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CABECâ€™s Support for the California Energy Commissionâ€™s 2019 Building Energy Efficiency Standards

Additional submitted attachment is included below.

CABEC
California Association of Building Energy Consultants

May 7, 2018

California Energy Commission
Docket Office, MS-4
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RE: CABEC's Support for the California Energy Commission's 2019 Building Energy Efficiency Standards

Dear Commissioners:

The California Association of Building Energy Consultants (CABEC) is a trade organization representing California's energy consulting industry. We support the adoption of the 2019 Title 24, Part 6 Standards. CABEC appreciates the hard work of the California Energy Commission Staff and their significant efforts to thoughtfully consider comments submitted in this rulemaking, and the subsequent revisions made to the 45-day language's requirements.

CABEC would like to encourage the California Energy Commission to consider making the following revisions which have been identified by the Statewide Codes & Standards Compliance Improvement Team. The recommended code language revisions included in this document are identified in orange, with recommended language insertions double underlined and language deletions are ~~double struck~~.

Recommended Revisions

1.1 High Performance Windows and Doors

Table 110.6-A: Section 110.6(a)2 states that the U-factor of exterior door shall be rated according to NFRC 100 or designers shall use the applicable default U-factor in Table 110.6-A. However, Table 110.6-A does not include a default U-factor for opaque doors. This will cause confusion and make compliance difficult for those who install non-rated exterior opaque doors. Since the U-factor requirement is not spelled out for these door types, this requirement is unenforceable as currently written. By including the U-factor requirements for these door types, code compliant doors can be more easily specified by designers as well as improving building departments' ability to verify compliant doors, both resulting in real energy savings.

It is recommended that a default U-factor be provided for opaque exterior doors by adding footnote 5.

TABLE 110.6-A DEFAULT FENESTRATION PRODUCT U-FACTORS

FRAME	PRODUCT TYPE[5]	SINGLE PANE [3,4] U-FACTOR	DOUBLE PANE [1, 3, 4] U-FACTOR	GLASS BLOCK [2,3] U-FACTOR
Metal	Operable	1.28	0.79	0.87
	Fixed	1.19	0.71	0.72
	Greenhouse/garden window	2.26	1.40	N.A.
	Doors	1.25	0.77	N.A.
	Skylight	1.98	1.30	N.A.
Metal, Thermal Break	Operable	N.A.	0.66	N.A.
	Fixed	N.A.	0.55	N.A.
	Greenhouse/garden window	N.A.	1.12	N.A.
	Doors	N.A.	0.59	N.A.
	Skylight	N.A.	1.11	N.A.
Nonmetal	Operable	0.99	0.58	0.60
	Fixed	1.04	0.55	0.57
	Doors	0.99	0.53	N.A.
	Greenhouse/garden windows	1.94	1.06	N.A.
	Skylight	1.47	0.84	N.A.

1. For all dual-glazed fenestration products, adjust the listed U-factors as follows:
    a. Add 0.05 for products with dividers between panes if spacer is less than 7/16 inch wide.
    b. Add 0.05 to any product with true divided lite (dividers through the panes).
2. Translucent or transparent panels shall use glass block values when not rated by NFRC 100.
3. Visible Transmittance (VT) shall be calculated by using Reference Nonresidential Appendix NA6.
4. Windows with window film applied that is not rated by NFRC 100 shall use the default values from this table.
5. Exterior doors with less than 25 percent glazing shall have a default U-factor of 0.50.

1.2 Healthcare Facilities

Healthcare requirements refer to "Chapter 7 of the California Administrative Code (Title 24 Part 1)" using inconsistent terminology in the following sections:

- Title 24 Part 1 10-103(a) refers to "Chapter 7," but does not specify a resource.
- Title 24 Part 6 Section 120.8 refers to "Healthcare facilities shall instead comply with the applicable requirements of Chapter 7 of the California Administrative Code (Title 24, Part 1)."

Inconsistent references and terminology use among the Standards results in compliance issues since guidance is not clearly stated for building departments. Consistent references to requirements will make it easier for building departments to improve code compliance and energy savings.

