# U.S. Department of Energy

# ENERGY STAR® Criteria for Clothes Washer Meeting

**Date:**
August 31, 2004

**Location:**
Forrestal Building, U.S. Department of Energy Headquarters, Room 1E245

**Speakers:**
Richard Karney, P.E., U.S. Department of Energy
Bill McNary, D&R International, Ltd.
Tony Gregg, P.E., City of Austin

**Moderator:**
Christine Barbour, Newport Partners, LLC

**Attendees:**
Kyle Andrews, U.S. Department of Energy
Christine Barbour, Newport Partners, LLC
Ed Barbour, Navigant
Tom Bee, Staber Industries
Bryan Berringer, U.S. Department of Energy
Michael Beyerle, GE Consumer & Industrial
David Calabrese, Association of Home Appliance Manufacturers
Katherine Delves, Natural Resources Canada
Becky Duff, ICF Consulting
Anthony Fryer, D&R International, Ltd.
John Flowers, U.S. Environmental Protection Agency
Rebecca Foster, Consortium for Energy Efficiency
Tony Gregg, City of Austin
Luke Harms, Maytag Corporation
J.B. Hoyt, Whirlpool Corporation
Bill Jacoby, San Diego County Water Authority
Richard Karney, U.S. Department of Energy
Michael McCabe, U.S. Department of Energy
Bill McNary, D&R International, Ltd.
Jenny Moe, Procter & Gamble
Jon Murell, BSH Home Appliances
Ed Osann, Potomac Resources
Myrna Overstreet, Procter & Gamble
Thomas Pape, California Urban Water Conservation Council
Richard Pettibone, Maytag Corporation
Rachel Schmeltz, U.S. Environmental Protection Agency

Karen Schneider, U.S. Environmental Protection Agency
James Siegel, D&R International, Ltd.
Scott Thigpen, D&R International, Ltd.
Jennifer Thorne-Amann, American Council for an Energy-Efficient Economy
Barbara Twigg, U.S. Department of Energy
Bryce Wells, Fisher & Paykel
Larry Wethje, Association of Home Appliance Manufacturers
Gadiben Yehunda, Alliance to Save Energy
Ying Zhou, BSH Home Appliances

**Introduction**:
The notes below are from a stakeholder meeting held on August 31, 2004 to discuss the market impacts of changing the ENERGY STAR criteria for clothes washers. The meeting consisted of topical presentations, open discussion and then closing remarks from the Department of Energy.

The title and a brief summary are provided for each formal presentation below. Any comments that immediately followed the presentations are listed under the presentation summary.

The stakeholder discussion section contains the comments shared with the group. The individual and his/her corresponding organization are attributed to each comment. (Flip chart notes written during the meeting are summarized by topic in Appendix A.)

The topical presentations and other materials pertaining to this meeting can be accessed at the following URL: ***http://www.energystar.gov/index.cfm?c=revisions.clotheswash_spec***

# 1. Presentations

## Overview of ENERGY STAR Criteria Setting Process and History of Clothes Washer Criteria
## Richard Karney, P.E., U.S. Department of Energy

*This presentation discussed some of the fundamental characteristics of the ENERGY STAR program and explained the need for criteria revision. The successes of the ENERGY STAR clothes washer program were also discussed. The final slide presented the next steps in the criteria revision process.*

Presentation available at this URL:
***http://www.energystar.gov/index.cfm?c=revisions.clotheswash_spec***

**Comments**

J.B. Hoyt, *Whirlpool Corporation:* asked about the Department's timeline after September 17, 2004 when comments are supposed to be collected from stakeholders. Richard Karney indicated his desire to receive manufacturer input on this matter; particularly on the issue of how much time is needed for manufacturers to change their production lines if a change in the criteria occurs.

## Review of Market Impact Analysis of Potential Changes
## Bill McNary, D&R International, Ltd.

*This presentation explained the Market Impact Analysis of Potential Changes to the ENERGY STAR Criteria for Clothes Washers paper (DOE Analysis Paper) that was distributed to stakeholders on August 19, 2004. The presentation showed the impact of changing the modified energy factor (MEF) and adding a water factor (WF).*

Presentation and DOE Analysis Paper are available at this URL:
***http://www.energystar.gov/index.cfm?c=revisions.clotheswash_spec***

**Comments**

A question was raised on using the Energy Factor (EF) metric for the 2007 ENERGY STAR Criteria. Bill McNary indicated that ENERGY STAR should continue to use the Modified Energy Factor to stay consistent with the Department's Federal standard metric and to eliminate consumer confusion.

Larry Wethje, *Association of Home Appliance Manufacturers (AHAM):* stated that AHAM would not recommend a specific ENERGY STAR criteria level, but would comment on the DOE Analysis paper. Mr. Wethje stated there are "gaps" in the DOE Analysis Paper and offered the following comments:

- A shipment-weighted analysis should be conducted instead of the model-based analysis that was used in the DOE Analysis Paper. Using the existing clothes washer models is not the best way to decide on a level. Model-based analysis does not take into account the market dynamics or features. It is a dangerous way to decide on a level.
- Savings numbers are flawed. ENERGY STAR is taking credit for all the energy savings, which may not be accurate. The DOE Analysis Paper does not account for the ENERGY STAR qualified washers that will be sold without any Federal program.
- The regression analysis in the paper is misleading. The $r^2$ value is high and there is no correlation between MEF and water factor. The regression should be qualified significantly.

Richard Karney, *U.S. Department of Energy:* responded by pointing out that the chart was included for the purpose of showing the low correlation between water factor and MEF.

Larry Wethje, *AHAM:* stated that the following issues should have been addressed in the DOE Analysis Paper:

- Questionable performance as efficiencies increase; particularly as the water factor increases.
- Consumer preference for top-loading washers.
- Capacity and price point issues.

Mr. Wethje then noted that Bill McNary addressed the limitations of a model-based analysis during his presentation (Mr. McNary discussed this issue during the "*MEF – Qualified Models at Various Levels" slide)*.

Mr. Wethje also reminded everyone that MEF is the metric that all stakeholders agreed to several years ago.

