

**FINAL STATEMENT OF REASONS
FOR PROPOSED BUILDING STANDARDS
OF THE CALIFORNIA BUILDING STANDARDS COMMISSION
REGARDING THE 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE,
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11
(BSC 04/22)**

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 CBSC 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 Building Standards Commission has determined that the proposed regulatory action would not impose a mandate on local agencies or school districts. CBSC does not have authority to adopt regulations for school districts.

The mandate does not require reimbursement pursuant to Part 7 (commencing with section 17500) of Division 4, Government Code.

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. BSC 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. BSC received the following public comments listed below. Please see below for responses.

COMMENTS RECEIVED DURING THE 45-DAY COMMENT PERIOD

ITEM 1

Chapter 2 DEFINITIONS, Section 202 Definitions

Electric Vehicle (EV) Related Definitions.

Commenter(s) and Recommendation:

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

- a. ELECTRIC VEHICLE (EV) CHARGER
Recommends **Disapprove** or **Amend**; delete the proposed definition or amend to define “EV Charger” to mean “EVSE.”
- b. ELECTRIC VEHICLE CHARGING STATION (EVCS)
Recommends **Disapprove** to 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**.

- g. LOW POWER LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE)
Recommends adding a new definition.

Agency Response:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. Upon further review of the proposed changes listed above, BSC has decided to not make any further modifications to the proposed language as the proposed changes are substantive and would need to be coordinated with other state agencies (HCD and DSA) that received the same comments and vetted during the pre-cycle process. Regarding comments “f” and “g”, these comments are outside the rulemaking process since BSC did not propose amendments to these two definitions this cycle. BSC may review and consider these proposals in future rulemaking code cycles and engage the CALGreen Electric Vehicle Workgroup (CEVW) to discuss some of these proposals.

ITEM 5

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES,

Division 5.1 – PLANNING AND DESIGN,

Section 5.106 SITE DEVELOPMENT, Section 5.106.5.3 with subsections

Amendments to existing Electric Vehicle (EV) Charging requirements for new buildings and new method of compliance with Electric vehicle charging stations regulations – Power allocation method.

1. Commenter(s) and Recommendation:

T. Sanchez & N. Dickerson, Tesla, Sections:

- a. 5.106.5.3.2
Recommends **approve** for clarification of the DCFC 5:1 compliance pathway option to encourage EV charging that matches dwell times.
- b. 5.106.5.3.5
Recommends **amend** that signage and pavement markings be encouraged, not required, and ensure they are aligned with existing state-level standards.
- c. 5.106.5.3.6
Recommends **amend** to add similar code clarification to the 5:1 ratio that enables DCFC to count towards EV capable and EVSE installed requirements for the Power Allocation method in Section 5.106.5.3.2.

Agency Response:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. BSC appreciates the support comment for Section 5.106.5.3.2. Upon further review of the proposed changes to Sections 5.106.5.3.6 and 5.106.5.3.5. BSC has decided to not make any further modifications to the proposed language.

In response to the comment to Section 5.106.5.3.5 regarding signage, this proposed change is substantive and was not vetted at the CALGreen workshops. Also, this BSC

proposed signage requirement is like HCD's current signage requirement for Electric Vehicle Ready Space Signage and would need to be coordinated between the two state agencies for consistency.

In response to the comment to Section 5.106.5.3.6, the Power Allocation Method Table 5.106.5.3.6 is solely based on power in kVA's and is meant to be equivalent to the current mandatory Table 5.106.5.3.1 which is based EV capable spaces rated at 40 amp. Compliance with Section 5.106.5.3.6 and the associated Power Allocation Table 5.106.5.3.6, which is based on total kVA, can be achieved by using any combination of EV capable, Low Power Level 2, Level 2 or DCFCs. Since compliance is based solely on total kVA, the DCFC or Level 2 allowance to replace on 5:1 ratio for EV capable spaces is not needed.

2. Commenter(s) and Recommendation:

K. Cunningham, C. Kim, J. Reeve, California Statewide Utility Codes and Standards Team, Recommends **Amend** for all the sections listed below:

- a. 5.106.5.3
Recommends amending the code section to replace Electric Vehicle Charging Stations (EVCS) with "EV Spaces".
- b. 5.106.5.3.2
Recommends amending the code section to replace the term EVCS with Electric vehicle charging space (EV Space) with EVSE. Additionally, they would like to replace the word "EV charger" with EVSE" in the paragraph below Section 5.106.5.3.2.
- c. 5.106.5.3.2.1
Recommends amending the code section to replace EV capable spaces with "EV Spaces" and remove the reference to "EVCS with Level 2 EVSE".
- d. 5.106.5.3.2.2
Recommends amending the code section to replace EV charging receptacles with EVSEs and provided alternative code language to require receptacles to be compliant with a NEMA standard for amperages ranging from 20-ampere to 50-ampere.
- e. 5.106.5.3.3
Recommends amending the existing code section for ALMS to replace EVCS with EV Spaces.
- f. 5.106.5.3.4
Recommends amending the existing code section to replace Electric Vehicle Charging Stations (EVCS) with EV Spaces.
- g. Table 5.106.5.3.1
Recommends amending existing Table 5.106.5.3.1 columns 2, 3 and 4 to replace EV capable spaces with EVSE Spaces.

- h. 5.106.5.3.6
Recommends amending the existing code section to replace Electric Vehicle Charging Station (EVCS) with EV Space.
- i. Table 5.106.5.3.6 with footnotes
Recommends amending Table 5.106.5.3.6 to delete column 2 in its entirety and amend column 3 to add the word “continuous”.

Agency Response:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. Upon further review of the proposed changes listed above, BSC has decided to not make any further modifications to the proposed language as the proposed changes are substantive and would need to be coordinated with other state agencies (HCD and DSA) that received the same comments and vetted during the pre-cycle process. Regarding comment “e” to section 5.106.5.3.3; this comment is outside the rulemaking process. BSC did not propose amendments to these two definitions during this cycle. BSC may review and consider these proposals in future rulemaking code cycles and engage CEVW to discuss some of these proposals.

