

ENERGY STAR® Residential Water Heater Criteria Development Meeting Notes

U.S. Department of Energy Headquarters
Forrestal Building, Room 6E069
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Speakers

David Rodgers, U.S. Department of Energy
Richard Karney, U.S. Department of Energy
Eric Moffroid, Bosch Water Heating
Phillip Wallace, Seisco
Aaron Siegel, Eemax
Ted Williams, American Gas Association

Frank Stanonik, Gas Appliance Manufacturers Association
Gary Klein, California Energy Commission
Harvey Sachs, ACEEE
Bill Hoover, A.O. Smith
Les Nelson, Solar Rating and Certification Corporation

Attendees

Geoff Abel, Takagi
Dave Anderson, The Cadmus Group
Robert Aresty, Solar Energy Corporation
Don Brundage, Southern Company Services
Josh Butzbaugh, D&R International
Ervin Cash, Rinnai Corporation
John Confrey, Noritz America Corporation
David Corrado, Eemax Electric Tankless Water Heaters Inc.
Lance Delaura, Sempra Utilities
Steve Elkin, Apricus Solar
Ed Fabrizo, Eemax Electric Tankless Water Heaters Inc.
Bill Healy, National Institute of Standards and Technology
Jack Henry-Rhoads, D&R International
Bill Hoover, A.O. Smith
Earl Jones, GE Consumer & Industrial
Richard Karney, U.S. Department of Energy
Noah Kaye, Solar Energy Industries Association
Mohammed Khan, U.S. Department of Energy
Brian Killins, Natural Resources Canada
Robert Kirkpatrick, Rinnai Corporation
Gary Klein, California Energy Commission
Judy Kosovich, Capital Sun Group
Linda Latham, D&R International
Melissa Lucas, Northeast Energy Efficiency Partnerships
Jim Lutz, Lawrence Berkeley National Laboratory
Bill McNary, D&R International
Eric Moffroid, Bosch Water Heating
Paul Mosher, Takagi

Les Nelson, Solar Rating & Certification Corporation
Albert Nunez, Capital Sun Group
Joanne O'Donnell, Consortium for Energy Efficiency
Bryan Pai, Sentech, Inc.
Mike Parker, A.O. Smith
Tom Patterson, Effikal LLC
Dan Pittman, Applied Energy Recovery Systems Inc.
Jeff Pratt, Northwest Energy Efficiency Alliance
Jim Ranfone, American Gas Association
Ryan Ritsema, Bradford White
David Rodgers, U.S. Department of Energy
Kara Rodgers, Consortium for Energy Efficiency
Steve Ryan, Environmental Protection Agency
Harvey Sachs, ACEEE
Edward Schmidt, Northeast Energy Efficiency Partnerships
David Seitz, Seisco
Aaron Siegel, Eemax Electric Tankless Water Heaters Inc.
James Siegel, D&R International
Jacob Skaggs, D&R International
Frank Stanonik, Gas Appliance Manufacturers Association
Glenn Strahs, U.S. Department of Energy
Troy Trant, Rheem Manufacturing Company
Philip Wallace, Seisco
Cory Weiss, Effikal LLC
Allen Wicher, Rheem Manufacturing Company
Ted Williams, American Gas Association
David Winiarski, Pacific Northwest National Laboratory
Loren Zucconi, Solene - Solar Hot Water Systems

Please note that while the best attempts were made to compile complete and accurate notes, record keeping is sometimes a logistical challenge. In certain instances, it was difficult to identify particular speakers. We appreciate your understanding of these challenges. If you have corrections to the notes, please contact Josh Butzbaugh of D&R International at jbutzbaugh@drintl.com.

Introduction

1. Presentations

Opening Remarks

David Rodgers, Deputy Assistant Secretary for Energy Efficiency, U.S. Department of Energy

David Rodgers of the U.S. Department of Energy opened the meeting by reminding participants of the importance of improving the energy efficiency of water heaters. There is now an unprecedented global and national awareness that energy efficiency is essential for prosperity, security and a healthy environment. Fortunately, we have the technology to continue improving our energy efficiency. In particular, a McKinsey Global Institute report has found that available energy efficiency technologies could halve growth in the global energy demand over the next 13 years. Given the magnitude of the problem and the availability of means to solve it, we should act now. There is no reason to build without using energy efficient technology.