In every instance of Chapter 7 throughout the Standards, it is recommended to use the following: Chapter 7 of the California Administrative Code (Title 24, Part 1)

1.3 Residential Indoor Air Quality

Section 120.1(b)1Biii: Section not numbered and as a separate requirement for a separate class of equipment needs a clearer definition. This advances the numbering of subsection 120.1(b)1Biii to iv, and iv to v.

ii. ~~The~~All systems shall be designed to accommodate the clean-filter pressure drop imposed by the system air filter (s). The design airflow rate, and maximum allowable clean-filter pressure drop at the design airflow rate applicable to each air filter ~~device~~ shall be determined and reported on labels according to subsection iv below.

iii. Ducted mechanical conditioning ~~S~~systems specified in Section 120.1(b)1Ai shall be equipped with air filters that meet either subsection a or b below:

Section 150(m)12D: Several sentences lack verbs.

i. The maximum allowable clean-filter pressure drop shall be determined by the system design for the nominal two-inch minimum depth air filter required by Section 150.0(m)12Biia, or

ii. A maximum of 25 PA (0.1 inches water) clean-filter pressure drop shall be allowed for a nominal one-inch depth air filter sized according to Section 150.0(m)12Biib, or

iii. For systems specified in 150.0(m)12Aii, and 150.0(m)12Aiii, the maximum allowable clean filter pressure drop shall be determined by the system design.

Section 150.0 (o)2: The numbering for this section should be "2" not "12".

~~12.~~ 2. **Field Verification and Diagnostic Testing.**

1.4 Nonresidential Indoor Air Quality

Throughout Section 120: The Statewide CASE Team recommends that instead of referencing sections of ASHRAE 62.1 and ASHRASE 62.2, the actual code requirements from the ASHRAE standards be replicated in Title 24, Part 6. Specifically, the minimum ventilation airflow rates and rated sound requirements should be explicitly stated in the code language. The ASHRAE Standards are not a code document but a third-party standard that is not a free and easily accessible resource to the stakeholders of California. Stakeholders often find this to be a barrier to compliance since a fee is required to access the code requirement, resulting in enforcement issues when requirements are not met. Specific requirements for code applicability of ASHRAE should be included in the code language rather than referencing the ASHRAE standards since it will reduce complexity and provide clear direction on code requirements.

In the following are instances where the ASHRAE 62.1 and 62.2 requirements should be replicated in Title 24, Part 6

Section 120.1(b)2Aii

ii. Continuous operation of central forced air system air handlers used in central fan integrated ventilation systems is not a permissible method of providing the dwelling unit ventilation airflow required ~~in~~ (Section 4 of ASHRAE Standard 62.2).

Sections 120.1(b)2Avi and 120.1(b)2Biia

vii. Kitchen range hoods shall be rated for sound *[enter required sound rating here]* ~~in accordance with~~ Section 7.2 of ASHRAE 62.2.

EXCEPTION to Section 120.1(b)2Avii: Kitchen range hoods may be rated for sound at a static pressure determined at working speed as specified in HVI 916 Section 7.2.

vii. Compliance with ASHRAE 62.2 Section 6.5.2 (Space Conditioning System Ducts) shall not be required.

viii. Compliance with ASHRAE 62.2 Section 4.4 (Control and Operation) shall require manual switches associated with dwelling unit ventilation systems to have a label clearly displaying the following text, or equivalent text: "This switch controls the indoor air quality ventilation for the home. Leave it on unless the outdoor air quality is very poor."

B. High-Rise Residential Dwelling Unit Acceptance.

i. Airflow Performance. The dwelling- ~~unit~~ ventilation airflow required by Section 120.1(b)2Aiv or 120.1(b)2Av~~Section 4 of ASHRAE Standard 62.2~~ shall be confirmed through field verification and diagnostic testing in accordance with Reference Nonresidential Appendix NA7.18.1.

ii. Kitchen Range Hoods. The installed kitchen range hood shall be field verified in accordance with Reference Nonresidential Appendix NA7.18.1 to confirm the model is rated by HVI to comply with the following requirements:

a. The minimum ventilation airflow rate ~~is~~ *[enter required rate here]*, specified in Section 5 of ASHRAE 62.2.

