



## JB ENGINEERING AND CODE CONSULTING, P.C.

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JULIUS A. BALLANCO, P.E.  
President

December 1, 2017

IAPMO Board of Directors  
The IAPMO Group – West Building  
4755 E. Philadelphia St  
Ontario, CA 91761

Gentlemen:

Re: Petition to Board of Directors regarding Appeal of UMC Item 144

**Petition Item:** UMC Item Number 144, Public Comments #1, #2, and #3

**Submitter of Petition:** Julius Ballanco, P.E., Chair, A2L Task Group

**Submitter's Representation:** A2L Task Group, JB Engineering and Code Consulting, P.C., and Daikin U.S.

**Action Being Sought:** Correction to Section 1104.0 of the 2018 Uniform Mechanical Code

It is with a heavy heart that I am filing this petition to the Board of Directors regarding the appeal to UMC Item 144. Since IAPMO switched to the ANSI process, I have not filed a petition with the Board of Directors regarding any changes to the Uniform Plumbing Code nor Uniform Mechanical Code. Hence, I do not take this process lightly and am only filing this petition because of an egregious error that I believe can do harm to IAPMO and the Uniform Mechanical Code. I believe it is important to correct this error that has occurred so as to not besmirch the 2018 Uniform Mechanical Code.

On October 16, 2017, I filed an appeal with the Standards Council to UMC Item Number: 144, Public Comments #1, #2, and #3. The public hearing for this appeal was held on November 15, 2017. The presentation to the Standards Council was made by David Calabrese, Esq. Senior Vice President, Government Affairs, Deputy General Manager, for Daikin US. I participated remotely via telephone.

The Standards Council rejected the appeal, stating their reasons in a letter, dated November 21, 2017. Thus, this petition to the Board of Directors is timely.

I identified two main procedural errors in my original appeal to the Standards Council. Both procedural errors were dismissed by the Standards Council as not being errors. The reason for this petition is because I believe the Standards Council was incorrect in stating that the procedural errors were not errors. I contend that they were errors and, as a result, will do harm to the Uniform Mechanical Code.

## **Background**

Because of the large number of code changes that were submitted regarding low global warming potential refrigerants, the acting Chair of the Mechanical Technical Committee formed an A2L Task Group, which I chaired. The A2L Task Group submitted a number of public comments to the Uniform Mechanical Code in order to update the Uniform Mechanical Code on the requirements for low global warming potential refrigerants classified as Group A2L.

The A2L Task Group proceeded with the understanding that the Mechanical Technical Committee was interested in updating the Uniform Mechanical Code to address all of the issues related to A2L low global warming potential refrigerants. As such, the public comments were coordinated as a complete package.

At the meeting in Anaheim, California, I presented the report of the A2L Task Group. In my written report, I included the following: **One of the difficulties faced by the Task Group was the fact that ASHRAE SSPC 15 had not yet completed their updating of ASHRAE 15 regarding A2L refrigerants. As a result, the Task Group developed public comments based on what was perceived to be consistent with the actions of ASHRAE SSPC 15.** (Emphasis added)

*The discussion on A2L refrigerants was subdivided into two main subject matters: use of refrigerant for human comfort and installation in a machinery room. In order to properly address the use of A2L refrigerants for human comfort, the Task Group reviewed the actions of CANENA WG10, the Committee developing an update to UL 60335-2-40. This is the standard that regulates refrigerant equipment such as air conditioning air handlers.*

*Public comments were necessary to sections of the code that specifically address the allowable refrigerants for human comfort. This included Table 1104.1. A public comment to this section is consistent with two of the proposed changes regarding the use of A2L refrigerant for human comfort.....*

*The Task Group eventually developed 10 public comments to 5 items. Some public comments were subdivided to make it easier for the Technical Committee to review. **However, these public comments are intended to work together with an anticipated acceptance of all parts.** (Emphasis added)*

It was my belief and the A2L Task Group's belief that it had to be made clear to the Mechanical Technical Committee that the public comments regarding low global warming A2L refrigerants worked as a package. If the complete package was not accepted, the result could be inconsistent, uncorrelated changes to Chapter 11 of the Uniform Mechanical Code. Unfortunately, that is what has occurred with the actions of the Mechanical Technical Committee, membership vote, and decision of the Standards Council.