Mr. Wethje indicated that AHAM would be willing to provide the Department with additional data to help with the criteria revision process, but AHAM must confer with its members before supplying any information. AHAM will be holding a meeting in October 2004 and this topic will be discussed and decided on.

Richard Karney, *U.S. Department of Energy (DOE):* indicated that he would postpone his decision on proposing revised criteria until after receiving new data from AHAM.

Larry Wethje, *AHAM:* made some additional comments on the DOE Analysis Paper.

- Capacity estimates may be too low. The DOE Analysis Paper assumes the average washer has a volume of 2.7 cubic feet. Yet last year, AHAM's shipment weighted averages indicated that the average washer had a volume over 3 cubic feet. 2.7 cubic feet may be misrepresenting the market.
- The number of base models may be overstated in the DOE Analysis Paper. The Analysis states the current number of models that meet the ENERGY STAR criteria is 181. However, some of the models included in that number may be derivatives of 1 basic model. So even though the ENERGY STAR list shows around 180 models, the actual number of different base models may be only around 100.

Rebecca Foster, *Consortium of Energy Efficiency (CEE):* commented that the shipment weighted data she has collected from CEE's members shows high market penetration of ENERGY STAR washers with high MEFs and low water factors. CEE has used information from various rebate programs around the country to analyze potential MEF and water factor levels. Thirty percent of products rebated in 2003 had an MEF of at least 1.8 and a water factor of at most 7.5.

Tony Gregg, *City of Austin:* asked AHAM if it would be able to provide quarterly data to support the DOE Analysis.

Michael Beyerle, *GE Consumer & Industrial:* asked if the DOE Analysis could include financial dollar savings. Bill McNary said that the next Analysis would include dollar savings.

J.B. Hoyt, *Whirlpool Corporation:* mentioned that 85% of Whirlpool's washer sales are top-loaders. Consumers prefer the top-loading washer, and top-loaders tend to use more water. It's the "nature of the beast."

Ed Osann, *Potomac Resources:* asked if the stakeholder discussion on changing the clothes washer criteria included commercial washers. Richard Karney said that the criteria discussion was for both residential and commercial washers. Mr. Osann also commented that the DOE Analysis Paper has been very helpful.

## Stakeholders issue Suggestions for Discussion

*Christine Barbour, Newport Partners, asked the meeting attendees to list some of the discussion points they would like to hear about at the meeting. The following topics were listed:*

- Water Factor
- Modified Energy Factor (MEF)
- Labeling
- Embedded energy (in water)

**Comments**

J.B. Hoyt, *Whirlpool Corporation:* stated that many of the topics are related.

## Including a Water Factor for ENERGY STAR Qualified Clothes Washers
## Tony Gregg, P.E, City of Austin

*Tony Gregg from the City of Austin Water Conservation Program emphasized the importance of including water factor in the ENERGY STAR criteria. Including a water factor results in a simplified message to consumers that the machine is efficient (i.e., both energy efficient and water efficient). Water utilities are likely to require a water factor of 7.5 or less on clothes washer incentives by 2007.*

Presentation available at this URL:
***http://www.energystar.gov/index.cfm?c=revisions.clotheswash_spec***

**Comments**

Larry Wethje, *AHAM:* asked about the minimum water factor requirement for the City of Austin's rebate program.

Rich Pettibone, *Maytag Corporation:* mentioned that Mr. Gregg sounded like he was speaking on behalf of a larger entity when discussing water issues.

Rebecca Foster, *CEE:* presented CEE's proposal for ENERGY STAR clothes washer criteria. CEE proposes a minimum MEF of 1.8 and a maximum water factor of 7.5. This will be CEE's lowest tier and should be the minimum ENERGY STAR criteria.

Bill Jacoby, *San Diego County Water Authority (SDCWA):* commented on the state of California's commitment to an aggressive water factor for clothes washers. California has proposed a maximum water factor of 8.5 for 2007 and a maximum of 6.0 for 2010. Of clothes washers qualifying for San Diego incentives, 81% of clothes washer sales have a water factor of less than 8.5 and 30% have a water factor of less than 6.0. Mr. Jacoby stated that consumers in California prefer efficiency, and don't care whether the product is a front-loader or top-loader.

Bryce Wells, *Fisher & Paykel:* commented on the "*Falling Percentage of Water Efficient Clothes Washers*" slide from Tony Gregg's presentation. Mr. Wells suggested that the falling line probably correlates with price points. So, consumers in Austin may be purchasing ENERGY STAR qualified washers that are not necessarily water efficient, but at least they are energy efficient. Also, these washers represent a lower price point and are more affordable to consumers.

Bill Jacoby, *SDCWA:* emphasized the importance of water efficiency in his region of the country. His organization is offering a rebate of $125 just on the water side.

Michael Beyerle, *GE Consumer & Industrial:* asked about the typical consumer's take on water efficiency. Michael asked if there are any data indicating that consumers are motivated about water efficiency. Tony Gregg responded that the consumer demand for water efficiency may vary regionally, and that he has no data.

Tom Bee, *Staber Industries:* stated that water rates are a big decision factor in certain regions of the country.

# 2. Comments Received to Date

*Richard Karney reviewed the comments that were submitted to DOE before the meeting. Below is a summary.*

The San Diego County Water Authority urged any clothes washer criteria revision to include water efficiency and also recommended that there be only one label to designate both energy and water efficiency.

Cost Containment Engineering, Inc. recommended the inclusion of water efficiency in any new criteria.

# 3. Stakeholder Discussion

*Below is a summary of the meeting discussion. The discussion was structured based on the suggestions from the meeting attendees. Many of the discussion topics overlapped.*

## Water Factor

David Calabrese, *AHAM:* offered the following comments to start the discussion on the potential market impact of including water factor in the 2007 ENERGY STAR criteria:

- The Department of Energy (DOE) is the government agency that should determine clothes washer labeling.
- Including water factor in the criteria may negatively impact consumer choice considering the following:
    - Consumer preference: consumers predominantly prefer top-loaders, which typically have higher water factors.
    - Performance: a high water factor may impact the performance of the washer.

- Capacity: consumers typically want larger capacity units.
- Price: high efficiency units are typically very expensive.