Section 120.1(g): The Statewide CASE Team recommends providing guidance on what the (4) air classifications represent, specifically adding air classification definitions as table notes in Tables 120.1-A/B/C notes since that will match how other sections of code approach defining classes In tracked changes of the 45-day language that we provided to the Commission, we recommended providing these as a definition in section 100.0(b), which is another viable option.

Table 120.1-A – Minimum Ventilation Rates [Continued]

Occupancy Category	Area Outdoor Air Rate R_a cfm/ft^2	Min Air Rate for DCV[b] cfm/ft^2	Air Class	Notes
Office Buildings				
Breakrooms	0.50	0.15	1	
Main entry lobbies	0.50	0.15	1	F
Occupiable storage rooms for dry materials	0.15		1	
Office space	0.15		1	F
Reception areas	0.15		1	F
Telephone/data entry	0.15		1	F
Miscellaneous Spaces				
Bank vaults/safe deposit	0.15		2	F
Banks or bank lobbies	0.15		1	F
Computer (not printing)	0.15		1	F
Freezer and refrigerated spaces (<50°F)	-		2	E
General manufacturing (excludes heavy industrial and process using chemicals)	0.15		3	
Pharmacy (prep. Area)	0.15		2	
Photo studios	0.15		1	
Shipping/receiving	0.15		2	B
Sorting, packing, light assembly	0.15		2	
Telephone closets	0.15		1	
Transportation waiting	0.50	0.15	1	F
Warehouses	0.15		2	B
All others	0.15		2	
Public Assembly Spaces				
Auditorium seating area	1.07[a]	0.15	1	F
Places of religious worship	1.07[a]	0.15	1	F
Courtrooms	0.19[a]	0.15	1	F
Legislative chambers	0.19[a]	0.15	1	F
Libraries (reading rooms and stack areas)	0.15		1	
Lobbies	0.50	0.15	1	F
Museums (children's)	0.25	0.15	1	
Museums/galleries	0.25	0.15	1	F

General:

[a] [1] Ra was determined ~~This value assumes~~ as being the larger of the area method and the default per person method. The occupant density used in the per person method was assumed to be one half of the maximum occupant load assumed for egress purposes in the CBC, ~~non-fixed seating~~ — ~~and uses the occupant density assumption in accordance with Section 120.1(c)3~~.

[b] ~~[1]~~ [2] If this column specifies a minimum cfm/ft^2 then it shall be used to comply with Section 120.1(d)4E.

AIR CLASSIFICATIONS:

CLASS 1 AIR is air with low contaminant concentration, low sensory-irritation intensity, and inoffensive odor.

CLASS 2 AIR is air with moderate contaminant concentration, mild sensory-irritation intensity, or mildly offensive odors (Class 2 air also includes air that is not necessarily harmful or objectionable but that is inappropriate for transfer or recirculation to spaces used for different purposes.)

CLASS 3 AIR is air with significant contaminant concentration, significant sensory-irritation intensity, or offensive odor.

CLASS 4 AIR is air with highly objectionable fumes or gases or with potentially dangerous particles, bioaerosols, or gases, at concentrations high enough to be considered as harmful.

Specific Notes:

A – For high-school and college libraries, the values shown for "Public Assembly Spaces – Libraries" shall be used.

B – Rate may not be sufficient where stored materials include those having potentially harmful emissions.

C – Rate does not allow for humidity control. "Deck area" refers to the area surrounding the pool that is capable of being wetted during pool use or when the pool is occupied. Deck area that is not expected to be wetted shall be designated as an occupancy category.

D – Rate does not include special exhaust for stage effects such as dry ice vapors and smoke.

E – Where combustion equipment is intended to be used on the playing surface or in the space, additional dilution ventilation, source control, or both shall be provided.

