

# ENERGY STAR® Criteria for Refrigerator Revision Meeting Notes

U.S. Department of Energy Headquarters  
Forrestal Building, Room 6E069  
June 4, 2007

## **Speakers:**

Richard Karney, P.E., U.S. Department of Energy  
Bill McNary, D&R International, Ltd.

## **Attendees:**

Sarah Bovim, Whirlpool  
Bill Brown, GE Consumer & Industrial  
Josh Butzbaugh, D&R International, Ltd.  
David Calabrese, Association of Home Appliance Manufacturers  
Larry Kast, Honeywell  
Richard Donner, LG Electronics  
Ken Gayer, Honeywell  
David Hall, Electrolux  
Earl Jones, GE Consumer & Industrial  
Richard Karney, P.E., U.S. Department of Energy  
David Lis, Northeast Energy Efficiency Partnership  
Bill McNary, D&R International, Ltd.  
Kara Rodgers, CEE  
Ed Schmidt, Northeast Energy Efficiency Partnership  
James Siegel, D&R International, Ltd.  
Jacob Skaggs, D&R International, Ltd.  
David Steiner, D&R International, Ltd.  
Dick Topping, Sub-Zero

*Please note that while the best attempts were made to compile complete and accurate notes, record keeping is sometimes a logistical challenge. We appreciate your understanding. If you have any corrections to the notes, please contact Bill McNary of D&R International at [bmcnary@drintl.com](mailto:bmcnary@drintl.com).*

**Introduction:**

The notes below are from the stakeholder meeting held on June 4, 2007, to discuss the market impacts of revising the ENERGY STAR criteria for refrigerators. The meeting consisted of preliminary presentations, open discussion, and closing remarks by the U.S. Department of Energy.

A title and brief summary is provided for the two preliminary presentations, followed by the comments from stakeholders.

The open discussion section contains comments shared by the group. The individual and his/her corresponding organization are attributed to each comment.

**Presentations:****Opening Remarks****Richard Karney, U.S. Department of Energy**

Mr. Karney gave an overview of the ENERGY STAR market for refrigerators. When setting ENERGY STAR criteria, Mr. Karney indicated that the U.S. Department of Energy (DOE) and the ENERGY STAR program typically attempt to establish the top 20-25% most efficient products on the market as ENERGY STAR qualified. DOE last changed the criteria for full-size ENERGY STAR qualified refrigerators in 2004, setting it at 15% more efficient than the minimum Federal standard. DOE's proposed new criteria would increase the current percentage to 20% more efficient than the Federal standard, with a proposed effective date of April 1, 2008. Mr. Karney expressed his interest in hosting this stakeholder meeting to receive input on how much the new criteria should be changed, when the new criteria should be set, and what other issues stakeholders want to address regarding DOE's proposed criteria change for ENERGY STAR refrigerators.

**Overview of History of ENERGY STAR Refrigerator Program and the ENERGY STAR Criteria Setting Process****Bill McNary, D&R International**

Mr. McNary indicated that 56.3% of refrigerator models on the market are ENERGY STAR qualified and over 30% of unit sales are ENERGY STAR qualified. ENERGY STAR qualified refrigerators currently only save customers an average of \$7 annually. Changing the criteria to 20% would increase unit savings and also potentially create large national energy savings. Mr. McNary explained that the production of models that perform 20% more efficient than the Federal standard is technically feasible for manufacturers based on the October 2005 Technical Support Document.

Mr. McNary's presentation also explained DOE's proposal to update the test procedure used to test ENERGY STAR qualified models by adding a provision that ensure all energy consuming features operate normally throughout the DOE test.

Mr. McNary established the following as areas DOE would like to receive stakeholder feedback:

- DOE's proposed effective date
- The feasibility of a 20% more efficient level for all sizes and configurations
- Input data accuracy and reliability
- Any other issues to include in the criteria

## Comments

*Earl Jones, GE Consumer & Industrial (GE):* Pointed out that comparing the recent dishwasher test procedure change to DOE's proposed refrigerator test procedure update is not a good comparison since dishwashers manufacturers had no choice but to test with the previous test procedure that did not take into account soil sensing models. DOE's proposed refrigerator test procedure update is to ensure manufacturers do not consciously alter the model for the test.

