

North American Association of Food Equipment Manufacturers  
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Ms. Brenda Edwards  
U.S. Department of Energy  
Building Technologies Program, Mailstop EE-2J  
100 Independence Avenue, SW  
Washington, DC 20585-0121

**RE: NOPR for Energy Conservation Standards for Automatic Commercial Ice Makers, Docket Number EERE-2010-BT-STD-0037, RIN 1904—AC39**

Dear Ms. Edwards:

The North American Association of Food Equipment Manufacturers (NAFEM) appreciates the opportunity to file these comments with the Department of Energy. These comments address engineering and economic concerns of manufacturers that lead NAFEM to conclude that the proposed rule, referenced to above, is neither economically justified nor technologically feasible. Because of the differing views between the Department and the manufacturers of commercial ice makers on the energy efficiency gains possible and the availability and performance of components and designs assumed by the Department, NAFEM believes the more efficient and sound pathway forward will be in a negotiated rulemaking. Given the Department's lack of responsiveness to similar concerns expressed in stakeholder meetings and in written comments in previous rulemaking proceedings, we have little confidence that those concerns will be effectively addressed in this proceeding without significantly more dialogue between the Department and manufacturers.

NAFEM is a trade association comprised of more than 500 foodservice equipment and supplies manufacturers with more than 60 years of history representing the industry. The association's members constantly seek opportunities to improve equipment, both in response to market demands and as innovative means of product improvement. Furthermore, NAFEM members helped develop and actively participate in ENERGY STAR in recognition of the role of voluntary, market-driven incentives for improving the efficiency of commercial foodservice equipment and supplies. NAFEM and its members support and actively seek opportunities to increase the energy efficiency of

commercial food service equipment while continuing to provide the products, performance and reliability expected in the marketplace.

### **I. Proposed Rule is Not Justifiable**

The proposed rule should not be implemented as written because it is neither technologically feasible nor economically justified. With the use of accurate, existing, real-world data NAFEM manufacturers have concluded that manufacturers will be able to achieve energy efficiency gains no greater than TSL-1, with a compliance timeline of at least five years, as allowed by the Energy Policy and Conservation Act.

As currently written it is likely that the standard will result in the unavailability in the United States of at least one covered product type of performance characteristics, features, sizes, capacities, and volumes that are generally available in the United States.<sup>1</sup> As an example, see the impact on the 22-inch wide IMH model in the comments submitted by Manitowoc Ice.<sup>2</sup>

#### **A. Establish a Transparent and Collaborative Rulemaking Process**

The Department points to interviews with manufacturers and suppliers as the basis for identifying components and technologies needed to achieve the proposed efficiency levels; however, without greater transparency or opportunities for dialogue, NAFEM members are not able to verify the data or assumptions used. Greater transparency would identify the model and serial numbers of components the Department would have manufacturers use that are not currently in use. Greater opportunities for dialogue would allow engineers to work out data validity and material and design performance options. Enhanced dialogue would also allow the Department to better assess the impact on end users and gain a better understanding of the expectations and needs of the marketplace. We believe this can be achieved in a negotiated rulemaking and that such transparency and dialogue will ensure a high degree of success of achieving an achievable level of energy efficiency within a reasonable time frame.

#### **B. Compliance Date Must be Extended**

The proposed 3-year period for compliance with an effective date of January 1, 2018 is unrealistic and not achievable. Even with more realistic assumptions used to determine technologically feasible efficiency levels, the Department must extend the compliance date for the additional two years allowed under the Energy Policy and Conservation Act.

After speaking with component suppliers, NAFEM members have concluded that an extended timeline is necessary for manufacturers to obtain new components needed to meet higher efficiency levels. The extended timeline will be required even with a lower, more realistic efficiency level. NAFEM requests information from the Department that demonstrates that component suppliers are able or

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<sup>1</sup> See 42 U.S.C. 6295(o)(4).

<sup>2</sup> Manitowoc Ice Comments Submitted to DOE on April 14, 2014. (ID: EERE-2010-BT-STD-0037-0064).

will be able to provide products within this timeframe to meet its proposed level or the lower TSL-2 and TSL-1 options.

The timeline extension is also necessary for manufacturers to spread the resulting high up-front costs associated with the implementation of the rule. A longer time line and more realistic levels of energy efficiency may prevent plant closings and job losses.