F – Ventilation air for this occupancy category shall be permitted to be reduced to zero when the space is in occupied-standby mode

Table 120.1-B – Minimum Exhaust Rates

[ASHRAE 62.1: TABLE 6.5]

Occupancy Category	Exhaust Rete, cfm/unit	Exhaust Rate, cfm/ft^2	Air Class	Notes
Arenas	-	0.50	1	B
Art classrooms	-	0.70	2	
Auto repair rooms	-	1.5	2	A
Barber shops	-	0.50	2	
Beauty and nail salons	-	0.60	2	
Cells with toilet	-	1.00	2	
Copy, printing rooms	-	0.50	2	
Darkrooms	-	1.00	2	
Educational science laboratories	-	1.00	2	
Janitor closets, trash rooms, recycling	-	1.00	3	
Kitchenettes	-	0.30	2	
Kitchens – commercial	-	0.70	2	
Locker rooms for athletic or industrial facilities	-	0.50	2	
All other locker rooms	-	0.25	2	
Shower rooms	20/50	-	2	G,H
Paint spray booths	-	-	4	F
Parking garages	-	0.75	2	C
Pet shops (animal areas)	-	0.90	2	
Refrigerating machinery rooms	-	-	3	F
Soiled laundry storage rooms	-	1.00	3	F
Storage rooms, chemical	-	1.50	4	F
Toilets – private	25/50	-	2	E
Toilets – public	50/70	-	2	D
Woodwork shop/classrooms	-	0.50	2	

AIR CLASSIFICATIONS:

CLASS 1 AIR is air with low contaminant concentration, low sensory-irritation intensity, and inoffensive odor.

CLASS 2 AIR is air with moderate contaminant concentration, mild sensory-irritation intensity, or mildly offensive odors. (Class 2 air also includes air that is not necessarily harmful or objectionable but that is inappropriate for transfer or recirculation to spaces used for different purposes.)

CLASS 3 AIR is air with significant contaminant concentration, significant sensory-irritation intensity, or offensive odor.

CLASS 4 AIR is air with highly objectionable fumes or gases or with potentially dangerous particles, bioaerosols, or gases, at concentrations high enough to be considered as harmful.

Notes:
A – Stands where engines are run shall have exhaust systems that directly connect to the engine exhaust and prevent escape of fumes.
B – Where combustion equipment is intended to be used on the playing surface, additional dilution ventilation, source control, or both shall be provided.
C – Exhaust shall not be required where two or more sides comprise walls that are at least 50% open to the outside.
D – Rate is per water closet, urinal, or both. Provide the higher rate where periods of heavy use are expected to occur. The lower rate shall be

SECTION 120.1 – REQUIREMENTS FOR VENTILATION AND INDOOR AIR QUALITY

Description	Air Class
Table 120.1-C – Airstreams or Sources	
Diazo printing equipment discharge *[ASHRAE 62.1:Table 5.16.1]*	4
Commercial kitchen grease hoods	4
Commercial kitchen hoods other than grease	3
Laboratory hoods	4[a]
Hydraulic elevator machine room	2

AIR CLASSIFICATIONS:

CLASS 1 AIR is air with low contaminant concentration, low sensory-irritation intensity, and inoffensive odor.

CLASS 2 AIR is air with moderate contaminant concentration, mild sensory-irritation intensity, or mildly offensive odors (Class 2 air also includes air that is not necessarily harmful or objectionable but that is inappropriate for transfer or recirculation to spaces used for different purposes.)

CLASS 3 AIR is air with significant contaminant concentration, significant sensory-irritation intensity, or offensive odor.

CLASS 4 AIR is air with highly objectionable fumes or gases or with potentially dangerous particles, bioaerosols, or gases, at concentrations high enough to be considered as harmful.

a. Air Class 4 unless determined otherwise by the Environmental Health and Safety professional responsible to the owner or to the owner's designee.

Section 120.1(c)3: We suggest adding the phrase, "that are not naturally ventilated per item 2 above" for additional clarity. We also suggest striking the phrase "to the zone" to make it clear that the mechanical ventilation outdoor airflow rates are being provided at the air handler rather than the zone, as per Title 24, Part 6 (2016).

3. **Mechanical Ventilation.** Occupiable spaces that are not naturally ventilated per item 2 above shall be ventilated with a mechanical ventilation system capable of providing an outdoor airflow rate (V_z) ~~to the zone~~ no less than the larger of A or B as described below:

Section 120.1(c)4: The Table reference is wrong. It should be Table 120.1-B (not D).