*Bill McNary, D&R International (D&R):* Clarified DOE's proposed update to the test procedure is to ensure the refrigerator performs in a lab as it would in a consumer setting.

*Richard Karney, U.S. Department of Energy (DOE):* Mentioned the availability of production tax credits for manufacturers on models that are 20% more efficient.

*David Calabrese, Association of Home Appliance Manufacturers (AHAM):* Stated that the existing tax credits expire on December 31, 2007.

*Bill McNary, D&R International:* Explained that 56.3% of models meet the current 15% criteria, and 4.4% would meet the proposed 20% criteria. Raising the criteria to 20% would provide a greater savings for ENERGY STAR qualified refrigerators. Mr. McNary also explained that the testing criteria were done at an ambient temperature of 90 degrees with no door openings.

*Earl Jones, GE:* Questioned the basis of the analysis; more specifically the feasibility of manufacturing sufficient 20% better models by DOE's proposed effective date.

*Richard Karney, DOE:* Indicated that historically manufacturers will work to meet the new criteria level and that 9 months is usually enough lead time for industry. Mr. Karney stated that the majority of stakeholders that submitted comments indicated the April 1, 2008 effective date is too soon, and that most stakeholders mentioned that the test procedures must be updated.

*Earl Jones, GE:* Commented that more in-depth analysis of the impact of the criteria increase needed to be conducted, and that the current analysis was insufficient and flawed. Mr. Jones stated that more information is needed on the basis of the analysis. Mr. Jones also stated that it is easy for manufacturers to meet new ENERGY STAR criteria on certain products, but that refrigerators are an example of a product category where it is not easy.

*Richard Karney, DOE:* Stated that stakeholders must submit their final comments to him before June 22, 2007 to be considered for the criteria change.

*Earl Jones, GE:* Expressed that more data on the configuration must be collected before changing the criteria. Asked if the analysis is claiming that there is already a 20% market share of products at 20% more efficient than the Federal standard.

*Bill McNary, D&R International:* Replied that the 20% estimate assumes that with the nine month lead time, the manufacturers will soon follow with changes to the units to meet the new standard.

*Richard Karney, DOE:* Agreed that manufacturers will make models or adjust models to meet the new efficiency standards.

*Earl Jones, GE:* Suggested that it is easy for some manufacturers to meet the new criteria, but not easy for all. Manufacturers' ability to create more efficient refrigerators is subject to the availability of components, especially compressors, to meet the new criteria

*Richard Karney, DOE:* Clarified that manufacturers felt the 20% criteria was possible, but that the issue was the timing of the criteria change

*Earl Jones, GE:* Mentioned several other comments about the analysis:

- DOE usually conducts a huge, cost-based analysis for changes to the Federal standards. GE is not suggesting DOE replicate that for ENERGY STAR, but the ENERGY STAR analysis should be more comprehensive. The Department's proposed new criteria represent a 33% jump, which is a huge undertaking for manufacturers.
- The analysis does not acknowledge the issue of foam. Mr. Jones stated the importance that foam and insulation gasses play in creating a more efficient refrigerator. Mr. Jones then questioned if adequate analysis on foam and insulation had been conducted and how the current analysis fits into the April 1, 2008 timeline. He questioned how readily available foam and other technology is and if this is adequate for a criteria change in April 2008. The ease of producing 20% more efficient models depends on which foam the manufacturers use. GE, for example, uses HFC-134A, HFC-245fa and cyclopentane, and therefore, no single improvement fits all models.
- The ease of producing models that meet the proposed levels depends on which platform the models are produced on and at what cost they can be upgraded.
- GE is not opposed to the 20% more efficient level, but believes the analysis underestimated the timing issues.

*Richard Karney, DOE:* Asked the manufacturers for any comments about differences regarding different foam types and DOE will keep any comments confidential.

*Earl Jones, GE:* Asked DOE which components they examined in the analysis.

*Bill McNary, D&R:* Replied that DOE did not consider any specific components in the analysis.

*David Steiner, D&R International:* Asked the other manufacturers if they felt the changes were feasible.

