

Stakeholder Feedback: Refrigerated Beverage Vending Machines ENERGY STAR Version 4.0 Draft 1 Specification		
Topic	Feedback	EPA Responses
Definitions	<p>Food' should explicitly reference "potentially hazardous food" to differentiate from refrigerated beverage machines. Some ENERGY STAR eligible products have the ability to vend potentially hazardous food and beverages, which means manufacturers cannot allow Low Power Refrigeration Mode.</p> <p>Stakeholders are unaware of a Rule regarding energy consumption of vending machines for frozen products. Significant effort and considerations would be required to develop guidance on setting energy use levels.</p> <p>Chilled package items is not an industry term. The industry interprets chilled (i.e., salads, sandwiches) packaged items as potentially hazardous foods and therefore should be referred to as 'refrigerated' and maintained under strict Health and Safety Controls.</p>	<p>EPA changed the term 'Food Vending' to 'Refrigerated Food,' which suggests that the food product is perishable and potentially hazardous. This term is used to further differentiate eligible products.</p> <p>EPA sees value in maintaining this term in the specification for clarification purposes, however, exploring scope expansion to cover these types of products at this time is premature. EPA is not expanding scope to include refrigerated food vending machines in this specification revision due to the absence of a test method and low market share, but could expand the scope to include these products in the future.</p>
Scope	Support scope expansion to include Combination A and Combination B machines; support potential test method development and scope expansion to include food vending machines.	EPA appreciates this support of scope expansion to Combination A and Combination B. EPA will continue to keep these categories with unique MDEC levels.
	Disagreement with differentiating the food vending machines by the types of products machines may vend. A glass front beverage machine can be configured to vend all beverages or all food or a mix of food and beverages and this does not change the MDEC of the machine.	EPA has aligned with the DOE product Classes and test method for this specification.
	Testing an all beverage (refrigerated) machine is a worst case scenario and the DEC is not going to increase if the configuration of the machine or "other foods" are put in place of the beverage(s).	
	Supports scope expansion, generally, but requests to hold on scope expansion to combination vending machines until performance testing is complete and a database is assembled. This is because a modeling approach contains risks, such that once tested, combination vending machines may significantly over or under perform compared to the modeled data, which in either case could render the ENERGY STAR criteria ineffective.	While the energy performance of Combination type machines is less known, EPA is able to propose criteria using DOE levels as the performance baselines. Mirroring the percentage reduction levels of Class A and Class B machines is a logical strategy in setting Combination levels for ENERGY STAR considering the overall components and machine operations are similar. Addressing these products now will offer operators some energy savings beyond DOE requirements and manufacturers raised no concerns with the Combination machine levels.
	If a refrigerated beverage vending machine has a heated compartment and is not violating the MDEC why should it be excluded? The heat doesn't have to increase energy consumption. It could be waste heat from the condensing section of the refrigeration system. This would be a design constraint that could limit innovation.	The intent of the exclusion of refrigerated beverage vending machines with heated compartments is to exclude machines that have an internal heating system. If a product has a non-refrigerated section, in addition to a refrigerated section separated by a partition, then that would be classified as a Combination machine, which EPA is proposing to expand scope to include. However, if additional energy is used to heat a section of the machine, the product is ineligible. EPA is not intending to limit innovation. If expelled heat from the compressor is transferred to a separate, non-refrigerated compartment that would be acceptable as long as there is not a secondary heating system.

