U.S. DEPARTMENT OF ENERGY

PUBLIC MEETING ON ENERGY CONSERVATION STANDARDS
WALK-IN COOLERS AND WALK-IN FREEZERS EQUIPMENT

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

9:00 a.m.
Wednesday, February 4, 2009

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P R O C E E D I N G S

(9:32 a.m.)

Welcome

Opening Remarks, Introductions & Agenda Overview

MR. BROOKMAN: Good morning, everybody, and welcome.

This is the U.S. Department of Energy's Public Meeting on Energy Conservation Standards, specifically Walk-in Coolers and Walk-in Freezers Equipment.

Today is February 4th, 2009. It's a snowy day in Washington, D.C. We're so glad you could make it, and I do apologize for starting a little bit late. We had a little bit of weather-related delays and also some technical delays.

My name is Doug Brookman from Public Solutions in Baltimore. I'll be facilitating today's meeting.

We're going to start this morning with Welcoming Remarks from Charles Llenza.

Rulemaking Overview

MR. LLENZA: Well, welcome and we're sorry for the delay. We're not used to getting any kind of snow here, so it's not much, but now we're ready to start the meeting.

This is the start of a process here at DOE for establishing walk-in coolers and freezers standards and test procedures. The meeting discussions today are about establishing the procedures and to lay out the plan that the Department has in terms of establishing the process for those standards.

We're going to discuss basically six different areas here: an Introduction, Rulemaking Overview, a Preliminary Analysis, the NOPR Analysis, the Final Rule Analysis, and the Closing Remarks.

I will be doing the Introduction part.

The purpose of the framework public meeting is to present procedure and analytical approaches that the Department of Energy anticipates using in evaluating the proposed Energy Conservation Standards for Walk-in Coolers and Walk-in Freezers.

We request for all parties and encourage participants to submit data information and written comments as we go through this process.

This process is also to provide the framework for the rulemaking, to inform the parties of it's content and to facilitate the rulemaking process.

Background. The Energy Independence and Security Act, EISA, establishes in Section 312(a) terms applicable to the walk-in coolers and freezers; Section

312(b) establishes specific requirements on equipment manufactured on and after January 1st, 2009. It directs DOE to publish the rule no later than January 1st, 2012, and then three years after that effective date the standards take effect.

Section 312 prescribes the methods for determining the K factor and calculating the R value of the insulation and it also directs the DOE to establish by January 1st, 2010, a test procedure for measuring the energy use of walk-in coolers and walk-in freezers.

In Section 312(a), which defines the terms "walk-in coolers," we are to regulate equipment, storage space, refrigerated to temperatures respectively above and/or below 32 degrees Fahrenheit, that can be walked into, and have a total chill storage areas of less than 3,000 square feet.

The terms "walk-in cooler/walk-in freezer" do not include products designed or marketed exclusively for medical, scientific and research purposes.

So, that is out of the scope of what we're trying to do here at the Department of Energy.

We provided a Federal Register Notice on January 6th that announced the meeting. We initially had planned to do this meeting at the end of January. We encountered some issues and then we issued another

notification for today.

I have to apologize. I know that there's some other meetings for the industry down in Florida, but it's difficult to establish these timelines and continue to move on and so this Framework meeting is taking place today.

The Framework Document is in your package. It's also on the website and basically it lays out our plan of attack for the standards that we're trying to establish.

We also have a series of questions throughout the Framework Document and we welcome your comments with respect to those questions as we go through the process.

You can check the website again, you have the link, and you should be able to find the document online.

There's a process in submitting comments and all correspondence should have a RIN number and/or a docket number as you address this issue. There's an e-mail link on the website. There's a postal and a courier method of sending comments in.

I'm Charles Llenza again, and the email link is on the website. You also can submit comments to me directly.

Okay, one last thing, also, the comment period closes on February 12, 2009, for the framework period.

MR. BROOKMAN: Go ahead, Steve.

MR. ROSENSTOCK: Steve Rosenstock, Edison Electric Institute.

Why is the comment period so -- again, it just seems like very, very -- kind of a quick deadline, and I wasn't sure -- you know, typically in the past, DOE usually provided at least a couple weeks after the workshop for people to review comments or any updates and this is, you know, eight days.

MR. LLENZA: Well, usually we have a statutory requirement of 30 days after the publication of the documents and the problem is that we had moved the meeting out, so we gave an extra week, actually.

It's a little bit timely but at this moment, I can't relieve anybody from the date, but the Department, you know, will still look at these comments as they come in. So we would appreciate that most people get the comments in by the 12th. At this point, I can't change anything.

MR. BROOKMAN: And we'll see how that discussion develops today --

MR. LLENZA: Yes.

MR. BROOKMAN: -- as the day goes on. Okay. Good morning again, everybody.

We would like to provide an opportunity for everybody to introduce him or herself and I'll start over here. If you'd say your name and organizational affiliation, we'll go around the room.

DR. AMRANE: Karim Amrane, Air Conditioning, Heating and Refrigeration Institute.

MR. BROOKMAN: We have new microphones and they work so much better. So go ahead.

MR. ROSENSTOCK: Steve Rosenstock, Edison Electric Institute.

DR. SACHS: Harvey Sachs, American Council for An Energy Efficient Economy.

MR. OSANN: Ed Osann, Potomac Resources. I'm here today on behalf of the Appliance Standards Awareness Project.

MR. McHUGH: John McHugh, McHugh Energy Consultants, here on behalf of Southern California Edison.

MR. BALLO: Tim Ballo with EarthJustice.

MR. RAMSAY: Bill Ramsay with Owens Corning.

MS. FABIAN: Barbara Fabian with Owens Corning.

MR. L. CRAIG: Lucas Craig with Craig

Industries.

MR. E. CRAIG: Ellis Craig, Craig Industries.

MR. CHRISTIE: Tony Christie with Eliason Corporation.

MR. COMBS: Steve Combs, International Cold Storage Carrier.

MR. GEE: Talbot Gee with the Heating, Air Conditioning and Refrigeration Distributors International.

MR. DUNLAP: I'm Steve Dunlap. I'm with Dunlap Consulting Service, and I'm representing HH Technologies, which is a manufacturer of quick-acting doors for cold storage.

MR. KIDO: Michael Kido, DOE.

MR. BROOKMAN: Charles introduced himself. Aris?

MR. MARANTAN: Aris Marantan, Navigant Consulting.

MS. LEGETT: Rebecca Legett, Navigant Consulting.

MR. WILLIAMS: Grant Williams, Pacific Northwest National Labs.

MR. ERBS: Daryl Erbs, Manitowoc Foodservice.

MR. MINELLI: Fred Minelli, Kysor Panel Systems.

MR. BEETON: Warren Beeton, Emerson Climate Technologies.

MR. BROOKMAN: How about we go to you next, please?

MR. DE LA ROSA: Marcus De La Rosa, Pacific Northwest National Lab.

MR. PARKER: Graham Parker, Pacific Northwest National Laboratory.

MR. SOMASUNDARAM: Sriram Somasundaram, Pacific Northwest National Laboratory.

MR. FRIEDRICKS: Mark Friedricks, Office of Policy and International Affairs, DOE.

MR. NEIL: Tim Neil with Morrill Motors.

MR. BROOKMAN: Yes, sir.

MR. PERRY: Jim Perry with CrownTonka Walk-in Coolers.

MR. LANGE: Mike Lange with Mr. Winter, a walk-in cooler manufacturer.

MR. KALLNOWSKI: Tim Kallnowski, Foam Supplies.

MR. HEGNER: Mike Hegner, Chase Doors.

MR. RASMUSSON: Loren Rasmusson with Nodaka.

MR. FINKELSTEIN: Burl Finkelstein with Kason Industries.

MS. STEVENS: Amanda Stevens, Energy

Solutions.

MR. HORNQUIST: Edward Hornquist, Southern California Edison.

MR. KNAUSS: Devin Knauss, Southern California Edison.

MR. BROOKMAN: In the back, yes.

MR. McCRUDDEN: Charlie McCrudden, Air Conditioning Contractors of America.

MR. McCABE: Michael McCabe, Department of Energy.

MR. BROOKMAN: Thank you. Did everybody get a chance? Okay.

All of you received a packet when you walked in the door and registered. I'm going to do a very brief Agenda Review and then we're going to launch right straight into this.

You can -- we've already had Welcoming Remarks. This is the second substantive element there. Charlie, Charles has already done a small Rulemaking Overview. We'll see how much more of that is needed, this frame right here.

This is the framework meeting where the Department lays out the way this proceeding, this regulatory proceeding goes forward over the span of many months.

Following the Rulemaking Overview, we'll have a Test Procedure Development description and following that Market & Technology Assessment & Screening Analysis, immediately following that Engineering Analysis. We'll take a break midmorning, round about 10:45 or 11. Immediately following the break, Markups for Equipment Price, Energy Use, End-Use Load Characterization, and then we'll describe Life-Cycle Cost & Payback Period Analyses.

We'll break for lunch round about noon today, and then when we return from lunch, Shipments Analysis & National Impact Analysis, NOPR & LCC Subgroup Analysis, Manufacture Impact Analysis, Utility Impact Analysis, Employment Impact Analysis, Environmental Assessment & Regulatory Impact Analysis & then Final Rule Analysis.

We'll take a break midafternoon and then there's an opportunity in the late afternoon for Other Issues, Questions or Comments and Closing Remarks, anything that anybody wishes to raise at that point.

How many of you are new to these proceedings?

(Show of hands.)

MR. BROOKMAN: So quite a few of you. We encourage you, I would encourage you as facilitator, the Department benefits if you have questions, to speak

up. That's in your interests to do so and the Department wants to hear that kind of feedback and wants to hear from you.

Questions or comments about the agenda? Steve Rosenstock?

MR. ROSENSTOCK: Not about the agenda but for the new people, do you want to go over the ground rules?

MR. BROOKMAN: Yeah. I will. Yes, Michael Kido?

MR. KIDO: Michael Kido, DOE. This is for the new folks. I just wanted to emphasize that your comments are extremely useful to us and with respect to what's laid out in the statutory requirements that Congress had put into place. You should view this particular setting as a chance for you to help frame what the final regulations look like.

So this is really -- it's really important for the Department to get your input upfront so we can help frame this whole regulation in a way that will meet the energy goals as well as take into account any of the other concerns that you might have in terms of practicability and other issues.

MR. BROOKMAN: Thank you. So I'd ask for your consideration, if you would, please. You can see

this flip chart up here. I'm going to ask please speak one at a time. Please say your name for the record each time you speak. I'll be doing my very best to cue you for speaking by name and then say your name, if you would, please, for the record. Please keep the focus here. Please turn your cell phones on silent mode or off.

If you need to have a sidebar conversation with some, we'll understand that if it's more than about 20 seconds or so, you can simply take it out of the room. That will be fine. These microphones are now working very well, so we can now hear many of these sidebar conversations.

I'd ask you to please be concise, share the air time with your colleagues. I know there's a lot to be said today, and I'll be queuing people as best I can to speak and also I wish to encourage follow-on comments; that is, to create dialogue back and forth. That's helpful for the Department in explicating different points of view.

So that's the plan and the way we intend to proceed. All of you have a copy of the slides that will be presented. The general format is rather detailed slide presentations followed by opportunities for question and answer and comment. Okay. That's all

that I had to cover.

Harvey Sachs. The little green LED light should be on and bright on the microphones.

DR. SACHS: In my case I try to keep it off. This is Harvey Sachs.

Mr. Kido, are you -- may I ask if you're from Standards side or General Counsel's side?

MR. KIDO: General Counsel.

DR. SACHS: Thank you.

MR. BROOKMAN: Okay. So then let's proceed with Aris.

Rulemaking Overview

MR. MARANTAN: Good morning, everyone. Aris Marantan, Navigant Consulting. I'm one of the team, the analysis team leads for this project, and I'll be going over the rulemaking process which may be useful for a lot of you here. I'll describe each step of the overall rulemaking process and describe to you what's included in each of these major steps.

This slide here shows us the four major steps of the Rulemaking Analysis, where we start off with the Framework Document and that's what we're here today for. That is followed by the Preliminary Analysis and that's triggered by the publication of the Preliminary Analysis.

Following that, several months later, we'll have the NOPR or the Notice of Proposed Rulemaking. That is the publication in the Federal Register that actually has a Proposed Energy Conservation Standard for consideration, and that's followed by the Final Rule which, as Charlie mentioned earlier, is a deadline of January 1st, 2010.

You can see here that the blue chevrons indicate the Federal Register Notices. So as you've seen, the Framework Document was published last month. The Preliminary Analysis will also be presented. The NOPR will be published in the Federal Register as well as the Final Rule.

Then the green chevrons here indicate opportunities for feedback and you can see that, for the Framework Document, there's a big green bar. The Preliminary Analysis, same thing, and for the NOPR, another opportunity for written and verbal feedback during the public meeting.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. Does it mean there will be no Federal Register Notice for the Preliminary Analysis? Are you going to be announcing it officially?

MR. BROOKMAN: Charles.

MR. LLENZA: Charles Llenza, Department of Energy. We probably will provide a Notice that the Technical Standards Document is out there for review, the first iteration of it. So there will be some kind of notice out there. I'm sure we're going to have to do that.

MR. MARANTAN: The documents themselves will be published on the DOE website.

Okay. A little more detail about the Framework Document which is the purpose of today's public meeting.

This covers the Framework Document that was also published last month on DOE's website. It includes the framework for the analytical work that's going to take place for this rulemaking. It provides an overview of the rulemaking process and encourages early participation by interested parties.

As Charlie mentioned, also, there's a lot of questions in there that we would like feedback on which will guide us through the analysis. So you're encouraged to have a look at that and submit comments during the comment period and we provide here a link for that document.

Moving on to the Preliminary Analysis, this analysis will cover the first set of analyses included.

We will be describing those to you today and I will highlight them for you.

We start off with the Market & Technology Assessment and Screening Analysis. This feeds into the Engineering Analysis. Then the Engineering Analysis results will feed into subsequent analyses, including the Markups for Equipment Price Determination. The Energy Use and End-Use Load Characterization is conducted concurrently and both of those feed into the Life-Cycle Cost and Payback Period Analysis, and then we include Shipments Analysis, as well, with the LCC that feed into the National Impact Analysis.

The National Impact Analysis, we'll describe to you later, that captures the national energy savings potential.

Okay. The next step is the Notice of Proposed Rulemaking.

MR. BROOKMAN: Charlie.

MR. LLENZA: On this step on the Preliminary Analysis, it's a new process here, but what we're planning to do is to provide notice of availability of data and then there will most likely be a public meeting to discuss that data. It's going to be more of a technical meeting to discuss the data and to get more information from the industry at that point.

MR. BROOKMAN: Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock, EEI. You know, under the previous -- the older procedure, this would be the Preliminary Analysis at the ANOPR stage, the Advanced Notice of Proposed Rulemaking, and it's kind of a broader question.

In terms of a Preliminary Analysis, are there still going -- is the Department still planning to put out, I'll say, trial standard levels or candidate standard levels? I forget the exact acronym, because, you know, again to give stakeholders an idea of, you know, where the Department is going with Preliminary Analysis.

MR. LLENZA: This is Charles Llenza. As part of the technical data that we will put out there, there would be -- the discussions are that we will put out a summary to the technical standards that we put out and in that summary some discussion to the level of what's proposed trial standard levels we're looking at for the discussions at the public meetings that would follow that. So yes, the answer is yes.

MR. BROOKMAN: Ed.

MR. OSANN: Ed Osann, ASAP. Under the previous framework, there would have been a technical support document, sort of a preliminary technical

support document produced at the ANOPR stage.

Will these preliminary analyses encompass what is typically found in the ANOPR stage of the Technical Support Document?

MR. LLENZA: This is Charles Llenza, DOE. Yes, we plan to follow the same Technical Document Standard formats, except we're probably going to be beefing up the preamble of those documents to encompass technical standard recommendations. So yes, they will follow the same format from a technical point of view.

MR. BROOKMAN: Aris.

MR. MARANTAN: Okay. Moving on to the Notice of Proposed Rulemaking, the first order of business for the NOPR is to update the Preliminary Analysis with any feedback we might receive from stakeholders and so first step here is to revise the Preliminary Analysis with updated information.

Next, we conduct several analyses in this stage, including the Life-Cycle Cost Subgroup Analysis, Manufacturer Impact Analysis, Utility Impact Analysis, Employment Impact Analysis, Environmental Assessment, and Regulatory Impact Analysis, and we'll hear more about each of these later today.

The Final Rule consists of -- well, prior to the Final Rule, we include a Department of Justice

review of our information and then we revise the NOPR Analyses to consider stakeholder feedback from the previous step. Then the Final Rule is published.

MR. BROOKMAN: Comments about this? No? Okay. As I said early on before we started the meeting, we do provide -- pardon me -- the Department provides and encourages any individual who wishes to do so brief summary remarks on key issues, concerns that you have here at the outset for the Department's consideration. So why don't we just do that now?

John, you want to start? Briefly.

MR. McHUGH: Thank you. John McHugh on behalf of Southern California Edison. A couple of comments about the overall framework.

Parallel to this proceeding, the State of California is pursuing a Title 20 Appliance Standard for walk-ins. It's a prescriptive standard in terms of features required by walk-ins and this standard is allowed under NAECA and we plan to be well in advance of the 2011 deadline for that California-only appliance standard.

So I just want to make sure that you're aware of this information or this proceeding going on in parallel and we'd be very happy to share any of the information from our proceedings with DOE.

I guess the other, from an overall point of view of what's presented here, the other issue is in terms of enforceability, the appliance standards are typically enforced at time of sale and unlike building standards, it becomes a little difficult to enforce whole assembly requirements when potentially some of these assemblies are sold separately.

So, for instance, a standard that is based on a kilowatt hour per cubic meter-type standard might be difficult to enforce in that the efficiency of the box and the efficiency of the refrigerant system might -- you might want to regulate those separately because they could be sold separately.

MR. BROOKMAN: Okay. Thank you. Other summary comments here at the outset? Yes, please, and your name for the record.

MR. CHRISTIE: Tony Christie with Eliason Corporation, and our concern with this Energy Independence and Security Act is that it makes no reference to a double-acting self-closing door which we manufacture many, many of for walk-in coolers and walk-in freezers and that in a nutshell is our concern.

MR. BROOKMAN: Okay. So in your written comments, if you'd tell the Department how you think that should be addressed, that would be very helpful to

them.

Please.

MR. DUNLAP: Steve Dunlap with HH Technologies. Same comment about the performance of freezer doors and walk-in coolers. Infiltration losses, sealing of doors, integrity of the doors, the application itself, the operation, there’s no mention about cycles, the application itself, the number of cycles that you’ll see in a typical cold storage or walk-in cooler application.

MR. BROOKMAN: Okay. Thank you. So the same thing applies. Your detailed written comments, your supportive arguments for how the Department should address that.

Yes, please. It is Barbara?

MS. FABIAN: Yes, Barbara Fabian with Owens Corning, and also representing the Extruded Polystyrene Alliance.

Our concern is that in Section 312(c), Defining the Insulation Criteria and How You Measure the R Value, that is not a complete definition of how you would define an R value. You are missing some critical parameters there, and we will submit comments to do so.

MR. BROOKMAN: Thank you. Yes, Michael Kido.

MR. KIDO: Michael Kido, DOE. Just briefly, could you sort of outline some of those, I guess, changes that you would suggest?

MS. FABIAN: Yes. The one thing that you are missing is an age of the material. A lot of the material that is being used has a blowing agent that is retained in it for a long period of time and over time that blowing agent ages the R value changes. So you need to define an age.

The second one is the Delta T of the equipment that is being used. You note a mean test temperature but you fail to note the Delta T that's critical for the apparatus.

MR. BROOKMAN: Great. Thank you. Michael McCabe.

MR. McCABE: This is Michael McCabe with the Department. The last three questions, if I'm not mistaken, are focusing on the standards that were laid out in the 2007 legislation, the prescriptive requirements.

For example, the foam insulation testing that's in the existing standards, the double closure in the existing standards.

This is going to be somewhat challenging since the proceeding today is focusing on the

performance standard which the Department will be adopting in the future, recognize that there are many issues with regards to the existing standards, and I say existing standards, referring to those laid out in the legislation.

I would encourage you to not wait until the close of the comment period, not consider those comments as part of this proceeding, but to send them directly to Charles. If you have a question regarding the performance standards that are in the legislation, you can submit the question now, submit recommendations, what have you, to the Department because those are dealing with how we implement the existing requirements. They are not matter with regards to the standards that we will be developing that will result from this proceeding.

Is that clear or anybody have any questions?

MR. BROOKMAN: I see a question here and then you can go next. Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock, EEI. I actually had kind of a follow-on, just as kind of an end point question.

We’ve heard questions about specific requirements, for specific prescriptive requirements. As DOE goes down this path, and since my familiarity is

that at the end point there's going to be a, I'll say, performance requirement based on the classes and the number of classes of equipment in this category, I'll just refer you to the Commercial Refrigeration rule. I don't know if you had a chance to look at it.

There's now 38 classes of products that have specific standards, I'll say kilowatt hours per cubic foot or it's based on TDA. You know, there's an energy metric based on a size metric for the refrigeration equipment. I'll just so there because I know it's display area versus volume, depending on the equipment, but that could be the end point in terms of a performance requirement.

The prescriptive requirements that are in the legislation still stay. They don't change. From my understanding, from my, I'll say, experience with the DOE rulemakings, is they are going to put out a, I'll say, performance and energy metric that all the refrigeration equipment will have to meet, but they will not be able to change the legislation because the legislation mandated certain technologies and that, I think, can only be changed by other legislation, as I -- from what I understand.

MR. BROOKMAN: We have Michael Kido.

MR. KIDO: That's right, but to the extent

that there might be a gap in the statute itself that might be -- there might be a way for DOE to fill in that gap, but again it depends on the specificity of what's being discussed within the particular statutory provisions.

So, for example, just to say if all walk-in coolers and freezers have to be azure red or something like that, that's something that the agency would not have any leeway to alter.

MR. BROOKMAN: Okay. Thank you. Yes, your name, please.

MR. ERBS: Daryl Erbs. One of my comments relates to actually this slide and then the framework where it talks about the Final Rule for the Test Procedure being completed before the NOPR for the Performance Standard has been issued, and I think it's very difficult to decouple the test method from the performance standard, that you almost need to have a good idea of what the metric is going to be and how you're going to calculate that metric before you can really finalize a test method to be used in support of that.

The other comment I would have, just briefly, is walk-ins are almost entirely field-assembled and so when I look at this, what we're trying to take on here,

it’s almost like including the house with the air conditioner in terms of a performance standard, and I think we really have to understand where we’re headed and make sure we don’t put in place something that’s very impractical for manufacturers to try to support.

