to affected private persons than the adopted regulation or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law.

The Division of the State Architect has not identified any reasonable alternative to the proposed action and no adverse impact to affected private persons or small business due to these proposed changes is expected.

REJECTED PROPOSED ALTERNATIVE THAT WOULD LESSEN THE ADVERSE ECONOMIC IMPACT ON SMALL BUSINESSES:

Government Code Section 11346.9(a)(5) requires an explanation setting forth the reasons for rejecting any proposed alternatives that would lessen the adverse economic impact on small businesses, including the benefits of the proposed regulation per 11346.5(a)(3).

N/A