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UNITED STATES DEPARTMENT OF ENERGY

PUBLIC MEETING ON ENERGY CONSERVATION STANDARDS FOR
WATER HEATERS, DIRECT HEATING EQUIPMENT AND
POOL HEATERS

U.S. Department of Energy
Room 1E-245
1000 Independence Avenue, Southwest
Washington, D.C. 20585

Tuesday, January 16, 2007
9:00 a.m.

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

2 9:20 a.m.

3 Welcome and Opening Remarks

4 Doug Brookman, Facilitator

5 MR. BROOKMAN: Good morning, everybody.

6 Welcome. Sorry for the slightly delayed start on the
7 day. Mohammed Khan is going to start us off.

8 Are you ready to go?

9 Introductions and Agenda Review

10 Mohammed Khan

11 MR. KHAN: Thanks, Doug. Good morning. My
12 name is Mohammed Khan. I'm from the Office of Building
13 Technologies. On behalf of the Department, I want to
14 welcome you and thank you all who are attending today's
15 workshop on Efficiency Standards for Residential Water
16 Heaters, Directing Heating Equipment, and Pool Heaters.17 Today's workshop gives us a first opportunity
18 to have a dialogue on the rulemaking processes
19 including the analytical methodologies the Department
20 plans to use for identifying and promulgating
21 appropriate standard levels. I encourage everyone to
22 participate as much as possible so that we can capture
23 a full range of opinions and ideas which will help the
24 Department in the rulemaking process.

25 We're scheduled to adjourn today at 4:45 this

1 afternoon. To help ensure that we cover all areas of
2 the agenda and allow all interested persons to express
3 their views, Mr. Doug Brookman from Public Solutions
4 will facilitate our workshop.

5 If at the end of the day you believe a topic
6 was not adequately covered or have additional pertinent
7 comments, please provide them in writing to us by
8 January 30th.

9 A court reporter is here today and a copy of
10 the transcript will be available for review in the
11 Office of Building Technologies' Resources Room.
12 Anyone wishing to purchase a copy of the transcript may
13 make arrangements with the court reporter.

14 So again, we appreciate your attendance and
15 participation in this workshop and look forward to a
16 productive discussion today. Thank you.

17 MR. BROOKMAN: Thank you. So it's our
18 tradition and as a matter of courtesy to provide an
19 opportunity for everybody to introduce him- or herself.

20 You're still tracking this, right? Thank you.

21 So I want to provide an opportunity for
22 everybody to introduce him- or herself. If you would
23 say your name and organizational affiliation. We'll
24 just go around the room. Yes, and thank you for
25 speaking right into the microphone.

1 (Introductions)

2 Agenda Review

3 Doug Brookman

4 MR. BROOKMAN: Thank you, thank you. I think
5 everybody has a copy of the agenda in your packet, as
6 well as a very detailed photocopy of the slides that
7 will be the basis of the presentations as we go along
8 today. I'm going to do a very brief agenda review and
9 then turn it back to Mohammed.

10 Mohammed is going to provide additional
11 introductory remarks and talk about the analytic
12 methodology. Following that, I want to provide an
13 opportunity for any of you to make brief opening
14 remarks to talk about the issues that are important to
15 you, and we'll proceed from there, around about 10:00,
16 to the Market and Technology Assessment, Screening
17 Analysis, and Engineering Analysis. We'll take a break
18 mid-morning, round about, say, 11:00 or 11:15.
19 Following that, we will proceed with Market and
20 Technology Assessments, Screening Analysis, and
21 Engineering Analysis.

22 We'll break for lunch round about noon.
23 Following that, we will move into Energy and Water Use,
24 Markups for Equipment Price Determination, Life-Cycle
25 Cost and Payback Period Analysis, and then Shipments

1 Analysis, National Impact Analysis, LCC Subgroup
2 Analysis, Manufacturer Impact Analysis. We'll take a
3 break mid-afternoon, and then Utility Impact Analysis,
4 Employment Impact Analysis, Environmental Assessment,
5 and Regulatory Impact Analysis. We'll close out the
6 day providing an opportunity for any of you to raise
7 other issues, make other comments, and also closing
8 remarks.

9 That's the plan for today. We intend to
10 adjourn round about 4:30 or 4:45. Are there questions
11 here at the outset? Yes, Harvey Sachs.

12 I'm going to be trying to recognize people by
13 name. Please proceed.

14 DR. SACHS: Harvey Sachs, ACEEE. Just a very
15 minor technical question. Is this very lovely set of
16 color slides handed out this morning identical to the
17 set that was posted on the Web a few days ago?

18 MR. BROOKMAN: Are the slides identical?

19 MR. KHAN: Yes.

20 MR. BROOKMAN: Mohammed nods his "yes."

21 DR. SACHS: Thank you. That just helps
22 tracking.

23 MR. BROOKMAN: Thank you. And I agree with
24 your comment. They're very complete, these slides, I
25 think.

1 DR. SACHS: I didn't say I liked them.

2 (Laughter)

3 MR. BROOKMAN: So, additional questions or
4 comments here at the outset?

5 (No response)

6 MR. BROOKMAN: I would ask for your
7 consideration to observe the courtesies that have
8 emerged over time in these workshops. Please speak one
9 at a time today. Please say your name for the record.

10 This will be a tape-recorded session. These notes
11 will be transcribed. As Mohammed said, anybody who
12 wishes to purchase a transcribed version of today's
13 meeting can obtain one from the court reporter.

14 Please keep the focus here. Turn your cell
15 phones on silent or vibrate or turn them off. I'm
16 going to ask you to be concise. Please share the air
17 time. Try and keep it focused here today. I'm going
18 to be queuing people to speak and also encouraging
19 follow-on comments. If I drop you out of the queue,
20 please let me know. Don't let me get away with that.
21 I don't intend to do that.

22 Questions or additional comments here at this
23 point?

24 (No response)

25 MR. BROOKMAN: Okay. So then, let's proceed.

1 Mohammed.

2 Introduction and Analytical Methodology

3 Mohammed Khan

4 (PowerPoint presentation)

5 MR. KHAN: Again, welcome and good morning.

6 As I mentioned earlier, the purpose of today's workshop
7 is to have a real two-way dialogue on the rulemaking
8 processes to establish a common understanding of how
9 the Department will develop and implement standards for
10 residential water heaters, pool heaters, and direct
11 heating equipment. This dialogue is very, very
12 important to the Department. We want to be confident
13 that all stakeholders have a clear understanding of our
14 analytical approaches and also because we want to
15 solicit certain information from the stakeholders
16 before conducting the analyses. Next please.

17 This slide summarizes our agenda. I will
18 cover the rulemaking introduction and the overview of
19 the analytical methodologies. Experts from Navigant
20 Consulting and the Lawrence Berkeley National
21 Laboratory will cover in detail the analyses later.

22 At this time I'd like to find out if there
23 are any pertinent topic areas or issues that someone in
24 the audience wants to cover or allow us to cover later
25 on today in addition to what's on the agenda.

1 (No response)

2 MR. KHAN: Okay. Next slide, please.

3 This slide shows the 16 topic areas we'll
4 discuss today. Ms. Ashley Abbott and Mr. Ed Barbour of
5 Navigant Consulting and Dr. Alex Lekov and Dr. Jim
6 McMahon of the Lawrence Berkeley National Laboratory
7 will be covering Sections 3 through 16 in detail.

8 To help keep us focused and on track, this
9 slide will appear throughout the presentation to
10 introduce and identify each topic section. For
11 example, Section 1 is highlighted here to indicate that
12 these slides are the introductory section. Next,
13 please.

14 Provided here is some background information
15 on the rulemaking. This rulemaking combines three
16 product classes. The most recent amendment to the
17 water heater standards was in 2001. Because a simple
18 test procedure is to be placed prior to our standard or
19 amended standard, the test procedure was updated in
20 1998.

21 In 1994, the Department published a notice of
22 proposed rulemaking for standards for direct heating
23 equipment and pool heaters. However, because of a
24 moratorium, these standards were never promulgated and
25 this resulted in leaving only existing NAECA standards

1 in place for those products. The Department, however,
2 was able to update the test procedures for both heating
3 equipment and pool heaters in 1997. Next, please.

4 This slide tells us of some very important
5 dates. I'd like to remind you that the workshop
6 comment period closes on January 30th. With regard to
7 assembling data, the Department anticipates completing
8 the necessary data collection by June. Let me mention
9 here that any proprietary information that we receive
10 will not be made public.

11 In September 2008, we plan to publish an
12 advance notice of proposed rulemaking, the NOPR in July
13 of 2009, and we are committed to a final rule by March
14 2010. Next, please.

15 As the slide indicates, we'll go over the
16 overview of the rulemaking analyses. Next, please.

17 Many of you are already familiar with the
18 general flow and concepts of the analyses the
19 Department uses in its standards rulemaking process.
20 This slide depicts the components and relationships of
21 the various analyses the Department will perform for
22 the advance notice of proposed rulemaking. The
23 approaches are the methods the Department will follow
24 to obtain key data inputs to the various analyses.

25 For example, we'll consider information from

1 public sources, stakeholders, others having special
2 knowledge and expertise, and when applicable or
3 necessary the Department will develop its own data
4 inputs. The results of the analyses yield key outputs
5 that are ultimately used in determining candidate
6 standard levels. Next, please.

7 This slide shows the relationships of the
8 NOPR and final rule analyses. In the ANOPR phase, we
9 perform sets of analyses which are revised in the NOPR
10 phase. The analyses are revised based on comments from
11 you and any other data that we might receive.

12 Let's see. Also in the NOPR phase, other
13 analyses are performed. They would include the
14 subgroup analyses, MIA, utility impact, employment
15 impact, environmental and regulatory impact analyses.

16 This concludes the introductory section of
17 the presentation. After we hear from stakeholders who
18 wish to provide a statement, we'll move on to the
19 market and technology assessment. Thank you.

20 Brief Stakeholder Statements

21 MR. BROOKMAN: Thank you. So this is the
22 segment of the agenda where we want to provide an
23 opportunity for any of you to make brief introductory
24 remarks on key issues from your perspective. Some of
25 you have submitted written comments in advance. I'd

1 like, if it's a lengthy written comment, for you to see
2 if you can summarize it in this time frame here.

3 How many of you have prepared written
4 comments in advance? About four or five, I think, were
5 in the packet.

6 (Show of hands)

7 MR. BROOKMAN: Okay. And then, how many of
8 you additionally would like to speak this morning?

9 (Show of hands)

10 MR. BROOKMAN: So we have about four or five
11 individuals who wish to speak. So let's recognize the
12 people that have provided written comments first. Jim,
13 do you want to start?

14 Please say your full name for the record.

15 Comments on behalf of American Gas Association

16 Jim Ranfone

17 MR. RANFONE: This is Jim Ranfone with the
18 American Gas Association. Basically, we'll discuss,
19 you know, the three products that we're talking about,
20 water heating, residential water heating. Number one
21 on the water heating issue is to keep in mind that this
22 final rule that went in is relatively new, 2001. There
23 have been a lot of changes in the safety requirements
24 for gas water heaters, including flammable vapor
25 emission-resistant requirements and some NOx

1 requirements, electric requirements in California.

2 So we would urge you to take a look at the
3 baseline cost of residential gas water heaters from
4 what you had in the past and update that based on the
5 new information. Also, take a look at the impact of
6 shifting because of that first cost increase for gas
7 water heaters versus electric resistance type water
8 heaters. That's the first issue, baseline cost and the
9 impact of raising the first cost of gas water heaters
10 as it applies to fuel switching.

11 On the technologies, you talked about -- the
12 framework document talks about a condensing gas water
13 heater as an option. There are no residential
14 condensing gas water heaters. So consider that that
15 technology is not in existence today. Nothing listed,
16 nothing in the GAMA directory or anywhere else that has
17 a condensing technology.

18 Third, the option or the requirement that
19 would require -- an option that would require
20 electrical hookup to a gas water heater needs to be
21 revisited. Currently, the majority of storage type gas
22 water heaters don't require electrical consumption.
23 They don't have a plug or a plug-in power supply.
24 That's an option or a feature that many consumers like,
25 especially if you're in the St. Louis area today. You

1 may not have heating from a central heating system but
2 you will hot water because the majority of those gas
3 water heaters operate without electricity.

4 On the other side, it talks about the --
5 there used to be heat pump water heaters. I think
6 that's in the framework document as an option. Take a
7 look at that on the electric side because there are
8 products listed, electric heat pump water heaters. So
9 the framework document isn't accurate in terms of
10 stating that a product did exist at one time. Those
11 products are available today. They've been available
12 for 20 years. Keep that in mind as you go through.

13 On the direct heating equipment, we're a
14 little concerned about the effort that DOE is going to
15 put into -- you know, recognizing that the law requires
16 you to take a look at this product line, but when
17 you're talking about floor furnaces of shipments of
18 7,000 per year -- that's the latest figure that we had
19 from 2004 -- it's really a replacement market. I don't
20 know if anything is going in new in terms of gas floor
21 furnaces. That I'm not sure really deserves any effort
22 on DOE's part. The effort could be spent in other
23 areas.

24 On vented room heaters, traditional type
25 vented room heaters, we see about 21- or 22,000 shipped

1 per year. Again, that effort -- you've got to take a
2 look at whether or not that really deserves a full-
3 blown technical and economic analysis because I think
4 you can consider that de minimis, both that and the
5 floor furnaces.

6 On the wall furnaces, there's two types,
7 gravity type and those that require electricity. I
8 think the total shipments we came up with, and GAMA can
9 correct this, for both product classes was about
10 157,000 shipped per year. That one you may take a look
11 at in terms of whether you could really do a lot of
12 improvement for gravity type wall furnaces and what the
13 expense would be if you do require some redesign on the
14 power type.

15 In those categories we just urge you to
16 review how much effort you really want to put into it
17 because if you do raise, you know, a minimum or propose
18 one that's going to require a redesign, I'm not sure
19 how many manufacturers have got the capability, number
20 one, or really have the incentive to do anything on
21 that product. They may disappear from the marketplace,
22 and I don't think that's in the best interest of energy
23 conservation in the country, because the options, of
24 course, would be to go to all electric.

25 We'll talk a little bit about the pool heater

1 requirements. We're a little concerned that there's
2 nothing being proposed or looked at, for example, for
3 heat pump type pool heaters. There is an ASHRAE test
4 procedure for that. You ought to take a look at that
5 as a product and way that differences in improvements
6 in efficiency on gas water heaters and in terms of how
7 that would apply to possible fuel switching with heat
8 pump type pool heaters.

9 Those are general statements. We'll provide
10 some more detailed statements, utility impacts, some of
11 the other concerns we have with the potential for fuel
12 switching, which I don't think the Department really
13 wants to do. I'm talking about fuel switching from
14 natural gas to electric.

15 MR. BROOKMAN: Okay. Thank you, Jim. Frank.
16 Comments on behalf of the Gas Appliance Manufacturers
17 Association
18 Frank Stanonik

19 MR. STANONIK: I'm Frank Stanonik with GAMA.
20 We did submit some preliminary comments. I'm not
21 going to go through those here. I will note that
22 certainly we are willing and look forward to working
23 with the Department to -- as they go through this
24 rulemaking, and we will provide the information we can.
25 I did note in some of our comments that some of the

1 information being sought we don't have, but to the
2 extent we can help and provide the information we
3 certainly look forward to doing that.

4 Actually, I just want to make and expand a
5 little bit on one of the things that Jim Ranfone was
6 saying. This particular rulemaking, there's a number
7 of products where I think DOE needs in the forefront --
8 to keep in the forefront let's say the potential for
9 saving energy or the fact that there isn't that much
10 potential. You know, whether we're talking about
11 direct heating equipment where there really aren't that
12 many products sold or pool heaters where, at least the
13 last study I saw some years ago, the average annual use
14 of a pool heater is 104 hours -- so they're not used
15 much -- or other products, whether it's electric
16 resistance water heater, which, you know, putting aside
17 the fuel, is an extremely efficient product, okay.

18 So in any event, I think this is going to be
19 quite a challenge for DOE because in fact for a lot of
20 the products covered in the rulemaking either because
21 of the small size of the market or the small energy use
22 of the product or in fact because the technology may be
23 nearly maxed out, we just don't see there will be
24 necessarily a lot of opportunity to move those
25 efficiency requirements. And that's really all.

1 MR. BROOKMAN: Thanks, Frank. Other
2 individuals that submitted comments to the Department?

3 (No response)

4 MR. BROOKMAN: So then, let's hear from
5 others that wish to speak at this time. David
6 Goldstein.
7 Comments on behalf of Natural Resources Defense Council

8 David Goldstein

9 MR. GOLDSTEIN: David Goldstein, NRDC. The
10 main point I want to make is when you're doing an
11 analysis of a set of products that consumes as much
12 energy and is responsible for as much emission and
13 economic impact as water heaters, it's important to
14 separate the big issues where you want to pay a lot of
15 attention from the little issues.

16 What could be the biggest issue based on our
17 analysis in two other rulemakings DOE is proceeding
18 with is entirely left out from this analysis, and that
19 is the extent to which higher water heater efficiency
20 can reduce natural gas prices not just in the
21 residential sector but across all sectors of
22 consumption.

23 We saw in the furnace proceeding that the
24 present value to the nation of reduction in gas prices
25 was as much as an order of magnitude bigger than any of

1 the other present values that were studied by DOE. So
2 the only thing I really want to talk about at this
3 point is the importance of this analysis looking
4 quantitatively at the number or the range of numbers of
5 value to the nation in reducing natural gas prices to
6 everyone at the higher levels of efficiency.

7 Again, because these numbers are so large, it
8 would suggest that DOE ought to pay more attention
9 analytically to the highest levels of efficiency that
10 are available, to condensing gas water heaters and to
11 heat pump electric water heaters, not just to present
12 one option, say a max tech option at that level, but to
13 present a couple using different technologies or
14 different levels of design options to make sure that
15 the ability to get the maximum level of efficiency
16 that's economically justified is satisfied in the DOE
17 analysis from the get-go. Thank you.

18 MR. BROOKMAN: Thank you. Harvey, you had
19 remarks?

20 Comments on behalf of the American Council for an
21 Energy Efficiency Economy

22 Harvey Sachs

23 DR. SACHS: Thank you. I'm Harvey Sachs from
24 the American Council for an Energy Efficient Economy.
25 There are five points that we will be covering in our

1 written remarks that seem worth mentioning now in terms
2 of this meeting.

3 Like NRDC, we want to see good, thorough
4 analysis of the advanced options. That's very
5 important perhaps even in the context of other DOE
6 efforts such as the roadmaps for solar and efficient
7 water heating technologies that was put out in 2005.

8 The second point we want to make is that the
9 test methods we are using are unfair in comparing
10 across technologies. There is now significant data
11 which may impact California's building code, Title 24,
12 of a systematic offset between fuel performance of
13 instantaneous or tankless water heaters and that of
14 tank type water heaters. It looks like the equivalent
15 of eight or nine points of AFUE.

16 When you review the test, it's entirely
17 understandable but it doesn't do much good for
18 promoting efficiency and it is in effect a strong bias
19 against products -- the tank type storage water heaters
20 produced by American manufacturers. It is a bias that
21 downstream is likely to have far more impact on U.S.-
22 based manufacturers than minor changes in the AF
23 required.

24 That's because, as far as we can tell, the
25 tankless water heaters that are favored are all

1 offshore manufactured or based on licenses that are
2 held offshore. There may be some exceptions, but the
3 dominant thrust is not a North American technology.

4 We're concerned about the decision criteria,
5 in particular reviewing other recent DOE actions. What
6 impresses us is the inherent uncertainty in life-cycle
7 cost analysis. In particular, future energy prices and
8 uncertainties about the installed model and other
9 effects are substantially larger than would be inferred
10 by the casual observer of the graphs presented by the
11 Department.

12 We have got to work, as the Department
13 acknowledged itself, on understanding the ramifications
14 that life-cycle costs are not revealed and carried down
15 on tablets from the mount but instead are a working
16 tool to guide us into the ball game. They cannot be a
17 sole decision tool because there is so much inherently
18 unknown that goes into the analysis.

19 We appreciate the Department's efforts to do
20 Monte Carlo simulations, but it ain't getting us where
21 we want to be and we are instead using LCC as a crutch
22 rather than a tool.

23 We're concerned about the Department's
24 legalistic exclusion of solar technologies from this
25 proceeding. The Department's own documents in other

1 contexts have thought about this in terms of solar-
2 assisted electric water heating, in terms of solar-
3 assisted gas water heating. It's a complementary
4 strategy, and we need to figure out how this plays in
5 terms of national energy savings instead of a narrow
6 misreading of the law to suggest that the sun is not a
7 fuel. If the sun is not a fuel directly, why is it a
8 fuel indirectly since natural gas, electricity to a
9 very large extent, an overwhelming extent, and oil are
10 all historically captured solar energy.

11 Finally, we want to make sure, and this
12 agrees very much with the statements earlier this
13 morning, that the Department focuses on watts to be
14 saved. We want to see this complemented with the
15 technical potential, but we certainly would join with
16 our colleagues in suggesting that an exhaustive
17 analysis of a product that -- whose annual sales are
18 7,000 units per year is not going to get us toward
19 energy dependence and environmental improvement. Thank
20 you.

21 MR. BROOKMAN: Thank you.

22 DR. SACHS: Oh, I should add that we
23 appreciate the opportunity to participate in this
24 workshop.

25 MR. BROOKMAN: Thank you.

1 DR. SACHS: Thank you.

2 MR. BROOKMAN: Thank you. Other comments
3 here at the outset? Yes, Steve Rosenstock.

4 Comments on behalf of Edison Electric Institute
5 Steve Rosenstock

6 MR. ROSENSTOCK: Steve Rosenstock, Edison
7 Electric Institute. Again, I wanted to thank the
8 Department for allowing us to be here. Also, first
9 off, just for general comment, we really appreciate the
10 fact that the Department is doing whatever they can to
11 do rulemaking on different -- the whole kind of
12 universe of products where possible, especially on the
13 water heating side, that you're doing all of the
14 competing fuels at the same time. You're trying to do
15 competing products at the same time.

16 I think that's very important that the
17 Department try as much as possible, wherever possible,
18 that as a result of its efficiency rulemakings to
19 minimize market distortions for products and market
20 distortions for fuel choice.

21 I know there's going to be a lot of
22 discussion about technology and screening out options
23 and everything, but I think the Department is doing, in
24 terms of process, doing the right thing by including
25 all fuel types of water heaters and maybe want to

1 expand that for other products. You know, electric
2 fireplaces as well as gas fireplaces, for example, and
3 even maybe wood fireplaces. They're competing products
4 in the marketplace, and you're doing a rulemaking that
5 affects one product out of three or five, for example.

6 There might be some distortions.

7 So I appreciate what the Department is doing
8 in terms of water heating, in terms of trying to be as
9 inclusive as possible, and the fact that the standards
10 will go into effect for all competing products at the
11 same time. I think that's a great process as well.
12 Thank you very much.

13 MR. BROOKMAN: Thank you. So we've heard
14 from several people. Anybody else wish to make a
15 comment here at the outset before we kind of plunge
16 into the detail of these different analytic frameworks?

17 (No response)

18 MR. BROOKMAN: Okay. So then, let's do that.
19 Let's proceed.

20 Let me note, you have in your packet this I
21 think very attractive and very complete set of slides.

22 There are over 100 slides total. The general format
23 for comment here will be that the Department or the
24 Department's representative will be talking about
25 probably several slides in a row and there will be

1 opportunities for them to elicit comment on specific
2 questions.

3 If you can kind of hold your comment or
4 question until we get through several slides at a time,
5 that will help us with the flow, I think. If you're
6 totally confused, speak up and the Department and their
7 supporters will try to answer those questions as we go
8 along.

9 Everybody understand the format? Okay.
10 Ashley.

11 Market and Technology Assessment and Screening

12 Analysis

13 Ashley Abbott

14 (PowerPoint presentation)

15 MS. ABBOTT: Good morning. My name is Ashley
16 Abbott and I'm from Navigant Consulting. I will begin
17 by discussing the Market and Technology Assessment and
18 the Screening Analysis. These are two foundation
19 analyses during the rulemaking process. As you can see
20 on the schematics, the market and tech assessment and
21 the screening analysis directly feed the engineering.

22 The market impact assessment provides an
23 overview of the industry and includes many sources of
24 information, such as technology options, market
25 structure data, historical product shipments, current

1 product models, current technologies and efficiencies,
2 distribution channel information, and many industry
3 trends.

4 This background research is used to establish
5 and define a baseline model. This information helps
6 DOE to determine how much the product classes should be
7 established in this rulemaking. These product classes
8 are critical because they determine what technologies
9 are competed against one another in terms of the
10 efficiency.

11 The market and technology assessment provides
12 an overview of the products in the market and the types
13 of technology options that exist to improve efficiency.

14 Clearly, not all the technologies can be considered in
15 terms of the minimum efficiency standard. Those
16 technologies that are screened out during the screening
17 analysis and are sent through are called design
18 options.

19 The baseline model, the product classes, and
20 the design options form the foundation of the
21 engineering analysis. Currently, we are in the stage
22 of performing our background literature survey. We are
23 reviewing rulemaking history, we're reviewing previous
24 stakeholder comments, and we're reviewing product
25 literature.

1 We'll see later throughout this presentation
2 some structural and general data requirements. DOE
3 invites anyone who has information that would be
4 relevant to our analysis to comment during this
5 proceeding.

6 The Department will separate each product
7 category -- for example, water heaters -- by product
8 classes. The criteria used for establishing product
9 classes are established by EPCA and are based on the
10 type of fuel, the capacity, or other performance-
11 related features.

12 Once we have established the product classes,
13 we will create the baseline model which the analysis
14 precedes. We would first like to understand primarily
15 what efficiency defines the baseline model and the
16 corresponding technologies that are incorporated into
17 this design. This will help us understand what
18 technologies and which technology options could be used
19 to improve the efficiency of the appliance.

20 For this rulemaking, the Department is
21 proposing to use federal minimum energy efficiency
22 standards to represent the baseline model's energy
23 efficiency.

24 One of the key outcomes of the market and
25 technology assessment are the technology options for

1 improving energy efficiency. Like I said in the
2 previous slide, we will only be examining some of these
3 technology options. We will review previous
4 rulemakings to see the viability of some of these
5 technology options for certain products.

6 Over the years new technologies have come
7 into the market and have been incorporated into the
8 products that were previously considered in
9 development. We will also be considering these.

10 The screening analysis is a new analysis that
11 was added as an outcome of the process rule. There are
12 four criteria that the Department considers when
13 screening out design options. DOE will eliminate from
14 further consideration technology options that are not
15 technologically feasible; are not practicable to
16 manufacture, install, or service; they have significant
17 adverse impact on utility of the product to the
18 consumer; they adversely affect health or safety.

19 The technology options we will be looking for
20 your comment on. We will also be looking through the
21 technology options to get out the limited subset of
22 design options that we should be considering for our
23 engineering. We need these design options to conduct
24 the engineering analysis.

25 MR. BROOKMAN: Harvey Sachs.

1 DR. SACHS: This is Harvey Sachs. Is this
2 the end of a section at which questions are
3 appropriate?

4 MS. ABBOTT: I've got a good bit of product
5 discussion where I'll go into more details about each
6 of those things for each product, and at the end of
7 each product section I will ask -- there's like a
8 subset of five questions that Doug will facilitate,
9 unless you have questions now.

10 DR. SACHS: I would just like to raise one
11 issue that crosses all these technologies.

12 MS. ABBOTT: Sure.

13 DR. SACHS: On the previous slide -- again,
14 this is Harvey Sachs -- I would like to raise the issue
15 under the second dash item, "Are not practicable to
16 manufacture, install, and service." We find that we're
17 a bit uncomfortable with the Department's install model
18 and its clarity and level of detail despite requests
19 for additional information from the furnaces and
20 boilers, like the procedure that just ended. We'd like
21 to go on record as suggesting that that's not an
22 adequate model. Thank you.

23 MR. BROOKMAN: Thank you.

24 MS. ABBOTT: Okay. Thanks, Doug.

25 Okay. Further product discussions. I will

1 be using material gathered from past rulemakings to
2 begin a discussion about what the appropriate product
3 classes, what the appropriate baseline models, and what
4 the appropriate technology options are.

5 The product discussions are broken into three
6 parts: residential water heating, direct heating
7 equipment, and pool heaters. I guess the best format I
8 would like to use for this discussion is to quickly
9 review the three elements for each product. We have
10 then established a series of questions on each -- on
11 those topics at the end of each product category. I'll
12 ask Doug to facilitate the discussion on each topic.

13 First we'll be looking at the product classes
14 for residential water heaters. NAECA initially
15 established three product classes for residential water
16 heaters, including gas-fired storage type, electric
17 storage type, and oil-fired storage type. The 2001
18 final rule further separated these product classes into
19 the six product classes, including gas-fired storage
20 tank, oil-fired storage tank, electric storage tank,
21 gas-fired instantaneous, electric instantaneous, and
22 tabletop storage type. The Department's current
23 thinking is to maintain these six product classes for
24 this rulemaking.

25 DOE is proposing two exclusions for water

1 heaters in this rulemaking. First, DOE is proposing to
2 exclude tabletop water heaters due to their strict size
3 limitations and to leave the existing standards in
4 place, as was done in the 2001 rulemaking proceeding.

5 In addition, the Department is proposing only
6 to examine gas-fired instantaneous water heaters.
7 Electric instantaneous water heaters have very low
8 shipments and a low potential energy savings. So DOE
9 is proposing to exclude them from this rulemaking
10 proceeding and leave the existing standards in place.

11 DOE is planning to use the existing energy
12 conservation standards to characterize the baseline
13 model's energy factor. Since the efficiency standards
14 are a function of storage volume for residential water
15 heaters, DOE has identified a representative rate of
16 storage volumes for each of the four types of
17 residential water heaters in order to further
18 characterize the baseline model.

19 These representative rated storage volumes
20 are from the 2001 rulemaking and usually correspond to
21 the volume, with the highest number of shipments for
22 each particular product class. DOE then intends to
23 extrapolate the cost data derived for the baseline
24 rated storage volume to other storage volumes based on
25 the methods involved in the 2001 technical support

1 document.

2 All these technology options were considered
3 in the 2001 rulemaking and are for storage type water
4 heaters. These technology options on the left side of
5 the slide were those that were not screened out. These
6 were further considered as the design options for the
7 engineering analysis.

8 Here are the five technology options DOE is
9 currently considering for gas-fired instantaneous water
10 heaters.

11 I'd now like to pass the presentation to Doug
12 to facilitate these questions and get your first
13 thoughts on these issues as well as any other
14 additional questions you guys may have. Thanks.

15 MR. BROOKMAN: Thank you. So there are a
16 series of slides that we've gone through. The first
17 question that DOE puts up for your consideration is
18 should DOE consider changes to the product classes for
19 residential water heaters. Andrew.

20 MR. DeLASKI: Just a clarifying question.

21 MR. BROOKMAN: Andrew DeLaski.

22 MR. DeLASKI: A clarifying question. In your
23 presentation you said you're proposing to keep six
24 product classes yet the slide shows seven. So there's
25 one -- if I'm reading this. Maybe I'm reading it

1 wrong. Maybe these aren't product classes.

2 MR. BROOKMAN: Ashley, do you want to get
3 close to that microphone?

4 MS. ABBOTT: I can answer. Heat pump water
5 heater, although they have different definitions,
6 they're part of -- they're treated as electric storage
7 type water heaters.

8 MR. DeLASKI: Okay.

9 MS. ABBOTT: Let me get that --

10 MR. DeLASKI: So the heat pump is not
11 supposed to be listed as a product class?

12 MS. ABBOTT: It just won't be a separate one.
13 It has a separate definition, but it will not be a
14 separate product class.

15 MR. DeLASKI: Okay. Thanks.

16 MS. ABBOTT: As of right now. That's what
17 we're proposing.

18 MR. BROOKMAN: Thanks for speaking up and
19 using the microphone. That will make it easier for us.

20 MS. ABBOTT: Sure.

21 MR. BROOKMAN: Other comments on product
22 classes for residential water heaters, whether the
23 Department -- the way they're zeroing in right now
24 works for people. Don Brundage.

25 MR. BRUNDAGE: Don Brundage, Southern

1 Company. Just to clarify on heat pump water heaters,
2 does that mean that heat pump water heaters will have a
3 separate minimum efficiency level or are they
4 considered a design option within electric water
5 heaters?