MR. BROOKMAN: Thank you for those comments. So I want to return -- yes, let me see. Is it Ellis?

MR. E. CRAIG: Yes, Ellis Craig, Craig Industries. I want to clarify a statement that was made here just a little bit earlier.

I understand you can’t change the law but it was our understanding that we’re kind of defining what the law meant, but maybe I’m wrong on that.

An example is that in the walk-in coolers, it’s got a specification of an R-32 for a freezer and an R-25 for a cooler, and it doesn’t have any time period on that. I mean, day one, it may be that way. Day two, it may be half of that, but the specification or the rule as written right now just says this is what it will be and if that can’t be clarified, then it’s a waste of time doing everything we’re doing here because that’s so -- such a huge fallacy, that if it can’t be defined and can’t be determined and better clarified, then we got a real big problem right here at the beginning.

MR. BROOKMAN: Thank you for raising it. Michael Kido.

MR. KIDO: I'm going to go out on a limb here and say that that is exactly the type of issue that we'd like to know more about because if, for example, -- I know that I am aware that there's a number of different questions regarding the exact meaning of the various pieces that Congress inserted into this piece of legislation and, as I said before, to the extent that there are any gaps or some kind of vagueness in what is contained within the language of the legislation, we'd be interested in knowing your views on that and how it should be addressed or whether it needs addressing at all.

MR. E. CRAIG: Is this -- Ellis Craig, Craig Industries. Our point of contention, which probably the main reason we're here is because it affects our industry as a walk-in manufacturer, probably more than anything is this one simple specification that was in that legislation.

Everybody should know in this room, according to your house, every insulation you've ever dealt with, that the highest R value that probably ever happens is the day it was manufactured and it changes from that point on.

So if I had a manufacturer of insulation and I could put in my walk-in that was an R-32 today and an R-5 tomorrow, I could meet this requirement and I could buy that insulation really inexpensively, I could meet this requirement and totally go away from the purpose of this law completely. So that's a real concern of ours.

We manufacture with three types of insulating materials. We manufacture with expanded polystyrene which is pretty well out of the ballgame now because of the existing rules, extruded polystyrene, and a foamed-in-place urethane. We do all three and in the industry, everybody's going to be in probably one of those three manufacturing processes.

We can do all three of them, but we have found that some insulations do better in different performance criteria, different applications, like doors versus wall panels and that type of thing, and our big concern is the rules right now as written out, some of the options that we have to apply it may be better insulation materials than we are -- than we're able to because the new law just rolled them out and that really concerns us.

But if we don't -- if we're not able to change somehow of a better understanding of that R-32

and that R-25 they put in that thing, this doesn't meet any of these -- any of the wishes that this law is supposed to provide.

MR. KIDO: Michael Kido, DOE. So if I hear you correctly, what you really want isn't so much change, it's clarification as to what these specific terms mean?

MR. E. CRAIG: Yes, if clarification -- Ellis Craig, Craig Industries. If clarification takes into consideration of aging, then I agree with you. Okay. If that can't be changed -- because there's no -- if you said in your legislation that it needs to be an R-32 in 15 years in operation, then that would be a very reasonable -- I mean that would be something -- I doubt very seriously there's any insulation on the market today that could do it.

But when you made this -- when -- not you but when this law came out specifying an exact insulation R value and didn't specify any time in the future that that would be that, then it was kind of a worthless R value and it really impacted the industry and it impacted the product that's being sold today.

There's several manufacturers in this room today that cannot make the product they did last year because of that law and it really didn't take into

consideration what that product would do. Your data here says 18-year life cycle on a walk-in and if 10 years, the R value on the insulation that was more or less outlawed as of January 1st, that R value may be twice the size of the insulation that meets an R-32 today.

MR. KIDO: I think just to sum up, I think the agency is now aware of your concern and to the extent that you can sort of elaborate on that in some written comments to sort of lay all that out and explain it, I think that would be extremely helpful.

MR. E. CRAIG: So we have submitted that comment already, but we will continue to submit comments on that order, but one thing I want to know is that it sounds like that's not an etched-in-stone kind of requirement without some clarification that could have aging involved in the evaluation of it.

MR. KIDO: Michael Kido, DOE. I'm not going to pin the agency down one way or another on what it might or might not do, but to the extent that you feel that there needs to be a clarification as to certain sections within the legislation, by all means, please let us know.

MR. BROOKMAN: Michael McCabe.

MR. McCABE: Michael McCabe, Department of

Energy. To follow up on what Michael has said, dealing with the existing standards, those that were in EISA 2007, such as the R value for the walls and the windows, the glazing requirements, there are two other things that are going on at this point in time dealing with those that folks may or may not be aware of.

One is that we are in the process of preparing for publication in the Federal Register a final rule that adopts the standards that are in the legislation and adds some more detail, for example, as to the specific test procedure requirements that are in EISA for measuring the R value of the insulation.

There are some issues, such as the time, the age of the insulation, which are not addressed in that proceeding that would be appropriate to raise in this second venue that we are dealing with.

A number of people have provided -- a number of individuals and firms have provided questions to the Department and we are preparing an FAQ, frequently-asked question, website on this product which we will answer many of those questions that we can.

As far as, you know, going with what Michael said, there are going to be certain things that are in the legislation that we're not going to be able to deal with.

The R value that is laid out, that is what it is. We're going to -- Michael and the staff are going to have to look at some of the questions that are asked in the context of what the law requires and offer some interpretation, where we may have what some have referred to as a certain amount of wiggle room, if you would.

To the questions both from Owens Corning and Craig Industries regarding the age of the insulation, the legislation generally is written for the establishing a standard for the manufacture of products.

Now, for most products that are covered in this program, it is fairly straightforward. The manufacture is when it comes off of production and goes into a warehouse, goes into distribution.

However, for central air conditioners, split-system central air conditioners, walk-in coolers, walk-in freezers, one can debate as to exactly when those products are manufactured. Are they manufactured when the panel is produced in the plant, when the door is produced at some other facility, when the strips -- I apologize that I'm not trying -- the plastic strips that are -- strip guards, when they are produced at some other place. What is the date of manufacture?

When each of those are produced or when they're brought together in the field?

Those are some questions that you've touched on today and some others that we certainly need to consider and will influence some of the answers of questions that will probably come up, but please, with your questions, particularly with regards to questions on the existing standards, if you could be very specific as to what the question is, you know, what you would recommend and why, so that we can get a better appreciation of where you're coming from because all too often we've found that within this program, with any conversation, we all make assumptions as to what the other person understands and we usually are wrong with those assumptions.

So if you can ask the question, provide some background and your recommendation and the basis for that recommendation, that will help us immensely in understanding and answering and providing some guidance to those questions.

MR. BROOKMAN: Thank you. Mark Friedricks.

MR. FRIEDRICKS: I'll go out on a limb and mentioned a third process --

MR. BROOKMAN: Mark, identify yourself.

MR. FRIEDRICKS: Mark Friedricks with the

Policy Office.

MR. BROOKMAN: Thank you.

MR. FRIEDRICKS: A third process that, if you're not aware of it you should be, and that is, it's my understanding that there is a technical corrections bill being developed in the Senate and probably a parallel one in the House for EISA '07.

If you have specific statutory issues that you think should be addressed, you should at least investigate that process.

MR. BROOKMAN: Thank you. That's helpful. Thank you. Harvey Sachs. So we do want to still provide in the midst of this interpretive discussion here an opportunity for any stakeholder to raise additional issues of concern here at the outset.

Harvey Sachs.

DR. SACHS: Harvey Sachs, ACEEE. With really request for further clarification to both Michaels, this has been very helpful, but I'd like to turn back to Michael Kido's comment that if the language had prescribed that walk-ins would be in azure, DOE would not have freedom to change to some other color.

It would be my understanding that DOE would have the authority and, indeed, the expectation to interpret that as azure as per ASTM Standard such and

such.

So that paralleling that, it would seem to be within the regulatory authority of the Department and the expectation to define R value with reference to a particular ASTM or ANSI standard that has been developed through a consensus process. Am I wrong in that?

MR. BROOKMAN: Michael McCabe.

MR. McCABE: Michael McCabe. I apologize that I probably was not as clear as I could have been.

The first of the two proceedings that we have going on parallel to this, which is adopting the EISA standards, also has test procedures that we're referring to as the ASTM Standard, I believe is where it is. All the EISA requirements are in there.

So the test procedures are going to be specified and incorporated by reference and the industry test procedure. However, I do not believe that that test procedure is specific to the point as to saying what is the time frame after manufacture, after -- when you -- when the test is performed.

It is providing the specifics as to how to set up the test, how to measure the test, and the like, but does not talk about when to test and some of the dialogue which has taken place so far is that -- I take

from that is that the R value of certain products can change over time and so the question would be, as I would interpret it, is the R value to be X at the point in time of manufacture or one year after manufacture, 15 years after manufacture? That's not addressed and that is something that would, in my belief, be addressed in the second proceeding which is the frequently-asked questions.

MR. BROOKMAN: Michael Kido, do you want to follow on there or are you okay?

MR. KIDO: Actually, I had a much simpler answer for Harvey.

MR. BROOKMAN: We appreciate simple answers here.

MR. KIDO: Well, if I understood your question correctly, Harvey, to the extent that, you know, there's an expectation that somehow azure is defined somewhere, I think that's correct because you have to have some sort of standard basis for everyone to follow, make sure everyone's on the same level playing field, and if Congress had defined what that particular azure is that DOE is supposed to follow, then yes, that would be the case.

If Congress didn't mention that it has to be azure as defined by whatever, then I think that creates

a question as to whether there needs to be some clarification there to make sure that everybody knows what azure means.

Now, does that help or --

DR. SACHS: That's very helpful. This is Harvey Sachs, and my final query on this area is that certainly in the Building Codes area where I have a little bit of experience, not much, if a standard is incorporated by reference in a regulation, then future versions of that are automatically incorporated by reference, and I'm getting some negative head shakes indicating --

MR. McCABE: This is Michael McCabe. In accordance with -- I always like to go into the General Counsel's arena. I apologize.

MR. LLENZA: I'll keep you honest.

MR. McCABE: The proceedings, the policy and the procedures of this program, which I understand are the norm, are that when an agency incorporates by reference the industry standard, that industry standard is available for public inspection at the Office of the Federal Register and at the agency that is incorporating by reference and we are incorporating by reference a specific version of the standard because it is what is known and it is a conscious action.

We cannot incorporate a standard without a specific date version to that standard because that standard could change and if that change could in this case, for this program, could affect the measure of efficiency and affect this program.

So when we incorporate something by reference, we are incorporating a specific version and our Federal Register language is very explicit upon that, that we are incorporating that version and any subsequent versions are not adopted by the Department, unless the Department does such by rulemaking.

MR. BROOKMAN: We have to move on here pretty quick.

DR. SACHS: Thank you.

MR. BROOKMAN: I promise you. Ed, and then Steve, as briefly as possible.

MR. OSANN: Yeah. Ed Osann, Appliance Standards Awareness Project. I just wanted to make a few general comments.

We're just beginning, I think, to get a taste for some of the challenges that will be involved in this proceeding. We've hardly gotten to the subject matter of this proceeding at all.

We recognize that this will be an especially challenging rule to write. ASAP or Appliance Standards

Awareness Project is sort of a joint venture of a number of efficiency advocate organizations. We intend to remain engaged throughout the process, through the development of a final rule.

The rule that we seek is one that achieves the maximum energy savings that's technically feasible and economically justified. That's the standard that's in the statute, but this will be quite a challenge. We sort of view this as kind of a shared journey. We're glad to learn along the way, and we look forward to dialoguing with manufacturers and other stakeholders, both inside and outside of this room, over the next three years.

MR. BROOKMAN: Thank you. Please say your name.

MR. FINKELSTEIN: Burl Finkelstein. Since we've been discussing the clarifications in the original Section 312, there's two issues that have been brought back to our company a lot. We sell ancillary hardware, non-refrigeration hardware to the industry.

One has been the section on saying that strip curtains or spring hinges shall be furnished to minimize air infiltration when doors are open. There's been a lot of questions split between our customers, about 50/50, on what spring hinges mean. We interpret

that to mean self-closing or double-acting door. A lot of customers are interpreting that just to mean spring hinges on the main door.

The other issue is the 40 lumens per watt requirement on lighting. A number of our customers are trying to get compliance on that by saying to -- instructing their customers to use a certain type of bulb and we think that leaves a lot of interpretation. If it’s a fixture that doesn’t require a certain bulb, somebody can change the type of bulb later and you don’t have a sustainable standard and you don’t have the original intent even, depending on what they install in the field.

MR. BROOKMAN: Thank you. So on both of those issues, as both Michael McCabe and Michael Kido have already said, very specific comments about how you think it should be and why to the Department and that will provide them a lot of information they need to proceed with their interpretation.

Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock, Edison Electric Institute. I’ve really enjoyed this discussion, and as DOE proceeds, I think it would be good for DOE and the manufacturers to get together in terms of frequently-asked questions, just think about

it from the customer's perspective.

There's a new standard and they're buying a product. Maybe a how do you do know that you're getting a product that complies with the new standard, what should you look for.

Right now, you know, obviously there's, you know, a custom-made versus, you know, non-custom-made, but think of it as people who have to, you know, buy these products in the market and there's obviously a lot of confusion in the manufacturing community what meets the prescriptive standards.

If there's a way to work together and get something out, think about the end-use customers because, you know, that way we know they're buying a product that meets the standards and will save energy for the next, you know, 15-18 years. So if possible.

Thank you.

MR. BROOKMAN: So I think this interpretive discussion has been very useful, especially for those that may be new to this process.

I want to turn now to our original intent which was to provide an opportunity for those that wish to do so to make summary brief remarks here at the outset before we plunge into the more detailed materials.

Any additional comments, especially from the stakeholders?

(No response.)

MR. BROOKMAN: Okay. So then let's proceed and many of these issues will be covered in considerable depth and there's plenty of opportunity for you to comment as we go.

Test Procedure Development

MS. LEGETT: Thank you, Doug. Rebecca Legett, Navigant Consulting. I'm going to discuss the Test Procedures for Walk-in Coolers and Freezers.

As was mentioned, this is a requirement of EISA and the deadline for producing these test procedures is the end of this year. So we're conducting a separate but concurrent rulemaking for the test procedures.

We are not aware of any existing test procedures at this time for walk-in coolers and freezers. California has appliance efficiency regulations, but it states that there are no test procedures for walk-in coolers and freezers. Also, European and Australian test methods for commercial refrigeration equipment exclude walk-in coolers and freezers from their scope.

So we would like to request comments on any

existing test procedures that you are aware of either for walk-ins or for other equipment that could be used as a basis for developing the test procedures for walk-in coolers and freezers.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. Well, the industry's working on a standard as we speak and although we are on an aggressive schedule here, we are hoping to give you a draft standard by April this year for DOE to consider.

MR. BROOKMAN: A test procedure?

DR. AMRANE: A test procedure.

MR. BROOKMAN: Thank you. Does it track some of the others that are mentioned here?

DR. AMRANE: It's going to be a new test procedure, although it's going to be based probably on some of the standards that are already developed.

MR. BROOKMAN: By April of this year. Michael Kido.

MR. KIDO: Michael Kido, DOE. Just a real quick follow-up.

With respect to the development of that test procedure, just so that I have some understanding, is that internally developed or are you working with other stakeholders within this room to sort of flesh out how

the procedure would look or --

DR. AMRANE: We are just starting the process. The HRA process is an open process, so anybody can participate, and if those in the room are interested, please let me know.

DR. SACHS: Done.

MR. BROOKMAN: Thank you. For the record, that was Harvey Sachs.

Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. I noticed the gentleman said that the industry is working on a test procedure. What industry is he talking about?

DR. AMRANE: I'm talking about the Air Conditioning, Heating and Refrigeration Institute.

MR. E. CRAIG: Okay. And the test procedure you're talking about is not just the refrigeration equipment but also the walk-in performance?

DR. AMRANE: Right now, it's going to be focusing -- and this may be part of the discussion we're going to have today, but the way we are approaching it, I think what we want to do is separate the box from the refrigeration system and I would support what John said before.

I think it's going to be easier to separate

the two and so we are focusing on the refrigeration system.

MR. E. CRAIG: Okay. I agree with your idea of separating the two but that was confusing because I feel like I'm part of the industry and didn't know anything about this test procedure being developed, so that's why we're asking.

MR. BROOKMAN: And so, Ed, just one clarification. So, Karim, the Department wants to develop a test procedure. Would they be welcomed to be engaged or exchange information and data with you?

DR. AMRANE: Absolutely. I mean, the intent here is to open that to anybody who is interested and if Navigant or anybody wants to participate in the process, absolutely, they're welcome to do so. We just started, so there is nothing yet, you know, being written. But we intend to have something done by April this year.

MR. BROOKMAN: Okay. Ed Osann.

MR. OSANN: Ed Osann, ASAP. This is a question for the Department.

This idea of focusing on the development of a test procedure for the refrigeration elements as contrasted with sort of the thermal integrity of the box raises a question of whether the Department

1 believes it has the authority in publishing a --
2 preparing a performance standard as directed by the
3 statute, to have a performance standard that has two
4 components.
5 We had a pretty exasperating experience with
6 the Department not too long ago, last couple years,
7 about whether standard or standards meant that there
8 could be more than one performance characteristic or
9 more than one specification for a particular product
10 category.
11 It would be good to know sort of early in the
12 process here, before we get two and a half years down
13 the road, whether you think you have the authority
14 under the law as it currently stands, to be able to
15 adopt, should you choose that this is the most
16 constructive way to go without precluding your options,
17 but do you even have the authority to adopt a
18 particular performance standard for the refrigeration
19 components and a separately-stated performance metric
20 for the thermal integrity of the box.
21 MR. BROOKMAN: Michael Kido.
22 MR. KIDO: Michael Kido, DOE. Since this is
23 the first we've heard of this particular approach,
24 we'll obviously have to take a look at the statute and
25 give it some thought. So I'm not going to give any

position at this time.

MR. BROOKMAN: Tim. To follow on, Ed.

MR. OSANN: To follow on, I would only point out in this case, the law does say standards.

MR. BROOKMAN: Tim.

MR. BALLO: Tim Ballo, EarthJustice. I was just going to point out the standard does say or the statute does say standards for this one.

MR. BROOKMAN: Okay. John, you want to follow on there?

MR. McHUGH: This is not a follow-on to that discussion.

The next item -- I assume we're talking right now about the Test Procedures and this is the time to take comment.

MR. BROOKMAN: Before long, I want to also provide Rebecca an opportunity to finish the presentation materials, so I think that might inform any additional questions.

So why don't we return to that? Rebecca, you finish your slides.

MS. LEGETT: Sure. Thanks, Doug.

Manufacturers would follow the test procedure in order to rate their equipment, that is, to determine some test metric or rating value. For example, the

daily energy consumption of the walk-in in kilowatt hours per day.

We're considering several options for manufacturers to be able to test their equipment, to rate their equipment. The first one is to test using a standard, a modified version of an existing standard, such as ARI-1200 (2008), which provides instructions for rating commercial refrigeration display cases. So we would have to modify that in order to be able to use it for walk-ins.

Another alternative we're considering is for manufacturers to calculate the energy consumption using an alternative efficiency determination method or AEDM that they would develop, and I'll cover both of these options in more detail, but before that, I'd also say that we're considering applying a normalization factor so that larger equipment is not at a disadvantage. For instance, dividing the test metric by a factor like the volume in cubic feet or the floor area in square feet.

We're considering floor area because that's part of the EISA definition for walk-ins, less than 3,000 square feet.

I'm going to pause here for feedback on this question.

MR. BROOKMAN: Yes, briefly. Let's leave

that thing turned on. Okay?

MR. ERBS: Daryl Erbs. Relative to the normalization factor, I think we would be much more supportive of a volume-based metric, not a floor. We manufacture walk-ins that have ceiling heights between, I think, six feet and 20 feet which could have the same floor area.

So that, if you look at how much that could change the energy use, we think it’s impractical to use a floor area basis.

MR. BROOKMAN: Thank you.

MS. LEGETT: Thank you. That’s very helpful.

The first rating method we’re considering is to use a modified version of ARI-1200, as I mentioned. This was developed for rating commercial refrigeration display cases. So it would need to be modified to be used for walk-ins.

The test metric here is the daily energy consumption in kilowatt hours per day. It directs the manufacturer to test under the conditions in ASHRAE-72, the test method for commercial refrigerators and freezers. Although ASHRAE excludes walk-ins from its scope, we believe that the same test method could be used with modification for walk-in coolers and freezers.

This test method requires the test data to be recorded over a 24-hour period to determine the daily energy consumption and there are several pros and cons for this method.

One advantage is basically that this has been developed already. It’s been used in the field. We know that it’s accurate and that it works for the equipment that it was written for and, like I said, we believe it could be modified.

A disadvantage is that it would probably be more difficult to test a walk-in with this test method than a refrigerator because of the size of the walk-ins. Also, because many walk-ins are custom-made, it might be impractical or expensive to test each one using this test method.

I’d like to request your feedback on this issue.

MR. BROOKMAN: Steve Rosenstock.

MR. ROSENSTOCK: Kind of a big picture question. Steve Rosenstock, Edison Electric Institute. I don’t know if DOE’s had a chance to look (at)?.

What percentage of walk-ins, and you might have to break it out between coolers and freezers, what percentage are custom-made versus, I’ll say, plant/manufactured, I don’t want to say mass produced,

but I'll say mass produced-made because that obviously could be a huge issue with any sort of test procedure. What's the percentage? I don't know. I'm just kind of curious what the percentage is, you know. If it's 10 percent, you know, but if it's 90 percent, that's a big deal.

MR. BROOKMAN: I'm looking to the --

MR. ERBS: I'll actually -- Daryl Erbs. I can only give you a datapoint that reflects what our experience is. It's not a 100 percent. It's probably in the 90+ percent range in terms of our volume shipment --

MR. BROOKMAN: That are custom-made?

MR. ERBS: -- that are custom. They're custom-designed. We design walk-ins down to an eighth of an inch in any dimension and as many corners, angles, as people want, and that's the majority of what we sell.

MR. BROOKMAN: Okay. And while you're there, you wanted to have a follow-on.

MR. ERBS: Yeah. I had another comment relative to limitations.

The other two limitations that I think need to be brought out are the fact that the box may be manufactured by one company, the refrigeration system

manufactured by another company.

ARI-1200, the way that it measures performance would require that you integrate those two individual subsystems before you could run the test and that would then place the burden on the installer or someone beyond the manufacturer of those subsystems. So I think you need to consider that.

Also, our walk-ins, a 3,000 square foot walk-in is of a size where I doubt that any manufacturer has a large-enough test facility to put it into a controlled environment to be able to actually make that measurement.