Certification Criteria	<p>The proposed levels for Class A machines (10% below DOE 2019) are aggressive and are perceived as unreasonable and unlikely that equipment will meet the levels without significant redesign and added costs.</p> <p>The ENERGY STAR V4.0 Draft 1 proposed level for Class A machines is 23% more stringent than DOE 2012. In order for manufacturers to meet DOE 2012 limits, technologies, such as LED lighting, high-efficiency compressors, electronically-controlled condenser and evaporator fan motors, and improved insulation were implemented.</p> <p>AMS suggests that they have integrated almost every available technology to meet present levels, making it challenging to meet the proposed V4.0 levels.</p>	<p>EPA is using DOE 2019 as the baseline, as it will be in place when the ENERGY STAR specification takes effect. In response to comments such as this one, EPA is proposing eased Draft 2 levels. Based on these proposed levels approximately 31% of Class A machines and 32% of Class B machines available on the market today from seven unique brand owners would be eligible for the ENERGY STAR, thus expanding product selection for the customers. The datasets for Class A and Class B, in addition to the available technology and component review for all eligible refrigerated beverage vending machines, suggests that the proposed performance levels for each type of machine are attainable. C18</p>
	<p>Support for the proposed MDEC levels. The proposed levels provide meaningful energy savings beyond the 2019 DOE minimum standards—10% savings for Class A and Combination A machines and 15% savings for Class B and Combination B machines. DOE analysis indicated significant energy efficiency improvements up to 35-43% beyond the 2019 standards without the additional energy saved by using propane as a refrigerant (which accounts for an additional potential savings of 15%).</p>	<p>EPA received mixed feedback from stakeholders on the proposed levels; however, most indicated that the Draft 1 levels are aggressive and very difficult to meet without significant innovation in componentry available in the market. EPA has proposed new levels in the Draft 2, which still offer energy savings over the DOE 2019 levels.</p>
	<p>The proposed MDEC levels for all classes of machines are deemed too much of a decrease in allowable energy consumption and very difficult to meet in light of the fact that most manufacturers are already using some of the highest efficiency components for their application available. Furthermore, hazard mitigation needed to safely place a propane cooled machine into the marketplace will require a currently unknown amount of energy.</p> <p>CEE understands that higher DOE federal minimum standards for vending machines may initially reduce the number of machines that meet the proposed ENERGY STAR criteria. As noted in the Draft 1 material provided by EPA, only 15-18% of models currently in the market will meet the proposed ENERGY STAR Version 4.0 performance criteria. Confirmation is requested that additional products that could meet ENERGY STAR Version 4.0 will be available in 2019 to ensure adequate product availability for consumers.</p> <p>The 10% less than DOE 2019 level for Class A and Combination A machines and 15% less than DOE for Class B and Combination B machines is aggressive. 5% less than DOE would be more reasonable.</p>	<p>In response to comments, EPA is proposing in Draft 2, relaxed levels that allow additional products to meet while maintaining energy savings over DOE 2019. Based on the current analysis, for Draft 2, reducing the Class A level to 7% and Class B to 12% less than DOE 2019, respectively, would allow 31% and 32% products in the data set to meet ENERGY STAR requirements.</p>
Improved Insulation	<p>Dow Chemical explained that the <i>Vending Times</i> article suggesting a 10% improvement of thermal insulation does not apply to manufacturers that already use more advanced insulation solutions. That savings potential is applicable only to old and dated systems.</p>	<p>EPA understands the 10% thermal insulation improvement cited by Vending Times is comparing older, less effective insulation solutions and that the potential savings is not based on the comparison to more advanced insulation products already found common in the marketplace.</p>

Refrigerants	Propane is the only potentially viable refrigerant listed in the SNAP 20 Rule. CO2 was a fringe possibility but was very doubtful due to its efficiency. It is no longer a possibility because there is no longer a compressor available in the capacity range needed for these applications. The problem some manufacturers face with propane is that UL Listing of the machines is dependent on a notation in the Installation Instructions that machines housing this gas must include a warning that: <i>"This machine is not intended for use in lobbies or locations of egress, such as a hallway or public corridor."</i> This is a severe restriction on the normal use of vending machines and will be an extreme roadblock to Sales of such machines.	In light of these comments, EPA has revisited the Draft 1 levels and using the combined DOE compliance database and the ENERGY STAR qualified product listing, has proposed new, less stringent MDEC levels in Draft 2. EPA will revise this vending specification now to ensure ENERGY STAR remains a leadership mark once the new DOE standard is in effect. EPA will work closely with stakeholders to watch the market response to issues such as placement and mitigation technology associated with use of alternative refrigerants and revise this specification again in the future when appropriate.
	ENERGY STAR can only accurately develop and implement a new specification after the vending machine industry has navigated the complex transition from R-134a to a propane refrigeration system, the only currently viable long-term option. It would be appropriate for ENERGY STAR to begin a new product specification only after the industry has successfully transitioned to a low GWP refrigerant and the associated standards organizations have modified their standards to allow for unrestricted placement and operation of low-GWP systems.	While EPA is encouraging the transition to climate-friendly, low-GWP refrigerants (i.e., R-290), the Agency is not proposing to make use of low-GWP refrigerants an ENERGY STAR certification requirement, rather just a reporting requirement for this specification revision. While the placement issue should be addressed, the Agency does not see this as a cause for delay in finalizing an ENERGY STAR Version 4.0 specification with new energy performance levels that can be met by models on the market today from many manufacturers.