DOE is involved in several exciting research programs for zero energy homes and buildings. David Rodgers is very excited to see the progress we're making by including water heaters in the ENERGY STAR program – it is very important towards achieving our energy efficiency goals.

Overview of ENERGY STAR criteria development for water heaters

Richard Karney, U.S. Department of Energy

Richard Karney presented an overview of the ENERGY STAR program, the water heater market, the reasoning behind the draft criteria, and the draft criteria.

Stakeholder Presentations

Eric Moffroid, Bosch

Bosch believes that the criteria should be based on efficiency, not size and capacity. Some consumers need smaller water heaters than others. ENERGY STAR criteria for air conditioners, boilers, and furnaces are all developed by efficiency, not size. Water heaters should be similar. A third of water heaters in the market are for low capacity applications. These users should have the option to purchase an ENERGY STAR water heater that matches their capacity needs.

Without ENERGY STAR for smaller water heaters, we would motivate consumers to buy water heaters that are larger than what they really need. This would be detrimental to the broader goal of the ENERGY STAR program to achieve national energy savings. The absence of ENERGY STAR criteria for smaller water heaters takes choices away from consumers and may have the unintended effect of limiting the program.

Questions and Comments

Ervin Cash, Rinnai Corporation: When you refer to capacity are you talking about GPM?

Eric Moffroid, Bosch: Yes, I'm referring to the second portion of the draft criteria for gas tankless water heaters, the GPM requirement.

Earl Jones, GE Consumer & Industrial: Bosch supports the warranty requirement. Why? It increases the price of the product

Eric Moffroid, Bosch: Warranties are critical for water heaters as a product type. Six years is usually the minimum warranty for them.

Earl Jones, GE Consumer & Industrial: What is the value of a warranty requirement?

Eric Moffroid, Bosch: I think it instills consumer confidence in the product.

Earl Jones, GE Consumer & Industrial: Warranty questions ought to be resolved in the market, not by government regulation. This is dangerous territory for DOE and ENERGY STAR. DOE is now saying that new technologies need to be held to a warranty standard. However, just because a warranty is issued does not mean that the manufacturer will fulfill its warranty obligations. DOE won't back up the warranties of companies who fail to fulfill their obligations. This makes a warranty requirement a meaningless gesture.

Steve Ryan, Environmental Protection Agency (EPA): Warranties have been in criteria for ENERGY STAR products before.

Earl Jones, GE Consumer & Industrial: But we're talking about DOE products, which are different.

Les Nelson, Solar Rating and Certification Corporation: (To Richard Karney) Did you elaborate which components the warranty covers? Is it full or partial? Did you look at the warranty requirements for other product types?

Richard Karney, Department of Energy (DOE): We haven't made a decision on those details.

Eric Moffroid, Bosch: Capacity is not a part of ENERGY STAR criteria for clothes washers, furnaces, or boilers. Let the consumer decide how much capacity they need. Someone who lives in a solar home with limited energy or a home in the south with warm ground water does not need as much capacity.

The capacity requirement disadvantages consumers who conserve energy with smaller capacity water heaters.

David Winiariski, PNNL: Are you concerned that new homes could have too little capacity installed?

Eric Moffroid, Bosch: Yes, this is a daily struggle, but it should not be ENERGY STAR's role. A builder or contractor could put in too little capacity on anything, not just the water heater.

Ervin Cash, Rinnai Corporation: That is also a problem in the tank industry.

Phillip Wallace, Seisco

Mr. Wallace's presentation, available online, gave Seisco's views on the proposed criteria. Seisco supports an ENERGY STAR program for water heaters, but disagrees with the decision to not include conventional gas and electric storage water heaters. Seisco also disagrees with the decision to include gas-fired tankless water heaters. Most of all, they disagree with the decision to not include electric tankless water heaters in the program.

Questions and Comments

Phillip Wallace, Seisco: A Florida P&L light study found that there is no peak demand difference between tankless and storage electric water heaters. There was also a study at a retirement community which showed this. Inadequate supply can also happen with gas water heaters. All appliances need to be properly installed.

Don Brundage, Southern Company Services: Our problem is this there are usually a number of homes on a transformer. A 28-kW electric tankless water heater leads to a voltage drop on the transformer.