MR. BROOKMAN: Thank you. So I'd refer all of you to the question box which is at the bottom of this slide. "Walk-ins are excluded from the scope of ASHRAE-72. What might DOE need to address to be able to use this test method to rate walk-ins?" So that was responsive to that.

Michael Kido. Ellis.

MR. E. CRAIG: Yes, Ellis Craig, Craig Industries. I was going to comment that most of our walk-ins are also manufactured as custom products. So, I mean, I think you'll find that pretty general in the industry, that custom is more, way more prevalent than any standard off-the-shelf. I wish it weren't but it

is. So that's what it is.

Another thing I just still want to bring up about this test method. Again, are we talking about fresh manufacturer? Are we talking about at the manufacturing plant on a brand-new product? If that's all we're testing, then it really has nothing to do with energy use over the life-cycle of 18 years that you've got in here because this is all -- it will look good on paper. It will look like we're doing something, but that customer gets it and six months later, he has to change his compressor out because it's not big enough because the box has changed in R value.

This is all -- I don't think it was the intent of the law to do this, but that's what we're coming to.

MR. BROOKMAN: Thanks. Okay. Thank you. I see -- let me see. First Tony, and then to Talbot.

MR. CHRISTIE: Tony Christie with Eliason Corporation, and just as a follow-on to the customization of walk-in coolers and freezers, that customization includes a double-acting self-closing door as a replacement, an in-field install to the current cooler manufactured door.

MR. BROOKMAN: Okay. Thank you. Talbot.

MR. GEE: This is Talbot Gee from HARDI, the

Heating, Air Conditioning, Refrigeration Distributors.

Along this point was our biggest questions with this because our members are primarily charged with the after-market of these once they are installed originally and how these standards would affect that because, to your point, our members are often charged with addressing changes in needs or parameters of the existing equipment in the servicing or replacement of that.

So to what standard or how would you achieve whatever the standard might be in the after-market where my members will tell you that four of their engineers could look at the same spec and come up with four completely different solutions for that same specification? So that's our question.

MR. BROOKMAN: Barbara.

MS. FABIAN: Yes. Barb Fabian, Owens Corning. Just another comment on the Test Procedure.

We would really need to specify completely how it's going to be tested. A lot of -- even though you make a panel that is completely skinned, a lot of the folks, when it's in use, will put nails or fasteners to hold their shelving in place. There is a lot of moisture that penetrates through those penetrations and moisture is not a good insulator. So

the R value changes. So depending on how you are going to state your test method that's a critical parameter.

MR. BROOKMAN: Thank you. That's also helpful.

Okay. We're getting a lot of good feedback. Additional comments on issues related to the Test Procedure and how it could be made to work? Karim.

DR. AMRANE: Karim Amrane, AHRI. As I indicated, we believe that the (ARI) 1200 standard might not be the right approach here and we need to somehow separate the mechanical system from the box and maybe have two separate standards for that.

So, as I said, we are working on the mechanical system and probably will get you something by April, but on the box itself, maybe we need to come up with something that would be acceptable to those who make the box.

MR. BROOKMAN: Your plan is to work on the one but not the other?

DR. AMRANE: Not the other, yes, at this point.

MR. BROOKMAN: John.

MR. McHUGH: John McHugh. In preparing for our appliance standard for walk-ins, Southern California Edison had performed an initial evaluation

of various measures. We found that there was approximately 75 gigawatt hours per year of savings just in the state of California associated with these measures.

Two-thirds of the savings were associated with two measures. Those measures are floating head pressure control or at least preventing the head from being fixed at a condensing temperature greater than 70 degrees, and also variable speed control of the evaporator fans.

Both of those measures involve issues that are time-varying and weather-varying. So a steady state test would not capture either of those huge efficiency options.

So in terms of developing the measure, you need to look at the changing temperatures and as well as the changing load conditions to capture that.

MR. BROOKMAN: Okay. Thank you. Let’s return to Rebecca and let her continue.

MS. LEGETT: Another approach to the Test Procedures that we’re considering is for the manufacturing to develop an alternative efficiency determination method or AEDM.

Examples of approaches to this method could include developing a calculation methodology or a

computer simulation. However, in both cases the AEDM must be based on actual walk-in performance data and it must be verified by testing.

There are several pros and cons to this possibility, as well. An advantage is that this could be easier to use than the test method and could address some of the difficulties that manufacturers might have with the other option.

A limitation is that this method might not be as accurate as testing the equipment and it may be difficult to develop an AEDM, but we would like to emphasize that if a manufacturer already has a method that they use to design a walk-in or for something else, we believe that this could be modified to be able to determine the efficiency or energy consumption of the walk-in.

MR. BROOKMAN: Barbara.

MS. FABIAN: Barb Fabian, Owens Corning. Is the intent of that last comment to say that any manufacturer could develop their own methodology and how would you use that to be a comparison? How could people compare the different ratings?

MS. LEGETT: We believe that this AEDM would be something that the manufacturer could develop. The manufacturer would have to verify that this test method

actually returned a value that was true to that characteristic of the walk-in by testing a sample size of equipment, and the questions that we're asking are requesting your feedback on what that sample size would be and how this test method could be verified.

MR. BROOKMAN: Yes, Michael McCabe.

MR. McCABE: Michael McCabe, Department of Energy. In follow-up, this is an approach that we have taken with a number of other products that are covered by the program. For example, electric distribution transformers, central air conditioners, residential central air conditioners, where there are a number of different models of products, depending -- specification of them may be done in the field, may be done in the plant.

In our test procedures, we have added requirements that get to the accuracy, repeatability and the validity of the values. For example, as Rebecca was saying, that the approach, the model that is developed has to be validated by test data from the manufacturer.

In the case of central air conditioners which I know better than the transformers, that approach, that model then has to be submitted to the Department for review by the Department and acceptance as a valid

AEDM.

So there are -- there may be ways that are unique to this industry to ensure the validity of the AEDM and that's one of the things that we'd like to come out in the discussion.

The purpose of the AEDM is to reduce the test burden because requiring manufacturers to test every basic model of product where you could end up having -- every product could end up being unique is extremely burdensome. So to have a computer modeling approach which has been validated, we believe, will take some of that burden off and reduce the costs of administering the program.

MR. BROOKMAN: And as an addition, as Rebecca said, you can see two specific questions there about sample size and percentage to which you would need to go to be accurate.

Karim.

DR. AMRANE: Karim Amrane, AHRI. To follow up on what Michael just said, an AEDM may work very well for central AC because the manufacturer is in control of that central AC, so you can develop a model that will simulate the system.

Here, we're talking about a mechanical system and we're talking about a box made by two different

manufacturers and that's where the challenge is going to be.

So if we somehow decide to separate the two and to have a performance standard for the mechanical system and a performance standard for the box, then maybe that approach can be used where the manufacturers of the mechanical system would be able to have -- develop a program similar to program that will simulate the mechanical system and the manufacturers of the panels will be able to have a program that will simulate the panels.

MR. BROOKMAN: Okay. Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock, EEI. Since the Test Procedure is supposed to be finalized by January 1st of 2010, if the manufacturer -- just kind of a general question.

If the manufacturers were interested in doing -- developing some sort of software methodology, would they need to get it to the Department of Energy before the Test Procedure was finalized or could they do it afterwards?

MR. McCABE: Michael McCabe, Department of Energy. It could be -- given previous experience, I would expect that it would be done afterwards.

MR. BROOKMAN: If at all possible -- yes.

MR. DUNLAP: Steve Dunlap. Real quick comment. Because of the customization of the walk-in coolers and freezers, our customers specify our doors. Consequently, we work with the walk-in cooler/freezer manufacturers and they don't provide the door. So here we are talking about a box and the end user is not configured completely from the walk-in cooler manufacturer.

So one of my comments is a little clarification on the end user. We have EISA? and today my interpretation is that the end user, our customer, is responsible to ensure that it complies with the standard and how can they and how can the manufacturer?

MR. BROOKMAN: Thank you. Okay. So can we get a response to the question of sample size and how accurate, how far, how much, how detailed, the percentage that would cause this AEDM to be accurate?

Yes, Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. It seems to me like this is a recipe, since all the variables that we have in the walk-in business, it's a recipe for working the system to your advantage, not that I couldn't do it, that I could come up with a test procedure that meets the requirements set by the DOE, but I would probably try to write it in a way that

makes it better for my company to present and so it lends itself to, I think, some really misgivings in what it's really going to perform out in the field.

So I really have a problem with each manufacturer coming up with their own test procedures or extrapolating out information too far without really backing it with some scientific data because it just lends itself.

This is not a refrigerator that's got an exact compressor and an exact box and all the doors are the same and all the -- these are all variables. It's just not a good deal.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. To answer the question, and Michael can answer better than me, I think in the past anyway on the air conditioning side, before the model can be used it first has to be reviewed by DOE and make sure that it really does what it's supposed to do. I think there is a check and balances that way.

But to answer your question, you know, again we are talking here about the performance standard and we don't even know what the metric is going to be. So, I mean, we are really -- I'm not sure that we can provide you feedback right now because we don't even

know what the metric is going to be.

MR. BROOKMAN: Okay. Yes, please.

MR. ERBS: Just one last comment. Daryl Erbs. Further to that point, at least for the box, I don't think we even understand what the proper test methodologies might be to collect data to then use to validate AEDMs.

So we almost need to start with some basic, you know, physics around where's the load come, what are all the factors that need to be considered and put into a design of experiment to collect data.

MR. BROOKMAN: Okay. Thank you. Ed, and then John.

MR. OSANN: A couple things. This is Ed Osann, ASAP. A couple things coming out of this discussion.

One is that there is in this rulemaking at least the potential for wider discussion as to what is the locus of responsibility for compliance. Who is the manufacturer? We've heard -- we can draw from some of the comments that have been made already that the locus of responsibility could be in several places and that sort of needs to be sorted out by the Department, but clearly there's kind of a feedback loop there between what is the standard and who's responsible for meeting

it, you know, feedback loop in terms of ensuring its practicality.

The other is that it’s also clear from this discussion that this question of whether the Department has the authority to adopt more than one metric for this product really can’t be deferred until the final rule, it’s got to be broached and resolved by the deadline for the Test Procedure.

MR. BROOKMAN: Thank you. John.

MR. McHUGH: This issue of having potentially different pieces of software by each manufacturer, I think raises a little bit of a concern in terms of the level playing field, in terms of people reporting efficiency numbers, based on potentially, you know, eight different pieces of software.

Southern California Edison has been involved with the development of refrigeration software. It’s a huge expense and multiple years in developing that software. So, you know, to get to the levels of accuracy that would be desired for this kind of standard, I think, is problematic, and especially saying it’s going to be diffused and that there’s going to be someone or the whole group of engineers that are going to be reviewing this, I think there’s probably a lot of sense to having some kind of analysis method

that is transparent, the algorithms are available to all participants, that the data collected to characterize equipment is in a standardized format so that test -- the tests are collected in a uniform manner and we have, you know, reasonable curves, that we're not trying to extrapolate, you know, -- well, you know, we collected this information and now we're trying to use it on completely different equipment, I think, is problematic, unless we have essentially developing curves for different pieces of equipment and doing this in the accepted manners of calculation.

The other thing that this also brings up is if we're looking at simulation, there has to be some kind of definition of what is the weather file that's being used and then also raises a larger question of do the standards actually differ by climate zone in the United States.

MR. BROOKMAN: Michael McCabe.

MR. McCABE: This is Michael McCabe, Department of Energy. The discussion has been very valuable. I appreciate. It expands some of the difficult areas that the Department has recognized prior to this meeting.

I'd like to take a couple steps back and just point out that the four slides that Rebecca has

presented, the underlying assumption that we have had to this point in time is that we were looking to come up with an energy use metric, either kilowatt hours per cubic foot, kilowatt hours per square foot, kilowatt hours, you know, over a day, a year, an overall measure was what we were looking at.

Some of the points that have been made and, Ed Osann, your comments are right on target. I think, Karim, you started some of them, talking about what AHRI is doing.

Given the underlying approach that we have for these four slides as far as coming up with an annual metric or an overall metric for the measure of energy use of these products, you’ve raised some comments.

The Department would appreciate some very specific suggestions as to what sort of approach, if this isn’t the right approach, makes sense for this industry because Ed has raised the question which I think is a very valid question, which we’ve struggled with, who is the manufacturer, that if we’re dealing with an overall energy metric, one could make a very good argument that the manufacturer is the heating, air conditioning contractor, the member who is assembling the product in the field and that they would need to

have data from the refrigeration equipment manufacturer. They'd have to have information from the wall manufacturer, so on and so on, in order to come up with the annual energy use of that product, if it's an annual energy use metric.

If it's a multiple standard, then it may be easier and it may be the individual refrigeration equipment manufacturer who's going to have to certify, but you all know the industry a lot better than we do. Though it may very well be that nobody in this room really knows the industry particularly well, they know segments of it.

AHRI knows the refrigeration manufacturers but knows nothing about -- I'm spinning -- nothing about the wall manufacturers.

In your comments, if, with your understanding of the industry, what works and what doesn't work, take a look at these four slides which has certain assumptions built into it and what makes sense in your mind as far as a metric or metrics for measuring the energy performance of these products and why is it an appropriate measure to use, in particular, going back to some of the legislative requirements, as I think that a number of you already have touched on as to why you believe some different approaches in one measure

would be allowed in the legislation.

MR. BROOKMAN: This provides me an opportunity to finish with these two slides and then we'll take additional final comments on the Test Procedure.

So, Rebecca, please proceed.

MS. LEGETT: Sure. Thank you.

There are two more slides in this section. I'm going to briefly discuss the two AEDM approaches that I've mentioned: the calculation methodology approach and the computer simulation approach, and we would welcome your comments on each of those.

The first one is a possible calculation methodology approach that a manufacturer could implement, how the manufacturer could calculate the test metric which is the daily energy consumption, and the method that we're thinking of is to add the energy consumption of the different components.

MR. ERBS: Daryl Erbs. I just have one brief comment. You have a box in blue over on the -- I guess my right-hand side.

Some of the energy uses that you have there, I would argue, are actually related to the heat load and not independent of the heat load. So I'm not sure they belong over on that side of the chart.

MR. BROOKMAN: Thank you.

MS. LEGETT: Okay.

MR. BROOKMAN: Daryl.

MR. ERBS: I'm sorry. I was -- Daryl Erbs. Which ones and so an example might be defrost energy use, even fan energy use, depending on the control strategy that's used for the refrigeration system.

MR. BROOKMAN: Thanks, Daryl.

MS. LEGETT: All right. We do have a separate box on the left-hand side for the heat load from the electrical components but that might be a different issue.

MR. LLENZA: This is Charles Llenza, Department of Energy. I encourage people to look at this slide and submit your comments specifically addressing those issues that have been mentioned and, you know, tell us what you think it should be so that we have an idea more specifically of what we need to change or consider.

Thank you.

MR. BROOKMAN: Yes, Talbot.

MR. GEE: This is Talbot from HARDI. Just for clarification on the goal here, is this a one-time calculation at the initial installation of the product or is this -- I just want to get a feel for what the

objective is for this type of procedure.

MR. LLENZA: This is Charles Llenza. Yes, the answer is yes to that.

MR. BROOKMAN: Okay. So why don't you finish with 20?

MS. LEGETT: Sure. This is just a brief discussion of the computer simulation approach.

As I mentioned, the manufacturer could also develop or use a computer program and again if the manufacturer already uses a program to design their system or to determine some other metric internally, they could modify it, we believe, to calculate the energy consumption and we would like your feedback as to whether there are any programs available for this for use or modification, and do they tend to be proprietary or would they be in the public domain?

MR. BROOKMAN: So we have two content slides here, example of calculation methodology approach and the computer simulation approach. So comments on that.

Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. Most manufacturers actually for the walk-ins have energy use requirements because we sell refrigeration equipment with our walk-ins and to size the right size refrigeration, you really kind of have to know how much

energy requirement that box is going to be at a certain temperature with the load of the product that's going in. So that's pretty common, I would think, with most manufacturers to have.

If not, a lot of the refrigeration equipment manufacturers have them that they will give them to the -- like Bohn and Heatcraft and several -- well, Russell. There are different manufacturers that have to have their own sizing programs which kind of go along that gist you're talking about.

I wanted to bring up one other idea, and I don't know that you know this or not and it may vary by the manufacturers in here, but walk-in manufacturers, we probably sell 60 to -- 40 -- 30 to 40 percent of our walk-ins with no refrigeration at all. We don't get to pick that refrigeration out. We sell to these guys over here who are the contractors and they like to go down to their local wholesaler and buy a refrigeration system and put it on locally because then they can go down and get the parts there locally and feel like they're supporting them.

So there are some of our customers that will not buy the refrigeration from us. So we're sizing the walk-in according to your thing, we don't even have anything to do with it, and by law, they do not have to

follow the EISA law because they all have to do is walk into the wholesaler and say, well, this is an existing walk-in, we're going to put -- and then they sell them a non-energy-efficient unit because the law is not made up for them.

MR. BROOKMAN: So you don't even specify what the refrigeration load would be?

MR. E. CRAIG: By National Sanitation Foundation, NSF, which is more of the health safety side, it's a certification. You have to sell walk-ins with most health departments, they come in and inspect them. On that, there is a sticker that says the Btu requirement of that walk-in and all it says is the walk-in's Btu requirement, okay, but we don't sell the refrigeration. So we put that on the unit but the local contractor is the guy that's going to pick what unit goes on there and how big it's going to be.

MR. BROOKMAN: And whether it's in compliance?

MR. E. CRAIG: It won't be in compliance. Nine times out of 10, knowing the people that we deal with, they're not going to walk down there and say sell me the expensive stuff. They're going to walk down there and say sell me the cheap stuff and I'm going to be competitive on this deal.

MR. BROOKMAN: I see. Okay. That's interesting.

MR. DUNLAP: Steve Dunlap. Real quick comment.

MR. BROOKMAN: Did you say your name?

MR. DUNLAP: Steve Dunlap.

MR. BROOKMAN: Thank you.

MR. DUNLAP: Real quick comment on infiltration, just to be sure I'm clear on that. You need to include air exchange between the door opening and closing because of the density differences, then infiltration could be sealing or penetrations from screws and things of that nature. So two components.

MR. BROOKMAN: Okay. Thank you. So broad comments and specific comments. They're both very helpful.

Barbara.

MS. FABIAN: Barb Fabian, Owens Corning. Just another quick comment to piggyback on what Charles said.

If you are only going to do this measurement one time and you are looking to do a life-cycle cost analysis for the life of this product, that's not going to give you the information you need.

MR. BROOKMAN: Thank you. You're next, sir.

Please say your name.

MR. McCRUDDEN: Charlie McCrudden, Air Conditioning Contractors of America. My members are installers and perhaps under certain definitions manufacturers.

My question is on enforcement and penalties. As we're creating these standards, what -- who would be -- what is the enforcement mechanism, and where would the penalties lie? With the facility owner, with the last person to touch the equipment, which in many cases may be my members, and is that part of this process, making comment on that?

MR. BROOKMAN: So Michael McCabe, can you do that briefly?

(Laughter.)

MR. McCABE: Michael McCabe. I heard somebody behind me that said yes, to say yes.

MR. DUNLAP: Steve Dunlap. We have customers today that are making changes to their walk-in cooler designs because of EISA and it's their interpretation, don't ask me where -- what authority, I'm not even sure how you would enforce it because it's not in the buildings codes, but they're already making changes which is a cost to the customer. It's a cost to us to upgrade or, you know, provide a supplemental door of an

R-32.

So, consequently, you know, my understanding is that the end user is ultimately responsible to ensure that they're in compliance with EISA, is that right or wrong?

MR. BROOKMAN: Okay. So Michael McCabe.

MR. McCABE: This is Michael McCabe. Under the legislation and the regulations that we have adopted, the standard is the responsibility -- the manufacturer of the product is responsible for demonstrating that they comply with the standards.

In this case, there are questions as to who the manufacturer is. Is it the individual who produces the refrigeration system or is it the individual who produces the walls, the doors, or the one who brings it all together?

There is going to be a separate rulemaking on certification and enforcement standards which I would encourage folks to comment on the Test Procedure Rulemaking, even though the certification will not be part of that, because I think the Test Procedures will go hand in hand with the questions you've raised, and I would suggest that you comment as to who should be viewed as the manufacturer, how the standard would be, you know, enforced.

As far as penalties, the legislation is clear that penalties apply to the manufacturer of the product, not to the consumer of the product. So if the manufacturer is determined to be the one who brings all the parts together, then they put in a refrigeration system that, to take the whole, does not meet the standard, then that manufacturer, that assembler would then be, given the way the regulations are structured and applied to date, would be viewed as at fault and that the Department would seek penalties there.

MR. BROOKMAN: So I want to provide you an opportunity. Do you want to follow on?

MR. DUNLAP: Yes, this is Steve Dunlap again. Then I'm not really sure exactly what I heard, but I'm taking it that there is no ruling as far as who is responsible for the final layout of the walk-in cooler, refrigeration, doors, the whole thing.

MR. BROOKMAN: Since there are multiple players --

MR. DUNLAP: Since there are multiple players.

MR. BROOKMAN: -- in the assembly process and some determination would need to be made.

I want to provide you an opportunity, as well. Do you want to follow on?

MR. McCRUDDEN: Well, I guess my --

MR. BROOKMAN: Say your name again.

MR. McCRUDDEN: Charlie McCrudden, Air Conditioning Contractors of America. My follow-up, I guess, is, is there a parallel regulation or somewhere else where this definition of manufacturer is one where it's put in place, and then is there examples of enforcement actions and/or penalty actions that would be, you know, something that we could look at and have a better understanding of how this may be implemented?

MR. BROOKMAN: Michael Kido.

MR. KIDO: Michael Kido, DOE. I'll comment on the, I guess, scope issue with respect to what manufacturer means.

If you look at -- I'll give the citation. We're talking about commercial products here, but a lot of the definitions refer back to those that are set out for consumer products.

So, essentially, under the definition of manufacturer, it basically says that a manufacturer means any person who manufacturers a consumer product. So if you look at the definition of manufacturer within the statute, it says "manufacturer" means to manufacture and produce, assemble or import.

So it's possible that anyone who's involved

in any of those things could possibly be considered a manufacturer. So that's what we're dealing with right now.

PARTICIPANT: Can you give the citation?

MR. KIDO: That particular statutory provision is over in 42 USC 6291, Subparts 10 and 12.

MR. BROOKMAN: I want to provide an opportunity first to the manufacturers to speak on this subject.

Ellis, you're next.

