CABEC
California Association of Building Energy Consultants

December 17, 2007

Commissioner Jackalyne Pfannenstiel
Commissioner Arthur H. Rosenfeld, Ph.D.
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

**Re: 2008 Standards 45-Day Language**

Dear Commissioners Pfannenstiel and Rosenfeld:

Since its inception in 1986, the California Association of Building Energy Consultants has been a staunch and reliable supporter of the state's Building Energy Efficiency Standards and the Energy Commission. We remain so, and would like to offer our general support of the 2008 Standards 45-day language. However, our support is qualified by some serious concerns we will explain.

On the positive side:

- There are major incremental changes in energy efficiency contained in the 2008 standards which we believe are good and cost-effective improvements which will move the state closer toward the goals of AB 32.

- We appreciate the fact that several Commission staff members have taken significant time responding to comments by individual CABEC members and to requests by the CABEC Standards Committee. Although we still have difficulty with the lack of clarity and the overall complexity of the standards (outlined below), and although staff rejected a number of our suggestions, many recommendations also were accepted and incorporated into the standards.

- An informal advisory group comprised of CABEC members, CALBO members and CEC staff has worked effectively since June to improve the 2008 Certificates of Compliance and the Residential Installation Certificates for better compliance and enforcement.

- The 2008 ACM Manuals are being completed early enough in this code cycle so that ACM vendors will have beta versions of their 2008 energy software available to interested parties well before the effective date of the new standards.

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We acknowledge that Staff and consultants have put a significant effort into developing the voluminous 45-day 2008 standards documents (Standards, Appendices and ACM Manuals); and the fact that the Compliance Manuals are still to come.

Notwithstanding all the above, however, we believe it is essential to point out that there are problems that must yet be addressed for the standards to function effectively. It is probably best to divide the following comments into three categories: (a) serious flaws in the overall process of standards development, and the kinds of problems this has created; (b) the types of standards measures that should be clarified in the 2008 Compliance Manuals and forms while time remains before the Manuals are released; and (c) how the standards process should be conducted under the next code cycle to help avoid these pitfalls.

***How the Process Failed -- and the Resulting Consequences***

In several interactions with Staff, we asked: "Tell us in plain English what you intend the policy to be in this section?" Staff never really answered the question, but kept referring us to the latest proposed draft language to study. A good example of this is Section 149 and Section 152 which cover alterations and additions. I challenge you, as Commissioners, to read these sections (without staff present to coach you) and understand what they mean. How is the building industry going to understand them? Staff will tell you "the Compliance Manuals will explain them." Unfortunately, the Compliance Manuals are not revised until later. How are we, trying to understand and review 45-day language, able to grasp what the real intent is in difficult sections without first reading a clear overview or description of the changes? Perhaps the legal language must, by necessity, end up convoluted. We might be able to accept that. But without knowing the intent, and without understanding the basis for that intent, we and other stakeholders cannot judge whether the language is correct or not, effective or not, good policy or not.

In some instances, a very well-meaning staff member inserted language or deleted language to fix a perceived problem. Unfortunately, there was no organized stakeholder peer review process in which we (a) were told what the perceived problem was, (b) were told what the proposed solution was, (c) had an opportunity to agree or disagree that the problem was real and significant and needed to be fixed, (d) had an opportunity to determine whether staff's solution created even more serious problems (i.e., unintended consequences), and (e) had an opportunity to propose alternative solutions that, as a group, we believed would be more effective in solving the problem. Since the release of 45-day language, we have worked furiously with some success in the past several weeks to mitigate what we see as several serious bloopers. But in 1200 pages of documents, we cannot be certain that we've caught them all.

Only after the release of all 45-day language can someone read through all those documents to see if all pieces of the puzzle fit together. Looking at draft standards language before that point is useless in understanding the whole picture. But when one finally can identify a serious lack of consistency or necessary coherence between, for example, the standards definitions section and the Administrative section and the ACM Manuals – it's too late to make any essential "substantive" changes! This is the great Catch-22 of standards development.

***What Can Be Done for the 2008 Standards?***

It is widely accepted within CABEC, CALBO and the building industry that the 2005 Compliance Manuals are not well organized or well written for the different audiences that must read them. If there is no available funding or time left to completely re-write them at this point (see *Next Standards* below), then we strongly advocate the following:

(1) Use a peer review process to quickly identify what sections are most unclear or inadequate;

(2) Do the same in identifying new 2008 standards language or sections that are especially confusing;

(3) Focus on writing concise and clear summaries and descriptions and/or instructions with respect to the above topics or standards sections;

(4) Have the peer review process study the draft Compliance Manual revisions to see if they are doing the job;

(5) Continue the process until the Compliance Manuals are deemed at least "acceptable" by the peer review group;

(6) Do the same for the compliance forms and acceptance/installation forms which have not yet been revised and reviewed by the existing working group;

(7) Working in conjunction with utility companies and the building industry, ensure that all building departments receive appropriate training on plan review and field inspection before the standards take effect;

(8) Institute a combination monitoring and training program similar to the one that the Commission instituted in the 90s that was conducted on-site at the local level; and,

(9) After the 2008 standards have been in effect for six months, hold a Workshop to identify outstanding problems in the implementation, compliance and enforcement of the standards.

