CAL SMACNA

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California Association Sheet Metal and Air Conditioning Contractors National Association

Ms. Martha Brook
California Energy Commission
Office of High Performance Buildings and Standards Development
1516 Ninth Street
Sacramento, CA 95814

Re: 45-Day Comment: Docket # 10-BSTD-01: 2013 Building Energy Efficiency Standards: Kitchen Ventilation

Dear Ms. Brook:

Thank you for your attention to the concerns of the California Association of Sheet Metal and Air Conditioning Contractors' National Association (CAL SMACNA) regarding the California Energy Commission's (CEC) proposed revisions to the Building Energy Efficiency Standards contained in the California Code of Regulations, Title 24, Part 6. As you know, we have been in frequent contact with you, your staff, and the firm Taylor Engineering, whose services the Energy Commission has retained as consultant.

CAL SMACNA is a non-profit trade association representing over 600 union sheet metal and air conditioning contractors who employ more than 25,000 men and women throughout the state of California. These contractors perform commercial and residential heating, ventilating, and air conditioning, manufacturing, and testing and balancing.

CAL SMACNA appreciates the time and thoughtfulness that CEC staff and Taylor Engineering have dedicated to our specific concerns. While some of our concerns have been assuaged through clarification, CAL SMACNA remains steadfastly opposed to two key revisions involving commercial kitchen ventilation. This letter reiterates the basis of our concerns and proposes amendments to the revisions that would address those concerns. We feel these amendments would help to achieve the most effective and practicable advancements in energy efficiency in kitchen ventilation by providing contractors with appropriate flexibility to provide quality installation and maintenance.

Please find attached our review of the two specified kitchen ventilation revisions, as well as our proposed amendments. We look forward to personally discussing these proposed revisions with you and your staff prior to the end of the comment period.

Sincerely,

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I. Short Circuit Hoods

The Energy Commission's proposed revision would prohibit replacement air introduced directly into the hood cavity of kitchen exhaust hoods from exceeding 10 percent of the hood exhaust flow rate.

Specifically, the revision would add Section 140.9(b)(1)(A) to read:

1. **Kitchen exhaust systems.**

    A. Replacement air introduced directly into the hood cavity of kitchen exhaust hoods shall not exceed 10% of the hood exhaust airflow rate.

CEC has explained that direct supply of greater than 10 percent in short circuit hoods can reduce capture and containment, requiring generally higher exhaust rates and higher room makeup rates to offset higher exhaust rates.

Our experience indicates, however, that the option to use short circuit hoods when appropriate serves property owners, designers, and contractors well in meeting unique challenges associated with kitchen ventilation. Further, our experience suggests quality contractors exercise the appropriate judgment and discretion when deciding whether to use short circuit hoods so as to avoid higher exhaust rates and higher room makeup rates. The infrequency of short circuit hoods is one indication of the high level of discretion that quality contractors apply. CAL SMACNA contractors' own direct experience with short circuit hoods is another indication.

Where short circuit hoods are in use by CAL SMACNA contractors, our contractors, along with property owners and designers, have generally found them to be the best option to suit their particular ventilation needs. Those needs typically include minimizing the energy costs and avoiding potential grease buildup that result from over-exhausting transfer air in some kitchen environments. In certain kitchen settings, short circuit hoods have demonstrated the potential to provide superior efficiency by minimizing removal of conditioned makeup air. In fact, numerous models that are commonly used in today's market, and approved by independent testing and certification organizations such as United Laboratories and the National Sanitation Foundation, have been shown in tests to supply up to 70 or 80 percent non-conditioned makeup air internally into the hood capture area.

Our experience and UL listings show CFMs can be decreased using short circuit hoods. For example, Captive Aire System's Model R Internal Compensating Hood uses up to 80 percent internal untempered makeup air with minimal removal of conditioned air from the kitchen area and a minimum exhaust CFM rate of 251; Model ND Exhaust Only Hood uses up to 90 percent makeup air supplied through optional rear plenum with an exhaust CFM rate of 150; Model SW Compensating Hood with Internal and Front Discharge uses up to 80 percent makeup air with a minimum exhaust CRM rate of 251. In some situations, where a designer and contractor choose to use short circuit hoods, this capability reduces heating and cooling costs of transfer air and more efficiently captures and contains grease and humidity.