6 MR. BROOKMAN: Ashley, I want you to stay up
7 there.

8 MS. ABBOTT: Sure.

9 MR. BROOKMAN: Get close to that microphone.

10 MS. ABBOTT: Okay. As of now I believe the
11 Department is proposing to treat them as a design
12 option for electric storage type water heaters.

13 MR. BRUNDAGE: For those of you who have been
14 around for a while, that was a big issue in the seven
15 product rulemaking. There are a number of limitations
16 with heat pump water heaters that make them impractical
17 as a minimum efficiency option. If you have an
18 internal location such as an apartment building, you've
19 got an air conditioner you can't cut off when you're
20 using a heat pump water heater.

21 The first class I would think they would be
22 better off as a separate product class or separate
23 efficiency instead of a design option within electric.
24 Thank you.

25 MR. BROOKMAN: Thank you. Please, your name.

1 MR. DeLAURA: This is Lance DeLaura with
2 Southern California Gas Company and SDG & E. A
3 question about the electric instantaneous water heater.

4 I think it was mentioned that there's very low
5 penetration of that product in the marketplace. It's
6 really a question of concern. The question is, do we
7 know what the number is relative to the gas.

8 And too, the comment is I think it's
9 shortsighted not to include the electric instantaneous
10 water heater for now if it is a lower market share. We
11 don't know what the market share will be in the future.

12 Energy prices are changing and customers are making
13 different choices based on the price of natural gas
14 relative to electricity compared to what they did let's
15 say 10 years ago.

16 MS. ABBOTT: Okay. Just to answer your
17 question, the first question, I do not know off the top
18 of my head how it is relative to gas, but we welcome any
19 of your comments or notes when you send in comments.

20 MR. BROOKMAN: You've got to get right up on
21 that microphone.

22 MS. ABBOTT: Sure.

23 MR. BROOKMAN: These mikes, they're not
24 orbital, or whatever that classification is. You need
25 to get --

1 MS. ABBOTT: Okay.

2 MR. BROOKMAN: Thank you.

3 MS. ABBOTT: Sure.

4 MR. BROOKMAN: I'm certain the Department
5 would appreciate your projections, your analysis, your
6 forecasts about how those units will increase in the
7 marketplace. That would, I think, further justify
8 their effort in this area.

9 Okay. Other -- yes, please. Harvey Sachs.

10 DR. SACHS: Harvey Sachs, ACEEE. My first
11 comment may be premature, but the baseline 3.5 or 3.4
12 for heat pump water heaters is absurd. We don't see
13 products, or I'm not familiar with products in that
14 range. The DOE has itself invested a great deal of
15 money in developing cost effective heat pump water
16 heaters in the range of 2.0, and we can't understand,
17 unless it's an effort to exclude the option entirely,
18 why the Department has chosen that for a baseline.

19 MS. ABBOTT: Can I just ask you one quick
20 question? This is Ashley Abbott. I think we had the
21 max tech level, right?

22 DR. SACHS: Yes, but -- yes.

23 MS. ABBOTT: I understand your comment.

24 DR. SACHS: But this is setting up for
25 failure. This is not a fair analysis.

1 The second comment is that I respectfully
2 suggest that the exclusion of tabletops because there
3 are no technology options appears to be rather
4 arbitrary. I would note that the Department itself has
5 invested a reasonable amount of money in vacuum panel
6 installation, that this product is now commercially
7 available, and this would actually allow increasing the
8 storage volume for the stated exterior size.

9 I don't know if this product class has enough
10 sales to warrant this attention, but to arbitrarily
11 exclude technology options and thus a class of products
12 when there are commercially available technologies
13 seems to be rather inappropriate.

14 MR. BROOKMAN: Thank you.

15 Other comments related to product classes?
16 David Goldstein.

17 MR. GOLDSTEIN: A brief couple of comments.
18 First of all, we agree with the Department's tentative
19 decision to look at heat pump water heaters as a
20 technology for electric storage. The reason is that we
21 don't see any reason why the technology couldn't
22 provide the same service. If other stakeholders
23 disagree, that's a technical issue that should be
24 addressed by the research that you're going to do in
25 this rulemaking.

1 Secondly, on gas, you might look at -- you
2 might revisit the issue of the upper limit of the Btu
3 input rate for residential gas storage water heaters.
4 Jim Ranfone mentioned that there are no condensing gas
5 water heaters in the residential sector. That's an
6 artifact of the fact that the Btu input is slightly
7 higher than that limit. I certainly know that there
8 are water heaters that you can install in a residence
9 that are condensing because I bought one 10 years ago
10 for a residence.

11 So the application is there as something the
12 consumer can do. So DOE ought to be looking into
13 whether it's appropriate to expand the definition of
14 residential water heaters and, if not, how we would
15 treat products that are perhaps going to be used in
16 residences but are technically commercial water heaters
17 using the present test procedure definitions.

18 MR. BROOKMAN: Thank you. Steve Rosenstock.

19 MR. ROSENSTOCK: Steve Rosenstock, Edison
20 Electric Institute. Just a question on Slide 21 where
21 you showed technology options for residential storage
22 water heaters. Do you know what was, you know,
23 considered and then screened out as part of the
24 screening analysis? I guess since we're kind of at
25 that stage again for 2007, does this mean the

1 technologies that were screened out are going to kind
2 of go back in for this new screening analysis and then
3 you'll decide again about screening them out? Along
4 with the options in Slide 22 for the instantaneous gas-
5 fired.

6 MS. ABBOTT: Yes, that is correct. We will
7 be conducting the screening analysis, and that's
8 something that we wish to gather all your comments on.

9 MR. ROSENSTOCK: Okay.

10 MS. ABBOTT: Those technologies that you feel
11 should be screened out and for what reasons.

12 MR. ROSENSTOCK: Okay. And I know there was
13 a time frame for the data collection and then the
14 ANOPR. What if there's -- in terms of -- you know,
15 because you're saying things like, you know, the
16 workshop comments are due January 30th but, you know,
17 in terms of some of the technical detail, I'm just kind
18 of curious if there's any sort of time frame for the
19 screening analysis. That might be of interest to
20 stakeholders.

21 MS. ABBOTT: I don't know the specific time
22 frame for each analysis right off the top of my head,
23 but I think it's set. If DOE wishes, they could get
24 back to you on it.

25 MR. ROSENSTOCK: Thank you.

1 MR. BROOKMAN: Yes, please. Jim.

2 MR. RANFONE: Jim Ranfone with AGA. Just a
3 question on the screening analysis. This is Slide 16,
4 third bullet, "Have a significant adverse impact on the
5 utility of the product to consumers." I guess the
6 question I have is, if, for example, gas water heaters
7 today operate without electrical usage or electrical
8 supply, would DOE consider requiring electricity to
9 operate a gas water heater to meeting that criteria?
10 Would that be a significant impact on the utility? You
11 know, recognizing that the water heater is still going
12 to receive water, but if one had to -- if the
13 requirement was to add electricity to operate the gas
14 water heater, is that considered a significant adverse
15 impact?

16 MS. ABBOTT: Yeah, I think that's a legal
17 question that DOE will have to consider during
18 analysis.

19 MR. RANFONE: Okay. The second -- that's
20 fine.

21 MR. BROOKMAN: You've got to speak into the
22 mike. Say it again, to the mike.

23 MS. ABBOTT: I think that's a legal question
24 that DOE will have to further consider.

25 MR. RANFONE: Right. That's why we're here.

1 Again, Jim Ranfone, AGA. On the limitations
2 or expanding the definition of gas water heaters, I
3 think Mr. Goldstein mentioned that above 75,000 to
4 include condensing technology because there is a model
5 today condensing in the -- I think the law -- the
6 definition in the law says 75,000. I think it defines
7 residential as 75,000 and below.

8 So, I mean, you can take that approach, but
9 legally I don't think you can expand the definition
10 with higher input models at this time. You can go back
11 and change the law, but I think the law is pretty clear
12 on the definition of a gas water heater.

13 MR. BROOKMAN: Thank you. So, other -- yes,
14 Harvey Sachs. Well, especially other comments on
15 product classes at this time. Harvey.

16 DR. SACHS: Harvey Sachs, ACEEE. With
17 respect to Jim Ranfone's comment on electricity, it
18 would appear that in parallel to other recent
19 rulemakings that this question of electricity
20 availability is a question that relates to the
21 installation model in terms of the frequency with --
22 frequency of occurrences in existing houses in which
23 electricity is not within the legal extension limit of
24 six feet, I believe.

25 So it's not only a legal question but

1 something to be explored on the basis of field data.

2 Thank you.

3 MR. BROOKMAN: Okay. Thank you. So, final
4 comments on product classes before we move on?

5 (No response)

6 MR. BROOKMAN: Okay. So now we're on to the
7 second question you see on Slide 23. Are the energy
8 conservation levels and rated storage volumes
9 identified appropriate for characterizing the
10 performance of baseline residential water heaters?

11 Yes, Frank Stanonik.

12 MR. STANONIK: Frank Stanonik with GAMA.
13 Certainly we would strongly encourage DOE to in fact do
14 what is proposed here and use the baseline as the
15 current minimum efficiency requirement for the
16 respective fuel and size of the water heater. I think
17 there is -- certainly to my knowledge there is not any
18 information that would indicate that some efficiencies
19 significantly or even above the federal minimums
20 currently would represent what is the baseline of
21 what's out there.

22 As Jim mentioned, we're -- in a relative way,
23 the industry just went through a rulemaking that went
24 into effect in 2001. I think that, you know, this is
25 five or six years ago. It's still -- in terms of the

1 market, we're still looking at products where the bulk
2 of them are being sold and made right at the minimums.

3 So I would -- I think you picked the right levels.

4 MR. BROOKMAN: Thank you. Other comments?

5 Yes. Your name, please.

6 MR. TRANT: Troy Trant with Rheem Water
7 Heaters. One question that we have going forward is we
8 would appreciate some additional information in the
9 assumptions pertaining to some of the recovery
10 efficiency levels that are listed here. There wasn't a
11 lot of detail in the framework document, and it just
12 helps us understand what tools are being used to
13 establish those numbers.

14 MR. BROOKMAN: Can you say what kind of
15 additional detail you would like to see?

16 MR. TRANT: How they were derived, who
17 generated those numbers, what tools were being used.
18 That's it.

19 MR. BROOKMAN: Is that kind of information in
20 the technical support document, Ashley?

21 MS. ABBOTT: No, there's not that kind of --

22 MR. BROOKMAN: Microphone.

23 MS. ABBOTT: There is not that kind of
24 information because there is not a technical support
25 document yet.

1 MR. BROOKMAN: Okay.

2 MS. ABBOTT: So that's something that the
3 Department will have to take into consideration.

4 MR. BROOKMAN: Thank you.

5 MR. TRANT: Were these numbers generated
6 using watt-sim and tank, just sort of some what-if
7 scenarios?

8 MS. ABBOTT: That's not something I have
9 right in front of me, but that is something that if the
10 Department wishes to it can provide to you.

11 MR. TRANT: Okay. Thank you.

12 MR. BROOKMAN: Thanks for raising that.
13 Other comments related to conservation levels and rated
14 storage volumes? It's okay to be affirmative in your
15 comments, you know.

16 (Laughter)

17 MR. BROOKMAN: It's a useful practice in
18 rulemaking.

19 (No response)

20 MR. BROOKMAN: Okay. So then I'm moving on
21 to the third question you see on Slide 23. Are there
22 other technology options that can improve residential
23 water heater energy factors that DOE should consider?
24 You saw the list.

25 Yes, please. Troy.

1 MR. TRANT: Yes. I think the comment raised
2 earlier regarding the list of things considered in 2001
3 as well as the things being screened out in 2001, I
4 think it's appropriate to take another look at those
5 because some of those technologies were screened out in
6 2001 for various probably economical reasons or
7 something like that. So it's probably appropriate to
8 go back over that full list.

9 MR. BROOKMAN: Lance, do you wish to follow
10 on? No. No? David Goldstein.

11 MR. GOLDSTEIN: Yes, this is David Goldstein,
12 NRDC. I want to reinforce Harvey Sachs' earlier
13 comment that solar technologies should be considered
14 both in terms of standard levels and, perhaps more
15 importantly, in terms of compliance options for
16 whatever standards level is eventually chosen. From
17 the consumer point of view, there is no difference
18 between whether solar energy is used to supplement heat
19 from gas or electricity or if it isn't.

20 The Department's overall mission is to
21 promote maximum energy conservation and to promote the
22 use of renewable energy resources as well as to reduce
23 the cost of fuels and reduce environmental impacts. It
24 seems to me solar does all those things. Whether or
25 not it is explicitly in the current definitions, it

1 ought to be considered pursuant to the Department's
2 overall mandate.

3 MR. BROOKMAN: Thank you. Yes, please.
4 Frank.

5 MR. STANONIK: Frank Stanonik with GAMA.
6 This may be out of place, but I guess at this point
7 we've already heard two -- at least in my mind, two
8 suggestions that there may be some problems or some
9 need to amend test procedures. I guess I'm
10 paraphrasing David's comment because if you're going to
11 get some kind of credit for adding a solar feature it
12 seems to me it has to be in the test procedure or you
13 don't get it. You won't get it.

14 I guess just because of that, you know, I
15 guess I would like to know -- I mean, I don't envy
16 DOE's position in trying to get this rulemaking done in
17 the schedule that's there, but if we're going to
18 entertain the idea of changing test procedures in the
19 course of this rulemaking I would very gladly take bets
20 that it won't get done in three years.

21 I guess I would like to know early on if DOE
22 is going to consider that that needs to be put before
23 the public and all the stakeholders or else make a
24 determination that we can't do those two things or we
25 can't do those two things at the same time, change test

1 procedures and change the rulemaking. And I'm putting
2 aside whether or not -- my own opinion of the test
3 procedures, but the fact is if we complicate this by
4 trying to incorporate features that you need to change
5 the test procedure to get credit for, we should just
6 recognize that this will be very unlikely to meet your
7 schedule.

8 MR. BROOKMAN: Don Brundage.

9 MR. BRUNDAGE: Don Brundage, Southern
10 Company. Can I get some clarification from Mr. Sachs
11 and Mr. Goldstein on the solar issue? I would agree
12 completely that solar is a very fine product and should
13 certainly be encouraged, but for a minimum efficiency
14 standard it just does not seem to be appropriate to
15 include.

16 I do have some concern that if you include an
17 option for credit for solar in a minimum efficiency
18 standard it could potentially provide a loophole to
19 where substandard products will claim solar as an
20 option and then with the lax installation procedures
21 you have in some jurisdictions would be a loophole for
22 substandard products.

23 Harvey, can you enlighten me a little on
24 this?

25 DR. SACHS: Harvey Sachs, ACEEE. I leave the

1 compliance options to David Goldstein, who brought the
2 issue up. In terms of the solar option in general, my
3 objection is to the Department's arbitrary exclusion
4 and we can't even consider how to do it until we
5 address that philosophical point.

6 MR. BRUNDAGE: Okay. Thank you.

7 MR. BROOKMAN: David, do you want to follow
8 on?

9 MR. GOLDSTEIN: Don, I pretty much agree with
10 that. You raised issues that are important technical
11 questions that would have to be addressed if you're
12 considering solar. I don't know where they're going to
13 lead, but I'm saying we should not just leave them out
14 of the discussion entirely. DOE may end up in the
15 position that you seem to be advocating, but let's do
16 it based on really thinking about it, not just
17 arbitrarily.

18 MR. BROOKMAN: Thank you. Steve Rosenstock.

19 MR. ROSENSTOCK: Steve Rosenstock, EEI.
20 Again, just a follow-up to the solar discussion, when
21 you think about it, if it's a solar system combined
22 with a gas or electric or oil system, in a way it's a
23 hybrid system or it's a dual fuel system, if you think
24 about it. The water is being heated by more than one
25 fuel source.

1 So again, maybe -- and again there's a good
2 question about the test procedures. Maybe it's another
3 product class for DOE to think about, dual systems.
4 I'll call them hybrid systems or dual fuel systems.
5 And then, unfortunately, it might require a separate
6 test procedure, but again, you know, just not to
7 exclude them from the market. Maybe they could have a
8 separate standard just like is done with other types of
9 product families. Just a thought. Thank you.

10 MR. BROOKMAN: Troy, do you have a comment?

11 MR. TRANT: No, not at this time.

12 MR. BROOKMAN: Okay. Final comments on this
13 question? I'm about to move on to the fourth question
14 on Slide 23, which is related to technology options
15 identified.

16 DR. SACHS: I'm sorry, Doug. There is one
17 other comment to put this in context.

18 MR. BROOKMAN: Go ahead, Harvey.

19 DR. SACHS: Harvey SACHS, ACEEE again. The
20 Department's own documents on proposals for an Energy
21 Star for water heaters have left me with the conclusion
22 that the Department does not believe it would be
23 appropriate to consider, for example, electric
24 resistance Energy Star because the amount of savings
25 is, in the Department's view, not large.

1 On the other hand, the Department seems, as I
2 recall that document from 2005, to be strongly
3 encouraging consideration of solar-assisted systems.
4 This will be infinitely easier or somewhat easier to do
5 if there is a regulatory backbone for that
6 consideration. So the request that solar not be
7 excluded arbitrarily actually has its roots in parallel
8 activities by this Department. Thank you.

9 MR. BROOKMAN: Thank you. Okay. So now,
10 with respect to technology options, that final question
11 on Slide 23. Are there any that DOE should reject from
12 consideration as design options because they're not
13 technologically feasible; are not practicable to
14 manufacture, install, and service; have significant
15 adverse impacts on utility of the product to consumers;
16 or adversely affect health and safety?

17 We've begun on that, I think. Let's see if
18 we have any other comments. Yes, Frank.

19 MR. STANONIK: Frank Stanonik with GAMA.
20 This is one area we did submit some initial comments,
21 and it would be our opinion that in terms of the ones
22 that are listed there, you could drop, or perhaps
23 should drop, heat traps, plastic tank, and insulated
24 tank bottom.

25 In the case of heat traps, I think that's

1 already a design feature that's been incorporated into
2 many storage water heaters.

3 The plastic tank, you know, there's certainly
4 -- that has been tried by industry without a lot of
5 success, and realistically, that's really just a way to
6 improve insulation in a sense. You know, I think that
7 if you're looking at a design feature, that's the
8 feature improving insulation and not specifically how
9 somebody might make a tank.

10 And then in the question of insulating the
11 tank bottom, I think we made this point the last time
12 in the last rulemaking, but in fact that is one of
13 those things that, you know, could you put more
14 insulation on the bottom as, for instance, an electric
15 water heater? Yes. It doesn't show up in the test
16 procedures. You don't -- you won't get the credit when
17 you run the test on that product whether it's two,
18 three, or four inches of insulation on the bottom. It
19 just doesn't evidence itself in terms of changing the
20 energy factor.

21 And again, you know, rightly or wrongly,
22 that's the ruler, if you will, on how you measure
23 whether you increase the energy. So we think it's
24 really a useless exercise to even look at insulating
25 the tank bottom.

1 MR. BROOKMAN: Thank you. Other comments on
2 technology options that should be rejected for the
3 reasons listed there?

4 (No response)

5 MR. BROOKMAN: Okay. No additional comments
6 then. So then, let's proceed.

7 For those of you that are tracking, round
8 about 11:00 or so we're going to take a break. Another
9 half an hour.

10 MR. STANONIK: Doug?

11 MR. BROOKMAN: Yes?

12 MR. STANONIK: I'm sorry. Can you back up
13 that last slide? I have one more, because I was only
14 talking about storage water heaters.

15 MR. BROOKMAN: Please do.

16 MR. STANONIK: And this is more a question on
17 the technology options for residential instantaneous
18 gas-fired. I don't understand what heat exchanger
19 insulation is. So it's a little difficult to comment
20 on that when I'm not really sure what we're talking
21 about, or what you're talking about. Can you explain
22 that one?

23 MR. BROOKMAN: Ashley?

24 MS. ABBOTT: Can I address that in just a
25 little bit? I have to get my additional information

1 for that. I'll come back to it.

2 MR. BROOKMAN: It fits better in another
3 place?

4 MS. ABBOTT: I'll just come back to answer
5 it, if that's okay.

6 MR. BROOKMAN: Okay.

7 MS. ABBOTT: I just need to get my additional
8 material.

9 MR. BROOKMAN: Sure.

10 MS. ABBOTT: Thanks.

11 MR. BROOKMAN: We're going to hold on that
12 one.

13 MR. STANONIK: Okay.

14 MR. BROOKMAN: Okay.

15 MS. ABBOTT: Next we will be looking at the
16 product classes for direct heating equipment. NAECA
17 initially prescribed standards for four product classes
18 of direct heating equipment at varying input
19 capacities. These four product classes are shown above
20 and include gas-fired, wall, fan-type; gas-fired, wall,
21 gravity-type; gas-fired, floor heaters; and gas-fired,
22 room heaters. The Department's current thinking is to
23 maintain these four product classes and the categories
24 of input capacities for this rulemaking.

25 DOE is proposing to exclude unvented home

1 heating equipment from this rulemaking. Unvented home
2 heating equipment is tested using the unvented home
3 heating test procedure, which does not specify a method
4 of determining energy efficiency or energy consumption.

5 DOE believes that vented hearth products meet
6 the definition of vented home heating equipment.
7 Consequently, DOE is proposing to include vented hearth
8 heating products if the appliance has a thermostat, it
9 is marketed as a space-heating device, or its
10 manufacturer literature includes a description of the
11 appliance's energy efficiency, energy use, or heating
12 function.

13 In addition, DOE understands that some vented
14 hearth heating products are already tested using the
15 vented home heating test procedure.

16 DOE has chosen representative product classes
17 with a representative input rating based on the class
18 with the greatest percentage of shipments within each
19 equipment type. DOE is planning to use the existing
20 energy conservation standard to characterize the
21 baseline model's AFUE. We'll be looking for your
22 comment on this issue at the end of this section.

23 These are the technology options being
24 considered for direct heating equipment. These are
25 from the 1994 rulemaking.

1 Once again, I'm going to pass the
2 presentation to Doug to go through these five questions
3 and any additional issues you all may have. Thank you.

4 MR. BROOKMAN: Thank you. These are the
5 questions that the Department seeks your comment on,
6 the first one being should DOE consider different
7 product classes for direct heating equipment? And
8 Ashley, you'll chase down Frank's answer.

9 MS. ABBOTT: Yes, sir.

10 MR. BROOKMAN: Yes. Thank you. Different
11 product classes for direct heating equipment. George.

12 MR. KUSTERER: Excuse me, Doug. George
13 Kusterer of Bock Water Heaters.

14 MR. BROOKMAN: Yes.

15 MR. KUSTERER: I don't -- maybe I had a
16 senior moment here. What happened to Slide 28? Did we
17 discuss that at all?

18 MR. BROOKMAN: Maybe we went through it
19 quickly.

20 MS. ABBOTT: Yes.

21 MR. BROOKMAN: But it's there in your packet.
22 Did you want more information on it?

23 MR. KUSTERER: Oh, okay. I thought we were
24 going to discuss it. Sorry. I'll go back.

25 MS. ABBOTT: It's one of the questions that

1 Doug is going to get to. It's one of the questions.

2 MR. KUSTERER: I'll go back to sleep, Doug.

3 Thanks.

4 (Laughter)

5 MR. BROOKMAN: So let's start with the first
6 question, should DOE consider different product classes
7 for direct heating equipment or are they on target with
8 what they've got. Frank Stanonik.

9 MR. STANONIK: Frank Stanonik with GAMA. At
10 this point, and I will emphasize at this point, we
11 agree with the product classes. I think one of the
12 discussions or one of the points that came up is
13 whether there might be some opportunity to combine some
14 of those and then certainly something in terms of the
15 information we have back in our office and talking to
16 some of our members. We will include some additional
17 comments on that. I don't know what the answer to that
18 is. It certainly looks like there might be some
19 opportunity, especially when you get into some of those
20 ranges of inputs. But we will provide some additional
21 comments on that.

22 And then the only other comment I had in
23 terms of the baseline models, and again we will look --
24 review some of the information available to us. The
25 representative inputs, particularly for floor furnaces

1 and even room heaters, we will try and, if we can --
2 well, if we have information, either provide some
3 information to validate that those are good selections
4 or that perhaps there is an alternative typical input
5 rating. Right now some of those look a little high to
6 me, but we'll be reviewing our data and get you
7 additional information by the 30th.

8 MR. BROOKMAN: Thank you. Thanks for getting
9 that additional data.

10 Other comments on the product classes for
11 direct heating equipment?

12 (No response)

13 MR. BROOKMAN: Then we're moving on to the
14 second question. Are there representative product
15 classes, representative input ratings, and energy
16 conservation levels identified appropriate for
17 characterizing the performance of baseline direct
18 heating equipment?

19 Yes, Steve Rosenstock.

20 MR. ROSENSTOCK: On Slide 27 I think there's
21 a typo under "Room Heaters." It says over 27,000 Btus
22 per hour up to 26,000 Btus per hour. So I don't know
23 what the range is there.

24 MR. BROOKMAN: Okay. So thanks for noting
25 that. Yeah, okay.

1 MR. KUSTERER: That's a condensing electric
2 furnace.

3 (Laughter)

4 MR. ROSENSTOCK: I was talking about room
5 heaters. Steve Rosenstock. Sorry. Didn't mean to
6 wake you up from your nap.

7 (Laughter)

8 MR. BROOKMAN: So, additional comments on
9 Question Number 2 as I read it?

10 (No response)

11 MR. BROOKMAN: I guess the operating premise
12 we must have here is if there is no comment that
13 largely the Department landed in the right zone here or
14 that, you know, silence in this case is something close
15 to assent. You're supposed to challenge me here.

16 Yes, Frank.

17 MR. STANONIK: Yeah, Frank Stanonik with
18 GAMA. I guess I was trying to figure out in terms of
19 the preceding slides where this fit in, but there was
20 some mention in the slides of how the Department was
21 looking at vented hearth products. I think that we did
22 -- have submitted some comments on that, but I think
23 the most significant thing that's different now than
24 certainly when these minimums were originally
25 established is in terms of the safety standards that

1 are used to list and test products for safety.

2 You still have a standard for what is
3 considered a decorative gas appliance. That's still
4 out there. But there is also now a standard for what's
5 called fireplace heaters, in essence a vented hearth
6 product heater, okay. And so from our view, the safety
7 standards in fact can be used to distinguish a
8 decorative appliance which is just there so people can
9 watch the flames and whatever, as opposed to a product
10 that is designed and intended to be a space heater,
11 i.e. a fireplace heater which has now its own safety
12 standard.

13 So we think that, you know, the answer to
14 these questions is not complicated at all. It's fairly
15 direct. That, if there is this product that looks like
16 a fireplace, the manufacturer intended it to be a
17 heater, it's going to be listed to the safety standard
18 for fireplace heaters. If they intended it to be a
19 decorative appliance, it's going to be listed to the
20 standard for decorative appliance. That's a very clear
21 and direct distinction.

22 MR. BROOKMAN: Thank you. Okay. So then,
23 I'm moving on to the next question, which is the third
24 question on Slide 29. DOE requests comment on possible
25 methods of extrapolating the standard levels and

1 national impact analysis of the representative direct
2 heating product classes to the other product classes,
3 e.g. maintaining relative incremental energy use
4 specified in federal energy conservation standards
5 across product classes.

6 That's a lot. Did everybody get that?
7 Harvey Sachs.

8 DR. SACHS: Harvey Sachs, ACEEE. Assent is -
9 - silence is not always assent. Sometimes it's trying
10 to figure out which of your categories, DOE's
11 categories, the question fits in.

12 And with respect to Slide 28, I assume that
13 the word "water" in the caption is an inadvertent
14 error, a copy-and-paste error, that it should be
15 "direct heating." Just for the record.

16 MR. BROOKMAN: Let's seek clarification on
17 that. Slide 28, "Direct Water Heating Technology
18 Options" is the header. So that's -- so "water" should
19 be deleted. Thank you, Harvey. Okay.

20 MR. KUSTERER: That's why I'm sitting here
21 and I'm totally confused.

22 MR. BROOKMAN: Okay. So, thanks for
23 clarifying that.

24 DR. SACHS: Continuing, I have --

25 MR. BROOKMAN: Harvey, keep going. Yeah.

1 DR. SACHS: -- a question on Slide 27, where
2 we've had some annual shipment allusions from our
3 colleagues at AGA and I guess I find it very difficult
4 to decide where to focus my efforts as well as make
5 recommendations to the Department when there is no
6 column which gives us an indication of units shipped
7 per year so we have some sense of whether these are
8 mice or elephants in terms of the energy-saving
9 potential. These do not need to be hard data. They
10 can be used -- kinds of proxy data, number of models
11 listed.

12 But the footnotes suggest that the Department
13 has some indications and perhaps these can be shared.
14 Perhaps GAMA will make them available to all of us.
15 Thank you.

16 MR. BROOKMAN: Thank you. Yes, Lance.

17 MR. DeLAURA: Yeah, this goes back to my
18 earlier comment. My recommendation is anywhere there
19 is a judgment statement on something -- as an example,
20 going back to the electric instantaneous heaters, that
21 they're insignificant in terms of the numbers of
22 distribution -- that it be footnoted with some example.
23 I think it would help a lot.

24 MR. BROOKMAN: Steve Rosenstock.

25 MR. ROSENSTOCK: Steve Rosenstock, EEI. Just

1 in terms of the extrapolation, just a thought. Again,
2 it's a matter of -- you know, you have the slide about
3 excluding unvented home heating equipment. So again,
4 market share shipments might make a difference in terms
5 of extrapolation if one product is vented versus
6 unvented, if that changes because of the standard.
7 That's one extrapolation.

8 The other one is probably, again, probably a
9 market survey of people with these products. Do they
10 alter the thermostat setting of a central heating
11 system. I'll call it the "warm room" concept. They
12 stay in one room and they just turn down the thermostat
13 for the heating system to save kind of on the central
14 and just use that one room. That -- again, I know it
15 adds a layer of complexity, but if people are doing
16 that just as an energy savings type of technique, then
17 that should be -- if possible, if that information can
18 be collected just in terms of extrapolating the energy
19 savings. Thank you.

20 MR. BROOKMAN: Frank Stanonik.

21 MR. STANONIK: Frank Stanonik with GAMA. In
22 terms of this particular question and the extrapolating
23 of information I guess, we put in the comments we think
24 that this can -- you know, this can be done correctly.
25 But I just want to clarify. We think it can only be

1 done within the same product type.

2 In other words, you know, looking at, as an
3 example, you have several ranges of inputs for a wall
4 type gravity furnace and certainly you could
5 extrapolate some information within that product type.

6 But we would not agree that you could take an analysis
7 of a gas-fired wall furnace and really extrapolate any
8 of that information to a room heater.

9 So we would agree with that point insofar as
10 you're looking at the same product type. We would not
11 agree if you're considering extrapolating from wall
12 furnaces to floor furnaces to room heaters, as an
13 example. You know, we don't think that really would
14 work.

15 MR. BROOKMAN: Thank you. So then, moving on
16 to the next question here, the fourth question on Slide
17 29. Are there other technology options that can
18 improve direct heating equipment AFUE that DOE should
19 consider?

20 (No response)

21 MR. BROOKMAN: I guess none that occur to us
22 at this moment.

23 So then, hearing no comment, I'm going to
24 move on to the last question. Of the technology
25 options identified, are there any that DOE should

1 reject from consideration as design options because
2 they are not technologically feasible; are not
3 practicable to manufacture, install, and service; have
4 significant adverse impact on the utility of the
5 product to consumers; or adversely affect health and
6 safety?

7 Frank Stanonik.

8 MR. STANONIK: Frank Stanonik with GAMA. We
9 would suggest that DOE should not look at either
10 improved blower motor efficiency or air circulation fan
11 not for any of the reasons you have just elaborated
12 when you repeated the question but in fact because
13 neither one of those increases AFUE. AFUE tests
14 procedures looking at the gas fuel efficiency if you
15 will, and including the technologies that look at
16 blower motor efficiency and circulation fan won't
17 change the AFUE one bit.

18 Unless we're going to open up the question on
19 direct heating equipment about fan efficiency, which is
20 a whole new question which we might discuss whether or
21 not DOE has that authority, there is no sense looking
22 at those technologies. It is a waste of time.