MR. E. CRAIG: Yes, Ellis Craig, Craig Industries. We have been dealing with our refrigeration contractors out there and pretty much universally across the board our manufacturers that manufacture refrigeration equipment for us are making the comment that the contractor is exempt from this EISA law, more or less, because he's doing retrofit and if he becomes the manufacturer, then he is as obligated to provide the right kind of equipment as I assume that I am at this point in time.

We are providing EISA-compliant refrigeration systems, but the suppliers to us say, well, they're selling a lot more that are non-EISA-compliant for retrofit than they are for EISA. They don't stock as many. They're not in inventory. They have some, but

you can run out because they look at us as a small market compared to the retrofit market.

Now, if they become the manufacturer of this product and they become like us, a manufacturer, does that mean that that retrofit exemption kind of goes by the wayside because that's the way they're interpreting it in the field? I'd like to know it.

MR. BROOKMAN: It's hard for the Department to give a legal interpretation on the spot, I would imagine.

MR. KIDO: We're not going to do that now. Thanks for the comment.

MR. E. CRAIG: Well, you see it's a big important thing to us as manufacturers because my customer base out there right now is assuming that they are not obligated to the EISA law, so therefore they are exempt what you can say and if what we're talking about here is including them in the manufacturing process, then on a competitive edge, I'm not competitive with them at this point in time, but if they become manufacturers, then we're on the even playing field and I would say the intent of the law was to reduce energy.

I don't see how they got an exemption to start with, but the way they're interpreting the law is

it’s a new walk-in manufacturing situation.

MR. BROOKMAN: You’re raising a whole host of very practical issues and the Department -- this is very, very helpful to the Department and so if, in your written comments, you can very specifically tell the Department how you think they should address these issues, then that will be very helpful to them.

Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock. Is there another manufacturer?

MR. BROOKMAN: I didn’t see any -- oh, do you want to -- please go ahead.

MR. FINKELSTEIN: To emphasize what Mr. Craig said, the majority of this -- this is Burl Finkelstein with Kason Industries.

The majority of problem installations I’ve been called out to help work on are ones where a third party contractor installed the refrigeration system. The manufacturer sold the box, somebody bought it, and the third party contractor installed the refrigeration system. The problems are generally related to controls, to sizing.

A real common problem which would kill energy efficiency is the hot gas defrost. They don’t turn the fans off while the thing’s in defrost, so it fills the

box with hot air which you have to defrost that later, but just to emphasize that point.

The standard and testing will have to take into account the third party mechanical installation.

MR. BROOKMAN: So thank you for that further description.

Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock, EEI. To follow up on Mr. Dunlap, working with the national account customers, they would say we didn't install it, we might have specified it, but you're responsible for all the standards, whether it's safety or energy, whatever. We bought it, you install it and you make sure, you have to meet the standards, not us, we're just the end users. That would probably be theirs.

So I think they'd be stunned to hear that they'd be responsible for the federal efficiency standards. They're responsible for operating and maintaining obviously but not for the initial efficiency standard.

Also, in terms of the computer simulation approach --

MR. BROOKMAN: Respond to that, Talbot.

MR. GEE: Well, yeah, let me just pretend I'm one of my members.

MR. BROOKMAN: I want to provide -- Steve wants to respond. I'll give him a chance first since it was directed at him. Do you want to respond or just go to Talbot?

MR. DUNLAP: No. Actually, I agree. The problem here is who's the manufacturer? As a door manufacturer and not refrigeration, not walk-in coolers, you know, they could look at us, but there's no single source in this whole situation because they're customized products.

This isn't a unitary-type of design where the manufacturer makes a self-contained unit. It's turnkey. So part of the challenge for DOE is to begin working on these customized types of solutions that vary, just like building houses. Somebody mentioned back here that you almost have to rate a house, not necessarily the air conditioning equipment.

MR. BROOKMAN: So, Talbot, please.

MR. GEE: Well, yes, as the wholesale distributors of these products, I don't necessarily want to speak for our contractor partners, but I do, to some degree, want to stick up for our customers here a little bit because they are in a tenuous situation with these things.

So I don't deny that there have been

installation issues with some applications, but the bottom line is it's a highly-competitive market with a lot of price pressures on it and the contractor doesn't control all the variables either. So they're brought in late in the game to try to fit the need here for this customized equipment.

So that raises the point to how exactly could you make the contractor entirely responsible for the performance of the product when they really are only responsible for a portion of it anyway, and it really disincented from necessarily doing all of the things that the prescriptive measures would tell them they're supposed to do in the competitive marketplace.

MR. BROOKMAN: So let's let this gentleman follow on. Your name, please.

MR. McCRUDDEN: Charlie McCrudden, Air Conditioning Contractors of America. Talbot did not want to speak for me or my members, but I will say he did a very eloquent job doing it.

MR. BROOKMAN: Steve's got a follow-on, then to Harvey.

MR. ROSENSTOCK: Just a follow-on in terms of some of the computer simulation and again, and especially because of cost of jobs, I'm just kind of curious what kind of variation is there in the

percentage of product in these units. Is it, you know, space filled, 10 percent versus to 90 percent?

MR. BROOKMAN: Ellis?

MR. E. CRAIG: The variance in product going in -- I mean, we quote out every day and every single walk-in has a different amount of product coming in at a different temperature. It's not like they're bringing all frozen food in or all cool food. They may be bringing in, say, boiling soup to put in the thing. So there's a huge difference in every one of these things. The load is one of the most important things when sizing the walk-in to start with, to know the refrigeration not only in just keeping the box cold but it has to cool down what you put in it.

And just in terms of modeling, just in terms of the approach, you know, if there's a way to, you know, -- if there was a way to do it, I'm not sure if -- I guess I'm sure some people have done it. We're just saying in terms of energy modeling and then, of course, the behavior of the door opening, how often does the door open and for how long is a key determinant because of infiltration, and then, of course, there's the, okay, what percentage of the market because I remember just doing some energy audits, the freezer's located within the refrigerators.

I’ve seen that quite a bit, actually, just because as an energy saver, you know, it’s the ambient temperature is lower outside the freezer, so again --

MR. BROOKMAN: So the Department has a daunting challenge here.

Harvey.

DR. SACHS: Harvey Sachs, ACEEE. Without belaboring it, I’d like to go back and first cause a heart attack --

MR. BROOKMAN: Harvey, may I interrupt for just one second? I apologize.

I wanted to make a process note. Since we started late and since we’ve got so much momentum at this point, I was going to suggest we just keep working till noon when we pause for lunch and I hope that no one’s going to be seriously discomfited by that.

Okay. So we’re going to proceed then and keep working till noon.

Harvey, please.

DR. SACHS: Karim, please hold on so you don’t have a heart attack, but I would like to think about this a little bit from sort of first principles and suggest the Department lean toward two metrics, one for the analog of the building, which is the shell, and that we work as closely as possible to expressing that

in kilowatt hours per square foot of surface per year, not per floor area.

We have defaults for that in the language in terms of some lighting loads and other loads and a procedure built around this would allow the manufacturer to take credit for beating the default values which are in the prescriptive requirements.

Coupled to that, I'd like to suggest we consider a refrigeration metric which has at least three values in it. One of them is capacity, one of them is steady state efficiency, and the third is a measure of part load efficiency, and that would subsume within it things like the default considerations for the evaporator fan and things like that.

Einstein observed that everything should be made as simple as possible but no simpler and from what I've heard today and the work I did beforehand on the structure of this industry and the nature of the products, I cannot conceive of a simpler system than this dual metric which is going to get us anywhere at all in any finite time before all of us have retired.

Thank you.

MR. BROOKMAN: Would you offer who the manufacturer is?

DR. SACHS: No.

(Laughter.)

MR. BROOKMAN: I just thought I'd ask the obvious question.

Ellis.

MR. E. CRAIG: I've just got a real short comment at the end. This AEDM that you were talking about, I wouldn't be adverse to a computer model that all manufacturers followed the same model. That would not be bad at all, but to have each individual manufacturer come up with his own model is the problem that I would have out of that.

MR. BROOKMAN: Okay.

DR. SACHS: Harvey Sachs with a follow-up. We would certainly agree with you about the difficulties of working with a lot of proprietary models that would be difficult to verify.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. I'd like to make a general comment here about Test Procedures. I understand that DOE is under the gun to complete the Test Procedures by the end of the year. In fact, actually, it's going to be much less than the end of the year because you have to go through the process of publishing and so on.

I think, and I hope Harvey would support me

here because I think it's very important that we get the Test Procedure right. If you don't have it right, the rest is meaningless, and as far as AHRI, I can only speak for AHRI here, it doesn't matter for us if DOE goes beyond the deadline of the end of the year to finish this procedure. It's more important to us that it be done the right way and I hope that others would support me on this.

MR. BROOKMAN: Thank you.

DR. SACHS: Harvey Sachs. Since my responses are questioned by Karim, I will not only endorse what he said but suggest that I will quote him when he get to the air conditioner procedure, as well.

(Laughter.)

MR. HEGNER: Mike Hegner with Chase Doors.

MR. BROOKMAN: Thank you, Mike, yes.

MR. HEGNER: You know, one of the things as a manufacturer that is frustrating about this, and the sooner we get the Test Procedures done the better, is that we're spending tooling and we're doing design issues to make our products comply, based on what we think is right, and it's possible that when the procedures come out we are not in compliance and then we have to go through the process again.

So this is a very costly process and, quite

frankly, it's frustrating because we're doing what we think is correct, spending the money on tooling, and then we find out we may or may not be actually in compliance.

MR. BROOKMAN: Thank you. Appreciate that. Okay. Ed Osann.

MR. OSANN: I've a follow-up question to Mr. Craig and that is, he said awhile back --

MR. BROOKMAN: Is the mike on? Ed Osann.

MR. OSANN: Ed Osann. That most manufacturers, in doing the box, most manufacturers need to have -- and I didn't get the rest of the thought -- information on the expected load? Was that it?

MR. E. CRAIG: Yes, in all of the -- Ellis Craig, Craig Industries. To -- when a customer calls in -- for our customer, an example would be a refrigeration contractor, calls in and has a customer who wants a walk-in, the first thing we go through is a series of a hundred questions just about that have to do with where is it located, is it outside, is it inside, what part of the country is it located, Arizona versus Minnesota, what product is going in, at what temperature is it going in, and how much of it is going in. That's done on every single system that's out

there.

So there's a huge amount of variance that all this Test Procedure we're talking about here really wouldn't have anything to do with. That's a different kind of load and a lot of times the refrigeration systems are way over-sized for the walk-in with a standard product load because it carries on another purpose which is cooling down the product that's inside.

So the efficiencies change by the product load because obviously if you're bringing boiling material in and you want to cool it down and freeze it, it's going to take a lot more energy than it would if you're bringing in frozen hamburgers.

So that's all a big variable that's not even being really talked about here.

MR. BROOKMAN: Lucas, follow on there.

MR. L. CRAIG: Yeah. A lot of the times it's we establish a Btu requirement but that also handles worst case scenario. You may have only, you know, a week out of the year where you have a 120 degrees with 95 percent humidity out there, but that's when you get the call when, hey, our refrigeration is running constantly because it can't keep the product at the given temperature that it needs to be held.

So when a lot of this is sized, it's sized as a worst case scenario, not an average across the year or whatever product happened to be in there that one time, but at kind of the extremes.

MR. BROOKMAN: Thank you. Ed, follow-on, yes.

MR. OSANN: Ed Osann. Does that suggest that the NSF specifications stated in Btu requirements tends to encourage the over-sizing of refrigeration equipment?

MR. E. CRAIG: Ellis Craig, Craig Industries. The NSF requirement's not necessarily load-based. It's the box itself. If you have a variant, like if you're bringing in product that's liquid, usually liquids are going to take -- there's more mass involved with them, like in your cooling them down. That would be a different Btu. That's not what's on the NSF box.

The Btu requirement there is what it takes to keep that at a normal load which would be a frozen material coming in.

MR. BROOKMAN: Ed, are you finished?

MR. OSANN: I think so, yes.

MR. BROOKMAN: Harvey.

DR. SACHS: Harvey Sachs with follow-on and to thank Mr. Craig, both of you, that it's, to me,

very important in that you've helped clarify the distinction between capacity and efficiency and this is why, in my prior comment, I suggested that a refrigeration efficiency metric would have to include something like the part load requirements which for HVAC have often been expressed as IPLV or similar metrics.

This is what allows us to have a worst case capability while having good part load efficiency and I certainly would be supportive of breaking apart this question of capacity from the question of efficiency.

Thank you.

MR. OSANN: Yes, I agree.

MR. BROOKMAN: Thank you. Okay. Well, that was, I thought, a very interesting discussion, but I'd like to proceed with the slides and Rebecca's going to continue on now and talk about Market & Technology Assessment & Screening Analysis. These are all critical bits of analyses that the Department would intend to conduct.

Ed.

MR. OSANN: Yeah. This has to do with sort of the wrap-up on Test Procedures. This is going on concurrently.

What will be the next step in the

development? What will be the next thing we see as stakeholders in the development of the Test Procedure? Will it -- do you go right to a Test Procedure NOPR?

MR. McCABE: This is Michael McCabe, Department of Energy. The next formal publicly-noticed step in the process would be a Notice of Proposed Rulemaking regarding Test Procedures that would be published in the Federal Register.

However, given the issues that have been raised in this morning's conversation, there is -- we are going to have to review in detail, we always do, the comments received and on the Test Procedure issue, I fully expect that there will have to be a series of exchanges between the Department and others in a format that we don't know whether or not it would be an informal one-on-one, public meeting, going to an organization, such as an AHRI or ACCEA or other organizations and talking to individuals about what their product, what works, what doesn't work, but there will have to be some information exchange so that we can be better prepared and prepare that Test Procedure Proposed Rule.

MR. OSANN: Might I suggest that if you make preliminary determinations as you sort of clear the underbrush on all these various issues that you've

heard about today, that having something in advance of just the NOPR for people to look at and comment on would be helpful.

MR. BROOKMAN: Thank you, Ed. Karim.

DR. AMRANE: Karim Amrane, AHRI. I have a follow-up question. When do you expect the NOPR to go out for the Test Procedure?

MR. LLENZA: Without giving a specific date --

MR. BROOKMAN: Charles Llenza.

MR. LLENZA: Charles Llenza, Department of Energy. We're expecting it some time in the summer, yes, probably late summer, but it can't be too late.

MR. BROOKMAN: Thank you. Yes, Karim.

DR. AMRANE: I'd like to offer an invitation for those of you who are interested in participating in the standard development with DOE and for the contractor. So please come and see me and we'll make sure that you are on the list so that you can participate with us in the development of the standard.

MR. BROOKMAN: A copy of everybody's business card will be -- everybody who attended the meeting today, the Department will supply that listing of attendees and so that will have Karim's business card on that with that list. Okay.

So then let's proceed with the presentation materials. We're going to work till noon and then we'll take a break for lunch.

Market & Technology Assessment & Screening Analysis

MS. LEGETT: Thanks, Doug.

The first analysis conducted in this preliminary phase of the rulemaking is the Market & Technology Assessment or MTA and that's what I'm going to discuss next.

Like I said, the MTA is the first step in the preliminary analyses and it produces data that we then use in subsequent analyses, such as the Screening Analysis and the Engineering Analysis.

The purpose of the MTA is to characterize the walk-in cooler and freezer industry and market, to determine equipment classes, and also to identify potential design options and baseline units for each equipment class.

There are two parts: the Market part and the Technology part. In the Market Assessment, the Department will identify and characterize manufacturers of walk-in coolers and freezers, estimate market shares and trends, and address regulatory and non-regulatory initiatives intended to improve the energy efficiency or reduce the energy consumption of the walk-in cooler

or freezer.

Then in the Technology Assessment, we will identify technologies for improving energy efficiency of walk-in coolers and freezers.

Here’s a very brief overview of the industry and market that we have information on. The numbers at the top represent totals, general totals for the industry and the pie charts at the bottom represent proportions of walk-ins that are at each temperature level and use for which applications, approximately.

Here also -- go ahead.

MR. BROOKMAN: Yes, Ed.

MR. OSANN: Ed Osann. On the pie chart on the right, food includes beverage, would you say?

MS. LEGETT: Possibly.

MR. OSANN: And the distinction between sales and service, what -- how do you draw that?

MS. LEGETT: Yeah. Sure. Food service includes applications like fast food establishments and restaurants, whereas food sales is retail or wholesale food, like grocery or convenience stores.

MR. McHUGH: And what is Other?

MR. BROOKMAN: John McHugh.

MS. LEGETT: Other is anything else that meets the definition of a walk-in cooler or freezer.

MR. McHUGH: Such as?

MR. BROOKMAN: John's asking what is Other and to which Rebecca just replied and now the question is such as, Rebecca?

MS. LEGETT: Yeah. We were hoping to receive your input on what other applications there might be.

MR. BROOKMAN: Ellis.

MR. E. CRAIG: Where do grocery store applications -- would that be --

MS. LEGETT: That would be food sales.

MR. BROOKMAN: Wish for to gain a little bit of momentum here. So why don't you keep going and then we'll double back for some of these questions?

MS. LEGETT: Okay. Yeah. We would like to receive your feedback on these issues of defining and identifying the market.

So here are some typical characteristics of a walk-in. We understand that many walk-ins are custom-made. This is not for a particular walk-in model or even the majority of walk-ins. We just wanted to represent the equipment in general with some of these numbers.

MR. BROOKMAN: Let's take a question on this one. Steve Rosenstock.

MS. LEGETT: Sure.

MR. ROSENSTOCK: Are we doubling back yet?

MR. BROOKMAN: Go ahead.

MR. ROSENSTOCK: I'm sorry.

MR. BROOKMAN: Go ahead, go ahead.

MR. ROSENSTOCK: I'm sorry. I was going to suggest that others might be medical and maybe some of the exempt categories, some of those -- when you say other in terms of end-use applications, could be medical/scientific. I just remember that. So it's an FYI.

MR. HEGNER: Excuse me. Mike Hegner with Chase Doors. Other also is pharmaceutical. A lot of medicines are stored in refrigerated facilities.

MR. BROOKMAN: Thank you. Yes, please.

MR. COMBS: Steve Combs, ICS. How about floral applications and convenience store applications and then meat processing or food processing applications?

MR. BROOKMAN: That's a help. Thank you.

MS. LEGETT: Thank you.

MR. ROSENSTOCK: And to follow up?

MR. BROOKMAN: Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock, Edison Electric Institute. On the next slide, I'm trying to go forward, the -- you know, when you say size, volume

might be a better metric than -- I guess it's floor area.

MS. LEGETT: Thank you.

MR. ROSENSTOCK: Square feet.

MR. BROOKMAN: Yes, please, Talbot.

MR. GEE: This is Talbot Gee with HARDI. Just a quick clarification, too.

If I understood the medical applications were exempted from coverage, correct? So, in theory, it could be 30 some percent of the installed would not potentially be affected by this?

MR. BROOKMAN: Is that what you think medical is?

MR. GEE: Well, I'm just -- I mean, it says 39 percent other. We only named like three other categories, besides.

MR. BROOKMAN: Okay. Michael McCabe.

MR. McCABE: Michael McCabe. These data, the 39 percent comes from the Energy Information Administration data and we'll go back to the EIA data to find out exactly what it is and, of course, if this 39 percent, some of it, maybe the majority, would not be covered by the regulations if they are some of the exempt products.

MR. BROOKMAN: Thank you. Yes, Barbara.

MS. FABIAN: Just a question. The typical characterizations. When you came up with the insulation mean temperatures of 20 for freezers and 55 for coolers, was that generated from an extrapolation of all of this information or where did that information come from?

MR. BROOKMAN: Can you repeat the question, Barbara?

MS. FABIAN: Yes. You have a basis for the thermal R value of the insulation at mean temperature of 20 for the cooler application and 55 for the -- excuse me -- the other way around. 55 for the cooler, 20 for the freezer. How did that -- those numbers -- how were they developed?

MR. MARANTAN: Aris Marantan, Navigant Consulting. Those numbers that you described were in the legislation.

Is your question as to how that came about?

MS. FABIAN: Yes.

MR. MARANTAN: Okay. I’m not at liberty -- I don’t have that information. I don’t know exactly how that was developed.

MR. BROOKMAN: Karim.

MR. MARANTAN: The information --

DR. AMRANE: Karim. I think most of what you

have in the legislation was based on what California had done. So it was State of California who came up.

MS. FABIAN: Barb Fabian, Owens Corning. I just wanted to see if we could relate that information back to this data. That's all. Thank you.

MR. BROOKMAN: Okay. Thanks. Thanks for the query.

MR. ERBS: And Daryl Erbs, and I don't know how important these typical characteristics are because nothing's typical in the walk-in world, but I don't think your cooling capacity numbers are right.

MS. LEGETT: Okay. Thank you.

MR. BROOKMAN: Could you suggest what --

MR. ERBS: Well, the freezer number looks too small, you know, if you look at the size ratios.

MR. BROOKMAN: Thank you. So to the extent you can provide specifics, that's very helpful to the Department. Okay.

MS. LEGETT: All right. And here's another slide requesting feedback because there are no existing Federal energy conservation standards for walk-ins.

The existing standards, like EISA, are design standards which specify design requirements. They don't say anything about the energy conservation standards.

So in this rulemaking, we're requesting input that will help us develop technologically-feasible and economically-justified energy conservation standards.

So there are a couple of questions about market characteristics that we would like your feedback on.

MR. BROOKMAN: Ed Osann.

MR. OSANN: Ed Osann, ASAP. While we're still on the subject of the market characterization here, I'm still struck by the extraordinarily-large fraction of other applications, and I wonder if the Department has -- is the Department intending to address perhaps in the rule or perhaps in the rule adopting the statutory standard or perhaps in the FAQs to provide further clarification of the exclusions?

As a for instance, should walk-ins for pharmaceuticals necessarily come under the exclusions or should those be deemed to be covered products?

MR. McCABE: Michael McCabe. The rule -- that language to adopt the EISA requirements is to the extent possible and in this case it will be in adopting the language in the legislation verbatim. So it will say have the exclusionary language but it will not go beyond to provide any interpretation as to where there may be some areas that you or others might question.

MR. OSANN: Did you also indicate that you're doing an FAQ document, as well?

MR. McCABE: Yes.

MR. OSANN: is it possible that the FAQ document will contain some elaboration on that?

MR. McCABE: The FAQ -- Michael McCabe. The FAQ that is in process right now does not, but specific questions, you know, can be -- and answers can be added to that. It will be a living document.

MR. BROOKMAN: Thank you. Yes.

MR. HEGNER: Mike Hegner, Chase Doors. The other -- back to the other for a minute. I think another piece of that is most likely the food manufacturing. For example, Tyson or Sara Lee have a tremendous amount of refrigerated space that would go in there. Now, those are almost always going to be over 3,000 square feet.

