

U.S. DEPARTMENT OF ENERGY
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ENERGY CONSERVATION STANDARDS FOR
RESIDENTIAL DEHUMIDIFIERS

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PUBLIC MEETING

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MONDAY
SEPTEMBER 24, 2012

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The meeting was held in the
Forrestal Building, Room 8E-089,
1000 Independence Avenue, S.W., Washington,
D.C., at 1:00 p.m, Doug Brookman, Facilitator,
presiding.

PRESENT:

DOUG BROOKMAN, Facilitator, Public Solutions,
Inc.

BETSY KOHL, Department of Energy

STEPHEN WITKOWSKI, Department of Energy

ALSO PRESENT:

BEN BARRINGTON, Navigant Consulting, Inc.

DONALD BRUNDAGE, Southern Company

KEVIN CHURCHILL, Intertek

JENNIFER CLEARY, Association of Home Appliance
Manufacturers

CAMILLA DUNHAM WHITEHEAD, Lawrence Berkeley
National Laboratory

JULIA FARBER, UL LLC

AMANDA GONZALEZ, Energy Solutions

MAITHILI IYER, Lawrence Berkeley National
Laboratory

ANDREW JEAN-LOUIS, Navigant Consulting, Inc.

STEVE LEYBOURN, Association of Home Appliance
Manufacturers

JOANNA MAUER, Appliance Standards Awareness
Project

MARK MENZER, Intertek

CHUN CHUN NI, Lawrence Berkeley National
Laboratory

TERESA PECK, Intertek

JUDITH REICH, Navigant Consulting, Inc.

NADAV SINGERMANN, Navigant Consulting, Inc.

LOUIS STARR, Northwest Energy Efficiency
Alliance

TIMOTHY SUTHERLAND, Navigant Consulting, Inc.

TROY WATSON, Navigant Consulting, Inc.

MEG WALTNER, Natural Resources Defense Council

TIMOTHY LONG, Lawrence Berkeley National
Laboratory

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P-R-O-C-E-E-D-I-N-G-S

(1:03 p.m.)

FACILITATOR BROOKMAN: Let's do start. Welcome, everybody. This is the U.S. Department of Energy's public meeting on energy conservation standards for residential dehumidifiers.

Today is Monday, September 24th, here in the Forrestal Building in Washington, D.C. A beautiful day in Washington, by the way.

My name is Doug Brookman from Public Solutions in Baltimore. Glad to have you with us. We will start this afternoon with brief welcoming remarks from Stephen Witkowski.

MR. WITKOWSKI: Hello, everyone. Welcome or welcome back. I'll make this very brief, since we have a lot of information to cover quickly.

But basically, we will present our methodology for conducting the energy

1 conservation standards rulemaking for
2 residential dehumidifiers this afternoon. And
3 this being a framework document meeting, we
4 are primarily interested in seeking input and
5 information and data and your comments on our
6 methodologies.

7 So with that, thank you for
8 coming, and let's start.

9 FACILITATOR BROOKMAN: Okay. We
10 typically start off these meetings by doing
11 introductions around the room. I'm going to
12 start here to my immediate left. And if you
13 would start by saying your name and
14 organizational affiliation. It gives you a
15 chance to get used to turning these
16 microphones on and off as well. Please.

17 MS. FARBER: Julia Farber with
18 Underwriters Laboratories.

19 FACILITATOR BROOKMAN: Okay.
20 Excuse me one second. Brenda asked me at the
21 outset -- the Department -- I apologize for
22 interrupting. The Department makes a

1 photocopy of the business cards of those that
2 are here present, and if you were at the
3 meeting this morning, then we do not have a
4 copy of that business card.

5 So if you could hand a business
6 card to Brenda as she walks around, then the
7 Department will have a more complete record of
8 who is here today. So thanks for doing that.

9 Now, please.

10 MS. FARBER: Okay. Still Julia
11 Farber from UL. Thanks.

12 MR. BRUNDAGE: Don Brundage,
13 Southern Company Electric Utility.

14 MS. WALTNER: Meg Walter, the
15 Natural Resources Defense Council.

16 MS. MAUER: Joanna Mauer,
17 Appliance Standards Awareness Project.

18 MS. GONZALEZ: Amanda Gonzalez
19 with Energy Solutions on behalf of the
20 California Investor-Owned Utilities.

21 MS. CLEARY: Jennifer Cleary with
22 the Association of Home Appliance

1 Manufacturers.

2 MR. CHURCHILL: Kevin Churchill
3 with Intertek.

4 MR. MENZER: Mark Menzer with
5 Intertek.

6 MS. KOHL: Betsy Kohl, DOE GC.

7 MR. WITKOWSKI: Steve Witkowski,
8 U.S. DOE.

9 FACILITATOR BROOKMAN: Will you
10 please stand up? We'll go around the room.

11 No need for a microphone here. Just project.

12 (Whereupon, introductions were made from off-
13 mic locations.)

14 Okay. Thanks to all of you.

15 I would note we have some
16 additional seats at the table. If you expect
17 to be making comments during the course of the
18 meeting today, please feel free to come up and
19 join us here on the front row.

20 All of you received a packet of
21 information when you came into the room today.

22 I'm going to do a very brief agenda review.

1 You can see immediately following these
2 opening remarks and agenda review there is a
3 -- we will have a rulemaking introduction and
4 background.

5 Prior to that, after the agenda
6 review in fact, there is an opportunity for
7 anybody that wishes to do so to make opening
8 statements and opening remarks about issues
9 that matter to you.

10 Immediately following the
11 rulemaking introduction and background, we
12 will move to a description of the test
13 procedure, market and technology assessment,
14 screening analysis, and engineering analysis,
15 and following that preliminary and NOPR
16 manufacturer impact analysis.

17 We will take a break mid-afternoon
18 as useful. And following that, an overview of
19 markups for equipment price determination,
20 energy use determination, life-cycle cost and
21 payback period analyses -- analysis, shipments
22 analysis, national impact analysis, LCC

1 subgroup, utility, employment, emissions, and
2 regulatory impact analyses -- plural.

3 And at the end of the day today,
4 around about 3:45 or so, there is another
5 opportunity for anybody that wants to to make
6 an additional comment, raise any other issues
7 that you think are important at this point in
8 the proceeding.

9 So that's the plan for today.
10 Questions and comments?

11 (No response.)

12 I see none. All of you received
13 this packet of information. This will be the
14 basis upon which we will both review
15 information and offer comment today. The
16 Department has a lot of information in these
17 colorful slides, and they also in here have --
18 if you look through it, they have callout
19 boxes, comment boxes, where they ask for
20 specific information to come from those of you
21 here present. We hope that you can respond to
22 those.

1 So questions or comments on any of
2 that?

3 (No response.)

4 I would ask for your
5 consideration, please, today. Speak one at a
6 time. Please say your name for the record
7 each time you speak. We typically have
8 individuals now joining us via the web. Yes?
9 How many do we have joining? Eight. Can you
10 -- we should probably have those individuals
11 identify themselves. Can you bring that
12 microphone over and just read their names into
13 the record?

14 PARTICIPANT: Online we have Brian
15 Daugherty, Charlie Stevens, Kurt Trammell,
16 Daniel Young, Linda Wilson, Michael Woodford,
17 Renata Mortazavi, and Yolanda Williams.

18 FACILITATOR BROOKMAN: Thank you,
19 Emily. Appreciate that. And for those of you
20 joining us online, the Department of Energy is
21 trying hard to make these meetings accessible
22 to everyone via the web.

1 Please turn your microphones or
2 your telephones on mute, so you won't cause
3 feedback to our system here in the room, and
4 also please feel free to raise your hand to
5 ask a question or deliver a comment during the
6 course of the proceedings today.

7 Finally, if we could -- everybody
8 could silent their cell phones, and let's keep
9 the comment as targeted and focused as
10 possible. There is quite a bit of content
11 here, and we will try and get through it as
12 expeditiously as possible.

13 Questions and comments before we
14 proceed?

15 (No response.)

16 I see none. So, Stephen, I was
17 thinking we would do opening remarks, if there
18 are any, right now.

19 MR. WITKOWSKI: Sure.

20 FACILITATOR BROOKMAN: Yes. Are
21 there any comments here at the outset
22 surrounding issues that matter to you?

1 (No response.)

2 I see none. Then, let's proceed.

3 Are you going to start off? First, we will
4 hear from Judith Reich.

5 MS. REICH: Okay. Well, good
6 afternoon, everybody. It is a pleasure to be
7 here and talking about DOE embarking on this
8 new dehumidifier rulemaking. Thanks to
9 everybody who has continued on from this
10 morning.

11 Let's see. I'm going to start off
12 by -- this is Judith Reich from Navigant --
13 give a little bit of the introduction and
14 background. Obviously, we are here for the
15 framework document public meeting, really
16 encouraging everybody to provide as much
17 information and data as possible. Welcome all
18 comments.

19 As you have seen from the previous
20 meeting, the request for comment will be
21 indicated by these green boxes, and the
22 numbers in those boxes you can refer back to

1 the framework document for the appropriate
2 sections.

3 Again, the instructions for
4 submitting comments -- what I'd like to point
5 out is that the comment period closes October
6 17th, which was an extension from the original
7 date that was indicated for the framework
8 document. So October 17th for written
9 comments.

10 A quick background -- the original
11 standards for dehumidifiers were established
12 in EPCACT 2005, and those applied to
13 dehumidifiers manufactured after October 1,
14 2007. EISA, the Energy Independence and
15 Security Act, amended EPCA to establish new
16 standards that will go into effect in -- a
17 week from now, October 1, 2012.

18 Those were codified -- although
19 EISA came out in 2007, they were codified in
20 2009. So the reason that we are initiating
21 this rulemaking is that DOE is required under
22 EPCA to publish a notice of proposed

1 rulemaking no later than six years after that
2 previous final rule. So this rulemaking will
3 meet that requirement.

4 I thought it would be a good idea
5 to quickly remind everybody of the current and
6 upcoming standards. It would be useful to
7 point out that the 2012 standards not only are
8 creating more stringent standards in terms of
9 the regulated metric of energy factor, which
10 is defined as the liters of moisture removed
11 per kilowatt hour.

12 Those are becoming more stringent,
13 but I also want to point out that the product
14 classes have been disaggregated a little
15 differently. And that is that the original
16 product classes 1 and 2, the less than 25
17 pints per day, and the 25 to 35 pints per day,
18 have been consolidated into a single product
19 class.