David Seitz, Seisco: If the transformer is adequate, this won't happen. Undersized transformers are the real problem. Flickers are more common than voltage drops. We work with utilities on power quality.

Don Brundage, Southern Company Services: Our concern is highest during the summer, when a large number of air conditioners are running and someone is using an electric tankless water heater.

Lance Delaura, Southern California Gas: Someone has to pay for the increased load demand. Increased costs will be embedded in our rates. Tell us about this family adaptation that you mentioned in the presentation.

Phillip Wallace, Seisco: People will shower at different times instead of buying a bigger new water heater – this is very common. Families change their behavior in accordance with their hot water availability due to their water heater.

Lance Delaura, Southern California Gas: Utilities have a stake on safety and installation because we offer rebates. We are sensitive to reliability and source energy.

Jim Lutz, Lawrence Berkeley National Laboratory: Regarding the NAHB study on lower flow rates, I would like to point out that the rate might be 2 GPM for 30 seconds and show up as 1 GPM in the study.

Harvey Sachs, ACEEE: What is the GPM on most fixtures?

Phillip Wallace, Seisco: Most are 1.5 GPM.

Jim Lutz, Lawrence Berkeley National Laboratory: The EF test covers gas and electric. It does include the electricity used by gas heaters – except the electricity used for freeze protection.

Harvey Sachs, ACEEE: With regards to electric tankless water heaters, we have to ask “What if everyone does this?” The end goal of ENERGY STAR is market transformation. Ultimately, utilities would occur larger peak demand if everyone uses an electric tankless water heater.

Aaron Siegel, Eemax

Mr. Siegel’s presentation outlined why Eemax thinks that electric tankless water heaters should be included in the ENERGY STAR water heaters program. Specifically, Eemax thinks that electric tankless water heaters ought to have the following criteria for ENERGY STAR qualification: minimum energy factor of 0.98, minimum flow of 2.0 GPM at 51° F rise, and a minimum ten-year warranty. His presentation is online.

Questions and Comments

Harvey Sachs, ACEEE: You all have made a strong case for point-of-use electric tankless water heaters – why not have those included as part of the ENERGY STAR New Homes program? That would save distribution energy losses.

Aaron Siegel, Eemax: The technology for higher capacity electric tankless water heaters use kW appropriate to the volume and GPM for the use. Even with a dedicated 28-kW supply, the heater usually won’t use all 28.

Phillip Wallace, Seisco: We want higher capacity electric tankless water heaters to be included. We do not like the idea of only point-of-use electric tankless being included in ENERGY STAR.

Aaron Siegel, Eemax: Although we do want to offer point-of-use as an option to the consumer.

Don Brundage, Southern Company Services: We like point-of-use for ENERGY STAR. But there are site-specific problems with larger capacity units on the grid.

Les Nelson, Solar Rating and Certification Corporation: You said there is no maintenance on these. What is the product lifetime?

Aaron Siegel, Eemax: No, we’re just saying that hard water lime buildup doesn’t occur with Eemax electric tankless water heaters due to the nature of the heat exchanger.

Ted Williams, American Gas Association

Our concerns are as follows. Energy savings should be key to criteria setting and the definition of what “significant energy savings” means for the ENERGY STAR program should be provided. We want to see savings over the full fuel cycle and carbon dioxide emissions as a driving force of the criteria. When it comes to ENERGY STAR, too often these concerns are only mentioned after the fact in metrics. Full

fuel cycle and carbon dioxide ought to be taken into account by DOE with full transparency during the criteria setting process.

Draft criteria aim to have “fuel neutrality.” There are many examples of ways that federal policies are not fuel neutral. Why have this—other than political concern over maintaining market shares?

When we talk about gas products, we aren’t talking about “plug ‘n’ play” products. Major changes have to be made during the installation process for gas condensing units. Gas instantaneous water heaters require changes to venting and piping. These additional costs need to be accounted for in DOE’s analysis.

Fuel switching could happen, particularly in retrofit.

We want to see ENERGY STAR revise criteria to include gas technologies that do not require an electrical power supply.

Because non-condensing technology is nearly maxed out, does this mean it should be excluded? We don’t think so. The six ENERGY STAR guiding principals don’t provide a reason for this.

For the advanced technologies, remember the rule about not having proprietary technologies. The gas technologies don’t meet this rule. The gas technologies also do not provide consumer choice.

