California Automatic Vendors Council
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November 10, 2017

Clerk of the Board, California Air Resources Board
1001 I Street,
Sacramento, California 95814

Re: **Proposed Regulation: Restriction on Refrigerant Gases Used in Refrigeration and Air-Conditioning Appliances**

To Whom It May Concern:

The California Automatic Vendors Council (CAVC) is an affiliated state council of the National Automatic Merchandise Association (NAMA), representing hundreds of large and small businesses that provide vending, coffee and convenience services to thousands of customers in California each day and employing hundreds of workers in the state of California. We appreciate the opportunity to provide public comments on the **Proposed Regulation: Restrictions on Refrigerant Gases Used in Refrigeration and Air-Conditioning Appliances.**

CAVC respectfully request an extension of the compliance date for vending machines to January of 2022, this date aligns with the date the industry has requested from the Environmental Protection Agency for transition at the federal level to comply with the SNAP regulations and the European Union ban on refrigerants with a GWP over 150.

Our industry has been actively involved at the federal level on the SNAP regulations, filing comments on the original proposed rule in October of 2014. Since the release of the final rules NAMA has been working with vending machine manufacturers to identify a refrigerant gas that can be used in vending machines that will allow those machines to be placed in the public areas that those machines currently occupy. NAMA has meet several times with the EPA since the rules were finalized to discuss implementation of the rules. In July of 2017, NAMA filed a request with the EPA for an extension of the date for the change of status of refrigerants used in new vending machines and has followed up with the EPA on several occasions. NAMA has discussed with the EPA the challenges that the industry is facing in meeting the January 2019 date. CAVC would assert that these same challenges would apply to the industry's ability to meet the CARB standard being proposed by January 1,2019.

Throughout the discussion with the EPA, NAMA has stated that our industry is committed to a transition away from HFC's in a timely, efficient, and business feasible manner, however there are several issues that in the industries opinion require an extension and stem from the fact that the vending industry, upon detailed review, only has one "real" transition option -- HC R290 -- which has its own challenges.

Refrigerant Options

CO2: Early on in the discussions the vending industry appeared to be on a trajectory of using CO2 as the refrigerant of choice; however, this decision had not been finalized by all manufacturers and many were reviewing additional options. In 2015 our industry was not aware or able to locate any manufacturer that produced a fractional horsepower CO2 compressor for vending applications that would meet future energy consumption regulations. We have been notified that the last compressor manufacturer will be ceasing production leaving zero suppliers of CO2 compressors technically suitable for refrigeration applications in the vending industry. Due to energy consumption and compressor issues CO2 was effectively taken off the table.

HFO: There was some back-and-forth of why not an HFO blend. These refrigerants are not ideal for the vending industry for several reasons.

• Available HFO's are propriety blends controlled by a singular manufacturer that could dictate pricing, demand, or experience supply chain disruptions.

• The EU as of 2022 has banned refrigerants with a GWP of 150 or higher; HFO's for vending have a GWP higher than 150 thus products using these refrigerants would not be permitted for use in the EU starting in 2022. We are part of a global marketplace and it is not business case feasible to either abandon a marketplace altogether or operate multiple manufacturing lines utilizing different refrigerants when there is the possibility of using one refrigerant that is acceptable globally.

• HFO's cost approximately $14 per pound compared to R134a and R290 which cost approximately $3 and lower per pound; transitioning to propriety chemicals would represent nearly a 500% increase in commodity costs making them prohibitively more expensive.

• Similar to the compressor situation with CO2 there is not currently a supplier of HFO compressors tested and approved for use in vending applications.

• HFO's contain HFC's and are not naturally occurring and many in our industry have made commitments to use only "natural" refrigerants.

• HFO's still contribute ODP whereas R290 – a HC – does not. Additionally, R290 is more energy and cost efficient compared to HFO's and CO2.

HC: HC's in general are in wide use globally and as noted above have a very low GWP and zero ODP. HC's have excellent thermodynamic properties which translates into significant charge reduction and increased energy efficiency; HFO's have a much higher GWP and require much larger charge sizes. The cost of HC's is comparable to HFC's and much less than HFO's. Given HC's global acceptance many vending machine customers are already very familiar with HC refrigerants and they would prefer to standardize their operations vs utilizing different technologies in different markets. HC's are also a more viable long-term solution. However, HC's are not without their challenges. To safely transition to these in the U.S. marketplace the additional level of complexity involved with designing for and working with HC's must be clearly understood and planned for. Intelligent design must be incorporated, rigorous testing on individual components and finished products must be carried out, and service protocols must be developed and technicians trained. HC's are clearly the best and most logical refrigerant for the

industry to transition to however sufficient time must be given to accommodate the level of complexity required to safely and efficiently transition. However, the largest challenge to HC's is the restrictions on placement imposed by UL and ASHRAE that must be altered.

In summary, HFO's are not suitable for our industry because of their proprietary nature, dramatically increased costs, and global acceptability, and CO2 is not possible because of the compressor/ energy standards issue.