So I'm assuming that that would be exempt from this law, but that's probably a big chunk of the other because any food manufacturing plant and also large distribution facilities, like a Kraft, they may have a 100,000 square feet of refrigerated space that is just for distribution that is in there, but again would not -- I'm assuming would not be under this law.

MR. BROOKMAN: Thank you.

MR. LLENZA: This is Charles Llenza, Department of Energy. That's part of the process here, is collecting better information, so we can characterize our market better. So we would appreciate all the input possible in terms of the characterization of that market and so we could define that 39 percent and get a better appreciation as to -- for the shipments, et. cetera, for our analysis.

MR. BROOKMAN: Okay. Before we move on, two large question boxes, Item 3.1 and 3.2, on Slide 27, if you could just take a peak at those, I think these are consistent with some of the comments we've received already and also Charles's last comment.

Additional input based on Item 3.1 and 3.2. Sriram.

MR. SOMASUNDARAM: This is Sriram Somasundaram, Pacific Northwest National Laboratory.

One clarification on Item 3.1 is, is there a trade association or a manufacturer's group that represents a majority of the manufacturers of the boxes/walk-in units?

MR. BROOKMAN: Ellis.

MR. SOMASUNDARAM: And the other question, follow-up, was we also are asking about small or niche manufacturers as opposed to the major manufacturers.

MR. BROOKMAN: Ellis.

MR. SOMASUNDARAM: So if you have any information.

MR. E. CRAIG: There’s not a specific walk-in cooler manufacturers --

MR. BROOKMAN: Your name.

MR. E. CRAIG: Ellis Craig, Craig Industries.

MR. BROOKMAN: Thank you.

MR. E. CRAIG: There’s not a specific walk-in cooler manufacturers association, be good if we had one, but there isn’t one.

The best way to get a list of the manufacturers, though, it’s publicly available with the National Sanitation -- NSF, National Sanitation Foundation. To be able to sell a walk-in, like I said, in the country here, you really need to have an NSF sticker which has to do with the cleanability and everybody who sells in the food service industry has it. So those guys are already listed. It’s free. You can go on the Internet and download all the information about every manufacturer that has that listing and that would really include anybody who’s in the business seriously. It’s Section 7, by the way.

MR. BROOKMAN: Thank you. Please.

MR. HEGNER: Mike Hegner, Chase Doors. Back

to the other and the groups, there's two other organizations.

When we talk about coolers, we keep talking about cooler boxes and, you know, that smaller part, but if you go back to the larger side, you have an organization called International Association of Cold Storage Contractors, which is a group probably similar to your organization, but it does the larger facilities, and then there's an organization called IARW, International Association of Refrigerated Warehousing, and that again will be the larger facilities. So those are both places you may want to reference.

MR. BROOKMAN: Thank you. That's helpful. Thank you.

Karim.

DR. AMRANE: Karim Amrane, AHRI. We do represent manufacturers who make the mechanical system, the refrigeration system, but, unfortunately, we don't have statistics or anything like that that would be helpful to this rulemaking.

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

MS. LEGETT: Sure. Part of the Market Assessment is determining equipment classes for walk-in

coolers and freezers. A list of the proposed equipment classes is presented in the Framework Document which I believe you all have, and here is a summary of the criteria for separation into different classes.

For example, the capacity, whether it's small, medium or large, whether it's self-contained or remote-condensing, whether it's located indoors or outdoors, or whether it's a cooler or a freezer.

These are some possibilities that we have considered. Based on your feedback, we will consider other criteria. We're required to consider other performance-related features, such as those that provide utility to the consumer, or others that justify the establishment of a separate energy conservation standard.

For example, one that's not up here is a strictly storage walk-in versus a storage and display walk-in. Also, we will consider modifications to these divisions. For example, the size divisions. We would welcome feedback on how to characterize small, medium and large walk-ins and based on the feedback, we might define that differently from what's shown here.

Since you all have this in your slides, I'm going to put this next slide up just showing pictures of several of these equipment classes that I've

mentioned.

MR. BROOKMAN: Thank you. So any other major characteristics that would help further discriminate, show the differences in a useful way on class, by class? Talbot first.

MR. GEE: I have a number of members who responded that 80 to 90 percent of the walk-ins that they touch or supply product to are actually, you know, around 200 square feet or less and there's a big difference between them and even a 1,000 square foot walk-in.

So there was some question of whether the small category was actually small enough.

MR. BROOKMAN: Ed.

MR. OSANN: Yeah. Ed Osann, ASAP. It wasn't all clear that this division of 1,000, 2,000, 3,000 square feet was necessarily the right way to set tiers on this or even whether square footage per se was the right way to set the tiers.

For the same square footage, you can have different configurations that have, you know, substantially-different interior volume and also exterior surface area.

MR. BROOKMAN: So you'd recommend?

MR. OSANN: We'll provide some comments on

it.

MR. BROOKMAN: Okay. Thank you. Steve.

MR. ROSENSTOCK: Steve Rosenstock, EEI. I was going to kind of agree with that, that you might want to have some sort of volumetric parameters, as well.

MR. BROOKMAN: Okay. John.

MR. McHUGH: As shown in your picture, the walk-ins that have doors, the glass doors on them are going to have substantially different loads than those that don’t and so I think it makes sense to have a separate one with doors.

MR. BROOKMAN: Thank you. Karim.

DR. AMRANE: Karim Amrane, AHRI. Just a comment on the volume. I think volume makes more sense here than square footage, but also, I mean, should we distinguish between freezers and coolers? So maybe that’s something we need to add here, you know, when we classify the product.

MR. BROOKMAN: What would you recommend to the Department?

DR. AMRANE: Well, that we set up product classes with respect to coolers and to freezers.

MR. BROOKMAN: Are these combined functions in many of these boxes? Ellis.

MR. E. CRAIG: Actually, the most prevalent -- Ellis Craig, Craig Industries. A lot of them are going to be combinations. If somebody is buying both of those boxes, they're buying combinations. It's cheaper to operate. They're more efficient. They cost less.

MR. BROOKMAN: Is it a separate --

MR. E. CRAIG: Separate unit.

MR. BROOKMAN: Inside --

MR. E. CRAIG: Separate refrigeration system for both of them and they can be inside or outside.

MR. BROOKMAN: I see.

MR. E. CRAIG: The combinations can.

MR. BROOKMAN: Daryl.

MR. ERBS: Daryl Erbs. A couple other things to consider. You mentioned indoor and outdoor, but there's actually a further distinction. You can have an outdoor box. You can have an indoor box with an outdoor condensing unit. So I think that's a further subclass.

And also on remote-condensing units, there are split-type condensing units where you essentially have a dedicated condensing unit that is remotely located, but in supermarket applications you also have rack, parallel rack systems which are remote but are

very different in their characteristics and those would typically then be used to cool, to hook up to the evaporator in the walk-in.

So I think on the -- it’s not enough to just say remote-condensing unit. We need to break that down further, as well.

MR. BROOKMAN: Thank you. Yes, please, Steve.

MR. COMBS: Steve Combs, ICS. I think there needs to be some consideration given to combined rooms of the same temperature storage where if you would have a large warehouse and you had two freezer units in there. Otherwise, I think that people might take liberty with that and combine the overall square footage and say that they exceed the 3,000 square foot limit, so they are exempt from the requirement. So it needs to be kind of considered on the units with the common wall, with a shared wall, if they’re at the same temperature potential.

MR. BROOKMAN: That would be the feature that would cause them to fall within the definition.

MR. COMBS: Right. Whether or not they used their combined square footage at that same storage temperature.

MR. BROOKMAN: Common wall. Thank you. Yes,

Aris.

MR. MARANTAN: Aris from Navigant. Just a quick question for Mr. Craig. You described the combination unit earlier.

Is there any case where you have a combination unit that’s served by one refrigeration system and provides two different temperature levels?

MR. E. CRAIG: The only application that would get into that would be like a rack system that he was talking about. A convenience store could have a rack system with several compressors that supply to different items throughout the facility. That would be the only shared.

Normal combinations are shared common wall with two complete separate refrigeration systems applying for it.

MR. MARANTAN: Okay. Thank you.

MR. BROOKMAN: And those two separates would be freezer and refrigerator.

MR. E. CRAIG: They’d be a freezer and a cooler.

MR. BROOKMAN: And a cooler.

MR. E. CRAIG: Yeah. And usually they will try to make it so that the door enters into the cooler and then the door is in the common wall, so you would

go from the cooler into the freezer, so it's less expensive to open the door.

MR. BROOKMAN: Mike.

MR. HEGNER: Mike Hegner, Chase Doors. The rack systems you're referring to, when you talk about supermarket industry, that is the common system that they use. So they almost always will have a rack system where it will be the same refrigerant literally in the cooler, the freezer, reach-in cases, stand-up cases. That's all one system. So that's a very, very common system in large supermarkets.

MR. BROOKMAN: Okay. Yes, please.

MR. CHRISTIE: Tony Christie with Eliason Corporation. In all of these pictures that I see here and these classes, again there's no reference or recognition of a double-acting self-closing door which there are thousands of them out there today and it is a preferred method of closure to a locking door which you see in a lot of these pictures here.

So our concern is that these classes are not making those references that are preferred out there.

MR. BROOKMAN: Thanks for raising it. Thank you. Okay. So lots of good comment on equipment product classes. Discriminators that relate to how these classes might be characterized.

Are there additions before we move on?

(No response.)

MR. BROOKMAN: Okay. That was good.

MS. LEGETT: This is just a slide with more questions. There have been a lot of questions going back and forth, but if there's any additional feedback related to the questions up here, we'd like that.

MR. BROOKMAN: I think we pretty much covered these.

MS. LEGETT: Okay. I'll move on to discuss baseline units. Once the Department establishes the equipment classes, we'll then select a baseline model for each class against which we can measure changes resulting from applying energy conservation standards.

Typically, a baseline model would be a model that just meets the current energy conservation standards. However, in this case there are no current energy conservation standards. So we propose to use information provided by stakeholders, interested parties, in selecting appropriate baseline models for the different equipment classes.

These baseline models are then used in subsequent analyses to determine energy savings and price increases as a result of implementing the standards. We'll compare the higher-efficiency models

to the baseline models.

MR. BROOKMAN: Ed Osann.

MR. OSANN: Yeah. I'm puzzled by the assertion that there aren't any existing standards. The -- for purposes of this rulemaking, it would seem to be appropriate to use the existing design standards that are in EISA as comprising the baseline, assemble a baseline based upon the requirements applicable to those components.

MR. BROOKMAN: What's covered in EISA?

MR. OSANN: Yeah.

MR. BROOKMAN: Steve Rosenstock.

MR. ROSENSTOCK: Steve Rosenstock, EEI. What also might help is to, if there's any data available, to show people what is the difference between, I'll say, 2007 baseline model that was out there and then the new EISA model, just to see what's been accomplished from an energy efficiency standpoint. How much more efficient is it now. Have we improved the efficiency by 10 percent, 20 percent, 30 percent? That might also help people in terms of, as you go down the line, you know, how far -- how close are we to the ceiling in a way with some of these types of technologies.

MR. BROOKMAN: Ellis.

MR. E. CRAIG: My concern is that if you -- and we haven't really discussed it because we've kept of kept away, but if I understand it right, with the existing EISA requirements that are out there, they may or may not save us any energy at all. They may be costing us energy.

MR. BROOKMAN: Thank you. Karim.

DR. AMRANE: Karim Amrane, AHRI. I guess baseline should be a baseline and the legislation that now is in effect has been in effect for less than 30 days. So I'm not sure what it means a baseline. So I think what DOE needs to do here is to go back and look at, you know, product that's in the field for at least five years and maybe look at that and see and use that as the baseline because it's really what it is.

MR. BROOKMAN: Ed.

MR. OSANN: Ed Osann, ASAP. I'd point out that EPCA or NAECA, the larger framework here in which DOE is operating, precludes the Secretary from setting a standard that's weaker than current standards.

So it's going to be important to establish what the efficacy [efficiency?] of the current standards is or are and because any performance standard applicable to this equipment is really, certainly in our view, going to have to deliver an

incremental addition of energy savings or the Secretary is not going to be able to adopt it.

MR. BROOKMAN: John.

MR. McHUGH: Yes, I'd also like to point out that most of the requirements in the EISA standard have been required by California law for three years. So in terms of a baseline for 10 percent of the population that really is the baseline.

I'd also like to make one more comment, that, you know, I was kind of surprised to see the choices being listed as things like ECM motors which have been required in California for awhile and are also in the EISA standard.

MR. BROOKMAN: Additional -- yes, please, Tony.

MR. CHRISTIE: Tony Christie with Eliason. I have a quick question regarding California.

Is the R factor or the R value for California coolers 28 versus 25 that's listed in the legislation?

MR. McHUGH: That's a good question. The California standard originally was the higher number and then because that's preempted by EISA, until we adopt our new standard, we've adopted all the EISA and it's under review right now. It will be posted, I think, within days.

MR. BROOKMAN: John, will you say again what your affiliation is and how you come by this information?

MR. McHUGH: Sure. My affiliation -- John McHugh, McHugh Energy, and I'm working on behalf of Southern California Edison, and I've also been involved with the development of the California Building Standards.

MR. BROOKMAN: Thanks. That's helpful. Daryl.

MR. ERBS: Okay. Daryl Erbs. Relative to the baseline, because we don't have any test method, we don't have rating standards, I'm just questioning what are you going to measure to establish that baseline? Is it EER? I mean, if it's something like R factor, then I think it's almost self-defining, but some of these other metrics we've talked about, we don't even know how to properly measure those. So I think that may be a step that you really have to take before you can get to a baseline.

MR. BROOKMAN: Given your knowledge, what would you suggest the Department do?

MR. ERBS: I think we need to work together on getting to at least a preliminary standard. Then some of the baselining could be done, I think, in

parallel with completing that standard, but at least -- otherwise, we could spend a lot of time collecting information on something that we disagree or agree that wasn't the correct metric.

MR. BROOKMAN: Amanda.

MS. STEVENS: Hi. Yes. I'm Amanda Stevens. I'm here for Energy Solutions on behalf of PG&E, and I just want to add to John's comment.

The original California standard for walk-ins, PG&E, that was a proposal developed by PG&E, and there is a report, I don't know if the Navigant team has seen it, but I'd be happy to share it with you in our written comments as well as any other stakeholders who want to take a look and just -- there was some analysis done on the original California requirements. So that may provide some information because the California requirement then served as the baseline for the EISA standard.

So to the extent that's helpful, we'd be glad to provide that.

MR. BROOKMAN: Thanks very much. Talbot.

MR. GEE: Well, my question for both the California representatives is what is the enforcement mechanism in California for that, that you've used for the last three years?

MR. BROOKMAN: John, can you answer that?

MR. McHUGH: Sure. The enforcement is at time of sale. So the state asked for registration of appliance in their appliance database. So when someone sells a new product, they're supposed to insert that information into their database.

Amanda, do you have any more comments about that? Okay.

MR. BROOKMAN: Amanda, you have that information, though, yes?

MS. STEVENS: Yes.

MR. BROOKMAN: So you can provide that to the Navigant team, the Department, all that information, right? Into the docket. Thank you. Charles reminds me that information will be inserted into the docket.

Ellis, first.

MR. E. CRAIG: On the baseline, I think we have to take into consideration the overall life cycle of this product. I can't say that we have the full answer, but we have done some case studies on existing walk-ins that we've taken out in the field as we replaced them with walk-ins that we sold and the walk-ins that we took out were full of ice. Okay.

Now, I guarantee you that we have the data on the R values that were received out of those walk-ins

that we took out of the field and they've been in existence from seven to 10 years, I think is what we were looking at. Owens Corning came down and we pulled some units that we were placing out and we actually sent them off to the laboratories and had them tested.

But all this talk we're doing today is not going to amount to anything if the walk-ins that we sell in the future turn into ice in five to seven years. This is all fun and games, guys, and it's not going to have any effect on the energy use of that walk-in over the long times.

So we have to -- the Department of Energy should go out and do some core sampling on existing walk-ins in varying applications in different areas of the country to get some real ideas of what we're dealing with out there in the field because we're talking about brand-new manufactured products which do not perform that way once they're out in real-life environments.

MR. BROOKMAN: Right. Okay. And what was the general life cycle of these?

MR. E. CRAIG: Well, on here it's 18 years, which I don't think that's unreasonable.

MR. BROOKMAN: Okay.

MR. L. CRAIG: Most walk-in cooler

manufacturers have a 10-year warranty.

MR. E. CRAIG: Warranty.

MR. BROOKMAN: Okay.

MR. L. CRAIG: That's just the warranty period. So they'll go 10 to 20 years, if they're treated, you know, relatively well. They'll last 20 years easily.

MR. BROOKMAN: Okay. So thank you. That last comment from Lucas.

Karim.

DR. AMRANE: Karim Amrane, AHRI. Just a follow-up question -- I mean answer to John about California.

Yes, the California standards have been in place in California for three years, but the feedback we are receiving is that there is no enforcement whatsoever. So I'm not sure if it really means or represents the baseline.

MR. BROOKMAN: So Amanda and others can at least supply what they say they're going to do, correct? Yes, okay.

So I want to take final comments on Slide 31 because I promised you we'd go to lunch and I promise you we will. No, I'm not going to do that now because I think there's a lot of content there that we don't

want to dance lightly over the technology options. I want to do that when we return from lunch.

Ed Osann.

MR. OSANN: Just following up on the last comment from AHRI in terms of the baseline, I want to be really clear here. I mean, we don't view this, the development of the prescriptive standard, as a do-over of the EISA component-specific prescriptive standards. We view it as the -- as a standards revision that needs to comply with the criteria that governs standards revisions generally under EPCA.

So this is going to have to provide additional increments of savings. The Secretary can't go backwards. So we have to know what the general level of performance is for products that comply with the current standards, albeit the fact that the standards are very new, that they just went into effect January 1st, 2009, but that clearly has to be a baseline consideration for assessing the increments of savings and the cost effectiveness and so on of the standards that are being proposed in this proceeding.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. My comments do not contradict what you just said. I'm not saying that the DOE shouldn't look at EISA and what the level,

what that EISA standard means in terms of energy savings.

I'm just saying that all the analysis will be based on the floor as far as the energy consumption of the products and I think, I mean, saying that the baseline is at the current EISA is wrong.

So yes, DOE will look at the trial standard levels, they should look at EISA and make sure that we go beyond that, but I'm saying as far as the analysis is concerned, I think it should be based on what is happening and what the real situation is.

MR. BROOKMAN: John.

MR. McHUGH: Just to go back to baseline units, I think the baseline should be what is the legal minimum currently and undoubtedly what the legal minimum is, and if someone's violating the law, that's something else, but in terms of what the legal minimum is, it's pretty clear, it's written in EISA, it's written in Title 20 standard, and there's really no -- you disagree with that?

DR. AMRANE: No, I don't.

MR. McHUGH: Okay.

DR. AMRANE: I'm truly perfectly fine with it, but we don't even have a metric for what that baseline is. I mean that's another thing, too.

MR. BROOKMAN: Tim.

MR. BALLO: Tim Ballo, EarthJustice. Just to respond to something. It's been suggested that because the California standards and the EISA standards are new, that in some way diminishes the role they should play in setting the baseline.

It should be remembered that this rulemaking, I believe, will not even go into effect until something like 2015, if I remember the statute correctly. So we're dealing with a situation where we need to study what the products are going to be like in 2015, not what they're looking like as they begin to comply with the new requirements.

MR. BROOKMAN: Okay. So let me make a process note. The Department and the consultant team thinks it makes sense to talk about the technology choices listed there in your Slides 32 and 33 right now.

Can we hang on and do this for 10 more minutes? Let's do it. Okay. No one's objecting vigorously.

Michael McCabe, are you going to object vigorously?

MR. McCABE: I'm not going to object. This is Michael McCabe. I'm not going to object. I just

want to -- I think there's some violent agreement with regards to baseline that people don't fully appreciate and want to add to that.

In our analysis, we do have to identify a baseline unit in which the Engineering Analysis starts and in typical rulemakings, we then add technologies to that baseline in order to identify the costs and efficiency of improvements to that baseline.

The comment with regards to the difference between the standard and the baseline is that, as the earlier slides indicated, we expect that the metric in which the standard is going to be is going to be different than what the prescriptive requirements were in the legislation.

Typically, when we define a baseline unit, we already have standards in place where we know what -- and in that case, the baseline is with the same basis with which the future standards are going to be. So if it's a central air conditioner, the baseline is an SEER and the standard levels are SEER.

In this case, it's quite possible that the baseline -- we're going to be describing it in terms different than which the standard is going to be specified.

MR. OSANN: Yes.

MR. McCABE: That's what Rebecca's comment was all about.

As far as the baseline unit, that then goes into our -- some of the subsequent analysis which will be described in which we forecast what is going to be the base case, what's going to happen in the marketplace without any further standards. That base case projection typically, and I think as far as almost -- typically shows an increase in efficiency in response to market demands from a number of factors.

So further analyses which will be described. We'll talk about a base case and improvement in efficiency. So for the purpose of the Engineering Analysis, the baseline unit, it has to represent, and I agree and I think the parties do agree, that it represents the units that are typically sold today. That's EISA requirements, California looks like it.

There are some questions as far as the compliance but that's a separate issue.

The Engineering Analysis and the technology choices which are the next two slides are part of how we build on the efficiency of the products and how we cost those out and that becomes our Engineering Analysis which is the foundation of all the economic analysis.

MR. BROOKMAN: So let's let Rebecca lay out these next two slides on technology choices.

MS. LEGETT: Sure. Here is a partial list of some technologies we're considering. These are technologies that we believe can reduce the energy consumption or improve efficiency from the baseline level.

Like I said, this is a partial list. The list is continued on the next slide. Initially, this list will include all those technologies that we consider technologically feasible, and this will serve to establish, and the technologies we end up with are finalists, will establish the maximum technologically-feasible design - max tech.

These specific technologies that we listed here that I believe you all have a list of are applicable to all walk-in coolers and freezers. Since you have that list, I'm going to move on to the next slide which is a continuation of that list.

Here's some more technology options that we have identified and some may be applicable only to specific classes of equipment.

I'd like to -- since you have this list, as well, I'd like to advance to the Screening Analysis slide. This is because this list of technologies will

be altered based on the results of the Screening Analysis in which we screen out technology options that will not be considered in the rulemaking, based on these four criteria on this slide.

We will apply these four screening criteria and the reasons for eliminating any of those design options that were in the previous two slides will be fully documented and published as part of these analyses, but we request comment on which technology options can be added to that list or should be removed from that list based on these four criteria.

MR. BROOKMAN: So thank you, Rebecca. That was well done.

Comments on these technology choices. Yes, Tony. Tony first.

MR. DUNLAP: Just one comment.