4. Exhaust Ventilation. The design exhaust airflow shall be determined in accordance with the requirements in Table 120.1-B ~~120.1-D~~. Exhaust makeup air shall be permitted to be any combination of outdoor air, recirculated air, or transfer air. [ASHRAE 62.1:6.5.1]

1.5 Nonresidential Indoor Lighting Alterations

Exception 5 to 141.0(b)2I: The Statewide CASE Team recommends that Exception 5 to 141.0(b)2I be rewritten to clarify that the intent of the exception is not to exempt simultaneous replacement of lamps and ballasts, as well as allow for various combinations of SSL sources to be exempted where appropriate. In our experience, this has been a source of confusion in the 2016 code cycle limiting the energy savings that could be garnered from lighting alteration projects in the State of California.

EXCEPTION 5 to Section 141.0(b)2I: ~~Any alteration limited solely to adding lighting controls or replacing lamps, ballasts, or drivers~~ Alterations where the luminaire housing is retained and lighting wattage is not increased for any of the following:

1. Alterations where only the lamp or only the ballast is replaced, or

2. Alterations where only an integrated LED lamp or CFL is replaced, or

3. Alterations where only a non-integrated LED lamp or only the LED driver is replaced, or

4. Alterations where an LED light engine or LED retrofit kit is replaced.

5. Any alterations strictly limited to addition of lighting controls.

Section 141.0(b)2Iiii: The 15-day language adds a square foot limitation for lighting alterations that makes the compliance method enumerated in Section 141.0(b)2Iiii difficult to enforce. Limiting this alteration method to 5,000 square feet or less would require such projects to identify the altered areas on a plan, which would mean significant added expense for the alteration. As currently written, building departments can only verify compliance by requiring lighting plans that identify areas being altered. Many lighting alteration projects do not have access to existing lighting plans so a consultant must be hired to draw up the floor plan and include the lighting reflected ceiling plan. This is an added expense that should be considered when establishing cost effectiveness to support this code change.

The Statewide CASE Team recommends removing the space limitation of 5,000 square feet, listed in Section 141.0(b)2Iiii below.

I. **Altered Indoor Lighting Systems.** Alterations to indoor lighting systems that include 10% or more of the luminaires serving an enclosed space shall meet the requirements of i, ii, or iii below:

i. The alteration shall comply with the indoor lighting power requirements specified in Section 140.6 and the lighting control requirements specified in Table 141.0-~~E~~F;

ii. The alteration shall not exceed 80% of the indoor lighting power requirements specified in Section 140.6, and shall comply with the lighting control requirements specified in Table 141.0-~~E~~F; or

iii. The alteration shall be a one-for-one luminaire alteration ~~within a building or tenant space of 5,000 square feet or less.~~ the total wattage of the altered luminaires shall be at least 40% lower compared to their total pre-alteration wattage, and the alteration shall comply with the lighting control requirements specified in Table 141.0-~~E~~F.

1.6 Nonresidential Outdoor Lighting Controls Alterations

Section 141.0(b)2Lii now contains code conflicts, because it was not revised to align with rewritten Section 130.2 and still contains references to 130.2 as written in the 2016 Title 24, Part 6 Standards. The Statewide CASE Team recommends revisions to Section 141.0(b)2Liib as they relate to the rewritten Sections 130.2(c)1, 2, and 3, listed below.

L. Alterations to existing outdoor lighting systems in a light application listed in TABLE 140.7-A or 140.7-B shall meet the applicable requirements of Section 130.0, 130.2(a), 130.2(b), and 130.4, and:

i. In alterations that increase the connected lighting load, the added or altered luminaires shall meet the applicable requirements of Section 130.2(c) and the requirements of Section 140.7 for general hardscape lighting or for the specific lighting applications containing the alterations; and

ii. In alterations that do not increase the connected lighting load, where the greater of 5 luminaires or 10 percent of the existing luminaires are replaced in a general hardscape or a specific lighting application, the alterations shall meet the following requirements:

a. In parking lots and outdoor sales lots where the bottom of the luminaire is mounted 24 feet or less above the ground, the replacement luminaires shall comply with Section 130.2(c)1 AND Section 130.2(c)3;

b. For all other lighting applications and where the bottom of the luminaire is mounted greater than 24 feet above the ground, the replacement luminaires shall comply with Section 130.2(c)1 AND EITHER comply with Section 130.2(c)~~2~~3 or be controlled by lighting control systems, including motion sensors, that automatically reduces lighting power by at least 40 percent in response to the are being vacated of occupants; and

EXCEPTION 1 to Section 141.0(b)2Liib: Luminaires with a maximum rated wattage of 40 watts each are not required to have motion sensing controls.

