



March 16, 2012

California Energy Commission
Attention: Docket #12-BSTD-01
Dockets Office
1516 Ninth St, MS-4
Sacramento, CA 95814

DOCKET	
12-BSTD-1	
DATE	<u>MAR 16 2012</u>
RECD.	<u>MAR 19 2012</u>

Subject: Baltimore Aircoil Company's Response to the 2013 Revisions to the California Building Energy Efficiency Standards, Title 24 Building Energy Efficiency Standards

Dear Energy Commissioner,

Baltimore Aircoil Company (BAC) is excited to witness and participate in the efforts of the California Energy Commission to increase energy and water efficiency for commercial buildings and the refrigeration industry. BAC also applauds the CEC's decision to establish minimum efficiency values for evaporative condensers, which to the best of our knowledge, is the first time such equipment has been included in any energy standard. Note that we are in agreement with the comments submitted by ASHRAE TC08.06 to the docket on March 15 and, as requested by the Technical Committee in their comments, BAC would like to suggest alternative minimum efficiency values for evaporative condensers.

BAC is in general agreement with the concerns relative to evaporative condenser requirements expressed by Daryn Cline of Evapco in a letter to the Commission dated March 8, 2012. We agree that the current proposed values in the 45-day language will have a negative impact on the industry through the removal of many evaporative



condenser models from the marketplace, the least efficient of which saves far more system and condenser fan energy than even the most efficient air cooled alternative.

On this basis, and recognizing that this is the first time minimum efficiency standards are being established for evaporative condensers in any energy code, BAC suggests lowering the required minimum efficiencies to more realistic starting levels, as previously proposed by Evapco in their docket for public comment:

Outdoor (axial fan) evaporative condensers: 225 Btuh/W

Indoor (centrifugal fan) evaporative condensers: 150 Btuh/W

Note: Efficiencies listed above at 100°F CT and 70°F WBT for all refrigerants

We estimate that the minimum efficiencies proposed above will eliminate up to 7% of the existing models from the marketplace. This new requirement will serve to educate the Refrigeration market on the need for greater energy efficiency while signaling all condenser manufacturers and suppliers on the necessity to increase the efficiency of their product lines for the 2016 standard and beyond. These more realistic levels will also help to prevent an unintended market shift to less energy efficient alternate condenser systems.

BAC also questions the decision to allow the use of air cooled condensers for ammonia condensing duty rather than limiting their use to hydrofluorocarbon refrigerant (HFCs) applications. Air cooled condensers are 4.66 times less efficient than evaporative condensers as previously explained by Evapco in their letter submitted to the docket. Allowing the use of air cooled condensers for ammonia duty, where they were not previously allowed, has the potential to significantly lower the overall efficiency of the refrigeration industry in California and contribute to higher peak loads experienced by utilities, which is opposite the goal of the Commission. We further believe that the non-



energy benefits, as stated in section 2(e) of the 2013 CASE for Refrigerated Warehouses, can be better achieved through the use of evaporative condensers than air cooled equipment.

In addition, BAC agrees with EVAPCO's arguments regarding the CASE study explained in their submitted letter to the docket. Specifically, the calculation of water consumption for the evaporative condenser in the CASE study is misleading and overestimated. It is critical that generic "rules of thumb" not be applied when calculating water use but instead a thorough analysis must be performed to calculate the true evaporation rate based on accurate load profiles, climactic data, and sound psychometric calculations. The actual evaporation rate is typically significantly lower than that calculated by these simplistic methods, which in turn reduces the calculated blowdown required to maintain the highest cycles of concentration possible for the given materials of construction. Because the actual water use, which is the sum of the evaporation and blowdown values, is significantly lower than indicated in the CASE study, the justification for allowing air cooled condensers for ammonia service is greatly reduced.

On this basis, BAC respectfully requests that the restriction on the use of air cooled condensers for ammonia applications be maintained in the standard, or at minimum, a system size limitation, similar to the current Title 24 limitation on air cooled condensers, be implemented. Should the latter path be chosen, we would suggest such a limitation be set at 150 tons based on the lower temperature duties encountered in refrigeration service and thus higher energy consumption of the compression equipment.

The modified language is shown below for the two cases:



Maintain exclusion of air cooled condensers for ammonia service:

Page 125, Paragraph 120.6 (4) (A) – undelete the statement and re-number or letter the subsequent paragraphs in this section

~~*A. Condensers for systems utilizing ammonia shall be evaporatively cooled.*~~

Or, alternatively:

Limitation on the use of air cooled condensers for ammonia service:

Page 125, Paragraph 120.6 (4) (A) – undelete the statement and modify text

~~*A. The use of air cooled cCondensers for systems utilizing ammonia shall be ~~evaporatively cooled~~limited to a maximum of 150 tons of refrigeration.*~~

Lastly, while we agree with all of the changes recommended by TC08.06 in their docket posting, BAC would like to further suggest that evaporative condensers also be included in the water saving requirements found in paragraph 110.2 (e). These water saving measures apply equally well to open circuit cooling towers, closed circuit cooling towers, and evaporative condensers. The modified text is shown below:

Page 75, Paragraph 110.2

~~*(e) Evaporative or Open and Closed Circuit Cooling Towers and Evaporative Condensers. All evaporative or open and closed circuit cooling towers and evaporative condenser installations shall comply with the following:*~~

BAC fully supports the intent of Title 24 and the mission of the California Energy Commission. We look forward to working with you on finalizing the 2013 Standard as well as future energy saving initiatives and the promotion of independent third party



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certification in the refrigeration industry. Please feel free to contact me at the number or email below to discuss our concerns and suggestions.

Sincerely,

A handwritten signature in black ink that reads "Preston Blay". The signature is written in a cursive style.

Preston P. Blay, LEED AP, P.E.

Director, Refrigeration

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TC08.06