3. Commenter(s) and Recommendation:

R. Murali, PowerFlex Inc, Section 5.106.5.3.1
Recommends **Amend** sub-item 2 and 3 to allow for ALMS to be sized at 3.3 kW.

Agency Response:

BSC appreciates the commenter. Upon further review of the proposed changes, BSC has decided to not make any further modifications to the proposed language as the proposed change is substantive and would need to be coordinated with other state agencies (HCD and DSA) that received the same comments. Additionally, comments regarding section 5.106.5.3 are outside the rulemaking process since BSC did not propose amendments to this section this cycle. BSC may review and consider this proposal in future rulemaking code cycles to engage the CEVW to discuss this proposal.

4. Commenter(s) and Recommendation:

R. McCarthy Weideman Group along with M. Estipona, O. Thomas, A. Willingham, N. Garcia, and A. Mohabatt. Sections:

- a. 5.106.5.3.2
Recommends **Approve** for clarification of the DCFC 5:1 compliance pathway option to encourage EV charging that matches dwell times.
- b. 5.106.5.3.2.1
Recommends **Amend** to replace the “or” to an “and”
- c. 5.106.3.6
Recommends **Amend** section and sections verbiage and delete sub-section item 3 EV capable spaces.

Agency Response:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. BSC appreciates the support comment for Section 5.106.5.3.2. Upon further review of the proposed changes to Sections 5.106.5.3.2.1, BSC has decided to not make any further modifications to the proposed language.

The proposed change could be misrepresented to mean that the same DCFC could be used to comply with both EV Capable and EVSE simultaneously. This could allow for 1 DCFC to comply with 5 EV Capable plus 5 Level 2 EVSE's which would provide a trade-off for 10 EVSEs or a double dip which is not the intent of the EV proposal.

BSC has agreed with the comment to Section 5.106.3.6. Upon further review, BSC amended, during 15-day public comment period, the newly proposed code Section 5.106.5.3.6 Electric vehicle charging stations (EVCS) – Power allocation method to add a reference to Section 5.106.5.3.1. Additional proposed code changes include: the repeal of the words “to create EVCS” from the sentence “Power allocation method to create EVCS shall include the following:” and the relocation of sub-item 3 mentioned above “EV capable spaces shall meet the requirements of Section 5.106.5.3.1 EV capable spaces.” Sub-item 3 has been moved and revised as footnote 4 to Table 5.106.5.3.6 to indicate a reference to Section 5.106.5.3.1. Footnote 4 has been added to the table in column 3 adjacent to footnote 3 as it relates to EV capable. These editorial changes to these proposed amendments clarify the intent of the code proposals for section for 5.106.5.3.6 Electric vehicle charging stations (EVCS)-Power allocation method to inform the code user of the two available compliance pathways for EV charging. These proposed code changes are based on HSC 18930 nine-point criteria number 6.

ITEMS 3, 4, 8, 9, 11, 12, 14, 15, 16, 22, 24 and 25

Chapter 2, Section 202 (CALGreen Carbon Reduction Related Definitions)

Chapter 5, Sections 5.105, 5.401, 5.402 and 5.409,

Chapter 6 REFERENCED ORGANIZATIONS AND STANDARDS,

Chapter 8 COMPLIANCE FORMS, WORKSHEETS AND REFERENCE MATERIAL,

Appedix A5, Sections A5.105, A5.401, A5.402 and A5.409

Carbon Reduction related measures in Chapters 2, 5, 6, 8 and A5.

Commenter(s) and Recommendation:

The commenters listed in the table below express support for various Carbon Reduction related proposals noted below:

Commenter:	Support for:
Colleen FitzSimons – San Diego Green Building Council	All compliance paths proposed as part of Carbon Reduction related proposal
Lisa Podesto – Self	Chapter 5, Section 5.409 (Items 11 and 12)
Rachelle Habchi – SEAOSC Sustainable Design Committee	Chapter 5, Section 5.409, Chapter 8 (Items 11, 12 and 15)

Commenter:	Support for:
Charles Stott – Stott Architects	Chapters 2, 5, 6 and 8
Ismar Enriquez – Self	Chapters 2, 5, 6 and 8
Michael F. Malinowski – AIA California	All compliance paths
Pauline Souza – WRNS Studio	Chapters 2, 5, 6 and 8
Rona G. Rothenberg – Self	Chapters 2, 5, 6 and 8
Suyama Bo – AIA Orange County Chapter	Chapters 2, 5, 8, Appendix A5
Seth Dunn – Self	Chapters 2, 5, 6 and 8
William E Leddy – AIA California	Chapters 2, 5, 6 and 8
Adrienne Etherton – Self	Chapters 2, 5, 8, Appendix A5
Vikas Shrestha – Steinberg Hart	Chapters 2, 5, 6 and 8
Hoi-Fei Mok – City of San Leandro	Sections 5.105.1, 5.105.2, 5.409.1, 5.409.2, 5.409.3, and corresponding worksheets and voluntary Tier measure sections (Items 4, 11, 12, 15, 16 and 25)
Timothy Burroughs – StopWaste	Chapter 5, Sections 5.105 and 5.409, Chapter 8, Appendix A5, Sections A5.105 and A5.409 (Items 4, 11, 12, 15, 16 and 25)
Sara Neff – Self,	Chapter 5, Section 5.409 (Items 11 and 12)
Hafsa Burt – HB+A Architects	Chapters 2, 5, 8, Appendix A5
Kurt Hurley – City of Berkeley	Sections 5.105.1, 5.105.2, 5.409.1, 5.409.2, 5.409.3, and corresponding worksheets and voluntary Tier measure sections (Items 4, 11, 12, 15, 16 and 25)
Lauren Kubiak – Natural Resources Defense Council	Chapters 2, 5, 8, Appendix A5
Simon Rees – Arup	All amendments that address embodied carbon of construction materials including Sections 5.105.1, 5.105.2, 5.409.1, 5.409.2 and 5.409.3.
Charley Rea – CalCIMA	Chapter 5, Section 5.409, Appedix A5, Section A5.405.5 (Items 11, 12 and 24 – Carbon Reduction proposals related to concrete)

The commenters listed above recommend **Approval**.