EXCEPTION 2 to Section 141.0(b)2Liib: Applications listed as Exceptions to Section 140.7(a) are not required to have motion sensing controls.

EXCEPTION 3 to Section 141.0(b)2Liib: Lighting subject to a health or life safety statue, ordinance, or regulation may have a minimum time-out period longer than 15 minutes or a minimum dimming level above 40 percent when necessary to comply with the applicable law.

1.7 Nonresidential Wattage Calculation

Section 130.0(c)2: The Statewide CASE Team is proposing two options of language to clarify this requirement. The first proposed language is the preferred clarification. However, if this change is too substantive for the 15-Day Language comment period, then the Statewide CASE Team believes the second proposed language adds important clarification without being a substantive change to the language.

Clarify requirements to allow JA8 lamp wattage to be used instead of the luminaire listed wattage. The team recommends this to be allowed for any luminaire containing a line voltage base. Unlabeled luminaires are not allowed unless they contain a JA8 lamp. Preferred proposed changes to language:

2. For luminaires with line voltage lamp holders not containing permanently installed ballasts or transformers,~~;~~ the wattage of such luminaires shall be determined ~~as follows~~ by either item A or B:
   A. The maximum rated wattage of the luminaire; as labeled in Section 130.0(c)1, or
   B. ~~For recessed luminaires with line-voltage medium screw base sockets, wattage shall not be less than 50 watts per socket, or~~ For luminaires containing only JA8 compliant light lamps which are marked "JA8-2019" or "JA8-2019-E", the luminaire wattage shall be the rated wattage of the installed JA8 compliant lamps.

Alternate language to Section 130.0(c)2: This is the second proposed language to clarify Section 130.0(c)2. The Statewide CASE Team developed this alternate language as a less substantive change for the 15-Day Language comment period. This proposed language provides satisfactory clarification, but is not the preferred change. Proposed changes to language:

2. For luminaires with line voltage lamp holders not containing permanently installed ballasts or transformers,~~;~~ the wattage of such luminaires shall be ~~determined as follows~~ the greater of the wattage in item A and B:
   A. The maximum rated wattage of the luminaire; as labeled in Section 130.0(c)1, and
   B. For recessed luminaires with line-voltage medium screw base sockets~~, wattage shall not be less than 50 watts per socket, or~~ if the luminaires contain only JA8 compliant lamps which are marked "JA8-2019" or "JA8-2019-E," luminaire wattage shall be the rated wattage of the installed JA8 compliant lamps; otherwise the luminaire wattage shall be 50 watts per socket.

1.8 Residential Lighting Standards

Section 150.0(k)1Cvi: Reference to the "JA8" label has been removed and replaced with language that references marking requirements in Joint Appendix 8 (JA8). The 2016 Title 24 Residential Standards simplified compliance by allowing designers, contractors, and inspectors to focus on a single metric as it applies to light emitting diode lighting: the "JA8" marking. The Statewide CASE Team believes references to the JA8 marking should be reinserted into this section to simplify compliance. Proposed changes to language:

C. Recessed Downlight Luminaires in Ceilings. In addition to complying with 150.0(k)1A, luminaires recessed into ceilings shall meet all of the following requirements:

i. Be listed, as defined in Section 100.1, for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and

ii. Have a label that certifies the luminaire is airtight with air leakage less than 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283. An exhaust fan housing shall not be required to be certified airtight; and

iii. 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; and

iv. For luminaires with hardwired ballasts or drivers, allow ballast or driver maintenance and replacement to be readily accessible to building occupants from below the ceiling without requiring the cutting of holes in the ceiling; and

v. Shall not contain screw base sockets.~~; and~~ ; and

~~vi. Shall contain light sources that comply with References Joint Appendix JA8, including the elevated temperature requirements, and that are marked "JA8-2016-E" as specified in Reference Joint Appendix JA8.~~

vi. Shall contain light sources that comply with Reference Joint Appendix JA8, including the elevated temperature requirements, and that are marked "JA8-2019-E" as specified in Reference Joint Appendix JA8.