20 And the original product class 3,
21 which was the 35 to 54 pints per day, has been
22 split into a 35 to 45 and a 45 to 54. And I

1 think that was, you know, in recognition of
2 the types of products that are currently
3 available.

4 This is a timeline for how this
5 rulemaking is anticipated to proceed. We are
6 here at the green box, the framework document.

7 DOE expects to make the preliminary analysis
8 available in early 2014 with the target of
9 first quarter 2015 for the NOPR and a final
10 rule sometime around 2016.

11 I also want to point out that it
12 is actually -- there is an update to this last
13 bullet point, because since this presentation
14 went to press the test procedure -- amended
15 test procedure actually has been issued, and
16 this addresses standby and off mode and
17 certain active mode updates.

18 Again, EPCA requires the
19 rulemaking to demonstrate technological
20 feasibility and economic justification for new
21 standards, and these are the analyses that
22 correspond to the demonstration of

1 technological feasibility, and, as everybody
2 is well aware, the seven factors that must be
3 considered.

4 So talking a little bit more about
5 the dehumidifier test procedure, the current
6 test procedure is denoted as Appendix X in
7 Title 10 of the Code of Federal Regulations at
8 Part 430, Subpart B.

9 And this was originally specified
10 -- the requirement originally specified in
11 EPCA is that the test procedure measures two
12 parameters -- the capacity, which is used to
13 establish the product class, and energy
14 factor.

15 And it actually referenced a
16 previous Energy Star requirement,
17 qualification criteria, which in turn made
18 reference to these two standards -- the
19 ANSI/AHAM DH-1 to measure capacity in the
20 pints of moisture removed per day, and a
21 Canadian standard, CAN/CSA C749-94. And that
22 is calculating energy factor in terms of

1 liters of moisture removed per kilowatt hour.

2 DOE recently conducted its
3 rulemaking for standby mode and off mode
4 energy use in the dehumidifier test procedure
5 to meet the requirements of EISA 2007. And
6 that required DOE to amend the test procedures
7 for certain residential products, which
8 included dehumidifiers, to include measures of
9 standby mode and off mode energy use, if
10 technologically feasible and if the test
11 procedure didn't already include measures of
12 those.

13 So some of the background was that
14 in 2010 DOE published a NOPR, and it proposed
15 to reference the international standard for
16 measuring standby power, which is IEC 62301.
17 At the time, that was a first edition of the
18 IEC method, and it was recognized that IEC was
19 in the process of updating that. And with
20 support of commenters, DOE published a
21 supplemental NOPR to reference the second
22 edition of IEC 62301.

1 So, again, this is -- since this
2 was put together, that amendment has been made
3 to the test procedure to include measures from
4 IEC 62301 for measuring standby mode and off
5 mode power.

6 In addition, that rulemaking
7 updated the active mode part of the test
8 procedure, so that rather than indirectly
9 referencing those two external standards for
10 -- each one measuring a different parameter,
11 it is now measuring both energy factor and
12 capacity according to the current ANSI/AHAM
13 DH-1, which is 2008.

14 So that amendment has been -- the
15 rule has been issued. It establishes a new
16 appendix called Appendix X1 that will have the
17 standby mode and off mode energy use and the
18 new DH-1, and X1 will be required to be used
19 on the compliance date of standards that are
20 being addressed in this standards rulemaking.

21 Okay. So the next portion of the
22 discussion are covering the various analyses

1 that DOE will conduct at the preliminary stage
2 of this rulemaking. And I will be talking
3 about the first few pieces of it indicated in
4 this flowchart, starting with the market and
5 technology assessment.

6 MS. MAUER: Judy, I have a comment
7 on the test procedure. Would now be a good
8 time to --

9 MS. REICH: Oh, yes. I'm sorry.

10 FACILITATOR BROOKMAN: Joanna
11 Mauer. Go ahead.

12 MS. MAUER: Thank you. So we are
13 concerned that the active mode test procedure
14 for dehumidifiers doesn't reflect actual field
15 performance. A recent study that Cadmus
16 conducted, a field monitoring study of
17 dehumidifiers, found that for most of the
18 units in their sample the measured energy
19 factor was significantly lower than the rated
20 value.

21 And they attributed this, at least
22 in part, to lower ambient temperatures and

1 lower relative humidity levels in the field
2 compared to the rating conditions. And I
3 don't think this is a surprising result.

4 We know from RECS that of the
5 homes that have -- that use dehumidifiers, 75
6 percent of those homes have basements, which
7 suggests that most dehumidifiers are used in
8 basements. And I think typical basement
9 temperatures are certainly lower than 80
10 degrees Fahrenheit.

11 And then, regarding the relative
12 humidity rating condition, I think 60 percent
13 relative humidity probably represents really
14 kind of the upper bound of what is recommended
15 in terms of relative humidity levels. And the
16 Cadmus study found that the average setpoint
17 of the dehumidifiers in their sample was
18 closer to 50 percent relative humidity.

19 And then, another study that was
20 recently conducted by NREL, they tested six
21 different dehumidifiers, and they measured
22 energy factor over a fairly wide range of

1 ambient temperatures and relative humidity
2 levels.

3 And their test results showed that
4 some dehumidifiers maintained performance
5 better than others over a wide range of
6 ambient conditions, especially when you get
7 down to lower ambient temperatures and
8 relative humidity levels that are probably
9 more reflective of what we see in the field
10 for where dehumidifiers are operated.

11 And so I think this suggests that
12 not only does the current test procedure not
13 adequately represent field performance, but
14 that the current test procedure also doesn't
15 necessarily give a good indication of relative
16 performance among units in the field at real-
17 world operating conditions.

18 So we would encourage DOE to look
19 at amending the test procedure, both to better
20 reflect real-world performance and also to
21 encourage good performance over a range of
22 operating conditions, not just at the single

1 rated condition.

2 FACILITATOR BROOKMAN: Thank you.

3 MS. REICH: Thank you. Any other
4 test procedure comments?

5 (No response.)

6 Then, moving on to the market and
7 technology assessment, as you are familiar
8 with, it is to characterize the state of the
9 dehumidifier industry and market using
10 historical data for shipments and trends, and
11 also in the technology assessment portion to
12 identify those technologies and strategies
13 that can be used to improve efficiency of the
14 units.

15 So the method, you know, is to
16 identify and characterize the specific
17 dehumidifier manufacturers, use various
18 sources to develop data to look at the
19 historical trends, to do a thorough survey of
20 the technologies that are available that have
21 been demonstrated to improve efficiency, and
22 to identify the various regulatory and non-

1 regulatory or voluntary initiatives that can
2 help encourage the implementation of more
3 efficient products.

4 I would like to put out a request
5 for comment. DOE requests information that
6 would contribute to the market assessment,
7 with information such as current product
8 features and efficiencies, trends, historical
9 product shipments, and prices.

10 FACILITATOR BROOKMAN: No
11 comments.

12 MS. REICH: All right. It is
13 useful to include here a definition of, under
14 EPCA, exactly what is considered a
15 dehumidifier. This is a statutory definition.

16 It is a self-contained, electrically
17 operated, and mechanically refrigerated
18 encased assembly consisting of the components
19 listed here.

20 DOE will consider categorizing
21 dehumidifiers by means of product classes when
22 evaluating energy conservation standards, and

1 the usual criteria for defining product
2 classes are the type of energy used, the
3 capacity of the equipment, and other
4 performance-related features that can provide
5 utility to the consumer.

6 As noted previously, the current
7 standards have established five product
8 classes for dehumidifiers based on the amount
9 of moisture that they can remove in a 24-hour
10 period under the DOE test procedure.

11 And as a starting point, in the
12 framework document, DOE has proposed
13 maintaining the same five product classes that
14 are the basis of the upcoming October 2012
15 standards, but clarifying that these would
16 apply to portable dehumidifiers. And by
17 "portable" we mean those units that are
18 designed to have an intake and exhaust to
19 ambient conditions rather than a ducted
20 installation.

21 So these will be defined as
22 portable dehumidifiers, and the reason that we

1 are including this clarification is that DOE
2 is also considering defining a separate
3 product class for this ducted type of
4 configuration, which are designated as whole
5 home dehumidifiers.

6 Talking about whole home units a
7 little further, an initial review of these
8 products indicates that they use similar
9 technologies as the portable units, but are
10 designed to be operated and installed in a
11 ducted configuration, normally in tandem with
12 the home's central air conditioning system.
13 And so they have, you know, a case that
14 provides for inlet and outlet connection to a
15 ducting system.

16 Some means by which they may
17 differ from portable units is that the
18 performance of the product in terms of the
19 energy factor and capacity could be affected
20 by air flow and pressure restrictions or
21 impacts from the ducting. Many of these units
22 are also installed with an additional fresh

1 air intake, alongside the return side air duct
2 from the home, so that they would have
3 management of two air streams at the intake
4 side.

5 These units also are typically the
6 larger size. They pretty much start at about
7 65 pints per day in capacity, ranging up to
8 about 200 pints per day at the residential
9 scale. An initial review of the energy factor
10 -- energy factors that have been published for
11 these units, albeit under the DOE test
12 procedure that doesn't specifically have
13 provisions for measuring a ducted
14 installation, showed that there was no
15 distinct correlation as you go -- increase in
16 capacity with the energy factor. There was no
17 real trend in energy factor, and so,
18 therefore, DOE is initially proposing to
19 include all of the whole home units in a
20 single product class.

21 There are some portable
22 dehumidifiers -- typically, again, some of the

1 larger capacity units -- that are designed to
2 -- or have the option to be installed in a
3 ducted configuration. And DOE is seeking
4 information on how these products should be
5 considered, how they should be tested and
6 rated, because there are several options.
7 These could be considered portable units
8 without the optional ducting kit, and, thus,
9 they would be tested in a configuration
10 without ducting, which would be the least
11 energy consumption.

12 Alternatively, they could be
13 classified as whole home units, because they
14 can be installed in ducting. And if they are
15 tested in such a manner with greater
16 restrictions, it's likely that that would be
17 the most energy intensive way that you would
18 test them. And it is possible that there
19 would be some hybrid or some alternative means
20 by which these would be tested.

21 So that leads me to the request
22 for comment. In general, DOE would welcome

1 input from the stakeholders on those proposed
2 classes and criteria for defining the classes,
3 whether there should be more or fewer criteria
4 that are the basis for the product classes,
5 and also specifically on the classification of
6 whole home dehumidifiers as a separate product
7 class, and the potential for classifying these
8 portable dehumidifiers that can optionally be
9 operated in a ducted configuration, how those
10 should be classified.