One of the first public comments, which was accepted, was to Section 1103.1 and 1103.1.1. The new text that will appear in the 2018 Uniform Mechanical Code will read, as follows: (I have underlined the new text to identify the changes between the 2015 and 2018 editions of the Uniform Mechanical Code.)

**1103.1 Classification of Refrigerants.** Refrigerants shall be classified in accordance with Table 1102.2 **or in accordance with ASHRAE 34 where approved by the Authority Having Jurisdiction.**

**1103.1.1 Safety Group.** Table 1102.2 classifies refrigerants by toxicity and flammability, and assigns safety groups using combinations of toxicity class and flammability class. For the purposes of this chapter, the refrigerant Groups A1, A2L, A2, A3, B1, B2L, B2, and B3 shall be considered to be individual and distinct safety groups. Each refrigerant is assigned into not more than one group.

With this change, two new groups of refrigerants are identified - A2L and B2L. It should be noted that ASHRAE 34 has made a change to expand the groups of refrigerants to include A2L and B2L as separate groups, however, this change has yet to be published.

With the acceptance of the change to Section 1103.1.1, there would be automatic changes to the code unless the A2L Task Group took necessary action to address those issues, which they did. One of the key issues was the allowance for refrigerants of a given group to be used in high probability systems. A high probability system is a direct system whereby the refrigerant tubing is in direct contact with the air used for breathing (and human comfort). These are the common air conditioning systems used in a home or residence.

Section 1104.6 identifies which refrigerants CANNOT be used in high probability, direct systems. The section in the 2015 Uniform Mechanical Code reads:

**1104.6 Applications for Human Comfort and for Nonindustrial Occupancies.** In nonindustrial occupancies, Group A2, A3, B1, B2, and B3 refrigerants shall not be used in high probability systems for human comfort.

By expanding the number of refrigerant groups, A2L and B2L would become allowable for high probability systems, similar to A1 refrigerants, unless a change occurred to Section 1104.6.

UMC Item 144, Public Comment 3 would correct this automatic acceptance of A2L and B2L refrigerants. The public comment proposed the following:

**1104.6 Applications for Human Comfort and for Nonindustrial Occupancies.** In nonindustrial occupancies, Group A2, A3, B1, B2, B2L, and B3 refrigerants shall not be used in high probability systems for human comfort. Group A2L refrigerants used in high probability systems for human comfort in nonindustrial occupancies shall not exceed the limits specified in Table 1102.2, and shall only be used in equipment that is listed and labeled in accordance with Section 903.1 for the specific A2L refrigerant.

The purpose of the public comment was to restrict B2L refrigerants from being used in high probability systems, similar to the requirements in the 2015 Uniform Mechanical Code. Furthermore, it was the intent of the A2L Task Group to allow the use of A2L refrigerants, provided necessary safety measures were taken, to be used in high probability, direct systems.

In Anaheim, California, at the Mechanical Technical Committee meeting, the Committee was under the assumption that by rejecting Public Comment #3, that A2L refrigerants would not be permitted to be used in high probability systems for human comfort. In fact, the opposite occurred.

By rejecting Public Comment #3, both A2L and B2L refrigerants would be permitted in high probability systems for human comfort without any additional safety precautions.

If the Mechanical Technical Committee did not want to allow the acceptance of A2L refrigerants for high probability, direct systems, they should have accepted the public comment with modifications. The modification could have been, as follows:

**1104.6 Applications for Human Comfort and for Nonindustrial Occupancies.** In nonindustrial occupancies, Group A2L, A2, A3, B1, B2, B2L, and B3 refrigerants shall not be used in high probability systems for human comfort.

If such a change had been accepted, Group A2L refrigerants would not be permitted for high probability, direct systems, nor would Group B2L refrigerants be permitted for this application. However, such a modification was never discussed nor proposed.

By the end of the meeting on the first day, the Mechanical Technical Committee realized the error of their ways in the votes on Item 144's three public comments. Rather than risk recalling the vote on the public comments, members of the Mechanical Technical Committee recommended that I correct the errors at the Annual Conference in Anchorage, Alaska. While that attempt was made, the membership either did not understand or did not care to correct the errors.