MR. BROOKMAN: Steve.

MR. DUNLAP: This is primarily on the refrigeration side and there’s nothing in here about the box, the envelope, or the doors, and I’d submit that the energy consumption is heavily dependent on the application of the freezer and the amount of traffic that these applications see.

MR. BROOKMAN: Thank you. Mike.

MR. HEGNER: Yes, to that point, I think

operational efficiency, if you have, for example, a door that opens and closes very quickly, it's a whole lot better than a door that's going to open slowly and those sorts of things and that's a big chunk of energy when you talk about cooler boxes where there's people going in and out of them sometimes hundreds sometimes a day.

MR. BROOKMAN: Thank you. Tony.

MR. CHRISTIE: Yes, Tony Christie with Eliason Corporation. I would suggest that the double-action self-closing door be a design option that you would consider.

MR. BROOKMAN: Okay. Thank you.

MR. ERBS: Daryl Erbs. A couple of points. You have listed for all equipment types floating head pressure. Floating head pressure really doesn't offer you any benefit if you place the condensing unit indoors in a constant temperature condition and you have external heat rejection.

I think that's probably in the same category, if you mean basically rejecting the condenser heat out of doors. That's not going to apply to those cases where it's in the indoor environment.

MR. BROOKMAN: Thank you. Okay. I gotcha. Ed.

MR. OSANN: Yeah. I also noted the lack of reference to doors, door closures and seals and so on.

In fact, I think you need to look at the elements that are covered by the EISA prescriptive requirements as potential technology choices. For instance, window insulation is specified and that might be an area for further improvement.

Also for external systems, for systems that are installed outdoors, reflective roof coatings and shading systems.

MR. BROOKMAN: Okay. John.

MR. McHUGH: You have listed here floating head pressure and I'd like to make sure you're aware of sort of a -- it's an alternative to floating head pressure which is floating head pressure usually refers to fan controls that are allowing the condensing temperature to be fixed -- to float down to a particular temperature.

In some cases, especially for smaller units that use things like a head master, the issue is that the head master pressure is set too high and so one of the alternatives is to look at a head master that has a 70 degree temperature. So it's essentially eliminating controls that allow or that fix the condensing temperature above 70 degrees.

Also related to -- kind of related to the last one, you have high-efficiency evaporator fan motors. Since ECMs are already required in the standard, that doesn't seem like that's a screening option. I guess the only place would be is removing the 460-volt exception in the standard.

In terms of evaporator fan motor controllers, is this referring to variable speed or what is the intent of that measure?

MR. BROOKMAN: Aris.

MR. MARANTAN: Aris from Navigant. Yes, that can refer to variable speed.

MR. McHUGH: Okay. As I mentioned earlier, that was the second largest opportunity that we saw, and I'm hoping that as part of the process that we rank these or prioritize these measures by both their magnitude of the savings as well as their payback.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. I guess I would have a question for Navigant about the economizer cooling.

Are you talking about the typical economizer that we have in air conditioning applications?

MR. MARANTAN: Yes, that could be any kind of precooling that might be extra heat exchange or

something like that.

DR. AMRANE: I'm not sure that could be used in this kind of application, but I think it's something that really shouldn't be listed.

MR. MARANTAN: Okay.

DR. AMRANE: As far as those technology options, I think we need to be very careful. I mean, when we combine them, they're not really simply additives. Okay. So Navigant has to really make sure that they're just adding percentages.

MR. BROOKMAN: Thank you. Thanks for that. Yes, Steve.

MR. COMBS: Yes, as follow on. Steve Combs, ICS. When -- as these initial technology choices are weeded out as to which ones are most applicable and which ones aren't, I think we're going to have to come down to some very definitive definitions and descriptions of what they are, and then on the last one on the initial technology choices where you have listed as freezers-only, defrost cycle control, we very frequently install defrost on what we would term as a cooler system that operates below or right around 35 degrees, depending on the application. So we need to be careful about pinning that down to a freezer-only application.

MR. BROOKMAN: Thank you. Thank you. A lot of good comments.

John.

MR. McHUGH: Just to point out that many of these control requirements require some kind of hourly or shorter time step simulation, that this is not a steady state, this evaluation is not steady state.

MR. BROOKMAN: Okay. So additional and perhaps final comments on this initial listing of technology choices and options? Talbot.

MR. GEE: This is Talbot from HARDI. I would just throw out one other thing that just jumped into my head and this may or may not be applicable, but this equipment, condensing units, compressors, is also in the middle of the refrigerant transition, too.

So we'd want to make sure, because the effective date would only apply to HFC-using equipment and components, only consider those and their performance metrics in this.

MR. BROOKMAN: Please say your name.

MR. NEIL: Tim Neil with Morrill Motors. I just want to talk about what John was talking about with the ECM. It's already being mandated and we're talking about variable speed and also controllers.

If you combine controllers along with ECM,

you can save a lot of money by doing that. Going from the motors which most people are using today to the ECM, you're going to save about 70 percent of your energy just from motor to motor savings, but a lot of these motors, they run 24 hours a day, seven days a week, 365 days a year, but the coolers aren't always open and the temperature doesn't always have to run at the full 1550 rpm which is mostly what they run at.

If you have a way of controlling going down to a second speed, which I think California's already looking at a rebate program to do that with retrofit, there's a cubic relationship with efficiency to speed that you can save a lot of money by doing that, a lot of efficiency doing that.

MR. BROOKMAN: Okay. Thank you. Charles. Yes, Lucas.

MR. L. CRAIG: Yeah. I was just going to add that we're talking about ECM as currently mandated under EISA, but it doesn't -- it's not required for retrofit. One way that you could leave it in then would be to apply ECM for retrofit applications.

MR. BROOKMAN: Okay. Thank you. Charles.

MR. LLENZA: I just wanted to add, also, we appreciate the comments and we would appreciate if you have more thoughts on this because this is very

important in establishing the different kind of classes and types as we go through this.

MR. BROOKMAN: And I guess, as soon as we return from lunch, if there’s something that bubbles forward while you’re eating, we can discuss that briefly when we return, and having made that transition, let’s go to lunch.

(Whereupon, at 12:20 p.m., the meeting was recessed for lunch, to reconvene this same day at 1:25 p.m.)

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

(1:25 p.m.)

MR. BROOKMAN: We're going to begin. If you could start taking your seats, folks?

As a housekeeping matter and also to bring you back to order, Brenda Edwards has provided, has made a Xerox copy of all of the compiled business cards and I hope you all received one, if you wish to have one, and they were at the Registration Desk right there in the back of the room, and so now I would want to proceed with the meeting.

Thanks to all of you for getting back here pretty much on time so we can keep going. We still have a lot of material to cover, and I wanted to follow through on my offer to spend a few more minutes on technology options, if anybody wishes to revisit that briefly, but then we'll press on.

Anything else that came up while we were gone for lunch? I thought we had a pretty good discussion. We may have covered it. Mike.

MR. HEGNER: Mike Hegner. You know, one thought as far as the technology, just thinking about the whole testing, it seems to me that it would be

difficult, if not impossible, to set standards based on the cooler box -- we had a lot of discussions -- cooler box and refrigeration of the doors, and it seems to me that the better method would be to establish a standard for the insulated box panels, standards for the refrigeration, standards for the doors and those sorts of things, that you can establish the standard that's manageable because again a cooler box, you know, the insulation value of that's going to change depending on the size, depending on the application, those sorts of things. The same goes for door refrigeration. So I don't see how you would manage that.

MR. BROOKMAN: Okay. Thank you. That's helpful, and it's hard to say how much the Department would be bound by what Congress tells them to do, for example.

(Laughter.)

MR. BROOKMAN: Ed.

MR. OSANN: Yeah. Ed Osann, ASAP. I was intrigued by the comment earlier this morning about the effect of the screw-mounted racking systems degrading the thermal performance of the insulation, and I wonder if free-standing racking systems or rack attachments that don't involve penetration of the panel might be considered as a technology option.

MR. BROOKMAN: Okay. Thank you. So I thought we covered it pretty well the first time around. Final comments before we proceed with the presentation material?

(No response.)

MR. BROOKMAN: Okay. So then to Aris.

Engineering Analysis

MR. MARANTAN: Okay. Thank you, Doug.

The next section in the preliminary analyses is the Engineering Analysis.

The purpose of the Engineering Analysis is to characterize the relationship between manufacturing costs and energy consumption, and actually we take that a step further. It’s not just the manufacturing costs but the manufacturer price at which the manufacturer sells the equipment that we finally characterize in this analysis.

We first start off by defining the baseline which was described to you earlier. That is one thing that needs to be developed. We collect baseline performance and cost data primarily from the Market & Technology Assessment as well as consultation with stakeholders, including manufacturers, and we apply a markup assumption which I’ll describe to you later and that just basically is an industry average, industry-

weighted average multiplier that we multiply the manufacturer cost to to arrive at a manufacturer price. I'll describe that in a little more detail.

Next, we have a cost model development which is a model that we develop to estimate the production cost of equipment and this is basically to estimate the core case cost to begin with and then we apply design options with specific price increases for those options.

The next step is design options where we take the initial list of technology choices that was described to you earlier and we screen out the ones that do not pass the screening criteria.

What we're left with are the applicable or available design options that we will consider in the analysis, and then the last step is to finalize the analysis by getting feedback on the actual results. So we'll meet with manufacturers and we'll present the results to them and say, you know, does this make sense? We'll welcome any feedback on what needs to change, if we haven't considered something specifically that needs to be, we'll include that. If something we considered doesn't make sense, we'll remove it. So there is a feedback loop in terms of the engineering phase of this process.

Let me describe to you in a little more detail the cost-energy consumption curve. If you can imagine the energy consumption is on the X axis here and the manufacturing cost to begin with is on the Y axis. What we do first is establish that baseline and as we discussed earlier that needs to be developed.

From the baseline, we implement design options and we calculate how much more it takes in costs to implement that design option and then we also estimate the energy consumption savings that that specific design option will achieve and so what you see here in the middle section of this graph is, you know, a baseline and three individual design options that we're considering.

The last step is to estimate which design options are the most practical or, the way we put it here, the most cost-efficient. So we see that we get more energy consumption for a little bit of manufacturing cost increase with the first design option implemented after the baseline and then that successively -- that slope successively gets steeper.

So the last design option shown, the top point on that graph, is the one that doesn't -- that is not -- it's the least cost efficient in terms of a metric, like a simple payback.

So what you end up seeing is a curve with an increasing slope that describes design options that we've considered for a specific product class, with a specific baseline, and then that curve is the basis for all of the economic analyses downstream.

Okay. Here are a couple of questions on the engineering approach. There are three. The first one is we request feedback on the design option approach. The second one is appropriate representative capacity. That has a lot to do with the product class or equipment classes we described earlier.

Let's take a look at the size category for a minute. If we look at a size category we had initially conceived of maybe zero to a thousand square feet, but for the analysis, should we be considering that 200 square foot unit in our analysis? Would that be the typical one?

So we need to establish a representative unit within each product class.

The third one is what particular components and features characterize the baseline model and we touched upon that earlier.

MR. BROOKMAN: Yes, Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. I don't know. I think we're, to a certain extent,

typical, but it seems to me that your sizing of your walk-ins, the class of a thousand and lower, our Number 1 selling product, if you added up all the walk-ins we've sold over the last 10 years and tried to pick the one or two models that we sold the most of, the most on a cooler would be an 8X10 cooler which is 80 square foot or panel-wise it'd be a little bit different, or on a freezer it'd be like a 6X8.

So our numbers are kind of smaller than the numbers you're using. So the impact on manufacturers like us, that's a big number, a thousand down to 80. Most of your restaurants use fairly small units going in instead of huge large ones. You get into convenience stores and grocery stores and the larger units, that's a different thing, but most of the food service is going to be a lot smaller units than we're dealing with.

MR. BROOKMAN: Thank you. That's helpful. So other representative sizes, for example, or ones that if you were going to do a sampling across the industry, the ones that would be the most -- used most often, indicative, if you would?

MR. MARANTAN: Just a follow-up question. Would those sizes also represent or be consistent with the combination units?

MR. E. CRAIG: Yes. It just seems like -- I wanted to know because we did some analysis to find out what's the Number 1 selling product out there and from what we've talked to friends of our competitors that are competitors and what we've seen, these are the two numbers that just come up consistently year after year after year, whether it be a combination or whether it be -- you know, you take a combination 8X10, well, then you'll have the 8X10 cooler sitting next to a 6X8 freezer and you'll have a combination wall between the two of them.

MR. BROOKMAN: Okay. Good. That's helpful. Daryl, I'm looking over at you. Earlier, you talked about a lot of different configurations. Maybe you could describe which ones are most typical.

MR. ERBS: Sure. Daryl Erbs. I think I'd echo some of the same comments. Restaurants, it depends a little bit on the volume. So some of the quick-serve restaurants do higher volume and also they have different menus, so we see that vary, but I would say that something that's on the order of a 100 square foot is probably more representative of that class of application than a 1,000square foot.

Then you'd have another class which would be convenience stores which would be larger, but then

you'd find most of those would have glass doors. So, you know, maybe you need to pick some different typical application examples and even make them more representative of the real-life configurations that they tend to be. You know, grocery stores would be larger. They could be maybe a 1,000 square foot and that might be a better way to pick a few places to explore some of these technology options because I think with different sizes, you'll find smaller compressors have different efficiency characteristics than larger compressors, for example, and that becomes important.

MR. BROOKMAN: Okay. Thank you. Yes, please, Steve.

MR. COMBS: Steve Combs, ICS. Two to 400 to even 600 square feet would be fairly typical. When you get larger in footprint, you typically get a little bit higher in ceiling height, so your volume is going to go up. So again the standard needs to be based probably on a volumetric measurement rather than a square footage area.

MR. BROOKMAN: Okay. Yes, Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. It seems to me that on your costing, it needs to be considered the economies to scale in making a big box

versus a little box. It's a lot cheaper to make a big box than it is to make a little box because of the amount of size of panels and the same labor going into a big panel as goes into a little panel. So labor varies quite a bit. So when you're doing your costing you have to take that little bit into consideration.

MR. BROOKMAN: Okay. Good. Yes, Tony.

MR. CHRISTIE: Tony Christie with Eliason Corporation. Just referring to the design option approach to determine cost versus efficiency and in our -- on our product, if that was a static type of test, then there's a potential that the double-acting self-closing door would not perform as well, but in a real-world application, where that door is opened and closed and opened and closed a number of cycles, then I would agree that the design option would lend itself to a different type of door.

MR. BROOKMAN: Okay.

MR. CHRISTIE: Does that make sense?

MR. BROOKMAN: Yeah. Okay. Yes, John.

MR. McHUGH: Tony, I have a follow-on question. Have you guys collected any sort of typical number of door closings, number of entries, how long people leave doors open? What have you found?

MR. CHRISTIE: Yes. Tony Christie with

Eliason, and we have found that many of our customers actually prop a cooler door open in an effort to get in and out efficiently, and the efficiency goes right out the window. So that is why they prefer to use a door that they can just walk through and it closes right behind them which would lend itself to more efficient design.

I can share with you some of those cycles if you would like.

MR. McHUGH: That would be fantastic. Thanks.

MR. BROOKMAN: Steve.

MR. DUNLAP: Yes, our experience has been, and this is a grocery store, a large, you know, retail supermarket, we actually have the doors that cycle, roll-up/roll-down, automatically and we have counters and I can tell you we see anywhere from, in these applications, anywhere from 400 to 600 cycles a week.

MR. BROOKMAN: Is that a big door?

MR. DUNLAP: The majority of the doors that we have are over four feet. Typical size in these applications is six feet wide, seven feet tall.

MR. BROOKMAN: Wow! Lucas.

MR. L. CRAIG: I was just going to say on the side note, when we went to lunch the walk-in cooler in

the cafeteria was propped open during the whole time.

(Laughter.)

MR. L. CRAIG: Just for your information.

MR. E. CRAIG: Department of Energy, right.

MR. BROOKMAN: Let me just say for the record the Department of Energy did install portable tanks on the roof of the Forrestal Building.

MR. DUNLAP: That’s another plug for an automatic, you know, door that completely seals.

MR. BROOKMAN: Okay.

MR. DUNLAP: Not to mention all the ice build-up from leaving the doors open.

MR. BROOKMAN: Okay. So I’d like to ask you to look again at the Item 5.1 and Item 5.2 and Item 5.3 on Page 39 and see if you have any additional comments before we move on.

Yes, John.

MR. McHUGH: I have a couple of questions about the first two pages. How does someone get involved in the feedback discussion? You said in this analysis you’re incorporating feedback. Is there a public process or is there an offline process where people can provide feedback, take a look at what you’re thinking about initially before the final analysis is conducted?

MR. BROOKMAN: Charles.

MR. LLENZA: Charles Llenza, Department of Energy. Usually the process is controlled in order to give everybody access and to cut everybody off literally so that there is no improprieties in between the processes that we do. So we have the comment period is what usually is the process for an open environment of feedback back and forth.

You could always provide us feedback and once the modeling and the data is on the Web at some point at the analysis -- at the first analysis interval here, feedback is always taken into consideration.

MR. McHUGH: So is there a list? Is there some kind of announcement when this is posted or how does that work?

MR. LLENZA: There will be some kind of announcement and I would think that we would probably have to have something in the Federal Register.

MR. BROOKMAN: Do you have a compiled interested persons list so that everybody sees an e-mail about it or anything like that?

MR. LLENZA: Well, we also do that. We do publish things because that way it goes on the record, but then we also have a database of stakeholders, parties of interest, and when information like that is

available, we make use of that type of announcement.

MR. BROOKMAN: Yes.

MR. McHUGH: So the next question I have has to do with this cost-efficient application. Could you go into a little bit more description, Aris, about what you mean by cost-efficient?

MR. MARANTAN: Are you referring to Slide 38, the right side?

MR. McHUGH: Yes, Step 3 of Slide 38.

MR. MARANTAN: Okay. Yes, okay. What we have done typically in our Engineering Analysis is analyzed design options one at a time and just in order to order the design options in terms of most effective, let’s say, we look at a simple payback of that design.

So let’s say we’re implementing improved insulation, for example, on our analysis point which is a typical unit, our analysis point for a specific equipment class.

We will have cost information about that design option and we will have performance information and so we do a simple payback on that and that’s how we’re able -- and we only use that payback information to order the design options.

We do a different payback analysis in subsequent analyses after the engineering.

MR. McHUGH: So for the technical standard level when you, you know, go to Technical Standard 1, 2, 3, 4, what is the basis of that ordering of those standards since that has a huge impact on what kind of ends up on the list and what ends up being dropped off?

MR. MARANTAN: The Engineering Analysis will include any design options that are not screened out of the Screening Analysis. So we examine everything that you can possibly throw at a walk-in.

Later on in subsequent analyses is when we identify, you know, what levels we should be considering. For example, in the LCC and the NES, and I think you may be referring to our candidate standards during the Preliminary Analysis. So that doesn't happen here, it happens downstream of this.

MR. McHUGH: Okay.

MR. BROOKMAN: And the candidate standard levels, they precede the trial standard levels. So moving from ANOPR to NOPR phases, right?

Ed, please.

MR. OSANN: Ed Osann with ASAP. How then are the CSLs ordered, and if you have this -- you're using a simple payback for ordering the technology options within the Engineering Analysis. Okay. That's fine.

When you approach the CSL tiering and

ordering, what's the basis for the sequencing of those?

MR. MARANTAN: Okay. I can describe to you some of the typical choices that have been used in the past. For other rulemakings, the CSLs are composed of things such as maximum LCC savings, highest-efficiency level with positive LCC, max tech, which is actually the highest point on the cost-efficiency curve, that's another option, and then intermediate levels in between.

I think we may go into a little more detail about that when we get into LCC or some of the other analyses.

MR. SOMASUNDARAM: Those are the four criteria that are required by EPCA to set the candidate standard levels.

MR. BROOKMAN: Thank you, Sriram. Okay. So then let's proceed here with the next slide.

MR. MARANTAN: Okay. Slide 40. This is Manufacturing Cost Components.

Now, what I described to you in that curve in the other diagrams is a production cost and that's how much it costs the manufacturer to produce that piece of equipment.

However, I also mentioned that we apply a markup assumption. The markup is an industry-weighted

average markup that we're able to estimate based on publicly-available data. The markups, as you can see here, account for sales and marketing, research and development, interest, profit, anything above the production cost of the equipment.

The way we estimate the markup is again from publicly-available information. This may include SEC 10-K reports, company annual reports, Dun and Bradstreet reports, Value Line industry reports, Standard and Poor's, and Ibbotson.

One thing that we do, though, is later on I'll be presenting to you a Manufacturer Impact Analysis Summary and that's when we meet with manufacturers and this is one of the things that we will be discussing, along with other financial items.

But anyway, to begin with, we come up with an estimate for the industry markup and we apply that to the full production cost estimate to get a manufacturer's selling price. So you can think of this as a multiplier to the production cost.

The manufacturer's selling price is what the manufacturer sells the equipment for and then there may be a distribution chain which accounts for further markups before it gets to the end user. That markup will be described in the next section.

MR. BROOKMAN: So the Department would seek comment on this as their general approach.

Yes, Talbot.

MR. GEE: This is Talbot from HARDI, and I'd ask the manufacturers would there not also be a cost consideration for getting your product from where you manufacture it to where it's going next, whether it be to the installation site or to whomever is delivering it to the installation site?

There's transportation and fulfillment costs that I don't notice.

MR. BROOKMAN: Yes, Ellis.

MR. E. CRAIG: Yeah. Yes. Ellis Craig, Craig Industries. Walk-ins are not little items that you can ship in UPS by any means. So that is a significant part.

If you look at it nationwide, probably three to four percent of the product cost is shipping, so if you want to get it in a number. We average ours all across the country. We come three-four percent of whatever our product is selling for.

MR. BROOKMAN: That's a helpful rule of thumb, and the Department loves to have that kind of information.

MR. E. CRAIG: Well, we have a process where

we provide free shipping, so we keep tabs on it pretty closely so we know how much we're giving away and it's usually running -- now, if you get into fuel surcharges and stuff during high-energy use times that kind of goes up but then vice-versa, it goes back down, but you can pretty well figure about that much.

MR. BROOKMAN: As the analysis proceeds, the elements that you see listed in these boxes here on Page 40, the Department and its supporting contractors are going to be trying to fill in those blanks.

Okay. Yes, Ellis. Lucas.

MR. L. CRAIG: I do have a question. In the gray box, the first box, the full production costs, direct materials. Now, different manufacturers may use different materials. So is that going to be averaged in or how's that going -- for example, say a foam place, urethane manufacturer may be a little -- will be a different cost of direct materials versus a laminator manufacturer.

MR. MARANTAN: Yes, that will be accounted for.