*Sarah Bovim, Whirlpool:* Stated the April 1, 2008, effective date is both technologically and economically feasible. Ms. Bovim stated that Whirlpool prefers the April 1, 2008 date for the criteria change but would not support mid-year criteria changes, which would require disruptive rearrangement of sales floor design in the middle of the refrigerator selling season. If the date of criteria change were to be postponed, Whirlpool prefers April 1, 2009, since April 1<sup>st</sup> is the beginning of the refrigerator season. Ms. Bovim also expressed interest in hearing the other manufacturers' comments about the proposed changes.

*Rich Donner, LG:* Stated support for the 20% level, but would prefer postponing the date of criteria change to later, at least September 1, 2008, and preferably April 1, 2009, due to issues involving offshore shipping and other logistical problems. Mr. Donner explained that the implementation date should take into consideration the time it takes for manufacturers to react to the criteria change and conduct proper testing. Mr. Donner also responded that even though the criteria change has been rumored for a while, without formal criteria discussions, there is no motivating factor for manufacturers to go forward with upgrading their units especially for manufacturers without domestic production facilities that can take advantage of the tax credits.

*Kara Rodgers, CEE:* When asked to comment, Ms. Rodgers stated that CEE always prefers sooner changes, but she did not want to contradict the manufacturers and their interests.

*Earl Jones, GE:* Explained that it is difficult for existing factories to simply change the foams and gasses that are used to manufacture refrigerators especially for a manufacturer like GE that uses three different foams. He explained that there are also issues regarding the availability of compressors due to over-demand. Mr. Jones stated that it is more complicated to make jumps in the manufacturing line than what is assumed in the analysis of the criteria change. Mr. Jones stated that the change would be easier for manufacturers that already planned on changing their production facilities, but once the factories are built, the manufacturers are stuck with them and it is very costly to change.

*David Hall, Electrolux:* Mr. Hall said that Electrolux waited for the official announcement of the criteria revision process to begin updating their development. He agreed with Mr. Jones that different technologies have a different level of cost-effectiveness for any changes. There is also the issue with the capacity of existing high-efficiency compressors. Electrolux makes their plant decisions based on the level of foam necessary to meet the Federal standard and uses urethane since that is all that is

needed to meet the minimum Federal standard. ENERGY STAR qualified units are manufactured by adding efficient components. A change to 20% more efficient will require expensive changes in the baseline foam production which will also make non-qualified models more expensive since they will automatically be produced with a more expensive foam.

*Earl Jones, GE:* Explained that the cost of standardized foam is very high. Mr. Jones stated that manufacturers use the Federal standard to determine foam usage, bringing all the manufacturers to an even playing field. Manufacturers then add components and new technology to make the models meet the proposed 20% criteria.

*Sarah Bovim, Whirlpool:* Stated that \$50 tax credits are used to promote models that meet the 20% criteria and that if the ENERGY STAR criteria change is delayed, there is a disincentive for manufacturers to produce units at 20% if 15% is still qualified. Ms. Bovim noted both the House and Senate are currently reviewing legislation that would potentially establish production tax credits for next year.

Ms. Bovim also questioned if the criteria change and the test procedure should be changed together or separate.

*Earl Jones, GE:* Supported the idea of revising the test procedure and agreed that they could be separated. Mr. Jones noted that the revision should only apply to new models so manufacturers don't have to re-label products tested with the previous test procedure. Mr. Jones then stated that tax credits, applied over three separate categories over three separate years, should not influence the decision for the criteria change.

*Sarah Bovim, Whirlpool:* Questioned if manufacturers could produce refrigerators that operate 20% more efficiently than the Federal standard without ENERGY STAR.

*Ed Schmidt, NEEP:* Stated that delaying the 20% criteria might dilute the value of the tax credit, which would be a shame after all the effort that went into reaching an agreement on it.

*Earl Jones, GE:* Stated that tax credits come and go and that they don't have a long-term effect. Mr. Jones explained that ENERGY STAR must stand on its own and that tax credits should not be taken into consideration when changing ENERGY STAR criteria.

*Richard Karney, DOE:* Requested clarification on the proposed production tax credits for 2008 and beyond.

*David Calabrese, AHAM:* Summarized the proposed legislation and indicated the proposed credits are much more stringent than the existing production tax credit.

*Richard Donner, LG:* Clarified that the Senate version of the proposed production tax credits covers overseas production, but indicated that the provision may not be included in the final law. Mr. Donner also raised the issue that increasing the market share of ENERGY STAR qualified refrigerators from 5% (assuming criteria change takes effect)

to 20% (optimal market share of ENERGY STAR products) may take a long time to reach.