11 MS. MAUER: Jennifer.

12 MS. CLEARY: Jen Cleary with AHAM.

13 I just was wondering if you could clarify a
14 little bit what you are thinking about when
15 you say the "ducted installation," like
16 particularly with the portable ones that could
17 be operated that way. Do you intend only to
18 mean the ones that -- like the manufacturer
19 provides specific instructions for ducting?
20 Or would you anticipate that including any
21 dehumidifier that the consumer could
22 theoretically install in it?

1 MS. REICH: Well, I think we are
2 seeking information on --

3 MS. CLEARY: Okay.

4 MS. REICH: -- what a
5 recommendation would be on how -- on what the
6 appropriate differentiation should be.

7 MS. CLEARY: Okay. Thank you.

8 FACILITATOR BROOKMAN: Thank you.

9 Amanda.

10 MS. GONZALEZ: This is Amanda
11 Gonzalez on behalf of the California IOUs. I
12 was wondering if you could describe what you
13 thought the unique utility was for the smaller
14 capacity units.

15 My understanding is that they are
16 less efficient but not necessarily -- they
17 don't necessarily offer unique utility to
18 consumers. And to this point, it is my
19 understanding that Energy Star is moving away
20 from having multiple capacity categories, and
21 they are just jumping to two.

22 MS. REICH: Yes, that's correct

1 about Energy Star. And the -- you know, this
2 was -- I think historically the
3 differentiation was made on the basis of that
4 -- different capacities having inherently
5 different capabilities to achieve a certain
6 energy factor level.

7 But, again, this was maintained --
8 this was based on the EISA 2007
9 differentiation. And if you have a comment
10 on, you know, whether different or more or
11 less differentiation would be appropriate,
12 definitely welcome that.

13 FACILITATOR BROOKMAN: Other
14 comments here?

15 (No response.)

16 Okay.

17 MS. REICH: Okay? In the
18 technology assessment, there was a previous
19 analysis conducted just before the EISA 2007
20 standards came out. It was a preliminary
21 analysis that was conducted for dehumidifiers,
22 and that is where most of these technology

1 options were identified.

2 But, you know, long list of
3 potential means to improve efficiency, and we
4 would certainly welcome any thoughts on those
5 technology options, whether there are any that
6 should not be considered, or whether there are
7 any that were missed.

8 FACILITATOR BROOKMAN: Jennifer
9 first.

10 MS. CLEARY: Hi. Jen Cleary with
11 AHAM. In the framework document it says that
12 DOE has identified, through research and
13 review of product literature, additional
14 designs that may be used to decrease
15 dehumidifier energy use including heat pipe
16 technology, which I see is on the list up
17 there.

18 But I was just wondering if you
19 could expand or provide information on the
20 product literature and research that
21 determined that, and it sounds like including
22 heat pipe technology. Were there others that

1 were identified that aren't on the list?

2 MS. REICH: Well, the research
3 identified many of those technologies are
4 still being implemented that were identified
5 in the previous analysis. So the heat pipe
6 technology is the only new one that is on that
7 list.

8 But, you know, it was a
9 comprehensive review of products that are
10 currently available on the market looking at
11 research that has been conducted lately, a
12 wide variety of sources.

13 FACILITATOR BROOKMAN: Joanna.

14 MS. MAUER: Joanna Mauer. I
15 understand that there are some dehumidifiers
16 on the market that employ air-to-air heat
17 exchangers to pre-cool the incoming air using
18 the cool air coming off of the evaporator. Is
19 DOE planning to look at other pre-cooling
20 technologies aside from heat pipe technology?

21 MS. REICH: Certainly. With
22 additional information, we would be happy to.

1 MS. MAUER: Okay.

2 FACILITATOR BROOKMAN: There you
3 see the list. Other comments?

4 MS. FARBER: Can I go back to the
5 comment right before? I just have one --

6 FACILITATOR BROOKMAN: Please do.

7 MS. FARBER: -- piece of -- a
8 clarification that I --

9 FACILITATOR BROOKMAN: Yes.
10 Julia.

11 MS. FARBER: I'm sorry. The one
12 about the whole home or the portable. Sorry.

13 Julia Farber from UL. Just a point of
14 clarification. Has the DOE taken any note of
15 any reason or trend to understand why a
16 portable system might be used over a whole
17 home system based on geography? Are there any
18 things to -- any data out there to imply that
19 one region of the U.S. might use a different
20 type?

21 MS. REICH: There has -- I am not
22 aware of any information about geographical

1 distribution of their use. Our initial
2 research has shown that these types of units
3 are used in applications that have more
4 limited ducting -- for example, a finished
5 basement where the dehumidifier is desired to
6 be located in an unfinished space nearby with
7 a more limited amount of ducting than would be
8 normally used for a whole home configuration.

9 But again, you know, any input on how these
10 are used, how they are installed --

11 MS. FARBER: Sorry. At this
12 point, I just have --

13 MS. REICH: -- would be
14 appreciated.

15 MS. FARBER: -- questions. Thank
16 you.

17 FACILITATOR BROOKMAN: Amanda.

18 MS. GONZALEZ: Yes. This is
19 Amanda Gonzalez with the California IOUs. I
20 have a question about the whole home
21 dehumidifiers. Is there a test procedure for
22 that in place? And, if not, what's the plan

1 to develop one?

2 MS. REICH: Well, the current DOE
3 test procedure does not have any ducting
4 configuration. It is designed for the product
5 to be, you know, tested in an environmental
6 chamber as is. So the question would be,
7 should DOE consider a new test method to test
8 these units separately?

9 For the products that are
10 currently rated with an energy factor, we
11 believe that they are being tested according
12 to the current test procedure.

13 FACILITATOR BROOKMAN: Joanna.

14 MS. MAUER: Joanna Mauer. Just a
15 question about the first technology option,
16 the built-in humidistat. Is that something
17 that the potential benefits can't be captured
18 by the existing test procedure? Or, in other
19 words, would the test procedure have to be
20 amended to be able to capture the potential
21 energy savings that are built in --

22 MS. REICH: You know, that's a

1 very good point. I think you're correct.

2 MS. MAUER: Okay.

3 MS. REICH: Because the test
4 procedure is designed to have the unit
5 operating continuously under --

6 MS. MAUER: Constant.

7 MS. REICH: -- certain ambient --
8 yes --

9 MS. MAUER: Okay.

10 MS. REICH: -- set ambient
11 conditions, so --

12 MS. MAUER: Okay.

13 MS. REICH: -- I think your
14 comment is correct.

15 MS. MAUER: Because I think --
16 yes, I think we would encourage Julia to kind
17 of analyze what the potential energy savings
18 from -- from that technology option would be,
19 and to consider potential amendments to the
20 test procedure to be able to capture that
21 technology option.

22 FACILITATOR BROOKMAN: Okay.

1 Thank you.

2 MS. MAUER: Thank you.

3 FACILITATOR BROOKMAN: Additional
4 comments here?

5 (No response.)

6 Okay.

7 MS. REICH: Okay. I think we've
8 actually covered this comment already, but one
9 more opportunity to comment on product
10 classes, particularly as we go forward to the
11 engineering and life-cycle cost analyses.

12 FACILITATOR BROOKMAN: And
13 particularly anything safety performance and
14 consumer utility as relates to the product
15 classes? Yes, please. Julia.

16 MS. FARBER: Sorry. Julia from
17 UL. Just another point of clarification that
18 I just need from somebody who knows the
19 technology better than I. The list of
20 technologies that you included, are there any
21 that are highly susceptible to molding? That
22 would need to be an additional consideration

1 in this procedure.

2 FACILITATOR BROOKMAN: Do we have
3 someone who can answer that?

4 (No response.)

5 That one is voluntary.

6 MS. FARBER: No worries. Thank
7 you.

8 FACILITATOR BROOKMAN: Okay.
9 Okay.

10 MS. REICH: Okay. The second
11 stage of the preliminary analysis is the
12 screening analysis where the -- that long list
13 of technology options are reviewed to see
14 whether they meet the criteria for continuing
15 to consider them in later stages of the
16 analysis.

17 And those four criteria are the
18 technological feasibility -- that is, whether
19 they actually improve the energy efficiency
20 and have been demonstrated to do so; whether
21 they can be manufactured, installed, and
22 serviced on the scale necessary at the time

1 that the new standards go into effect; whether
2 there might be any adverse impacts on utility
3 or availability of certain types of products;
4 and whether there are any adverse impacts on
5 health or safety.

6 Any comments on initial thoughts
7 on those technology options and how they might
8 be screened?

9 (No response.)

10 All right. Then, the next stage
11 of the preliminary analysis is the engineering
12 analysis, and that has an overarching goal of
13 determining, for incremental improvements of
14 efficiency of the product, what the
15 incremental manufacturer cost would be.

16 The first step is to define what
17 exactly is a baseline model, so that
18 incremental increases in efficiency can be
19 compared relative to these products. So a
20 baseline is defined for each product class,
21 and for the existing classes, which we are now
22 defining as portable units for which there are

1 standards that will shortly be in place, the
2 baseline is defined as this upcoming federal
3 standard.

4 For whole home units, DOE's
5 initial proposal is to define the same energy
6 factor level as will be the standard for the
7 large capacity, and that's the greater than 75
8 pint per day units.

9 Very interested to know whether
10 these are appropriate efficiency levels for
11 the analysis, for the baseline, particularly
12 for whole home units, because these are newly
13 being considered as their own product class.
14 And then, further, DOE welcomes any input or
15 information on what technologies, designs,
16 control strategies, et cetera, would be
17 characteristic of a model that just meets the
18 baseline level.

19 FACILITATOR BROOKMAN: Comments
20 here?

21 (No response.)

22 Okay.

1 MS. REICH: Okay? From there, DOE
2 determines the cost efficiency relationship,
3 and the first step is to determine whether it
4 is going to be a design option approach or an
5 efficiency level approach. And DOE is
6 proposing at this stage to use the design
7 option approach in which specific technologies
8 are identified, along with their incremental
9 efficiency improvement, and layered together
10 to determine incrementally higher efficiency
11 levels.

12 And the reason that this approach
13 is being considered is because there are very
14 -- the current data suggests there is little
15 variation in a given product class in energy
16 factors. So there are not a lot of products
17 to choose from to use as representatives at
18 various efficiency levels.

