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Air Resources Board

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TO: Fred Aguiar, Secretary
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FROM: Mary D. Nichols
Chairman

DATE: November 12, 2009

SUBJECT: ARB COMMENTS ON PROPOSED REVISIONS TO THE CALIFORNIA
GREEN BUILDING STANDARDS CODE MEASURES

We are writing in support of the proposed revisions to the California Green Building Standards Code (Code) scheduled for consideration at the January 2010 meeting of the Building Standards Commission. The proposed Code would substantially strengthen the 2008 Code, and would provide key measures that support the goals of the State's Greenhouse Gas Reduction and Building Energy Efficiency Programs, as well as promote healthful indoor and outdoor air quality.

As you may be aware, the Air Resources Board approved California's landmark Climate Change Scoping Plan in December 2008, and we are now initiating the many actions needed to implement the Plan. Green building actions are a critical component of the Scoping Plan, and they are essential to efficiently and cost-effectively meeting the 2020 and 2050 targets for greenhouse gas (GHG) emissions reduction.

We appreciate your and your staff's extensive work to strengthen the Code both within the mandatory and voluntary provisions. A number of the new measures included in the proposed Code are at the forefront of State green building codes, including the use of "cool roofs"; water efficient and energy efficient plumbing and appliances; and building materials, architectural coatings, and consumer products with very low chemical

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

Mr. Fred Aguiar
Ms. Lynn Jacobs
November 12, 2009
Page 2

emissions. By providing voluntary “reach” standards, the proposed Code offers model language for local governments to adopt more advanced measures beyond the Code’s required measures. These voluntary standards also provide the opportunity to demonstrate the technical feasibility and cost-effectiveness of measures that may become part of all new construction in the future. Finally, the proposed Code incorporates verification measures to better confirm compliance with both mandatory requirements and voluntary measures.

We especially appreciate the additional time and effort taken by your staff to strengthen the voluntary Tiers as we requested, and believe that the performance-based measures proposed will help move us forward in achieving our statewide GHG and energy reduction goals.

There are a few requested revisions listed in the attached document. We believe these can be incorporated through a 15-day comment period. Most are minor refinements or corrections. The requested additions to strengthen the verification of compliance with the voluntary Tiers are important to ensure that the benefits of these measures are fully realized.

Thank you again for your agency’s extensive work on the proposed revisions to the Codes. We estimate that the proposed mandatory measures will reduce greenhouse gas emissions by about 3 million metric tons carbon dioxide equivalent (MMTCO₂E) in 2020 and that the proposed voluntary measures may add significantly to this amount, depending on the extent to which the voluntary measures are adopted and verified by local governments. We appreciate your consideration of our remaining comments in the attached document, and look forward to your successful approval and implementation of a strong Green Building Standards Code for California in January.

If you have any questions or need further information, please feel free to contact Bart Croes, Chief of the Research Division at (916) 323-4519, or bcroes@arb.ca.gov. For staff level clarifications of the detailed comments in the attached document, contact Ms. Peggy Jenkins at (916) 323-1504, or mjenkins@arb.ca.gov.

Attachment

cc: See next page.

Mr. Fred Aguiar
Ms. Lynn Jacobs
November 12, 2009
Page 3

cc: Dave Walls
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Indoor Exposure Assessment Section

ATTACHMENT

California Air Resources Board (ARB) Staff Comments
Green Building Standards Code
Proposed Express Terms: Revised October 2, 2009

California Building Standards Commission – Non-Residential Buildings

A. Greenhouse Gas and Energy Efficiency Related Comments

1. **5.106.5.2 Designated Parking.** Please update the ranges for total number of parking spaces in Table 5.106.5.2 to be consistent with the ranges included in the voluntary measures. At least 1 designated space for a clean air vehicle should be required in a parking lot with 10-25 spaces. One space represents 8% of the midpoint (17) of 10-25 parking spaces and is half of the voluntary Tier 1 threshold. Additionally, at least 3 designated spaces should be required in a parking lot with 26-50 spaces. Three spaces represent 8% of the midpoint (38) of 26-50 parking spaces and it is lower than the voluntary Tier 1 threshold.