*Bill McNary, D&R International:* Clarified that the criteria change for refrigerators in 2001 saw the market share increase from 0% to 20% from January to December.

*Earl Jones, GE:* Stated that other reasons contributed to an increase in market share of refrigerators in 2001. Some businesses were in the process of building new factories in 2001 in order to comply with the new Federal standard, which allowed them to develop appliances that quickly came to meet the new ENERGY STAR criteria change.

*Richard Karney, DOE:* Commented that the market share for refrigerators from 2004–2006 remained in the low 30%, and that manufacturers should be able to meet the new criteria.

*Richard Donner, LG:* Raised the issue of creating a “pull” vs. a “push” customer strategy for refrigerators, and that consumer tax credits may be the best way to promote the most efficient ENERGY STAR refrigerators.

*Kara Rodgers, CEE:* Explained the current rebate incentive programs, and emphasized the differentiated consumer incentive levels based on product efficiencies. Ms. Rodgers indicated she can talk to her members about consumer tax credits.

*Bill McNary, D&R International:* Stated that tax credits are an effective way to promote the most efficient ENERGY STAR qualified products and referenced various state-level incentives from around the country, such as sales tax holidays and income tax credits on energy efficient products.

*Sarah Bovim, Whirlpool:* Clarified that consumer tax credits do not transform the market and also stated that she has not seen data that indicates consumer credits are effective.

*Bill McNary, D&R International:* Stated that the savings numbers for refrigerators are not currently compelling with savings equal to that of CFLs. With the new criteria change, annual savings numbers would increase from \$7 to \$10.

*Dick Topping, Sub-Zero Refrigeration:* Stated that he agrees with Earl Jones that the April 2008 date for the criteria change is problematic. He explained that transitioning from a less to more efficient gas takes time in which to invest, and that the DOE has made a mistake in setting the date of criteria change prematurely. Sub-Zero is transitioning from HFC-R22 to HFC-245fa and the transition is going slower than expected and that the Department does not understand the time it takes to go from having the technical capability to produce a small number of units to mass producing qualified models.

*Larry Kast, Honeywell:* Questioned what effect a smaller pool of ENERGY STAR qualified products would have on the market.

*Richard Karney, DOE:* Stated that the new criteria change gives manufacturers nine months from now to adjust and that he expected the percentage of ENERGY STAR qualified products to move from 4% to 20% over time.

*Earl Jones, GE:* Commented that GE will have to invest in substantial capital and use a sizeable amount of money to develop products that meet the new criteria. Retailers demand ENERGY STAR qualified products and any manufacturer who cannot provide qualified products will lose floor space and market share to their competitors.

*Ken Gayer, Honeywell:* Asked if manufacturers could manufacture cheaper compressors and other components if the foam was better.

*David Hall, Electrolux:* Commented that high efficiency motors do not offer a sizeable energy savings and that the dynamics are different in the other direction. The urethane foam is a large increment of the cost.

*Ken Gayer, Honeywell:* Clarified an earlier comment from GE about the proposed “33% jump” in the criteria (i.e., going from 15% more efficient to 20% more efficient). Mr. Gayer noted that the proposed criteria change is only a 5.9% reduction in refrigerator model kWh/year based on the shipment weighted averages used in the analysis paper.

*Bill McNary, D&R International:* Asked for clarification as to why the criteria date of April 1<sup>st</sup> is so important.

*Sarah Bovim, Whirlpool:* Responded that the peak buying time for refrigerators is during the summer months. Changing the criteria during the summer can cause problems changing floor plans, and that the costs would move back upstream to the manufacturers.

*Earl Jones, GE:* Agreed that the criteria change should not happen during the summer months of the year when it is to take effect.

*David Hall, Electrolux:* Agreed that the sales season is an important issue to take into account when choosing an effective date for the criteria change.

### **Closing Remarks**

*Richard Karney, DOE:* Requested that all comments from manufactures be submitted before June 22, 2007, so that they can be considered before the announcement of the effective date on July 1, 2007. He then concluded the meeting and thanked everyone for coming, noting that all presentations and meeting notes would be posted on the web. Mr. Karney asked again for manufacturers to also submit any confidential insulation issues for the Department to consider if those would be helpful.