DOCKETED

Docket Number:	17-BSTD-02
Project Title:	2019 Title 24, Part 6, Building Energy Efficiency Standards Rulemaking
TN #:	222832
Document Title:	Icynene Comments On 2019 Building Energy Efficiency Standards 45-Day Language
Description:	N/A
Filer:	System
Organization:	Icynene
Submitter Role:	Public
Submission Date:	3/2/2018 1:29:47 PM
Docketed Date:	3/2/2018

Comment Received From: Icynene
Submitted On: 3/2/2018
Docket Number: 17-BSTD-02

On 2019 Building Energy Efficiency Standards 45-Day Language

Additional submitted attachment is included below.

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March 2, 2018

CALIFORNIA ENERGY COMMISSION
Attention: Docket No. 17-BSTD-02
Dockets Office
1516 Ninth Street, MS-4
Sacramento CA 95814

Re: 2019 Building Energy Efficiency Standards 45-Day Language Comments

Icynene appreciates the opportunity to be part of the process of commenting on the 2019 Building Energy Efficiency Standards (BEES) 45-Day Language. We support existing CEC staff recommendations as currently written in 45-day language, with some exceptions as noted:

SUBCHAPTER 7

1. Ceiling and Rafter Roof Insulation. Section 150.0(a) 1; Current wording: Shall be insulated to achieve a weighted average U-factor not exceeding U-0.043 or shall be insulated between wood-framing members with insulation resulting in an installed thermal resistance of R-22 or greater for the insulation alone. For vented attics, the mandatory insulation shall be installed at the ceiling level; for unvented attics, the mandatory insulation shall be placed at either ceiling or roof level; and
   Comment: Energy efficient unvented attics in US climate zones 1 through 4 have been widely built with R-19 insulation at the roof level. R-19 insulation at the roof level is a very constructible approach for 2x4 and 2x6 roof assemblies. Performance path analysis has indicated that R-22 insulation at the roof level results in a negligible energy cost savings benefit. With the prescriptive below deck roof insulation proposed to be increased to R-19 (Table 150.1-A), setting the mandatory insulation for unvented attics to R-19 would result in a consistent R-value at this insulation area, thereby aiding code enforcement/compliance activities.
   Recommendation: In section 150.0(a) 1, lower mandatory insulation for unvented attics to R-19 at the roof level.

2. Ceiling and Rafter Roof Insulation. Section 150.0(a) 2.; Current wording: Attic access doors shall have permanently attached insulation using adhesive or mechanical fasteners. The attic access shall be gasketed to prevent air leakage.
   Comment: Gasketing of attic access, for air leakage control, between unvented attic and conditioned space is not necessary since an unvented attic is considered within the building thermal envelope (2016 CRC section 806.5). Gasketing of attic access adds to construction costs and provides no hygrothermal performance benefit for unvented attic construction. Indirect conditioning of the unvented attic becomes more difficult when gasketing of attic access occurs.

Recommendation: In section 150.0(a) 2, provide exception to gasketing of attic access for unvented attic construction.

3. Recessed Downlight Luminaires in Ceilings. Section 150.0(k) 1.C. iii; Current wording: Be sealed with a gasket or caulk between the luminaire housing and ceiling, and shall have all air leak paths between conditioned and unconditioned spaces sealed with a gasket or caulk; Comment: Gasketing or caulking of recessed downlight luminaires, for air leakage control, between unvented attic and conditioned space is not necessary since unvented attic is considered within the building thermal envelope (2016 CRC section 806.5). Gasketing or caulking of recessed downlight luminaires adds to construction costs and provides no hygrothermal performance benefit for unvented attic construction. Indirect conditioning of the unvented attic becomes more difficult when gasketing or caulking of recessed downlight luminaires occurs.
   Recommendation: In section 150.0(k) 1.C. iii, provide exception to gasketing or caulking of recessed downlight luminaires for unvented attic construction.