We would urge the Commission to delay the effective day of the standards a few months, if needed, to ensure that there is adequate time for items 1 through 7 to be properly undertaken and completed.

Please refer to the attached Appendix which lists specific remaining items that we would like staff to address, several which can be dealt with in 15-Day language.

***What Should be Done in Developing the Next Standards?***

- Early on, publish a list of any and all perceived problems in standards language, definitions, policies, procedures or methods that you'd like the next standards to fix; and list of all new policies, procedures, methods you'd like the new standards to incorporate. In short, put your cards on the table.

- Hold a stakeholder peer review and Workshop in which the Commission takes comments on that list, and listen carefully to what people deeply involved in implementing the standards on a daily basis have to say about it.

- Have all consultant contracts involved in standards development require that 5% of the funding go to paid peer review of implementation, compliance and enforcement issues associated with any work.

- Have all proposals for new technologies, efficiency requirements, procedures and rules (e.g., brought to the Commission by the utility companies), also include a detailed implementation, compliance and enforcement plan that can be reviewed as well – and reviewed early on.

- Introduce "90-Day" language which gives all stakeholders enough time to carefully review and consider all relevant documents, and the ways in which those documents must work together to create effective standards. Then also have "45-Day" and "15-Day" language in the timeline for necessary revisions.

- Provide enough funding and time in the process for the Compliance Manuals to be re-written by well-qualified technical writers; re-organize the Manuals, also with peer review input, to address the different audiences and needs of those who must use the Manuals: building designers, energy analysts, plan checkers, field inspectors, installers, utility company personnel. Consider the creation of different Volumes of the Manuals for different groups, so that each audience only has to read and interact with, say, 50 or 100 pages of material, instead of finding relevant information in 400 pages.

- Re-think the standards language from the ground-up with the goal of greater simplicity and clarity, especially with respect to the myriad and unbelievably complex conditional (if/then) requirements of various prescriptive options. A flowchart of what compliance options are available under what design and permit scenarios, and what exceptions are also available under which conditions, will highlight the enormity of the problem. Perhaps an on-line, public domain software program that lets users interactively input increasing levels of information about a particular project could clarify standards scope, compliance options and requirements in a real-time tutorial. But the overall complexity of the 2008 standards, without addressing it in the next code cycle, will continue to be a obstacle to compliance and enforcement of the standards and remain a significant barrier to reaching the state's AB 32 goals by 2020.

CABEC is firmly committed to working with the Commission and all stakeholders in significantly improving the standards and the extent to which the building industry can and does comply with them. We hope that you will take our comments in that spirit. We realize that the Commission is not adequately staffed and may not have sufficient resources to do everything that we are recommending. However, we believe that many of the issues we've raised can be addressed with current staffing levels if the Commission understands the importance of improving the process. We sincerely hope that the Commission moves in the direction that we have outlined here.

Yours truly,

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*Appendix w/ 12-17-07 CABEC Letter to the California Energy Commission*

# ISSUES WITH 2008 TITLE 24 STANDARDS, 45 DAY LANGUAGE

Due to lack of time and resources, the following is not an exhaustive review of the 45 day language. The focus was mainly on sections that CABEC had previously commented on.

- There was insufficient time to review staff proposed Standards language before the 45 Day language publication date. And the 45 Day review period is too short, and too restrictive as to what can be altered, to allow for effective feedback from stakeholders. For the next Standards cycle, the CEC ought to issue 90 Day Standards, which would allow stakeholders sufficient time to understand the full scope of changes and new initiatives. This future 90 Day language cycle should be much more open to modifications than the current 45 Day language cycle is.

- Section 101(b) Definitions:
  1. **BUILDING** is any structure or space covered by Section 100 of the Building Energy Efficiency Standards. ~~for which a permit is sought~~.

     Striking "for which a permit is sought" eliminates crucial language that helps clarify the portion of the "building" that Standards language applies to. This phrase was added in the 1992 Standards at CABEC's request to make it absolutely clear that *Title 24 compliance and documentation applies only to the portion or components of the building which are covered by a specific permit*. In years prior to the 1992 Standards there was considerable confusion about what was meant by the "building".

  2. **FENESTRATION PRODUCT, SITE-BUILT** is fenestration designed to be field-glazed or field assembled units using specific factory cut or otherwise factory formed framing and glazing units that are manufactured with the intention of being assembled at the construction site and are provided with an NFRC label certificate for site-built fenestration. Examples of site-built fenestration include storefront systems, curtain walls, and atrium roof systems.

     Two errors: a) NFRC certification is not required; b) "Site-built" fenestration is often not assembled at the project site, but rather at the glazing contractor's shop.

     Note: Same issues at JA-1 Glossary definition of "Fenestration Product, Site-Built" and "Site-Built Fenestration".