Further, CAL SMACNA is not convinced that direct supply of makeup air leads to over-exhaust. Exhaust rates are prescribed by the California Mechanical Code based on square footage of the hood and type of cooking, among other factors. Whether a kitchen uses a non-short circuiting hood or short circuit hood, the exhaust rate does not change. That prescribed exhaust rate is based on multiple complex factors that contractors must take into account when determining what type of hood is right for a

particular kitchen. The fact that the mechanical code does not dictate whether the hood is short circuit or not short circuit allows contractors the appropriate leeway to adjust to multiple complex factors to achieve the required exhaust rate.

Additionally, CAL SMACNA believes that Taylor Engineering, in its Life-Cycle Analysis that supports the proposed revision, has incorrectly presumed that short circuit hoods automatically lead to higher rates of exhaust. The Life-Cycle Analysis, which was presented as part of CEC's presentation of the proposed revision, compares the costs of a non-short circuiting hood system with the costs of a short circuit hood system. However, the analysis arbitrarily doubles the exhaust from the short circuit hood relative to the non-short circuit hood. While CAL SMACNA is receptive to evidence that indicates short circuit hoods lead to higher exhaust, we find that the CEC's Life-Cycle Analysis, rather than producing and using such evidence, uses a simple presumption that short circuit hoods lead to exactly twice the exhaust relative to non-short circuit hoods. Because this flawed presumption underlies the proposed revision that effectively bans short circuit hoods, CAL SMACNA believes the proposal is not well-substantiated empirically.

In those relatively few kitchens that use short circuit hoods, CAL SMACNA believes reducing short circuit makeup air to 10 percent or less may require kitchens to condition the balance of the makeup air that is not directly introduced into the exhaust hood. Overall, this revision would significantly restrict the flexibility of quality contractors to use their judgment and discretion, in cooperation with property owners and designers, to meet each commercial kitchen's unique ventilation needs.

CAL SMACNA therefore proposes amending the CEC proposed revision to increase the proposed ceiling, from 10 percent to 50 percent, for replacement air to be introduced directly into the hood cavity of kitchen exhaust hoods:

1. Kitchen exhaust systems.

A. Replacement air introduced directly into the hood cavity of kitchen exhaust hoods shall not exceed ~~10%~~ *50%* of the hood exhaust airflow rate.

We believe this proposal will allow short circuit hoods, within reason, to be considered an option in appropriate situations for contractors to deliver energy-efficient commercial kitchen ventilation.

II. Transfer Air

The Energy Commission's proposed revision would prohibit mechanically cooled or heated makeup air delivered to any space with a kitchen hood from exceeding the supply flow required to meet the space heating and cooling load, or the hood exhaust flow minus the available transfer air from adjacent spaces, whichever is greater. "Available transfer air" is defined to mean that portion of outdoor ventilation air serving adjacent spaces not required to satisfy other exhaust needs, such as restrooms, not required to maintain pressurization of adjacent spaces, and that would otherwise be relieved from the building.

Specifically, the revision would add Section 140.9(b)(2) to read:

2. Kitchen ventilation.

A. Mechanically cooled or heated makeup air delivered to any space with a kitchen hood shall not exceed the greater of:

i. The supply flow required to meet the space heating and cooling load; or

ii. The hood exhaust flow minus the available transfer air from adjacent spaces. Available transfer air is that portion of outdoor ventilation air serving adjacent spaces not required to satisfy other exhaust needs, such as restrooms, not required to maintain pressurization of adjacent spaces, and that would otherwise be relieved from the building.

CAL SMACNA believes transfer air in the dining or restroom areas should not be used in substantial amounts to cool the preparation area. While we appreciate CEC's inquiry to reducing energy costs associated with cooling and heating makeup air, we are concerned that measures to capture what is defined as "available transfer air" would disrupt the air balance between the preparation area and dining area of commercial kitchen, contributing to possible customer discomfort, contamination of the cooking area, and inefficiencies that end up costing more in energy.