Finally, we should compare the 40-gallon gas unit to the 50-gallon electric unit based on FHR.

Questions and Comments

Lance Delaura, Southern California Gas: We are close to the maximum on conventional tank technology and support a 0.63 or 0.64 and a 0.62 replacement unit. We think that since ENERGY STAR for water heaters is new, these criteria are a good start.

Ted Williams, American Gas Association: With the advanced technologies, we’re concerned about NOx emissions.

David Seitz, Seisco: Full fuel cycle – how would this be measured? Could cradle to grave costs include future renewables?

Ted Williams, American Gas Association: eGrid / DOE tests could be used. The analysis could start with today’s capacity by energy source.

David Seitz, Seisco: What about hydro and nuclear power, which have different environmental impacts than other electricity sources?

Ted Williams, American Gas Association: eGrid is good for comparative purposes because it uses the average for all consumers. The test procedure is still very valid for comparison although it doesn’t accurately reflect energy consumption under real circumstances. The national average could be looked at as a start.

Frank Stanonik, Gas Appliance Manufacturers Association

The fundamental question about ENERGY STAR for water heaters is do we use the ENERGY STAR brand to identify the most efficient products on the market or do we try to transform the market? There is a reason why water heaters is the last great residential energy end use left without an ENERGY STAR Program – water heaters are complex. We want ENERGY STAR to identify the most efficient conventional tank and advanced technology models. This program won't work if DOE tries to transform the market by switching the type of water heaters that consumers purchase. DOE should focus on market stimulation, not market transformation.

There is not unanimity among GAMA members on everything so here are our general issues.

1. There should not be warranty requirements. Leave this to manufacturers since it is a condition of sale. ENERGY STAR criteria for furnaces and boilers do not have a warranty requirement.
2. We do not agree that there should be one EF for all storage water heaters. It isn't too hard to make a table with different requirements based on volume. Having one level makes it impossible for larger capacity heaters to qualify and pushes consumers to small water heaters which may be inadequate.
3. ENERGY STAR should require that safety standards are independently verified. Safety is very important when dealing with water heaters.

Now, the details...

Electric storage water heaters can be 5% more efficient than the standard in some cases. This is equal to the savings generated by the furnace motors that EPA is hyping so much. Millions of electric storage water heaters are sold every year so when the total sales volume of this type of product is considered, 5% savings translates to significant national energy savings.

Gas storage water heaters should have ENERGY STAR. 10% savings is significant, especially when you consider the sales of these units.

Non-Condensing gas storage water heaters could have two tiers. Tier one would be gas storage water heaters and tier two would be the advanced technology level.

For tankless, criteria can be set by gas input. About 140,000 BTU is needed for a whole house unit.

Residential gas condensing units are not available on the market. Some small commercial units are being installed in homes though. We should have criteria for them.

Advanced non-condensing water heaters should have a two-tier criteria setup.

Also note that we have left out oil-fired storage water heaters, non-whole house residential gas storage tank heaters (<140,000 BTU) and non whole house electric heaters.

The key question is "What do people buy now?" We should set up ENERGY STAR criteria for each product category in which units are sold. Also, ENERGY STAR shouldn't drive consumers who need

large capacity heaters to purchase smaller heaters. We need a table with a sliding energy factor based on capacity. DOE should not go for home runs, but should allow everyone to save energy.

Questions and Comments

Harvey Sachs, ACEEE: By extending your logic, we could say that we should have an ENERGY STAR qualification for the most energy efficient 8-mpg hummer, as long as it is more efficient than other hummers. Would you say that is a fair analogy?

Frank Stanonik, Gas Appliance Manufacturers Association: It isn't exactly the same, because consumers of large capacity water heaters actually need all of that capacity. However, I am saying that we should focus on the market as is, so I suppose it is a fair analogy.

Harvey Sachs, ACEEE: I'm not sure it is productive to have any kind of endorsement for 100-gallon water heaters.

Mike Parker, A.O. Smith: If people want a larger capacity water heater, they will get one regardless of whether they can get an ENERGY STAR unit or not. However, if they're really intent on purchasing an ENERGY STAR unit, then they will buy two 50-gallon units.