19 So to identify the contributions
20 of each of these design options, a selection
21 of products will be reverse engineered. They
22 will be torn down and examined to see what

1 sort of approaches and designs manufacturers
2 are implementing. That will be supplemented
3 with testing to look at the various control
4 strategies that might be used.

5 And, in addition, DOE makes a
6 request from manufacturers to submit an
7 industry aggregate information on cost at each
8 efficiency level. So that cost data will be
9 supplemented, where available, with additional
10 confidential stakeholder interviews and any
11 publicly available data.

12 So from that analysis, a cost
13 efficiency curve will be generated for each
14 product class that is analyzed.

15 I am just quickly showing you what
16 the various contributors are to the industry
17 cost submittal. These are -- there are two
18 components to the manufacturer cost. There is
19 the full production cost with things like
20 direct material, labor, overhead,
21 depreciation, and there are also conversion
22 costs shown there.

1 So, again, where this information
2 is made available to DOE, it is an industry
3 aggregate that is shipment-weighted. And for
4 reasons of not divulging any business
5 proprietary information, where there are fewer
6 than three manufacturers that are represented
7 in a particular product class, that data would
8 not be provided to DOE.

9 In addition, DOE requests
10 information about the depreciation method that
11 manufacturers use to expense their conversion
12 capital.

13 This request for comment is to
14 invite input on the feedback -- input on the
15 use of a design option approach for
16 determining the cost efficiency relationship.

17 FACILITATOR BROOKMAN: Yes.
18 Jennifer.

19 MS. CLEARY: Jen Cleary. I just
20 had a question. It's not really directly
21 related to that comment, but it is in the
22 section where that appears. On page 14 to 15

1 of the framework document it says, "DOE notes
2 that, should the dehumidifier test procedure
3 be revised to capture the benefits of high
4 efficiency dehumidifiers, such as those that
5 incorporate heat pipe technology, a wider
6 range in EF would result."

7 I'm just wondering if you could
8 expand on what the test procedure revisions
9 might be there. Just the sentence I guess was
10 a little unclear to us.

11 MS. REICH: Well, I think it's not
12 that there is any specific revision being
13 contemplated right now for the test procedure.

14 But if, on the basis of what DOE learns from
15 stakeholders during this process that some
16 revision would be warranted that would be able
17 to capture some real-world benefits that
18 aren't currently measured by the test
19 procedure, then you might be able to see a
20 broader differentiation in energy factor.

21 FACILITATOR BROOKMAN: Don
22 Brundage.

1 MR. BRUNDAGE: Don Brundage,
2 Southern Company. I think I know the answer
3 to this, but I was just going to clarify it.
4 There are some different technology
5 dehumidification systems under development,
6 such as desiccant systems. Since those would
7 not use a cold plate and would not put out the
8 removed moisture in a liquid form, this test
9 procedure and this product class would not
10 apply to those, would it?

11 MS. REICH: The only covered
12 products are those that would meet that
13 statutory definition.

14 MR. BRUNDAGE: So this would be --
15 a desiccant product would probably be an
16 unregulated product with no specific standard
17 associated with it until DOE chose to set one.

18 MS. REICH: I will let DOE comment
19 on that.

20 FACILITATOR BROOKMAN: Stephen
21 Witkowski.

22 MR. WITKOWSKI: Well, at this

1 point, we have looked at a number of
2 technologies, and the determination is made
3 that unless we meet the definition, then, yes,
4 it would not be a product that we would
5 regulate at this time.

6 MR. BRUNDAGE: Thank you.

7 FACILITATOR BROOKMAN: Yes,
8 please. Is it Louis?

9 MR. STARR: Yes. Louis Starr with
10 NEEA. I was just kind of interested, sort of
11 a question or maybe a little bit of a concern.

12 On the portable ones that could be ducted, it
13 almost seems that that application could also
14 be used in a whole house application,
15 particularly in a retrofit.

16 And if you are increasing the
17 efficiency of your whole house option, but
18 also leaving the option of a lower standard
19 for a portable one that could just be ducted
20 in and out of the return, you are not only
21 getting less efficient product there, but you
22 are also doing some stuff with the fan energy

1 that kind of actually increases energy.

2 So you might think about that as
3 one of the unintended consequences of creating
4 that product class.

5 FACILITATOR BROOKMAN: Okay.
6 Thank you. Other comments here?

7 (No response.)

8 None. Okay.

9 MS. REICH: A subset of the
10 product classes that were identified are being
11 considered for the engineering analysis and
12 subsequent LCC and payback period analyses.

13 And this is for reasons of having
14 a manageable number of product classes to
15 analyze, and also, as was -- it is comparable
16 to the approach that was taken for room air
17 conditioners where certain representative
18 product classes were analyzed and then the
19 results, because technologies are comparable,
20 the results can be extrapolated to the
21 remaining product classes.

22 So DOE's initial proposal is to

1 analyze the portable product classes that
2 represent the most number of -- the greatest
3 number of products available -- namely, the 35
4 to 45 pints per day, the 45 to 54 pints per
5 day, and the 54 to 75 pints per day.

6 In addition, because of the very
7 different nature of whole home units, DOE
8 proposes to analyze that product class as
9 well.

10 DOE is required -- I'm sorry.

11 FACILITATOR BROOKMAN: Yes. Don
12 Brundage.

13 MR. BRUNDAGE: My question on the
14 whole home units is right now those would be
15 classified the same as the portable and the
16 largest size category. Is that correct, under
17 the current -- under the current rulemaking
18 that is about to go into effect?

19 MS. REICH: There is -- I am going
20 to let Betsy correct me if I am misspeaking
21 here. But I think it is open to
22 interpretation whether a whole home unit is

1 currently a covered product. Is that correct?

2 MS. KOHL: This is Betsy. We are
3 looking into that issue in the context of this
4 rulemaking now, whether to establish a
5 separate product class for those.

6 MR. BRUNDAGE: Well, the key issue
7 would be whether anti-backsliding applies to
8 it, if it is covered under the current
9 rulemaking.

10 MS. KOHL: We are fully aware of
11 that issue.

12 FACILITATOR BROOKMAN: Okay.
13 Thank you, Don.

14 MS. REICH: So DOE is required, as
15 one of the efficiency levels that it analyzes,
16 to look at the maximum technologically
17 feasible or so-called max tech efficiency
18 level. In some cases, that is the highest
19 efficiency product that is available on the
20 market, otherwise known as a max available
21 design.

22 And in some cases this may not

1 truly be a max tech level, if there are design
2 options that are feasible but are not yet
3 commercially available. So in cases where
4 this occurs, DOE will seek stakeholder input
5 on resolving the difference between the max
6 tech and max available.

7 For the purposes of the initial
8 proposal, DOE has based the max tech level on
9 the maximum available efficiencies for
10 products currently on the market. Again, the
11 baseline for each of the product classes that
12 are intended to be analyzed are shown above
13 with those being the 2012 federal standards
14 with the whole home product class being the
15 standard for the greater than 75 pint per day
16 units.

17 Efficiency level 1 is the highest
18 efficiency that has been identified for
19 products currently available in the 35 to 45
20 pint per day level -- capacity, excuse me.
21 And the -- for 45 and 54 pints per day, that
22 is a gap fill level between the federal

1 standard and the maximum available energy
2 factor.

3 In the 54 pints per day to 75
4 pints per day, the 1.85 is the Energy Star
5 level that will be applicable to units that
6 are less than 75 pints per day. Between 75
7 pints per day, and I think it's 185, there is
8 a second qualification criteria for Energy
9 Star, which is the 2.8 which is proposed to be
10 used as efficiency level 1 for whole home
11 products.

12 The maximum available for 54 to 75
13 pints per day is the 2.47, and for whole home
14 units that maximum available corresponds to
15 the highest rated value that DOE's research
16 identified. But, again, it is believed that
17 that is tested according to the current DOE
18 test procedure.

19 DOE invites comments and input on
20 these efficiency levels, and, in particular,
21 are interested to receive input on the max
22 tech efficiency levels.

1 FACILITATOR BROOKMAN: Jennifer.

2 MS. CLEARY: Jen Cleary. I think
3 you clarified it -- could you go back to slide
4 43? I think your explanation clarified this a
5 little bit, but I think we are just getting a
6 little confused in reading the level 1 row.

7 So the source says Energy Star,
8 but that is actually only really the case for
9 the 54 to 75? Okay.

10 MS. REICH: Yes.

11 MS. CLEARY: The two at the end,
12 and then the 35.01 to 45 pints per day, that
13 is the max available?

14 MS. REICH: That's correct.

15 MS. CLEARY: And then the next one
16 is the gap fill. Is that --

17 MS. REICH: Yes.

18 MS. CLEARY: -- how it should be?
19 Okay. So it is not intended that that whole
20 row is actually the Energy Star.

21 MS. REICH: That's correct, yes.

22 MS. CLEARY: Okay. Thank you.

1 And a question is just how -- how did you
2 reach the levels that are identified in -- for
3 2 and 3?

4 MS. REICH: Let's see. So for
5 efficiency level 2, for 45 to 54 pints per
6 day, again, that was the maximum available
7 currently on the market. And so the gap fill
8 between 1.6 and 1.8 was a halfway point to
9 provide reasonable differentiation.

10 The max -- let's see. Well, for
11 both 54 and 75 pints per day, and whole home
12 units, efficiency level 2 is a gap fill
13 between the levels that were based on the
14 Energy Star qualification criteria at level 1
15 and the maximum available, and those levels
16 were chosen based on availability of products
17 at or near that gap fill level that could be
18 used as the basis of the analysis.

19 And then, of course, the maximum
20 available were based on certified values for
21 those units on the market.

22 MS. CLEARY: Thank you.

1 FACILITATOR BROOKMAN: Final
2 comments on item 5.5?

3 (No response.)

4 Nothing additional.

5 MS. REICH: Okay. So DOE looks at
6 all design options that are available in
7 products already being sold or have been
8 demonstrated in a working prototype, which may
9 include designs or technologies that are
10 proprietary.

11 But those designs are only
12 considered for the purposes of the engineering
13 analysis as long as there are other means to
14 reach the efficiency level that that
15 proprietary design can achieve.

16 In other words, DOE does not want
17 to consider only an approach, only an
18 efficiency that can be reached by means of
19 this one unique pathway. And, therefore, the
20 confidentiality in proprietary business
21 information can -- for manufacturers can be
22 maintained.

1 So the request for comment is, are
2 there any proprietary designs or technologies
3 for dehumidifiers that DOE should be aware of
4 in conducting this rulemaking? And, if so,
5 how should DOE acquire cost data necessary to
6 evaluate those designs?