4. Air-Distribution and Ventilation System Ducts, Plenums, and Fans. Section 150.0(m)1.B.ii; Current wording: a minimum installed level of R-4.2 when the duct system is located entirely in conditioned space as confirmed through field verification and diagnostic testing in accordance with the requirements of Reference Residential Appendix RA3.1.4.3.8
   Comment: Unvented attics should be considered as conditioned space when location of duct system is concerned since unvented attic is considered within the building thermal envelope (2016 CRC section 806.5).
   Recommendation: In section 150.0(m) 1.B.2, provide notation that duct system within unvented attic construction can have minimum installed insulation level of R-4.2.

5. Add Section 150.0(s) Building Air Leakage; Current wording: Not applicable.
   Comment: Mandatory air leakage requirements exist in the 2015 IECC section R402.4 for newly constructed buildings. The requirement specifies that building shall be tested and verified as having an air leakage rate not exceeding three air changes per hour in US Climate Zones 3 through 8.
   Recommendation: Create section 150.0(s), or other suitable section location, for Building Air Leakage requirement. In section include mandatory air leakage requirements for newly constructed buildings. Specify that all buildings shall be tested and verified as having an air leakage rate not exceeding three air changes per hour.

SUBCHAPTER 8

6. Framed Exterior Above Grade Walls. TABLE 150.1-A; Proposed Table values: Maximum U-factor of 0.048 in climate zones 1 through 5, and 8 through 16.

Comment: Current U-factor of 0.051 is commonly achieved with R-5 continuous (exterior) insulation and R-19 stud cavity insulation. To meet a U-factor of 0.048, a likely approach, due to cost effectiveness, would be to increase stud cavity insulation to R-21 while maintaining R-5 continuous insulation. There is a negligible energy cost savings benefit to this construction approach.
Recommendation: In TABLE 150.1-A, for framed exterior above grade walls, maintain maximum U-factor of 0.051 in climate zones 1 through 5, and 8 through 16.

Residential Appendix RA

7. Definitions. Section RA3.5.2; Current wording: Below are example materials meeting the air permeance testing performance levels of 1 above.
   -- Closed cell spray polyurethane foam with a minimum density of 2.0 pcf and a minimum thickness of 2.0 inches
   -- Open cell spray polyurethane foam with a minimum density of 0.4 to1.5 pcf and a minimum thickness of 5½ inches
   Comment: Air barrier material definitions for open cell and closed cell spray polyurethane foam also exist in 2015 IECC section C402.5.1.2.1. Icynene considers the definitions in that document to be more representative of the performance characteristics of the noted spray foam materials.
   Recommendation: In section RA3.5.2, change definition of spray foam materials meeting the air permeance testing performance levels to:
   -- Closed cell spray polyurethane foam with a minimum density of 1.5 pcf and a minimum thickness of not less than 1.5 inches
   -- Open cell spray polyurethane foam with a minimum density of 0.4 to1.5 pcf and a minimum thickness of not less than 4.5 inches

8. Roof/Ceilings RA3.5.6.3 (g); Current wording: All recessed light fixtures that penetrate the ceiling shall be listed for zero clearance insulation contact (IC), have a label that certifies it as airtight with leakage less than 2.0 cfm @ 75 Pa when tested to ASTM E283, and shall be sealed with a gasket or caulk between the light's housing and the ceiling.
   Comment: In unvented attic construction it is common practice that the insulation is not in contact with recessed light fixtures since insulation is installed at the roof level and recessed light fixtures are at the ceiling level. This situation makes clearance and airtightness requirements for such fixtures unnecessary. Gasketing or caulking of recessed light fixtures luminaires adds to construction costs and provides no hygrothermal performance benefit for unvented attic construction. Indirect conditioning of the unvented attic becomes more difficult when gasketing or caulking of recessed light fixtures occurs.
   Recommendation: In RA3.5.6.3 (g), provide exception to all requirements for unvented attic construction.

If there any questions regarding these comments and recommendations do not hesitate to contact me.

Yours truly,

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Engineering Manager

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