MR. L. CRAIG: Okay.

MR. BROOKMAN: Okay. Additional comments on this aspect of the Engineering Analysis?

(No response.)

MR. MARANTAN: Okay. Proprietary designs. The Department will evaluate all design options that are commercially available or are present in a working prototype, including proprietary designs. However, proprietary designs will only be considered if they do not present a unique path to a given energy consumption level.

So, for example, if we have a design option that is covered by, you know, trademarks or copyright or something like that and that is the only option available to achieve a certain level of efficiency, we are not able to consider it. However, if there are other options available to achieve the same level of efficiency for energy consumption, then we can consider that.

So we're interested to know if there are any proprietary designs out there that may limit our scope of analysis.

MR. BROOKMAN: Ed.

MR. OSANN: The fact that a design is proprietary doesn't necessarily mean it's not widely available because proprietary designs can be licensed to multiple entities.

Do you have the ability to take that into account?

MR. McCABE: This is Michael McCabe. With the procedures and processes which we have established, you know, we are not picking winners or losers, so we do not have the ability to take that -- we've chosen not to have the ability to take that into account as we would interpret and apply the requirements of the legislation.

MR. OSANN: Is there a particular provision in EPCA that you would point to that would limit your ability to consider the proprietary designs, if they were cross licensed?

MR. BROOKMAN: Michael Kido.

MR. KIDO: We can get that to you later.

MR. BROOKMAN: Thank you. So you can see two boxes there in 41, Proprietary Design Issues and Additional Outside Issues the Department should consider in its analysis of walk-in coolers and freezers.

Daryl.

MR. ERBS: Daryl Erbs. I'm not sure that you've had experience before with something that maybe is so entangled with food safety and so one of our considerations, you know, would be as we look at things like variable speed evaporator fans, that we not only consider what the cost and energy benefit is but

somehow set some limits to the point where we might impact the food safety.

A lot of the practices -- we talked earlier about sizing a refrigeration system. We have to be very cautious to make sure that under all conditions you maintain proper food storage temperatures. So I'd just want to make sure that somehow there's a check in your process to make sure that we haven't gone outside of those bounds.

MR. BROOKMAN: Thank you. Yes, Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. He's very right. Like velocity of the fans, drying out of food product. We have low-velocity fans you can put in some products that you can't have a lot of, like pastries and stuff that you dry out or floral or whatever.

So it's very important that those are taken into consideration. You might have a great idea for energy savings but they won't work, you know. So that's a good point.

MR. BROOKMAN: Okay. Thank you. Aris, was there anything else you expected to get out of this segment?

MR. MARANTAN: There is one more question that came to my mind.

MR. BROOKMAN: Go ahead.

MR. MARANTAN: That was the last of my presentation, but I do want to ask, maybe this is a good time to ask, you know, what we understand about the commercial refrigeration industry is that it has, for the most part, transitioned over to HFC refrigerants. We know this from conducting the commercial refrigeration equipment rulemaking which just wrapped up in December.

So is it a fair assumption to say that our analysis can be based on HFC refrigerant for walk-ins?

MR. BROOKMAN: I see a few heads nodding, but we'd like to have that on the record.

MR. ERBS: Daryl Erbs. Yeah. I would say that's fair until such time as they no longer present an economic option.

MR. BROOKMAN: Yes, yes. Talbot.

MR. GEE: A question back at you is I don't know, given the timeline of the effective date of this, could you even consider a non-HFC piece of equipment?

MR. BROOKMAN: Steve, do you want to comment?

MR. COMBS: Well, I believe it's 2010, is it January 2010, is when the change-over, the phase-out of HCFCs begins. So I know there's, you know, manufacturers throughout the industry that are right

now and contractors, as well, using R-22 or HCFC-22. So like you say, given the timeline for this legislation, I don't think that it's even possible that there could be any of those out there in use.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. I think I would agree. I think given that we're phasing out HFCs by January 1st, 2010, I think the analysis should be based on the alternative refrigerants.

MR. BROOKMAN: Okay. Thank you.

DR. AMRANE: And for the foams, as well, whatever foams we use.

MR. MARANTAN: By alternative, you mean HFC?

DR. AMRANE: That's what the industry is using, yes. For the foams, it's something else. I know that there are different alternatives, other than HFCs, being used.

MR. MARANTAN: Okay. Thank you.

Markups for Equipment Price, Energy Use & End-Use Load Characterization

MR. DE LA ROSA: My name is Marcus De La Rosa, and I will be presenting the Markups for Equipment Price Determination that Aris mentioned earlier.

The purpose of the Markups for Equipment

Price Determination is to develop overall distribution chain price markups from the manufacturer to the customer and to establish the customer prices for both baseline equipment and equipment at higher standard levels.

To do this, DOE needs to determine distribution channels. Preliminary analysis of the available data suggested three such channels. Distribution Channel 1, the equipment goes from the manufacturer to a distributor, then through a mechanical contractor and finally to the customer.

Distribution Channel 2 goes from the manufacturer to the distributor, then to the customer, and Distribution Channel 3 goes directly from the manufacturer to the customer.

There are two types of markups in the distribution chain. They are the baseline and the incremental. Both markups relate customer price to cost of goods sold. The baseline markups relate the price to cost prior to the change in efficiency and they indicate a customer price that covers all the distributors or contractors expenses, plus profit.

The incremental markups relate to incremental change in consumer price to the incremental change in cost of goods sold. The incremental markups cover only

expenses that vary with cost of goods sold. So in this case, expenses that increase due to an increase in equipment efficiency. Certain costs, such as direct labor costs, do not vary with efficiency in induced changes in cost of goods sold and remain constant in the calculation of incremental markups.

The Department requests information from interested parties on the proposed distribution paths for walk-in coolers and freezers covered under this rulemaking. It’s apparent from the discussion that these distribution paths aren’t necessarily linear.

Your comments.

MR. BROOKMAN: Let’s list the other requests for information at the same time.

MR. DE LA ROSA: Okay. The Department requests feedback on the overall markups for the walk-in coolers and freezers, for each distribution path, and requests feedback on the proposal to use incremental distribution chain markups for the Life-Cycle Cost Analysis, and the Department seeks comment on what are the sources of relevant data that could be used to characterize markups for the walk-in coolers and freezers.

MR. BROOKMAN: This kind of information is very important to the Department.

So comments on this. Yes, Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. Your Number 2 distribution channel here, manufacturer-distributor-customer, if that distributor could be a mechanical contractor, then that makes sense. If it's a per se distributor, I don't know. I'm assuming that when you have distributor here, you're talking about something like a refrigeration wholesaler, somebody who stocks the product and sells it to a contractor and then the contractor sells it to a -- there's another distribution channel where like a manufacturer would sell to the contractor, like a refrigeration contractor.

MR. BROOKMAN: So in this case, --

MR. E. CRAIG: And then to the customer. There wouldn't be a distributor in that case. It'd be straight to a dealer and, generally speaking, there are two types of customers really that are out there that we sell to that are resellers and one of them, of course, refrigeration wholesalers, mechanical contractors, and food service equipment dealers. Those are the three avenues that you would have where the wholesaler would be a distributor, but the other two would be more or less retail. They would sell to the end user and service it and take care of it and that

type of thing.

So there's another avenue where the manufacturer sells to the mechanical contractor and then to the customer, and I would say that was more prevalent than the distributor.

MR. BROOKMAN: Okay. Ed.

MR. OSANN: Follow-up question.

MR. BROOKMAN: Yes.

MR. OSANN: Follow-up question. Ed Osann, ASAP. Is it most typical in this business that the equipment is owned by the end user or is there a considerable amount of leasing as there is with a lot of food service equipment.

MR. BROOKMAN: Ellis.

MR. E. CRAIG: Who we work with, generally the end user ends up owning that. There are leasing programs out there. Food service dealers provide it. Some mechanical contractors provide it, but I would say that with our experience probably 98 percent of it is owned by the end user.

MR. BROOKMAN: Talbot.

MR. GEE: Yeah. I think I'd echo his comments, that probably that Distribution Channel 2 would be more accurate if distributors were actually replaced probably with the term "contractor."

There are instances where the distributor may have done the spec but it will still run the product through the contractor, so that would be more like Channel 1, and, you know, I mean even with (Channel) 3, the national account is direct but there is still a contractor generally somewhere in that mix, too. So that'd be the thoughts on those channels.

I think my guess is Number 1 is probably the best way to look at most, almost all retrofit and repair and maybe 10 percent, 20 percent of new installation, whereas 3 would be the predominant for new.

MR. BROOKMAN: Okay.

MR. GEE: Well, 2, right.

MR. BROOKMAN: Right.

MR. E. CRAIG: May I make a comment.

MR. BROOKMAN: Yes, please, Ellis.

MR. E. CRAIG: When you're talking about manufacture direct to the end user, that only happens in fairly large accounts where you're talking about chain accounts or fairly large users, and a lot of them even set up their own buying groups or buying divisions to buy for them, such as McDonald's or Hardee's or whatever. They'll have a little group they set up over there to be kind of like a dealer, more or less, to

process the purchasing product.

So it’s a very big no-no in our industry to sell from a manufacturer to an end user. It’s very highly looked down upon because it jeopardizes the whole stream of people. It’s looked down upon really strongly.

MR. BROOKMAN: Even with those -- many of those are franchise operations, correct? So you have a buying group for them.

MR. E. CRAIG: No. A franchise operation would buy through a dealer, unless they were fairly large. You have some franchises out there that may have a thousand stores. Well, now if they had a thousand stores, that’d be a little different than somebody that has five. So franchise operations are usually pretty small, but some of these have gotten fairly large, to the point that they’re justifiably an entity unto themselves and some manufacturers do sell them.

MR. BROOKMAN: Thank you. Helpful. Take a peak, if you would, at these other questions that are in this mix because we’d like to get your thoughts on those, as well.

Overall markups, incremental distribution chain markups for life-cycle cost and other sources of

relevant data. Karim.

DR. AMRANE: Karim Amrane, AHRI. I guess, you know, there has been issues with markups in the past, in past rulemakings. I mean, you estimate markups and if you can make mistakes, you compound the mistakes and then in the end, you end up with a price that might not make sense and we know it happened in past rulemakings.

Can DOE consider to maybe estimate retail prices directly, so going through the process of estimating markups which we know is going to be difficult and not accurate?

MR. BROOKMAN: Okay.

DR. AMRANE: It’s a question. I guess I’m not sure. Are you considering doing that at all or it’s out of the --

MR. McCABE: This is Michael McCabe. It’s -- this analysis approach has evolved out of the Consumer Products Analysis where we looked at retail price. There was quite a range of retail prices for a given model for products.

If you go in for a refrigerator, for example, and if you look at a major chain, there’d be a price for a model at a smaller store, very different price, and so we found quite a range in prices for models and

so we ended up going back to the cost and building up markups in order to come up with a price.

With these products, since they are, you know, not consumer products, they're sold very differently than consumer products, be interesting to, you know, hear the opinion on others as far as alternative approaches to come up with the price.

No, we are not wedded to a given path and that's for the purpose for the framework. This meeting is to get comments on either the recommended path or alternative suggestions.

MR. BROOKMAN: Karim.

DR. AMRANE: I have follow-up.

MR. BROOKMAN: Yes.

DR. AMRANE: I guess that is a suggestion. Maybe do what you're proposing to do, but at least check with some maybe service or maybe something like that, at least it gives you an idea that you are in the ballpark.

MR. BROOKMAN: Okay.

MR. McCABE: Let me add one more thing. This is Michael McCabe.

With other products we have seen a range in markups, depending upon what the efficiency is, that the high-volume products tended to have lower markups

and the much more efficient products had much higher markups.

What we're -- we are not trying to capture in this analysis what is the price of a very efficient product with very small sales. These are what I'll call high-volume markups in order to get an estimate as to what the sales price would be in high-volume situations; that is, if the standard were set at that level, and so that going into the marketplace to get information on the price of very efficient products today for any of the given product types where they may be truly an exception, their markups may not be representative at all as to what the high-volume product would be and as a result their price would not be representative of the high volume.

MR. BROOKMAN: Talbot.

MR. GEE: This is Talbot with HARDI. A few things to add to that. I agree with Karim's point, but also in this channel, especially with new installations, I want to be clear we're talking the final completed product because in some degree you could almost take like the Gillette shaver example where, you know, the shaver itself is one thing but then it's really intended for the resale of all those blades later.

So, in other words, you can't necessarily look at the final cost that might be attributed to one of the components because really that was factored into the final installation cost of the whole project. So that can mislead some of the analysis.

I'll also, just based on our experience with the residential standards, I'd do a friendly reminder that markup is not the same as gross margin, so just those multipliers don't work exactly the same way, and we will be working to try to quantify as best we can for our written comment here, but the challenge with all these markups always is, again, how are we -- what are we talking about the end result because there could be a variety of suppliers and a variety of different channels that actually might have created the end result here.

So I just will have to -- will give you whatever information we can try to find on this, but this could be a pretty difficult analysis to do.

MR. BROOKMAN: Okay. Karim.

DR. AMRANE: Karim Amrane, AHRI. I have another question for DOE.

How does DOE intend to estimate the baseline cost? Are you going to go through a reverse engineering analysis again or can you tell us a little

bit about that?

MR. BROOKMAN: Aris.

MR. MARANTAN: Aris Marantan, Navigant Consulting.

That is certainly one of the options available to us, but we haven't yet decided if that is a feasible approach, only considering the size of these units and, you know, all of the different components. So that hasn't been established yet but it is one of the choices for us.

MR. BROOKMAN: Do you have a previous position, Karim?

DR. AMRANE: No, no. I'm just -- in the past rulemakings, this is what DOE had been doing and I'm just curious here are we following the same path.

MR. BROOKMAN: John.

MR. McHUGH: In looking at your markups, I think Mr. McCabe alluded to earlier the products that we might look at. Our future standard might be something that's considered a premium product now and might have a different markup structure than a commodity product that has higher volume and also more competition.

Is it your intent to try to identify markups for essentially the commodity products that are

essentially on the low end of the market for defining markups?

MR. McCABE: Now I can have my one-word answer. This is Michael McCabe. Yes.

MR. BROOKMAN: So maybe we should do a round of applause right now. Oh, no, we'll wait and see if you can do it again.

Yes, Ellis.

MR. E. CRAIG: I have a comment. I don't know if -- maybe I'm naïve about this, but I think I'm probably right. From what I see of competitors and not all competitors, but I don't know if this industry is very sophisticated in pricing products.

We know that because we're pricing products and we see prices jumping all over the place. It's like -- there's no logical sense to the way the market is going.

If you're looking for something like specific -- like, well, this high-energy-efficient model costs a lot more markup, I don't think you're going to find that. I think most of the manufacturers that we're competing with out there are waiting till their financial statement comes out once a quarter and decides what to set their price at. Okay. I think it's more that than real sophistication.

Some manufacturers who are a little more sophisticated do take into -- do do real-time costing of the raw materials that are going into the product since it's a custom product. It's not simple that you have a bill of materials for this model. So you have to do it kind of on the fly and calculate that for every model that goes through the system and that's pretty sophisticated to do that and then they will take a multiplier and apply that which will give them the exact margin to sell it to that end user or to the dealer, I should say, and then the dealer will take that, he'll mark it up anywhere from five to 20 percent himself and that varies consistently throughout the industry. So it's going to be hard to nail this down to where it gets the effect you're looking for about this high-efficiency unit and how much is it really going to happen. I just don't know if it's going to work out that easy.

MR. BROOKMAN: When the order is made, there's not an agreed-to price?

MR. E. CRAIG: Yes, there's an agreed-to price, but it's -- every order that comes in has to be calculated. You remember we were talking about 90 percent of it is not standard product. So somebody's either calculating or using a computer system to

calculate that and it's usually not based on cost, it's based on what they charged last month and whether they decide to take the price increase two months from now. It's very crude.

MR. BROOKMAN: And furthermore, there's enough competition within -- among the different competitors that they might move their price --

MR. E. CRAIG: Oh, they move it all the time.

MR. BROOKMAN: -- all over the place.

MR. E. CRAIG: In the middle of the winter -- we're a little bit seasonal because it's a construction product. You get in the middle of the winter and you'll see prices on walk-ins, oh, 10 to 15 percent, 20 percent cheaper than you would in the middle of the summer. If they're out six to 10 weeks in delivery, they're not looking to take discount on product, you know, but you get in the winter and their plant's not had anything to build and they're looking for something, they'll fill that plant with cost product, if they have to.

So it's like you said, it's a moving target, depending on the market, and we deliver in two to three weeks. So if we don't have an order in two to three weeks, we're out of business, you know. So it's a constant fluctuation going on in the market out there.

MR. BROOKMAN: Okay. Thanks. That's helpful.

MR. E. CRAIG: It's not real simple.

MR. BROOKMAN: Ed.

MR. OSANN: This is Ed Osann. A follow-up that gets back to the distribution channel, as well.

Is there -- does this industry tend to be marked by sort of just-in-time manufacturing and shipping or do products get manufactured and placed in inventory somewhere?

MR. BROOKMAN: Yes, Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. The general industry out here is just-in-time, meaning they don't build the product till they get an order. In the last five years, you're beginning to see some manufacturers, there's some over here, that have what they call a quick ship program which may be based on stocking panels that can be pulled off a shelf to make a certain size walk-in and shipped in a quick fashion, but, generally speaking, in the industry it's not a matter of -- maybe you guys might be a little bit different, but most of them are made to order.

MR. BROOKMAN: Thank you. Talbot.

MR. GEE: This is Talbot from HARDI. I'd add to that that the wholesalers, especially for smaller

applications, may have all the parts and pieces that can be put together for a given installation, but it's oftentimes the same equipment that would be used for a repair job, as well. So it wasn't necessarily procured for a new installation.

The other thing is, to exactly the same points as brought up by Craig Industries, is that, we do not necessarily see in all products this incremental markup model. That's kind of -- somewhat of an antiquated model in some respects, especially with what we've seen in residential products and the same, too, the price fluctuations are so much of it, you can't necessarily assume that this incremental model will apply for these systems, as well.

MR. BROOKMAN: Okay. Thank you. Helpful comments. Okay. So then, unless there's any -- yes, Ed.

MR. OSANN: Ed Osann. One more follow-up. If the nature of the production tends towards more just-in-time and the prevailing product is custom rather than standardized, how is it that manufacturers typically don't distribute directly to end-use customers? Is the custom order coming back through a distributor?

MR. BROOKMAN: Ellis.

MR. E. CRAIG: Yeah. Craig Industries, Ellis Craig.

In this industry, pretty much everything is sold through a dealer. Not only that for the support aspect of it, I mean, the contractors, they are an integral part of this whole thing because it’s not just the sale but, like you said, this thing is actually assembled onsite. It’s not necessarily manufactured in a plant, shipped out and plugged in with a plug-in, you know. This thing is actually constructed onsite.

So it’s good to have a support group out there of quality contractors that do -- even if you sell to a food service contractor -- food service dealer, they will have a contractor involved with them that does all their work. So this is -- if somebody wants to buy a walk-in, he’s going to call a dealer and the dealer’s going to call up three manufacturers of walk-ins and he’s going to give them exactly the same specification and they’re going to each one quote that specific custom-made box. Then he’s going to talk to the end user and give the quote he wants to give to them and then he’s going to get an order and he’s going to place it with one of those three and they’re going to build it and ship it. That’s kind of the way the system works.

MR. OSANN: So this is Ed Osann. So for all these custom products, all these sort of oddball angles and specific specifications that are very site-specific, those get handled by three different people up the chain?

MR. E. CRAIG: Yes, it's not like a price list where you -- here's my price list for next year and you buy your walk-in. It doesn't work that way. Very seldom would anybody in the field ever buy a walk-in off of a price list. They will all call and they'll get a quote for that product and they will place that order according to -- usually price is the deciding factor. So the market really depends what -- and there will be three people handle it.

Usually the end user will talk to a distributor, a dealer I'll call them which could be a refrigeration contractor, a food service dealer. They will call a manufacturer. They will negotiate a price. They will get that price and call back that guy and they'll sell it.

MR. BROOKMAN: Does the specification, for example, include things like the insulation to be used and that sort of thing?

MR. E. CRAIG: It can. In the past -- to be honest with you, unless you're a sophisticated buyer, a

restaurateur will walk in and he'll say I need a walk-in, I got about an 8X10 area here, see what you can do for me and he'll come back with a walk-in and he doesn't care the insulation value, the efficiency of the refrigeration system. It's going to come down to a price issue 99 percent of the time.

MR. BROOKMAN: Interesting. Thank you. That's a very important clarification. Talbot.

MR. GEE: Talbot from HARDI. To expand on that answer, to maybe simplify it, you could have any of the three players in the channel bidding or spec'ing a job.

MR. BROOKMAN: Interesting, very interesting. All right. Okay. I think we need to keep pressing on to make sure we get as much coverage as possible.

So back to you, Marcus.

MR. DE LA ROSA: Next, I'll cover the Energy Use and End-Use Load Characterization.

The purpose of the Energy Use and End-Use Load Characterization is to develop energy use and peak electricity demand characteristics for buildings that use walk-in coolers and freezers and to provide the basis for the unit energy costs used in the Life-Cycle Cost Analysis.

The Department is considering conducting a

simplified analysis of walk-in coolers and freezers that does not address the impact of higher-efficiency design options on building space heating and cooling loads, but is based on the Engineering Analysis tools the Department is developing for walk-in coolers and freezers.

Statistical data will then be used to develop appropriate weights for the resulting energy use data. These weights will be used to develop regional and national average net energy use figures as well as energy use distributions for specific equipment classes and efficiency levels.

The Department seeks input on the relative merits of incorporating the whole building space heating and cooling energy in its Energy Analysis of walk-in coolers and freezers. If the whole building analysis is recommended, the Department seeks the reasons supporting this type of analysis as well as comments on what building types and analysis tools and for which equipment classes such analysis should be considered.

MR. BROOKMAN: Daryl.

MR. ERBS: Daryl Erbs. I would really discourage that approach, just based on the -- we don’t always even know where these things are going inside

the building. I mean, we have some idea, based on floor plans, but certainly from an energy standpoint, I think we're a long, long ways from any kind of integration. So I think that would be a hard thing to do.

MR. BROOKMAN: Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. I want to make one comment that's very -- it was shown earlier, but it's very important to realize that some walk-ins are indoors with indoor refrigeration equipment which dumps the heat inside the building which can make an extra load if you're air conditioning the building, of course.

It would be more efficient to dump it outside where you're not, but then in the winter when you're heating the building, it works the other way around. So there's some issues involved with the building, but I don't know how you take it into consideration.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. And I believe that DOE has done this kind of analysis for the commercial refrigeration rulemaking, and I'm not sure. If I recall correctly, the impact was not that much at all.