Some of the commenters listed above have additional comments or recommendations for the proposed amendments. Those comments and BSC's responses are addressed under each Item number below, respectively.

Agency Response:

BSC appreciates the commenters for their support of the proposed amendments and the participation in the CALGreen Carbon Reduction Collaborative (CCRC) workshops held between April and September 2022.

ITEM 9

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, Division 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY, Section 5.402 DEFINITIONS

Carbon Reduction related definitions.

Commenter(s) and Recommendation:

Laura Karnath – Self.

Recommends **Approve as Amended**. Section 5.402 lists definition of “reference baseline building”, but it has not been provided in the definitions section. Reference baseline building should be defined to ensure that true GWP reductions from business-as-usual are achieved.

Agency Response:

BSC appreciates the comment and notes that the term “reference baseline building” is not included as a specific definition, but is defined 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, BSC 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. BSC is proposing no further changes to this section.

ITEM 11

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, Division 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY, Section 5.409 LIFE CYCLE ASSESSMENT

New amendments addressing Carbon Reduction related measures – Whole Building Life Cycle Assessment pathway.

1. 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:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. BSC proposed to add 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, BSC 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.

2. Commenter(s) and Recommendation:

Tien Peng – National Ready Mixed Concrete Association.

Recomends **Approve as Amended** for Section 5.409.2 to add "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:

BSC appreciates the comment. Upon further review, BSC 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.

3. Commenter(s) and Recommendation:

Jeff Bradley – American Wood Council.

Recomends **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 Assessment (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:

BSC appreciates the comment. Upon further review, BSC proposed to include ASTM E2921-22 in notes to Section 5.409.2 in the Additional 15 Day Express Terms. BSC is not proposing to make changes to delete the type of construction and material specification from all WBLCA sections as it would be substantive and would need to be vetted during the pre-cycle process. BSC may review and consider this proposal in future rulemaking code cycles and engage CCRC workgroup to discuss some of these proposals.

4. Commenter(s) and Recommendation:

Laura Karnath – Self.

Recommends **Approve as Amended** for Section 5.409.2.1. This section limits the building enclosure components to glazing, insulation, and exterior finishes. Wall framing and sheathing materials should be included with the building enclosure. Language should be clarified to indicate that framing (such as curtainwall, storefront, or window framing) is included with glazing.

Agency Response:

BSC appreciates the comment. BSC 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. BSC proposed to add 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:

Simon Rees – Arup, in addition to expressing support for the Carbon Reduction related proposals noted above, the commenter includes the below observations to be addressed in the next full code adoption cycle:

- The regulations proposed are not sufficiently ambitious to leverage current industry capabilities, nor so they match the urgency of emission reduction necessary to reach net zero no later than 2045.

Agency Response:

BSC appreciates the commentor and takes the listed observation in consideration. BSC notes that the proposed language is intended to be introductory in nature and may become more encompassing and stringent in future code adoption cycles.

6. Commenter(s) and Recommendation:

Kurt Hurley – City of Berkeley,
Hoi-Fei Mok – City of San Leandro,
Timothy Burroughs – StopWaste.

In addition to expressing support for various Carbon Reduction related proposals. The commenters also includes the following recommendations:

- 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 staffing and resources in the local building departments.

- Request that state agencies provide centralized training resources, worksheets for project teams, and standardized tools to ease compliance verification and minimize the impact on building departments.

Agency Response:

BSC appreciates the commentors for their support. BSC added worksheets and references to Sections 702.2 and 703.1 in the Additional 15 Day Express Terms as standard tools available to local jurisdictions and design professionals. BSC also notes that the Division of the State Architect (DSA) does have a centralized Learning Management System which is used for the purpose of educational webinars available to the public. BSC intends to coordinate with DSA to make learning content addressing Carbon Reduction regulations available for these purposes.

ITEM 12

**Chapter 5 NONRESIDENTIAL MANDATORY MEASURES,
Division 5.4 - MATERIAL CONSERVATION AND RESOURCE EFFICIENCY,
Section 5.409 LIFE CYCLE ASSESSMENT**

New amendments addressing Carbon Reduction related measures – Product GWP compliance – prescriptive pathway.

1. 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** 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 for Section 5.409.3.

Agency Response:

BSC appreciates the commenter and the participation in the various CALGreen workshops held between April and September 2022. BSC proposed to add 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, BSC 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.

2. Commenter(s) and Recommendation:

Rachelle Habchi – SEAOSC Sustainable Design Committee, in addition to expressing support for the Carbon Reduction related proposals noted above, the commenter also includes SEAOSC Sustainable Design Committee Chair personal opinion to recommend:

- **Approve as Amended** for the third option compliance option (product GWP compliance-prescriptive path) Table 5.409.3 to reduce the limit to a more reasonable percent of BCCA GWP values (for example, 100 percent currently with a tiered reduction plan for future dates).
- Incorporate seismic resilience into future revisions of the code as seismic resilience and sustainability are inherently intertwined.

Agency Response:

BSC appreciates the commentor for their support and take the listed recommendations in consideration. Upon further review, BSC has decided to not make any further modifications to the proposed language as the proposed changes are substantive and would need to be vetted through the pre-cycle process. BSC notes that the proposed language is intended to be introductory in nature and may become more encompassing and stringent in the future code adoption cycles.

3. Commenter(s) and Recommendation:

Tien Peng – National Ready Mixed Concrete Association.