Michael Beyerle, *GE Consumer & Industrial:* supported AHAM's statement that DOE should be the owner of the ENERGY STAR clothes washer program and it prefers working with one government agency on clothes washers. Mr. Beyerle then discussed the issue of water factor and pricing. GE currently offers several "value washers" that meet the current ENERGY STAR criteria. Some of these products cost less than $400. Implementing a water factor would significantly drive up the price on an ENERGY STAR qualified clothes washer. Utility rebates will not be able to make up the high prices.

J.B. Hoyt, *Whirlpool Corporation:* stated that it is logical to increase the minimum MEF for 2007. Mr. Hoyt then pronounced Whirlpool's support to implement a water factor in the 2007 ENERGY STAR criteria. Whirlpool will support one label that takes into account both MEF and water factor. Whirlpool produces 1 of 2 washers sold in the U.S and is a big supporter of the ENERGY STAR clothes washer program. With regard to water factor, the ENERGY STAR program should "walk, not run" because water factor is somewhat of an unknown at this point.

Mr. Hoyt then addressed the importance of maintaining consumer utility as the program discusses changing the criteria. Even though utility rebates can influence consumer purchases of front-loaders, 85% of consumers buy top-loaders. Consumers also demand full-sized machines. Both front-loaders and small capacity washers tend to have low water factors, but these washers do not necessarily have all the attributes consumers demand in a clothes washer. It is very important to keep consumer flexibility and not limit their choices since consumers want options.

J.B. Hoyt went on to discuss the issue of providing enough lead time so manufacturers can change their production lines in time to meet new criteria. Mr. Hoyt stated that 2007 is appropriate, and mentioned that Whirlpool's engineering department is already working to prepare for the Federal standard change for 2007. Lead time is very important for manufacturers. A typical product development phase consists of the engineering effort (i.e., design), the testing effort, consumer testing and finally tooling of the products based on requirements and tests. Mr. Hoyt added that manufacturers also need to make sure and "move" carefully on water factor since they are not as aware of the effects of water factor on washer technology.

Rich Pettibone, *Maytag Corporation:* talked about Maytag's historically active role in the ENERGY STAR clothes washer program, citing the importance of the Maytag *Neptune* as the first premium residential front-loader to make an impact on the American market. Some other examples of Maytag's active participation in ENERGY STAR are the washer study in Bern Kansas, and also Maytag's washer study in Boston.

Mr. Pettibone then stressed Maytag's inclination to always consider the consumer–the consumer value proposition. Clothes washers make life better. Maytag can support a DOE Analysis to consider water factor if the needs and desires of the consumer are taken into consideration.

Mr. Pettibone stated that certain factors that affect the consumer have not yet been addressed in the preliminary DOE Analysis Paper such as:

- Wash/rinse issues

- Hygiene issues (i.e., deposited cleaning agents are not entirely removed when doing a wash)
- Pricing issues: (i.e., many consumers have problems paying $800 - $900 for washer)

Rich Pettibone went on to say that Maytag would support a water factor in ENERGY STAR if the consumer issues listed above and sales volumes are taken into consideration. Many high efficiency units have low volumes.

Christine Barbour, *Newport Partners:* asked about the affordability of high efficiency washers. What is it about these models that make them so expensive?

Jon Murrell, *BSH Home Appliances:* stated that there is more engineering involved in manufacturing a front-loader. Mr. Murrell represents BSH Home Appliances, which is a European-based company that is making its first steps into the US market. BSH manufactures front-loaders for the US market under the Bosch and Siemens brands. Since more engineering is involved, the paybacks are longer for the manufacturers.

Michael Beyerle, *GE Consumer & Industrial:* provided some additional explanations on why a horizontal-axis washer typically costs more to manufacture than a vertical-axis washer.
Horizontal axis washers have:

- More complicated motors
- More complicated control systems
- More complicated suspension systems
- More electronics
- Shock absorbers

Lastly, the typical horizontal axis washer weighs about 50% more than a vertical axis washer. That means much more steel and copper must be used in the manufacturing process.

Tony Gregg, *City of Austin:* asked Maytag if it had recovered its costs from the *Neptune*.

Rich Pettibone, *Maytag Corporation:* responded that the margin on a *Neptune* goes down over time due to competitive pressures.

Mr. Pettibone also commented on clarifying clothes washer terminology. "Top-loaders" are being referred to as the non-efficient products, and this is not entirely accurate. The most efficient clothes washer that Maytag produces is a "top-loader" (i.e., the *Neptune TL)*. All previous comments about the non-efficient "top-loaders" are referring to conventional agitator technologies.

J.B. Hoyt, *Whirlpool Corporation:* indicated the washer market has three categories.

- Conventional deep-fill top-loaders
- Efficient top-loaders
- Front-loaders

Mr. Hoyt also spoke about Maytag's *Neptune* washer. The rollout of the *Neptune* gave Maytag a first-mover advantage in the premium laundry category allowing Maytag to collect some return. However, producing a *Neptune* is still more expensive than producing a conventional washer. Some of the issues that Michael Beyerle raised are what contribute to higher costs when producing front-loaders.

Tom Bee, *Staber Industries:* mentioned that there are actually 4 categories of washers. Staber manufactures a horizontal-axis machine that's a top loader.

Ying Zhou, *BSH Home Appliances:* stated that consumers overcome payback with utility savings.

Jon Murrell, *BSH Home Appliances:* emphasized that horizontal axis washers save money over time. The average lifetime is 10 – 15 years, with 10 being the minimum life expectancy. Ying Zhou said the life expectancy could be upwards of 20 years. Tom Bee said their research indicated an average of 14 years and J.B. Hoyt recommended assuming a range of 10-15 years.

Richard Karney, *DOE:* asked if it was the process of loading clothes into a top-loading washer that caused consumers to prefer top-loaders.

J.B. Hoyt, *Whirlpool Corporation:* indicated there is no data on the process.

Rebecca Foster, *CEE:* asked about any time series data for sales (i.e., front-load vs. top-load).

J.B. Hoyt, *Whirlpool Corporation:* indicated that demand for horizontal axis washers has clearly grown. Yet sales are beginning to plateau at about 15% of total sales. Projecting several years into the future would probably show front-loaders representing around 1/3 of the market in a best case scenario with top-loaders representing 2/3 of the market.