Frank Stanonik, Gas Appliance Manufacturers Association: Some 70 gallon gas tanks have 10% savings. They ought to have an ENERGY STAR label so that consumers know. Remember that organizations are spending a lot of money on consumer education programs to affect these kinds of water heater purchasing choices.

Phillip Wallace, Seisco: Are you suggesting different EF by volume or output for each category of water heaters?

Frank Stanonik, Gas Appliance Manufacturers Association: Just storage tank only.

Harvey Sachs, ACEEE: Did you support near-condensing and condensing though?

Frank Stanonik, Gas Appliance Manufacturers Association: Those are extensions of storage water heater technology. For a quick set up we should have ENERGY STAR for conventional storage water heaters.

Eric Moffroid, Bosch: For the record, that might be a consensus of tank manufacturers, but it is not a consensus of GAMA members.

Gary Klein, California Energy Commission

Mr. Klein provided a thorough critique of the draft criteria analysis.

Questions and Comments

Frank Stanonik, Gas Appliance Manufacturers Association: You finished by saying that this proposal would make the market worse, not better. If the program provides incentives for customers to purchase energy efficient products, how is that worse?

Gary Klein, California Energy Commission: The proposal is not inclusive of what consumers buy and does not look at all technologies equally.

(Lunch Break)

Harvey Sachs, ACEEE

There are some large issues for all to come to grips with here. I am disappointed in the divergent views of EPA and DOE. There is still no unified view of what the ENERGY STAR program should be. I am also disappointed that this document did not explicitly state that one of ENERGY STAR's goals for water heaters would be to validate and encourage early adopters. This was in the 2003 document.

The original ENERGY STAR model was based on a continuum of energy efficiency for relatively mature technologies like refrigerators. The model did not address how to move from the most efficient conventional technology to the next level of advanced technology. It has not succeeded in bringing emerging technologies into the spotlight.

The ENERGY STAR program never used to have tiers, but we're starting to see this now. Tiers, emerging technologies, and "maxed out" conventional technologies are big issues for ENERGY STAR.

The basis for the ENERGY STAR water heaters program of Energy Factor is bankrupt (DOE test procedure). It is time to ask how to align the rating method with actual field performance. We need a better test than 6 equal draws and recovery periods. The test procedure is also not realistic for tankless and new technologies. ENERGY STAR should start with EF, but acknowledge that a gap exists between predicted and actual savings.

We need to find ways to reward achieved savings by utilities.

We need to ask what really is the program value. We're focused on the individual consumer predominantly, but today some speakers have focused on national savings in the aggregate. What we need to know is which focus our criteria should be based on. We should all also be aware that at some point our focus will change from energy consumption to carbon dioxide consumption.

Moving on to the ACEEE's official position on water heaters, I'd like to note that we do not want a program for devices with less than 10% in energy savings. Using the ENERGY STAR logo on such products does not help the brand and there is no reason for consumers to buy ENERGY STAR. Units with an EF of 0.62 or 0.65 should not qualify.

We want to encourage a program for heat pump water heaters. We recently conducted studies in which electric heat pump water heaters were mixed-in with conventional storage models in a retail store. All

units were labeled with the FTC EnergyGuide label. We found that consumers were not jolted by the mixed-in heat pump water heaters.

We are willing to consider a near term 10% savings criteria with a stipulated phase out. We do not believe a two-tier program for gas storage water heaters will work—other than to confuse consumers. It is best to separate the two levels in time.

Tankless water heaters should be required to have a minimum EF of 0.82 to qualify.

Solar systems should be measured as systems but be open to supplemental technologies

We definitely need some sort of quality assurance. I'm not saying it has to be warranties, but we need something to ensure quality of emerging technologies.

I'd like to conclude by echoing Gary Klein. Think about the entire hot water distribution system, not just the water heater, which is just a component of the system.

Questions and Comments

Steve Ryan, EPA: We applaud DOE for taking on water heaters, but we question whether ENERGY STAR is the appropriate program. EPA is concerned about payback lengths.

Harvey Sachs, ACEEE: We need an ENERGY STAR “family.” It is time to move into the next level of advanced technologies.

Steve Ryan, EPA: ENERGY STAR is branching out in a number of ways. We're using ENERGY STAR as an information resource more now.

Phillip Wallace, Seisco: What category would you be open to the 10% savings criteria on?

Harvey Sachs, ACEEE: Condensing with a separate category for non-condensing advanced technology.