Recomends **Approve as Amended** to either revise Table 5.409.3 values to accurately reflect 175% of the National Ready Mix Concrete Association (NRMCA) Benchmark values or revise the footnote 2 (easier) to the range of percentages (166-189%) of the listed allowable values.

Agency Response:

BSC appreciates the comment. BSC 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:

Bryce Tanner – Arup.

Recomends **Approve as Amended** to adress the following:

- Exception equation 5.409.3.1 does not appear correct. Recommend to place the summation symbol outside the parenthesis. The intent is to represent a summation of products for each mix n. Instead what's written is that GWP_n is summed for all n and then multiplied by v_n.
- Table 5.409.3 lists GWP limits for both steel and concrete that are extremely high. If the state's 2035 target for carbon emissions is to be met, these values will need to be dropped precipitously in future years.

- Table 5.409.3 refers only to ready-mixed concrete, which would not include precast concrete, shotcrete or CMU. Suggest that all concrete forms should be included, at least by the 2025 edition.
- In Section 5.409.3.2, recommend to require Type III EPDs be included in as-built documentation instead of the construction documents.

Agency Response:

BSC appreciates the comment. BSC proposed to correct the Equation 5.409.3.1 as outlined in the Additional 15 Day Express Terms for accuracy. The summation symbol should be placed outside of the parentheses. Correcting the equation removes ambiguity and provides clarity.

BSC notes that the materials and GWP values in the Table 5.409.3 are based on the current materials and accepted GWP values indicated in the California Buy Clean Act (BCCA) language and will not be expanded in this intervening code cycle. The proposed language for these amendments are intended to be introductory in nature for this code cycle and may become more encompassing in future code cycles.

BSC notes that jurisdictions enforcing the building codes do that through review and approval of construction documents and they do 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; therefore, relevant Type III EPD documentation would be required at that time. BSC is proposing no further modifications to this section based on this comment.

5. Commenter(s) and Recommendation:

Laura Karnath – Self.

Recommends **Approve as Amended** for the following sections:

- Exception EQUATION 5.409.3.1 appears to have an error as Volume should be expressed in m³ not kg³.
- The exception in 5.409.3.1 allows to use industry wide EPD's for concrete, but they do not provide sufficient information and product-specific EPDs would be needed to demonstrate compliance.
- Table 5.409.3 should include processed glass to achieve the intent of setting limits on GWP of glass products installed in buildings.

Agency Response:

BSC appreciates the comment. BSA proposed to correct the unit of measurement in the Equation 5.409.3.1 as outlined in the Additional 15 Day Express Terms for accuracy.

BSC 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. BSC also notes that the materials in the Table 5.409.3 are based on the current materials indicated in the California Buy Clean Act (BCCA) language and will not be expanded in this intervening code cycle. The proposed language for these amendments are intended to be introductory in nature for this code cycle and may become more encompassing in future code cycles.

BSC is proposing no further modifications to this section based on this comment.

6. Commenter(s) and Recommendation:

Josh Jacobs – WAP Sustainability.

The commenter supports inclusion of product environmental impacts into the code and recommends **Approve as Amended** for Table 5.409.3 to include other types of insulation in addition to mineral wool board insulation. Single type of insulation should not be singled out when all insulation should be looked at in a total carbon basis.

Agency Response:

BSC appreciates the comment. Upon further review, BSC is proposing no further changes to this section. BSC notes that the proposed language is based on the current materials indicated in the BCCA language and is intended to be introductory in nature. It may become more encompassing and stringent in future code adoption cycles.

7. Commenter(s) and Recommendation:

Simon Rees – Arup, in addition to expressing support for the Carbon Reduction related proposals noted above, the commenter includes the below observations to be addressed in the next full code adoption cycle:

- The regulations proposed are not sufficiently ambitious to leverage current industry capabilities, nor so they match the urgency of emission reduction necessary to reach net zero no later than 2045.
- The regulations proposed for steel and concrete products in Table 5.409.3 will have minimal impact on business as usual. The standard set by Table 5.409.3 seems only to limit a small number of outliers.
- California's building standards should be aligned with California's overall climate change strategy. Taking the NRMCA average value as representative of 2019 emission intensity in the cement industry, the 2035 target for 4000 psi concrete would need to be 63% below the value provided in Table 5.409.3. The limits established for the 2025 Building Code Cycle will need to be tightened significantly in line with best practice.

Agency Response:

BSC appreciates the commentor and takes the listed observation in consideration. BSC notes that the proposed language is intended to be introductory in nature and may become more encompassing and stringent in future code adoption cycles.

8. Commenter(s) and Recommendation:

Kurt Hurley – City of Berkeley,
Hoi-Fei Mok – City of San Leandro,
Timothy Burroughs – StopWaste.

In addition to expressing support for various Carbon Reduction related proposals. The commenters also includes the following recommendations:

- 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 staffing and resources in the local building departments.
- Request that state agencies provide centralized training resources, worksheets for project teams, and standardized tools to ease compliance verification and minimize the impact on building departments.

Agency Response:

BSC appreciates the commentors for their support. BSC added worksheets and references to Sections 702.2 and 703.1 in the Additional 15 Day Express Terms as standard tools available to local jurisdictions and design professionals. BSC also notes that the Division of the State Architect (DSA) does have a centralized Learning Management System which is used for the purpose of educational webinars available to the public. BSC intends to coordinate with DSA to make learning content addressing Carbon Reduction regulations available for these purposes.

9. Commenter(s) and Recommendation:

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

In addition to expressing support for various Carbon Reduction proposals related to concrete noted above, the commenter requests that consideration be made to update code with region-specific data for California as it becomes available.

Agency Response:

BSC appreciates the commentor for their support and take the request in consideration. BSC notes that the proposed language for these amendments is intended to be introductory in nature for this code cycle and may become more encompassing in future code cycles.

ITEM 15

Chapter 8 COMPLIANCE FORMS, WORKSHEETS AND REFERENCE MATERIAL

New Worksheets related to proposed Carbon Reduction related measures.