Section 150.0(k)1G: Language has been stricken here that requires screw based luminaires to be marked with "JA8-2016-E". The Statewide CASE Team believes the intent of the language is to ensure screw based luminaires are labeled with the JA8 marking to make it easier for implementers of the residential Title 24 Standards to follow code. If this is the intent of the language, then the Statewide CASE Team proposes that the JA8 marking requirement be added back to the language. Proposed changes to language:

G. Screw based luminaires. Screw based luminaires shall ~~meet all of the following requirements:~~

~~i. The luminaires shall not be recessed downlight luminaires in ceilings; and~~

~~ii. The luminaires shall~~ contain lamps that comply with Reference Joint Appendix JA8~~; and~~

~~iii. The installed lamps shall be marked with "JA8-2016" or "JA8-2016-E" as specified in Reference Joint Appendix~~

~~JA8.~~, and be marked with "JA8-2019" or "JA8-2019-E".

EXCEPTION to Section 150.0(k)1G: Luminaires with hard-wired ballasts for high intensity discharge lamps.

Section 150.0(k)1H: The Statewide CASE Team believes the Energy Commission rewrote this section for simplification. However, we believe that the language can be further clarified by stating directly that light sources installed in enclosed or recessed luminaires need to be marked with "JA8-2019-E". The Energy Commission's proposed language implies that the implementers of the residential Title 24 Standards need to familiarize themselves with the elevated temperature and marking requirements in JA8.

Ceiling recessed luminaires are already covered by Section 150.0(k)1C.

The intent of the 2016 Title 24 Standard was to ensure that JA8 light sources are appropriate for enclosed and resources sources by requiring the "JA8-2019-E" markings (indicating elevated temperature testing had been completed) in these applications. The double negative in the 2016 code language was not good. For clarity it is desirable that the code language be is a parallel format as in Section 150.0(k)1C. Proposed changes to language:

H. ~~Light Sources in~~ Enclosed or Recessed Luminaires. Enclosed luminaires or recessed luminaires that are not ceiling recessed luminaires, shall contain ~~Lamps and other separable~~ light sources that are ~~not~~ compliant with the JA8 ~~elevated temperature requirements~~ and are marked "JA8-2019-E". ~~, including marked~~ing ~~requirements, "JA8-2016-E" shall not be installed in enclosed~~ or recessed ~~luminaires.~~

If it is desired to allow legacy light sources in these luminaires, then the following could be added.

Exception to Section 150.0(k)1H: Enclosed luminaires or recessed luminaires that are not ceiling recessed luminaires containing light sources listed as items 1-6 in the first column of table 150.0-A.

Table 150.0-A: The Statewide CASE Team recommends the following changes to Table 150.0-A to clarify what designers and building official should be looking for, namely the "JA8-2019" marking on all LED lamps and SSL luminaires. It also highlights that "JA8-2019-E" is suitable for enclosed and recessed luminaires. This will save a lot of time during the 2019 code education and training process. Proposed changes to language:

Table 2: Recommended changes to Table 150.0A

High Efficacy Light Sources
~~Luminaires installed with only the lighting technologies in this table shall be classified as high efficacy~~ Light sources shall comply with one of the columns below:

Light sources in this column other than those installed in ceiling recessed downlight luminaires are classified as high efficacy and are **not** required to comply with Reference Joint Appendix JA8	Light sources in this column ~~shall be~~ are only considered to be high efficacy if they are certified to the Commission as High Efficacy Light Sources in accordance with Reference Joint Appendix JA8 and ~~be~~ marked "JA8-2019" or "JA8-2019-E" (suitable for enclosed or recessed luminaires) as ~~meeting~~ required by JA8.

The CABEC Board of Directors, our Members and our Executive Director thank you for this opportunity to contribute to the 2019 Building Energy Efficiency Standards.

Respectfully,

Linda Pierce

Linda Pierce

CABEC Executive Director

Brian Selby

Brian Selby, Selby Energy Inc.

CABEC 2018 Board Chair