## **II. Fundamentally Flawed Market Assessment**

The Department's market assessment is flawed. For example, the Department arbitrarily concludes that the proposed energy efficiency levels are economically justified despite clear evidence to the contrary. The costs imposed on manufacturers by this proposal are unreasonable, unfounded, and overly burdensome on business. The Department's own economic analysis concludes that the industry will lose nearly a quarter of its net present value.

The presumption that "the additional cost to the user of purchasing a product complying with an energy conservation standard level will be less than three times the value of the energy savings during the first year that the user will receive as a result of the standard as calculated under the applicable test procedure" is rebutted in this rulemaking.<sup>3</sup> The costs to the end user including the increase in price, installation costs, and maintenance expenses are considerably more than the cost savings to the end user.

### **A. Proposed Rule is Not Economically Justified**

The Department is required to consider six factors to determine whether a regulation is economically justified.<sup>4</sup> A brief evaluation of the factors demonstrates that the Department failed to show that the costs of the regulation are economically justified. First, the economic impact on manufacturers and end users, particularly small businesses, is considerable and higher than the Department estimates because the design options are not technologically feasible. Second, the utility and performance of the equipment will be significantly impaired as a direct result of the proposed standard because the efficiency standards are so stringent that the design options required for compliance limit the product's most basic utilitarian purposes of freezing and holding large quantities of ice. Finally, the proposed TSL-3 standard would result in a lessening of competition because the costs of researching and developing design options are significant and will drive small businesses away from production of automatic commercial ice makers, leaving fewer manufacturers and fewer models for consumers to choose.

### **B. Market Assessment Flaws**

The market assessment contains several other flaws that are briefly outlined below.

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<sup>3</sup> 42 U.S.C. 6295(O)(2)(b)(iii).

<sup>4</sup> 42 U.S.C. 6295(o)(2)(B)(i)(I)-(VII).

## 1. Lifetime Estimates

The Department overestimates the lifetime of commercial ice maker products by assuming an 8.5 year average life for all equipment classes. This skews the assumptions in the cost/benefit analysis. The Department has not used adequate data to justify its conclusion and should more actively engage end users and manufacturers to arrive at a more accurate lifetime estimate for commercial ice maker products. In particular, the Department should study the differences in continuous and batch type ice maker lifetimes.

## 2. Equipment Classes

The equipment categories used by the Department do not fully encompass the variety of products and customizations currently in the marketplace. Distinctions among products will result in different energy savings potential. These categories should be reevaluated to incorporate the differences in water usage, continuous or batch ice production, and lifetimes.

For example, the Department should reevaluate the classification of 22-inch IMH models and differentiate between the 22-inch and the 30-inch IMH-A-Small B category. The Department currently assumes in the TSD analysis that cabinet volume can be increased in 30-inch ice makers to allow space for the larger evaporators and condensing coils needed to achieve the energy savings required under this proposed rule. The increase in cabinet volume cannot be achieved with 22-inch size IMH models.

To emphasize the significance of both creating accurate categories and the significance of size in the marketplace, the 22-inch wide size model is especially important in the ice/beverage sector. Ice/beverage dispensers are increasingly designed to exclusively accept a 22-inch ice machine on top of the dispenser. The placement of these dispensers in the real world usually do not allow for further height increases in the ice maker due to restaurant ceiling heights. The proposed rule would result in the unavailability of the covered 22-inch wide IMH model product type which is currently available in the United States. Height cannot be increased for this model and the 30-inch wide IMH model is not an acceptable substitute for ice/beverage dispensers exclusively designed for 22 inches.

## 3. Cost Modeling

The curve fit and tabular cost models the Department used to select TSL-3 result in inaccurate assumptions that undermine the Department's presumption that the efficiency standards satisfy the requirement that the added cost to the end user is less than three times the value of the energy savings.

For example, the Department makes an error in the assumption used to examine the cost increases associated with improvements in efficiency for compressors. The unrealistic and arbitrary assumption that a 10-percent increase in compressor efficiency could be achieved for a 5-percent increase in costs was determined by the Department to be an error in the Commercial Refrigeration Equipment Energy Conservation Standard docket. The Department recognized the mistake and changed the assumption

to assert that a 2-percent improvement in efficiency could be gained for a 5-percent increase in price.<sup>5</sup> The same correction should be made in this proceeding.

As an additional example, the Department underestimates the cost increase resulting from increasing the evaporator surface area. Increasing evaporator surface area by 51%, as discussed in Table 5.10.6 of the TSD, requires the size of the ice machine chassis to be significantly enlarged. NAFEM members calculate that just the cost of materials to make a larger ice machine chassis would be \$100. That cost does not include the increased shipping costs that would result from a larger ice machine chassis. The actual cost increase for materials and shipping will be passed to the end user.