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 Sections 5.409.2 and A5.409.2 (Life Cycle Assessment) and Sections 5.409.3 and A5.409.3 (Product GWP Compliance prescriptive path).

Agency Response:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. BSC proposed to add Worksheets 4, 5, 7, 8 and 9 in the Additional 15 Day Express Terms.

Other than Worksheet 3 and 6 (numbered as WS-4 in 45-day ET), the worksheets were not fully developed in the Initial version of the ET (the version that went before the GREEN Code Advisory Committee (CAC)) but a placeholder reference for the worksheets to be developed at a later date was presented to the CAC. References to the worksheets were removed prior to the 45-day comment period.

After further review and in response to this public comment, BSC developed and proposed the worksheets 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.

ITEM 17

Chapter A5 NONRESIDENTIAL VOLUNTARY MEASURES, Division A5.1 – PLANNING AND DESIGN, Section A5.106 SITE DEVELOPMENT

Amendments to existing Designated parking for clean air vehicles and subsections.

Commenter(s) and Recommendation:

T. Sanchez & N. Dickerson, Tesla, Section A5.106.5.1.3 Future charging spaces.

Recommends **Amend** for the “Note” to provide clarity that installed EVCS can count towards Clean Air Vehicle Space requirements.

Agency Response:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022. Upon further review of the proposed changes to Section A5.106.5.1.3, BSC has decided to not make any further modifications to the proposed language. This proposed change is already addressed in the current mandatory code Section 5.106.5.3.1 EV capable spaces; “Note” which states that parking spaces served by EVSE or designated as a future charging space counts toward at least one automobile parking space.

ITEM 18

Appendix A5 NONRESIDENTIAL VOLUNTARY MEASURES, Division A5.1 – PLANNING AND DESIGN, Section A5.106 SITE DEVELOPMENT

Amendments to existing Electric Vehicle (EV) Charging voluntary measures for new buildings and new method of compliance with Electric vehicle charging station voluntary measures – Power allocation method.

1. Commenter(s) and Recommendation:

K. Cunningham, C. Kim, J. Reeve, California Statewide Utility Codes and Standards Team, recommend **Amend** for all the sections listed below:

- a. A5.106.5.3.1 Tier 1
Recommends amending the code section to replace Electric Vehicle Charging Stations (EVCS) with EV Spaces.
- b. Table A5.106.5.3.1
Recommends amend existing Table A5.106.5.3.1 columns 2, 3 and 4 to replace EV capable spaces with EVSE Spaces.
- c. A5.106.5.3.2
Recommends amend the existing code section to replace Electric Vehicle Charging Station (EVCS) with EV Space.
- d. Table A5.106.5.3.2 Tier 1
Recommends amend Table A5.106.5.3.2 to delete column 2 in its entirety and to amend column 3 to add the word “continuous”.
- e. A5.106.5.3.3 Tier 2
Recommends amending the code section to replace the term Electric Vehicle Charging Stations with EV Spaces.
- f. Table A5.106.5.3.3 Tier 2
Recommends amend existing Table A5.106.5.3.3 columns 2, 3 and 4 to replace EV capable spaces with EVSE Spaces.
- g. A5.106.5.3.4
Recommends amend the existing code section to replace Electric Vehicle Charging Station (EVCS) with EV Space.
- h. Table A5.106.5.3.4 Tier 2
Recommends amend Table A5.106.5.3.4 to delete column 2 in its entirety and to amend column 3 to add the word “continuous”.

Agency Response:

BSC appreciates the commenters and the participation in the various CALGreen workshops held between April and September 2022.

Upon further review of the proposed changes listed above, BSC is proposing no further changes to this section as the proposed changes are substantive and would need to be coordinated with other state agencies (HCD and DSA) that received the same comments and vetted during the pre-cycle process. BSC may review and consider these proposals in future rulemaking code cycles and engage the CEVW to discuss some of these proposals.

BSC notes that while amendments to the BSC 45-day proposed code language were not made based on the above public comments received, BSC proposed additional modifications to the language available for public comments during additional 15-day public comment period for changes made to the mandatory, related, code Section 5.106.5.3.6 Item 5. The changes to Section 5.106.5.6 affected the related voluntary

code Sections (A5.106.5.3.2 Tier 1 and A5.106.5.3.4 Tier 2) Electric vehicle charging stations (EVCS)- Power allocation method to add a reference to Section 5.106.5.3.1. Additional proposed code changes include: the repeal of the words “to create EVCS” from the sentence “Power allocation method to create EVCS shall include the following:” and the relocation of sub-item 3 mentioned “EV capable spaces shall meet the requirements of Section 5.106.5.3.1 EV capable spaces.” Sub-item 3 has been moved and revised as footnote 4 to Table A5.106.5.3.2 and Table A5.106.5.3.4 to indicate a reference to Section 5.106.5.3.1. Footnote 4 has been added to the tables in column 3 adjacent to footnote 3 as it relates to EV capable. As previously mentioned in Item 5, these editorial changes to these proposed amendments clarify the intent of the code proposals for (Sections A5.106.5.3.2 and A5.106.5.3.4) Electric vehicle charging stations (EVCS)-Power allocation method to inform the code user of the two available compliance pathways for EV charging if implementing a Tier 1 or Tier 2 option. These proposed code changes are based on HSC 18930 nine-point criteria number 6.

ITEM 20

Appendix A5 NONRESIDENTIAL VOLUNTARY MEASURES, Division A5.1 – PLANNING AND DESIGN, Section A5.107 BIRD-FRIENDLY BUILDING DESIGN

BSC is proposing to add Section A5.107 Bird-Friendly Building Design and adopt amendments that address bird-friendly standards for planning and design of buildings that specifically reduce the negative impact of bird deaths caused by collisions with buildings.