Table 5.106.5.2

Total Number of Parking Spaces	Number of Required Spaces
0-9	0
10-25	1
26-50	3
51-75	6
76-100	8
101-150	11
151-200	16
201 and over	At least 8% of total

2. **A5.106.11.2 Cool Roof.** There is a typo in the Tier 1 “Climate Zone” column of Table A5.106.11.2.1. Please update the table to include climate zone 16 for roofs with a slope greater than 2:12 and a weight less than 5 lbs/ft². This would ensure that the Tier 1 thresholds are consistent with the prescriptive compliance path for cool roofs in the Title 24 Energy Code, Part 6.
3. **A5.303.2.2 Tier 3 – 40% Water Savings (Indoor).** There are no other “Tier 3” voluntary measures in the nonresidential code. ARB staff recommends deleting Tier 3 from the section title and keeping this threshold as an elective voluntary measure. This change would follow the format of the Outdoor Water Use section where there is a Tier 1 threshold to reduce the use of potable water by 50%, Tier 2 threshold to reduce the use of potable water by 60%, and an elective measure to eliminate potable water use outdoors entirely.

4. **Verification of Compliance with Tiers.** Please add the following language to each of the relevant voluntary measures in the tiers to ensure they are verified:
 - a. **Cool Roof:** Special inspection shall be conducted to ensure roofing materials meet cool roof aged solar reflectance and thermal emittance or SRI values.
 - b. **Outdoor Water Use:** A calculation demonstrating a 50% or 60% reduction in the “water budget” developed pursuant to section 5.304.1 shall be provided.
 - c. **Construction Waste Recycling:** A copy of the completed waste management report shall be provided.

5. **5.102 Definitions.** Please update the definitions of zero emission vehicle and high efficiency vehicles. Advanced technology PZEV should be designated as (AT PZEV) and High Occupancy Vehicle (HOV) should replace the term Single-Occupant Vehicle (SOV) as follows.
 1. “Zero emission vehicle (ZEV), including neighborhood electric vehicles (NEV), partial zero emission vehicle (PZEV), advanced technology PZEV (AT PZEV), or CNG fueled (Original equipment manufacturer only) regulated under Health and Safety Code section 43800 and CCR, Title 13, sections 1961 and 1962.

 2. “High efficiency vehicles, regulated by US EPA, bearing ~~Single-Occupant Vehicle (SOV)~~ **High Occupancy Vehicle (HOV)** car pool lane stickers issued by the Department of Motor Vehicles”.

B. Indoor Air Quality and Miscellaneous Comments

6. **5.410.3.3.1 HVAC Balancing.** P. 30 first line should read “...the system shall be balanced...” not “should”, since balancing is required.

7. **5.504.2 IAQ Post-construction.** The 14-day equivalent of outdoor air volume is not specific regarding how it should be calculated. Add the following text to no. 5: “The equivalent of 14 days of maximum outdoor air shall be calculated by multiplying the maximum feasible air flow rate (in ft³/min) by the time in 14 days (20,160 min), to yield a target air volume for the flush-out (in ft³). The air volumes for each period are then calculated and summed, and the flush out continues until the total equals the target air volume.” Also, in no. 5, the sentence is missing some words, and should read “...flush-out air volume must total the equivalent of....”

8. **5.504.4.3 Paints and Coatings.** “Architectural paints and coatings shall comply...unless local limits apply.” should read “...unless more stringent local limits apply.” Also, note that footnote 3 for Table 5.504.4.3 (Architectural Coatings) should be revised to match HCD’s footnote 3, which is preferable.

9. **5.504.4.3.1 Checklist.** P. 83, at the end of the sentence after the word “substances”, insert the phrase “of California Code of Regulations, Title 17, commencing with section 94520.”