Tony Gregg, *City of Austin:* asked Whirlpool how its washer sales breakdown in Europe versus the U.S. Mr. Gregg mentioned how he recently traveled to Spain and did not see any top-loaders. Mr. Gregg asked the manufactures to comment on the European breakdown.

J.B. Hoyt, *Whirlpool Corporation:* indicated that Whirlpool is established in the European market and the predominant clothes washer is the front-loading model. The machines in Europe are much smaller. Since 1995, capacity is the leading driver in consumer purchase.

Tony Gregg, *City of Austin:* asked about the inclusion of an agitator.

J.B. Hoyt, *Whirlpool Corporation:* indicated that the larger capacity models are typically the front-loaders.

Bryce Wells, *Fisher & Paykel:* disagreed with Mr. Hoyt that larger capacity models are front-loaders.

Michael Beyerle, *GE Consumer & Industrial:* stated that GE's research indicates people do not like doing laundry. Most consumers want to get their laundry done quickly. The larger capacity models result in the need for less loads.

Bryce Wells, *Fisher & Paykel:* talked about some of the differences between the European market and US market. Front loaders are popular in Europe and frequently are located in kitchens where the front-loading washer can also serve as a counter top. It is more utilitarian. In the US, the washer is typically located in the basement.

Rachel Schmeltz, *U.S. Environmental Protection Agency (EPA):* from EPA then asked why top-loading models with large capacities were more popular in the US.

J.B. Hoyt, *Whirlpool Corporation:* responded and mentioned that the top-loaders are typically priced lower, but also the issue of familiarity plays a large role in consumer preference for top-loading models. There's also an ergonomics benefit, as top-loaders are viewed as being easier to load.

Rich Pettibone, *Maytag Corporation:* stated that Maytag estimates top loader sales to be less than 85%–as was previously indicated by J.B. Hoyt. But top-loaders are still the overwhelming majority of clothes washer sales. Mr. Pettibone also stated that Maytag research indicates that consumers prefer top-load models even when they are priced the same as front-load models.

Ed Osann, *Potomac Resources:* asked GE to comment on the possibility of including water factor in the ENERGY STAR criteria.

Michael Beyerle, *GE Consumer & Industrial:* stated that GE is internally discussing the benefits and complications of including a water factor in the ENERGY STAR criteria. GE will reserve comment on this particular issues today, but will take all of today's comments into consideration before issuing a formal comment.

Bill Jacoby, *SDCWA:* commented that water efficiency is a geographical issue. It is very important to states on the West coast.

Ying Zhou, *BSH Home Appliances*: stressed that stakeholders should be careful with the "85% of washer sales are top loaders" number. There are other things that consumers think about before buying a washer such as energy consumption.

Tony Gregg, *City of Austin:* stated that front loaders represented zero percent of the washer market in Austin 7-8 years ago, but now are a big part of the market.

J.B. Hoyt, *Whirlpool Corporation:* said that Whirlpool's research shows a consumer in a price-free environment will usually choose a top-loader.

Ying Zhou, *BSH Home Appliances:* commented about the purpose of the ENERGY STAR washer program, to promote more efficient washers. BSH only produces front-loaders. BSH is a European-based company, and in Europe, efficiency is more important because both water and energy are much more expensive. BSH supports more efficient washers.

Scott Thigpen, *D&R International:* talked about the regions that are the most active in promoting the ENERGY STAR program and wondered about consumer clothes washer purchasing decisions in those

regions. Scott asked the manufacturer representatives if they had ever differentiated consumer preference by regions. Both Maytag and Whirlpool responded no.

Tom Bee, *Staber Industries:* commented about the capacity issues that had been discussed and cited some of the average capacities mentioned in the Bern washer study.

J.B. Hoyt, *Whirlpool Corporation:* reiterated that since 1995, capacity has been the number one consideration in consumer purchases.

Tom Bee, *Staber Industries:* stated that ironically he gets positive comments about Staber's small capacity washers from the consumers that buy Staber clothes washers.

Rich Pettibone, *Maytag Corporation:* stated that average load size is getting bigger over the years.

Bryce Wells, *Fisher & Paykel:* commented that his company is seeing larger load sizes as well.

Thomas Page, *California Urban Water Conservation Council (CUWCC):* stated that if a washer is not water efficient, it is not water efficient. Mr. Page used the "Boxers vs. Briefs," example to provide example of a consumer's tendency to behave based on familiarity even if it is not necessarily more beneficial.

J.B. Hoyt, *Whirlpool Corporation:* commented that a water label should be representative of what consumers want to do.

Thomas Page, *CUWCC:* stated that labeling should not make consumers feel good about their purchase. Mr. Page also spoke to Mr. Beyerle's comment about "value washers," and questioned if those specific products were truly "value washers" if you take into consideration the consumer costs over the course of the product's life.

Bryce Wells, *Fisher & Paykel:* mentioned that a better alternative might be for utilities to change the price of water in order to deal with water efficiency issues.

Ed Osann, *Potomac Resources:* called attention to a document he distributed to all meeting attendees titled "*Potential Changes to the ENERGY STAR Criteria or Clothes Washers."* The document listed several points regarding ENERGY STAR and water-using products with an emphasis on clothes washers. Attached to the document was a position statement in support of a voluntary water-efficeint labeling program with signatures from numerous stakeholders.

Mr. Osann then began a long set of comments focused on the importance of including a water factor requirement in the ENERGY STAR criteria. Right now there is huge gap in water/wastewater infrastructure. Not all of it can be tempered by moderating flow, but a lot of it can; roughly 50%.

Mr. Osann went on to discuss the ENERGY STAR Clothes Washer Criteria history slide from Richard Karney's presentation. Mr. Osann noted that the timeline left out a 1992 Congressional amendment to the underlying statute of NAECA that included water savings as a purpose of the efficiency standards.

Ed Osann was pleased to see representation from EPA's Water Office. He stated that clothes washers must be considered for a water efficiency program since clothes washer water use is the second largest use of water in residential homes after toilets.