We'd like to see ENERGY STAR homes adapt whole system criteria for hot water distribution systems.

Phillip Wallace, Seisco: You mentioned some studies on EnergyGuide labels and water heaters. What were the consumers looking at?

Harvey Sachs, ACEEE: They were given a range of electric water heaters, then told to buy one and were given surveys while they shopped.

David Seitz, Seisco: ENERGY STAR should not use widgets as the only metric since you can get as much efficiency just by insulating lines.

Bill Hoover, A.O. Smith

Bill Hoover from A.O. Smith presented his company's position. His presentation is online.

Questions and Comments

Harvey Sachs, ACEEE: We discussed assuming the same daily draw for all sizes – should these be revised for the test procedure itself or for the ENERGY STAR criteria?

Bill Hoover, A.O. Smith: The test procedure is not a logical draw pattern. Unfortunately, it's the best ENERGY STAR has to work with.

John Confrey, Noritz: Should we change DOE's test method for tankless and then lower the proposed criteria?

Frank Stanonik, Gas Appliance Manufacturers Association: It should be changed but ENERGY STAR is based on the current procedure.

Bill Hoover, A.O. Smith: We don't see heat pump water heaters coming into the market in significant quantities soon.

Dan Pittman, AERS: We have been producing heat pump water heaters for 30 years and currently have 100,000 heat pump water heaters installed with a COP of 3.3 to 3.4 and an EF of 1.84 to 1.87.

Harvey Sachs, ACEEE: I'm not sure that consumers will even notice a 5% savings. Do we design around visible paybacks or national energy savings? Models with an EF of .95 are available now and even higher models could be available in two years

Phillip Wallace, Seisco: If the consumer values the ENERGY STAR brand, they will care about the savings. Switching from a .93 EF to a .95 EF leads to a \$15 annual savings and the manufacturer premium is only \$20.

The 5% savings units will be a good way to achieve national savings until the 30% savings units become popular. We need something for the low-end models.

Kara Rodgers, CEE: What kind of appropriately designed program brings new products to market?

Mike Parker, A.O. Smith: Remember the consumer is usually not the decision maker on the water heater purchase. The builder or contractor is.

An ENERGY STAR program that includes conventional water heaters can get consumers involved in making incremental steps (.90 EF to .95) and also major steps like with solar and heat pump.

Kara Rodgers, CEE: How soon before we can move to advanced technologies only?

Mike Parker, A.O. Smith: The distribution is not there yet for these products. Having ENERGY STAR will be key in getting that distribution.

Brian Killins, NRCAn: I like the intermediate step. If we could easily move from .90 to .95, we'd put it in regulations.

Bill Hoover, A.O. Smith: New water heater standards in the U.S. won't take effect until 2015.

Earl Jones, GE Consumer & Industrial: What is the purpose of ENERGY STAR? Is it market transformation or incremental movement? Our approach on water heaters needs to have technology paths for the future or else we'll perpetuate low efficiency products for a long time. ENERGY STAR needs to pull the market.

Market transformation works and it is how DOE has been successful. Look at clothes washers. Advances in front loader technology were often applicable to top loaders too.

If we really want to transform the market—and keep in mind that these advanced technologies are already commercially available—would we really want to have conventional models qualified as ENERGY STAR?

Frank Stanonik, Gas Appliance Manufacturers Association: Whether or not the technology is maxed out, the market is still not buying the most efficient products. Consumers are still buying the prior generation of products.

Lance Delaura, Southern California Gas: ENERGY STAR could progressively move consumers to do this – thus picking off the low hanging fruit and build a bridge to the next level.

Earl Jones, GE Consumer & Industrial: I disagree. We have to get to the next generation of technology.

Steve Ryan, EPA: Note that CFLs are like a bridge technology for LEDs. I think that situation is comparable to this.

Mike Parker, A.O. Smith: Also, don't forget that these advanced technologies have large additional costs for retrofit installation.

Earl Jones, GE Consumer & Industrial: Since consumers aren't familiar with the technologies, why lead them to buy played out products?

Ted Williams, American Gas Association: This proposal is not saying that the goal is to pull new technologies into the market. Installation costs for advanced technologies are significant. If the goal is to bring them into the market, the proposal should say so.