23 The other one that we have -- suggest you
24 don't really need to look at, and that's increased
25 insulation on floor furnaces. Really, the reason we

1 raise that is primarily, I think, a safety issue. The
2 fact is that floor furnaces by their nature -- the
3 grate of the floor furnace is right there on the floor
4 and there always has been some concern about the
5 temperature of that grate. There have been, over the
6 years, attempts to try and make that as safe as
7 possible. Well, I think if you would insulate the
8 floor furnace more, you run the risk you're going to
9 make that grate hotter, raising a safety issue.

10 Everybody should -- you know, to be very
11 clear on this, we're not aware that floor furnaces are
12 being installed in, you know, any new homes. This is
13 purely a replacement market. We will try and get you
14 the latest information, but as Jim mentioned, the sales
15 of those units are in the thousands of units a year.
16 Not tens of thousands, thousands of units, and it's not
17 a growing market.

18 MR. BROOKMAN: Thank you. Okay. So then I
19 think we've gone -- David Goldstein.

20 MR. GOLDSTEIN: David Goldstein, NRDC. I
21 wanted to respectfully disagree with Frank on the issue
22 of the furnace fans. I'm in agreement with the
23 technical issue that furnace fan improvement will not
24 be reflected in the AFUE test procedure, but DOE's
25 mandate is not to achieve the maximum improvement in

1 energy efficiency that can be covered by one
2 descriptor. It's to get the maximum improvement in
3 energy efficiency that's technologically feasible and
4 economically justified. If it takes two descriptors to
5 accomplish that mandate, then DOE has to do that.

6 MR. BROOKMAN: So let's proceed with the rest
7 of the slides, or keep going at least. Ashley.
8 Ashley, get to the microphone, please.

9 These mikes will not pick up unless you're
10 within about 18 inches of them. So, please.

11 MR. LEKOV: Since there is no jacket
12 insulation currently in the instantaneous water heater,
13 and it just -- this is an option which we don't know
14 much about. But we think it's logical to insulate the
15 area -- at least the area around the heat exchange, if
16 not the entire --

17 MR. STANONIK: Let me suggest you just call
18 it jacket insulation.

19 MS. ABBOTT: Sure.

20 MR. STANONIK: And understand that in terms
21 of an instantaneous water heater what we consider the
22 jacket might be a little different, but that will
23 convey better what we're talking about than calling it
24 heat exchanger insulation.

25 MR. BROOKMAN: Okay. Thanks, Frank. Thanks,

1 Alex and Ashley. Okay. Ashley, thank you.

2 MS. ABBOTT: I'm Ashley Abbott. So, last, we
3 will be looking at the product classes for residential
4 pool heaters. NAECA initially prescribed energy
5 conservation standards for one product class of pool
6 heaters, and those are gas-fired pool heaters. The
7 Department's current thinking is to maintain this one
8 product class for this rulemaking.

9 In addition, DOE is thinking of excluding any
10 gas-fired pool heater with an input capacity greater
11 than 1 million Btus per hour. It is our understanding
12 that these products are designed for commercial or
13 light industrial use.

14 To represent the baseline model's energy
15 efficiency, DOE will be using the existing federal
16 standard, which is a minimum thermal efficiency
17 requirement. In addition, we have chosen a
18 representative rating of 250,000 Btus per hour, which
19 corresponds to the most common input rating of all
20 covered models in the FTC directory.

21 These are the technology options being
22 considered for gas-fired pool heaters. Most or all of
23 these are from the 1994 rulemaking except induced draft
24 technology.

25 Once again I'm going to pass the presentation

1 to Doug to go over these similar questions and gather
2 your initial thoughts. Thank you.

3 MR. BROOKMAN: As Ashley said, these are the
4 questions we answered or we tried to answer a moment
5 ago. So we'll start with different product classes for
6 pool heaters. Should there be any?

7 Yes, please. Your name.

8 MR. GLASS: Robert Glass, Raypak. A question
9 I believe that DOE should be considering, they have the
10 classes listed up to a million Btus as fitting the mold
11 of a residential pool heater. If DOE does a check of
12 the various manufacturers that make pool heaters,
13 they'll see that the classification of residential pool
14 heaters stops at 400,000 Btus. Anything above that is
15 done as you had said in light commercial applications,
16 et cetera. But to have a classification as a
17 residential pool heater all the manufacturers that make
18 it, that limit is capped at 400,000 Btus.

19 MR. BROOKMAN: Thank you. Please, Lance.

20 MR. DeLAURA: Same thing, minor comment. But
21 any of these factoids that can be footnoted with a
22 source so we have confidence in them. Thanks.

23 MR. BROOKMAN: David Goldstein.

24 MR. GOLDSTEIN: David Goldstein. Two
25 comments. One is that if the current class is a

1 million Btu/h and there are energy savings that can be
2 achieved by maintaining that, DOE should not
3 gratuitously throw away energy savings. In fact, you
4 might want to look at whether a rulemaking on
5 commercial pool heaters would be sensible, given what
6 the savings are. I have no data whatsoever on whether
7 that's big or little, but it's something it probably
8 wouldn't be very hard to get some data on and determine
9 whether there should be a commercial standard in
10 parallel with the residential one.

11 Second, I have no idea how much electric pool
12 heaters are being used, but that is something DOE
13 should know in deciding whether or not a standard for
14 electric pool heaters would be warranted. That would
15 require a separate class. So I would suggest that DOE
16 do an analysis, which, again, shouldn't be very time-
17 consuming or difficult, of what the market is for
18 electric pool heaters in the residential sector.

19 MR. BROOKMAN: Lance.

20 MR. DeLAURA: I think one thing that would be
21 helpful too is the delineation of a spa heater versus a
22 pool heater. To David's point, on the pool heaters,
23 the dominance -- I don't have the numbers in front of
24 me, but the dominance is natural gas. It's important
25 not to exclude the electric pool heaters.

1 But on spa heaters the numbers become much
2 more equalized. In the spa market, I'm going to guess,
3 without hard facts in front of me, it's nearly equal.
4 It's slightly in favor of gas but not by much. And
5 therefore it should be considered because people run
6 their spas a lot more than they run their pool heater.

7 MR. BROOKMAN: Are you reflecting the
8 national market or a regional market?

9 MR. DeLAURA: I believe it's a national
10 market.

11 MR. BROOKMAN: Okay. Thank you. Steve
12 Rosenstock.

13 MR. ROSENSTOCK: Steve Rosenstock, EEI. Very
14 interesting point, would our spas be covered under this
15 definition of, quote, "pool." I hate to do this to
16 you, but again, is it a covered product?

17 MR. BROOKMAN: Alex Lekov.

18 MR. ROSENSTOCK: Steve Rosenstock, EEI. You
19 know, if you wanted to add it, I'm sure that's a good
20 question for all the stakeholders to answer. But
21 again, it's just one of those little nits you might
22 want to take care of first.

23 MR. BROOKMAN: Alex, hang on just -- Alex,
24 just one moment, okay. I don't know whether the DOE
25 wanted to --

1 MS. ABBOTT: No.

2 MR. BROOKMAN: Okay. So, Alex, speak loudly,
3 directly into that microphone.

4 MR. LEKOV: Alex Lekov. In the framework
5 document, it seems that we're not looking at
6 environment, we're looking at the heater. The heater
7 is just for pools or for spas.

8 THE REPORTER: Is the microphone on?

9 MR. BROOKMAN: It's on, yes. His voice is --

10 THE REPORTER: Speak up some more.

11 MR. ROSENSTOCK: Steve Rosenstock, EEI. So
12 you're -- if it's a heater and it's used for a pool or
13 a spa you're saying it's the same technology basically
14 for both?

15 MR. LEKOV: This is how the Department listed
16 it in the framework document.

17 MR. ROSENSTOCK: Okay. Thank you.

18 MR. BROOKMAN: Steve, thanks for restating
19 that. That's useful.

20 Robert.

21 MR. GLASS: Robert Glass, Raypak. Two
22 comments, one in regards to the use of the pool or spa
23 heater. Many of the applications of pools do have spas
24 that a single heater does provide the heat to both of
25 them. But there are other applications where the spa

1 is a stand-alone spa unit by itself. There is no
2 corresponding pool, like a hot tub and things like
3 that. So one of the questions to DOE would be, would
4 that same classification of heating product be included
5 under this rulemaking.

6 MR. BROOKMAN: Okay. Thank you. Lance.

7 MR. DeLAURA: Just to add on to that, that
8 was my example. Where you have the stand-alone spa the
9 chances are very good that it could be electrically
10 powered versus gas. It's much higher as a percentage.

11 To David's point, I think you're leaving
12 energy savings on the table if you exclude that.

13 MR. BROOKMAN: Thank you. Yes, back to
14 Robert.

15 MR. GLASS: Yeah, Robert Glass, Raypak. A
16 second question concerning a question that was raised
17 down here about commercial pool heaters. One of the
18 things -- please recognize that the number of
19 commercial pool heaters sold a year is probably
20 significantly lower than even the floor furnace numbers
21 that were mentioned earlier. There are not a huge
22 number of commercial units. There are more residential
23 units that are going out.

24 So from a rulemaking standpoint, I think DOE
25 would be better focused in other areas than to be

1 looking at that from a rulemaking standpoint.

2 MR. BROOKMAN: I'm certain the Department
3 would like to have that information, that data, that
4 hard data so that it can make a judgment.

5 MR. GLASS: That data is proprietary
6 information. I will be glad to provide the contact
7 information for DOE to go ahead and contact, but the
8 manufacturers that are supplying that information do
9 not have the ability to provide that information
10 directly.

11 MR. BROOKMAN: Okay. Frank Stanonik.

12 MR. STANONIK: Since there seems to be some
13 confusion about this, and I'm just reading from the
14 framework document on page 12, "EPCA defines pool
15 heater as an appliance designed for heating non-potable
16 water contained at atmospheric pressure, including
17 heating water in swimming pools, spas, hot tubs, and
18 similar applications."

19 I don't know what the Department intends, but
20 that definition is pretty clear to me.

21 MR. BROOKMAN: Okay. Thanks, Frank.

22 Harvey Sachs.

23 DR. SACHS: Harvey Sachs, ACEEE. Just for
24 context, the information provided in this meeting this
25 morning of roughly 100 hours' use per water heater

1 would lead to -- per pool heater, excuse me. Thank
2 you, Frank. It's great to have some colleagues who are
3 helpful, and I mean it.

4 That corresponds, if my rough numbers are
5 right, to roughly 25 teraBtu per year, if there are a
6 million residential water heaters drawing gas. Pool
7 heaters, thank you. It's contagious, senility.

8 MR. KUSTERER: That's because you're hanging
9 around me too much.

10 DR. SACHS: That's what I mean.

11 Harvey Sachs continuing in a serious vein.
12 This kind of information is really helpful at this
13 stage of the process, the Department's estimates of the
14 impact of this class of appliance. That can be done in
15 terms of the use, in terms of annual sales. All of
16 these things are really important for distinguishing
17 the mice, like floor furnaces, from the elephants, like
18 residential water heaters. Thank you.

19 MR. BROOKMAN: Thank you. Yes, please. Go
20 ahead.

21 MR. GLASS: Robert Glass, Raypak. Just as an
22 extension from what Harvey was saying, although he did
23 use a figure of saying a million units, actually that
24 probably represents about five times too many from an
25 annualized basis on what the annual sales of

1 residential pool heaters are. So in looking at what
2 your savings and things of dealing with, I think you're
3 looking at a much smaller potential savings.

4 And I would encourage DOE to go ahead and get
5 that shipment data to be able to contact and get the
6 information and really make a determination on whether
7 or not the time spent on the rulemaking would be better
8 spent someplace else, looking at the relatively low
9 volume of the residential pool heaters that are out
10 there and the hours of operation and the potential
11 energy that is available from the savings standpoint.

12 MR. BROOKMAN: Thank you. Steve Rosenstock.

13 MR. ROSENSTOCK: Steve Rosenstock, EEI. I
14 was just going to say in terms of the spas, again, you
15 can classify it the same way in terms of either KW or
16 Btu per hour input. It could be the same type of, you
17 know, 4,000 Btus per hour or X KW input on the electric
18 side. So, however you wanted to classify it, I think
19 that's fine.

20 MR. BROOKMAN: Okay. Thank you. Additional
21 comments on this question?

22 (No response)

23 MR. BROOKMAN: Okay. Let's move on, then.
24 You'll note that these four questions are the same
25 format as the ones we just went through a moment ago.

1 So, talking about energy conservation level identified
2 appropriate for characterizing the performance of
3 baseline pool heaters, and we might as well talk about
4 other technology options in the same screen here, it
5 seems to me. The two questions, the second and third
6 question on Slide 33.

7 Harvey Sachs.

8 DR. SACHS: Harvey Sachs, ACEEE. It is my
9 understanding, and I think Mr. DeLaura could amplify on
10 this, that the building code in California essentially
11 requires solar water heaters as opposed to fossil fuel
12 or electric options now for new construction. I'm not
13 sure if that's the case, but --

14 MR. DeLAURA: Not yet.

15 DR. SACHS: That's proposed for --

16 MR. DeLAURA: It's proposed for 2009
17 implementation.

18 MR. BROOKMAN: And Lance, your last name is?

19 MR. DeLAURA: DeLaura.

20 MR. BROOKMAN: Thank you.

21 DR. SACHS: So that there is context here
22 that may be appropriate for consideration in terms of
23 state activities that are complementary to the federal
24 standard.

25 MR. BROOKMAN: Okay. Other comments on these

1 two questions, energy conservation level identified
2 appropriate for characterizing the performance of
3 baseline pool heaters, and are other technology options
4 available that can improve pool heater thermal
5 efficiency that DOE should consider.

6 Yes, please. Robert.

7 MR. GLASS: Robert Glass, Raypak. I believe
8 that DOE, as noted in comments from GAMA that were
9 submitted earlier, should probably not consider any of
10 the condensing versions that are there from the
11 standpoint of rating as a new baseline. Recognizing
12 that a substantial number of residential pool heaters
13 that are installed are installed outdoors and from a
14 standpoint of dealing with condensing products that are
15 mounted outdoors, there are concerns about the
16 condensate management, where and how do you do it; two,
17 blocking up of that condensate discharge system; three,
18 freezing that's associated with it.

19 So there are other applications and things
20 that are directly -- would directly affect the
21 application of a residential pool heater mounted
22 outdoors, of which a vast majority of the installations
23 are done, as people are probably well aware.

24 MR. BROOKMAN: Thank you, thank you.

25 James.

1 MR. RANFONE: Jim Ranfone, AGA. I guess
2 these all apply to gas-fired, these particular options,
3 and I'm not sure you've come to a conclusion on whether
4 you're going to consider electric pool heaters or heat
5 pump-type pool heaters as far as a product class.

6 But one thing I do want to mention; the DOE
7 website does promote heat pump-type pool heaters as a
8 competitive product. I think what DOE needs to do is,
9 you know, take a look at the product classes in terms
10 of information available and the amount of shipments
11 and see if that fits in, because if that's the case and
12 if you are going to include heat pump-type pool
13 heaters, then your technology options are going to
14 differ in terms of what to address.

15 Right now, the way it's presented it's only
16 for gas. I can understand that; that's what's in the
17 law. But if you're going to move over to looking at
18 heat pump-type pool heaters, you need to consider those
19 options.

20 Again, I don't know if the law allows that.
21 Is there test procedures for them or not? Like I say,
22 on the DOE website it's pretty prominent that you do
23 promote those. There is an ASHRAE standard for heat
24 pump-type pool heaters. So, how much time you want to
25 spend on this. You know, you just need to take a look

1 at it because if there's some energy -- low-hanging
2 fruit that you want to take a look at and it's possible
3 to do it in this rulemaking, then take a look at it.

4 MR. BROOKMAN: Okay. Thank you.

5 Let's look at the final question on this
6 slide. It relates to technology options that are
7 identified. Are there any that should be rejected for
8 consideration as design options? You can see the
9 qualifiers there: because they are not technologically
10 feasible; are not practicable to manufacture, install,
11 and service; have significant adverse impact on the
12 utility of the product to consumers; or adversely
13 affect health and safety.

14 So, comments on that. Yes, Frank.

15 MR. STANONIK: Frank Stanonik with GAMA. As
16 Robert Glass had mentioned, I mean, we had already
17 submitted a comment that we really think that DOE
18 should not spend any time looking at condensing
19 technology in any variation as an option for pool
20 heaters. Again, we think that the overwhelming driving
21 factor there is that these products just are not used a
22 lot in terms of annual usage. There is just not a
23 significant amount of burner on time to justify that
24 level of technology.

25 Having said that and being -- let's say

1 recognizing that DOE doesn't only take advice from
2 GAMA, certainly if you are going to look at condensing
3 technology there is no need to have three variations of
4 condensing. First of all, pulse combustion. Nobody
5 makes a pulse combustion condensing product anymore.
6 The one company that had a technology in fact is
7 building condensing products with different technology
8 today.

9 And beyond the question of manufacturer, if
10 you go to look at condensing and what it takes to get
11 there, there is really no value to looking at, well, do
12 I do it with a power burner or do I do it with
13 secondary -- whatever. I mean, if you're going to look
14 at that technology as an option, it's just a question
15 of making a condensing product and don't complicate it
16 by looking at other bells and whistles I add to that
17 major technology shift.

18 MR. BROOKMAN: Robert, I did want to give you
19 a chance.

20 MR. GLASS: Robert Glass, Raypak. I was just
21 going to say, actually, my comments were actually more
22 focused on this question rather than are there
23 additional design options that way. So in support of
24 what I had mentioned before, the reasons for not
25 considering a condensing pool heater stand based on

1 this question here.

2 MR. BROOKMAN: Okay. Are there any other
3 comments on the final question, not technologically
4 feasible, not practicable, significant adverse impact
5 on utility, and adversely affect health and safety --
6 or safety. Additional comments on that stream of
7 qualifiers?

8 David Goldstein.

9 MR. GOLDSTEIN: David Goldstein. I would
10 just urge DOE to consider the condensing option at more
11 than one level at this stage of the analysis. All the
12 concerns that previous commenters raised may be valid
13 based on data, but let's collect the data first before
14 screening out the technologies, particularly given the
15 information that we have at this hearing that these
16 products apply to spas, which are quite common, as well
17 as pools, which aren't so common.

18 I recall some data showing that pool heating
19 is a significant use of gas in California. I don't
20 know if it's right -- I don't know that if it were
21 right how many other states that would be typical of.
22 But again, we ought to get the information before
23 making the decisions.

24 MR. BROOKMAN: Thank you. Additional
25 comments? George.

1 MR. KUSTERER: George Kusterer, Bock Water
2 Heaters. I have to agree with my colleagues from
3 Raypak and of course from GAMA on a technical stand
4 point of view. Condensing products, whether it's in a
5 pool heater or whether it's in a water heater for
6 domestic purposes, has had problems in the past and
7 will continue to have problems not only on the service
8 level, on the install level.

9 There is really not a big infrastructure out
10 there. There are not too many people who can actually
11 service this equipment properly. What we're also
12 finding is the impact on certain municipalities
13 throughout the country which will not allow condensate
14 to be put into the municipal distribution systems, such
15 as storm drains and so forth and so on. So now we
16 install this equipment and now what does the end user
17 or the homeowner do with this condensate product?

18 So I think, you know, we can collect the data
19 but we have already seen in our industry some of the
20 problems that we've had with condensing products.
21 We've also seen it in Canada, where condensing products
22 have been a problem and now they're refocusing on what
23 type of vent material to use: PVC, CPVC, and so forth
24 and so on.

25 So as far as the DOE spending time on this

1 particular technology with regard to pool heaters, I
2 think it would be a waste of their valuable time.

3 MR. BROOKMAN: Thank you. Final comments on
4 this set of questions, Slide 33?

5 (No response)

6 MR. BROOKMAN: I think we should try and do
7 one more segment here before we go to break, so let's
8 press on through Engineering Analysis. I think many of
9 you are familiar with the slides that are about to
10 follow, so I suspect Ashley can go through these
11 rapidly. And then after we do these we'll take a
12 break.

13 Let's see where we stand in about 15 minutes.

14 That would make it almost 11:15 and let's just see --
15 actually, my watch says 11:10. So let's press on and
16 see where we are a little closer to 11:30.

17 Engineering Analysis

18 Ashley Abbott

19 (PowerPoint presentation)

20 MS. ABBOTT: Okay. The Engineering Analysis
21 takes the model and improves its efficiency to derive a
22 cost efficiency relationship. The engineering
23 analysis-cost efficiency relationship is really a
24 critical input to both the life-cycle cost analysis and
25 the manufacturing impact analysis.

1 Earlier throughout the presentation there has
2 been some discussion about an efficiency level approach
3 to collecting the information and documenting the
4 analysis. Obviously, we are open to your comments on
5 this proposal at the end of this section.

6 The engineering analysis will include a four-
7 step methodology. The first step includes determining
8 the efficiency levels for which DOE will be collecting
9 data on. Since this is primarily an efficiency level
10 approach, it is important that we come up with the
11 range of efficiencies that are feasible all the way
12 from the baseline up to the maximum technology
13 efficiency levels. We want to gather data on these
14 discrete efficiency levels.

15 In addition, we will need, where possible,
16 very disaggregated data. This data will be part of the
17 engineering analysis and the manufacturing impact
18 analysis. The design-related costs feed directly into
19 the government regulatory impact model, so it is
20 critical that we have a data set that we can
21 distinguish variable costs from fixed costs.

22 Next we will conduct one-on-one interviews
23 with manufacturers who provide data. This allows us to
24 gain insights into what's going on to determine the
25 cost efficiency relationship. The interviews will be

1 held after the data has been received, and this is a
2 new feature of DOE's rulemaking process.

3 We will also begin to have discussions about
4 the manufacturing impacts. In the past, all
5 manufacturing discussions have been post-ANOPR.
6 However, it is important to DOE that we get on the
7 record immediately what are the major concerns for
8 manufacturers and identify the thresholds and
9 efficiency levels that cause the largest burdens.
10 These interviews provide an opportunity to talk not
11 only about the data but also about the manufacturing
12 impacts.

13 Finally, once we have received the data and
14 we have conducted our interviews, we will report back
15 in an industry-non-specific fashion without attribution
16 to any particular manufacturer an explanation of the
17 shape of the cost efficiency curve.

18 As previously stated, the first step is
19 establishing the baseline models and the intermediate
20 efficiency levels up to the maximum technology
21 efficiency level. I will briefly describe the
22 methodology on the next set of slides and then I will
23 immediately present the Department's initial thoughts
24 on the possible efficiency levels at which we should be
25 collecting data.

1 This is an example of a data collection
2 instrument. It is just an example of how we would like
3 to gather the data. This is modeled after previous
4 rulemakings and data gathering for other products. For
5 example, we are looking for data by efficiency level.
6 We are looking to have it disaggregated in different
7 cost categories, like I said, so we can separate the
8 variable costs from the fixed costs.

9 We would like to capture a range or an
10 uncertainty to each manufacturer within this data set.

11 We are open to how we could do this, but we would like
12 to have more than a single value for each of these cost
13 categories.

14 In the follow-up interviews discussing the
15 engineering analysis, some of the types of questions
16 that we would be asking manufacturers include what are
17 your typical components incorporated into your baseline
18 model. In other words, what is your ground zero, where
19 you start incurring costs. Is your efficiency typical
20 of the aggregated cost data. What technologies are you
21 currently using and how are you able to improve the
22 efficiency of the baseline unit. Where did a couple of
23 conversion investments come into consideration. For
24 example, at what efficiency level.

25 All these questions are examples of

1 information that the Department is interested in
2 understanding. This will help us give an appreciation
3 of how these costs may be different from one
4 manufacturer to another. These interviews will also
5 allow us to understand not just the industry average
6 but the variability in that average. It is a really
7 critical input into our manufacturing impact analysis.

8 Our final task will be to explain our
9 findings in an analytical report. When we conduct
10 interviews, we have our technology and market
11 assessment as our touchstone. We have a idea of what
12 we believe the technologies that can be used to improve
13 efficiency and what the estimated cost of these
14 technologies might be. There may be differences in our
15 understanding and what is actually occurring in the
16 industry which would be further explained in this
17 analytical report.

18 Now I'd like to pass the presentation to Doug
19 and ask him to facilitate your first thoughts on the
20 engineering analysis approach.

21 MR. BROOKMAN: You can see the two questions
22 listed there on page 41 of your packet. DOE requests
23 comment on the proposed approach for conducting the
24 engineering analysis. Let's start with that one.

25 I think many of you, perhaps most of you, are

1 familiar with this general framework. Comments on the
2 proposed approach? Frank Stanonik.

3 MR. STANONIK: Frank Stanonik with GAMA.
4 Actually, first a question and then a comment. Again,
5 I'm not sure where it fits into these specific
6 questions here, but in terms of the manufacturer
7 interviews I'm assuming that DOE intends to interview
8 manufacturers within each of the different product
9 classes that are part of this combined rulemaking. And
10 by that I mean, obviously, residential water heater
11 manufacturers, oil water heater manufacturers, direct
12 heating equipment pool heater manufacturers, that
13 you're going to interview manufacturers within all of
14 those groups.

15 I guess I just want to confirm that because,
16 again, you've got a fairly daunting task. You've got a
17 wide range of companies making some of the products
18 that are in this combined rulemaking thing here.

19 MS. ABBOTT: Okay.

20 MR. BROOKMAN: Thanks for getting close to
21 the microphone. Mohammed Khan.

22 MR. KHAN: Mohammed Khan, DOE. Good
23 question, Frank. It is the Department's intention to
24 interview as many representative manufacturers as
25 possible. Obviously we can't -- I don't think we will

1 be able to get them all, but that is our intention.

2 MR. STANONIK: Okay. And then the comment.

3 At this point, you know, I will only indicate it's just
4 kind of an uneasiness, I guess. But it is mentioned
5 both in the framework and it was mentioned on Slide 37
6 that, you know, after doing this efficiency level kind
7 of analysis that at least the plan is right now to do
8 some subsequent analysis that looks at a design option
9 approach or whatever to supplement that efficiency
10 analysis.

11 We just have some concern whether that's
12 really going to be valuable and/or useful, again
13 especially in terms of this being what I would call a
14 fairly compressed rulemaking, you know, getting it all
15 done in three years. That's something I'll let you
16 know we're going to talk to our members some more about
17 in terms of whether -- you know, what their opinions
18 might be as to whether it really would be any value to
19 the supplemental design approach.

20 I mean, you know, if you're going to do the
21 efficiency level, it's kind of like, okay, how do you
22 get to these other ones and, you know, ultimately pick
23 one and the industry will have to figure out how to get
24 there.

25 Anyway, I just want to let you know that at

1 this point we have some concern with it if that's going
2 to be of any value or use.

3 MR. BROOKMAN: Thank you. Thank you for
4 that. Other comments on this first bulleted question
5 on the proposed approach to conducting the engineering
6 analysis? Andrew DeLaski.

7 MR. DeLASKI: Just to follow up on Frank's
8 comment. In our view, the design option approach is
9 important to verify the data the Department gets from
10 manufacturers. Manufacturers really have an interest
11 in the outcome. I know that a lot of effort goes into
12 the interviews and appreciate all that, but we need to
13 have some additional process to verify that data and
14 know that it's right, or getting in the ball park of
15 what's right. So we encourage you to keep that element
16 in there.

17 MR. BROOKMAN: Thank you. David Goldstein.

18 MR. GOLDSTEIN: David Goldstein. A little
19 bit of follow-on. At different times in history
20 different manufacturers have different attitudes as to
21 whether they embrace higher efficiency or don't. We
22 need an approach that takes competition into account.

23 When I did my kitchen remodel a couple of
24 years ago, you could tell from the bids who really
25 wanted the job and who didn't. An average of the bids

1 would have given you the wrong answer. The right
2 answer is the low bid. Similarly for efficiency
3 levels, if one manufacturer can produce a product
4 cheaper than the others, that's what's going to set the
5 market price and the DOE methods have to be reflective
6 of those kinds of market forces.

7 I want to also re-echo one of Andrew's
8 points, that whatever DOE does needs to be transparent.

9 We need to be able to look at it as commenters and say
10 here is why it's supposed to cost \$50 to get to this
11 level and be able to verify it or critique it
12 independently, not just take someone's word for it out
13 of a black box.

14 MR. BROOKMAN: Thank you. So then, moving to
15 the next question.

16 MR. KUSTERER: I have a question.

17 MR. BROOKMAN: George, please do.

18 MR. KUSTERER: George Kusterer, Bock Water
19 Heaters. Remember that -- and again, I don't know how
20 you go about the bid process, but being a dumb farm boy
21 from Pennsylvania, you only get what you pay for. So
22 if you always go with the lowest bid, you're not
23 necessarily getting the quality of the product. Keep
24 that in mind.

25 MR. BROOKMAN: Okay. So then, I'm looking at

1 the second question on page 41 there. DOE requests
2 comment on the proposed maximum technologically
3 feasible energy efficiency levels identified. So,
4 comments on those. Steve Rosenstock.

5 MR. ROSENSTOCK: Steve Rosenstock, EEI.
6 Peeking ahead at the slides, you might want to -- it
7 might be just after we -- we might want to ask that
8 question after we go through the next set of slides.

9 MR. BROOKMAN: Okay. Let me get a check on
10 everybody's comfort level. It is now almost -- it's
11 11:20. Can we hang in there and keep going for a
12 while? Let's keep going, then. Okay.

13 MS. ABBOTT: Ashley Abbott. Next I will be
14 going through each of the proposed efficiency levels by
15 product class for residential water heaters, direct
16 heating equipment, and gas-fired pool heaters. This is
17 the first step in the engineering analysis.

18 These are the efficiency levels that DOE is
19 considering for gas-fired storage type residential
20 water heaters. The standards are based on a 40-gallon
21 water heater. The efficiency levels were gathered from
22 minimum current standards, the 2001 rulemaking, and the
23 efficiency levels of the available models in the 2006
24 GAMA directory.

25 These are the efficiency levels that DOE is

1 considering for electric storage-type residential water
2 heaters. The standards are based on a 50-gallon water
3 heater. The efficiency levels were gathered from the
4 current minimum standard, the 2001 rulemaking, the
5 efficiency levels of available models in the GAMA
6 directory, as well as current prototypes.

7 These are the efficiency levels DOE is
8 considering for oil-fired storage type water heaters.
9 The standards are based on a 30-gallon water heater and
10 the efficiency levels are gathered from the current
11 minimum standards, the 2001 rulemaking, and the
12 efficiency levels of available models in the 2006 GAMA
13 directory.

14 These are the efficiency levels that DOE is
15 considering for gas-fired instantaneous water heaters.
16 The efficiency levels were gathered from the current
17 minimum standards, the 2001 rulemaking, and the
18 efficiency levels of available models in the 2006 GAMA
19 directory.

20 These are the efficiency levels that DOE is
21 considering for gas-fired wall type heaters. The
22 efficiency levels were gathered from the current
23 minimum standards, the 1994 rulemaking, the efficiency
24 levels of available models in the 2006 GAMA directory,
25 and the 1997 GRI report.

1 MR. BROOKMAN: I'm wondering whether we
2 should subdivide this cluster somehow.

3 MS. ABBOTT: I have three more or four more
4 and then I was going to ask for comment on all of them.

5 MR. BROOKMAN: Okay. Go ahead.

6 MS. ABBOTT: But if --

7 MR. BROOKMAN: No, keep going.

8 MS. ABBOTT: Okay.

9 MR. BROOKMAN: We'll just take them all as a
10 sweep.

11 MS. ABBOTT: These are the efficiency levels
12 that DOE has considered for gas-fired wall gravity
13 heaters. The efficiency levels were gathered from the
14 current minimum standards, the 1994 rulemaking,
15 efficiency levels of available models in the 2006 GAMA
16 directory, as well as the GRI report.

17 These are the efficiency levels DOE is
18 considering for gas-fired floor heaters. These
19 efficiencies were once again gathered from current
20 minimum standards, the 1994 rulemaking, the efficiency
21 levels of available models from the 2006 GAMA
22 directory, and the GRI report.

23 These are the efficiency levels DOE is
24 considering for gas-fired room heaters. The efficiency
25 levels were gathered from, once again, the current

1 minimum standards, the 1994 rulemaking, the efficiency
2 levels of available models from the 2006 GAMA
3 directory, and the GRI report.

4 MR. BROOKMAN: Thank you.

5 MS. ABBOTT: Last but not least --

6 MR. BROOKMAN: Yes.

7 MS. ABBOTT: These are the efficiency levels
8 DOE is considering for gas-fired pool heaters. These
9 efficiency levels were gathered from the minimum
10 standards, the 1994 rulemaking, and efficiency levels
11 of available models in the FTC directory.