7 FACILITATOR BROOKMAN: Nothing
8 additional? Yes, Joanna.

9 MS. MAUER: Joanna Mauer. Sorry.
10 This is a comment going back to the request
11 for comment on the efficiency levels. Just an
12 observation. I think on the -- for the whole
13 home category, it seems to be a pretty big
14 jump from level 1 to level 2, and also level 2
15 to level 3.

16 And there may be kind of a
17 technology jump at some point, but we might
18 encourage DOE to perhaps add one or two
19 additional efficiency levels, especially for
20 that whole home category, just because it is
21 -- you know, they are big jumps right now it
22 seems like.

1 MS. REICH: Thank you.

2 FACILITATOR BROOKMAN: Other
3 comments here?

4 (No response.)

5 Okay.

6 MS. REICH: Okay. And then,
7 finally, there is some overlap here with the
8 topic of looking at the impact of regulatory
9 changes in the engineering analysis as well as
10 the manufacturer impact analysis.

11 But the intent is to consider the
12 impact on manufacturers that are subject to
13 multiple regulatory changes at the same time
14 in addition to this dehumidifier standards
15 rulemaking.

16 And as many of you are aware,
17 there are recent standards that -- for
18 dishwashers and clothes washers that will go
19 into effect, unless DOE decides otherwise in
20 the next week, and there were also in 2011 new
21 standards that came out in a final rule for
22 clothes dryers and room air conditioners.

1 In addition, you know, some other
2 issues that manufacturers may have to deal
3 with is the RoHS topic, and so the request for
4 comment would be, are there any other
5 regulatory issues that DOE should consider?

6 FACILITATOR BROOKMAN: Don
7 Brundage.

8 (Off-mic comment.)

9 FACILITATOR BROOKMAN: Thank you.

10 MS. REICH: And actually, I would
11 be interested, if you could clarify, are these
12 local building codes or state building codes
13 that are driving this?

14 MR. BRUNDAGE: Well, the IECC
15 code. And if you want a point of reference,
16 there has been a lot of consideration of this
17 in the Florida -- Florida Solar Energy Center
18 has done a lot of research on this and related
19 to -- they have considered this in local
20 customization of their Florida building codes
21 for making adjustments to the IECC.

22 They were considering at one time

1 requiring supplemental dehumidification in
2 certain very humid areas of the state. I
3 don't know what became of that, but at one
4 time that was under active consideration to
5 require supplemental dehumidification as part
6 of their building code.

7 MS. REICH: Thank you for that
8 information.

9 Okay. If there are no more
10 comments on other regulatory issues, I will
11 turn it over to Ben Barrington, who will
12 discuss the preliminary manufacturer impact
13 analysis.

14 MR. BARRINGTON: Thanks very much,
15 Judy. Ben Barrington with Navigant
16 Consulting. If you were here earlier, I
17 presented on the manufacturing impact analysis
18 for commercial clothes washers, which is
19 remarkably similar to this, except for the
20 fact that in that rulemaking we are going
21 straight to NOPR, and in this we have two
22 phases.

1 We have a preliminary manufacturer
2 impact analysis followed by a NOPR phase
3 manufacturer impact analysis, both of which I
4 will present at this point in time in the
5 interest of me not getting up and down more
6 than once.

7 As mentioned earlier, the
8 manufacturer impact analysis satisfies two of
9 the seven requirements put forth by EPCA in
10 terms of economic justification for an amended
11 efficiency standard, those being the impact
12 directly to manufacturers as well as the
13 potential of any lessening of competition
14 within the industry in question.

15 Additionally, there are some finer
16 points on the methods and procedures used in
17 the manufacturer impact analysis in the report
18 listed in the link at the bottom of this
19 slide.

20 Where we do a full-scale
21 rulemaking that includes both the preliminary
22 analysis phase and the NOPR phase, we break

1 things out into six distinct steps for the
2 manufacturer impact analysis. Again, starting
3 with the industry profile in which we build
4 off of a lot of the information collected
5 during the market and tech assessment,
6 identifying both current and past industry
7 structures, and trends that we see carrying
8 forward.

9 Additionally, we look through
10 public records, 10Ks, annual reports that are
11 publicly available for each of the constituent
12 manufacturers, and develop industry average
13 financial parameters that we then later use in
14 our government regulatory impact model.

15 At this point in time, we also dig
16 through manufacturer databases and try to
17 identify any particular manufacturer subgroups
18 that we think merit special consideration in
19 terms of them potentially seeing different
20 impacts of -- excuse me, impacts of a
21 different magnitude than other manufacturers.

22 As we are doing the preliminary

1 analysis phase, we do a first round of
2 interviews with manufacturers in conjunction
3 with the pre-NOPR phase engineering analysis
4 interviews, and this allows us to identify
5 some of the key issues that we see
6 manufacturers facing, as well as develop or
7 inform our preliminary analysis, which
8 primarily relates to understanding how
9 manufacturing capital might change in this
10 industry as a result of new standards.

11 From there, in the second phase of
12 the preliminary analysis, we tailor our
13 government regulatory impact model, which is a
14 discounted cashflow model of future cashflows
15 for the industry, as a result of or in light
16 of information gained in the first round of
17 interviews. And then, we use this framework
18 to determine what other types of information
19 we would need to carry out the full analysis.

20 With that information, or with
21 that understanding of the information gap, we
22 develop interview guides to take back to

1 manufacturers to complete our analysis.

2 And these topics include key
3 issues, questions about market share, markup
4 structure for the -- for their first
5 customers, the shipments analysis, verifying
6 our assumptions that went into developing the
7 financial parameters that we had earlier, how
8 capital and non-capital expenditures might be
9 made in light of new efficiency standards, as
10 well as the cumulative regulatory burden,
11 impacts to direct employment, manufacturing
12 capacity, as well as competitive effects and
13 how those might play out on manufacturer
14 subgroups.

15 Sorry I haven't been pausing for
16 questions, but if anyone has anything, please
17 feel free to speak up.

18 (No response.)

19 Okay. Okay. With those guides
20 circulated, we conduct interviews with
21 manufacturers that are protected by a non-
22 disclosure agreement between the manufacturer

1 and Navigant Consulting, and we maintain those
2 records in confidence.

3 The information gathered in those
4 interviews is then aggregated up to an
5 industry representative depiction of what the
6 impacts might be with new efficiency standards
7 in place as to anonymize the information and
8 maintain that confidentiality. From there, we
9 populate our model and quantitatively assess
10 the impacts to the industry net present value,
11 as well as cumulative regulatory burden and
12 the effects on competition and those other
13 factors that I earlier described.

14 At this point in time, the sort of
15 preliminary analysis that we have done to date
16 indicates that there are five -- or
17 potentially five small business manufacturers
18 of residential dehumidifiers. And if I am not
19 mistaken, the Small Business Association
20 defines a small business as anyone employing
21 fewer than 500 employees.

22 Additionally, we anticipate that

1 there would be some cumulative regulatory
2 burden borne of other efficiency standards
3 from DOE, including those for dishwashers,
4 clothes washers, clothes dryers, and room ACs,
5 both existing and upcoming rulemakings in that
6 regard, as well as the EPA-mandated phase out
7 of HCFCs and the RoHS directive.

8 And with that, we are requesting
9 comment on any potential manufacturer
10 subgroups that we haven't yet considered
11 outside of small businesses, if anyone cares
12 to comment on that.

13 (No response.)

14 No? Okay. And also, just in
15 terms of doing our own due diligence, we feel
16 that people in the industry themselves might
17 be aware of other small businesses that could
18 be affected by this rulemaking that we may not
19 have uncovered. So if anyone can provide
20 names and contact information, that would be
21 greatly appreciated as well, and we are happy
22 to take that here or after, as always.

1 All right. So I am going to take
2 us out to the break really quickly. So in
3 terms of cumulative regulatory burden, if
4 there is anything beyond that list of three or
5 those three types of regulations that we think
6 might impact the industry, we also welcome
7 comment on that.

8 All right. I'll turn it back to
9 Doug.

10 FACILITATOR BROOKMAN: Thank you.

11 Do you want to take a break now, or do you
12 want to keep going for a little bit longer?
13 Let's break. Okay. Let's try and make it
14 back here for real in 15 minutes. All right?

15 That means we'll start on the dot at 2:30
16 according to that watch.

17 Very good this morning; we are
18 being very disciplined today. See you back
19 here to start up. Wear your badges in the
20 hallway, please. The restrooms are on both
21 ends of the halls. If you are going to go
22 grab some beverage, do it quickly. We'll see

1 you back here shortly.

2 (Whereupon, the above-entitled
3 matter went off the record at 2:14 p.m., and
4 resumed at 2:29 p.m.)

5 FACILITATOR BROOKMAN: So we're
6 going to proceed. Ladies and gentlemen, we
7 are going to proceed, and we are going to hear
8 next from Camilla Dunham Whitehead.

9 MS. DUNHAM WHITEHEAD: Good
10 afternoon. My name is Camilla Dunham
11 Whitehead, and I want to thank you all for
12 being here today and showing interest in the
13 dehumidifier standards rulemaking. I want to
14 thank Judy and Ben for their earlier
15 presentations.

16 I am going to be talking about two
17 main analyses in the preliminary analysis
18 phase of this standards rulemaking, and then I
19 am going to -- after I conclude the national
20 impact analysis, I will touch on six analyses
21 that will be conducted during the NOPR phase,
22 or the Notice of Proposed Rule phase.

1 So I am going to start with the
2 LCC and payback period analysis and talk about
3 two key inputs into that analysis. For those
4 of you who were here this morning, this will
5 all sound very familiar. These analyses, as
6 you know, are applicable to numerous different
7 products and equipment.

8 I am going to talk about the life-
9 cycle cost and payback period. The life-cycle
10 cost is the total cost of owning in this case
11 a dehumidifier over the lifetime of that
12 product, and that includes both operating and
13 installed costs. The first thing that I will
14 talk about is the markups, which is part of
15 the total installed cost.

16 Markups are multipliers that
17 convert manufacturing cost into consumer
18 product price. And consumer product price
19 data is important as inputs into the life-
20 cycle cost analyses and also into the national
21 impact analysis. So DOE looks at the
22 distribution chain of the dehumidifier to see

1 what sorts of markups will be needed to
2 transform the manufacturer cost into the
3 consumer price.