	Until the UL 541, CSA 128, and ASHRAE 15 standards are changed, the vending machine industry is unable to fully transition to a low-GWP refrigerant. It is not uncommon for changes and/or updates to UL and CSA standards to take 2 years or more and changes to ASHRAE standards can take up to 3 years. Thus the request for a delay until at least 2022. Until these standards are changed, it would be impossible for manufacturers to engineer all models, understand and manage energy consumption profile, transition the purchasing of components and production, and fully transition all products to this new low-GWP refrigerant.	
	The additional energy used to effectively ventilate an R-290 refrigerant leak requires enough additional energy to negatively impact daily energy consumption, thus making it more difficult to meet DOE and EPA ENERGY STAR levels.	EPA encourages stakeholders to submit any energy consumption data on additional components used for leak mitigation. This information would inform EPA about energy use of additional components and inform the next iteration of the RBVM product specification. Thus, EPA plans on addressing this issue at a later date, once effective solutions are in place.
Refrigeration Low Power Mode	This should be a credit as you've proposed. However, since our machines can be switched from and to "food" machines (that safely store and dispense potentially hazardous foods) through a simple firmware change, we won't be able to benefit from it.	A 3% credit is applicable to refrigerated beverage vending machines that have this feature. EPA understands that in some applications, this feature may not be activated, but the 3% credit applies to eligible products that incorporate a refrigerated low power mode. The 3% credit is applicable to any refrigerated beverage vending machine that offers this mode and has undergone validation testing per Appendix B to Subpart Q, Part 431, Section 2.3.2.1., regardless if it's activated in the field or not.
Accessory Low Power Mode	Why is the availability of this feature not afforded the 3% credit?	The accessory low-power mode performance is directly measured in the DOE test procedure. Thus, the energy savings are directly included in the measured energy use and a credit is not appropriate.
Test Requirements	Agreement that it is preferable to use the DOE test procedure for ENERGY STAR certification.	EPA appreciates the support regarding the usage of the DOE test procedure for ENERGY STAR certification.

Represented Value	With the proposed energy reductions, it is possible that different or additional components will be needed in order to meet ENERGY STAR V4.0 levels. This, in turn, could lead to significant additional costs and manufacturers might want to offer a separate ENERGY STAR certified machine and pass that additional cost on to the operator. If the ENERGY STAR version then had to list a DEC that is equal to that listed for DOE it would seem likely to cause a lot of confusion.	The DEC value would be the same value for ENERGY STAR as registered with DOE. If the model has two different configurations that have different components and different efficiency performance, two different model numbers should be assigned.
Effective Date	<p>An effective date only 9 months after the Rule is Issued is far too short. Due to the strict MDEC limits proposed and the continuing uncertainty of the SNAP 20 Rules AMS suggests a full 24-month period between the final ENERGY STAR V4.0 specification date and the effective date.</p> <p>Postpone the product specification process for Version 4.0 until 2022 (or at least until 2022), until the industry has implemented a successful transition to low-GWP refrigerants.</p>	In response to this comment, EPA has proposed levels achievable by a broad selection of models on the market today, and will work with stakeholders to develop a new specification that considers use of alternative refrigerants and other efficiency gains in the future. EPA anticipates finalizing this specification by the end of Q1 2019 with it taking effect 9 months after.
General	<p>Prior to the DOE Test Procedure change in 2015, AMS had to install special software in order to achieve the 36°F average product temperature required. AMS machines have a default minimum temperature set point of 40°F as this is more appropriate than 36°F for food storage. AMS sees no need to specify different test loads – the 12 oz. cans are a good representation of a load of “food”.</p> <p>If the load is under Health and Safety Controls, the low power refrigeration mode may be inhibited by a manufacturers firmware controls. If the machine is not loaded with potentially hazardous food (i.e., beverages), this control can be disabled by the operator and the low power refrigeration mode can be activated as desired.</p>	EPA and DOE appreciate this information.
General (Incentives)	<p>Additional information is necessary for program administrators to justify program support, including:</p> <ol style="list-style-type: none"> 1) Market sales and penetration data or other data EPA is using as a proxy, such as shipment data by product type; 2) Per unit and percent energy savings of proposed performance levels for all product categories, including transparency to how these energy savings values are calculated; 3) Number of models, brand, or unique model groups generally available that would meet the proposed performance criteria for each product type; and 4) Cost-effectiveness analysis and incremental retail price of the base unit relative to the ENERGY STAR unit. 	This granular level of data (market penetration by sub-type) is not published information. However, the published data package includes the data set and other information that should help interested stakeholders determine market sales, percent of energy saved by model, the number of models that meet, how the per unit energy savings can be calculated, and cost effectiveness.