12 I'd now like to pass the presentation to Doug
13 to facilitate a discussion on the possible efficiency
14 levels for collecting data for each product class. In
15 addition, I'd also like to request specific comment on
16 the maximum technology efficiency levels for each
17 product.

18 MR. BROOKMAN: Thank you. As a matter of
19 convenience, for the record these slides are 43 through
20 51. The first four, Slides 43, 44, 45, and 46, are
21 contiguous in my copy of the slides. So let's try and
22 restrict our comment to those first. Those are gas-
23 fired storage, electric storage, oil-fired storage, and
24 gas-fired instantaneous. So let's start with those and
25 proceed from there.

1 Steve Rosenstock.

2 MR. ROSENSTOCK: Steve Rosenstock, Edison
3 Electric Institute. This is a question for -- I'm
4 sorry.

5 MR. BROOKMAN: Ashley.

6 MS. ABBOTT: Ashley.

7 MR. ROSENSTOCK: Ashley. You were going
8 through -- and on the electric water heaters you said
9 about what the numbers were based on and then at one
10 point you said Slide 44, you said something about
11 prototypes. These numbers were based on, you know, the
12 GAMA directory, the previous rulemaking, and then you
13 said something about prototypes? Could you repeat that
14 sentence again?

15 MS. ABBOTT: Sure.

16 MR. BROOKMAN: Close to the microphone.

17 MS. ABBOTT: Yeah.

18 MR. ROSENSTOCK: Just that one sentence about
19 the prototypes.

20 MS. ABBOTT: Yeah.

21 MR. ROSENSTOCK: Okay.

22 MS. ABBOTT: All I said was when we looked at
23 the efficiency levels the Department could consider we
24 just took all those things into consideration.

25 MR. ROSENSTOCK: But what was that line you

1 said --

2 MS. ABBOTT: It said the 2001 rulemaking, the
3 efficiency levels of available products, and current
4 prototypes. That's all it said. Current prototypes.

5 MR. ROSENSTOCK: Where did you get the
6 prototype information from?

7 MS. ABBOTT: Just literature, research kinds
8 of things.

9 MR. ROSENSTOCK: The reason I ask is that
10 seemed -- for the water heaters, you only looked at
11 prototypes for electric water heaters and not for --

12 MS. ABBOTT: We looked across the board.

13 MR. ROSENSTOCK: Okay. And there were no
14 other -- okay.

15 MS. ABBOTT: It's something we'll take into
16 consideration. So, is there something you know of?

17 MR. ROSENSTOCK: Well, I'm just kind of
18 curious about, you know, if you're looking at
19 impossible research or something where they're looking
20 at -- they say they're looking at -- they think they
21 can get 3.12 versus actually in the GAMA directory. I
22 think that's going to make a big, you know, difference
23 in terms of max tech, I mean.

24 MS. ABBOTT: That's why I specifically asked
25 for comment on the max tech levels.

1 MR. ROSENSTOCK: Okay. Prototypes are nice
2 but I don't know if you want to use that as -- to make
3 a max tech level for any product. Just so -- no one is
4 manufacturing it.

5 MR. BROOKMAN: So, Ashley, so what I
6 interpret here is that you gathered as much information
7 you could across all these product classes.

8 MS. ABBOTT: Yes.

9 MR. BROOKMAN: Yes. Not just restricted to
10 electric.

11 MR. ROSENSTOCK: Oh, absolutely. Just, she
12 just mentioned the prototypes earlier.

13 MR. BROOKMAN: Okay. Don Brundage.

14 MR. BRUNDAGE: A question for you on the
15 electric storage water heaters. Your max available
16 efficiency level energy vector 3.12, which is obviously
17 a heat pump water heater, is that a single integral
18 piece of equipment or is that an add-on heat pump water
19 heater?

20 MR. BROOKMAN: Alex, speak loudly, please.

21 MR. LEKOV: Oh, sure. Alex Lekov, Lawrence
22 Berkeley National Laboratory. This particular
23 technology is based on the currently reported Japanese
24 heat pump water heaters which we read a very detailed
25 paper recently about six months ago. It's more than a

1 prototype. In essence, those folks reporting that they
2 are going to produce about 10 million units by 2010 in
3 their market as well as they're interested to introduce
4 this technology in the United States.

5 So this was enough reason to be considered as
6 a potential design -- technology option which could
7 appear in our market.

8 MR. BRUNDAGE: Okay. That's useful
9 information, but it wasn't exactly what my question
10 was. There are some heat pump water heaters which --
11 and if you don't know, that's okay for an answer, too.

12 There are some heat pump water heaters that are
13 basically an add-on and it's like a separate unit.
14 There are some that it's one integral unit.

15 I have some concern about including it where
16 it's more of an add-on package due to lax building
17 codes enforcement in many jurisdictions that you could
18 set a standard for this and then the heat pump part
19 just gets left off. So that's a consideration in how
20 you define these products. Thank you.

21 MR. BROOKMAN: Steve Rosenstock, follow on.

22 MR. ROSENSTOCK: Yeah, just a quick follow-on
23 in terms of this heat pump water heater. You're saying
24 that's going to be made for the domestic market in
25 Japan, you said? And I think one thing that could be -

1 - I'd be very curious is the capacity. Is it going to
2 be 50 gallons or is it going to be something that's
3 quite different? Because that could have, obviously, a
4 huge impact in terms of a quote -- you know, what
5 you're looking at in terms of efficiency standards.

6 MR. BROOKMAN: Let me ask, Lance and Troy,
7 are you following on or are you going in a different
8 direction?

9 MR. DeLAURA: Mine is a follow-on.

10 MR. BROOKMAN: Follow on, Lance, and then
11 Troy.

12 MR. DeLAURA: The thing that the numbers
13 don't show me is the percentages. You mentioned that
14 you got the information and used the GAMA directory
15 quite a bit in several examples. The thing that's not
16 telling is whether a manufacturer is making one of
17 these units -- I'll be extreme in my comments because
18 it helps with the data. Are they making one of these
19 units and they make it for the one situation in
20 someone's area where they sell one or two of these a
21 year or are these mainstream water heaters, as an
22 example, or furnaces or whatever you might have.

23 I think that's useful to know because are we
24 looking at a technology level that somebody is mass-
25 producing this stuff or is it a customized -- almost a

1 customized niche product. The reason I'm concerned
2 about that is for my customers, what that does to the
3 cost for them. It's one thing to have something that
4 can comply with a rule, but if it costs five times the
5 amount of the money and it's nearly a one-off, that
6 doesn't work.

7 MR. BROOKMAN: Thank you. Troy.

8 MR. TRANT: A couple of comments, following
9 on with the gentleman from Southern Company on add-on
10 versus integral heat pump water heaters. You could
11 conceivably break those out into separate categories so
12 that you could assess the efficiency of that
13 technology.

14 The other item, with respect to the growth of
15 heat pump water heaters in Japan, a lot of that is
16 being bolstered by government subsidies to help move
17 the equipment. So that's -- and they've been doing
18 that for quite some time now.

19 Just as a general comment about the maximum
20 available efficiency level, I think it would be helpful
21 to reference any and all sources used to identify those
22 levels just so we collectively understand how that
23 number was established.

24 MR. BROOKMAN: I saw Harvey first and then
25 I'm coming back to you. Let me note that shortly, I

1 hope, you will start responding to the Department's
2 request for comment on efficiency levels and also the
3 max tech option specifically.

4 Harvey.

5 DR. SACHS: Harvey Sachs, ACEEE. I'm
6 specifically requesting with respect to Slide 44, so
7 it's a follow-up, that an efficiency level of about 2.0
8 -- I don't care if it's 1.9 or 2.25, but somewhere in
9 that range -- be added to the set of efficiency levels
10 being considered. That corresponds very closely to the
11 Department's determinations in the research development
12 context of where the maximum cost effectiveness is
13 likely to be available where products are used for
14 manufacture and so on.

15 MR. BROOKMAN: Thank you. Please, your name.

16 MR. ADAMS: Charlie Adams with A.O. Smith. I
17 have a comment on the gas max tech and also on the
18 electric storage max tech, gas storage max tech first.

19 For a recovery efficiency or a thermal efficiency,
20 either one, condensing to the 0.95 range, I would ask
21 DOE to go back and look at what EF that translates to.

22 I'm not sure that the correlation between an 8.6 and a
23 9.5 is exactly correct in max tech. The EF may be
24 somewhat lower than that.

25 On the max tech for the gas -- I'm sorry, the

1 electric storage, responding to the comment about the
2 3.12 being an EF for a Japanese product, I'm not --
3 obviously not sure that we're thinking about exactly
4 the same product, but from what I understand of recent
5 developments in the Japanese heat pumps, those tend to
6 be split systems, meaning the compressor bearing and
7 the evaporator section are outside. That would tend to
8 work better in Japan than it would in Milwaukee,
9 Wisconsin, where I live, because of the balance point,
10 the outdoor temperature at which a heat pump stops
11 working.

12 So I would be very cautious in suggesting --
13 or, I would suggest to DOE to be very cautious in
14 setting any -- looking at a national technology that
15 doesn't work north of Kansas City or some such
16 arbitrary spot. Thank you.

17 MR. BROOKMAN: Thank you. George.

18 MR. KUSTERER: Harvey Sachs, ACEEE -- oh,
19 that's you.

20 (Laughter)

21 MR. KUSTERER: He's been saying it so much, I
22 figured I'd try to help him out so he wouldn't have to
23 strain so much. George Kusterer, Bock Water Heaters.

24 No disrespect to any young lady, but I think
25 that maximum available efficiency level of 3.12 is a

1 little inappropriate for electric storage residential
2 water heaters. Specifically, such storage, to my
3 knowledge, unless there is a -- some type of an
4 indirect or a storage type tank hooked up to this heat
5 pump Japanese technology, I don't think it should even
6 be there.

7 MR. BROOKMAN: Would you suggest a
8 replacement number, George?

9 MR. KUSTERER: That I would yield to those
10 gentlemen who make dynamic electric storage water
11 heaters.

12 MR. BROOKMAN: Okay. Thank you. Harvey
13 Sachs.

14 DR. SACHS: Harvey Sachs, ACEEE. Doug, I
15 feel a little cheated that I don't think we had a
16 chance to comment on Slide 42.

17 MR. BROOKMAN: Well, I don't -- I'm happy to
18 return to it, Harvey. Please.

19 DR. SACHS: Slide 42 says "Determine
20 efficiency levels for collecting incremental cost
21 data."

22 MR. BROOKMAN: Yeah.

23 DR. SACHS: That, in the context of Slide 35,
24 assumes that efficiency is a continuous function with
25 cost, and in fact for a lot of things this has to be an

1 iterative loop because there are incremental steps that
2 you have to do and will buy you several points and then
3 you have a flat line. So, where on that curve you
4 choose to make your analytical point makes a difference
5 in the answer.

6 Now, I can discuss this offline, but I want
7 to make the point that efficiency options are not
8 necessarily continuously distributed as a function of
9 cost.

10 MR. BROOKMAN: Okay. So then I do seek
11 additional comment on the first four slides, 43, 44,
12 45, and 46, gas-fired storage, electric storage, oil-
13 fired storage, and gas-fired instantaneous, on those
14 levels and particularly max tech.

15 David Goldstein and then to Andrew DeLaski.

16 MR. GOLDSTEIN: David Goldstein. In some
17 sense, I think the previous several comments just
18 reinforce the general comment I made at the beginning
19 that DOE needs to look at more choices of efficiency
20 level near the max tech level.

21 First of all, maximum technologically
22 feasible is not the same thing as maximum available.
23 It could well be higher and DOE has to look for what
24 the law calls for. I don't -- in this case, I don't
25 see any big differences, but I haven't looked in detail

1 at the data.

2 But the point is you can well see from the
3 controversy that many of these suggestions are already
4 generating that you might have an 86 energy factor for
5 gas and a 3.12 for electric that might get rejected in
6 the analysis due to reasons of manufacturer impact or
7 cost or serviceability, and then if you drop back to a
8 68 gas and a 95 electric, you would totally miss the
9 possibility that there might be a more modest level of
10 advanced technologies. Harvey mentioned two for
11 electric heat pumps. The tax incentives that Congress
12 passed selected an 80 EF for water heaters, but maybe
13 something lower than that but still condensing would be
14 worthwhile.

15 So in order to avoid an iterative process at
16 the last minute where you discover you're rejecting
17 some level because it's not economically justified and
18 then the next choice is much lower and maybe you're
19 missing something in between, it would make sense to
20 try to identify those in-between technologies early on
21 and get some thorough data on them so that we know that
22 all of the options for advance technologies have been
23 studied for considering or possibly considering lower
24 levels.

25 MR. BROOKMAN: Additional comments on

1 efficiency levels and especially max tech for 43, 44,
2 45, and 46?

3 (No response)

4 MR. BROOKMAN: Okay. Then let's move on,
5 then, to the next cluster, which commences with 47 and
6 goes through 48, 49, and 50 in your slide packet, gas-
7 fired wall -- yes? Okay, okay. Let's then break for
8 lunch.

9 Okay. We've made really good progress here.
10 We do have a lot to do yet. It's now, by my watch,
11 11:40. Let's -- can we resume at 12:45? That gives
12 you a full hour.

13 (Whereupon, at 11:40 a.m., the proceedings
14 were recessed for lunch, to reconvene at 12:45 p.m.,
15 the same day.)

16

1 A F T E R N O O N S E S S I O N

2 12:52 p.m.

3 Market and Technology Assessment, Screening
4 Analysis, and Engineering Analysis (Continued)

5 MR. BROOKMAN: Okay. Thank you for being
6 back. We're going to resume. This is the U.S.
7 Department of Energy's Public Meeting on Energy
8 Conservation Standards for Water Heaters, Direct
9 Heating Equipment, and Pool Heaters. It is now a
10 little after 12:45 as we said.

11 I'm pretty sure that where we left off before
12 the luncheon break was on Slides 47, 48, 49, and 50.
13 However, if people want to make any additional comments
14 on 43, 44, 45, and 46, that would be welcome to double
15 back there. But I'd like to keep us looking forward if
16 we can. So the Department is requesting your comment
17 on efficiency levels and particularly max tech for gas-
18 fired wall fan residential, gas-fired wall gravity,
19 gas-fired floor, and gas-fired room residential at this
20 time.

21 (No response)

22 MR. BROOKMAN: No additional comments on what
23 is written here? Yes, please.

24 MR. CAGNOLI: This is Allan Cagnoli with
25 HPBA. We have no comments right now but we will be

1 submitting comments further on. I just wanted -- for
2 the record right now.

3 MR. BROOKMAN: Thanks very much for saying
4 that. The Department will look forward to receiving
5 those.

6 Okay. So then, I think we'll just proceed.
7 I guess the final product that is in this suite of
8 products is residential pool heaters, Slide 51. Once
9 again, the Department requests your comment on
10 efficiency levels and max tech feasible efficiency
11 levels.

12 Steve Rosenstock.

13 MR. ROSENSTOCK: Steve Rosenstock, EEI.
14 Again, if you're going to start looking at I'll say the
15 electric pool heaters/spa heaters, it seems that's more
16 where they're higher quantity. Again, as far as I
17 know, there is no mandated federal minimum efficiency
18 standard for those products. Please correct me if I'm
19 wrong.

20 But again, if -- you know, a baseline would
21 be just, you know, again, available from the
22 manufacturers just to get the -- you know, I'll say
23 maybe a shipment weighted average or just trying to get
24 the market data from the manufacturers. Obviously
25 nothing proprietary, but -- and then just kind of

1 what's out there and what's basic -- I'll say the
2 market baseline rather than a federal standard for
3 those products as the baseline.

4 In terms of max tech, again, I'm not sure but
5 again multiple levels, as was suggested. If possible,
6 look at at least, you know, three or four levels of
7 efficiency. That would probably be best in terms of
8 the analysis. Thank you.

9 MR. BROOKMAN: Thank you, thank you. Any
10 other comments with respect to residential pool
11 heaters? Frank Stanonik.

12 MR. STANONIK: Frank Stanonik with GAMA.

13 MR. BROOKMAN: I'm not sure that's on. Are
14 you getting him? It's not on. Try the switch on the
15 back. Start talking, Frank.

16 MR. STANONIK: Okay. Frank Stanonik with
17 GAMA. On this particular table --

18 MR. BROOKMAN: Wait a second. Are you
19 getting this? He's getting it. Okay. Thank you.

20 MR. STANONIK: Efficiency Level 4, we would
21 recommend that you drop it. I'm reading that being not
22 intended to be a condensing pool heater, and if that's
23 correct, then again I'll repeat that we suggest you
24 could drop Efficiency Level 4 because that level of
25 thermal efficiency we think there are significant

1 issues relative to undesirable condensation either --
2 perhaps even in the appliance or in the venting system.

3 We just think it would be not worthwhile to
4 look at that particular level if you intend that to be
5 a non-condensing pool heater because we're concerned
6 that, whatever your intent may be, it will end up,
7 unfortunately, in the field presenting some problem
8 regarding condensation.

9 MR. BROOKMAN: Thank you. Other comments?
10 Yes, please. Robert.

11 MR. GLASS: Robert Glass.

12 MR. BROOKMAN: I'm wondering if the whole
13 system has been turned down or something. I'm not
14 hearing anything up here. Okay. Talk loud, please.

15 MR. GLASS: Robert Glass, Raypak. In order
16 to also support and agree with what Frank had just
17 mentioned, I understand that these levels have been
18 taken based on manufacturers' models that are currently
19 available or shown in the FTC directory. The thing
20 that DOE needs to be aware of is that models may be
21 shown in there but you may not understand and recognize
22 the direct applications. The application of an
23 individual unit may not mean that it is applicable in
24 all different installations. As a result of that, that
25 86 percent unit -- there, that's better.

1 While there may be models that are indeed
2 shown in there, DOE does need to be aware that at an 86
3 percent thermal efficiency condensation in the vent is
4 a very real and critical problem that DOE needs to be
5 aware of.

6 With that said and done, the Level 3 at 84
7 percent is even very suspect as well. We are aware of
8 many installations, because we get involved in them
9 periodically, of a product that at 84 percent has
10 created and has had issues with condensation in the
11 vent.

12 So I support the restriction of saying that
13 the Level 4 -- that I would recommend that that be just
14 eliminated and I even -- I'll go on record of saying I
15 question the 84 percent level as well because of the
16 same concerns that you have. You have manufacturers
17 that may have products specifically intended for an
18 application where that may be acceptable. There may be
19 vent provided or there may be other things specifically
20 allocated for it.

21 But to make an assertion that that would be
22 usable as a general across-the-board efficiency is --
23 can be very dangerous for DOE to make that assumption.

24 MR. BROOKMAN: Thank you. Other comments
25 with respect to pool heaters?

1 (No response)

2 MR. BROOKMAN: Then let's move on to Slide
3 52. Ed Barbour. Mohammed Khan, please.

4 MR. KHAN: Mohammed Khan, DOE. Just before
5 we go to the next section, I just want to make a point
6 just for clarity. Earlier Ashley Abbott of Navigant
7 had mentioned that for the GAMA listed products that
8 these efficiency levels that are appearing in the
9 tables were based on the GAMA directory, and it was
10 actually the March '06 directory. What she really
11 means is that we looked at those and determined based
12 on frequency or number of occurrences in terms of the
13 models which ones were more prevalent to establish
14 these tables.

15 MR. BROOKMAN: Okay. Thank you. Ed Barbour.

16 Engineering Analysis (Continued)

17 Ed Barbour

18 (PowerPoint presentation)

19 MR. BARBOUR: I am Ed Barbour. I'm with
20 Navigant Consulting. I'm going to actually present the
21 final two slides of the engineering analysis and also
22 talk a little bit about the overall manufacturer impact
23 analysis, which I will be back up here a little bit
24 later and talk about.

25 The key aspect of the engineering analysis

1 that we're trying to accomplish is to develop that cost
2 efficiency relationship. So in order to do that, we
3 have to be able to have markups or an actual
4 manufacturer selling price. I'm going to talk a little
5 bit about how we come up with that and actually how the
6 data that Ashley talked about once gathered is used.

7 Ashley also mentioned that this is different
8 from the past rulemaking for some of the water heater
9 manufacturers that are here in that we are engaging the
10 manufacturers in the pre-ANOPR stage to start to talk
11 to them, interview them, and try to understand their
12 issues outside of just the data collection.

13 But essentially what we are collecting are
14 manufacturer production costs, which is a lot of the
15 information that Ashley talked about where we collect
16 very discrete data based on EPCA, those efficiency
17 levels, and we try to get it disaggregated as much as
18 possible.

19 First, because it is a direct input into the
20 GRIM, which again I will talk about a little bit later,
21 the Government Regulatory Impact Model, which is used
22 in the manufacturer impact analysis.

23 And second, it is very important that DOE
24 understand sort of what goes into those efficiency
25 levels, the costs associated with that not only from a

1 direct material and direct labor and factory overhead
2 but also the amount of tooling, capital improvements,
3 the R & D which is captured on the depreciation side of
4 things, at those efficiency levels.

5 The next thing that we try to do is come up
6 with sort of the markups. This captures sort of the
7 baseline costs for a typical manufacturer. It is where
8 we look at SGA, sales, general administrative costs.
9 Research and development beyond meeting that efficiency
10 level, just your typical research and development
11 costs. We look at your interest and then we look at
12 profit typically before financing.

13 What I'm going to present on the next slide
14 is some information that we have already pulled out of
15 publicly available data, such as 10-K reports, company
16 annual reports, and Dunn and Bradstreet.

17 We can go to the next slide.

18 What I want to show is sort of how the data -
19 - basically, a straw person of what the data typically
20 looks like. This would be sort of our baseline. So we
21 have been able to take the publicly available
22 information. This is data that we would love comments
23 back on from manufacturers in terms of understanding
24 their own personal situation and how we handle it.

25 But, you know, this gives you an idea of what

1 we think a baseline typical manufacturer would look
2 like for residential water heaters, direct heating
3 equipment, and pool heaters. Actually, that's about
4 all I want to say at this point before we get to
5 manufacturer impact. Are there any questions on the
6 two slides I just presented?

7 (No response)

8 MR. BROOKMAN: So no additional questions or
9 comments on these slides, on 52 and 53?

10 (No response)

11 MR. BROOKMAN: Okay. So, who is going to --
12 Alex, you're next? Okay.

13 Energy Use

14 Alex Lekov

15 (PowerPoint presentation)

16 MR. LEKOV: Good afternoon. I'm Alex Lekov
17 from Lawrence Berkeley National Laboratory, and I will
18 be talking about the next item on the agenda, which is
19 energy use calculations. Basically, the annual energy
20 use is needed to calculate the annual operating costs.

21 First, let's talk about the methodology the
22 Department proposes to use to calculate the annual
23 energy use. For storage water heaters, we will stay
24 with the methodology, or we're proposing to stay with
25 the methodology used in the 2000 water heater

1 rulemaking. It relies on data from EIA's residential
2 energy consumption survey.

3 For the other three products, the Department
4 plans to rely on the assumptions from the applicable
5 DOE and ASHRAE test procedures.

6 Within the annual energy use, the Department
7 also plans to investigate the annual use of this
8 parameter, the variability of this parameter. In the
9 case of storage water heaters, the Department plans to
10 analyze the energy consumption of each household using
11 a simulation approach that relies on the Monte Carlo
12 sampling technique. The main advantage of this is that
13 this will enable the Department to determine the
14 percent of consumer benefiting and being burdened by a
15 potential standard.

16 For direct heating equipment and pool
17 heaters, the Department plans to use direct data
18 samples to decide only the high and low estimates of
19 energy use.

20 To accomplish these calculations, the
21 Department will need some data. In the case of
22 instantaneous water heaters, the Department looks for
23 pilot input rate information as well as information
24 about the electricity use and specifically electricity
25 use when the burner is not operating.

1 In the case of direct heating equipment, the
2 Department requests information about the pilot input
3 rate as well as steady-state efficiency data at each
4 considered efficiency level.

5 In the case of pool heaters, the Department
6 requests, again, pilot input rate information as well
7 as electricity use information and specifically
8 electricity use when the burner is not operating.

9 At that point I will pass the presentation to
10 Doug to facilitate the discussion on the energy use
11 approach.

12 MR. BROOKMAN: Thank you. So you can see in
13 your packet on Slide 57 the Department requests your
14 comment on approaches proposed for specified typical
15 annual energy consumption and DOE is interested in
16 sources of data that can assist in characterizing the
17 annual energy consumption of water heaters, direct
18 heating equipment, and pool heaters. Let's start with
19 that one first.

20 Yes, please. Robert.

21 MR. GLASS: Robert Glass, Raypak. It is more
22 of a qualifying question. When you are listing pilot
23 input rate, is that making the understanding that it is
24 a standing pilot input rate?

25 MR. LEKOV: Yes, this is the Department's

1 understanding at this time.

2 MR. GLASS: Okay. I just wanted to clarify
3 that because actually the vast majority of the pool
4 heaters use intermittent pilots. They do not use
5 standard pilots.

6 MR. BROOKMAN: Steve Rosenstock.

7 MR. ROSENSTOCK: Steve Rosenstock, Edison
8 Electric Institute. You're looking at annual energy
9 use. I guess, just from the previous discussion, you
10 might want to break out, just because of annual hours
11 of operation, spas versus pools. It sounds like there
12 is quite a considerable difference in terms of annual
13 hours of use. So to kind of lump that together for
14 annual energy usage might not be the best. I know you
15 are talking more about the deck pools, but in terms of
16 just the annual energy usage, to try to get from
17 manufacturers or end use studies maybe hours of use
18 because it sounds like it might be significantly
19 different. Thank you.

20 MR. BROOKMAN: Thank you. Harvey Sachs.

21 DR. SACHS: Harvey Sachs, ACEEE. I would
22 particularly like to thank Frank Stanonik for several
23 times reminding us about technology options that
24 wouldn't matter because they don't show up on the
25 tests.

1 Complementing that, this particular set of
2 questions and issues is remarkable because across all
3 of these technologies the annual energy use is totally
4 unconstrained by any fuel measures. These are -- RECS
5 data, to the best of my knowledge, are not based on
6 direct measurements of hot water use or hot water
7 produced. Please correct me if I'm wrong.

8 Certainly the test methods are not based on
9 use data. We have seen allusion this morning to
10 discrepancies introduced by assuming that the six mega-
11 draw approach is equally valid for tankless and tank
12 type water heaters.

13 So we would like to go on the record as just
14 noting that, as we understand it, the Department's
15 approach is not constrained by field realities.

16 MR. BROOKMAN: Harvey, I'm not sure that I
17 got the implication of that.

18 DR. SACHS: One of my colleagues is actually
19 doing field use studies in California now with
20 instrumentation of the energy input and the hot water
21 generated and drawn.

22 We don't have these real world data for
23 different types of housing, for different types of
24 climate, for different types of water heater
25 technology. We are assuming that the 20-year-old

1 standard for storage water heaters is applicable when
2 we certainly have every indication that it gives quite
3 different results compared to the small number of field
4 measurements that have been made for tankless versus
5 tank type units.

6 So we are -- the intent of this comment is to
7 point out that, just as Frank has pointed out that some
8 technology options don't show up, some of our
9 assumptions about hot water use are uncalibrated by
10 substantial field measurements.

11 MR. BROOKMAN: Okay. Thank you. Don
12 Brundage.

13 MR. BRUNDAGE: Don Brundage. I would agree
14 with Harvey's comments, particularly with products such
15 as pool heaters, which are very arbitrary on the amount
16 that a homeowner would choose to heat a pool based on
17 personal lifestyle. I think it would be very helpful
18 to have information other than RECS that is based on
19 actual measured data for determining usage amounts.
20 Thank you.

21 MR. BROOKMAN: Thank you. Robert.

22 MR. GLASS: Robert Glass, Raypak. The
23 comment that I have doesn't fit exactly here, but it is
24 talking about energy use so I want to take the
25 opportunity to put it here.

1 One of the concerns that I have in looking at
2 I think the framework document and information was that
3 it had made reference to the fact that annual energy
4 savings in the neighborhood of 0.3 to 0.5 quads for
5 pool heaters with efficiency changes and opportunities
6 there. The question that I posed to Alex earlier, and
7 he is going to provide me a link to some of the
8 information on maybe where those numbers were
9 determined.

10 But when you are looking at the hours of
11 operation and you're looking at the fact that a
12 residential pool heater is indeed only up to 400,000
13 Btus and not up to a million that was identified first
14 here, and the fact that the size of the market that
15 those calculations are based on may be overstated, the
16 question is, is that the actual potential savings may
17 be substantially less than what was there and that
18 those values are well overstated.

19 As a result, the question whether or not
20 going through a rulemaking process is even worthwhile
21 from a standpoint of the potential energy savings to
22 the United States as well as the time that the
23 Department of Energy will be using to try to go through
24 this analysis.

25 So I would really like to request DOE to look

1 into that calculation more and with information that
2 the industry I think will be glad to try to provide to
3 DOE to see whether or not there is even a justification
4 to proceed with a rulemaking on pool heaters.

5 MR. BROOKMAN: Okay. Thank you.

6 MR. LEKOV: A brief response to Robert.
7 Essentially, the data which -- or, the information
8 which is in the framework document comes from the
9 Department's 2005 Priority Study, and this information
10 is on the Department's website.

11 MR. BROOKMAN: Jeff.

12 MR. HARRIS: Jeff Harris, Alliance to Save
13 Energy. I have a question about the issue of annual
14 energy use. I don't see any reference here or, as I
15 recall, in the framework document that talks about load
16 profile or the time of use for electric water heating
17 in particular.

18 It seems to me that that omission, the
19 failure to have that kind of information, not only
20 might hamper the conventional analysis that we are
21 going to do of cost effectiveness of different
22 strategies again for electric water heating based on
23 time of use differentials, but it also leaves outside
24 of any consideration here options for making water
25 heaters more effective devices for shifting load off

1 peak or for demand response, options that conceivably
2 could be incorporated into a new round of standards and
3 could change the cost effectiveness of some of the
4 conventional measures that also affect energy
5 efficiency: added insulation, differences in storage
6 capacity, and so forth.

7 So I realize that as a result of DOE's
8 reorganization questions of utility system reliability
9 and utility system cost effectiveness, that even if
10 they are represented directly in rates to consumers,
11 nevertheless are social costs that have to be borne and
12 don't seem to have a place here. My question is
13 whether it is possible to at least do some of the data
14 gathering that lets these issues be considered at some
15 point in the proceeding.

16 MR. BROOKMAN: Andrew.

17 MR. DeLASKI: Go ahead, Ron.

18 MR. BROOKMAN: Ron Lewis.

19 MR. LEWIS: There were many questions --
20 there were many comments and inputs given today that --
21 of things that we don't have, things that would be nice
22 to do. One of the things that most of you are aware of
23 is we have an obligation to Congress and we have a core
24 overseeing schedule to get a lot of things done. So in
25 the absence of us having information -- specific

1 information, anybody that knows of information that's
2 out there, either if you have it or you know the
3 whereabouts, that is an answer to some of these things
4 or is a starting point to accelerate or catapult us
5 forward in looking at it.

6 It is a difficult task to get everything
7 accomplished if you don't have things identified as far
8 as specific studies or data or something that exists
9 right now. If we have to start everything from scratch
10 and develop it and get it all done in the time that
11 we've got to get it done, it's very, very difficult.
12 So if anybody could help us with that, if there's
13 something that you hear, that you know of a source or
14 there's a study or something that you've got in mind
15 when you bring up a topic, it would be very helpful if
16 you could make sure and link us up with that.

17 MR. BROOKMAN: And in fact, that -- Ron's
18 comment also is the second request that the Department
19 puts there on Slide 57, specifically requesting comment
20 on data sources that it can use to characterize the
21 variability of annual energy consumption for each
22 product. So let's include that in this comment period
23 right here.

24 Andrew, did you have a comment?

25 MR. DeLASKI: Just a real short comment.

1 Andrew DeLaski. I just wanted to note for the record
2 that there is nothing discretionary about these
3 rulemakings. DOE has to do these rulemakings, has to
4 follow through and set a standard in terms of what they
5 have -- the rulemaking is not discretionary.

6 MR. LEWIS: This is not a determination.
7 It's a rulemaking.

8 MR. BROOKMAN: Thank you, Andrew and then Ron
9 following on. Frank.

10 MR. STANONIK: Frank Stanonik with GAMA. A
11 couple of points on this annual energy use. First of
12 all, in the years preceding the previous rulemaking,
13 there were some studies done and at least at that time
14 the studies on residential hot water use, the
15 information that came out of those studies was, in a
16 general term, that the actual average hot water use in
17 a household in the United States was about 50 gallons.