Mr. Osann acknowledged the caveats of including a water factor in the ENERGY STAR criteria that were presented from industry. Mr. Osann recommended that DOE listen to the comments. Mr. Osann also stated that ENERGY STAR is always meant to represent premium performance. It is reasonable to expect the label to include water efficiency and represent the best performance with regard to both energy efficiency and water efficiency. Mr. Osann recommended ENERGY STAR to support an MEF of 1.8 and a water factor of 7.5.

Rebecca Foster, *CEE:* stated CEE's support of the levels suggested by Ed Osann.

Rich Pettibone, *Maytag Corporation:* stated that an important consideration of this process is to understand the true clothes washer market. The DOE Analysis Paper we are discussing represents models but not the market.

Ed Osann, *Potomac Resources:* agreed with the comments about the DOE Analysis Paper. The critique of a model-based analysis is a valid point. Mr Osann went on to say that he is pleased to see major manufacturers supporting a water factor. Ed Osann and Rebecca Foster stated that sales by model are available by looking at the results of local rebate programs, which CEE is collecting.

Bryce Wells, *Fisher & Paykel:* stated that there needs to be some clarification on the meaning of "premium performance." Washing performance cannot be jeopardized by this potential criteria change. Larry Wethje of AHAM said that "cleanability" procedures need to be included to make sure that the clothes are clean.

Richard Karney, *DOE:* stressed the importance of getting more feedback from the manufacturers on the "cleanability" issue.

Larry Wethje, *AHAM:* mentioned a AHAM/ANSI cleaning standard in response to some of the comments surrounding wash performance. It's a voluntary standard and some manufacturers use it for design and development.

Tony Gregg, *City of Austin:* asked Mr. Wethje if this voluntary standard should be incorporated into the new ENERGY STAR criteria.

Larry Wethje, *AHAM:* said "not necessarily" and stated that the decision should be made by AHAM's members.

David Calabrese, *AHAM:* stressed the importance of maintaining the integrity of the ENERGY STAR clothes washer program and keeping all stakeholders pleased and involved.

Mr. Wethje, *AHAM:* then reiterated the earlier suggestion to "walk and not run" with regard to implementing a water factor in the ENERGY STAR criteria. Mr. Wethje went on to state that the industry will learn more about performance issues and water factor. There's an ongoing study looking

at some of these issues and monitoring a washer's ability to remove certain stains from clothes (e.g., blood, wine, cocoa, etc.).

Tony Gregg, *City of Austin:* asked AHAM if the AHAM Web site lists the model numbers that have been tested with the voluntary cleaning standard. After AHAM replied no, Mr. Gregg asked why, and commented that it would probably be beneficial to consumers.

Larry Wethje, *AHAM:* stated that it is the decision of the manufacturers.

## Labeling

J.B. Hoyt, *Whirlpool Corporation:* offered the first round of comments on potential criteria levels. Mr. Hoyt's first remark was on the potential savings in the DOE Analysis Paper. Mr. Hoyt disagreed with the assumed 20% penetration with a minimum MEF of 1.8. Mr. Hoyt indicated that a higher MEF would result in a lower penetration and the overall energy and water savings would decline.

Mr. Hoyt then proposed an MEF of 1.6 as a great qualifying level. 1.6 is roughly 25% more efficient than the 2007 minimum Federal standard MEF of 1.26. An MEF of 1.6 will allow for a 25% ENERGY STAR market share. Mr. Hoyt also proposed a minimum water factor of 10.0. Mr. Hoyt stated that industry does not know as much about water factor. Industry needs to maintain the "cleanability" consumers demand.

Bill Jacoby, *SDCWA:* talked about the tendency for consumers in his territory to replace perfectly good washers with new ENERGY STAR washers. Mr. Jacoby commented about how the manufacturers are producing "slick machines." The comments questioned whether early replacement should be encouraged.

J.B. Hoyt, *Whirlpool Corporation:* stated that the early retirement is encouraged across all lines, and not just for clothes washers. Whirlpool encourages consumers to replace products before they wear out. New models provide more consumer benefits, and energy efficiency is not the only decision factor for consumers.

Ying Zhou, *BSH Home Appliances:* stated that it is difficult to project what consumer demand will be in 2007.

Ed Osann, *Potomac Resources:* commented on the proposed levels from Whirlpool; specifically the water factor. Mr. Osann talked about how certain states have already established maximum water factors for commercial clothes washers. Both California and Maryland have maximum water factors of 9.5. A maximum of 10.0 for ENERGY STAR in 2007 is too high.

Michael McCabe, *DOE:* asked about how the inclusion of a water level might affect program activity.

Bill Jacoby, *SDCWA:* responded that the inclusion of a water factor will make a significant difference in program activity.

Rebecca Foster, *CEE:* stated that many water utilities have stressed enthusiasm about joining with the ENERGY STAR brand. Including a water factor would help attract more water utilities in some of the national ENERGY STAR promotions such as the "Double Your Savings With ENERGY STAR" clothes washer promotion.

Rebecca then spoke to J.B. Hoyt's proposed levels. Ms. Foster stated that including a water factor will help bring more resources to the table. More of CEE's members will be willing to participate in the ENERGY STAR program.

Michael McCabe, *DOE:* talked about the 25% market share number and indicated that it is somewhat arbitrary. Mr. McCabe touched on the importance of proprietary technology issues. All manufacturers must be able to produce products at the given ENERGY STAR level.

Rebecca Foster, *CEE:* responded and stated that 9 different manufacturers currently offer clothes washers at the proposed CEE levels.

Michael McCabe, *DOE:* asked which technologies are being used by those 9 manufacturers.

Bryce Wells, *Fisher & Paykel:* indicated that increasing the spin speed is not a loophole in the clothes washer test procedure as was previously suggested during Bill McNary's presentation (A comment was made during the "*Water Factor Issue"* slide). He stated that using less hot water achieves a higher MEF without a trade-off with water factor. Mr. Wells stated that his organization will continue to participate in ENERGY STAR. Mr. Wells also commented about the wash/rinse trade off. Mr. Wells also talked about the consumer preference and ergonomic benefits of top-loaders, and mentioned his organization's rollout of a top-loading dryer.

J.B. Hoyt, *Whirlpool Corporation:* responded to Mr. McCabe's question on the technologies from the 9 manufacturers that meet the proposed CEE levels. Mr. Hoyt stated that it is a small number of models, and that they are not mainstream products. They are specialty products targeted at niche markets. Mr. Hoyt also stated that it would be nice to get volume numbers from AHAM.