Public Comment #1 to Item 144 included additional safety requirements applicable to high probability, direct systems using A2L refrigerants. Public Comment #2 revised Table 1104.1, which lists the acceptable refrigerant groups for each type of system based on occupancy classifications. The purpose of Public Comment #2 was to coordinate Section 1104.6 with Table 1104.1 identifying where Group A2L refrigerants can be used.

If the Board of Directors takes no action, Section 1104.6 would allow the use of Group A2L and B2L refrigerants in high probability, direct systems, without any additional safety limitations. Table 1104.1 would limit the use of A2L and B2L refrigerants to certain use groups for high probability, direct systems.

### **Violation of Procedures**

I identified two violations of procedures in my appeal to the Standards Council. First, the justification statements for rejecting UMC Item 144, Public Comments #1, #2, and #3 were improper. Second, a change is being made to the code without benefit of justification. Both are violations of IAPMO and ANSI procedures.

Improper Justification: The justification statement for rejecting UMC Item 144, Public Comment #3 is: *Addendum D of ASHRAE 15 was not completed at the time of this public comment.*

This justification statement is improper and does not follow the requirements of the *Regulations Governing Committee Projects*. Furthermore, the justification statement is inconsistent with the action taken by the Mechanical Technical Committee.

Having been a member of the Plumbing Technical Committee for 17 years, I have gone through training by the IAPMO staff on the proper means of developing a justification statement. This is a part of the training required for each Technical Committee member. The reason for this special

training is to assure that the consensus process is being followed and due consideration is given to each item.

The statement, *Addendum D of ASHRAE 15 was not completed at the time of this public comment*, is not applicable because there is no reliance on the acceptance of draft Addendum d by the ASHRAE SSPC 15. To the contrary, the A2L Task Group clearly stated that Addendum d was not completed, nor did the Task Group rely on the completion of Addendum d.

The report from the A2L Task Group, which I was responsible for writing, clearly stated, “One of the difficulties faced by the Task Group was the fact that ASHRAE SSPC 15 had not yet completed their updating of ASHRAE 15 regarding A2L refrigerants. As a result, the Task Group developed public comments based on what was perceived to be consistent with the actions of ASHRAE SSPC 15.” The Mechanical Technical Committee was informed that SSPC 15 was still working on Addendum d.

The substantiation to the three public comments to Item 144 starts out by stating, “The Task Group was charged with reviewing the publication public review addendums to ASHRAE 15 and correlating the requirements with the proposed items (changes) on A2L refrigerants. “Addendum d” public review draft of ASHRAE 15-2013 proposed modification to the standard to allow the use of A2L refrigerants for human comfort.”

There is no reliance of Addendum d being completed by ASHRAE SSPC 15. It is clearly stated that the document is a publication public review and not complete.

The substantiation for Public Comment #2 further states, “This change will modify the Table on refrigerants for human comfort to be consistent with Addendum d draft.” Take notice that Addendum d is identified as a draft.

Throughout all three public comments, it was stated that the A2L Task Group worked independent of ASHRAE SSPC 15 in developing requirements for A2L refrigerants. Similarly, the Mechanical Technical Committee was responsible for reviewing the proposed requirements independent of ASHRAE SSPC 15.

The Mechanical Technical Committee brushed aside all three public comments by indicating that ASHRAE SSPC 15 did not finish PPR Addendum d to ASHRAE 15. This brush off is a failure of the Mechanical Technical Committee to perform their obligation of properly reviewing the technical merits of all proposed code changes and public comments. Because of this brush off, the Mechanical Technical Committee prepared an improper justification statement that violated IAPMO and ANSI procedures.

The procedures require Technical Committee members to be competent in the subject matter. If not competent, Technical Committee members should abstain. However, in the case of this Item, Mechanical Technical Committee members skirted their responsibility by stating that another, independent committee did not finish their work. The work of ASHRAE SSPC 15 does not impact the public comments submitted to Item 144. The Mechanical Technical Committee had an obligation to review the proposed requirements and rule on the technical merits.

What the Mechanical Technical Committee attempted to do was use a reason statement that is commonly used when consensus standards are proposed to be referenced in the code. If the

standard is not complete at the time of the meeting, the common, acceptable statement for rejecting the change is, “The standard has not yet been completed.” Or, “The standard committee has not completed the standard.”