18 I can certainly give you the citation of those
19 studies. This was actually, if I remember them right,
20 was looking at both gas and electric water heaters.

21 The significance of that is, first of all, I
22 think it was Harvey who expressed some concern about
23 using the RECS data. I guess I would have similar
24 concerns in that there are studies that have shown that
25 this 50 gallons per household appears to be -- has some

1 documentation to support it as an average. I think
2 certainly you can look at the RECS data to perhaps look
3 at what might be the range of uses in the U.S., but by
4 the same token I think you should -- DOE should give
5 significant weight to that 50 gallon average daily hot
6 water use.

7 Related to that, I am concerned about this
8 switch when we get to gas-fired instantaneous that all
9 of a sudden DOE is going to rely on the test procedure
10 to make some estimate of the annual energy use. Again,
11 as Harvey mentioned, there may be some studies going on
12 right now to try and directly measure hot water use in
13 households that have gas-fired instantaneous water
14 heaters. Those are ongoing.

15 Having said that, right now there isn't
16 anything in the public domain that indicates that
17 because somebody does have a gas-fired instantaneous
18 water heater that they necessarily use more hot water.

19 So until -- if and when that information ever comes
20 forth to indicate that that's really a phenomenon, then
21 there is no reason not to assume that that household
22 that is using a gas-fired instantaneous is a typical
23 U.S. household, again that their typical usage is still
24 50 gallons of hot water a day. That would be the
25 proper assumption barring some detailed field data that

1 shows otherwise.

2 And by the way, just one little side comment.

3 If it turns out that we do see the data that shows all
4 of a sudden people with instantaneous water heaters are
5 using more hot water for whatever reason has driven
6 that pattern, okay, then that actually becomes a
7 significant -- I'm trying to remember the term that
8 showed up in the framework -- rebound issue, okay.

9 I'm not saying that that's there, but if some
10 of these studies show that, then you're going to really
11 have to factor that in, if somehow people with
12 instantaneous water heaters start using a whole lot
13 more hot water because they think they can, I guess. I
14 don't know. That's -- you know, that's something that
15 will have to be factored in.

16 As far as the pool heaters, again I will -- I
17 apologize for not even having that one ready. But I'm
18 very familiar that there was a study done a few years
19 ago now, and I'm trying to remember who actually
20 sponsored the study. But we've had a lot of
21 discussions with our friends at the South Coast Air
22 Quality Management District about pool heater energy
23 use, and that study showed on an average national basis
24 pool heaters are fired for 104 hours a year.
25 Residential pool heater, 104 hours a year.

1 MR. BROOKMAN: Nationally?

2 MR. STANONIK: Nationally. So again, I will
3 get you that citation because, again, rather than
4 necessarily go to the test procedures, I think there is
5 some information that shows that these products are not
6 fired a lot. Like I said, they're not not used a lot,
7 they're just not fired a lot.

8 And then lastly, as far as direct heating
9 equipment, I'm a little concerned about just relying on
10 the test procedure again because direct heating
11 equipment has certainly got a unique characteristic in
12 that many -- well, most cases, it's really supplemental
13 heating. So its use is very discretionary in terms of,
14 you know, the homeowner has to do something to
15 literally turn it on so it's operating or whatever.

16 At the moment, I'm really not aware of any
17 studies that show what might be an actual typical usage
18 for any type of -- any of these types of room heaters.

19 We'll certainly comb our very limited library to see
20 if we can't find some other information. But again,
21 I'm a little leery about just relying on the test
22 procedure.

23 MR. BROOKMAN: Thank you. Steve Rosenstock.

24 MR. ROSENSTOCK: Steve Rosenstock, EEI. Just
25 a couple of follow-up comments. Mr. Harris, I

1 appreciated that thing about the off peak and the
2 controls. That sort of thing would make -- you know, a
3 lot of utilities would like that and have had water
4 heater load control programs in the past. Some of them
5 still do. That is a control feature and a lot of those
6 devices work in terms of shifting the energy usage.
7 They don't necessarily reduce it. So again, it
8 wouldn't show up in the EF numbers anywhere.

9 So it would be -- and there might be assists
10 on the gas side too during the peak winter times. They
11 might want to shift to gas usage to a less peak time.

12 But again, those type of things are controls
13 that are very helpful but don't change the energy usage
14 -- annual energy usage. They change when you use it,
15 not how much is used.

16 Also, in terms of other -- you know, there
17 are other controls. My water heater I got two years
18 ago has a nice tall control on it. I just turn a dial
19 and I can set it to energy smart versus vacation
20 setting, where it automatically -- you know, I go on a
21 business trip, knock it down to vacation, it keeps the
22 water at 50 degrees Fahrenheit. I don't have to touch
23 the circuit breaker at all or anything.

24 As those get more commonplace with the lower
25 in cost solid state controls, that could have an impact

1 on the annual energy usage of water heaters. It
2 especially becomes more common for all types, whether
3 electric or gas or oil-fired.

4 Another thing, again just since we're talking
5 about annual energy usage, is that two of the big users
6 of hot water in the home are clothes washers and
7 dishwashers. As of this month, January 2007, we're now
8 at Tier 2 of the clothes washer energy efficiency
9 standard. 1.26 modified energy factor, as I recall.

10 As of last year -- actually, as of this
11 month, there is a new Energy Star standard for
12 dishwashers, 40 percent more efficient than the
13 standard model. And I know that DOE started a
14 rulemaking on dishwashers. I'm not sure exactly what
15 that time frame is.

16 But if those two uses, I would say, are at
17 least -- as I recall from the DOE documents, are about
18 30 to 40 percent of the homeowner's hot water is for
19 clothes washers and dishwashers. So that's 40 percent
20 of the usage that is probably, over the next few years,
21 that gallons per day is going to go down because of the
22 higher efficiency standards for those products. That
23 is obviously going to have an impact on the annual hot
24 water usage. Thank you.

25 MR. BROOKMAN: Thank you. Other comments on

1 these questions, particularly I'm sure the Department
2 would appreciate other data sources that people can
3 volunteer. Yes, Harvey.

4 DR. SACHS: Just one point of clarification
5 because I may not have done a good job, leading to
6 Frank's comments. My comments on energy use of
7 instantaneous gas versus storage gas was only that the
8 draw pattern imposed by the test may lead to an
9 overestimate of operational efficiency of instantaneous
10 relative to tank type, and I certainly did not mean to
11 imply anything about rebound or actual use but only
12 about the differential effect of the test.

13 MR. BROOKMAN: Thank you. Alex.

14 MR. LEKOV: Just because I would like to
15 connect to Frank's remark, regarding the Department's
16 proposal to use or mostly to rely on the assumptions of
17 the test procedure for the direct heating equipment,
18 pool heaters, and instantaneous, this is definitely not
19 the only option we're considering. We know that this
20 option is available to us. Everything which could be
21 provided by the stakeholders in terms of information
22 will be certainly considered in the rulemaking.

23 In particular, I would like also to mention
24 about -- you referring to 50 gallons. The actual
25 number is 47 gallons compared to the 64 gallons in the

1 test procedure. During the previous rulemaking, the
2 Department fully considered this number and essentially
3 looked at the variability around it. It will be --
4 certainly the same number will be looked at this time.

5 Regarding the pool heater study, we have
6 access to the SoCal study which is from 1993 and very
7 well explains the survey base for this 104 hours.
8 There is also a number -- a separate number for the
9 pool heaters associated with spa locations. The
10 Department will certainly use this number compared to
11 the test procedure.

12 So again, any source which could help us to
13 go beyond the assumptions -- will be appreciated and
14 will be very useful.

15 MR. BROOKMAN: Thank you.

16 MR. DeLASKI: I think Alex just answered my
17 question, but Andrew DeLaski of the Appliance Standards
18 Awareness Project. But Frank, you mentioned 104 a year
19 for pool heaters. Earlier you read a definition out of
20 the framework document that included spas and hot tubs,
21 but that 104 figure doesn't cover spas and hot tubs; is
22 that right?

23 MR. STANONIK: Frank Stanonik. I'm pretty
24 sure that that 104 was specifically looking at a pool
25 heater.

1 MR. DeLASKI: Swimming pool heater.

2 MR. STANONIK: Swimming pool, yes. Right.

3 MR. DeLASKI: Defined by what you're defining
4 it as, a swimming pool.

5 MR. STANONIK: Right, yes.

6 MR. DeLASKI: Got it. Thank you.

7 MR. BROOKMAN: Okay.

8 MR. LEKOV: The same study essentially, which
9 Frank refers to points to the spa pool heaters,
10 which is essentially about 230-plus hours per year.

11 MR. BROOKMAN: That last comment was from
12 Alex Lekov.

13 So, additional comments on these two
14 questions that are on Slide 57?

15 (No response)

16 MR. BROOKMAN: Okay. So then let's proceed.

17 Markup for Equipment Price Determination

18 Alex Lekov

19 (PowerPoint presentation)

20 MR. LEKOV: So the next item on the agenda is
21 Markups for Equipment Price Determination. So the
22 Department uses manufacturer to consumer markups to
23 convert the manufacturer's selling price estimate to
24 consumer equipment prices. Note that the consumer
25 equipment prices should include all applicable fees,

1 such as delivery, permit, removal. We know they are
2 applicable in the case of water heaters but does not
3 include the installation cost.

4 Before developing other markups, the
5 Department needs to characterize the distribution
6 channels for each product. On the next slide I will be
7 discussing the details of the development of the
8 distribution channels.

9 Once the proper distribution channels are
10 established, the Department will develop separate
11 markups for each party involved in the distribution
12 channel, such as contractors, wholesalers, builders, et
13 cetera.

14 The main source for data on which the
15 Department will rely is the economic data from the U.S.
16 Census Bureau, as well as any input from the
17 stakeholders.

18 To validate the calculated markups, the
19 Department plans to collect data from publicly
20 available sources, mostly sellers' websites.

21 The Department also intends to investigate
22 the variability of consumer equipment prices. This is
23 feasible since a set of price estimates will be
24 available, so it will be possible to describe the new
25 consumer equipment prices within a certain range of

1 uncertainty.

2 This slide shows the current understanding of
3 the distribution channels for the considered products.

4 For water heaters, the Department will utilize the
5 same channels which were applied during the 2001
6 rulemaking, which are essentially there are two paths
7 for distributing the products. One goes through large
8 retails and the other through plumbing wholesalers.

9 For the other two products, direct heating
10 equipment and pool heaters, at this time the Department
11 intends to utilize the distribution channels developed
12 for residential during the residential furnaces and
13 boilers rulemaking, which as shown here includes
14 wholesalers, contractors, or builders. And builders in
15 the case of new constructions.

16 At this time I will pass the presentation for
17 Doug for markups discussion.

18 MR. BROOKMAN: Thank you. You can see on
19 Slide 61 the Department requests your comments
20 concerning its intended approach to develop estimates
21 of consumer equipment prices and also requests comments
22 about the distribution channels for water heaters,
23 direct heating equipment, and pool heaters. Those are
24 illustrated on Slides 59 and 60.

25 So, comments on those two. Steve Rosenstock.

1 MR. ROSENSTOCK: Steve Rosenstock, EEI. Just
2 looking at this slide on page 60, and I think you said
3 this, for the distribution channel for water heaters
4 for new construction, shouldn't builders be on there
5 somewhere? Don't builders put in water heaters in new
6 homes?

7 MR. LEKOV: Yes.

8 MR. ROSENSTOCK: Okay. Again, just on the
9 slide it's not showing builders anywhere in that chain.

10 MR. LEKOV: It shows --

11 MR. ROSENSTOCK: It just shows contractors
12 for water heaters.

13 MR. LEKOV: Contractors/builders.

14 MR. ROSENSTOCK: That's for direct heating
15 equipment and pool heaters. I'm just -- for water
16 heaters.

17 MR. LEKOV: No.

18 MR. ROSENSTOCK: I don't see any builders for
19 water heaters. Just, again, just a graphic.

20 MR. LEKOV: This, as explained in the
21 framework document, was not the case during the 2001
22 rulemaking. This is the exact chain as confirmed by
23 the stakeholders at this time. So no such component
24 was considered.

25 MR. ROSENSTOCK: I guess I would -- Steve

1 Rosenstock, EEI. I guess I would suggest adding that
2 to the distribution channel for water heaters because,
3 you know, obviously for new homes, if builders are
4 putting them in, it's not going to a separate
5 contractor.

6 MR. BROOKMAN: Thank you, Steve. Thank you.

7 Yes, Frank Stanonik.

8 MR. STANONIK: Frank Stanonik with GAMA.
9 Specific to the distribution channels for water heaters
10 and particularly when you look at the large retail, the
11 idea that -- I mean, the implication here that I'm
12 contesting, I guess, is that the large retailer sells
13 to the contractor sells to the consumer. You know, the
14 Home Depots and the Lowe's of the United States, you
15 know, they're very interested in selling, in essence,
16 directly to the consumer and then offering an
17 installation service. And I don't -- you know, I don't
18 -- the way you've characterized that, you're not
19 capturing that.

20 I think that is a big difference, that, you
21 know -- maybe you need to talk to the retailers, but if
22 they view their ultimate customer as, you know, Harry
23 and Harriet Homeowner, not Joe the Plumber, okay, that
24 may be some difference in how they go to the market,
25 okay.

1 And again, they're doing something in terms
2 of some things that have changed since the last
3 rulemaking perhaps. I think certainly there is more
4 emphasis that even if the homeowner buys that water
5 heater from the retailer that they should still have it
6 professionally installed or installed by a professional
7 as opposed to just doing it themselves. There is less
8 emphasis on that.

9 But I think in terms of that distribution
10 channel, it's -- you know, you've either only captured
11 some part of it or you may in fact have
12 mischaracterized it.

13 MR. LEKOV: Frank, basically there is no
14 difference between the Department's understanding of
15 this process compared to what you just said. The
16 Department -- at this point the Department clearly
17 understands that the retail price suggested by those
18 folks who are selling out of large retailers, this is
19 what the consumer price will be. Certainly, our
20 development of the approach will account for it.

21 So just again to confirm, there is no
22 difference between your understanding and the current
23 understanding of the Department of this process.

24 MR. BROOKMAN: Frank, follow on.

25 MR. STANONIK: Frank Stanonik with GAMA.

1 That being the case, I'm going to be perhaps a little
2 more critical than I need to be. With that being the
3 case, then why would you show me two distribution
4 channels that, once I get past the point at which it's
5 sold, looks to be the same? They're not the same.

6 Your understanding may be correct, but then I
7 guess my point is your presentation to the public
8 should reflect that understanding.

9 MR. LEKOV: It's a general approach, as
10 explained here. There is still contractor -- as you
11 also mentioned, there is still a contractor involved in
12 the process. Essentially --

13 MR. BROOKMAN: Ron Lewis here.

14 MR. LEWIS: The kickoff, the starting point,
15 the framework document, and we're starting from a base
16 of gathered information, those kinds of inputs, Frank
17 and all the rest, are very important to distinguish and
18 I think it is important that we do communicate clearly
19 and make sure that we've got it right. So I'm going to
20 ask that the contractors and that we -- we're in a
21 receiving mode here.

22 We're describing what we've got our starting
23 point. We're asking for your intervention. You're
24 giving us input, catching things that we might have
25 missed, giving us data where it's necessary. So we

1 need to show those distinctions and make sure that we
2 are understanding. So, thank you for that input.

3 MR. ADAMS: Charlie Adams, Leo Smith. I
4 basically had a wonderful set of comments, but Frank
5 said them all.

6 (Laughter)

7 MR. STANONIK: I was channeling.

8 MR. ADAMS: That's scary. But I do want to
9 just reinforce what Frank said, that the retail channel
10 is indeed a different decision-making process and has a
11 different series of markups when you're looking at cost
12 information than the wholesale channel. That needs to
13 be taken into account.

14 MR. BROOKMAN: Thank you. George.

15 MR. LEWIS: Could I follow up?

16 MR. BROOKMAN: Yes. Ron, follow on, please.
17 Ron Lewis.

18 MR. LEWIS: It would be appreciated if you
19 gave us input on that that because, as Frank pointed
20 out, it's not recommended to consumers do it yourself,
21 install these for safety purposes and all the rest,
22 that a contractor frequently is involved. Is it just a
23 change in the way that the monies are invoiced and
24 received? Does it impact the bottom line or not? Is
25 there a markup by the contractor still? In effect, if

1 he didn't get the markup on material, is -- because
2 he's in the line here and doing the installation does
3 he effectively still get, you know, the same price?

4 So as this relates to the process, the bottom
5 line of getting the economics correct, any insights you
6 could give us on that as well as the distinguishing
7 between the flow of who takes custody and ownership
8 would be helpful.

9 MR. BROOKMAN: George.

10 MR. KUSTERER: George Kusterer, Bock Water
11 Heaters. I just want to reinforce what Frank and my
12 colleague from A.O. Smith said. You know, with regard
13 to the distribution of water heaters manufacturers to
14 large retailers. Large retailers basically want to put
15 the plumbing wholesaler out of business. The large
16 retailers want to bypass the contractors. Contractors
17 don't buy from the large retailers. They would rather
18 support the wholesale supplier.

19 The intent of the large retailers, the Home
20 Depots and the Lowe's, are to bypass all those people
21 and sell direct to the consumer. And in many cases,
22 the consumer will go to a Home Depot, and we've seen it
23 on numerous occasions throughout the country, and they
24 will buy a water heater and they will have it delivered
25 to their home.

1 Now, again, those large retailers offer
2 installation. They elect not to do it. They will call
3 a local contractor. The contractor doesn't want any
4 part of it because he hasn't made his profit. All's
5 he's going to get paid is the labor. So the
6 homeowners, and this has been a rash throughout the
7 country and I can show you service call upon service
8 call where homeowners are installing equipment
9 themselves and giving manufacturers a black eye simply
10 because they don't know how to do it and they don't
11 know how to adjust it.

12 To answer your question with regard to the
13 distribution, you know, contractors and builders don't
14 put in gas water heaters. They leave that to the
15 plumbers. And in most states, the law requires that a
16 plumber install it, not a builder, because they can't
17 get the license. The same goes for electric water
18 heaters.

19 But one part of the distribution that you
20 kind of missed is with regard to manufacturer, plumbing
21 wholesaler, contractor, and consumer. You forgot that
22 there are a number of us manufacturers that do not sell
23 to large retailers but we sell through a distribution
24 system. So there you have distribution representatives
25 that are in that mix, so there's somebody else that's

1 going to add a couple of dollars to that final cost
2 that goes to the consumer. That needs to be taken into
3 consideration.

4 MR. BROOKMAN: Okay. Thank you, thank you.
5 Additional comments on distribution channels and other
6 things? Let's hear from Harvey, and then I'm coming
7 back to you, Frank.

8 DR. SACHS: There is a very strong temptation
9 to invest our human and financial resources in things
10 which can be analyzed whether they matter or not. In
11 the context of driving toward life-cycle costs, which
12 we know are approximate, relatively large changes in
13 the markups have rather small changes in the life-cycle
14 cost. Really, we're looking at three to five times the
15 cost of energy over the product lifetime as the cost of
16 the product installed, at least for base equipment
17 efficiencies.

18 I'd much rather see the Department recognize
19 the uncertainties, the unknowabilities in an evolving
20 market, than to try to get the third figure of
21 precision in something which actually has a relatively
22 small effect on the analytical result.

23 MR. BROOKMAN: Follow on, Lance.

24 MR. DeLAURA: Just to Harvey's point, one
25 thing that jumps out at me is the difference in the

1 availability of product when it is purchased from a
2 retailer from an efficiency perspective. There is
3 usually a much narrower range of product. Through the
4 wholesaler there is a wide variety of efficiencies and
5 product types which may skew your results.

6 MR. BROOKMAN: Thank you. Frank.

7 MR. STANONIK: This is somewhat related, and
8 Ron Lewis' comments made me think of it a little bit.
9 Marshall Hunt can probably talk to this a little bit
10 more, but in my involvement with the SEGWHAI project
11 one of the things that they did was do some study of
12 the installed cost of a gas water heater. I just
13 remember this because I honestly am still amazed by it,
14 but what they found was that in terms of the installed
15 cost of a residential gas storage water heater, the
16 cost for installing it was roughly twice as much as the
17 cost of the product. It was almost, rough numbers,
18 \$1,000 to install -- this was their average result --
19 to install a residential gas water heater.

20 And I only want to bring that up because in
21 terms of -- and again, thinking about the large
22 retailers, okay. In terms of looking at things like
23 markup and stuff, I think at some point there has to be
24 a realization that there certainly is more movement
25 towards selling an installed product. As George

1 mentioned, homeowners still buy them and try to do it
2 themselves, but there is more movement towards selling,
3 quote, an "installed" product.

4 I mean, how do you put it? A large retailer,
5 you know, they don't care where the profit comes from
6 as long as there's profit. And so I think, you know,
7 somehow that's -- I don't envy the task, but I think
8 somehow DOE is going to have to deal with that. Water
9 heaters, residential water heaters, in this practical
10 aspect, is very unique. You know, if you talk about a
11 furnace, you know, you basically have one major kind of
12 challenge. If you're talking about a dishwasher, a
13 clothes washer, you basically have one kind of channel.
14 You have two channels here that nowadays are roughly
15 equal. Very different.

16 MR. BROOKMAN: Okay. Harvey Sachs.

17 DR. SACHS: A follow-on to Frank's comment
18 about installed cost. I'm asking Marshall Hunt for
19 backup. He's been uncharacteristically quiet.

20 This thing that struck me was not only the
21 high fraction that was installation but the high
22 variability from metropolitan area to metropolitan area
23 within California, whereas I recall several major
24 metropolitan areas had installed cost averages pretty
25 close to \$600 and one anomaly was right at \$900.

1 So that getting the installed price for a
2 baseline product is itself a challenge for which
3 variability is the most important factor and context
4 relative to other costs must not be ignored. Thank
5 you.

6 MR. BROOKMAN: Marshall?

7 MR. HUNT: Yes. Marshall Hunt, Super
8 Efficient Gas Water Heater Appliance Initiative. It is
9 a project supported by the Energy Commission, the
10 California Energy Commission's Public Interest
11 Research. Rather than quote the numbers today, I would
12 just like to let everyone know that we will be
13 submitting comments. Our reports will be out for final
14 review of our steering committee in late February, and
15 everything will be on our website. So I'll make sure
16 that the record has that information and anything we
17 can do to contribute, I'd be happy to do.

18 One thing I should mention is a good study
19 also done in the northwest on their marketplace, just
20 done a year or so ago. And there they found that a lot
21 of electric water heaters are getting installed by
22 individuals. Gas water heaters, thank goodness, were
23 tending to get installed by contractors. But
24 definitely, I think what George said about complaints,
25 I certainly can understand that happening.

1 So yes, this one-third the piece of equipment
2 you buy and two-thirds for installation starts to be
3 the story, with variations.

4 MR. BROOKMAN: George.

5 MR. KUSTERER: Just one quick comment again.

6 George from Bock. And thank you for bringing up that
7 point. I don't know how many people are aware of this,
8 but water heaters are being sold over the Internet to
9 homeowners. We're seeing it with gas product, we're
10 seeing it with oil-fired product, and this is scary.

11 Now, we go from the manufacturer to obviously
12 somebody is buying this product, putting it on the
13 Internet. I mean -- and I have to say, I've seen water
14 heaters shipped to Massachusetts and when we track the
15 serial number, we find it in, you know, someplace in
16 Alaska. Well, we knew we shipped it to Massachusetts
17 but it wound up in Alaska, and then when the customer
18 has a complaint, "Oh, yes, I installed it myself and I
19 purchased it online." Where is the service? Where is
20 the infrastructure and who gets the black eye?

21 And codes specifically state in many, many
22 states that equipment must be installed. If it's gas,
23 it's NFPA 54. If it's oil, it's NFPA 31. You know,
24 the code enforcement officials just -- they're
25 overwhelmed. And of course, if there is a failure,

1 then where is the liability subrogation? That comes to
2 the original manufacturer. So, thanks.

3 MR. BROOKMAN: Okay. So I think we're ready
4 to move on. So let's move on to Life-Cycle Cost and
5 Payback Period Analysis.

6 DR. SACHS: I'm sorry. Harvey Sachs again.
7 Before we move on, I only want to introduce to the
8 record that I'm very sympathetic to George's issue of
9 non-contractor installations. I'm not at all certain
10 how this applies to the framework for the rulemaking.
11 I'm not sure where the federal jurisdiction is. That's
12 something you might associate more with my colleague
13 Mr. Rosenstock, but I'll raise it anyhow.

14 Life-Cycle Cost and Payback Period Analysis

15 Alex Lekov

16 (PowerPoint presentation)

17 MR. LEKOV: Okay. Continuing with Life-Cycle
18 Cost and Payback Period Analysis. Basically, the LCC -
19 - estimates the effect of increased energy efficiency
20 standards on lifetime operating expense savings
21 compared to the increase in purchase price.

22 There is a set of several important
23 parameters that will be discussed in the next slides,
24 including the total installed cost to the consumer,
25 operating expenses, lifetime -- the impact of lifetime,

1 and discount rates. I mentioned about those parameters
2 because they're very closely related to the approach
3 applied to calculate the average LCC savings. We
4 intend to calculate the average LCC savings from a
5 range of inputs associated with those parameters.

6 Within the life-cycle cost analysis, the
7 Department plans to consider the rebound effect or
8 take-back effect. That refers to a potential increased
9 energy consumption that results from actions that
10 increase efficiency and reduce consumer costs.

11 Here it is important to note that the take-
12 back in energy consumption associated with the rebound
13 effect provides the consumers with increased value.
14 It's mostly in terms of improved comfort.

15 So for each LCC analysis, the Department
16 plans to estimate that the increased value to consumers
17 added by the rebound effect is equivalent to the
18 monetary value of the energy savings.

19 I will again switch to Doug for the
20 discussion.

21 MR. BROOKMAN: Thank you. The Department
22 would like comment on this LCC and payback period
23 analysis slide.

24 MR. DeLAURA: This is Lance DeLaura, SoCal
25 Gas. Question on Slide Number 63, first bullet. The

1 bullet ends with "increase in purchase price." Do you
2 mean increase in installed cost? The reason I call out
3 that delineation is that the further up the food chain
4 that you go with technology and product, there may be
5 differences in the requirements for the installation.
6 There may be a difference in the flue that's required,
7 the diameter of the flue. If you're talking about a
8 condensing product, there's additional plumbing cost.
9 If you're talking about something that has a power
10 burner, you have the electric cost.

11 So I suggest a better phrase would be "the
12 installed cost."

13 MR. BROOKMAN: Thank you. Thanks for that
14 comment. Steve, yes. Steve Rosenstock.

15 MR. ROSENSTOCK: Steve Rosenstock, EEI. In
16 terms of the rebound effect for higher efficiency
17 standards, I wonder -- I don't know if there's any
18 studies out there, but there have been two rounds of
19 energy efficiency standards for water heaters back in
20 '92 under NAECA and now in 2004 under the last
21 rulemaking. I don't know if any studies have been
22 done, if there's a way to get any sort of data in terms
23 of -- for people who just put in higher -- new high
24 efficiency water heaters and everything else stayed
25 static in terms of hot water-using appliances, shower

1 heads, clothes washers, dishwashers, et cetera.

2 I'm kind of curious, especially if they
3 didn't, because it's pretty hard to reset the
4 thermostat on a water heater. I don't -- I would guess
5 that it's less than in other products just because of
6 the fact it's so hard. Number one, most people don't
7 say, oh, well, my water heater is 5 percent more
8 efficient, I'll just adjust the water heater thermostat
9 five degrees, because those people hardly would ever go
10 into the box to get to the thermostat.

11 I would guess it's less with water heaters.
12 I don't have any empirical evidence, just my personal
13 thoughts. But especially just because it's really --
14 the rebound effect might be from the high efficiency
15 clothes washer that uses 50 percent less hot water.
16 People might do more loads of laundry, but the water
17 heater itself, I think it's less than with other
18 products.

19 MR. BROOKMAN: Okay. Harvey Sachs.

20 DR. SACHS: I think it's important that the
21 Department recognize that there are a couple of
22 decades' worth of experience with utility program
23 evaluation from an era which the conventional products
24 did have a fair amount more efficiency differentiation
25 than they do today. The Department could take very

1 seriously that program literature which, after all, has
2 been used to justify rate cases and justify
3 expenditures. Real money has been at stake, and these
4 have generally been done fairly carefully.

5 My sense from that literature, of which I'm
6 not a careful student, is that your hypothesis would be
7 that there ain't no rebound. It becomes important to
8 demonstrate why there actually is a rebound as opposed
9 to accept that there is probably not.

10 MR. BROOKMAN: Thank you. Additional
11 comments on this question, proposed treatment of
12 rebound in the LCC analysis?

13 (No response)

14 MR. BROOKMAN: Okay. Let's keep going. Yes,
15 Marshall.

16 MR. HUNT: Marshall Hunt with the SEGWHAH
17 project. I would support Harvey's comments, and the
18 cite for that is CALMAC, C-A-L-M-A-C, .org, O-R-G.
19 Yes, the California utilities have spent a lot of money
20 looking at this.

21 One thing that would concern me about rebound
22 is that when we do energy efficiency programs or
23 looking at resource acquisition, we do an energy
24 evaluation measurement verification and we set a net-
25 to-gross ratio which depreciates those values. But we

1 have to have a starting point. If buried in the
2 standards there is some kind of net-to-gross ratio
3 also, I'm worried that you start double counting or
4 double penalizing the products.

5 So I don't quite have the intellectual
6 framework that we should follow, but do keep that in
7 mind. We have energy efficiency programs and we do get
8 the net-to-gross. That could be rebound also. It's in
9 there. But we want to have a standard that can just
10 stand alone and come up with the energy purely without
11 the rebound, I'm almost positive.

12 MR. BROOKMAN: Okay. Thank you. Yes,
13 please.

14 MR. WILLIAMS: Ted Williams, American Gas
15 Association. I think you have to realize within
16 rebound comments like Steve's are particularly
17 important because there is a limited opportunity for a
18 consumer to have a direct intervention in an
19 operational water heater.

20 The other extreme, though, within this
21 rulemaking are things like hearth products. Certainly,
22 we know from experience how people operate hearth
23 products, particularly in an era of high energy prices.

24 There certainly would be some element of that sort of
25 price elasticity and sensitivity which would show up in

1 a rebound for operation of those equipments.

2 So you're going to see different effects that
3 I think are supported by data within this rulemaking.

4 MR. BROOKMAN: Thank you.

5 Okay. Alex, proceed.

6 MR. LEKOV: So this slide is shown here to
7 identify the component of the LCC analysis and in the
8 next several slides I'll be discussing the
9 methodologies the Department plans to use to develop
10 those critical inputs.

11 Starting with the energy prices, the main
12 source will be the Department of Energy, Energy
13 Information Administration data. This will be to
14 establish the current prices. The most current version
15 of that EIA Annual Energy Outlook, the reference case,
16 will be used to develop the energy prices forecast.

17 The Department also plans to analyze the
18 variability of the energy pricing using high and low
19 price estimates.

20 The next important item are the discount
21 rates. The discount rates are used in the LCC analysis
22 to translate the future operating costs into present
23 values. The discount rates are determined by the
24 interest rate for borrowed money and depend on the debt
25 and equity used to purchase the appliance.

1 In essence, the methodology the Department
2 plans to use is identical to the methodology used in
3 the previous residential products. It uses the Federal
4 Reserve Board's Survey of Consumer Finances to
5 establish the consumer equity and debt holdings.

6 Within the analysis, the Department will
7 develop -- using this particular source, will develop
8 distributions for the debts, such as mortgages, credit
9 cards, and equities, such as stocks. Those
10 distributions are sampled for each individual
11 household, RECS household, in order to develop the
12 interest rate applicable to the specific household.
13 After that, the interest rate is used to calculate the
14 discount rate.

15 The next important input are the maintenance
16 and installation costs. The maintenance cost is the
17 annual cost of maintaining an appliance in proper
18 working conditions. At this time, the Department
19 assumes that increases in maintenance costs are
20 negligible for more efficient products with a notable
21 exception of the heat pump water heaters.

22 The installation cost is the cost to the
23 consumer of installing the appliance. It covers all
24 labor to install a new appliance or replace the
25 existing one.