Tony Gregg, *City of Austin:* asked about whether ENERGY STAR should consider "washability." Mr. Gregg talked about the voluntary ANSI wash test and compared it to ENERGY STAR, a voluntary program.

Myrna Overstreet, *Procter and Gamble:* stated that she was glad that "washability" was being considered. Ms. Overstreet stated that the consumer will ultimately decide. She also cautioned against efficiency standards that are too stringent or else the consumer will take compensatory behavior like washing the clothes twice if they are not sufficiently clean.

John Flowers, *EPA:* commented on the impact on water supply and pollution. Mr. Flowers then mentioned that last September, EPA announced its intention to initiate a water labeling program. Mr. Flowers emphasized that EPA's Water Office is not at the stage where it can recommend a specific water factor level. The program is not that far along, and is still considering which products to use. Mr. Flowers stated that EPA's Water Office is certainly in favor of including a water factor requirement.

## Modified Energy Factor

Rebecca Foster, *CEE:* reiterated her earlier recommendation of a minimum MEF of 1.8. Ms. Foster then discussed why it is important to keep ENERGY STAR clothes washer savings significant. Rebecca stated that many appliance promotions are "carried" by clothes washers since the products generate higher savings than the other appliance categories. Ms. Foster proceeded to say that many of CEE's members want to keep savings significant and will need savings in order to justify their rebate programs.

David Calabrese, *AHAM:* stated that many water factor issues apply to MEF.

J.B. Hoyt, *Whirlpool Corporation:* stressed the importance of maintaining performance and consumer utility. Mr. Hoyt suggested the stakeholders assess the models that are available and look at capacity and wash temperature. Consumers need the products to actually wash clothes. Manufacturers achieve higher MEF levels by using cooler and cooler water which at a certain point may compromise cleanliness.

Mr. Hoyt also restated Whirlpool's belief that an MEF higher than 1.6 will not attract the volume and therefore will not generate enough energy savings. Mr. Hoyt stated that ENERGY STAR market penetration will tail off significantly after 1.6 and won't get close to the 20% assumed penetration mentioned in the DOE Analysis Paper.

Michael Beyerle, *GE Consumer & Industrial:* commented that a minimum MEF of 1.8 is too high. It would be too much too fast and would be more of a revolution instead of proper evolution.

Richard Karney, *DOE:* asked if it was still too high considering there will be over two years of lead time.

Michael Beyerle, *GE Consumer & Industrial:* answered yes. GE's design cycles are 2–4 years, and GE is already preparing for 2007. To initiate something radical, industry would have to abandon things that are already in place.

Mr. Beyerle then asked Rebecca Foster to follow up on her comment about CEE members only wanting to promote clothes washers.

Rebecca Foster, *CEE:* responded that Public Utility Commissions (PUCs) regulate many of the efficiency programs around the country. The PUCs need to see savings in order to justify the programs. Ms. Foster noted that a low annual savings number for an ENERGY STAR clothes washer would put all appliance programs in jeopardy.

Michael Beyerle, *GE Consumer & Industrial:* asked Rebecca how much savings she needed. Rebecca Foster stated that CEE would like to see 300-350 kWh of annual energy savings. Ms. Foster indicated that it does vary based on state utility rates and the PUCs.

Tom Bee, *Staber Industries:* stated that consumers don't understand MEF.

Richard Karney, *DOE:* commented that the FTC EnergyGuide label helps differentiate energy consumption of clothes washer products for consumers. Retailers do not talk about MEF either.

Tom Bee, *Staber Industries:* spoke about changing the system.

J.B. Hoyt, *Whirlpool Corporation:* asked for clarification on the use of the term "system." System means both washing and drying. Mr. Hoyt stated that the tub size is inversely proportionate to MEF.

Ying Zhou, *BSH Home Appliances:* commented that MEF is more appropriate. The metric is more comprehensive and takes into account drying time. It generates new technology.

Richard Karney, *DOE:* then reiterated what Rebecca Foster had mentioned earlier and proposed the situation to the manufacturers. Mr. Karney asked the manufacturers what is doable for 2007. Mr. Karney stated the goal of having substantial savings and maintaining market share that is optimal.

Bill Jacoby, *SDCWA:* talked about how water efficiency is a regional issue. Mr. Jacoby said he has seen it first hand. His region imports water from the Colorado River and must incur significant costs from pumping and water treatment.

J.B. Hoyt, *Whirlpool Corporation:* talked about the embedded energy cost in the price of water and life cycle cost analysis.

Bill Jacoby, *SDCWA:* talked about how the California Energy Commission (CEC) has water factor included in its proposed standard.

Mr. Jacoby then discussed the peaking issue. Peaking is still a concern until there is better infrastructure for energy transmission.

Michael Beyerle, *GE Consumer & Industrial:* asked if Mr. Jacoby was proposing different models for different states.

Bill Jacoby, *SDCWA:* discussed the proposed water factor levels in California—8.5 in 2007 and 6.0 in 2010. CEC is in the process of getting a waiver from DOE.

J.B. Hoyt, *Whirlpool Corporation:* emphasized that the manufacturers need economies of scale. The manufacturers get that from "large quantities of stuff." The marketplace decides what we do. Individual models for different regions wreak havoc with cost structures. He stated that it causes problems from a production and distribution standpoints and that the California example will cause major issues. Whirlpool has a distribution facility in California that ships to different states.

Mr. Hoyt stated that Whirlpool ships in response to consumer demand and that states should not try to sway their shipments.

Michael Beyerle, *GE Consumer & Industrial:* asked some of the California representatives how they keep product in state.

Thomas Page, *CUWCC:* stated that it is similar to the evolution of unleaded gasoline or implementing the 1.6 gallon toilet before the Federal standard in that the vast majority is compliant and 100% compliance is not vital.

Mr. Page also called attention to two CUWCC handouts for the meeting attendees. One described some of the basic components of high-efficiency clothes washer financial incentive programs. The other listed numerous water efficient clothes washer models currently eligible for financial incentives.