4 The latest AHAM Fact Book reports
5 that 93 percent of most consumer products move
6 from the manufacturer directly to the retailer
7 where they are sold to the consumer. So DOE
8 has assumed that there are three parties along
9 this distribution channel that it should
10 consider.

11 For the markups, for manufacturing
12 costs, DOE looks at the Securities and
13 Exchange Commission 10K reports that are filed
14 by publicly traded manufacturers. For the
15 retailer markup, DOE looks at the SEC 10K
16 reports for publicly traded retailers in
17 addition to U.S. Census Bureau data.

18 As a part of the retailer markup,
19 too, we look at the sales tax that consumers
20 would pay, and we get information about the
21 sales tax from the Sales Tax Clearinghouse.

22 So DOE plans to use retail price

1 data to validate the overall manufacturer-to-
2 consumer markup. Markups enable DOE to use
3 retail prices in the calculation of first
4 costs, which, as I mentioned to you earlier,
5 is one of the primary inputs into the LCC and
6 payback period analysis.

7 You have seen these requests for
8 comments. You will see them also throughout
9 my presentation. The comments are directed --
10 direct stakeholders to provide input to DOE
11 based on the purpose of the analysis, the
12 approach that DOE intends to use, data sources
13 that DOE intends to use, and also as an
14 opportunity to provide information to DOE.

15 So I am moving into the energy use
16 characterization. Energy use is a part of the
17 lifetime operating expenses portion of the LCC
18 analysis. For the LCC, DOE establishes annual
19 energy consumption and assesses energy savings
20 potential of various product efficiencies.
21 You heard about some of those product
22 efficiency levels in the presentation by Judy

1 earlier.

2 DOE will potentially analyze six
3 product classes that you see here in the green
4 box on this slide. DOE recognizes that energy
5 use varies across households depending on the
6 product's characteristics and also how the
7 product is used.

8 With databases from the Energy
9 Information Administration, the California
10 Energy Commission, in conjunction with
11 engineering analysis results, DOE will develop
12 annual energy use for each U.S. household that
13 has a dehumidifier.

14 For the 2007 dehumidifier
15 preliminary analysis, insufficient household
16 data was available to enable DOE to really
17 examine things on a household level, so AHAM
18 provided data about capacity usage and energy
19 use on a month -- on an hourly basis over a
20 12-month period.

21 DOE hopes to improve upon the 2007
22 estimates of energy consumption and usage with

1 current -- for the current rulemaking with
2 more recent reports, research reports, and
3 information provided by stakeholders.

4 For dehumidifiers, annual energy
5 use is calculated by multiplying capacity by
6 the hours of operation and dividing the
7 product of those two quantities by the energy
8 efficiency of the device.

9 So I'm referring, you can see
10 here, to this equation. So capacity -- the
11 units for capacity are pints of moisture
12 removed from the air. Hours are the number of
13 hours that the dehumidifier is in operation in
14 a 24-hour period. And then, efficiency is the
15 liters of moisture removed per unit of energy
16 consumed.

17 We have repeated that calculation
18 using the data sources that we hope to use for
19 each of those different quantities.

20 Here is a request for comment.
21 Again, DOE seeks comment on its proposed
22 approach for determining energy use and also

1 on the sources that it intends to use. DOE
2 also requests any information or data
3 stakeholders may have that would help in its
4 characterization of energy use.

5 FACILITATOR BROOKMAN: Comments
6 here? Don Brundage.

7 MR. BRUNDAGE: I've got a general
8 comment that I'm not sure where is the best
9 place to get it in, so I might as well do it
10 here. For whole house dehumidifiers, they are
11 essentially a supplement to increase the
12 dehumidification capability of a whole house
13 air conditioner unit.

14 And I don't know that -- it would
15 be nice if there was an alternative to having
16 a separate, totally independent system to be
17 an integrated system. How you would do that
18 without violating the anti-backsliding on the
19 standard air conditioning products rule, I
20 don't know.

21 But it just seems to me that if
22 you had an integrated product to provide

1 supplemental dehumidification you could do,
2 combined across both functions,
3 more efficiently than establishing an entirely
4 separate system.

5 I think the Department needs to
6 consider if there is some possible way to
7 define a product to do that, which I think
8 would save more energy in total than playing
9 around with how you make a separate
10 dehumidification system slightly more
11 efficient.

12 Thank you.

13 FACILITATOR BROOKMAN: Thanks,
14 Don. Other comments here? Yes, please.
15 Julia.

16 MS. FARBER: Julia Farber from UL.
17 I was just wondering, can you just define for
18 me one more time what characterizes as a
19 household, how you're defining it here?

20 MS. DUNHAM WHITEHEAD: What
21 characterizes --

22 MS. FARBER: Sorry. How are you

1 defining a household? Is it --

2 MS. DUNHAM WHITEHEAD: Well,
3 actually, what we use is the Energy
4 Information Administration's Residential
5 Energy Consumption Survey. And so we use RECS
6 as the -- sort of the basic household sample.

7 And so how the government currently defines a
8 household in terms of that particular survey
9 is how we will continue -- we will continue
10 that on through our consumer analysis.

11 FACILITATOR BROOKMAN: Yes,
12 Joanna.

13 MS. MAUER: Joanna Mauer. On the
14 previous slide where you showed the equation
15 for calculating energy use, the dehumidifier
16 efficiency, would that be the rated efficiency
17 or -- so at the -- efficiency at the rating --
18 the rated conditions based on the current test
19 procedure?

20 MS. DUNHAM WHITEHEAD: That would
21 be information, yes, in a sense that we would
22 get from the engineering analysis.

1 MS. MAUER: Okay.

2 MS. DUNHAM WHITEHEAD: And we
3 would use a range of efficiencies that would
4 be appropriate for that product class, and
5 then assign them to the household based on a
6 Monte Carlo simulation, which I will get into
7 in a little bit.

8 MS. MAUER: So I guess based on
9 the current test procedure, if, you know,
10 field conditions are typically lower ambient
11 temperature and relative humidity, the kind of
12 energy factors and efficiencies we would see
13 in the field would -- I think would --
14 typically may be significantly lower than what
15 we see out of the test procedure.

16 So I think if -- I mean, we would
17 also encourage DOE to consider amending the
18 test procedure. But kind of based on the
19 current test procedure, it looks like this
20 energy use calculation may significantly
21 underestimate annual dehumidifier energy use,
22 if it is based on the rated conditions.

1 MS. DUNHAM WHITEHEAD: We will
2 take into consideration field measurements
3 through published reports that could be
4 considered as sort of a range that is
5 appropriate for that particular capacity unit
6 or product class.

7 FACILITATOR BROOKMAN: Okay.
8 Additional comments here?

9 (No response.)

10 MS. DUNHAM WHITEHEAD: Okay. So
11 now I am going to talk more fully about the
12 life-cycle cost and payback period analysis.
13 I am going to talk again -- I'm showing you
14 this slide again. After I talk about the
15 purpose and approach of the LCC and payback
16 period, I will go more into the inputs in the
17 second and third columns on this flowchart.

18 So the life-cycle cost analysis
19 establishes the total cost of dehumidifiers
20 over their lifetime, and the payback period
21 analysis determines the amount of time
22 required for the energy cost savings to pay

1 back any increased cost from a higher
2 efficiency.

3 We do both of these analyses using
4 an Excel spreadsheet. The savings that are
5 quantified are then discounted to a base year,
6 typically the year that the NOPR is conducted,
7 the Notice of Proposed Rule.

8 You see here a graphic that shows
9 the two major inputs, the first costs and
10 operating costs into the consumer lifetime
11 cost. There will be a baseline established
12 and a standard, and the difference between the
13 two would show the LCC impact.

14 DOE conducts the LCC using a Monte
15 Carlo simulation. A Monte Carlo simulation
16 and probability distributions model both the
17 uncertainties and variabilities of the inputs,
18 enabling DOE to look at -- to identify
19 percentages of consumers who benefit from or
20 who are negatively impacted by a proposed
21 standard.

22 Each Monte Carlo simulation

1 represents 10,000 calculations of life-cycle
2 cost and payback period, which reduces the
3 error brought in by uncertainty or
4 variability. And as I just mentioned earlier,
5 the Energy Information Administration
6 publishes the Residential Energy Consumption
7 Survey, and that sample forms the basis of the
8 energy use characterization from the house --
9 from the consumer perspective.

10 Each product class is analyzed
11 separately, and there is a base case
12 efficiency distribution that would -- that I
13 will get into in a later slide, but that
14 characterizes the mix of efficiencies that are
15 in use in the nation in a given year of this
16 -- of the analysis period.

17 Here is a sample slide. This is
18 from the dishwasher LCC analysis. You notice
19 that in the upper graph there is the number
20 10,000. That is the number of LCC runs for
21 this Monte Carlo simulation. The thick blue
22 line is -- rests at zero and represents the

1 no-impact line. Everything to the right of
2 the line is a benefit, and to the left of the
3 line in red is not a benefit.

4 The dotted blue line is the
5 average life-cycle cost savings, and that is
6 \$17 here. That \$17 you can pick up down below
7 in the table. It is shown there as 16.8. The
8 other numbers to take note of in the table are
9 the no impact and the net benefit, which
10 together summed equal about 68 percent
11 receiving no impact from the standard or a
12 benefit from the standard. Conversely, the 32
13 percent number is that percentage of
14 households who are negatively impacted by the
15 standard.

16 The request for comment on the
17 proposed approach, and also a data request to
18 characterize the current mix of dehumidifier
19 efficiencies.

20 FACILITATOR BROOKMAN: No comments
21 here?

22 (No response.)

1 MS. DUNHAM WHITEHEAD: Okay. So
2 now I am transitioning to the second and third
3 columns on the flowchart, and I will start
4 with electricity prices. Electricity prices,
5 combined with energy use, will show how much
6 any given household will need to spend on
7 energy to operate its dehumidifier at a given
8 efficiency level.

9 DOE uses the EIA Form 861, which
10 provides electricity utility data, and DOE
11 will estimate average electricity prices using
12 the EIA data covering 13 geographical areas,
13 nine census divisions, plus four large states.

14 For future savings, DOE uses electricity
15 price projections to residential consumers as
16 reported in EIA's Annual Energy Outlook. DOE
17 requests input on the planned approach for
18 using -- for estimating current and projected
19 electricity prices.

20 As we did this morning, we are
21 covering three inputs here. Installation
22 costs are part of the first costs and the two

1 primary inputs into the LCC. Maintenance and
2 repair costs are part of that -- lifetime
3 operating expenses.