#### 4. Impacts on Small Businesses

The proposed rule has a disparate impact on small businesses because commercial ice makers are largely manufactured by small businesses. The proposed rule will also raise the price of an essential piece of equipment for the foodservice industry, also dominated by small businesses. Small businesses do not have the upfront capital resources to dedicate to the research and development necessary to create and implement the design options that will be necessary to comply with the proposed standards. Small business manufacturers will lose product placement and small business end users will not be able to upgrade to newer models, extending their older models beyond longer than they would otherwise or risking higher costs to stay competitive.

#### 5. Markups to Determine Price

The Department utilizes baseline distribution markups to the manufacturer to establish the selling price in the base case, but uses incremental markups to the incremental difference in the price in each standards case. This assumes wholesalers or dealers will mark up cost increases required to meet the new efficiency standards in an amount less than their markups for the base equipment. This assumption of lower "incremental" margins is incorrect and does not reflect normal business practices of maintaining margins. If the Department's assumption were true, wholesaler and dealer margins would be reduced each time the manufacturers pass on a cost increase.

The Department fails to demonstrate that wholesalers and dealers will mark up cost increases related to efficiency increases less than the base product margin. Additionally, the Department examined price sheets for 470 ice makers and concludes that there is no correlation between higher prices and higher efficiency ice makers. Instead, the Department incorrectly assumes a strong linear relationship between price and ice harvest rates, with higher capacity ice makers having a higher price.<sup>6</sup> The Department should assume that all cost increases will be marked up consistent with the markup of the underlying product, which is the standard business practice.

#### 6. Installation Costs

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<sup>5</sup> Please reference the comments submitted by compressor manufacturer Danfoss for further discussion from the component manufacturer with a long history of expertise in this area.

<sup>6</sup> 79 Fed. Reg. at 14888.

The proposed rule will result in a significant increase in installation costs for consumers. The design options available to improve efficiency will result in automatic commercial ice makers with larger footprints to accommodate the increased insulation, larger evaporators, and larger condensers, while maintaining consistent ice storage capacity.

Larger footprints will result in higher installation costs. A number of factors are at play. First, ice makers require a complicated installation at end users' premises and therefore, are generally installed by outside contractors. Second, as stated in the Department's analysis, 80-percent of ice maker sales are to replace older, existing equipment. Third, most ice makers are currently in 22 or 30-inch wide cabinets. As a result of these conditions, manufacturers have largely kept ice makers within those dimensions to prevent customers from having to make modifications to their premises for larger models.

With the larger evaporators and condensers, the ice makers will be too large to fit into these spaces. To purchase a new more efficient ice maker with the evaporators assumed for the proposed TSL-3 level, the end user will incur the costs of redesigning and constructing workspaces or moving to accommodate larger equipment.

In addition to the installation costs for end users, the Department should look to the similar example of air conditioners as it relates to the declining sales of larger, more efficient appliances, such as the chassis ice makers. As air conditioners became more efficient their footprint changed and the demand dropped from end users because there was no desire for the new more efficient air conditioner's dimensions. Based on that historical example, the Department should assume in the largest capacity units in the 22" and 30" cabinet size, an 18% reduction in ice maker sales at the proposed new, higher efficiency levels. Another unintended consequence of the proposed rule at the TSL-3 standard is that a proportionate number of 10 to 15 year-old less-efficient units will remain in service for another five years when they otherwise would have been replaced if the installation costs were not prohibitive. The Department must consider this in the cost-benefit analysis review before the rule is finalized.

### **III. Cumulative Regulatory Burden**

The Department fails to adequately consider the cumulative regulatory burden on manufacturers of commercial ice makers. The commercial ice maker industry is not only facing the burden of complying with these proposed regulations. Many of these same manufacturers are impacted by new rules the Department has proposed or promulgated for commercial refrigeration and walk-in refrigeration equipment. Furthermore, the size of the commercial ice maker industry is only 1% to 2% the size of the refrigerated appliance and HVAC industries, and any increased regulatory burden will have larger

impacts across the industry. These same manufacturers are confronted with the uncertainty of new refrigerant regulations.<sup>7</sup>

#### A. Coexisting Department of Energy Regulations

The Department states that it cannot consider regulations that are not yet finalized. NAFEM disagrees and believes the Department must consider these regulations. To adequately estimate regulatory burden, these known regimes are essential to the analysis. As noted earlier, three energy efficiency regulations will affect the automatic commercial ice maker industry within a very short compliance window.<sup>8</sup> These other standards are known, both in terms of their timeframe as well as the proposed levels developed by the Department.