Bill Jacoby, *SDCWA:* stated that his industry wants to work with the manufacturers. They want to serve consumers and save water and that the people in California like the efficient machines.

Myrna Overstreet, *Procter & Gamble:* commented on low water rinses. She stated that industry must watch out for fabric softener users. Fifty percent of consumers use liquid fabric softener and they need enough water for the rinse. Without adequate water, the spray and rinse will not work, creating spottiness, staining and no softness in the clothes.

Tony Gregg, *City of Austin:* asked if she has seen that issue with ENERGY STAR qualified washers.

Myrna Overstreet, *Procter & Gamble:* responded that the top-loading models with a spray rinse could have that issue. Front-loaders are fine. Ms. Overstreet went on to say that 50% of clothes washer users use fabric softener.

Richard Karney, *DOE:* asked if manufacturers test their machines using fabric softener.

J.B. Hoyt and David Calabrese commented that manufacturers conduct internal testing to monitor the effectiveness of dispensing fabric softener and the completeness of the rinse.

# 4. Closing Remarks

Richard Karney indicated he is looking forward to receiving comments from all the stakeholders and emphasized the importance of receiving comments. The Department also needs the stakeholders to expand on what was said today with suggestions or thoughts on how to proceed. Mr. Karney reiterated his statement that the preliminary "model-based" analysis was a starting point.

Mr. Karney stated that October 15, 2004 is the deadline for the comment period. That gives enough time for AHAM to send its market data to the Department. Mr. Karney also would like the comments to focus on the amount of lead-time needed for a new criteria.

By the week of September 13th, comments and handouts from the meeting will be available on ***http://www.energystar.gov/index.cfm?c=revisions.clotheswash_spec***

## Appendix A

# DRAFT MEETING SUMMARY

# ENERGY STAR Criteria for Clothes Washers Meeting
# August 31, 2004

**IMPORTANT CHANGE OF DATE NOTICE: Comments due October 15, 2004**

The following summary is an attempt to organize flip chart notes by topic rather than by time of discussion since many topics were raised multiple times throughout the meeting. This summary does not attempt to serve as minutes nor does it attribute remarks to individuals. In many cases a group of stakeholders or an individual from a stakeholder group is identified to assist in understanding the topic. This summary is designed to remind stakeholders of points of discussion and to serve them as they prepare their comments.

**KEY FINDINGS:**

- All stakeholder groups supported the continuation of ENERGY STAR clothes washer **labeling**. They value the process of coordinating and coinciding with Federal standards, but need as much lead time as possible for planning purposes.
- Most stakeholder groups support the addition of a **water factor (WF)** given that the level considers consumer preferences and behavior, manufacturer design and engineering needs and limitations (including the impact of a higher modified energy factor (MEF)) weighed and balanced against potential water savings.
- All stakeholder groups appear to support keeping the ENERGY STAR **MEF** above the Federal minimum MEF to maintain premium consumer benefits and the integrity of the label, however, manufacturers ask that performance trade-offs be considered.
- Utilities, municipalities and their supporting stakeholder organizations recommended a 7.5 water factor and a 1.8 MEF while manufacturers and their supporting stakeholder organizations recommended a target of 10 water factor and 1.6 MEF since they are still learning about the relationship between design, performance, water efficiency and energy efficiency.

**Action Items:**

- Submit comments by **October 15, 2004**. ***What is doable in 2007 to maintain market share? Where is the optimum point?***
- Review comments on the ENEGY STAR Web site: http://www.energystar.gov/index.cfm?c=revisions.clotheswash_spec
- Gather model-based and shipment weighted data.
- Gather data on consumer preference for clothes washers by region.
- Gather new data on capacity and consumer use.

**SUMMARY**

**Analysis**

- Manufacturers need to provide more model-based and shipment weighted data on an on-going basis.
- Develop a different baseline that considers the effect of current programs. Base on difference above current savings rather than taking credit for all savings.
- Since regression demonstrates little correlation between MEF and water factor consider explaining this or removing it from the DOE Analysis Paper since it may pose danger to the casual reader.
- The DOE Analysis Paper uses an average volume of 2.7 cubic feet capacity, but the average capacity in the US is over 3 cubic feet.
- Consider characterizing the basic models rather than the whole realm of models since most clothes washers are based on the same models.
- Expand the DOE Analysis to include consumer savings.
- Consider consumer preferences (top loader vs. front loader).

**Water Factor (WF)**

- From the manufacturers' perspective, the most critical issues related to water factor are **performance**, **consumer utility and preference** (**capacity**) and **price**.
- Manufacturer representatives stated that research indicates that **capacity** (clothes washers with a volume of 3.0 cubic feet or greater) is the **leading consumer driver**.
    - Capacity impacts water factor capabilities.
    - Consumers are using clothes washers differently. More wash is done at home today.
    - Consumers want to get their wash done quickly so they wash larger loads.
    - Capacity varies by technology. The agitator is not the issue.
    - According to the Bern Study (which some stakeholders suggested was too limiting since it is old and from one location) consumers average 8 lbs of clothing per wash (98 percent of laundry loads between 4-14 lbs.)
    - Newer studies with actual data (different methodology) support the use of larger loads.
    - Consumers want the ability to do large loads even if they do not use it.
- According to Whirlpool, 85 percent of **consumers prefer top-loaders**. A low water factor threshold could eliminate preferred products from the market.
    - It was acknowledged that consumer preferences are likely to **vary by region**, but there are no current studies available to support this. A utility stakeholder stated that the San Diego market is experiencing early replacement to high efficiency clothes washers.
    - The preference for TLs is driven by price, familiarity and ergonomics.
    - When asked about the existence of time series data on the process of loading clothes, a manufacturer stated that available data indicated that the preference for front loading washers has grown to 5 percent, but it has recently hit a plateau.