For the three public comments to Item 144, this was not the case. ASHRAE 15 is not proposed to be included in any of the proposed code text. Furthermore, ASHRAE 15, Addendum d, is never referenced. The only reference is to the PPR or the “draft” of Addendum d.

It should also be noted that some of the public comments submitted by the A2L Task Group referenced the draft of Addendum h to ASHRAE 15. Addendum h has also not been approved by ASHRAE SSPC 15. Furthermore, it has not been recirculated for a later review by SSPC 15, unlike Addendum d. All of these proposals referencing the draft of Addendum h were accepted. Apparently, acceptance of Addendum h by ASHRAE SSPC 15 was not necessary when evaluating the technical merits of the public comments. For these changes, the Mechanical Technical Committee properly evaluated the technical merits of the public comments.

For the stated reasons, the justification statements to the three public comments are inappropriate and violate the procedures.

The second violation of the procedures is more egregious. A change is being made to the Uniform Mechanical Code without benefit of technical justification or, for that matter, any justification.

The change to Section 1103.1.1 results in two new classifications of refrigerants. The rejection of Item 144, Public Comments #1, #2, and #3 result in the allowance of A2L and B2L refrigerants in high probability, direct systems.

Group B2L refrigerants are toxic. As a subgroup of B2, the 2015 Uniform Mechanical Code prohibited the use of the refrigerant for high probability, direct systems. With the change to Section 1103.1.1, these toxic refrigerants, identified as B2L, are permitted for high probability, direct systems. This is accomplished without any justification. This is a violation of the procedures. Every technical change to the code is required to be supported by a justification statement.

Similarly, Group A2L refrigerants are permitted in high probability, direct systems. While this was the intended outcome of the three public comments to Item 144, the public comments included the necessary safety requirements for the use of A2L refrigerants. Those safety requirements are not included in the acceptance of A2L refrigerants. This is also a direct violation of the procedures by allowing a significant change to the code without any technical justification.

As stated, the procedures were violated when significant changes to the Uniform Mechanical Code have been made without any justification or technical justification.

### **Outcome Being Sought**

The desired outcome of this petition would be the acceptance of UMC Item 144, Public Comments #1, #2, and #3. If the Board rules in favor, this would add the necessary code text to the 2018 Uniform Mechanical Code to regulate low global warming potential refrigerants that fall within Group A2L.

It is recognized that the Board of Directors avoids making changes to the code without the consent of the Technical Committees, membership, and Standards Council. However, this is a unique situation whereby the Mechanical Technical Committee identified their incompetence with the justification statement. If the Mechanical Technical Committee is not competent to review the public comments, the technical competency of the Board of Directors must step forward to preserve the integrity of the Uniform Mechanical Code.

The Board cannot allow a gross error regarding the regulating of A2L and B2L refrigerants to remain in the 2018 Uniform Mechanical Code.

Another option available to the Board would be the partial acceptance of UMC Item 144, Public Comment #3. The following change would result:

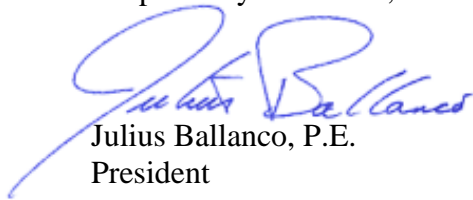
**1104.6 Applications for Human Comfort and for Nonindustrial Occupancies.** In nonindustrial occupancies, Group A2, A3, B1, B2, B2L, and B3 refrigerants shall not be used in high probability systems for human comfort.

The problem with partially accepting this public comment is that it will still leave the code with a correlation problem. The acceptance of this modification would add the necessary restriction on the use of a toxic refrigerant, B2L, for high probability, direct systems. However, there would remain a conflict between Section 1104.6 and Table 1104.1 for the use of A2L refrigerants.

My first obligation is to the integrity of the Uniform Mechanical Code. It is most important for the Board to protect the integrity of the code. The code cannot have confusing or dangerous requirements. Our obligation is to protect the public health and safety through a proper Uniform Mechanical Code.

I trust that the Board of Directors will make the ruling they determine is most appropriate to protect the 2018 Uniform Mechanical Code so that it is a viable document for adoption and enforcement.

Respectfully submitted,



Julius Ballanco, P.E.  
President