Jim Lutz, Lawrence Berkeley National Laboratory: Can we come up with a way to guarantee that we get to the next step? That could be a good compromise and make people more comfortable with having ENERGY STAR for conventional models.

Allen Wicher, Rheem: People without much money want to be able to participate in ENERGY STAR too but will not be able to due to high purchase and installation costs. It is a disservice if we don't let them do so with lower-priced, conventional products.

Les Nelson, Solar Rating and Certification Corporation

Les Nelson spoke on behalf of the Solar Rating and Certification Corporation and Solar Energy Industries Association. His presentation is online.

Questions and Comments:

Lance Delaura, Southern California Gas: Is there any correlation between developed utility infrastructures and solar penetration? What about mandates and incentives?

Les Nelson, Solar Rating and Certification Corporation: There are mandates in Israel and Spain. Elsewhere it has been achieved with very modest incentive policies.

Lance Delaura, Southern California Gas: What is the payback for a fully integrated system?

Les Nelson, Solar Rating and Certification Corporation: That depends on energy prices. In Hawaii, it is 2 to 3 years. In places with low natural gas prices, it can be 10 years or longer. In new construction is where we'd really like to see these.

Discussion

Robert Kirkpatrick, Rinnai: Rinnai supports ENERGY STAR for water heaters. We do not want ENERGY STAR for conventional gas and electric heaters. Whole house tankless should be able to qualify. We do not agree with the 3.5 GPM minimum for tankless heaters. 2.5 GPM at a 77°F rise should qualify for small homes. Hard water can be addressed other ways – tanks have the same problem. We agree on gas condensing water heaters. On the warranty issue, we believe there should be equal warranties for applications or there should not be a warranty requirement.

Troy Trant, Rheem: We take exception on product safety. Attempts to redefine “residential” water heaters would sacrifice safety and emissions. We ask DOE not to sacrifice these.

Harvey Sachs, ACEEE: What is 0.95 EF comparable to for gas storage?

Troy Trant, Rheem: We embrace ENERGY STAR for the best products already widely available. Not everyone can afford a \$1,000 water heater.

Ryan Ritsema, Bradford White: We like 0.65 EF on gas and support GAMA on electric.

Harvey Sachs, ACEEE: I'm not hearing strong advocacy of levels lower than 0.65 and 0.95 EF. Did we consider size?

Mike Parker, A.O. Smith: Yes, 40 and 50 gallon.

Harvey Sachs, ACEEE: What are the additional requirements to get to 0.65 EF for gas.

Bill Hoover, A.O. Smith: I'm not comfortable discussing that.

Jim Lutz, Lawrence Berkely National Laboratory: Lets talk test procedure. Is there any way to encourage DOE to look into and listen to us along the way?

Richard Karney, DOE: There have been many comments on the test procedure. We need to hear something more specific about it.

Mohammed Khan, DOE: We recognize the test issues. New standards development is underway and aspects of it are subject to change. We'd like to take this opportunity to collect comments on changing the test procedure.

Richard Karney, DOE: I'd entertain more comments. I encourage ENERGY STAR to cooperate with the standards folks.

Mohammed Khan, DOE: We want to know what people's issues are with the current test and what their ideal would be.

Brian Killins, NRCAN: How much of the market as is would meet these criteria?

Frank Stanonik, Gas Appliance Manufacturers Association: The number is there. 30 of 51 gas tankless models on GAMA's list would qualify. With electric tankless, none would meet the proposed criteria. Solar would be most but not all. Heat pump would be almost all. Concerning advanced non-condensing technologies, there are none but there will be.

Dave Winiarski, Pacific Northwest National Laboratory: With gas tank water heaters, there are three ways to improve:

1. High efficiency conventional models
2. SEGWHAI advanced technologies
3. Condensing units

There is value in having separate criteria for each of these three

Harvey Sachs, ACEEE: ACEEE would support two routes—condensing and non-condensing. There should be a temporal separation for the early tier. "10% better" would be phased out to 0.7 EF.

Dave Winiarski, Pacific Northwest National Laboratory: ACEEE, what is the primary benefit of separating condensing from non-condensing?

Harvey Sachs, ACEEE: Condensing saves more energy but at a higher cost. Other technologies may complement it. We could increase sales and decrease savings one way, but decrease sales and increase savings the other. We don't know enough to say no to one of the alternatives yet.