10. **5.504.4.4.2 Checklist.** P. 83, Table 804.4.1 should be corrected to read “Table 5.504.4.1.”
11. **5.504.4.6 Resilient Flooring.** P. 36 bottom, add FloorScore program website to the Note.
12. **5.504.4.6 Resilient Flooring.** P. 84, Checklist does not specify 50% as the mandatory level of compliance.
13. **A5.504.4.7.1 Resilient Flooring.** P. 84, Checklist should indicate 90%, not 100% (to be consistent with p. 69).
14. **Section A5.504 Pollutant Control.** Please add statements requiring documentation of meeting the Tier VOC-related requirements, e.g. for sections A504.4.5.1 (formaldehyde), A5.504.4.7 and A5.504.4.7.1 (resilient flooring), A5.504.4.8 and A5.504.4.8.1 (thermal insulation), similar to the requirements for commercial buildings in HCD’s Express Terms.

Department of Housing and Community Development – Residential Buildings

A. Greenhouse Gas and Energy Efficiency Related Comments

1. **A4.1.6.2.3 Topsoil Protection.** This voluntary measure is identified as a Tier 1 prerequisite in Section A4.6.2, “Residential Occupancies Application Checklist.” Please label this as a Tier 1 voluntary measure in Appendix A4.
2. **A4.1.6.2.4 No Disturbance Areas.** This voluntary measure is identified as a Tier 2 prerequisite in Section A4.6.2, “Residential Occupancies Application Checklist.” Please label this as a Tier 2 voluntary measure in Appendix A4.
3. **A4.1.6.5 Cool Roof.** There are a few typos in the Tier 1 Table A4.1.6.5(1). Please update the table to limit the first row climate zones to 13 & 15 for roofs with a slope less than or equal to 2:12. Also, update the table to limit the climate zones to 10-15 for roofs with a slope greater than 2:12 and a weight less than 5 lbs/ft². Please update the third row to specify the roof weight is greater than or equal to 5 lbs/ft². This would ensure that the residential Tier 1 thresholds are consistent with the prescriptive compliance path for cool roofs in the Title 24 Energy Code, Part 6. In both tiers, please update the tables to ensure that the first row includes a roof slope of less than or equal to 2:12.
4. **A.4.3.3.2 Dishwashers in Tier 2 buildings.** Please update the Tier 2 threshold to include both the Tier 1 criteria for low-flow kitchen faucets and the requirement for Energy Star dishwashers. This would ensure that Tier 2 increases in stringency beyond Tier 1. It is also additive rather than providing an either/or option. Also, consider updating the titles for both Tier 1 and Tier 2 with something more general such as “A4.3.3.1 Tier 1,” and “A4.3.3.2 Tier 2.”
5. **Verification of Compliance with Tiers.**
Please add the following language to each of the relevant voluntary measures in the tiers to ensure they are verified.
 - a. **Cool Roof:** Special inspection shall be conducted to ensure roofing materials meet cool roof aged solar reflectance and thermal emittance or SRI values.
 - b. **Outdoor Water Use:** A calculation demonstrating a 50% or 60% reduction in the “water budget” developed pursuant to section 5.304.1 shall be provided.
 - c. **Construction Waste Recycling:** A copy of the completed waste management report shall be provided.
6. **Division A4.6 – Tier 1 and Tier 2.** Please summarize the prerequisites and electives for tiers similar to the BSC formatting. Currently, the prerequisites for the tiers can only be found when reviewing the 18 pages of the application checklist. The requirements for Tier 1 and Tier 2 should be listed as a summary so that it is clear at a glance what is included in each tier.

B. Indoor Air Quality and Miscellaneous Comments

7. **4.5.4.2.3, Aerosol Paints.** Missing from checklist.
8. **A4.5.4.2, A4.5.4.3, Notes.** Notes for each of these includes a statement that "Documentation must be provided that verifies...meet the pollutant emission limits in sections." These are good requirements for verifying compliance with the Tier measures. However, the end of these sentences should be "...emission limits in this section." Or, it should refer to that specific section.
9. **4.5.4.2.3 Aerosol Paints and Coatings.** This new mandatory section needs to be added to the checklist. Suggest the following language: "*Aerosol paints and coatings shall be compliant with product-weighted MIR limits for ROC and other toxic compound limits.*"