1. Commenter(s) and Recommendation:

Dr. Daniel Klem, Muhlenberg College and James M. Cubie, J.D – Acopian Center for Ornithology. Recommend **Approve** and, for the future code cycle, to consider raising Bird-Safe height of glass to 100 feet and consider a comparison of the cost vs. the benefits. Bird-safety building code standard will not have a significant negative effect on the level of construction activity in California. Bird-safe glass requirement only affects the cost of the glass not the fabrication, delivery and installation. A 40-foot bird safe height is low and further lowered by the provisions stating that 90 percent of the first 40 feet must be bird safe, leaving 10 percent, equivalent to a four-foot exemption which is not justified and increases avian deaths.

A phase-in is clearly preferable to lowering the safety standard below 100 feet. The proposed voluntary standards should be adopted with the understanding that it will be substantially strengthened before it becomes mandatory.

Agency Response:

BSC acknowledges the commenter’s concerns and appreciates their support and participation in the code development process. BSC thanks the commenters and may consider the proposed changes during a future code adoption cycle.

2. Commenter(s) and Recommendation:

Jeff L. Rank – CollidEscape.

Recommends **Approve as Amended** for Section A5.107.1.

- Remove the Note from Item 1.a. as visual markers on glass surface 2 are not effective, even if visible behind exterior surface with reflectivity of 15 percent or less.
- Remove Item 1.c. as laminated glass with 2 x 2 visual markers patterned Ultraviolet (UV) coating or use of contrasting patterned UV absorbing and UV reflecting films has been academically tested and proven to be ineffective as a bird strike preventative.

Agency Response:

BSC acknowledges the commenter's concerns and appreciated their support and participation in the code development process. Upon further review, BSC is proposing no further changes to this section. Research provided during the workshop phase and documents relied upon indicate that UV solutions are not overall solutions, because not all birds see UV, and there isn't much UV in the early morning and on overcast days, but they are an important option as well as the visual markers on glass surface 2.

3. Commenter(s) and Recommendation:

Donna Marciano - San Joaquin Audubon Society.

Recommends **Approve** and concurs with the recommendations of Dr. Daniel Klem and Jim Cubie, J.D., that the proposed action be approved with the understanding that it will be substantially strengthened before it becomes mandatory.

Agency Response:

BSC acknowledges the commenter's comment and appreciates their participation in the code development process.

ITEM 23

**Appendix A5 NONRESIDENTIAL VOLUNTARY MEASURES,
Division A5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY,
Section A5.405 MATERIAL SOURCES**

New amendments addressing Carbon Reduction related measures – Certified Wood Components – Sustainability Standards.

Commenter(s) and Recommendation:

Jeff Bradley – American Wood Council.

Recomends **Approve as Amended** to clean up the language in Section A5.405.2.1 to clarify the intent.

Agency Response:

BSC appreciates the comment. Upon further review, BSC is proposing no further modifications to the proposed language as the proposed changes could be substantive and would need to be coordinated with other stakeholders and interested parties. BSC may review and consider these proposals in future rulemaking code cycles.

ITEM 25

Appendix A5 NONRESIDENTIAL VOLUNTARY MEASURES, Division A5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY, Section A5.409 LIFE CYCLE ASSESSMENT

Amendments addressing Carbon Reduction related voluntary measures – Whole Building Life Cycle Assessment pathway and Product GWP compliance prescriptive pathway.

1. 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** for Sections A5.409.2.3 and A5.409.3.2 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 for Sections A5.409.2 (Life Cycle Assessment) and A5.409.3 (Product GWP Compliance prescriptive path).

Agency Response:

BSC appreciates the commenter and the participation in the various CALGreen workshops held between April and September 2022. BSC proposed to add the recommended information and references into Sections A5.409.2.3 and A5.409.3.2 in the Additional 15 Day Express Terms.

During the 45-day comment period BSC staff noticed that the verification of compliance is missing from the voluntary whole building life cycle assessment section. BSC added the 15-day language for consistency with the mandatory section 5.409.2.3 and to include recommended information and references into Sections A5.409.2.3.

The worksheet reference in Section A5.409.3.2 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, BSC 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 Sections A5.409.2.3 and A5.409.3.2 removes ambiguity and provides clarity and is based on HSC 18930 nine-point criteria 6.

2. Commenter(s) and Recommendation:

Tien Peng – National Ready Mixed Concrete Association.

Recomends **Approve as Amended** for Sections A5.409.2.1 and A5.409.2.2 to add "The life-cycle assessment software tool and data sets to evaluate both the baseline building and the proposed building shall be the same" following to Sections A5.409.2.1 Tier 1 and A5.409.2.2 Tier 2.

Agency Response:

BSC appreciates the comment. Upon further review, BSC proposed to add language as outlined to Sections A5.409.2.1 and A5.409.2.2 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.

3. Commenter(s) and Recommendation:

Jeff Bradley – American Wood Council.

Recomends **Approve as Amended** to delete the type of construction and material specification from Sections A5.409.2.1 and A5.409.2.2 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:

BSC appreciates the comment. Upon further review, BSC proposed to include ASTM E2921-22 in notes to Section 5.409.2 in the Additional 15 Day Express Terms. The regulatory language in Sections A5.409.2.1 and A5.409.2.2 that states "meeting the requirements of Section 5.409.2" includes the notes. BSC is not proposing to make changes to delete the type of construction and material specification from all WBLCA sections as it would be substantive and would need to be vetted during the pre-cycle process. BSC may review and consider this proposal in future rulemaking code cycles and engage CCRC workgroup to discuss some of these proposals.

COMMENTS RECEIVED DURING THE 15-DAY COMMENT PERIOD

ITEM 5

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES,

Division 5.1 – PLANNING AND DESIGN,

Section 5.106 SITE DEVELOPMENT, Section 5.106.5.3 with subsections

Additional 15-day changes to existing Electric Vehicle (EV) Charging requirements for new buildings and new method of compliance with Electric vehicle charging stations regulations – Power allocation method.