4 We have grouped all three of them
5 here together, because DOE assumes that there
6 are no additional costs from installation,
7 maintenance, or repair related to a higher
8 efficiency unit. So DOE also requests comment
9 on that assumption and information or data
10 where that is relevant as well.

11 FACILITATOR BROOKMAN: Thoughts on
12 that?

13 (No response.)

14 MS. DUNHAM WHITEHEAD: Okay. On
15 to product lifetime. DOE will use information
16 from available literature sources, as well as
17 any inputs from stakeholders, as to product
18 lifetime. Appliance Magazine is one source of
19 information. If stakeholders have other
20 suggestions for product lifetime, we would be
21 happy to have that information.

22 FACILITATOR BROOKMAN: Additional

1 sources?

2 (No response.)

3 Okay.

4 MS. DUNHAM WHITEHEAD: The
5 discount rates -- Can you all hear me in the
6 back?

7 FACILITATOR BROOKMAN: I think
8 that will work. It's on.

9 (Pause.)

10 MS. DUNHAM WHITEHEAD: It's going
11 to make me break into song --

12 (Laughter.)

13 -- which would be a problem.

14 Okay. Discount rates -- discount
15 rates are the last of the inputs that I will
16 discuss here. DOE uses discount rates to
17 determine the present value of lifetime
18 operating expenses that occur into the future.

19 The approach for dehumidifiers is
20 consistent to other product rulemakings, but,
21 to summarize, DOE estimates that interest or
22 finance costs to purchase a dehumidifier,

1 these can be seen as the cost of raising funds
2 to buy a product from the financial costs from
3 debt incurred or opportunity costs from equity
4 used.

5 Much of the data required for the
6 discount rate determination comes from the
7 Federal Reserve Board's publication Survey of
8 Consumer Finances.

9 And here is a comment box
10 requesting input on the planned approach for
11 estimating discount rates.

12 Okay. The last thing that I will
13 cover here in the life cycle is the base case
14 efficiency distribution. Just to make it
15 clear, it is important that DOE -- that DOE
16 recognizes that all of the dehumidifiers
17 currently at use in the field now in people's
18 homes aren't of uniform efficiency level.

19 And so DOE will attempt to
20 characterize that mix of efficiencies that are
21 currently in use, and that is what we call the
22 base case efficiency. And that is to avoid

1 overcounting benefits of a higher standard.

2 So this comment requests input on
3 the proposed approach and also any information
4 or data that would help DOE characterize that
5 base case efficiency distribution.

6 Okay. So we are back to this
7 orienting slide of the chevrons. I am moving
8 into the second input into the national impact
9 analysis, which is the shipments analysis.

10 The purpose of the shipments analysis is to
11 estimate the impact of appliance shipments
12 caused by potential new efficiency standards.

13 The method relies on the
14 development of a shipments model, which is
15 based on a variety of sources and includes
16 historical shipments data. The shipments
17 model considers only the products that are
18 covered by this particular rulemaking, which
19 in this case is residential dehumidifiers.

20 The shipments model provides two
21 main functions. The first is a projection of
22 shipments during each year that the standard

1 is in effect, and the second purpose is to
2 account for the total inventory or stock of
3 appliances that are in service in the nation
4 for any given year in the analysis period.

5 Furthermore, the model keeps track
6 of the age of the stock, so that the vintage-
7 dependent appliance energy use and operating
8 costs can be accurately assigned. So when I
9 use the words "vintage-dependent" here, I mean
10 the distribution of efficiencies that were
11 present in that given year.

12 So the first step in the shipments
13 analysis will be to protect appliance
14 shipments under the base case, and that means
15 the case when no new standards are adopted.
16 Under the base case, shipments will be
17 projected for two primary markets -- new
18 construction and then units shipped as
19 replacements for failed equipment.

20 Shipments to new -- the new
21 construction market will be estimated by
22 multiplying projections of new housing stock

1 -- new housing starts, sorry -- by historical
2 rates of product ownership or product
3 saturation rates.

4 DOE will get the projections for
5 new housing starts from the Energy
6 Information's Annual Energy Outlook. And the
7 RECS and the AHAM Fact Book -- the Residential
8 Energy Consumption Survey and the AHAM Fact
9 Book provide input that DOE can use as product
10 saturation rates.

11 The shipments' projections will be
12 calibrated to the historical shipments data by
13 first determining the discrepancy between the
14 historical projections that we will call
15 "backcasts" and the shipments data. DOE plans
16 to attribute any discrepancy between the two
17 to early replacement.

18 Replacement shipments will be
19 estimated by applying product retirement
20 functions to existing product stock in the
21 overall housing stock. Retirement functions
22 will be based on the product lifetime

1 estimates developed in the LCC and payback
2 period analysis and from historical shipments
3 data.

4 Known sources for the historical
5 shipments are Appliance Magazine and the AHAM
6 Fact Book. Requests also will be made to
7 stakeholders for information and input.

8 Yes?

9 MR. BRUNDAGE: Don Brundage,
10 Southern Company. Continuing on my earlier
11 comment, if you will drop back to the slide
12 before this, it is really just with the last
13 couple of versions of the IECC code that it
14 has become a real issue on increasing the need
15 for supplemental dehumidification. And most
16 jurisdictions didn't adopt those until about
17 2009.

18 So I would caution you against
19 doing a long-term linear trend, pay special
20 attention to the most recent couple of years,
21 because it may have a different pattern than
22 earlier. I realize with very few housing

1 starts the last few years that is problematic,
2 but I would expect to see different behavior
3 the last few years than in earlier years.

4 MS. DUNHAM WHITEHEAD: Okay.

5 Thank you.

6 FACILITATOR BROOKMAN: Thank you.

7 Yes, and Louis.

8 MR. STARR: Louis Starr with NEEA.

9 The other aspect -- and I think in your
10 shipment direction, it does sound like you are
11 somewhere in there also including units on a
12 refurbished -- or retrofitting existing units,
13 or sometimes when people put in new units in a
14 house they go ahead -- they are usually sold
15 on things like humidifiers and all kinds of
16 things.

17 So to the extent that you are
18 capturing that in your shipment projections --
19 it sounds like you are, but just want to
20 confirm that.

21 MS. DUNHAM WHITEHEAD: Yes. We
22 try to capture both the new construction or

1 first units and then also the replacement
2 units. And if I am understanding you
3 correctly --

4 MR. STARR: Well, it says "failed
5 units." You never had one in the first place,
6 you didn't have a failure, right?

7 MS. DUNHAM WHITEHEAD: That's
8 correct.

9 MR. STARR: Okay.

10 MS. DUNHAM WHITEHEAD: So --

11 MR. STARR: Do you see what I'm
12 saying?

13 FACILITATOR BROOKMAN: Yes. And
14 you're suggesting the configuration may be
15 different for it, right?

16 MR. STARR: Well, for --

17 FACILITATOR BROOKMAN: For a
18 replacement unit.

19 MR. STARR: Yes. For instance,
20 when you buy a new air conditioner, you might
21 buy an air filter, and you may not have had
22 one in your first one, in the same way you

1 might buy a humidifier or dehumidifier for
2 your house, because you are replacing a unit.

3 And I think you can speak to that
4 one, right, yourself? So --

5 MS. DUNHAM WHITEHEAD: Yes.

6 MR. STARR: -- it's a very common
7 thing that people will -- it won't -- you
8 won't have -- the unit won't have failed, and
9 you won't have a new house. You will have an
10 existing house that you will add this unit to,
11 and I think that's a very popular item that
12 happens.

13 MS. DUNHAM WHITEHEAD: Yes. I
14 think that that's important to characterize.

15 FACILITATOR BROOKMAN: Don
16 Brundage.

17 MR. BRUNDAGE: I would also point
18 out the third thing is retrofit into existing
19 construction. And one of the reasons you have
20 this is if you have an older generation air
21 conditioner, they tended to, for single speed
22 units, to have better dehumidification

1 performance among older SEER8, SEER10 units,
2 than new minimum efficiency units.

3 So someone may have been adequate
4 on dehumidification on their old, inefficient
5 unit. They get a new unit in and find
6 objectionable levels of internal humidity and
7 feel the need to go in and put in a
8 supplemental system. So there's three sources
9 of shipments, and it is real. I have -- we
10 are hearing in the market about people doing
11 retrofit of supplemental dehumidification
12 systems in existing homes.

13 Thank you.

14 FACILITATOR BROOKMAN: Thank you.

15 Okay. Helpful comments. Joanna.

16 MS. MAUER: Joanna Mauer. Just a
17 followup, Don. Is there any data available on
18 that trend that you're seeing? Because I
19 think AHRI did look into this issue of whether
20 there is some correlation between SEER and
21 basically sensible heat ratio. And I thought
22 they found that there in fact was basically no

1 correlation.

2 MR. BRUNDAGE: There is not any
3 correlation on the current new products in the
4 market. The older products that are being
5 retired now tended to have very cold
6 temperatures on the internal -- in the
7 condenser. It's anecdotal. I don't have any
8 data, but we have seen a lot of examples of
9 that.

10 FACILITATOR BROOKMAN: Thank you.

11 MS. DUNHAM WHITEHEAD: Okay. Here
12 is a data sheet that stakeholders can use to
13 fill in shipments information. As you can
14 see, we go back to a 1997 year, but we
15 wouldn't be opposed to receiving earlier data
16 as well. For the different -- and you can see
17 across the different columns the different
18 potential product classes that are considered
19 at this point.

20 So after developing our base case
21 shipments projections, we then need to develop
22 standards case shipments projections, and that

1 assumes that a standard -- a new standard has
2 been adopted.

3 The standards case shipments
4 projection is developed in much the same way
5 as the base case's shipments projection, but
6 with one important difference, and that is
7 that we account for the purchase price
8 increases and the operating cost savings that
9 would be due to any standard to estimate any
10 changes to the base case shipments
11 projections.

12 If we are not able to obtain data
13 that show how appliance shipments are affected
14 by purchase price or operating costs, we may
15 project standards case shipments with
16 scenarios that assume certain drops in annual
17 shipments for particular standards levels.

18 And, finally, we will incorporate
19 any impacts from market-pull programs, such as
20 Energy Star or tax credits on projected
21 standards case shipments.

22 DOE has collected the request for

1 comments for the shipments analysis on this
2 slide. Again, DOE requests comment on the
3 approach that it proposes to use, the data
4 sources that it proposes to use, and also
5 requests information or data that will help in
6 developing the shipments model.

7 FACILITATOR BROOKMAN: Anything
8 additional at this time?

9 (No response.)