After taking into consideration availability, cost, GWP, energy consumption, global acceptance, and compressor limitations, the industry has found that HC's are the only option to meet transition needs however additional time is required to address the challenges posed by a flammable refrigerant including working with the standards bodies on placement

UL/ ASHRE

The requirements of UL 541, Paragraph SA6.2.3 (c) are based directly off ASHRE 15, Clause 7.5.1.2 which requires refrigerating systems installed in a public corridor or lobby to be limited to either being: (a) systems having Group A1 or B1 refrigerants; or (b) sealed absorption systems. The language in UL 541 states that the installation and operating instructions shall indicate that "(c) a vending machine having a flammable refrigerant shall not be intended for use in lobbies or locations of egress, such as a hallway or public corridor." The locations mentioned in UL 541 are the most common locations for vending machines. Because the only workable transition is an HC – R290 our industry must go through the process of changing UL 541 and ASHRE 15 or making our products work within the current guidelines.

Our concern is simple; with UL 541, schools, universities, hospitals, military installations and government buildings, correctional facilities, manufacturing facilities, hospitals, etc. are all facilities where consumers look for refreshing beverages and snacks from vending machines. UL 541 would cause either non-optimal machine placement or prohibit placement at all thus devastating the business model for the industry. Lastly, should a facility decide to place a machine in one of the locations specified in UL 541 as not "intended" and an issue occur, the vending machine operator, manufacturer, and building owner all could be susceptible to unknown legal, financial, and reputational risk.

Some in our industry have asked ASHRE for a formal clarification of the standard however we are not expecting a response until 2018. In addition, in speaking with UL and a review of literature, it will take several years for code changes to take place and filter down to the local level – in quoting UL it "will not be completed until 2021 or 2022." The vending machine industry, prior to complete transition and placing machines in the field, will need to have the code change process fully completed or alternative measures in place. Thus, we require an extension of our transition date until 2022 so that the code process can be completed.

In addition, there is concern at the local level about building and fire/safety codes that must be revised to allow for the flammable refrigerant to be used in vending machines that are placed in lobbies, locations of egress, hallways and public corridors.

Component Testing

To properly transition to a flammable refrigerant all individual components must be tested and reengineered. The standard machine has dozens of vending motors and payment systems that can produce sparks. Additionally, there are other types of components and fans that must be redesigned including items like heating elements that prevent freezing in outdoor machines.

The challenge is to develop components that reduce potential hazards, do not cause an increase in energy consumption, and do not materially increase the cost of the machine. The development, engineering, and testing of each individual component in each individual machine design all takes time. For example, one component manufacturer must perform machine design reviews for every model of machine to understand the containments and/or controls in the event of a leak and confirm component products are mounted in a location above any leakage point.

One manufacturer has stated that their current vending motor supplier does not have a model available that is brushless – i.e. does not produce sparks – and that the only solution presented is to redesign the motors to seal them, however this is by no means guaranteed. A second manufacturer mentioned that their supplier is working on an option but it will increase the cost of the motor by over threefold ($3 to $10) – an unacceptable level of increased cost. There are dozens of motor types and applications that must redesigned and tested and while the work has been ongoing the work has not yet been completed. One manufactured stated that they have only just completed the redesign and testing of the refrigeration system and still must settle on and test the vending motors, switches, and fans.

Our industry is committed to a transition away from HFC's however as noted above the only practical refrigerant is an HC and we must have the time to source, safely redesign, and test all conceivable components.

Global Acceptance

As previously stated the EU transition date is not until 2022. US vending machine manufacturers export to EU countries. By not aligning dates US manufacturers will be at a severe disadvantage because of cost and expenses. By requiring an earlier compliance date in California would further complicate the issue. It is impractical for a manufacturer to build and operate multiple lines to serve multiple geographic areas when a delay and alignment would reduce costs, create efficiency's, and enable healthy global competition.

NAMA has been in communication with our EU counterparts and we are not aware of any European manufacturer preemptively switching to alternative refrigerants; some are still using CO2 just like US manufacturers but they have not transitioned to newer chemicals to meet the EU 2022 regulation or account for the lack of a CO2 compressor supplier.

Smooth Transition

CAVC through NAMA and its members are seeking a to make a safe, methods based, cost effective, transition to meet the CARB and SNAP requirements and overall market driven changes taking place in the industry. As the industry embarked on this path several challenges outlined above remained unresolved. The industry is committed to solving these problems in coordination with the EPA and CARB

and standards bodies however we believe that we cannot do this and still meet the CARB 2019 transition date and that a 2022 date is needed.

In keeping with NAMA's request on the SNAP rules CAVC requests that any requirements for new vending machines have an implementation date of January 1, 2022 which would enable the industry to meet the requirements and work through the issues set forth above.

We would welcome the opportunity to meet with you to address any of your concerns and can make representatives of the vending machine manufacturers available to address any of your questions.

Sincerely,

Sandra T. Larson
NAMA Senior Director of State Affairs