    - When asked about European preferences for front loaders, manufacturers stated that product preferences in Europe are not comparable since the washers are exclusively smaller capacity. The only exception is the TLHA in France.
    - In Europe smaller house sizes and the utilitarian location of the washer and dryer are a factor (use counter space above washer and dryer). In the US, homes are typically larger and many have basements or specific spaces / laundry rooms for washers and dryers – therefore space and size is not a critical issue.
    - One manufacturer stated that consumers will choose top-loaders in a "price-free" environment.
    - What is the goal for what consumer preference should be in 2007? From 15 percent high efficiency to 25 percent?
- Performance metrics should be considered so that there is not a **performance trade-off**.
    - Caveats should be considered, but premium performance should be maintained.
    - AHAM/ANSI have **voluntary standards for testing "cleanability."** Many manufacturers use these to design and test products, but they are not reported since it is voluntary. The standards are currently under revision. They are just now learning about the effects of water efficiency on performance.
    - Consider a "cleanability" index based on data from manufacturers.
    - Only front loaders can meet a 7.5 water factor, which limits the number of models to low volume, niche market products.
    - Consumers use a lot of **hot and warm washes**, so products need to be able to meet these desires.
    - Consider consumer's **compensatory behavior**.
    - Consider the implications of a low water factor on fabric softeners and other cleaning products. Low water rinses will not effectively distribute the fabric softeners and can result in spottiness, stains, and no softness. (Procter & Gamble can provide statistics on fabric softener use.)
- Price and Value
    - Higher efficiency clothes washers are more expensive. The "value" price of around $400 gives more consumers an opportunity to purchase clothes washers.
    - Higher efficiency CWs result in lower sales volume for manufacturers since they are more complicated to manufacture. The higher cost results from a more complicated motors and controls, suspension and additional weight. The margin goes down over time, but not dramatically.
    - Water factor impacts a manufacturer's ability to meet the **"total value**" needs of consumers. Considerations include the **wash & rinse cycles**, **the sanitation of clothes** (effect of cleaning agents), and **affordability** (even with rebates). Other stakeholders suggested that "value" should include operating costs over the life of the product.
    - Rather than price, consider **savings** over time. The minimum engineering **life time** of a clothes washer is 10 years (varies from 10-15 years)
- The use of top load v. front load **terminology** is misleading since a top loader can be highly efficient. The engineering or lack of an agitator is the critical element. There are **four general types** of clothes washers:
    - Top Loading (TL)
    - High Efficiency Top Loading (HETL)

    - Top Loading Horizontal Axis (TLHA)
    - Front Loading (FL)
- From the **utility and local municipality perspective**, the availability of water resulting from an impending **infrastructure gap** is the most critical issue for incorporating a water factor.
    - The costs of water and wastewater are growing in excess of inflation.
    - Half of the investment needs are flow dependant. Clothes washers are the second largest consumers of water in the residential market so they must be included in order to close the gap.
    - 1992 EPACT includes water savings as a purpose.
    - EPA's Office of Water is part of this discussion. EPA is currently in the preliminary stages of reviewing stakeholder comments and potential products a water-efficiency labeling program.
    - Look at markets and sales data, not model numbers.
- What about **geographica**l balance?
    - Consider the **geography of pumping**.
        - One stakeholder suggested that this is reflected in the price of water.
        - A utility representative suggested that the lifecycle cost is reflected if you do not consider the transmission peak loads.
    - Some regions will need more efficient products as a result of state regulations. The California Energy Commission (CEC) is proposing water factor levels of 8.5 by 2007 and 6.0 by 2010.
    - Coin-operated residential machines are required to have a 9.5 water factor in certain states.
    - Manufacturers look for **economies of scale**. Different regions may have a different mix of products based on consumer demand, but they cannot manage locally because of state borders and distribution systems.
- Technically, water factor is not as easy to understand as MEF, so as much time as possible is needed to plan for changes. **Manufacturers need to know the final ENERGY STAR criteria by early 2005.**
    - For manufacturers process lead times are critical to the engineering effort which includes: design, performance testing, consumer testing, and retooling (if necessary) lead times.
    - Manufacturers emphasized the importance of a time line and not setting criteria too quickly. They stated that given what they know today, it is possible to meet the criteria (7.5 water factor and 1.8 MEF) by using less hot water, but what are the wash/rinse trade-offs?

**Modified Energy Factor (MEF)**

- Many stakeholders agreed that reverting to an energy factor (EF) should not be open for discussion since the MEF was arrived at through stakeholder negotiations. Stakeholders supported the changes.
- The Steering Committee for Water Efficient Products and CEE recommend a **1.8 MEF**.
    - This level meets cost-effective barriers.
    - Utilities often bundle appliances for savings and clothes washer savings are significant.

    - Utilities require savings of 250 kWh/year, but they would prefer 300-350 kWh/year.
    - Although manufacturers appreciate the utilities role and they want to continue working together to bring consumers products, they emphasized that the performance issues (capacity and wash temperature) stand.
        - Manufacturers held that there are not a lot of full size units at 1.8 MEF.
        - ENERGY STAR will not get 20 percent market penetration above 1.6
        - Manufacturers stated that 1.8 is "too much, too fast" and could force them to abandon known solutions rather than enabling them to work on other platforms.
        - Design cycles require 2-4 years.
- There was disagreement regarding the impact of higher MEFs. Some felt that a higher MEF would generate new technology. Others suggested that less efficient products would result from higher MEFs because of tub size.
- A stakeholder, pointing to the DOE Analysis Paper, suggested that with a higher MEF, the cumulative savings decline since fewer products meet the criteria.

**ENERGY STAR Label and Market Transformation Goals**

- AHAM and most manufacturers represented at the meeting stated that DOE should manage a **single ENERGY STAR label for clothes washers**. This label should include water savings. They felt this would reduce confusion.
- There were varying opinions on the inclusion of MEF and water factor on labeling.
    - Some stakeholders suggested that MEF should be included on the ENERGY STAR label, but others disagreed stating that consumers do not understand it and it is available on the FTC label. Others stated that the MEF is more complicated because of drying time.
    - Not misleading consumers must be the #1 consideration. Water efficiency should be included on a label.
- Lead Change / Transform Markets. The goal should be to **influence consumer preferences**.
- It was argued that the top 25% of the market goal should include the consideration of other factors like energy consumption without excluding the purpose of the washer to clean clothes.
- Consider the upward trend for high efficiency clothes washers from 1 to 15 percent in about seven years.
- A stakeholder suggested that the market penetration number is arbitrary and that there are other factors that are more important such as performance trade-offs.
- Utilities suggested that there should be some additional efforts to understand the "dynamism" of the market.