Commenter(s) and Recommendation:

Ryan McCarthy – Weideman Group along with Matthew Estipona – ABC NorCal, Kristian Corby – California Electric Transportation Coalition (CalETC), Orville Thomas – CALSTART, Anthony Willingham – Electrify America, LLC, Noah Garcia – EVgo, Adam Mohabbat – Wallbox, Kevin Loscutoff – Walmart.

- a. Recommends **Approve** the 15-day changes to Section 5.106.5.3.6 Electric vehicle charging stations (EVCS)-Power allocation method.

- b. Recommends **Amend** footnote 4 in Table 5.106.5.3.6 to clarify that the reference applies to the technical requirements (1)-(4) for EV capable spaces, rather than numerical requirements for EV capable stations in Table 5.106.5.3.1.
- c. Recommends **Amend** Section 5.106.5.3.2.1 to clarify that the 1-to-5 ratio for DCFCs applies to the requirements in Section 5.106.5.3.2.1 for EV capable spaces and EVCS independently either in the Express Terms or subsequent guidance documents.

Agency Response:

BSC appreciates the support comment for Section 5.106.5.3.6.

BSC does not agree with the 15-day comment related to footnote 4 of Table 5.106.5.3.6. Upon further review, BSC's amendment during 15-day public comment period to add footnote 4 to Table 5.106.5.3.6 to indicate a reference to Section 5.106.5.3.1 EV Capable Spaces is sufficiently clear to mean that the requirements only pertain to the technical requirements. However, BSC will provide clarification in the 2022 Intervening CALGreen Guide to clarify that the reference to the EV capable code section is for the technical requirements 1-4 only and not for the required number of capable spaces listed on Table 5.106.5.3.1.

Upon further review of the proposed changes to Section 5.106.5.3.2.1, BSC has decided to not make any further amendments. However, BSC will provide clarification in the 2022 Intervening CALGreen Guide to clarify that the 1-to-5 ratio for DCFCs applies to the requirements in Section 5.106.5.3.2.1 for EV capable spaces and EVCS independently.

ITEMS 9, 11, 12, 14, 15, 22 and 25

Chapter 5, Sections 5.402 and 5.409

Chapter 6 REFERENCED ORGANIZATIONS AND STANDARDS,

Chapter 8 COMPLIANCE FORMS, WORKSHEETS AND REFERENCE MATERIAL,

Appedix A5, Sections A5.402 and A5.409

Additional 15-day changes to Carbon Reduction related measures in Chapters 5, 6, 8 and A5.

Commenter(s) and Recommendation:

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

Agency Response:

BSC appreciates the commenters for their support.

ITEMS 11 and 12

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES, Division 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY, Section 5.409 LIFE CYCLE ASSESSMENT

Additional 15-day changes to mandatory Carbon Reduction related measures – Whole Building Life Cycle Assessment pathway and Product GWP compliance prescriptive pathway.

Commenter(s) and Recommendation:

Bob Raymer – California Building Industry Association (CBIA), California Business Properties Association (CBPA), Building Owners & Managers Association of California (BOMA), California Apartment Association (CAA).

Recommends **Further Study Required** for Section 5.409 Life Cycle Assessment.

Consider placement in the CALGreen Appendix or Further Study to resolve the below noted concerns:

- Steep Learning Curve: Is it reasonable to expect product suppliers, the building industry, and especially code-enforcement officials to learn all this and effectively comply/enforce by July 1, 2024?
- How does a building official know if the info in the document is accurate?
- Cradle-to-Grave vs. Cradle-to-Gate: Many designers and building owners have no idea who will be renting space and for what purpose. This could easily impact the life of the structure and impact the “grave” portion of the analysis. Is this reasonable? Isn't cradle to gate more reasonable?
- Do all construction materials (and variations thereof) have easily accessible and certified carbon content data? What governmental entity certifies that this information is accurate?
- Many building materials and products are mined, processed, fabricated, assembled in foreign countries, and shipped to the US for distribution. How do we know these foreign entities are accurate in reporting carbon impact?
- What does a typical report cost? How long does a report take to assemble and what is the typical cost? Benefit?
- Is there a conflict with last year's bill AB 2446 (Holden)?

Agency Response:

BSC acknowledges the comment and notes that the comment does not pertain to the proposed additional 15-day text modifications. BSC also notes that these concerns and questions have been addressed during initial development of the proposed regulations in collaboration with the California Carbon Reduction Collaborative (CCRC), DSA, AIACA and other sustainable and design professional organizations and in subsequent refinements including additional 15-day language modifications. Upon further review, BSC is proposing no further changes to this section but offers additional responses to the noted concerns below.

During the GREEN CAC meeting the committee's recommendation for approval, based upon public comments received from CALBO representatives, modified the scope of the proposed changes by raising the area limit from 50,000 sq ft to 100,000 sq ft. to reduce the number of projects subject to these regulations. Other significant modifications to the proposed language were brought forward at the 15-day comment period. BSC added required worksheets making verification of compliance the responsibility of the design professional of record and provided references to Sections 702.2 and 703.1 which authorize the enforcing agency to invoke, at their discretion, the special inspection provisions of CALGreen Chapter 7 Section 702.2 and/or the verification provisions of Section 703.1.

BSC also notes that the Division of the State Architect (DSA) has a centralized Learning Management System which is used for the purpose of educational webinars available to the public. BSC will coordinate with DSA to make learning content addressing Carbon Reduction regulations available for these purposes.

The WBLCA option has been developed as a performance pathway that enables practitioners to demonstrate embodied carbon reduction through a broader range of strategies compared to the prescriptive pathway. The carbon benefits that can be quantified in a Cradle-to-Grave but not a Cradle-to-Gate LCA include: durable materials that need to be replaced less often, systems that can more easily be disassembled, highly recyclable materials such as steel or aluminum, bio-based materials as the carbon sequestration occurring during the material's growth phase and building reuse cannot be included in the LCA unless end-of-life outcomes are modeled for this carbon flow.