1 Basically, with regard to installation cost,
2 DOE expects that more efficient residential water
3 heaters, direct heating equipment, and pool heaters
4 will incur installation costs that depend on electrical
5 and venting requirements. In addition, the heat pump
6 water heaters will also incur higher installation
7 costs.

8 The next product we'll be looking at the
9 lifetimes. During past rulemakings, the Department
10 developed the average lifetimes which are listed here.

11 At this time, the department proposes to utilize those
12 values and also will be looking mostly at Appliance
13 Magazine for a potential update.

14 And at this time, I'm passing the
15 presentation to Doug.

16 MR. BROOKMAN: Thank you. So you can see
17 that on Slide 70 the Department has several questions,
18 several issues that they wish for you to comment on.
19 The first is proposed approaches for estimating current
20 and forecasted energy prices, which begins on Slide 66.
21 We'll just proceed on down the list.

22 First to Lance.

23 MR. DeLAURA: A comment on the discount
24 rates. Just a caution to be considerate of the type of
25 equipment that is being financed. As an example, if

1 someone is replacing a water heater, they typically
2 would not take a mortgage on their house to do that.
3 That is probably credit card, cash out of pocket,
4 something.

5 The case of a pool heater or something that's
6 larger, it's usually done in conjunction with other
7 things, and that might involve a second mortgage. So
8 it's not directly linear to say, you know, people are
9 going to do all second mortgages or equities. I'm not
10 sure if the model is set up to allow for that, but it's
11 a recommendation to take a look at the type of
12 equipment being financed.

13 MR. BROOKMAN: Thank you. Don Brundage.

14 MR. BRUNDAGE: Don Brundage, Southern
15 Company. I'm a little confused on the Department's
16 approach on discount rates because we have these
17 detailed discussions on how customers actually buy
18 them. But when you get to the NOPR stage, it turns
19 into a 3 percent discount rate versus 7 percent
20 discount rate and no other considerations. Judging
21 from recent experience in other NOPRs and all of the
22 sort of discussion that goes on here seems to go away
23 by the time you actually make decisions.

24 Can the Department illuminate that a little
25 bit?

1 MR. BROOKMAN: Jim McMahon.

2 MR. McMAHON: Jim McMahon, Lawrence Berkeley
3 Lab. Don, I understand the confusion. There are two
4 sets of discount rates and they go in two different
5 analyses. With the life-cycle cost analysis, the focus
6 is on individual consumers, and so the method is as
7 defined. It depends upon the finance mechanism.

8 Later, when we get to the national impact
9 analysis, we're looking at the national impacts and the
10 net present value associated with that. In that case
11 we use the 3 percent and 7 percent real values that you
12 just indicated. Those come from the Office of
13 Management and Budget and have to do with how federal
14 regulations are evaluated.

15 MR. BRUNDAGE: Thank you.

16 MR. BROOKMAN: Thank you. Yes, please. Ted.

17 MR. WILLIAMS: Ted Williams, American Gas
18 Association. Just to follow on to your comment, I
19 think, though, that that uses 7 percent for the life-
20 cycle cost analysis, don't you? I mean, you didn't
21 furnish --

22 MR. McMAHON: It may turn out to be 7
23 percent, but it's coincidence. It's not from the same
24 source.

25 MR. WILLIAMS: Okay. Well, I guess just to

1 follow on with that, a quick comment. I mean, there is
2 a literature that has been -- DOE has paid for, I
3 think, over the last 20 years that looked at consumer
4 discounts or consumer durables discount rates, which
5 are quite a bit higher. I mean, and they are different
6 from different products, as Lance indicates, but those
7 discount rates are up in the 10s for -- I looked at
8 furnaces, for example, recently in a study done in the
9 early '30s that the consumer discount rate for purchase
10 of new furnaces was 40 percent.

11 I'm having trouble having just, you know,
12 looked at that literature, having not looked at it for
13 a number of years, reconciling that with what's used in
14 the NOPR on the furnace rule of 7 percent for the life-
15 cycle cost analysis.

16 MR. McMAHON: Jim McMahon, Lawrence Berkeley
17 Lab. That's a third set of discount rates that has to
18 do with consumer preferences, and let me explain the
19 difference. I agree with you that a number of studies
20 have shown discount rates ranging from 10 to 40 percent
21 or something like that. What we are using in the
22 discount rates for the life-cycle cost is not that but
23 rather what the actual cost to the consumer is in their
24 net finances.

25 MR. WILLIAMS: In terms of what's

1 economically justified for that consumer?

2 MR. McMAHON: That's correct.

3 MR. WILLIAMS: Okay.

4 MR. BROOKMAN: Okay. There are several other
5 points to be considered in Slide 70. I saw,
6 approximately in this order, Steve and then Harvey and
7 then to Troy. Go ahead.

8 MR. ROSENSTOCK: Thank you. Steve
9 Rosenstock, EEI. Just a quick one on the energy
10 prices. I think for this analysis, again, it really
11 depends on how people are using the products.
12 Obviously, an annualized number is perfectly fine for
13 water heaters, but there is the possibility of
14 seasonality in terms of consumption and prices for the
15 pool heaters. You know, more possibly in the spring,
16 summer, and fall than in the wintertime. Again, there
17 might be empirical studies that flesh that out. Again,
18 this is just kind of what I remember from what I've
19 read.

20 And then, of course, for the direct
21 heating/hearth products, more likely to be used in the
22 wintertime than in the -- possibly in the spring and
23 the fall. But again, there might be some seasonality
24 where you're looking at the analysis. That will have
25 an impact, obviously. There is a difference between

1 summer and winter electric prices as well as summer and
2 winter gas prices. So that's just something to
3 consider for this analysis. Thank you.

4 MR. BROOKMAN: Harvey.

5 DR. SACHS: If I might, I'd like to go back
6 to Slide 65 for a second, Life-Cycle Cost and Payback
7 Period Flow Chart, and request of the Department that
8 estimates of variability be proposed at each stage
9 rather than at the end, just as though we were doing a
10 failure analysis. I do not get comfortable feelings
11 from recent determinations that I got a good grip on
12 what the uncertainties were without having that step-
13 by-step.

14 Similarly, I have concerns on Slide 66 where
15 Bullet 2 says that -- energy prices -- "will analyze
16 variability using high and low price estimates," and in
17 Bullet 3, "base energy price forecasts on most recent
18 EIA Annual Energy Outlook."

19 The comments I have are, first of all, that
20 life-cycle costs in the recent NOPR showed a 20 percent
21 change just between the 2005 AEO forecast and the 2006
22 AEO forecast. This is some sort of an uncertainty and
23 without even looking at more than two years with the
24 inherent uncertainty in the life-cycle cost analysis.
25 I think we need to be sensitive to that, although I'm

1 not sure exactly how to use that judgmentally.

2 I would suggest that in addition to looking
3 at high and low price estimates, which is not very well
4 fleshed out yet, that some trend analysis may also be
5 useful. If we look at five- or 10-year histories both
6 of forecasts and of revealed prices, we may get a
7 better sense of the energy prices to be expected over
8 the period of effect of this rulemaking.

9 MR. BROOKMAN: Thank you. Troy.

10 MR. TRANT: Yes. Troy Trant with Rheem. On
11 Slide 68, the comment pertaining to maintenance and
12 repairs being assumed to be negligible. I think most
13 of us would agree that most high-performance, higher
14 efficiency types of things that you buy inherently
15 incur a higher maintenance cost. So I don't think we
16 necessarily want to assume those to be negligible,
17 especially if we look at maybe the impact of sort of
18 your lower income buyers out there as we go forward.

19 My other comment has to do with the
20 assumption on installations. We need to be cognizant
21 of the fact that if there are certain technologies that
22 make some of the products physically larger in size the
23 added cost to modify installations should be
24 considered. Just as an example, we could turn to some
25 of the surveys that SEGWHAI did throughout California.

1 It would give us an example of some cases in
2 California just as an example for us.

3 MR. BROOKMAN: I'm certain that the
4 Department would appreciate you providing any kind of
5 data to support your idea that the maintenance costs
6 would be more than negligible.

7 MR. TRANT: Sure.

8 MR. BROOKMAN: Okay. Did I see Don Brundage
9 there first? Please.

10 MR. BRUNDAGE: Just to emphasize on the
11 energy prices to pay particular attention to the
12 situation with pool heaters because pool heaters, the
13 way they're normally operated, will never be on the
14 peak for either summer or winter. You obviously are
15 not going to be heating the water in summer, and on the
16 coldest winter days you will not be running a pool
17 heater because people will not be out there.

18 In the case of my own company, if we're aware
19 of a residential homeowner that has an electric pool
20 heater, we will actively encourage them to go to a time
21 of use rate because it's in their benefit. So the
22 average energy cost for a pool heater is going to be
23 significantly below the average for that homeowner.
24 Thank you.

25 MR. BROOKMAN: Thank you. David Goldstein.

1 MR. GOLDSTEIN: David Goldstein. Just in the
2 interest of time, I will just refer the Department to
3 our comments on discount rates and energy prices in the
4 furnace proceeding. I hope you would address these
5 comments at one point other than dismissively.

6 I want to mention specifically on fuel
7 prices, the current assumptions are that no state or
8 federal government entity will ever charge for carbon
9 emissions. That's a pretty silly assumption to make
10 right now.

11 MR. BROOKMAN: Charlie.

12 MR. ADAMS: Charlie Adams, A.O. Smith. A
13 couple of comments on Slide 68 to echo what Troy said
14 about the repair costs. There's two ways of looking at
15 it. If you look at is the increase in maintenance and
16 repair cost of a more efficient product greater than
17 the standard baseline of today, and I would submit from
18 our experience at least that the answer to that is yes.

19 Now, to Mr. Sachs' comment a little while
20 ago, even the increased maintenance costs may get lost
21 in the rounding of the life-cycle cost because I'm not
22 sure that maintenance is a large component of the life-
23 cycle cost. But I would support Troy's comment that a
24 more efficient max level water heater is going to cost
25 more to maintain.

1 On the installation costs, we need to take
2 into account also -- it's been mentioned earlier in the
3 day -- the condensate drain and the provision for the
4 condensate management could add to the install costs of
5 a condensing gas option.

6 One other comment on Slide 69 on the product
7 lifetimes. The estimated lifetime of a gas-fired
8 instantaneous water heater of 20 years, at least in my
9 experience, sounds a little extreme.

10 MR. BROOKMAN: Thank you. Harvey Sachs.

11 DR. SACHS: I'd like to start with a follow-
12 up on Slide 69, the 20 years. Where did that come
13 from? Please, that doesn't need to be answered now,
14 but it does strike us as rather strange. It ties back
15 to Slide 68, where it is my understanding from recent
16 literature reviews by Gas Technology Institute among
17 others that the manufacturers generally call for an
18 annual maintenance call by a qualified technician for
19 instantaneous gas water heaters. That is a significant
20 recurring cost that is comparable to the cost of fuel.

21 The second point on that is that in New
22 England, and we'll try to get you data on this,
23 builders, who are only 20 percent of the market, are
24 now using an increasing number of power-vented gas
25 water heaters because the combination of the power-

1 vented water heater and a condensing furnace has lower
2 installation costs than having to have a chimney.

3 So the assumption that venting system costs
4 associated with more efficient gas-fired equipment are
5 likely to increase is again a case where you may have a
6 step function in which true condensing products are
7 less expensive to install in many cases than mid-
8 efficiency products.

9 Finally, it is not clear to me why heat pump
10 water heaters would necessarily incur higher
11 installation costs than other more efficient products.

12 Particularly, there is at least one brand on the
13 market today which runs on 120 volt, not even requiring
14 230 if you were trying to retrofit some other
15 technology. So there is a great deal of room for
16 further exploration on all of these. The factoids come
17 across as assertions.

18 MR. BROOKMAN: Steve Rosenstock.

19 MR. ROSENSTOCK: Steve Rosenstock, EEI. Just
20 in terms of that, I wonder if there is kind of a
21 difference, especially when you are talking about a
22 single family home versus multi-family.

23 The reason I mention that is just this story.

24 A friend of mine moved into one of those new
25 condominiums out in Virginia near, actually, Dunn-

1 Loring Metro station. And I just remember looking --
2 we thought it was a closet. Actually, the water heater
3 was in there. I would say there was about three inches
4 of room around each side of that water heater. It was
5 like, you know, they put the water heater in and built
6 the closet around it, you know. Forget about -- you
7 know, I feel sorry for the person having to maintain or
8 repair that unit.

9 But I'm just kind of curious. There might be
10 a difference just because of just the way builders are
11 building things that for all units, whether it's a high
12 efficiency or a standard, that just the maintenance
13 cost in condo buildings might just be higher just
14 because of that aspect.

15 MR. BROOKMAN: Lance.

16 MR. DeLAURA: That's exactly where I was
17 going. My home is a good example. My water heater is
18 located right by my garage door hinge. To go to the
19 higher efficiency water heater, it wouldn't fit. It
20 was three inches larger in diameter. So what I ended
21 up doing was going with a standard efficiency water
22 heater with a blanket, and it worked in my particular
23 situation.

24 But we have literally hundreds of thousands
25 of customers that have these closets and cabinets,

1 whether they're indoors or outdoors, and the clearances
2 are just nil. So the cost to comply with that will
3 require some modification of those. It's doable, but
4 there's a cost added for that.

5 MR. BROOKMAN: Robert.

6 MR. GLASS: Robert Glass, Raypak. Again, to
7 support the comments that have been talked about in
8 regards to the assumption that the increase in
9 maintenance costs will be negligible, one of the things
10 to look at from a pool heater standpoint is that pool
11 heaters that are installed by pool builders, when
12 something goes wrong with that, the pool builder and/or
13 the pool supply company is what gets called to go ahead
14 and come and to service this.

15 So training and education of these people to
16 deal with higher efficiency products that may include
17 draft or other design features and electronics and
18 controls to be able to allow the unit to operate more
19 efficiently, there's going to be a significant amount
20 of education of these people to try and go ahead and do
21 that.

22 So first of all, on one hand, you have the
23 higher technology of more electronic components and
24 other things that can go bad in the design -- not in
25 the design but with the product, and then the second

1 hand is that you have people that are servicing it that
2 may be able to handle a lower technology product, but
3 when you start raising the bar, it becomes an issue
4 that has to get addressed. That's something that the
5 consumers are going to end up dealing with.

6 Manufacturers are going to work to try and go
7 ahead and train people, but as technologies come
8 forward, that's a very slow-learned process. You do
9 have a number of consumers that choose lower technology
10 product because it's easy to troubleshoot and it's easy
11 to service and maintain that way. You start increasing
12 efficiencies, you're increasing that level of
13 technology and it becomes very difficult for the
14 service industry to be catching up with that.

15 MR. BROOKMAN: Thank you. George.

16 MR. KUSTERER: Yes, George from Bock Water
17 Heaters again. I have to concur with my colleagues
18 both on my left and both on my right with the increased
19 maintenance issue because the equipment is becoming
20 more sophisticated, even today without the new addition
21 to the energy.

22 This also is an expense that's incurred on
23 the manufacturer because, yes, we manufacture the
24 product but yet we have the added expense of putting
25 together an infrastructure and training that

1 infrastructure in the field which the wholesaler
2 doesn't have nor does the retailer nor anybody else.
3 This is strictly on the manufacturer side. So I
4 disagree with the negligible comment regarding to the
5 cost of maintenance and repair.

6 With regard to oil-fired equipment, whether
7 it's a water heater, a boiler, or a furnace, NFPA 31
8 requires an annual efficiency adjustment and testing
9 not only for product safety but also for the efficiency
10 of the equipment. NFPA 54 is going to write that in
11 their new standard.

12 So we see these other standards that are
13 dictating to the installers and the service people out
14 there you've got to buy more sophisticated equipment to
15 test these products and to repair these products,
16 especially the electronics.

17 And just so I can talk to Mr. Sachs, I know
18 he disrespected me there a moment ago when he made a
19 derogatory comment, but that was only for distribution,
20 Harvey.

21 Thank you.

22 MR. BROOKMAN: So, Frank Stanonik.

23 MR. STANONIK: At the risk of perhaps dealing
24 the death blows to this horse on the maintenance issues
25 --

1 (Laughter)

2 MR. STANONIK: I just wanted to give you some
3 specific examples here because I think it is an
4 important one. If you're looking at efficiency levels,
5 as an example, on storage water heaters that are going
6 to assume that the product has electronic ignition or
7 some type of damper or power venting, okay, you're
8 adding components that really aren't there on a
9 baseline water heater right now, okay. And you know,
10 the one thing you shouldn't assume is that in all cases
11 those components will last the life of the water heater
12 and never need repair or replacement.

13 You know, I think in this day and age there
14 is probably significant information out there on what a
15 consumer pays when they have to have their electronic
16 ignition system repaired or replaced.

17 MR. KUSTERER: And in most cases they're not
18 even reparable. It is a replacement.

19 MR. KUSTERER: Yeah. And certainly in power
20 venting, we may be able to give you some information
21 because there is at least some segment of residential
22 water heaters out there now that have power vents.
23 Even on Steve's electric water heater that has the
24 microprocessor or whatever controls in it, again that
25 little sophistication at some point -- you know, some

1 of those do fail, and I don't even know what they would
2 cost to replace if one wanted.

3 MR. BROOKMAN: Let's not go there at the
4 moment. I do want final comments on this slide. It
5 seems like we have addressed energy prices, discount
6 rates, the assumption about negligible maintenance and
7 repair, installation costs, and product lifetimes.
8 Final comments.

9 MR. STANONIK: I just want to mention,
10 likewise in the case of direct heating equipment, again
11 if you're talking about efficiency levels that would
12 introduce electronic ignition or some type of damper or
13 power venting induced draft device, again you're adding
14 components that didn't exist on the baseline product,
15 and again there will be a new -- a different
16 maintenance and repair cost because, again, not all
17 those components last forever.

18 MR. BROOKMAN: Okay. Yes, Harvey Sachs.

19 DR. SACHS: With enormous respect for George,
20 Frank, and my other colleagues, it is perhaps worth
21 recalling that in the recent furnaces and boilers
22 determinations the Department has suggested that there
23 is no difference in maintenance cost for condensing
24 furnaces and boilers relative to their non-condensing
25 equipment equivalents. The difference, I think we

1 would all agree, is that there is a much longer and
2 broader experience base, that these technologies are
3 relatively new to the water heater business.

4 On the other hand, the Department has been
5 fairly generous in general in terms of implementation
6 dates and it reasons to hope that utility programs and
7 other vehicles will give us a great deal more
8 experience before the standard takes effect. Thank
9 you.

10 MR. BROOKMAN: Don Brundage.

11 MR. BRUNDAGE: A quick comment. This was
12 alluded to earlier, but your note on request comments
13 on the assumption that installation costs will be
14 dependent on electrical and venting requirements.
15 Physical size has been mentioned earlier. In the last
16 round of rulemakings that was a very fundamental issue.
17 I think it needs to be included here. The physical
18 size is an important factor of water heaters.

19 MR. BROOKMAN: Thank you. Those comments
20 came in earlier. Thank you.

21 Are we done with this? Let's try and do one
22 more section before we take our break. So, Alex, let's
23 proceed.

24

25

1 Shipments Analysis

2 Alex Lekov

3 (PowerPoint presentation)

4 MR. LEKOV: Shipments Analysis. So shipments
5 forecasts are required to calculate both national
6 energy savings and net present value, as well as they
7 are used to calculate the future cash flows of
8 manufacturers.

9 The first thing we will be discussing is the
10 development of the base case forecast shipment. The
11 base case forecast estimates what would happen to
12 energy consumption and cost over the analysis period if
13 the Department does not adopt new standards. It's a
14 reference point from which to evaluate the impact of
15 standards.

16 Also, base case forecast accounts for
17 products which are going to replace failed units as
18 well as those going to new construction.

19 In order to develop the base case forecasts
20 seen later and as we'll see on the next eight slides,
21 the Department will show examples of data sheets that
22 DOE proposes at this time to use for this data
23 collection. Before going to the individual data
24 requests for the different products, I will summarize
25 what kind of data the Department is seeking.

1 The first thing is historical shipments data
2 dating back to the 1990s. Second, historical shipment-
3 weighted evidence efficiency data, again going back to
4 the 1990s. And market share efficiency data for the
5 most current years.

6 Let's go to the individual product slides.
7 They are almost identical but I will a little bit focus
8 on the first one, which is electric storage water
9 heaters. This proposed form basically, on the first
10 table, shows the year, shows the shipments for the
11 particular year, and shipments-weighted average
12 efficiency.

13 The second table focuses on one product class
14 only, the one we will be using to derive the data for
15 the others. In this case, for electric water heaters,
16 we're talking about the market share efficiency data
17 for 50-gallon electric storage water heaters.

18 This one is the gas-fired storage water
19 heaters. The only difference here is where the market
20 share efficiency data is requested, market share
21 efficiency data is for 40-gallon tanks.

22 Oil-fired storage water heaters. In this
23 particular case, the market share efficiency data is
24 for 30-gallon oil-fired water heaters.

25 Now we are to gas-fired instantaneous water

1 heaters. The data format is very similar, and the
2 second table shows the efficiency levels. And they are
3 exactly the same ones which were discussed this morning
4 in terms of what we'll be using in the engineering
5 analysis.

6 Getting into the direct heating equipment
7 area, the difference here is that generally each
8 product type will have several product classes. As you
9 see in the first table for fan wall furnaces, there are
10 two product classes so there are two columns. In terms
11 of market share, the request is just for one of them,
12 over 42 KBtu per hour.

13 Going to gravity wall furnaces, the
14 Department would like to try to get data for all
15 furnace classes as they are listed here, but the market
16 share efficiency is requested just for one, preferably
17 the one which is over 27 kBTu per hour and up to 46
18 kBTu per hour.

19 Floor furnaces, similar approach.

20 The room heaters. Again, several product
21 classes. Market share requested for one of them, over
22 27, below 46.

23 And the last data sheet -- proposed data
24 sheet is for pool heaters, which is the same format.
25 The efficiency is identical to the engineering analysis

1 efficiency.

2 So those are multiple sheets the Department
3 provided to all stakeholders to have a convenient data
4 format to look at each of the product types.

5 Now let's look at the approach for
6 forecasting the shipments. Basically, it's an
7 accounting methodology. The Department will account
8 for products going to replace failed units and those
9 going to new construction. The failed units are
10 dependent on the product lifetimes and it's used for
11 estimating those replacements.

12 The main source will be the EIA's Annual
13 Energy Outlook, which provides the estimates for new
14 constructions.

15 In terms of historical saturation rates which
16 are needed to properly account for existing stock of
17 products, the Department will look for available --
18 publicly available information as well as any
19 information provided by the stakeholders.

20 In addition to the base case shipments
21 forecast, the Department plans also to develop
22 forecasts for the proposed standards levels. It will
23 be the same approach, based on the same data used to
24 develop the base case forecast. The standards case
25 forecast also uses purchase price increases and

1 operating cost savings to estimate a potential impact
2 on shipments.

3 In the past, the Department always tried to
4 develop a methodology for those sensitivities to
5 purchase price and energy cost. For this particular
6 rulemaking, the Department may look at an approach
7 based on scenarios, which means specific percentage
8 drops in annual shipments for particular efficiency
9 levels.

10 And in case they exist, the Department will
11 also look and consider impacts from market-pull
12 programs such as consumer rebates, manufacturer
13 incentives, and tax incentives, and others.

14 At that point, going back to Doug.

15 MR. BROOKMAN: Thank you. So you can see at
16 the top of Slide 85 that the Department, as Alex said,
17 requests comment on historical shipment data, shipment-
18 weighted average efficiency data, and market share
19 efficiency data.

20 Let me ask a question for the Department.
21 These -- beginning on Slide 74 and going through 82,
22 these formats, they've been provided -- they illustrate
23 the fields and the level of detail for which you seek
24 comment, correct?

25 MR. LEWIS: That's correct.

1 MR. BROOKMAN: Do you expect to receive a lot
2 of that detailed comment now or do you want everybody
3 in the room to provide that?

4 MR. KHAN: Mohammed Khan, DOE. This will be
5 something that we anticipate getting in terms of
6 written comment.

7 MR. BROOKMAN: Okay. I just wanted to
8 clarify that. I think it's very useful to have this
9 level of detail as a presentation so that everybody's
10 got a sense of what you're looking for specifically.

11 Okay. So then let's go to the second
12 bulleted point there. DOE requests data on
13 representative saturation rates for each of the three
14 products under consideration for this rulemaking to
15 determine the shipments forecast. And, do you think
16 they'll have that information now at their behest?

17 MR. KHAN: No.

18 MR. BROOKMAN: Perhaps not now. Okay. And
19 what about the third question? As part of its
20 preliminary manufacturer impact analysis, DOE requests
21 comment from manufacturers on the potential impact of
22 new energy conservation standards on product shipments.
23 DOE requests comment on any market-pull programs that
24 currently exist to promote the adoption of more
25 efficient products.

1 MR. KHAN: My thinking is that this is
2 something that perhaps they may want to provide
3 preliminary comment on at this time.

4 MR. BROOKMAN: Okay. The market-pull
5 programs that people are familiar with and their
6 impacts.

7 Yes, Steve Rosenstock.

8 MR. ROSENSTOCK: Are you thinking, well,
9 market-pull meaning -- could that be tax incentives or
10 what? Are there -- or just kind of the whole universe?

11 Because, you know, you might -- you know, there's lots
12 of programs out there both on the -- I'll say the
13 government side in terms of policy versus the
14 incentives from manufacturers, et cetera. So, you
15 know, there's a lot out there.

16 MR. BROOKMAN: Yes.

17 MR. KHAN: Mohammed Khan, Department of
18 Energy. We're certainly considering, I guess, the
19 whole universe. You know, we'll look at other
20 regulatory or governmental programs that might be
21 existing that would work in conjunction with what we're
22 doing. But if there's something else out there that
23 we're not aware of that would be -- mainly in the
24 manufacturing area, we would certainly want to hear
25 about that.

1 MR. BROOKMAN: Yes, please. Troy.

2 MR. TRANT: Troy Trant with Rheem. Just one
3 comment on the market-pull programs. I know the
4 Consortium on -- for Energy Efficiency, they frequently
5 work with utilities to help structure programs,
6 incentive programs. So they have a pretty good idea of
7 the ones that have been successful and they
8 intentionally work with utilities that might be
9 interested in structuring a program to help make them
10 the best that they can be.

11 The other question I have with respect to the
12 historical shipments data, I assume that the DOE would
13 be interested in 2006 data as well since that year just
14 wrapped up. That might help with the analysis as well.

15 MR. BROOKMAN: Thank you. Please, Lance.

16 MR. DeLAURA: As a utility that's provided
17 millions of dollars in rebates to customers over the
18 years, I have a very simple answer. It's still yet to
19 be seen what the numbers will be for the costs of these
20 products, and our experience has shown that the rebate
21 needs to be meaningful relative to what the incremental
22 cost is for that product.

23 So it's very difficult not knowing what that
24 number looks like at this point to be able to say,
25 first of all, whether a utility would provide a rebate.

1 You reach a point of diminishing return. If it's not
2 meaningful, you might as well not invest the money in
3 the rebate. And on the other hand, you get to the
4 point where the rebate becomes so expensive that you
5 can't offer to do a very large broad base of rebates.

6 So I guess we'll leave that question open in
7 terms of seeing what the estimated costs would be.

8 MR. BROOKMAN: Are you able to generally
9 characterize what "meaningful" means?

10 MR. ROSENSTOCK: Usually about a third of the
11 incremental cost. Sometimes as much as half, but it's
12 usually done on a declining basis. If it's something
13 that's introduced initially, it can be as high as 50
14 percent and then each succeeding year or increment of
15 time of measurement, the rebate becomes lower until
16 eventually you do away with it.

17 MR. BROOKMAN: Robert.

18 MR. GLASS: Robert Glass, Raypak. Just one
19 of the things for the Department of Energy. Just
20 wanted to pass along the -- and who knows why it's been
21 done. It's probably based on usage patterns.

22 But the year, the annual year from the pool
23 industry standpoint is October 1st through September
24 30th. That's how the year has been classified. So the
25 shipment data and things that you would receive that

1 reflects the year, it's an offset that's done that way.

2 So, just for Department of Energy's information.

3 MR. BROOKMAN: Thank you. Other -- yes,

4 Frank.

5 MR. STANONIK: I just want to touch on the
6 first two bullets. You know, I appreciate your trying
7 to keep this thing moving and obviously we can't
8 provide this data right now. But I do think I'm
9 obligated at this stage to kind of inform DOE that in
10 terms of what they're looking for, you know, and I'll
11 certainly defer to Charlie and Troy, but shipment-
12 weighted average going back to 1990, I -- first of all,
13 in terms of water heating products, GAMA has had no
14 statistics program to collect any kind of shipments by
15 efficiency.

16 So at this point we would have to do some
17 kind of special statistical collection to try and
18 generate that data. I don't even know if that's
19 doable, again, going back to the 1990s.

20 In terms of the other part, which is a
21 specific -- the baseline model and current levels,
22 again that's something we would -- well, we can do but
23 we'll probably have to do it as a separate kind of data
24 collection. And then it really becomes a question of
25 getting it done in some kind of timely fashion.

1 But I want to also point out as an example,
2 like -- the idea of shipment-weighted average
3 efficiency on an oil water heater, I'm going to tell
4 you you're wasting your time because in terms of
5 residential oil water heaters, you know, I don't know -
6 - I haven't looked at our directory lately. There's
7 probably only like 12 models made total. And there
8 just isn't that significant a spread of efficiencies,
9 or if there is even a spread of efficiencies, picking a
10 weighted average you're going to hit nothing. I mean,
11 you won't hit a real product.

12 And so I'm going to tell you right now I
13 don't think we'll be able to provide you that data
14 because it just won't have a lot of use.

15 As far as instantaneous water heaters, again,
16 certainly we won't be able to give you information back
17 to 1999. The reality is that only in the last few
18 years has that product really kind of established a
19 foothold in the U.S. market. I'm not aware where I
20 could even find information going back to the early
21 '90s.

22 And then, on the -- similarly, on all of the
23 direct heating products, and we certainly will expound
24 on this one, but again you've got a real question --
25 or, we have a real question whether there is a

1 significant range of efficiencies of what's out there
2 today for it to make sense to talk about a shipment-
3 weighted average efficiency. We'll try and follow up
4 on that one, but again for those direct heating
5 products, this level of detail may just, in this case,
6 not really be necessary.

7 MR. BROOKMAN: Frank, while you've got the
8 microphone there in front of you, so in that last
9 description you basically described the areas where
10 it's going to be really hard for you to come up with
11 data.

12 MR. STANONIK: Right.

13 MR. BROOKMAN: Okay. So I'm sure the
14 Department -- if you have any further thoughts on what
15 you're going to have a hard time getting, they would
16 appreciate knowing that soon.

17 MR. STANONIK: Right.

18 MR. BROOKMAN: Okay. Yes, Charlie.

19 MR. GLASS: Robert.

20 MR. BROOKMAN: Pardon me. Robert. I
21 apologize. Robert, please.

22 MR. GLASS: Robert Glass, Raypak. Just to
23 complete what Frank was talking about on the pool
24 heater side, the data that's been collected from that
25 only goes back to 2000. So there's seven years of data

1 that has been collected as an industry. But again,
2 that is not weighted by efficiency level. It is only
3 total product that is shipped. So, I mean, that
4 information is available, but there's nothing that's
5 going back beyond that.

6 MR. BROOKMAN: Thank you. Harvey Sachs.

7 DR. SACHS: Harvey Sachs, ACEEE. Just one
8 minor note on market-pull mechanisms. Some utilities
9 have operated non-end user stimuli, otherwise known as
10 SPIFs, for distributors and contractors for water
11 heaters. I believe that there is a record of success
12 with some of these products where the dollar amounts
13 per unit are in the single digit range. But, just a
14 matter of information. We can certainly get -- ask
15 Marshall to provide you the data.

16 MR. BROOKMAN: Lance, follow on.

17 MR. DeLAURA: Just a quick add-on to that.
18 We call them upstream rebates. Right now in California
19 -- I can't speak for the nation -- there is a question
20 of how upstream rebates will be treated for the
21 regulators there. So it's a little dicey.

22 MR. GLASS: Have they been cost effective for
23 you all?

24 MR. DeLAURA: Yes, but they're questioning
25 now, the regulator, what cost category you put that

1 midstream rebate in, whether you count it the way we
2 traditionally use rebates as a cost to the program or
3 if it's an administrative cost. It makes a difference
4 in the cost effectiveness of the program.