CAL SMACNA believes prudent kitchen ventilation is premised on a separation of the preparation area and dining area as two distinct environments. Breaking the seal between these environments with substantial air transfers could compromise customer comfort, sanitation, and energy efficiency. Although we understand CEC's attempt to reduce energy use by moving conditioned air from the dining area to the preparation area, CAL SMACNA believes this revision may require air transfers that are much too large and the large quantities of transferred air may have adverse effects that far outweigh whatever energy savings may accrue.

Title 24 and ASHRAE Standard 62 currently do allow air transfers from the dining area to the preparation area. However, the amount of these air transfers is typically calculated to avoid contamination of the preparation area and increased cooling load in the dining area, and generally is around 5 percent. CEC's proposal that a very large amount of air be transferred from the dining area to the preparation area using the required outside air from the air conditioning units, appears to neglect these priorities.

With regard to energy efficiency in particular, the part of the revision exempting dining areas that use these air transfers from demand-control ventilation requirements implies a tacit admission that air balance in the dining area would be significantly and unpredictably impacted.

At the least, this proposed revision by CEC to uniformly mandate that restaurants transfer very large amounts of air from the dining area to the preparation area, is without precedent. As such, it concerns CAL SMACNA that CEC has not produced a study showing that the proposal would not adversely affect the comfort, health, sanitation, and safety of customers and staff.

In addition to these potentially adverse effects of the revision, CAL SMACNA questions whether dining area air conditioners can substantially affect kitchen temperatures. The air that flows from the dining room air conditioning units to the preparation area would be approximately 75 degrees. Because a commercial kitchen requires a large quantity of air exhaust and makeup air due to the amount of heat and humidity produced during operation, dining area air conditioning units are unlikely to provide a substantial cooling effect to the kitchen. CAL SMACNA questions whether it is prudent to compromise

comfort of customers, sanitation of food, and efficiencies of air balance, for the minor, if any, cooling effect that these air transfer can provide.

CAL SMACNA also questions how, under this revision, air will flow from the dining area to the preparation area. While typical coffee shops have pass thru windows, too much air passing through will cool foods and potentially reduce customer satisfaction. Additionally, high-end and buffet restaurants tend to have very little open passage for air to transfer from the dining area to the preparation area.

CAL SMACNA wishes to emphasize that, while using transfer air as exhaust makeup is voluntarily common practice in certain types of restaurants, this does not make it appropriate to require this practice in every type of restaurant. For example, this practice is common in fast food restaurants because these types of restaurants characteristically provide dining space in a single large room where air flows are more predictable and easily regulated. In contrast, other types of restaurants may include multiple rooms, such as banquet halls, upstairs seating, and hallways that complicate attempts to channel "transfer air" to the preparation area without compromising comfort and sanitation. The scenario represented in CEC's proposed revision would impose a mandate on all restaurants, and thereby create significant potential for adverse effects on comfort, sanitation, and health, which apparently has not been analyzed nor considered in an official study by CEC.

CAL SMACNA therefore proposes an amendment to limit the transfer-air mandate to quick-service restaurants:

2. Kitchen ventilation.

A. ***In the case of restaurants qualifying as a Group B occupancy, pursuant to Section 303.1.1 of the 2012 International Building Code,*** ~~**M m**~~**echanically cooled or heated makeup air delivered to any space with a kitchen hood shall not exceed the greater of:**

i. The supply flow required to meet the space heating and cooling load; or

ii. The hood exhaust flow minus the available transfer air from adjacent spaces. Available transfer air is that portion of outdoor ventilation air serving adjacent spaces not required to satisfy other exhaust needs, such as restrooms, not required to maintain pressurization of adjacent spaces, and that would otherwise be relieved from the building.

In doing so, this amendment would limit the transfer-air mandate to a type of restaurant whose general operation has demonstrated it to be suitable for transferring large amounts of air from the dining area to the preparation area. In the absence of any studies to show that the extension of this practice to larger or more complex restaurants would not adversely impact comfort or sanitation, CAL SMACNA believes the transfer-air mandate should be limited to fast food restaurants.