#### B. Local & State Regulations

Local and state entities are increasingly creating regulations that address energy efficiency measures in commercial ice makers. The Department should request information from manufacturers on the impact of these regulations on their businesses. These regulations should be considered and addressed when issuing rules and compliance deadlines.

#### C. International Refrigerant Regulations

The burden of complying with international regulations should be considered when issuing rules and creating compliance timelines. There is considerable international pressure to reduce the use of high-GWP compounds the ice maker industry uses as refrigerants. The automatic commercial ice maker industry has in recent years primarily utilized refrigerants R-134a with GWP = 1,300 and R-404A with GWP = 3,900, whereas CO<sub>2</sub> has the benchmark GWP = 1.0.

The industry is hamstrung from early adoption of low GWP refrigerants because most practical alternatives such as propane are flammable. Outside the United States, refrigerants such as propane are commonly and safely used. The EPA through its Significant New Alternatives Policy (SNAP) program has begun to approve the use of alternative refrigerants in several applications, and is expected to approve more this year. However, local building and fire safety codes still do not allow even small quantities of flammable refrigerants. As a result, manufacturers are forced to maintain their current use of R-134a and R-404A until codes are updated in states and municipalities.

Switching to flammable refrigerants will also require capital costs and major redesigns of systems to reduce the risk of fire. The Department must consider the hardships imposed by refrigerant choice uncertainty, future refrigerant changes, and the costs associated with this reality.

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<sup>7</sup> For example, the EPA's Significant New Alternative Policy Program is in a continuous process of limiting the type of allowed refrigerants and limiting the appliances that may use each refrigerant.

<sup>8</sup> The three regulations referred to are: Energy Conservation Standards for Walk-in Coolers and Walk-in Freezers; Energy Conservation Standards for Commercial Refrigeration Equipment; and Refrigerant Requirements issued by Significant New Alternatives Policy Program.

#### **IV. Failure to Comply with Executive Orders**

Creating an undue regulatory burden on manufacturers is a violation of Executive Orders 12866 and 13563 which direct agencies to limit regulations to necessary situations and ensure that the negative effects on stakeholders are limited. The Department's analysis fails to adequately consider the impact on small businesses, non-regulatory alternatives, and duplicative regulation. The rulemaking also fails to utilize the most cost-effective solution to achieve the objective of improved efficiency in commercial automatic ice makers.

##### **A. Small Business Impact**

In addition to creating an undue regulatory burden with excessive and overlapping regulation on a single industry, the proposed rule has a disproportionately negative impact on small businesses. Small manufacturers do not have the capital to invest in the engineering and testing costs that would be necessary to create and implement design options that meet TSL-3. Additionally, the price markups as a result of the rule will negatively affect the foodservice industry which is largely comprised of small businesses.

##### **B. Failure to Fully Consider Non-Regulatory Alternatives**

The Department dismissed non-regulatory alternatives without the detailed consideration required by Executive Orders 12866 and 13563. Programs that should have been considered as an alternative to this regulation include: ENERGY STAR, government procurement initiatives, initiatives to encourage high-efficiency product development, early replacement programs, and voluntary energy efficiency targets. There are several alternatives to regulation that would achieve energy savings. The Department should reconsider non-regulatory alternatives and explain, in detail, why the regulation is necessary in light of these programs, such as the following effective government initiatives.

###### **i. ENERGY STAR Impacts**

The Department fails to consider the positive role of ENERGY STAR in the marketplace. The Department fails to recognize that requirements to purchase ENERGY STAR appliances now reaches all corners of the market, which means that manufacturers must meet the standard to sell to the majority of end users. Several programs below elaborate on this point.

###### **ii. Federal Energy Management Program**

The Federal Energy Management Program is a program that in conjunction with ENERGY STAR results in a significant improvement in efficiency. This program requires that federal buildings implement energy efficient appliances. The federal government is a large client for many NAFEM members. Therefore, this market-based program encouraged manufacturers to innovate and create energy savings. The effectiveness of this program should have been more thoroughly considered as an alternative to issuing this regulation.