5 MR. BROOKMAN: Thank you. Additional
6 comments on this series of slides on 85?

7 (No response)

8 MR. BROOKMAN: We've really made great
9 progress since lunch. It's now 2:45. Let's take a
10 break. We'll resume at three. And now, for the first
11 time today, I think we're going to get through all
12 this.

13 (Laughter)

14 MR. BROOKMAN: Thank you. We'll resume at
15 three.

16 (Brief recess)

17 MR. BROOKMAN: So we are now, I think, round
18 about Slide 86. We are talking about National Impact
19 Analysis, and we'll proceed with the other major
20 analytic pieces that you see on this overview slide.
21 So then, back to Alex.

22 National Impact Analysis

23 Alex Lekov

24 (PowerPoint presentation)

25 MR. LEKOV: So the National Impact Analysis

1 is used to determine the standard case national energy
2 savings and national consumer economic impacts,
3 everything relative to the base case. In general
4 terms, the approach we're proposing is to take
5 individual consumer impacts due to the standards and
6 aggregate them to the national level. Those analyses
7 rely on inputs from prior analyses that include
8 shipments, consumer prices, energy use, energy prices,
9 repair and maintenance costs, product lifetimes.

10 DOE calculates the consumer impact in terms
11 of net present values. In essence, as pointed on the
12 slide, this is the difference between the national
13 operating cost savings and increased equipment
14 expenditures. All those calculations will be performed
15 in a spreadsheet format for all product costs.

16 With this, I'm turning the presentation to
17 Doug for comments.

18 MR. BROOKMAN: Thank you. So you see the
19 question there at the top of Slide 88. Information on
20 the Department's plan to develop NES spreadsheet models
21 for estimating national impacts.

22 Comments, if any, on the national impact
23 analysis? Harvey Sachs.

24 DR. SACHS: Harvey Sachs, ACEEE. I suspect
25 that this particular groove in my 45 RPM record is

1 getting somewhat worn, but I'm still concerned that the
2 implication to me of spreadsheet models is of line
3 estimates, point estimates of costs, decorated with
4 some Monte Carlo analysis. I think if we're honest and
5 serious about this type of analysis and presentation,
6 it's going to be important to carry forward bottom-up
7 error and uncertainty estimates.

8 I have not seen that. Perhaps I've been
9 reading superficially, but I have not seen that
10 incorporated in prior analyses. I don't want to make
11 the job harder, but I just don't know how to judge
12 again what's elephant and what's mouse without having
13 this kind of tracking done.

14 MR. BROOKMAN: Thank you. Other comments on
15 national impact analysis? Yes, Steve Rosenstock.

16 MR. ROSENSTOCK: Steve Rosenstock, EEI.
17 Again, just as a reiteration, you know, if possible to
18 take into effect (sic) indirect effects, especially on
19 water heaters, just new efficiency standards for
20 clothes washers and dishwashers and how that impacts
21 national impacts for the water heater standards.

22 MR. BROOKMAN: Thank you. Yes, Robert.

23 MR. GLASS: Robert Glass, Raypak. Question
24 for DOE. Is there some type of a go/no go indicator
25 that once you go through this analysis or even previous

1 ones that in looking at it you can make a determination
2 that, yes, it is worthwhile to continue making changes
3 to a rulemaking process or no, just to stay with
4 existing efficiency levels?

5 MR. BROOKMAN: Ron Lewis.

6 MR. LEWIS: This is a full-fledged rulemaking
7 process, and the analysis that we're doing I would
8 expect that we're going to carry it out to the ends to
9 final rule. It's not a determination whether we ought
10 to go forward, it's a matter of -- it's just justifying
11 whether there's a new efficiency level that ought to be
12 prescribed or not.

13 So it's not an if we're going forward, it's a
14 matter of what is that number. Is there justification,
15 does the analysis that we're required to perform lead
16 us to another number or do we end up at the same point
17 but we're required to go through the process. Does
18 that answer your question?

19 MR. GLASS: Not totally. But I'll reserve
20 things for additional comments, written comments.

21 MR. BROOKMAN: Thank you. So, any additional
22 comment on national impact analysis?

23 (No response)

24 MR. BROOKMAN: Then we're moving on to Life-
25 Cycle Cost Subgroup Analysis and Jim McMahon.

1 Life-Cycle Cost Subgroup Analysis

2 James McMahon

3 (PowerPoint presentation)

4 MR. McMAHON: Jim McMahon from Lawrence
5 Berkeley National Lab. Thank you all for persisting.
6 If you recall the overview this morning, Slides 8 and 9
7 in your presentation, we have now completed everything
8 on Slide 8. That is the advance notice of proposed
9 rulemaking. At this point we're going to shift to
10 after that process is complete, about a year and a half
11 from now. We will then go on to a proposed rule. I'm
12 going to describe to you, and Barbara's going to help
13 with the Manufacturer Impact Analysis, the analyses
14 that will be conducted at that second phase of this
15 rulemaking.

16 So the first one of those is the life-cycle
17 cost subgroup analysis. This was established in the
18 process rule in 1996. The intent is to determine
19 whether there are disproportionate impacts on consumer
20 subgroups. That is done by conducting a life-cycle
21 cost analysis for particular subgroups.

22 For these products we intend to analyze two
23 subgroups, low income and senior citizens, and we're
24 open to comment about whether that's the appropriate
25 set of subgroups or we should look at others.

1 We'll look at variations in regional energy
2 prices, energy use, and installation costs that might
3 affect the impact of standards on those subgroups, and
4 we will not apply the rebound effect for the reasons
5 that were stated above in the earlier discussion today.

6 I'll turn it over to Doug.

7 MR. BROOKMAN: Thank you. You can see the
8 question that the Department is seeking comment on.
9 What consumer subgroups are appropriate for these
10 products?

11 Marshall.

12 MR. HUNT: Marshall Hunt, SEGWHA I. I would
13 hope that we could say the positive and the negative
14 impacts. We will have those -- the low-income, for
15 example, usually that's a negative impact.

16 MR. BROOKMAN: Through your analysis, you
17 mean, on your project?

18 MR. HUNT: No, in their analysis.

19 MR. BROOKMAN: Thank you. Okay.

20 MR. HUNT: One of the things we've looked at
21 is some people are more benefitted than others. Some
22 are damaged or disincentives. So definitely when we
23 look at, for example, multi-family projects, someone
24 there doesn't have a choice about the water heater
25 that's installed. So when you raise the standard, they

1 are paying the utility bills. So it may be difficult
2 to look at all of the subgroups, but look at the
3 negatives and the positives.

4 MR. BROOKMAN: Thank you. Please, yes.
5 Charlie.

6 MR. ADAMS: Charlie Adams, A.O. Smith. I
7 question the need to look at the low-income subgroup
8 for pool heaters.

9 (Laughter)

10 MR. BROOKMAN: Yes.

11 MR. GLASS: Robert Glass, Raypak. I was
12 going to make the same comment. In addition, even with
13 senior citizens, too. The recognition that the use of
14 having a pool heater is obviously when one has a pool,
15 and that in and of itself doesn't qualify or typically
16 have for low-income applications or in many instances
17 even as a senior citizen, even though a senior citizen,
18 which would be more on a commercial side as some type
19 of retirement community or something else that may have
20 a pool heater. But that's going to be more on a
21 commercial side than on a residential side.

22 So I don't think either subgroup is really
23 appropriate for pool heaters.

24 MR. BROOKMAN: Additional comments on these
25 consumer subgroups?

1 (No response)

2 MR. BROOKMAN: Okay. Jim.

3 MR. McMAHON: Okay. I'll turn this over to
4 Ed Barbour.

5 Manufacturer Impact Analysis

6 Ed Barbour

7 (PowerPoint presentation)

8 MR. BARBOUR: I'm Ed Barbour with Navigant
9 Consulting and I'm going to go over the Manufacturer
10 Impact Analysis. The purpose of the manufacturer
11 impact analysis is to really evaluate the impacts and
12 standards on the industry as a whole. But also, and
13 this is probably more important, it's really to
14 understand how the impacts differ from manufacturer to
15 manufacturer, from small to large or even between
16 different large manufacturers.

17 In terms of methodology, we really use, or
18 DOE uses, two tools to sort of conduct the manufacturer
19 impact analysis. The first is the GRIM, or the
20 Government Regulatory Impact Model, and I'll talk a
21 little bit more about that in a couple slides, and the
22 other one is manufacturer interviews. Those in the
23 past, and I expect in the future, are typically, you
24 know, one-on-one interviews with as many manufacturers
25 that are willing to talk to DOE.

1 In the past, and Jim indicated everything --
2 this was going to be in the NOPR stage. Part of the
3 MIA is actually going to be during the ANOPR stage, and
4 that is new to this rulemaking compared to, say, the
5 previous water heater rulemaking.

6 The goal is, really, in terms of outputs, to
7 quantify the impacts in terms of net present value,
8 really have an understanding of how the impacts might
9 be different amongst different categories of
10 manufacturers, as well as any other impacts that the
11 manufacturers want to bring to DOE's attention.

12 You can really, in terms of the MIA,
13 visualize it in three different parts or phases. The
14 first part is the ANOPR phase, which we talked a little
15 bit about, and the engineering analysis, talking about
16 industry profile and preliminary MIA interviews. And
17 we'll talk a little bit more about that.

18 The post-ANOPR phase is the traditional MIA
19 that some of you may be aware of in terms of the last
20 rulemaking. It's where we create a GRIM, we develop a
21 more detailed, more robust interview guide to go out to
22 the manufacturers, and then in phase three we actually
23 conduct those interviews. We refine the GRIM, as well
24 as start to assess sort of direct employment,
25 competitive, cumulative burden, some other issues that

1 we'll talk about in a minute.

2 If we go to phase one, we look at the
3 industry profile. In this phase we're using a lot of
4 publicly available information in order to conduct the
5 industry profile. Previous slides I put up show some
6 of the preliminary data that we've gathered, or that
7 DOE has gathered, in order to show sort of where they
8 are at this point. Hopefully, we can get more
9 information and data from you that can help refine that
10 industry profile.

11 We're also preparing a preliminary MIA
12 questionnaire, and this is actually part of the
13 engineering analysis where we're going to take the
14 opportunity, hopefully, to get the manufacturers' sense
15 of impact on the potential efficiency levels on not
16 only shipments that Alex presented but, you know, also
17 try to understand market dynamics, you know, price,
18 product switching.

19 We're very interested to know the
20 manufacturers' product distribution from an efficiency
21 standpoint. A lot of times if you raise the bottom
22 floor, not everything else goes up, so you actually
23 squeeze your margins. So maybe -- central air
24 conditioners is an example that comes to my mind in
25 that, you know, there's a certain product

1 differentiation by the manufacturers in terms of
2 pricing that if you eliminate the bottom but you can't
3 go any higher on the top, then you may actually squeeze
4 their margins overall. Those types of issues are
5 issues we'd like to talk to manufacturers about.

6 The other thing about the -- that we'll try
7 to ask are the typical components in the baseline unit,
8 sort of what's the starting point, what's ground zero
9 in determining what your costs that are going to be
10 incurred to meet those efficiency levels.

11 We're really going to try to understand is
12 your efficiency levels in terms of your product typical
13 of the aggregated industry, what technologies are you
14 using, how are you able to improve the efficiency or
15 how are you proposing to improve the efficiency to meet
16 certain levels.

17 This is very important. What are your
18 capital costs in order to meet those levels? What's
19 the tooling involved? Is there a special R & D that
20 you have to do in order to meet certain levels?

21 And the other thing that even the preliminary
22 MIA interviews do, and later the more robust, is that
23 it really gives a good appreciation of how the costs
24 can be very different from one manufacturer to another.

25 An example is maybe one manufacturer has actually

1 heavily invested in certain technology that makes it
2 very easy to meet one of those other efficiency levels
3 while other manufacturers have not, in which case it's
4 going to be a great deal more costly for those
5 manufacturers in order to meet that.

6 We want to be able to not only represent sort
7 of the aggregate but sort of understand the range.

8 The final task of the ANOPR would be sort of
9 a documentation that would explain the findings of the
10 interviews. That would be, actually, part of the
11 ANOPR, which again is new at this time. Go to the next
12 slide.

13 In phase two, after the ANOPR is published,
14 got all the disaggregated cost data, we have,
15 hopefully, a good understanding of the market dynamics.

16 We start preparing a GRIM model.

17 Now, for those of you not familiar with the
18 GRIM, the GRIM uses inputs derived from both the
19 engineering, the shipments, and other analysis
20 sections, plus the financial information associated
21 with the industry inputs to develop a cash flow for the
22 industry, essentially an evaluation of what the
23 industry looks like both pre- and post-standards,
24 determining -- in terms of different efficiency levels.

25 The other thing that we do in phase two is we

1 start developing the interview guide for phase three.
2 And these are much more qualitative in terms of
3 aspects. We're going to try to understand again price
4 differentiation within product lines.

5 We're also going to try to understand even in
6 more detail the conversion costs. The conversion costs
7 are very critical, particularly for smaller
8 manufacturers. So we're going to try to understand how
9 much -- not just how much but also what you're doing,
10 you know, what are some other issues. Maybe there are
11 -- in some other industries there are import/export
12 issues we might want to try to understand.

13 Instantaneous water heaters may be an issue that comes
14 up in terms of import/export.

15 And the goal is to hopefully provide
16 information back to DOE that will help, you know, to
17 determine that due to standards there may be some
18 impacts from competition that could force, you know,
19 industry into consolidation, you know, could force
20 industry overseas, various, you know, outcomes that
21 could happen that I think DOE would be very interested
22 in learning.

23 And then finally, we actually go out and do a
24 second series of interviews. These are more detailed.

25 In the past it has actually involved site visits. It

1 may still involve site visits. And the goal is to
2 actually try to understand the impacts on the
3 individual manufacturers and/or subgroups of
4 manufacturers.

5 You know, typically the information that is
6 gathered during these interviews is really critical,
7 and I want to emphasize that. It helps every aspect of
8 the analysis, not only the quantitative aspects and
9 refining the GRIM and refining the cash flow but really
10 trying to feed back to DOE the issues that the
11 manufacturers face in meeting certain standards. And
12 that's going to be very key.

13 So the other thing I guess I'll point out is
14 through past history we've found that a lot of times
15 setting up these interviews does take a lot of time.
16 So I think we're going to want to start as soon as
17 possible setting it up through the various trade
18 associations or with the manufacturers. You know, we
19 have confidentiality agreements that we often -- that
20 we provide. I haven't had one confidentiality
21 agreement go to a manufacturer that they haven't wanted
22 to change. So then we get lawyers involved and it
23 takes a little bit of time. It's just something to
24 keep in mind as we go forward.

25 The other thing is we want to try to -- I

1 don't think we brought it up earlier in the preliminary
2 one, but we do want to assess impacts on industry
3 employment levels at this stage. This is where we
4 start to get a little more detail in terms of
5 discussions about how it's going to impact our
6 employment levels, shift jobs. We're going to want to
7 try to document that as much as possible and bring that
8 back to DOE. Go to the next slide.

9 So now I'm going to hand it over to Doug, who
10 will facilitate the discussion around these three
11 questions.

12 MR. BROOKMAN: Thank you. You can see the
13 first question is the point that Ed just made a moment
14 ago about scheduling interviews, requesting
15 information, and kind of the form of that or advice
16 that this multiple sector group would offer to DOE and
17 its contractors. Thoughts on how to get that done,
18 aside from early and efficiently?

19 How has it been done previously in this
20 sector? Coordinated through GAMA? Frank.

21 MR. STANONIK: Yeah, certainly in terms of
22 the extent that our members are affected by this we can
23 certainly work with Navigant and whoever else to try
24 and coordinate and certainly facilitate contact to set
25 up these interviews and try and create some kind of

1 schedule so that they can be done as quickly and
2 efficiently as possible. Yeah, we have done that in
3 the past.

4 MR. BROOKMAN: Okay. George.

5 MR. KUSTERER: George with Bock. I just have
6 one question. What kind of a timeline are you looking
7 for for these interviews? Will they be starting next
8 week? What kind of a time frame are you looking at,
9 three months, six months?

10 MR. BARBOUR: That's actually a very good
11 question. We're really talking about two sets of
12 interactions. One would be during the engineering
13 analysis, which is ASAP. Comment period closes January
14 30th, get the comments. I'm assuming we'll start
15 trying to contact you as soon as possible.

16 I believe, if I remember correctly, and
17 somebody here correct me, the timeline for data
18 gathering is by June 2007. So we will have to have
19 discussions with manufacturers on that first stage by
20 June 2007.

21 I don't remember when the ANOPR is published,
22 but I believe what we would try to do is during the
23 comment period for the ANOPR is to start trying to set
24 up some of the meetings that would occur after the
25 ANOPR comment period. Again, it's a very pressed

1 schedule. I think Frank went into the three years
2 being incredibly aggressive, and it's going to be
3 paramount that we try to set up stuff maybe a little
4 bit leading as opposed to lagging in terms of
5 reactionary.

6 MR. KUSTERER: Thank you.

7 MR. BROOKMAN: Harvey Sachs.

8 DR. SACHS: My first question is -- Harvey
9 Sachs, ACEEE. My first question is really for the
10 Department, and that is the role of this manufacturer
11 impact analysis on the overall standards rulemaking
12 process. Does this wind up as a go/no go if there is
13 some threshold of negative manufacturer impact that
14 nothing goes forward? How does this enter? How is it
15 valued? You have to tell me.

16 MR. LEWIS: Ron Lewis, DOE. The importance
17 of trying to get as much information on the plate early
18 on so we know where we are and knowing not whether to
19 proceed because we're required to proceed with these
20 things, but trying to look at what are the items that
21 could be problematic or things that we need to be aware
22 of early on.

23 There are instances where looking at mere
24 technology, maybe max tech that might be, you know,
25 possible, or life-cycle cost by itself or something

1 just stand-alone may give you one conclusion, but as
2 you know, we're required to look at a whole lot of
3 things. So getting an early glimpse and trying to get
4 all the ingredients that we can get our arms around
5 early on and get a rough idea of where those
6 difficulties may be is helpful to stop us from having
7 sudden surprises or major detours later on in the
8 process when time is more compressed and much more
9 difficult to make up in the process.

10 DR. SACHS: My actual question -- I
11 appreciate that response. Again, this is Harvey Sachs
12 -- was what its ultimate effect is. Is this a process,
13 an analysis or a group of analyses, that can stop the
14 process, or how does this play out in the ultimate
15 rulemaking?

16 MS. PINTO: Francine Pinto. Basically, we
17 weigh benefits and burdens of all the criteria that
18 EPCA sets out that we must consider. There is not one
19 factor that is the one we just examine. We have a
20 whole set of factors that we have to weigh benefits and
21 burdens.

22 DR. SACHS: Okay. Thank you.

23 MS. PINTO: 325.0 is where all the criteria
24 are set forth for residential products.

25 DR. SACHS: Thank you. Now, I guess what --

1 MS. PINTO: I should add one caveat. I mean,
2 for example, we're not allowed to -- we have an anti-
3 backsliding.

4 DR. SACHS: Yes.

5 MS. PINTO: So we cannot reduce efficiency
6 standards.

7 DR. SACHS: Yes. Thank you very much.

8 MS. PINTO: Okay. So there are certain
9 things that are -- you know, we cannot do.

10 DR. SACHS: Where I'm going with this is that
11 water heaters seem to be an unusual product, and I'm
12 not referring, with all due respect, to pool heaters
13 and direct equipment, so I don't know what their annual
14 shipments are, I don't know what their energy impact
15 is.

16 But repair versus replace is rarely an option
17 for conventional storage water heaters. They live and
18 they die. They're gone. So this market is a
19 relatively inelastic market, and it's also a highly
20 consolidated manufacturing group. This, to me, seems
21 to indicate that the analysis is a rather different
22 analysis than was done, for example, for furnaces and
23 boilers or air conditioners.

24 In particular, what concerns me here is the
25 sense that, given an inelastic market where shipments

1 are not likely to decline at almost any efficiency
2 level, because relatively few people are going to put a
3 pot on the stove, that the biggest likely impact on
4 total sales is the offshore/onshore equipment question,
5 and in particular the storage versus instantaneous or
6 tankless water heater question.

7 And given what seems to be a substantial bias
8 -- I mean that in the technical rather than the
9 political sense -- in the present test method with its
10 large draws against storage water heaters and in favor
11 of instantaneous and given that most or all of the
12 instantaneous are built offshore, the potential
13 employment and manufacturer impact would seem
14 conceptually to be dominated by loss of market share
15 for storage water heaters. How does the Department
16 plan to evaluate that?

17 MR. LEWIS: I don't have the answer right
18 now.

19 MR. BROOKMAN: Ron Lewis speaking.

20 MR. LEWIS: In the process of laying out all
21 that we have to do and get done and the decisions of
22 trying to move things up that have presented us with
23 not necessarily surprises but findings that we need
24 more information on later on, we've tried to improve
25 the process by moving up some of this material to do a

1 preliminary. In evaluating the criteria that were
2 required of the statutes that Francine just referred
3 to, the material that we need to evaluate, we want to
4 be aware of those factors and collect as much
5 information.

6 I don't know about -- and that's the process
7 that we're in, to gather the information and take a
8 look at it before we pre-decide what we're going to do
9 with it.

10 DR. SACHS: Harvey Sachs again. As a follow-
11 up, Ron, I very much appreciate that, but you're out
12 there looking at pebbles and not realizing that there's
13 an avalanche. I mean, that's the only metaphor I can
14 think about. Given the conditions that I've suggested
15 for the industry, and Lord knows I'm an observer, I'm
16 not a participant, it seems to me that the potential
17 train wreck in terms of our manufacturers and our
18 employment and, incidentally, the ramifications for our
19 utilities and others as well, is this question of
20 whether the DOE is imposing inadvertently standards
21 that could destroy the American industry.

22 MR. LEWIS: We appreciate your concern and
23 your input, and anything -- any other wisdom you can
24 transmit to us through this process we would welcome.
25 And very few of these are easy and we're doing what

1 we're required to do and we're trying to do it in a
2 process to give opportunities to gather information and
3 get comments from people such as yourselves.

4 DR. SACHS: Again, just one final point. The
5 discrepancy in preliminary data from California study
6 is roughly -- and California would propose in its Title
7 24 I believe for 2009 decrementing the EF of tankless
8 water heaters by 8.9 points relative to tank type in
9 terms of whole building energy consumption. I think I
10 have that right. I'm not sure, but we certainly can
11 get you to the regulatory literature on this.

12 This is not a small impact in terms of
13 consumer perception. Thank you.

14 MR. LEWIS: Thank you.

15 MR. BROOKMAN: David Goldstein and then to
16 George.

17 MR. GOLDSTEIN: David Goldstein, NRDC. I
18 wanted to make two comments within the general
19 construct of this page but not within any of the bullet
20 points. Appropriately, they're about some things that
21 I think are missing from the analysis.

22 The first concerns the effect of learning
23 curve. When you go to new technologies, there is a
24 learning curve or experience curve in every product
25 that I've seen data on, and numerous of them through

1 the process of previous appliance standards where the
2 cost of production comes down with experience and winds
3 up being lower than any kind of prospective calculation
4 based on, you know, buying this much pounds of copper
5 and that many fasteners and so on would lead you to
6 believe. I think this needs to be incorporated into
7 the analysis.

8 It needs to be incorporated in two ways, and
9 one of them -- the second one is more subtle and
10 probably more interesting than the direct one.
11 Consider the point that was brought out in the NOPR on
12 furnaces where there was a discussion of a potential
13 manufacturer impact at an AFUE 90 where the NOPR
14 pointed out that European manufacturers were producing
15 more AFUE 90 furnaces and therefore might have a lower
16 cost structure. So one of the impacts of setting a
17 standard might be going to a place where the costs were
18 lower.

19 There is certainly going to be a global
20 market for higher efficiency in water heaters as well
21 as in everything else, and to the extent that other
22 countries are getting ahead of this country, which I'm
23 not saying is happening now; I don't have the data on
24 that. But to the extent that other countries are
25 getting ahead of this country, they're going to bring

1 down the costs on high technologies earlier and we're
2 facing a potential loss of domestic employment and
3 maybe even companies from a continuation of the status
4 quo for too long of a time.

5 So the recommendation is that you look at
6 what the international competition would be and
7 consider in the manufacturer impact how a standard at
8 various levels or different time frames can assure that
9 U.S. companies have the global lead in storage -- water
10 heater technology and are at least competitive globally
11 on instantaneous.

12 Second thing on manufacturer impact is all of
13 the analyses that I've heard talked about, and I'm not
14 criticizing any of them, but they're all speculative.
15 They're all trying to figure out what might happen in
16 the future using models. To some extent, that's the
17 best you can do. But to another extent, we've already
18 had a contested water heater proceeding with
19 manufacturer impact analyses and the standard has gone
20 into effect.

21 So it would seem to me that a retrospective
22 on what impacts were predicted and what actually
23 happened would be useful. It would be useful in two
24 different ways. It would be useful in trying to see
25 how accurate the initial projections were, and it would

1 also be accurate (sic) in trying to figure out how can
2 you separate signal from noise.

3 In other words, I would hypothesize one of
4 the results you would get from a retrospective is you
5 look at the data and you look at the predictions and
6 you say, well, are these consistent with each other.
7 Well, they're not inconsistent with each other, but you
8 can't really show they're consistent with each other
9 because there's too many other things going on.

10 If that's what you found, that would be
11 valuable because it would kind of put a threshold on
12 how big do these predicted impacts have to be before
13 you can see them. In other words, if you predicted a 5
14 percent impact on something and you went back and you
15 couldn't determine whether it really happened or not,
16 it would tell you 5 percent impact isn't very big
17 because you can't observe it in the real world.

18 So I think that would be a useful
19 calibration. Probably wouldn't be very time-consuming
20 or expensive. So I would suggest that you look at
21 doing that, particularly for water heaters but for
22 other products if it's possible.

23 MR. BROOKMAN: George.

24 MR. KUSTERER: George from Bock Water
25 Heaters. First, let me say anything that I ever said

1 about Harvey Sachs, I take it back and apologize
2 profusely.

3 (Laughter)

4 MR. BROOKMAN: You want that on the record,
5 huh?

6 MR. KUSTERER: Yes, absolutely, I want it on
7 the record.

8 MR. BROOKMAN: Okay.

9 (Laughter)

10 MR. KUSTERER: Harvey is right on the money.

11 When I started my career in this industry some 40
12 years ago, there were probably 50 or 60 manufacturers
13 of water heaters. Look at the table. How many of us
14 are left? And the impact that we're having with
15 offshore products, regardless of the advancement in
16 technology, because what you have to realize is the
17 technology was given to them by us or it was stolen,
18 one or the other. But look at the impact from these
19 instantaneous water heaters that are not even being
20 produced in this country.

21 I suspect if this is going to be an impact on
22 our industry, the next time DOE decides that they want
23 to up the efficiency standards, they may be sitting
24 here alone. So I would caution you on exactly what
25 Harvey said. Look at the impact to the manufacturers.

1 Are we going to, number one, lose market share? If we
2 do lose market share, we may have to look for another
3 industry.

4 MR. BROOKMAN: So, as a follow-on, one of the
5 questions you see on Slide 98 is what the appropriate
6 manufacturer subgroups for the four products would be.

7 Maybe somebody could just describe those briefly.

8 Frank.

9 MR. STANONIK: Frank Stanonik with GAMA. Far
10 as subgroups, I mean if you look at residential storage
11 water heaters, some of this most recent discussion, I
12 mean, the reality is there are three major
13 manufacturers left in the United States. Since the
14 last rulemaking, it went from five to three.

15 And even within that, I mean, on the gas
16 side, there's basically three. If you look at electric
17 water heaters, there still are a few, couple, small
18 companies making some electric water heaters. So even
19 within that group you have the majors and then some
20 small guys. If you look at oil water heaters, they're
21 all small guys. I mean, any one of those oil water
22 heater companies would love to have as annual shipments
23 what those other guys ship out in a month, I think.

24 And on direct heating equipment, again I
25 don't know if there is a subgroup. I mean, just as a

1 barometer, in our certification program in terms of how
2 we assess what we charge participants, we base it on
3 their annual sales. The categories of annual sales in
4 the low end is 20,000 units a year, on the up end is
5 over 50,000 units a year. Okay. Nobody in the direct
6 heating business -- within their own business you will
7 have a bigger company versus a smaller, but I think in
8 the bigger picture nobody in the direct heating
9 business is a big company.

10 The pool heater market is probably closer to
11 that. There's three or four manufacturers. In fact,
12 at least a couple of them, their only business is pool
13 heating anymore. And again, I don't -- you know,
14 clearly the price will rank them among them, but again
15 I think they're all probably, in a bigger sense, small
16 companies.

17 So I don't know that there's really that many
18 subgroups. Certainly with storage water heaters you've
19 got some variation of subgroups. You even have some
20 variation in the big guys. I mean, you have one
21 company whose at least, you know, main business is
22 selling to only one of the distribution channels. The
23 other two compete in both channels. That's
24 significant. But once you get past that, I don't know
25 what the other subgroups would be.

1 MR. BROOKMAN: Thank you. Additional
2 comments on that point, subgroups?

3 (No response)

4 MR. BROOKMAN: And the final question here is
5 regulations or pending regulations that DOE should
6 consider in the manufacturer impact analysis.

7 Yes, please. Troy.

8 MR. TRANT: Troy Trant with Rheem. I did
9 notice in the framework document a reference to the NOx
10 emission standard for California, as well as the --
11 vapor ignition resistant standards. It's good that
12 those are noted. There's been some changes certainly
13 with the -- that I think need to be recognized with
14 respect to -- the NOx emissions requirements will come
15 out in phases, and in the FEIR we still have a phase
16 that's due this year. So there is still some activity
17 in that area.

18 MR. BROOKMAN: Thank you. George.

19 MR. KUSTERER: George from Bock. With regard
20 to possible pending regulations, if DOE is looking at
21 condensing products, there is the possibility of
22 pending legislation with regard to the type of venting
23 material that can be used. As I said, in Canada, they
24 are seriously looking at doing away with certain
25 materials which are currently being used, and I suspect

1 before long that CSA documents and so forth and so on
2 will just kind of filter on down here to the lower part
3 of Canada, meaning the United States.

4 So I would suggest that DOE take that into
5 consideration when looking at condensing products.
6 Thank you.

7 MR. BROOKMAN: Thank you. Frank Stanonik.

8 MR. STANONIK: Frank Stanonik with GAMA. One
9 other thing, and it's probably more in the category of
10 just making sure that it's not an issue, and I'm sure
11 George could speak to this better than I can. But when
12 we look at oil-fired products, there is a lot of
13 activity going on with looking at biodiesel -- not --
14 bio heat. Okay. Oil -- fuel heating oil that in fact
15 has some component of biofuel or whatever you want to
16 call it.

17 And certainly the objective and the desire is
18 that if a product is using this biofuel oil that in
19 fact you don't see any difference in the operation or
20 the performance, but I certainly think, as I say, it's
21 one of those things that needs to be made sure that
22 isn't an issue as you go forward with this rulemaking.

23 If that's the objective, I think we need to make sure
24 that we have it.

25 MR. BROOKMAN: George.

1 MR. KUSTERER: George from Bock again.
2 Currently, there is a movement on, and of course like
3 we do here in America, we always put the cart before
4 the horse. So government has gotten involved deeply
5 with biodiesel or biofuel, and of course there are many
6 state governments and local governments that are
7 advocating its use. Some governors and legislators
8 have signed laws requiring certain states to do this.

9 Unfortunately, there is no ASTM number, there
10 is no UL-approved appliances here in the United States
11 or in Canada that can burn biofuel. But currently, we
12 as an industry are moving forward and working with ASTM
13 and UL through NORA to have a 5 percent or a B5, which
14 is in the process of being tested, to give -- to ASTM
15 to give it a number and UL to allow it to be used in
16 its listings. So we would caution DOE to not use that
17 biodiesel or biofuel or bioheat, whatever acronym
18 they're going to use for it, to be considered in this
19 rulemaking simply because it is not a proven product
20 and cannot be used by law.

21 MR. BROOKMAN: Thank you. Final comments on
22 this set of -- Harvey Sachs.

23 DR. SACHS: This is Harvey Sachs, ACEEE. I
24 want to thank my new best friend George for bringing up
25 another issue which we have lumped with technology

1 options not considered in the framework.