Frank Stanonik, Gas Appliance Manufacturers Association: Condensing water heaters are hard to do right now at the residential size. The other level will be available to a wider market and lead to significant savings in the shorter term.

Kara Rodgers, CEE: We support a two-level approach. ENERGY STAR products should be available in the market now.

Harvey Sachs, ACEEE: What about a procurement spec to push advanced technologies – if you build it, we will buy it.

Ted Williams, American Gas Association: But we don't know the real cost of some of these technologies yet.

Dave Anderson, Cadmus: What opportunities are there for leased or “service-based” water heaters with advanced technologies?

Les Nelson, Solar Rating and Certification Corporation: Florida's Lakeland Electric does this. They own solar water heaters and then sell the heat for shared savings. Models also exist in Canada where leasing is common.

Kara Rodgers, CEE: How can ENERGY STAR and energy efficiency programs support this?

Les Nelson, Solar Rating and Certification Corporation: ENERGY STAR would boost our visibility. How people acquire our water heaters (rental, leasing or owning) is less important than having the label.

Kara Rodgers, CEE: How should utilities lease them?

Les Nelson, Solar Rating and Certification Corporation: They aren't very expensive. Visibility is more important than any difference that could be made with rental programs.

Earl Jones, GE Consumer & Industrial: I would like to revisit warranties. What is meant by a warranty? What is the purpose?

Kara Rodgers, CEE: We're concerned about advanced technologies not working. The warranty requirement gives us quality assurance.

Lance Delaura, Southern California Gas: I agree with Kara. Utilities would prefer warranties.

Earl Jones, GE Consumer & Industrial: What about the “industry standard” warranty that was mentioned earlier?

Les Nelson, Solar Rating and Certification Corporation: A warranty is an insurance policy.

Lance Delaura, Southern California Gas: A warranty requirement makes it much easier to justify offering a rebate.

Frank Stanonik, Gas Appliance Manufacturers Association: Warranties are great, but we don't want them in the ENERGY STAR requirements.

Harvey Sachs, ACEEE: We all expect manufacturers to offer warranties, even if it is not in the ENERGY STAR requirements. Utilities can request warranties if they want them.

Kara Rodgers, CEE: We are invested in the ENERGY STAR brand. We don't want to damage it by putting it on unreliable products.

Frank Stanonik, Gas Appliance Manufacturers Association: The heat pump water heaters that failed were all made by disreputable companies.

Edward Schmidt, Northeast Energy Efficiency Partnerships: What about a minimum annual production threshold. For example, you can only receive ENERGY STAR qualification if you can produce 10,000 units annually.

Earl Jones, GE Consumer & Industrial: Then we have the chicken-egg dilemma. To get to 10,000 unit sales, you need ENERGY STAR.

Jim Lutz, Lawrence Berkeley National Laboratory: What about a procurement guarantee in combination with it.

Lance Delaura, Southern California Gas: I'm not comfortable with this. We would need to test the units ourselves to understand what we're getting ourselves involved in.

Kara Rodgers, CEE: We want quality assurance.

Earl Jones, GE Consumer & Industrial: We're more invested in ENERGY STAR than anyone, including you.

Lance Delaura, Southern California Gas: We're significantly invested. We took a huge loss on a furnace buyback not long ago.

Harvey Sachs, ACEEE: How do we ensure that customers don't get burned. Think of defective CFLs. ENERGY STAR had to get into quality control with them. It was a new approach. Maybe there is some similar alternative route that would allow new entrants to show reliability.

Earl Jones, GE Consumer & Industrial: With CFLs, there is way more potential for fly-by-night shops.

Harvey Sachs, ACEEE: There is a history of water heaters failing though.

Earl Jones, GE Consumer & Industrial: Then the utilities can wait to offer rebates and incentives until they are comfortable with the reliability.

Jim Lutz, Lawrence Berkeley National Laboratory: But the advanced technologies aren't out yet.

Earl Jones, GE Consumer & Industrial: Wait until they are there.

Jim Lutz, Lawrence Berkeley National Laboratory: If we do, there will be no market.

Closing Remarks

Richard Karney of DOE thanked all stakeholders for attending and meeting and providing comprehensive feedback. Mr. Karney extended the deadline for the second round of comments to July 13, 2007.