###### **iii. Local and State Regulatory Initiatives**



In addition to federal programs that require ENERGY STAR, many states and local entities have implemented these requirements as well. These initiatives further the effectiveness of ENERGY STAR and add to the market demand for efficient commercial ice makers. The Department failed to consider these initiatives in its analysis.

iv. U.S. Green Building Council Leadership in Energy & Environmental Design Program (LEED)

The Department failed to acknowledge the positive impact of voluntary building standards that are increasingly present and influential in the market place and require high efficiency products endorsed by the ENERGY STAR program.

**C. Failure to Select the Most Cost-Effective Solution to Achieve Objective**

The Department failed to select the most cost-effective solution to achieve significant energy savings. We believe the market incentives mentioned above and the competitive drive to meet market demands will continue to ensure the availability of the most technologically feasible and economically justified energy efficient equipment. If the Department continues to conclude that revisions to the existing standards are necessary, NAFEM believes that a negotiated rulemaking would create a more constructive and efficient environment to resolve these issues and allow all parties to arrive at efficiency levels that are both feasible and cost-effective.

**D. Impact on End User**

The Department should review its analysis of the restaurant industry. NAFEM is concerned that higher equipment costs associated with this proposal will result in the use of less efficient used equipment. NAFEM customers and their stakeholder representatives, such as the National Restaurant Association (NRA), express significant concerns about the negative impacts to the restaurant industry of larger, more expensive ice makers with less capacity.

**V. Technological Analysis**

The model used to select the proposed efficiency levels is fundamentally flawed. The analysis overestimated compressor efficiency and availability, failed to analyze real world operating temperatures, and reached inaccurate conclusions related to product liability. The Department must reevaluate the following modeling and assumption errors before publishing a final rule.

**A. Compressor Efficiency**

The Department's reliance on compressor efficiency improvements as a basis for the stringent efficiency standard is problematic. Ice maker efficiency increases from increases in compressor efficiency will be less than other refrigeration and cooling products. Commercial ice makers do not operate to maintain a consistent temperature like most air-conditioning and refrigeration equipment or appliances, but rather cycle between an ice production phase and an ice harvest phase with transitional periods between these two phases. Therefore it is possible that the ice maker efficiency increase may be a mere one-third of the compressor efficiency increase. The Department must adjust the TSL level to adjust for this significant difference in efficiency possibilities.

#### **B. Compressor Availability**

NAFEM suppliers verified that high-technology compressor motors for automatic commercial ice makers will not be available in the foreseeable future.<sup>9</sup> Compressor manufacturers indicated that the investment necessary for this type of specialized production was not available for products with shipments as few as automatic commercial ice makers' roughly 150,000 units per year. Compressor manufacturers indicated that this was different than for larger industries because the volume of units may be high enough to recoup the required research, development, and testing costs. The Department must account for the unavailability of high-technology compressor motors in the design options analysis and any economic assessments.

#### **C. Reliability Impact**

The Department's analysis of technical options to increase energy efficiency is fundamentally flawed because it only examines ratings in conditions between 90-degree Fahrenheit and 70-degree Fahrenheit water temperatures. In the real world ice makers operate over a wide range of ambient air and inlet water conditions. The Department must reexamine the reliability conclusions made using a wider spectrum of operating conditions in the analysis to ensure reliable operation of ice makers over the full range of conditions is not negatively impacted. In this analysis the Department should examine the impact of design options on diminished harvest abilities and slushing likelihood.<sup>10</sup>

### **VI. Conclusion**

The Department should not issue a final review without addressing each flaw in the market and technological analyses. The Department must also bring the analysis into compliance with Executive Orders 12866 and 13563 that reiterate the importance of a common sense regulatory approach that balances business concerns with government oversight. The cost estimates associated with design options, costs to end users, and lifetime costs savings must be recalculated to reflect the real world data provided by manufacturers. The Department must also reexamine the feasibility and availability of design options and their impact on product availability, ice making capacity, and reliability.

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<sup>9</sup> Please see compressor manufacturer Danfoss' comments for a discussion on this topic.

<sup>10</sup> Manitowoc Ice Comments Submitted April 14, 2014 (ID: EERE-2010-BT-STD-0037-0064).

As a result of the fundamental flaws in the market and technological assessments outlined above, and in NAFEM member comments, the rule is economically unjustified and technologically infeasible. NAFEM requests a negotiated rulemaking to work with the Department in a collaborative process to correct the errors in the analysis and establish an appropriate energy conservation standard.

Thank you for the opportunity to comment on this proposed rule. NAFEM looks forward to working with the Department through the negotiated rulemaking process to improve the efficiency standards in this rulemaking.

Respectfully submitted,

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