2 We have -- are in the midst now of seeing a
3 tremendous tightening of the sulphur in diesel
4 requirements, which will lead from a present 250 PPM or
5 so down to in the range of 15 PPM, if I understand.
6 That's the limit of sulphur in diesel fuel.

7 We would not be surprised to see Ozone
8 Transport Commission states, which are a dominant
9 fraction, I believe, of the market for oil-fired
10 equipment, move to adopt these standards for stationary
11 applications and for residential equipment.

12 The reason this becomes important for the
13 Department's analysis is that work at a Department
14 laboratory, Brookhaven, has made a very strong case
15 that once you remove virtually all of the sulphur from
16 the fuel your corrosion problems both internally and in
17 terms of the flue essentially disappear, that you're
18 now on a maintenance schedule of other fuels, like
19 natural gas with comparable amounts of sulphur in them.

20 So this is a technology option which has a
21 cost. The cost has an upward-bound estimate from API
22 of 10 cents a gallon for truck fuel. Everyone else is
23 thinking five cents a gallon. But it then comes down
24 to a technology option that must be explored in terms
25 of its potential for reducing the cost of efficiency

1 options by decreasing the need for special materials.

2 Thank you.

3 MR. BROOKMAN: Thank you. Yes, Troy.

4 MR. TRANT: Just a final comment. It may be
5 helpful for us to look at, really, the things that have
6 taken shape in California. The reason why I'm bringing
7 this up is, in 2003, the first phase of FBRR hit the
8 marketplace. In the beginning of '04, we went to NAECA
9 II. Now we're -- the later part of this year, you'll
10 see the most stringent NOx emissions regulation hit a
11 large region of California and maybe other areas.

12 So there are things that can be looked at in
13 terms of what's the effect to the manufacturer
14 certainly but also to the cost of the product and any
15 influence on fuel switching.

16 The other comment; my colleague from Rheem
17 reminded me that there are other local governments that
18 are causing changes with respect to indoor air quality,
19 issues that are causing us to put in specially vented
20 products like direct vent products. For instance, we
21 also know that LNG is progressively being imported into
22 the U.S. That occurrence may very well lead to us
23 having to account for variations in the fuel that could
24 occur.

25 And also CO monitoring is just another area

1 that our industry still gets pressured with. We may
2 have to address that at some point in the future.

3 MR. BROOKMAN: Thank you. Yes, please.

4 MR. GLASS: Robert Glass, Raypak. Just to
5 expand on the comment about LNG, the issue to recognize
6 is that the higher the efficiency that you have means
7 the more control that you have over the air and the
8 less actual functionality operating window that you
9 have, which makes it more difficult to be operating
10 cleanly and efficiently on both natural gas and LNG,
11 and depending on whatever the blends and the things
12 that are associated with that.

13 So the import and the use of LNG widely
14 within the distribution systems here needs to be
15 considered by DOE from a functionality standpoint
16 because that operational window of products at higher
17 efficiency becomes smaller and smaller and therefore
18 it's more critical on installation-related issues,
19 maintenance issues, keeping the flue gas passageways
20 and burners and things clean. There's more and more
21 issues that are related to that.

22 MR. BROOKMAN: Thank you.

23 Okay. Let's move on to Utility Impact
24 Analysis, which is Slide 100. We're on the home
25 stretch here, folks.

1 Utility Impact Analysis

2 James McMahon

3 (PowerPoint presentation)

4 MR. McMAHON: Jim McMahon, Lawrence Berkeley
5 National Lab. The next three sections are basically
6 going to have one slide each. These are the follow-on
7 analyses after we've done all this heavy lifting, and
8 some of the comments just made are going to affect some
9 of these.

10 Utility Impact Analysis. This will estimate
11 the effects on the electricity and gas utility
12 industries of the reduced energy sales due to new
13 standards. The methodology that we use is to take the
14 National Energy Modeling System that's in place by the
15 Energy Information Administration. We have an exact
16 copy of that model and we will update it as it's
17 updated by the Department.

18 We will operate that model with inputs from
19 the analyses as you've just heard about, specifically
20 the national impacts analysis, and it will provide us
21 with measures of impacts on -- national impacts on
22 electric and gas utilities, such things as energy
23 sales, prices of energy, and unneeded capacity.

24 I'll turn this over to Doug for questions or
25 comments.

1 MR. BROOKMAN: Thank you. So you can see the
2 question there. Comment on proposed use of NEMS-BT to
3 conduct the utility impact analysis.

4 Yes, please. Ted.

5 MR. WILLIAMS: We continue to be a little
6 surprised that you use this approach. We see that --
7 in the first boiler rule, for example, we don't think
8 this approach would have picked up some fairly
9 significant fuel switching had DOE proposed a
10 condensing minimum on furnaces and boilers.

11 When we went back and did some simple return
12 on equity calculations, we found that, particularly in
13 southern climates, furnaces and boilers -- essentially,
14 you know, the condensing minimum would have imposed a
15 fairly significant shift from gas heat to electric heat
16 both in the extension of new mains of services for new
17 customers and also in existing replacement market.
18 People don't think that happens, but it does. And I'm
19 not sure this approach will work for capturing those
20 effects.

21 We have a similar situation facing us now in
22 the water heater market because we're looking at
23 another jump in technology potentially to condensing
24 and combustion, even to power venting. This is a
25 fairly significant jump. The prospect of fuel

1 switching in both those markets are important to us.

2 So we'll be providing comments on an
3 alternative means of looking at gas utility impacts.
4 I'm not sure we'll have a full proposal by the end of
5 this month when the comments on the workshop are due,
6 but hopefully we will be working with you guys and LBNL
7 to get some more detail into the issues as they affect
8 gas utilities.

9 MR. BROOKMAN: Thank you, thank you very
10 much. Steve.

11 MR. ROSENSTOCK: Steve Rosenstock, EEI. Just
12 to follow on on that, this kind of reiterates my thanks
13 to DOE for examining competing products at the same
14 time because, as we know, the efficiency levels for
15 heat pumps went up significantly last year.
16 Correspondingly, competing equipment such as furnaces
17 and boilers and other heating equipment, there was no
18 change in the efficiency standards, leading to the
19 reverse effect of fuel switching from electric to gas.

20 So, you know, this kind of reiterates it. I
21 hope in the future that when DOE does space heating
22 efficiency standards that competing products are done
23 at the same time to minimize these effects that Mr.
24 Williams was referring to. Thank you.

25 MR. BROOKMAN: Harvey Sachs.

1 DR. SACHS: Harvey Sachs, ACEEE. I guess I
2 have a couple of concerns. One of them is that
3 although water heating is a significant demand, it is
4 not the dominant demand. There is a very strong sense
5 that this will, over the roll-in of new product, affect
6 demand growth rather than actual sales. The context in
7 which it's stated in abbreviated form under utility
8 impact analysis does cause concern.

9 More importantly is what's not here, and
10 again, I would just suggest that I don't know the
11 impact of a potential shift to instantaneous water
12 heaters, but there is a strong sense that this could
13 exacerbate early morning demand in many areas. It's a
14 concern that I've heard expressed by a number of
15 utilities.

16 The storage water heater itself -- I hope I'm
17 not seen as biased, but the storage water heater itself
18 is an energy storage mechanism which is not available
19 for the tankless water heater. And I suspect that our
20 friends at AGA are going to be somewhat concerned about
21 the potential impact of lumping that demand that has
22 been stored -- for which we have stored up energy
23 overnight into a short period of an hour or two in the
24 morning at the same time as the furnace is trying to
25 recover from its setback.

1 MR. BROOKMAN: Go ahead, please. Ted.

2 MR. WILLIAMS: Going backwards a little bit,
3 but we are concerned about that effect. But I think
4 it's also important for the Department in looking at
5 water heaters and specifically instantaneous water
6 heating not just to look at energy factor issues, you
7 have to look at the sizing and the draw issue.
8 Essentially, you're replacing a 40-gallon water heater
9 in some instances with a 200,000 BTU-an-hour
10 instantaneous unit and with -- to size it right, or
11 multiple units, you have to upgrade the gas system,
12 possibly your meter. All those cost-adders need to be
13 included.

14 So I think there's an overemphasis on looking
15 at the comparative AFUEs and things like we talked
16 about earlier, the water draws over a period of time.
17 It's really the instantaneous draw that's important in
18 driving the cost of those products.

19 MR. BROOKMAN: David Goldstein.

20 MR. GOLDSTEIN: David Goldstein, NRDC. Let
21 me summarize something that I think is consistent with
22 all the previous comments but it's more of a proactive
23 recommendation rather than a "Don't do it"
24 recommendation.

25 It would seem to me that the analysis could

1 point DOE at a consistent set of levels between gas,
2 electric, instantaneous gas, and instantaneous
3 electric, if you're going to do it, that are going to
4 minimize or eliminate any adverse impacts because you
5 are providing a level playing field for all the
6 different competing technologies. That seems to me the
7 most constructive way of handling all these potential
8 problems.

9 MR. BROOKMAN: Lance.

10 MR. DeLAURA: I would agree with David. The
11 other concern I would have and would suggest that the
12 Department look at is the impacts to home builders.
13 Home builders, when they're constructing, if they make
14 an electric choice for water heating, they're going to
15 make an all-electric choice for the home. Those have
16 dramatic impacts to the consumers that then live in
17 those homes in terms of their operating cost.

18 It also affects what we call allowances to
19 home builders. They're the remuneration for their
20 installing certain end uses of equipment to offset the
21 construction cost for the piping or the wires that go
22 to the structure.

23 Significant fuel shifting or fuel switching
24 in that area would dramatically impact what builders
25 receive and certainly would impact the choices that

1 they make. So I agree with David about having a level
2 playing field on a number of levels.

3 MR. BROOKMAN: Don.

4 MR. BRUNDAGE: I was not going to make a
5 comment on electric instantaneous because it didn't
6 seem to be under serious consideration, but after
7 David's comment I feel compelled to.

8 The situation with instantaneous on electric
9 distribution systems is much more serious than with gas
10 because electricity is a product that is not stored.
11 We've had significant problems with people trying to
12 put in 28 KW instantaneous to be able to maintain a
13 full shower and having to replace transformers. There
14 are very significant costs at the local level from
15 full-scale size electric instantaneous systems. Thank
16 you.

17 MR. BROOKMAN: Thank you. Back to David
18 Goldstein.

19 MR. GOLDSTEIN: I would like to follow up
20 with Don. So, does that mean your company would
21 support a standard on electric instantaneous that
22 essentially bans resistance instantaneous? Essentially
23 ban the product. I mean, technically you could do a
24 heat pump, but trying to construct a 200,000 Btu heat
25 pump in a small space is not something I would want to

1 design.

2 MR. BRUNDAGE: I would not say it that way,
3 but an electric instantaneous is not a viable option
4 for a full house-size product. There may be niche
5 applications where it's worthwhile, but it's not a
6 viable option for a full-scale minimum appliance
7 efficiency standard option. We don't want 28 KW water
8 heaters that three are on the same transformer and all
9 come on at the same time.

10 MR. BROOKMAN: George.

11 MR. KUSTERER: George from Bock. In respect
12 to what my colleague Mr. Brundage mentioned, in the
13 summer meeting, the ASHRAE meeting in Quebec City, a
14 symposium was put on by the TC6.6 Service Water Heater
15 Committee with regard to just this subject. And the
16 comment was basically what Mr. Brundage just said. You
17 know, transformers coming off the pole, houses burning
18 down because they don't have a 400 amp service, gas
19 instantaneous water heaters of 400,000 Btus being
20 installed with three-quarter inch pipe.

21 I would encourage a member of the DOE to
22 attend -- of course I'm not going to pay for the
23 ticket. DOE has got enough money.

24 PARTICIPANT: You ultimately do.

25 MR. KUSTERER: I know.

1 (Laughter)

2 MR. KUSTERER: I would encourage DOE to
3 possibly have a representative attend the Dallas ASHRAE
4 meeting. The TC6.6 Water Heater Committee again is
5 going to sponsor a symposium just about this subject,
6 you know, instantaneous hot water heaters, friend or
7 foe. So if DOE does have a representative that's going
8 to attend the ASHRAE meeting, I would suggest they
9 attend that symposium.

10 DR. SACHS: Are you trying to remind us that
11 DOE's staff used to chair that committee? That was the
12 furthest thing from your mind, I guess.

13 MR. KUSTERER: Yes.

14 MR. BROOKMAN: Let's have final comments on
15 utility impacts. Yes, please, Marshall.

16 MR. HUNT: Marshall Hunt, SEGWHAI. The one
17 thing -- this is a totally different subject -- that
18 concerns me is that hopefully more and more the trend
19 is this way, more and more gas utilities. I think
20 electric utilities will be decoupled. Their earnings
21 will be decoupled from sales. And while at first that
22 seems to be a very weird and bizarre thing, 10 percent
23 of the nation's customers probably now are in that
24 situation and we are doing energy efficiency programs
25 but with that in mind.

1 So somehow the analysis has got to look at
2 that as a subgroup because it's a very, very different
3 impact on the utility once you're decoupled.

4 MR. BROOKMAN: Thank you, thank you. Yes,
5 Ted.

6 MR. WILLIAMS: A final comment on decoupling
7 because we hear that a lot in our own offices. Our
8 response is if you don't have a customer, you're
9 decoupled, all right. And we're -- issues --
10 particularly when -- you know, decoupling is used as a
11 rationale that we can increase efficiency without
12 worrying about the financial impact of gas sales,
13 decrease the gas sales. Well, the implications of
14 first cost have been driven up so high that people will
15 switch out of natural gas applications.

16 MR. BROOKMAN: Okay. Thanks. Steve
17 Rosenstock.

18 MR. ROSENSTOCK: Steve Rosenstock, EEI. And
19 again, it's kind of interesting because especially with
20 the instantaneous, you really -- again, it's demand
21 versus energy. It's -- you know, a person might be
22 using the same amount of kilowatt-hours or therms for
23 that application, it's just what's the in-rush? Is it
24 going to be most -- two or four kilowatts on the
25 electric side versus 28 with the instantaneous? It's

1 going to be 20- or 30,000 Btus versus 200,000. So, I
2 mean, that's demand on the utility system and it's kind
3 of an interesting aspect.

4 Again, I don't know if there's going to be a
5 trend. I know that there are smaller commercial
6 instantaneous water heaters like right under the sink,
7 like one kilowatt, maybe one and a half, just for,
8 basically, hand-washing applications. And I do know
9 that, especially in this area with the larger homes
10 being built, that they're saying, you know, some are
11 putting in two water heaters, two storage water
12 heaters, to take -- to reduce the pipe runs so that
13 people have hot water.

14 So it's rather -- it will be interesting, you
15 know. Just thinking about the demand for energy, it is
16 kind of thinking a little bit out of the box because
17 it's not necessarily -- on the annual energy usage
18 there might not be a difference. If you look at the
19 energy vector, it's not a difference. But if you look
20 at demands on the gas or electric system, there is a
21 huge impact.

22 MR. BROOKMAN: Let's move on to Employment
23 Impact Analysis.

24

25 Employment Impact Analysis

1 James McMahon

2 (PowerPoint presentation)

3 MR. McMAHON: The next analysis element is
4 Employment Impacts, and as has been described in the
5 manufacturer impact analysis, the direct impacts will
6 be analyzed there. That is, the impacts of standards
7 on the manufacturers that are being regulated.

8 The purpose of this analysis is to estimate
9 the total impacts, including the indirect employment
10 impacts. Now, indirect employment impacts arise
11 because of the fact that consumers will presumably pay
12 more for more efficient products, to purchase and
13 install them, but they will pay less for their energy
14 bills. So it shifts the spending. This has impacts on
15 the utility companies, both electric and gas, and also
16 in consumer spending. So these will affect other
17 sectors of the economy.

18 The method is to use a tool developed by the
19 Pacific Northwest National Laboratory which is called
20 ImSET, the Impact of Sector Energy Technologies, and
21 this is effectively built on an input/output model. We
22 will take the results of the analyses that we've just
23 described, specifically increased purchase prices and
24 maintenance costs, whatever those impacts are, as well
25 as decreases in energy bills, and run this through a

1 model of the economy to see what the employment impacts
2 across the entire economy are.

3 So I'll turn this over to Doug.

4 MR. BROOKMAN: So you can see the question
5 there. Comments on this proposed approach to
6 assesssing the employment impacts.

7 Harvey Sachs.

8 DR. SACHS: Harvey Sachs, ACEEE, just with a
9 question. Today what is the direct employment in water
10 heating manufacturing? Estimate. Nearest 5- or
11 10,000.

12 MR. BROOKMAN: Harvey, I don't think we heard
13 you. Say it again.

14 DR. SACHS: I'm sorry. Harvey Sachs, ACEEE.
15 In order to understand the proposed route, I'd like to
16 have a sense of the total direct employment in water
17 heater manufacturing in North America today. Is it
18 50,000 people, 200,000 people, a million? Because the
19 direct size of the employment is a bounding factor on
20 the believability of any kind of impact analysis.

21 MR. McMAHON: I don't know the answer to that
22 question. Does someone from Navigant have that on
23 hand? No.

24 DR. SACHS: Again, we don't need that answer
25 now, but --

1 MR. McMAHON: We will certainly look, yeah.

2 DR. SACHS: There are questions of the
3 resolution of any IO model on relatively small sectors
4 of the economy, and I just would hope that we'd be
5 judicious in these estimates, particularly in
6 comparison to some of the issues that were raised
7 earlier. Thank you.

8 MR. BROOKMAN: Thank you. Additional
9 comments on employment impact analysis, the approach
10 the Department intends to employ?

11 (No response)

12 MR. BROOKMAN: Okay.

13 Environmental Assessment

14 James McMahon

15 (PowerPoint presentation)

16 MR. McMAHON: So I'll turn now to the
17 Environmental Assessment. We've already had a number
18 of comments that are relevant to this section. The
19 intent here is to estimate the impact of any considered
20 standards on three types of energy-related emissions.
21 They're air emissions, carbon dioxide, oxides of
22 nitrogen, and sulfur dioxide. We will use the same run
23 of the National Energy Modeling System that we used for
24 the utility impacts to estimate the impacts -- the
25 emissions impacts from powerplants because that is a

1 full treatment of the energy sector in the United
2 States and has an explicit treatment of all these
3 emissions.

4 However, that model lacks any estimate of the
5 emissions that are not from powerplants. So for
6 example, for gas or oil-fired products that are in the
7 home, not at a powerplant, we will need to do a
8 separate analysis, as we have done, for example, for
9 furnaces in the past. We will do that and then report
10 the total impacts both from electricity generation and
11 also from fuels burned on site.

12 MR. BROOKMAN: Harvey Sachs.

13 DR. SACHS: Again, the request is that --
14 Harvey Sachs, ACEEE. Again, the request would be that
15 when we're looking at this analysis, the amount of oil-
16 fired equipment is relatively small. It has the
17 largest potential for change in its sulfur dioxide
18 footprint, and this potential should be at least looked
19 at to see if it's significant or not. Thank you.

20 MR. BROOKMAN: Thank you. David Goldstein.

21 MR. GOLDSTEIN: David Goldstein, NRDC. In
22 addition to calculating the tonnage of emissions, DOE
23 should monetize the value of that reduction. We have
24 or will have markets in SO2 and CO2 that I know of, so
25 it shouldn't be a major research project or a

1 theoretical endeavor to try to figure out what the
2 value of those emissions is.

3 MR. BROOKMAN: Jeff Harris.

4 MR. McMAHON: Before we move on, let me
5 respond to that.

6 MR. BROOKMAN: Please do.

7 MR. McMAHON: The NEMS model --

8 MR. BROOKMAN: Jim McMahon speaking.

9 MR. McMAHON: Jim McMahon. With regard to
10 sulfur emissions, the NEMS model does account for
11 sulfur emissions and it also -- since there is a
12 trading allowance, it does account for the prices. So
13 if the effect is -- the effect of standards is
14 sufficiently large to impact the price of sulfur in
15 that model, then we will report that.

16 I don't want to prejudge the results, but the
17 expectation is for this set of products it may not be a
18 large enough effect to show up in that model that it
19 will affect the emission trading price of SO2 for the
20 country.

21 MR. BROOKMAN: Jeff Harris.

22 MR. HARRIS: A question.

23 MR. BROOKMAN: Do you have a related
24 question?

25 MR. GOLDSTEIN: Let me clarify. I think that

1 answered the question with respect to SO2. The
2 question with respect to CO2 was not an analytical
3 question, it's a policy question and DOE would be the
4 folks who would need to answer that.

5 MR. BROOKMAN: Okay. That was David
6 Goldstein. Harvey, do you have something that goes in
7 right here?

8 DR. SACHS: Yes. I'm sorry. This is Harvey
9 Sachs again. The effect on the trading price of SO2
10 was not what I was directly looking for. It's an
11 indirect impact. It may or may not be significant. It
12 feeds back into a lot of other things, like the
13 technology options and the local value of the trading
14 rights.

15 MR. BROOKMAN: Jeff Harris.

16 MR. HARRIS: Jeff Harris, Alliance to Save
17 Energy. Jim, I don't recall whether regionality is in
18 the NEMS model when it comes to sulfur oxides. Can you
19 tell us what that is, both on the powerplant side and
20 on the individual device level?

21 MR. McMAHON: I believe it's NERC regions.
22 National Electric Reliability Council regions. But I
23 can check that.

24 MR. BROOKMAN: Steve Rosenstock.

25 MR. ROSENSTOCK: Steve Rosenstock, EEI. As

1 we've seen, there's been a downward trend in emissions
2 from powerplants over the last 20 or 30 years. I know
3 there's proposals and possibly new legislation this
4 year to ratchet it down further anywhere, especially on
5 the SOx side from I'll say 60 to 80 percent below
6 today's levels. So again, that will obviously have an
7 impact on the amount per kilowatt-hour as well as the
8 monetized value, I would guess, in the markets for SO2.

9 And at this point, also, I guess the other
10 factor is -- I guess on the oil side, going from, I'll
11 say, 250 parts per million down to 15 I guess -- I
12 don't know when that might be starting, but obviously
13 that's going to have an impact on the oil products in
14 terms of their emissions.

15 So again, I don't know if there's technical
16 data out there in terms of SOx emissions from oil-fired
17 water heaters that are using 15 parts per million fuel,
18 but again, if those become effective, that could have
19 an impact as well on your analysis. Thank you.

20 MR. BROOKMAN: Final comments on Slide 107?

21 (No response)

22 MR. BROOKMAN: So we're moving on then, Jim.

23

24

25 Regulatory Impact Analysis

1 James McMahon

2 (PowerPoint presentation)

3 MR. McMAHON: Okay. The last element of the
4 analysis is the Regulatory Impact Analysis. This was
5 required by Executive Order 12866. This analysis is
6 intended to compare the impacts from the proposed
7 standards to impacts from non-regulatory programs.
8 This has been conducted for rulemakings for many years
9 now, I think since 1993.

10 So the regulatory impact analysis will use
11 the national impact analysis tools to calculate the
12 energy savings and net present value of non-regulatory
13 alternatives to the proposed standards.

14 So the Department is interested in knowing if
15 there are any programs that should be examined as non-
16 regulatory alternatives, and there's been some
17 discussion already that's relevant to that. And, are
18 there other approaches to this analysis that the
19 Department should consider?

20 MR. BROOKMAN: So, comments on that question,
21 or those questions? Jeff Harris.

22 MR. HARRIS: Jeff Harris, Alliance. Jim or
23 others, I wonder if, given the issues raised earlier
24 today about the differences in installing some of these
25 technologies in new construction versus as replacements

1 in existing buildings, whether there's been any
2 consideration of using a dual approach and regulating
3 some of these products as part of a national building
4 code as opposed to a manufacture and sales standard.

5 MR. McMAHON: To date, no.

6 MR. BROOKMAN: Okay. Other comments related
7 to regulatory impact analysis, optional, non-regulatory
8 alternatives or other approaches to consider?

9 (No response)

10 Other Issues and Comments

11 MR. BROOKMAN: Okay. So I guess that is --
12 those are all the slides. We want to provide an
13 opportunity now, at the end of the day -- thank you,
14 Jim -- for individuals to make final comments, closing
15 remarks briefly, before I turn it back to the
16 Department.

17 Yes, George.

18 MR. KUSTERER: George Kusterer, Bock Water
19 Heaters. In closing, I would just like to thank our
20 facilitator, who we've spent a lot of time with over
21 the years and does a dynamic job. I would also like to
22 thank the members of DOE and its team in putting this
23 together.

24 However, I only have two comments. Number
25 one, I would respectfully encourage DOE to abandon the

1 use of prototype equipment in this analysis. That is
2 not a proven product and therefore has no track record.

3 The second thing, I would respectfully
4 request that, given the time frame, and I do understand
5 that they are under obligation to Congress, that they
6 do have a timeline. I would respectfully request that
7 an extension be given to the January 30th, 2007,
8 comment closing period simply because that only gives
9 us 14 days to digest this and comment on it. I would
10 respectfully request that they extend that period to
11 February 15th. That will give us approximately 30
12 days. Thank you.

13 MR. BROOKMAN: Thank you, George.
14 Don Brundage.

15 MR. BRUNDAGE: I agree with George's
16 comments, and many of us in this room will be at ASHRAE
17 for much of the time between now and the 30th of
18 January. So the comment period is one of the shortest
19 I've ever seen, and it overlaps with ASHRAE. February
20 15th would be greatly appreciated.

21 MR. BROOKMAN: Thank you. Additional final
22 comments at this point?

23 (No response)

24 MR. BROOKMAN: Okay, then. So then, from my
25 perspective, for my part, I just thank all of you for

1 what I thought was a very constructive and cooperative
2 and respectful engagement today. I thank all of you
3 for that.

4 So I'm going to turn it back to the
5 Department, to Mohammed Khan and Ron Lewis and Francine
6 Pinto, for closing remarks.

7 There's an evaluation form attached to the --
8 as the last page of your packet. Please fill it out
9 and turn it in. And thanks very much. I'll turn it
10 back to the Department.

11 Closing Remarks

12 MR. KHAN: Mohammed Kahn, DOE. I just have a
13 couple of final comments. The last slide of the
14 presentation was 110. I just want to remind you of
15 that one. That has information on how to submit your
16 written comments, which as I said early on that we
17 would greatly appreciate receiving. So there are
18 certain instructions there. I also believe that these
19 same instructions appear in the original Federal
20 Register publication.

21 Secondly, again, I want to thank everybody
22 for their attendance and participation, all of the
23 great comments that were received, all the suggestions
24 that we've heard today. I think a lot of the ideas
25 that were expressed I think the Department has already

1 given a lot of consideration to. Likewise, there were
2 many suggestions that were provided that perhaps we
3 haven't really realized that we should consider as
4 well. So we're going to do our best to do that. We're
5 going to look at your comments that you'll be sending
6 us, and incorporate that in the ANOPR. Thank you.

7 MR. LEWIS: Ron Lewis. I want to add to
8 Mohammed's comment there thanking everybody to take the
9 time out of your schedules. I think many of you have
10 been at some other meetings we've had over the last
11 couple of years or the last year and we are in a new
12 environment with a very aggressive schedule with an
13 awful lot of things going on simultaneously.

14 To Don's comment just about the short comment
15 period, Don, I don't know if you noticed, this was
16 actually published on November 24th in the Federal
17 Register. So the comment period to the end of January
18 is not exceedingly short. The time from the meeting,
19 you were accurate that it's only a couple weeks left,
20 but it was published in November.

21 We're trying to do everything on a timely
22 basis. We're being required to do that. We've got
23 Congress requiring that we have a consent decree by the
24 Court of the Southern District of New York. It's
25 overseeing our timeliness getting things done, and

1 we're trying to be very timely getting it done. So we
2 consider your comments and your input and appreciate
3 everybody's input.

4 There are some things where people said they
5 would appreciate us looking with greater granularity at
6 things and doing more extensive work. We will consider
7 and take a look at how we could accomplish that. A
8 great assist on that, as I noted earlier, is if people
9 have studies, they have prior work that's been done,
10 something rather than just a suggestion or a
11 perspective but actual -- something substantive that we
12 can, you know, start from that gives us a head start
13 would be very welcomed.

14 There were some things, I think, Frank, you
15 had mentioned in trying to collect data, that there are
16 some areas where it's not going to be easy, where there
17 are some areas where you would be letting us know
18 you're going to have difficulty doing that. We would
19 appreciate knowing that as much as giving the data.
20 And there were some areas where, if the metric that
21 we're looking for, if the data that we're looking for
22 is not convenient, if there's something else that could
23 be a substitute that would help us get there or
24 partway, if you have suggestions as well as -- what
25 we've given you is what we'd like to see. If that's

1 not possible, if there are other things that you could
2 provide in lieu of, that would also be appreciated.

3 We're trying real hard. We're working
4 extremely aggressively to try to get all these things
5 done, and your input -- we're holding these open
6 workshops at the beginning trying to get everything on
7 the table that's on our radar screen right now. And
8 you're helping us by addressing those things that we
9 may have missed and helping us to get a good flavor of
10 the viewpoints of all the stakeholders and things from
11 your perspectives and your needs. So that's very much
12 appreciated.

13 We're going to do our best to deliver it on
14 time as we've committed to do, but we want to get it
15 right as well. So give us as much intelligence from
16 your perspective and your experience, and we'll try to
17 handle that responsibly and make sure that the end
18 product is in consideration of that.

19 So, thank you again for your time, and we
20 look forward to seeing you in the ANOPR and NOPR stages
21 as we progress with this.

22 MR. KUSTERER: Just one more question. If
23 we're granted an extension, when we will know? Or if
24 you just emphatically said that January 30th is the
25 cut-off date. Because I don't care when it was

1 published, this meeting is held on the 16th. That
2 still gives us 14 days. And I think if you want to do
3 it right, sir, then allow us to participate. If you
4 don't want to do it right, then we can't participate.
5 It's up to you.

6 DR. SACHS: Mr. Lewis, Harvey Sachs for
7 ACEEE. Even though we fear greatly being ganged up on
8 as a result of the manufacturers and utilities having
9 time to get together at ASHRAE, we would not oppose a
10 request for extension to February 15th. We do respect
11 the concerns that have been expressed.

12 MR. LEWIS: Okay. Thank you for the input.

13 DR. SACHS: But not a day later.

14 (Laughter)

15 MR. ROSENSTOCK: Steve Rosenstock, EEI. One
16 thing that might be helpful; again, I know DOE has all
17 of the standards that you have to get out in the next
18 five years because of the consent decree. I think it's
19 like 20 or something, or 20 product classes,
20 product/product classes. It might be higher.

21 If possible, again, I know the ANOPR stage,
22 but if there's an indication where you've kind of
23 decided on the -- how do I call it? It's either the
24 candidate or the trial standard levels. I'm not sure
25 what it's called. I've been to too many rules.

1 So whether it's the candidate standard rules
2 or the trial standard levels, it might not hurt to say,
3 okay, here are the numbers we're looking at because
4 that might facilitate negotiations, and negotiated
5 standards might be another way to help facilitate the
6 process, speed up things, help your work load,
7 especially, you know, on certain products. It might go
8 a lot quicker. There might be a quicker one for some
9 product within the class than the other. So, just a
10 thought.

11 MR. LEWIS: General counsel just had a great
12 suggestion here that we -- even though I can't commit
13 right now to whether we are going to grant an extension
14 or not, that's not an autonomous, unilateral decision
15 to just do that on the spot. We will discuss it.
16 We'll take a look at it.

17 So as far as communicating that to people, we
18 have your -- everybody signed in. We have the e-mail
19 list that we sent out before this meeting. So we will
20 notify everybody just as soon as we make that decision.

21 So you wouldn't be left to reading the Federal
22 Register every day, looking through to see whether we
23 will be granting that.

24 MR. KUSTERER: That is why general counsel is
25 so good-looking.

1 (Whereupon, at 4:23 p.m., the meeting was
2 concluded.)
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1 REPORTER'S CERTIFICATE

2

3 This is to certify that the attached
4 proceedings before:

5 UNITED STATES DEPARTMENT OF ENERGY

6 In the Matter of:

7 PUBLIC MEETING ON ENERGY CONSERVATION STANDARDS FOR

8 WATER HEATERS, DIRECT HEATING EQUIPMENT AND POOL

9 HEATERS

10 were held as herein appears and that this is the
11 original transcript thereof for the file of the
12 Department, Commission, Board, Administrative Law Judge
13 or the Agency.

14 Further, I am neither counsel for or related
15 to any party to the above proceedings.

16

17

18 *Sonya Gonzales*
19 Official Reporter

20 Dated: January 21, 2007