10 Okay.

11 MS. DUNHAM WHITEHEAD: Okay. So
12 now we are going to cover the last analysis in
13 the preliminary phase of the standards
14 rulemaking, and then I will touch briefly on
15 six analyses that will be covered in the next
16 phase of the standards rulemaking.

17 The purpose of the national impact
18 analysis is to estimate the energy savings and
19 economic inputs that may result from a
20 standard. National energy savings and
21 economic inputs are calculated on an annual
22 basis before being summed into a cumulative

1 value.

2 The NIA uses a model that
3 incorporates projections of product shipments
4 and then tracks the inventory of dehumidifiers
5 that is in service in the nation for any given
6 year. Each year, as new appliances are
7 shipped and old appliances are retired, the
8 analysis adds and subtracts appliances to the
9 existing stock. Thus, the model estimates the
10 historical, current, and projected stock of
11 dehumidifiers in the nation.

12 The NIA also employs the per unit
13 total installed cost and per unit annual
14 energy consumption developed in the LCC
15 analysis and aggregates these costs and energy
16 use values based on the vintage of the stock.

17 Energy savings are defined in
18 terms of quads saved; that is, quadrillion or
19 10 to the 15 BTUs saved. While energy use in
20 the LCC analysis is determined at the site
21 level -- that is, the building or household
22 where the dehumidifier is used -- the NIA

1 calculates the energy use at the source. And
2 I will touch on that a little bit in a later
3 slide.

4 The economic impact is defined in
5 terms of the national net present value or NPV
6 and is calculated in dollars. Because the
7 standard is an effect over several years, we
8 discount the value of future savings in order
9 to estimate the present value of the national
10 impact using a discount rate.

11 So this is a slide similar to the
12 one that Maithili used this morning. You can
13 see that the shipments analysis produces two
14 different chains -- a base case projection and
15 a standards case projection -- starting -- the
16 calculations begin in the year 2019, the
17 assumed effective date of the standard, and go
18 30 years to -- through 2048.

19 So then those annual savings are
20 summed together to produce a base case
21 cumulative energy use value and a standards
22 case cumulative energy use value.

1 The difference between the base
2 case and standards case cumulative energy
3 consumption is the savings, the cumulative
4 energy savings. And at this point in the
5 calculation, there is a site-to-source
6 conversion that takes place that I mentioned
7 that I would get into a little bit more in a
8 later slide.

9 So the difference between those
10 two values with a site-to-source conversion
11 results in the national energy savings.

12 Here is a similar flowchart for
13 the national economic impacts or the net
14 present value. As with the calculation of
15 national energy savings, base case and
16 standards case shipments are projected from
17 the time the standard takes effect through 30
18 years.

19 So we look at the economic impacts
20 for the costs of electricity, repair, and
21 maintenance, and total equipment. We sum them
22 together on an annual basis, and then sum the

1 energy cost and the repair and maintenance
2 cost together to yield the cumulative
3 operating cost savings. And we summed the
4 total equipment costs to -- on the annual
5 basis for a cumulative total equipment cost
6 increase.

7 The difference between the base
8 case and standards case cumulative operating
9 costs yields, as I said, the cumulative
10 operating cost savings, and then also,
11 similarly, the total equipment cost increase.

12 The difference between the
13 cumulative operating cost savings and the
14 total -- the cumulative total equipment cost
15 increase, if the -- I'm sorry, let me restate
16 this. If the cumulative operating cost
17 savings is greater than the total equipment
18 cost increase, then the nation experiences a
19 net benefit to the possible standard level.
20 If the operating cost savings is less than the
21 total equipment cost increase, then the nation
22 experiences a net burden from the proposed

1 standard.

2 Okay. So this next slide covers
3 the need for historical shipment weighted
4 efficiency data. It is a key input into the
5 national impact analysis. Key inputs into the
6 NIA are dependent on shipment-weighted
7 efficiency data.

8 For example, per unit annual
9 energy consumption data are used to determine
10 the national energy savings. And equipment
11 retail price and per unit annual operating
12 costs, as I just showed you in the slide, in
13 the flowchart, are used to determine the net
14 present value.

15 Historical trends of the shipment-
16 weighted efficiencies are used to determine
17 future equipment efficiencies for the base
18 case. Additionally, market share efficiency
19 data help determine the impact to base case
20 shipment-weighted efficiencies.

21 Data sources include the AHAM Fact
22 Book, which reports shipment-weighted

1 efficiencies for all dehumidifiers. And
2 because DOE runs its analyses based on the
3 product classes, it requests shipment-weighted
4 efficiencies broken out by product class.

5 Here is another data request form
6 that shows tentative efficiency levels within
7 each of the product classes.

8 On August 18, 2011, DOE published
9 a Notice of Policy stating its intention to
10 incorporate the full fuel cycle metric into
11 the cost-benefit analysis. The methodology is
12 based on the calculation of an FFC or full
13 fuel cycle multiplier for each of the primary
14 fuels used by the product, which in this case
15 would be electricity. And further discussion
16 and presentation will be made of the full fuel
17 cycle in the technical support document for
18 the preliminary analysis.

19 So here are two requests for
20 comment -- again, requesting comment on the
21 planned approach and also for information and
22 data.

1 Okay. So this -- I am moving
2 beyond the preliminary analysis into the NOPR,
3 Notice of Proposed Rule, analyses. And as I
4 said earlier, I will touch on six analyses
5 here. I will go through the purpose very
6 briefly and the proposed method.

7 So this shows the orientation in
8 some of the analyses -- or the analyses that I
9 will touch on here. I just want to note that
10 Ben already talked about the manufacturer
11 impact analysis earlier this afternoon.

12 So the first analysis that I will
13 cover is the life-cycle cost subgroup
14 analysis, and the purpose of this particular
15 analysis is to look at different consumer
16 populations that may be disproportionately
17 affected by the standard.

18 The method used is identical to
19 the LCC determination for the general
20 population, but we just use a sample that is
21 dedicated to that particular subgroup when
22 running the analyses.

1 Our request for comment will
2 follow each of my presentation of these six
3 analyses, and, again, DOE is looking for
4 comment on the proposed approach.

5 So on to the utility impact
6 analysis. The purpose of the utility impact
7 analysis is to assess the impact of standards
8 on energy suppliers. The method that DOE has
9 used and proposes to use for this rulemaking
10 is to use a variant of NEMS -- National Energy
11 Modeling System -- called -- the variant is
12 called NEMS-BT. And we modify the NEMS so
13 that we are able to analyze the effect of the
14 appliance standard.

15 I am going through these a little
16 quickly here because they will come up again
17 in the -- after the preliminary phase. They
18 will become more relevant in the NOPR phase of
19 the standard rulemaking. Here is a request
20 for comment on the utility impact analysis.

21 So for the employment impact
22 analysis, its purpose is to assess the overall

1 impact on the national employment from
2 standards. Employment impacts are analyzed
3 both as direct impacts and indirect impacts.
4 Ben covered direct impacts. The employment
5 analysis -- impact analysis at this stage
6 looks at indirect impacts.

7 And that effect comes from the
8 fact that consumers are experiencing increased
9 costs, but they are also, at the same time,
10 experiencing operating cost savings. And so
11 the operating cost savings results in
12 consumers having additional funds that can --
13 higher purchasing power than can go to -- into
14 the retail sector. And so it is looking at
15 the effect of that possibility.

16 DOE uses the model ImSET, which
17 stands for the Impact of Sector Energy
18 Technologies. And here is a request for
19 comment.

20 So the emissions analysis is to
21 estimate the effect of standards on airborne
22 emissions from power plants being used to

1 generate electricity in the case of
2 dehumidifiers. For the purposes of estimating
3 the impacts at the power plant, we used NEMS-
4 BT, the same tool that is being used, or
5 proposed to be used, for the utility impact
6 analysis.

7 There are a list of emissions
8 here, and DOE requests input on inclusion of
9 these emissions and any others that
10 stakeholders would like to include.

11 FACILITATOR BROOKMAN: Don
12 Brundage.

13 MR. BRUNDAGE: Don Brundage,
14 Southern Company. Just to repeat a comment
15 from this morning, things are moving very
16 rapidly with changes in generating units and
17 the electric utility market. So it is -- I
18 think NEMS-BT will handle that, but it is --
19 using the most up-to-date possible information
20 in that particular area will be very
21 important.

22 FACILITATOR BROOKMAN: Okay.

1 Thank you.

2 MS. DUNHAM WHITEHEAD: Thank you.

3 Okay. Finally, the regulatory impact
4 analysis analyzes non-regulatory alternatives
5 to standards; for example, rebates, voluntary
6 efficiency programs like Energy Star, tax
7 credits, or procurement programs offered by
8 state and federal governments.

9 The method to conduct the
10 regulatory impact analysis is to modify the
11 NIA model, national impact analysis model, and
12 we modify key inputs to determine what the
13 impact from non-regulatory alternatives are.

14 Stakeholders -- we don't have a
15 specific comment box for the RIA, but
16 stakeholders are welcome to send in comments
17 on the regulatory impact analysis.

18 So I have covered two key inputs
19 in the preliminary analysis phase, and then
20 six -- very briefly six additional analyses in
21 the NOPR phase. I invite any comment or
22 question at this point before turning the

1 microphone back to Doug.

2 FACILITATOR BROOKMAN: Nothing
3 additional?

4 (No response.)

5 Okay. Thank you.

6 MS. DUNHAM WHITEHEAD: Thank you
7 very much.

8 FACILITATOR BROOKMAN: So a lot of
9 good content here this afternoon. As we
10 promised at the outset, another opportunity
11 for anybody that wishes to make -- raise other
12 issues that need to be raised at this time
13 before I turn it back to Stephen Witkowski.

14 (No response.)

15 Okay. Thanks to all of you.
16 Stephen?

17 MR. WITKOWSKI: Again, I just want
18 to thank all of you for attending and
19 participating. And to repeat what everyone
20 else has said, if you have information, data,
21 whatever, please get it into us. The comment
22 period closes October 17th, and we certainly

1 look forward to and encourage your
2 participation.

3 And thank you very much.

4 FACILITATOR BROOKMAN: I'll hand
5 out a quick evaluation form, as we always do.

6 Thank you. Safe travels,
7 everyone.

8 (Whereupon, the above-entitled
9 matter concluded at 3:17 p.m.)

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Conservation Standards for
Residential Dehumidifiers Meeting

Before: US DOE

Date: 09-24-12

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