  3. **MANUFACTURED FENESTRATION PRODUCT** is a fenestration product constructed of materials which are factory cut or otherwise factory formed with the specific intention of being used to fabricate a fenestration product. A manufactured fenestration product is typically assembled before delivery to a job site.

     This definition would apply to many "site-built" fenestration assemblies. Would suggest changing 2nd sentence to: **A manufactured fenestration product is typically factory-assembled before delivery to a job site.**

- 116(a)2 and 3: 10,000 square foot exemption is supposed to only apply to "site-built" fenestration, not site-built and skylights. Skylights are either "manufactured", "site-built", or "field-fabricated", just like windows.

- 116(a)5 Fenestration Acceptance Requirements. NA7 states that whomever is taking responsibility for fenestration acceptance must verify that installed fenestration is consistent with the compliance documentation and the plans. This will necessitate that building enforcement agencies confirm the compliance documentation is correct, and that it is consistent with the plans. Further, compliance forms will need to more clearly articulate the requirements, and locations, for each fenestration type.

- Table 116A and Table 116B note: 1. Translucent or transparent panels shall use glass block values. What are "translucent or transparent panels", and what are "glass block values"?

- 118(g) Insulation Requirements for Heated Slab Floors. Covers on-grade and raised, but points to Table 118-B which is labeled as for "on-grade".

- 144(g) Exception 4 reads:
  **EXCEPTION 4 to Section 144(g)**: Where the total capacity of all electric-resistance heating systems serving the building, excluding those allowed under Exception 2, is no more than 3 kW.

  Is the 3kW exception supposed to apply to any tenant improvement? If it is only supposed to apply to entire buildings, the exception should read:
  **EXCEPTION 4 to Section 144(g)**: Where the total capacity of all electric-resistance heating systems serving the **entire** building, excluding those allowed under Exception 2, is no more than 3 kW.

- Table 146-C: The 2005 version provides greater automatic daylight control PAF's for variable dimming systems than for stepped dimming systems at vertical glazing daylit areas. The 45 day language completely eliminates any control credit distinction between these two different control technologies. Efforts to reach staff to determine whether this is intentional, or an oversight, have been unsuccessful.

- Section 149:
  a) Exception 2 is unclear. Could be erroneously construed mean that additional electric heat may not exceed 150% of existing electric heat.
  **EXCEPTION 2 to Section 149 (a):** Where an existing system with electric reheat is expanded by adding variable air volume (VAV) boxes to serve an addition, total electric reheat capacity may be expanded **so that the total capacity does** not ~~to~~ exceed 150 percent of the existing installed electric heating capacity in any one permit and the system need not comply with Section 144 (g). Additional electric reheat capacity in excess of 50 percent may be added subject to the requirements of the Section 144 (g).

b)1.A.i.i. Exception 1 should be stricken. CABEC had suggested that high-rise residential and hotel/motel envelope changes be subject to the prescriptive envelope requirements, including fenestration area limits, similar to 152(b)1. Hence we also advocated a small new glazing area exemption from the fenestration area limits, just as 152(b)1 does. Because our proposed high-rise residential prescriptive envelope compliance was not accepted, there is no reason to include Exception 1.

c)1.A.i.i. Exception 2. Reference should be149 b)1.A.i.i., not 149(b)A.(i)

- 149(b)2.B. Incomplete sentence. What about "the existing plus alteration."?

- Section 150(k)8 and 9. Lighting in Kitchens. A new note under subsection 8 explains that the 50% high efficacy lighting rule excludes internal cabinet lighting that only illuminates the inside of cabinets. New subsection 9 provides an extra allowance for inside cabinet lighting, but makes no mention that the lighting must be for illuminating only the inside of the cabinet. Therefore, it appears that one can take the extra inside cabinet lighting wattage allowance, and use glass doors so that this light helps light the room. But according to subsection 8, this lighting would need to be counted against the 50% rule, even though it's an extra allowance.

  To fix this conflict, in subsection 9, either require that the inside cabinet lighting be controlled by an automatic system (for example, a switch activated by opening and closing the cabinet doors), or provide the inside cabinet lighting allowance only when the cabinet doors are not light-transmitting.

- Section 152:
  152(a)2.B. Wording in the last sentence is mangled. The sentence should be corrected, as follows:
  When determining the standard design, the fenestration area shall be the smaller of the sum of 20 percent of the conditioned floor area of the addition plus glass removed from the existing building **as a result of the construction of the addition,** or the proposed glass area in the addition ~~as a result of the construction of the addition~~.

  152(b)2.B. Incomplete sentence. What about "the existing plus alteration."?

THANKS FOR MAKING SEVERAL CHANGES THAT CABEC RECOMMENDED, INCLUDING:

- 100(f) Mixed Occupancy (liberalizing the exception for combining occupancies, while requiring every occupancy to meet it's own lighting requirements).
- Factoring in the typical portable lighting contribution into the Complete Building LPD, eliminating the current requirement that open office floor area be calculated.
- Adding "Classroom Building" to Complete Building types.
- 118(g) clarification that all heated slab floors, raised as well as on-grade, must be insulated (with reservation mentioned above).