Guidance for reasonable assumptions on the use phase and end-of-life phase and steps for validation of the EPDs and data required for WBLCA can be found in ISO standards, which are referenced in the proposed regulations.

Data received from the Rocky Mountain Institute (RMI) and AIACA estimated that compliance with the WBLCA option would increase the professional service fee by \$10,000 to \$15,000 per project. Using the average per square foot construction costs, \$10,000 to \$15,000 of the overall project cost for a 50,000 square foot building is 0.0675 percent. When complying with the product GWP compliance-prescriptive path, an analysis by the Assembly Appropriations Committee indicates that businesses with concrete mixing plants may incur anywhere from \$12,500 to \$28,700 in initial costs of obtaining an EPD and ongoing membership fees of \$2,400 to \$6,180, depending on the number of concrete mixing plants a business is seeking to have analyzed. These costs would be spread across all non-residential projects statewide resulting in a negligible increase per project. Data was not provided by the glazing, steel, or mineral wood board industries but these industries have been required to provide EPDs for State projects through the Buy Clean California program beginning in 2018.

BSC also notes that CARB expressed support of the proposed regulations during the GREEN CAC meeting. The proposed CALGreen changes support the stated intent of AB 2446 which states in Section 1(a)12: "There is momentum at the federal and state levels to decarbonize the building sector. California can continue to be a leader on

climate by taking early steps to measure and reduce the embodied carbon of building materials.”

ITEMS 11, 12 and 15

Chapter 5 NONRESIDENTIAL MANDATORY MEASURES,

Division 5.4 – MATERIAL CONSERVATION AND RESOURCE EFFICIENCY,

Section 5.409 LIFE CYCLE ASSESSMENT

Chapter 8 COMPLIANCE FORMS, WORKSHEETS AND REFERENCE MATERIAL

Additional 15-day changes to mandatory Carbon Reduction related measures – Whole Building Life Cycle Assessment pathway and Product GWP compliance prescriptive pathway. Additional 15-day changes to Worksheets related to proposed Carbon Reduction related measures.

Commenter(s) and Recommendation:

Brady Guertin – California Building Officials (CALBO).

CALBO submits the following questions and concerns for the record to consider as CBSC looks at implementing the proposed regulations:

- CALBO is concerned that the proponents are not considering the structural safety implications of new technology in the built environment.
- CALBO would like to better understand why the proposed regulations use a cradle-to-grave measurement for LCA instead of a cradle-to-gate measurement.
- CALBO would like an explanation of how field verification will work. In Items 15-1 through 15-6 is there a consideration to include a field verification attestation to verify that the Responsible Designer visited the construction site and verified the material?
- CALBO would like an explanation of why BSC is not considering a more measured approach for embodied carbon by having the Division of the State Architect (DSA) roll out the proposed regulations first. Since DSA will move forward with the original proposal of 50,000 square feet for DSA occupancies, would it be more practical to pause BSC’s application of Life Cycle Assessment in its entirety until the 2025 Triennial Cycle?

Agency Response:

BSC acknowledges the comment and notes that the comment does not pertain to the proposed additional 15-day text modifications. BSC also notes that these concerns have been addressed during initial development of the proposed regulations and in subsequent refinements including additional 15-day language modifications. Upon further review, BSC is proposing no further changes to this section but offers additional responses to the noted concerns below. Concerns relating to Cradle-to-Gate measurement and field verification are addressed in the responses to the above comment made by Mr. Raymer.

The proposed regulations do not supersede the California Building Code structural requirements, so the materials specified by the project teams are required to meet all code requirements including structural performance.

The proposed embodied carbon reduction regulations are a result of a joint effort for projects withing BSC and DSA authorities to have mandatory regulations with reasonable triggers. That has been the intent during precycle and throughout the rulemaking process. BSC has implemented a measured approach, reducing the number of projects subject to these regulations to buildings 100,000 sq ft and larger. The BCCA has already had requirements for State buildings which served as a basis for the BSC proposal. Pausing to allow DSA to “roll-out the proposed regulations” does not fulfill the intended purpose for occupancies under BSC authority of reducing Greenhouse Gas (GHG) emissions from building construction statewide, as stated in the Initial Statement of Reasons, nor would it require practitioners or agencies not involved in school design to familiarize with the requirements. The proposed regulations are a measured first step in reducing GHG and embodied carbon emissions from buildings constructed in California.

ITEMS 11 and 25

Chapter 5, Section 5.409

Appedix A5, Section A5.409

Additional 15-day changes to mandatory Carbon Reduction related measures – Whole Building Life Cycle Assessment pathway and voluntary measures – Whole Building Life Cycle Assessment pathway and Product GWP compliance prescriptive pathway.

Commenter(s) and Recommendation:

Michael Cudahy – PPFA,

Recommends **Further Study Required** for Sections 5.409.2, A5.409.2.1, A5.409.2.2. Consider including operational energy component in the WBLCA methodology – the long use phase of the building, where a majority of energy and environmental impacts may occur.

Agency Response:

BSC acknowledges the comment and notes that the comment does not pertain to the proposed additional 15-day text modifications. Upon further review, BSC is proposing no further changes to this section.

BSC also notes that the WBLCA methodology which is one of the options for compliance neither reduces or replaces requirements for energy conservation and operational energy management in conformance with the California Energy Code. Embodied carbon considerations are supplementary to operational energy considerations, not supplanting them. Also, excluding operational energy from the calculation eliminates teams’ ability to trade operational energy savings for embodied carbon.

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.

CBSC has determined that no reasonable alternative considered by CBSC or that has otherwise been identified and brought to the attention of CBSC would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law.

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).

No alternatives were identified to lessen the adverse impact on small business. The CBSC has determined that the proposed regulations will have no adverse impact on small businesses.