So again, I mean, I think we had this same

kind of issue before and if it didn't make any difference, I don't see why we should be doing it.

MR. DE LA ROSA: On Page 27 of the Framework Document, there's a discussion of that, of what was done for CRE and that's correct. It wasn't significant.

MR. BROOKMAN: Sriram, do you have a contribution? Oh, Grant.

So yes, Ed, and then to John. We're going to keep moving. We need to keep moving along here, so let's try and be as focused as possible.

MR. OSANN: Yeah. On this subject, I don't know that this is our final view on it today, but I think we recognize the considerable additional complexity that would be involved with this and are not recommending today that the Department pursue it.

MR. BROOKMAN: Thank you, Ed.

MR. OSANN: But we would qualify that.

MR. BROOKMAN: Thanks, Ed. Appreciate that. John.

MR. McHUGH: I can see that some sort of simplified approach might be taken, but just thinking about, you know, if you're lucky and you had an R-13 piece of equipment, you're still talking about an extra 30 percent of energy consumption to -- for the energy

to reject that heat.

MR. BROOKMAN: Okay. Thanks. We're going to keep moving ahead here.

Grant Williams.

Life-Cycle Cost & Payback Period Analyses

MR. WILLIAMS: My name is Grant Williams. I'm with the Pacific Northwest National Laboratory. I'm going to discuss the Life-Cycle Cost & Payback Period Analyses and then on to the Shipments Analysis & the National Impact Analysis.

So our purpose is to assess the net Life-Cycle Cost or the LCC impacts of different efficiency levels for walk-in coolers and freezers and this is from the perspective of the customer, and when we at DOE develop new energy standards, this usually means a decrease in the operating expenses but an increase in the purchase price.

The relative magnitudes of these two things have a big impact on the payback period which is really important to customers.

The method we use. We look at it from, like I said, the customer perspective and we say that the life-cycle cost equals the customer's purchase price, plus the sum of the operating costs, discounted to a particular base year every year.

Economic evaluation is from the customer perspective and we use this very, very large spreadsheet to accomplish this in Excel and the results are expressed as the difference between the baseline, which has been discussed and established, minus the standard level.

So if we have a projection and we have a standard level, the difference is the value or the negative difference would be the dis-savings.

If you look on the bottom of this -- excuse me. We take the operating expenses, which are for the lifetime of the equipment. We convert that to the present value and we combine that with the first costs, which is the consumer price plus the installation costs, and that is combined into the change of costs which comes the LCC results.

So we take the baseline manufacturer price and the standard level manufacturer price, top upper left, and we combine -- those are from the Engineering Analysis. We combine those with the markup for Equipment and Price Determination Analysis, the mechanical contractor markup, the sales tax. We combine that into a consumer price. We combine that with the installation cost to come up with a total installed cost.

On the lower half, you'll see that we take the Energy Use and End-Use Load and Characterization Analyses and we add those with the electricity prices which are regional, so we compare apples to apples. New York prices for New York power consumption, Washington prices for Washington power consumption.

With those, we get annual energy expenditures which we would compare with repair costs -- excuse me -- which we add to with the repair costs and maintenance costs to come up with our annual operating expenses.

The total -- excuse me. The total installed costs and the annual operating expenses we use to come up with the payback period and that's the point at which the additional spending on the more expensive model and more efficient model of a walk-in freezer or cooler, it's the point at which the savings will surpass the extra expenses.

We take the annual operating expenses, like I said, plus the lifetime -- the discount rate and the electricity price trends, and we use those to establish lifetime operating expenses, and those are combined with the total installed costs to produce a life-cycle cost for the piece of equipment and the standard level.

Energy prices are necessary to convert the

energy consumption for the equipment analyzed to energy costs. DOE proposes to use regional average electricity and natural gas fuel prices for its analysis of walk-in coolers and freezers, like I said, to compare electricity use in New York with New York prices, so it’s more accurate.

We will be using the Annual Energy Outlook as a default source of projections for these energy prices, and we will also use the latest AEO forecast for subsequent analysis as they become available.

The Department seeks comment on the proposed approaches for estimating current and forecasted energy prices.

MR. BROOKMAN: Daryl.

MR. ERBS: Hi. Daryl Erbs again. I think my biggest concern is whether we have an accurate picture of what the loads are on these walk-ins, both coolers and freezers, so that when you’re looking at increases in efficiency, if you’ve got the load wrong, then that’s going to directly translate to either too much or too little savings in electrical energy and you may attribute the wrong economic benefit to a particular technology.

MR. BROOKMAN: Thank you. Ed.

MR. OSANN: Ed Osann, ASAP. I wonder if I

could follow up that point.

Are you suggesting the -- I mean, where do you go with that thought? Is there -- do you have in mind the development of a series of test loads for use in the test procedure or where does that take you?

MR. ERBS: Daryl Erbs again. I think what I'm suggesting is maybe we need to do a little more research or maybe it's just digging a bit more into studies that may have been done, although I'm not familiar with a lot of work. So I'm not sure if it's something that is easy to do in a short period of time, but I would just be concerned that we try to go out and get some idea.

I think we've heard some comments about sizing of refrigeration systems to be conservative and so you shouldn't assume that the refrigeration system is running, you know, 90 percent of the time, it may be less than that, and it may depend upon the application. A convenience store may be much more a series of peak loads as people come in at lunch time to, you know, grab and go versus a restaurant in an institution where the door's propped open a lot of the time.

MR. BROOKMAN: Thank you. So additional comments on these issues, Life-Cycle Costing, the flow chart that's there, the Energy Price and Payback Period

Analysis. John.

MR. McHUGH: Again, there's been no discussion so far about for that Energy Analysis, if you're using different temperatures for all those condensers that are outdoors and also different temperatures when the envelope is exposed to the outside.

Is there an intent to -- how are -- you're going to end up with different outcomes, depending on the temperatures. So what is DOE's position on how they're going to address that?

MR. McCABE: This is Michael McCabe. This analysis is looking at regional values. Now within that, we can look at -- there are -- there's a lot of variability that may or may not have any impact on the results of the Life-Cycle Cost.

It would be particularly helpful if you could provide some recommendations as to specifically how the Life-Cycle Cost Analysis should be structured, again as -- should we be looking at regional differences in usage for the same piece of equipment? If so, what is it a function of? The outdoor temperature? If it's an indoor unit, does it vary? You know, all those factors that may have an effect.

Is there a regional variance to it, and if

so, you know, please provide some of your suggestions on how we should take that into consideration.

MR. BROOKMAN: Thank you, Michael. Thank you. Yes, Karim.

DR. AMRANE: Karim Amrane, AHRI. But again, I would have to follow up on Michael's response here.

We're not dealing here with regional standards, so yes, there would be variation, depending on where you are in the country, but, overall, I mean, we need to look at the U.S. as a country and make some judgment as to where we should be basing our analysis on.

MR. BROOKMAN: Michael McCabe.

MR. McCABE: You're totally right, Karim. These are not regional standards. We do not have the legislative authority to set regional standards, but the analysis for most of our products are looking at the regional -- what it costs that consumer and we're looking at the range of values, energy prices, usage and the like and so that our Life-Cycle Cost shows a distribution of Life-Cycle Cost savings that are a function of a number of factors that, you know, are appropriate and affect those individual users.

MR. BROOKMAN: Thank you.

MR. WILLIAMS: If I could, Doug?

MR. BROOKMAN: I'm sorry. Yes.

MR. WILLIAMS: If I could? Grant Williams.

MR. BROOKMAN: Yes, please.

MR. WILLIAMS: We take into consideration in our Life-Cycle Cost Subgroup Analysis things such as electricity prices and energy use. So the model will capture, based on, you know, comments and considerations from the industry and advocates, et. cetera, will capture -- we can capture people who are -- individuals or groups who are going to be more likely to have atypical energy consumption.

MR. SOMASUNDARAM: Sriram Somasundaram, Pacific Northwest National Laboratory. Further clarification on that would be that, depending on the data that you provide in terms of what percentage of these units are outdoors versus indoors, we have done a similar analysis for vending machines just recently based on that data, and then for the outdoor units, for example, we can run the climate files and the ambient temperatures over the year and basically do an annual simulation of energy use of this -- by this box.

So it's -- and then we aggregated up to state level and then we have state -- use state average energy prices to get the energy costs. So we aggregate all that state level analysis then to a national usage.

MR. BROOKMAN: Okay.

MR. WILLIAMS: And that will all be discussed in the continuing slides.

MR. BROOKMAN: And so, Grant, do you have anything else you wanted to raise here in this segment or did we cover it pretty well? We didn't deal with discount rates yet.

MR. WILLIAMS: Not yet. We're coming to it.

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

MR. WILLIAMS: Grant Williams. Discount rates are used to convert the extremes of annual operating expenses to the present value in our LCC Analysis.

The Department will use or will derive the LCC discount rates by estimating the weighted average costs, debt equity capital of the WACC, for companies that purchase walk-in coolers and freezers.

The Department seeks comment on the proposed approaches for estimating discount rates for customers purchasing the equipment covered under this rulemaking and given the relatively narrow commercial application of most of the equipment covered under this rulemaking which, if any, commercial sectors beyond grocery stores and restaurants should be considered in the evaluation of these discount rates?

In addition, do interested parties feel government purchase of equipment are large enough to require that they be included in the evaluation of discount rates?

MR. BROOKMAN: Two questions regarding discount rates. Yes, Steve.

MR. COMBS: Well, again, -- Steve Combs, ICS. Again, the convenience store market and then the floral application market, I know they're pretty big segments of that whole thing and need to be given consideration, as well.

MR. BROOKMAN: Okay. Thank you. Other comments?

(No response.)

MR. BROOKMAN: Okay.

MR. WILLIAMS: Other Life-Cycle Costs & Payback Period Analysis inputs. We have four others. Installation costs, equipment lifetime, repair costs and maintenance costs.

As far as installation costs are concerned, we don't expect installation costs to really increase unless the rulemaking somehow results in larger or heavier equipment.

As far as lifetime is concerned, we're going to -- we grab most of our information from ASHRAE and

other literature, such as appliance magazines. Of course, any data that could be provided by any of you would be really appreciated and DOE will consider and, to be honest, would make my job a lot easier.

For repair costs and maintenance costs, typically these are incremental changes in equipment efficiencies and incur very small to no increases. However, the more efficient the machine is compared to the baseline the bigger changes. It does make a case for a significantly-larger increase for maintenance and repair costs.

So changes based on the comments to these questions will be included in the preliminary and -- from this Preliminary Analysis will be included in the ANOPR documentation, so that’s something that we’ll see at a future meeting.

So the questions. The Department seeks feedback on whether changes in the maintenance, repair and installation costs will be negligible for equipment with lower energy consumption, such as I said.

The Department also seeks feedback on whether changes in maintenance, repair and installation costs will be changed as a result of the efficiency increases, and if so, whether those changes are likely to be negligible. If those costs are not likely to be

negligible, please explain what those costs would be and why this would likely be the case.

MR. BROOKMAN: Let's just deal with that one alone for now.

MR. WILLIAMS: Sure.

MR. BROOKMAN: Yes, since that's an important question. Karim.

DR. AMRANE: Karim Amrane, AHRI. I think, in addition to those costs, I think that there's been some discussion before about transportation costs. So I think somehow this has to be captured in that LCC Analysis.

Now, as far as the installation, I'm assuming, again, I mean, because of sizes, I'm sure that there will be an installation cost increase as product becomes bigger and so on. So I think maybe it might not be correlated with efficiency but it would be correlated with size, so something that probably needs to be looked.

Now, on this issue of maintenance costs and repair costs, yes, in the past DOE has always assumed that, you know, as product becomes more and more efficient, as this cost is relatively flat and does not increase, and we have always commented against that. That's not the case.

When product becomes more sophisticated, they become more expensive to repair. So I would again ask the DOE to consider that.

MR. BROOKMAN: Thank you. Additional thoughts on installation costs, equipment lifetime, repair costs and maintenance costs. Ed.

MR. OSANN: Ed Osann, ASAP. Just a follow-up question for Karim.

The point about increasing size, is that within the current size distribution in this product class or are you suggesting there's some exogenous increase in the size of walk-in coolers that's going on?

DR. AMRANE: No. What I'm saying here is that in the analysis, in previous analyses anyway, when installation was assumed to be constant regardless of the size of the equipment, regardless of its efficiencies, in this particular case, I'm not sure about efficiency but I'm sure that as the equipment is bigger in size, there would be changes in installation cost and somehow this has to be factored in and again I'm just saying that, you know, in the analysis DOE has to look at that and maybe, you know, try to estimate how this cost would vary.

MR. OSANN: Is that bigger in size as a

result of the standards?

DR. AMRANE: No. I'm talking about size itself. I'm talking about the volume of the system.

MR. WILLIAMS: If I could clarify, I think I may have misspoke or there's a misinterpretation.

What I meant by size, the installation costs for a unit of comparable size, so, you know, X many square feet or volume units, and then looking at that as opposed to the same unit of the same dimensions that's more efficient. We don't anticipate a very significant increase in the installation costs because it probably won't be a heavier unit or a larger unit.

If we change the metric or if the metric is decided to be in volume instead of square feet maybe some kind of issue could come up from that.

DR. AMRANE: Karim Amrane, AHRI. Again, what's different here is that maybe for other products, like a central air, you know, the size of the equipment does not matter much as far as the installation, but in this case, I think size will matter. So it's something that has to be --

MR. WILLIAMS: Yes.

MR. BROOKMAN: Daryl.

MR. ERBS: Daryl Erbs. One of the concerns I would have and will probably not have much historical

data before we get pretty far along on this process, but as we introduce new technologies, electronically-computated motors is an example of a good technology, but it hasn't been out in the field, and even in cases where the products aren't necessarily less reliable but they're new, we tend to see at least over a period of time some incremental costs because people don't understand them, they don't have as much experience diagnosing them, and we end up with a higher rate of changes.

So depending on the technology that gets introduced, I think there can be an impact on maintenance costs. I don't know how you estimate that, but I'd just caution you that it's not necessarily safe to take historical rates on some of these components if we're radically changing the technology that goes into them.

MR. BROOKMAN: So then do you want to comment, can you comment about equipment lifetime then?

MR. ERBS: I think the equipment lifetimes that you have down are not unreasonable. I think we tend to see, for example, refrigeration systems in freezers probably tend to last a bit less than one in a refrigerator just because of the stress it places on the components, but I'm not sure it's worth trying to,

you know, narrow that down, but I'm not too uncomfortable with the time period you've stated.

I think it's just a higher rate of replacement and they're more expensive components and so that ends up being a higher cost over the life of the equipment.

MR. BROOKMAN: Ellis.

MR. E. CRAIG: Ellis Craig, Craig Industries. I think that you've got a 10-year life cycle on refrigeration. I thought that was a little high. I don't know if that's figured in your calculation, but it seems fairly high to me. You guys might think differently, but I think that's pretty high.

As the walk-ins begin to become less and less efficient due to moisture penetration and out-gassing, some things that go on then, the compressors run more and more all the time and we see -- everybody in this room knows that most warranties run five years on compressors and no farther, and there's a good reason for that, because after five years they start failing at a higher and higher percentage rate. So I think a 10-year life expectancy on a refrigeration system is pretty high.

Now these new motors like we're talking about here, there's not much life experience out there, so

they may be less maintenance or more maintenance, but he is right, as the new people are learning the new products, they're going to be more apt to change out the motor quicker because they don't know what to expect of it. So if there's a problem, they're going to do some things like that and I think they are a little bit bigger, aren't they? The newer motors, aren't they larger? It seems to me I heard that.

MR. NEIL: Tim Neil with Morrill Motors. I can answer that. We're a manufacturer of electronically-computated motors.

They're a little longer. There are some manufacturers that are larger in diameter. It depends on how they went about doing the technology. But we've been in the market with ECM products since 1985 for HVAC equipment, started to get into the commercial refrigeration applications in the lower wide ranges for display cases in 1995.

We just introduced something for this legislation in 2007. We have one year of data out there and you guys are exactly right, that half of the returns that we've had have been no defect found, where people don't know how to diagnose them yet, but, you know, even with that, we're still at a 99.5 percent 10-year reliability rate right now with those.

MR. BROOKMAN: Tim, say your name again.

MS. STEVENS: Tim Neil with Morrill Motors.

MR. BROOKMAN: Thanks. Thank you. Talbot.

MR. GEE: This is Talbot from HARDI. I wanted to pass on a comment from a representative from the RSES, which is the service side for a lot of the refrigeration equipment, the contractors and installers who couldn't be here today, but one of their biggest concerns is they felt the maintenance costs were grossly underestimated in the commercial refrigeration standards that were recently completed and were concerned that that same type of estimate would be used in this rulemaking, as well.

So I'm expecting them to provide you more detailed comment on that point, more specifics.

From HARDI's perspective, I'd say, too, because we don't know what this performance standard might look like and that it's in theory going to be an all-encompassing energy consumption figure for this end result, more than likely I would have to assume it's going to require more labor time on the front end before you even touch the equipment to make sure that you have factored in all of these variables very, very thoroughly, and I don't know how you account for that, but depending on how this standard goes forward, if

this really is a holistic approach, then I hope that's taken into account, the added labor cost that the installing contractor's going to have with this stuff.

MR. BROOKMAN: Okay. Thank you. John, and then Charles.

MR. LLENZA: Charles Llenza, Department of Energy.

MR. BROOKMAN: Charles.

MR. LLENZA: If we could get more information in terms of specific costs, the Department would appreciate that.

MR. BROOKMAN: Following Talbot's?

MR. LLENZA: Yes.

MR. BROOKMAN: Okay, okay. John.

MR. McHUGH: This comment is kind of in response to Daryl's comments, that yes, there's, you know, new technologies brought into the market. Sometimes there's -- you know, people have to get used to new technologies, but the question is for this proceedings, we're talking about changing the market over the long term and the question is, you know, two years down the road, do we now still have people still scratching their head?

So I think what we're really trying to look at is what is the long-term cost of installation once

people have gotten used to whatever the new protocols or procedures are? What are the long-term effects on maintenance and that's really the question rather than, yeah, the first time I installed one, I installed it backwards or whatever.

MR. BROOKMAN: Okay. Thank you. Tim.

MR. BALLO: Tim Ballo, EarthJustice. Yeah. I was going to make a similar point, that we're looking at sort of a 30-year analysis period and if there is any initial increase in maintenance costs due to lack of familiarity that would presumably disappear as the learning curve goes on.

MR. BROOKMAN: Okay. So then additional comments on this Slide 55 before we move on?

(No response.)

MR. BROOKMAN: Okay.

Shipments Analysis & National Impact Analysis

MR. WILLIAMS: So as I mentioned before -- Grant Williams. As I mentioned before, the Shipments Model that I'll be discussing now is combined with our Life-Cycle Cost Model and Analysis to produce the National Impact Analysis choices, the end of my presentation.

So the purpose is to project the rate of new equipment shipments under a proposed energy

conservation standard and track the walk-in freezer/cooler equipment stock of equipment by vintage over the time frame of the standard, and we develop a base case of shipment forecasts to compare our standards case to this base case and in part of that is that we expect that the shipments for our base case will be higher than our shipments in the -- as a rule, than our shipments in the standards case because of the increase in first cost to customers.

The method we used for this is we take the life-cycle of the equipment and it’s modeled as a cradle-to-grave process, so we follow it from one stage to another throughout its lifetime. New equipment is purchased and shipped to a building. This equipment operates over the years in a building. Also, some equipment is constructed onsite and eventually, after the equipment lifetime is up, it’s retired.

Our data sources include product lifetime, estimates of commercial floor space, current product saturation rates by building type, and the shipment model is calibrated to historical shipments, and market saturation data, and again data on historical product shipments and market shares efficiency level by equipment class would be considered and appreciated.

If data cannot be found for the distribution

of equipment types and efficiencies, we'll use a -- excuse me. We'll develop an efficiency distribution model to estimate these numbers as a proxy.

Additionally, when manufacturer tax credits or customer rebates or other incentive programs exist, the model does take these into consideration, as well.

So request for feedback. The Department seeks information on representative saturation rates for each equipment class covered under this rulemaking as well as industry trend data regarding relative growth in each equipment class.

MR. BROOKMAN: And this may be the kind of thing that you would want to submit very detailed comments in writing rather than just try to talk about it now, but maybe there's a way you can generally describe this now or something. Whatever you think is appropriate but the details are what matter to the Department.

Talbot.

MR. GEE: Well, I'm sorry, if you don't mind to go back to just our last point of discussion since no one's really jumped on this new point.

Just in response to your comment, when we're talking about, for example, --

MR. BROOKMAN: John's comment?

MR. GEE: Yes, for the ECM motors. For example, training in the industry right now is only focused on a very small percentage of installers because it only really applies to in theory new installations and that's not likely to change significantly for quite awhile.

So I'm not so sure we can assume that by the time this gets implemented that we really have caught up a whole lot on that learning curve for a lot of these installers because a lot of the guys who are servicing solely retrofit and replacement probably aren't paying a whole lot of attention to that, but then all of a sudden one day they're going to need to.

So I'd just point that out there. I think there is a significant -- I can't quantify it for you, but there's a significant training and education cost that's going to be borne by a lot of the distributor and contractor community to get caught up to speed with this.

MR. BROOKMAN: Ed.

MR. OSANN: Ed Osann, ASAP. This comment, though, seems to reflect that there's kind of a blurred distinction between retrofit and new installations because if you had -- if the labor force that you're referring to that primarily deals with retrofits --

when is it that they're suddenly going to all have to deal with this because this applies to new product installation. Are they doing new product installation now?

MR. GEE: Well, I think the manufacturers can comment on this, too. That contractor base is a bit fragmented in that respect. You'll have guys who are much more comfortable in service and repair work as versus new installations and what went into effect at the beginning of this year only technically applies to new installations.

So in theory, you could be a service contractor doing plenty of work who maybe never touches an ECM drive. So I just throw it out there. I'm not making an argument one way or another. I'm just saying I think there's actually probably a hidden cost in here that maybe we forget or would be prone to forget because we just think this is all going to work itself out between now and 2015 and I'm not so sure that's the case.

MR. BROOKMAN: Okay. Thank you. Okay. So then you can see two requests for feedback, 9.1 and 9.2. Are there -- do we have comments on these or shall we rely on detailed written remarks? Yes, let's do it that way. Okay.

MR. WILLIAMS: All right. So the last step in this proposal is the National Impact Analysis.

So the purpose is to develop a national energy savings and national net present value or NPV impact estimate for higher-efficiency standard levels.

With this, we take a look at the aggregate impact of LCC savings and payback periods for individuals and we take that and aggregate it to the national level. We use a spreadsheet-based analysis tool, as we did before. We use a spreadsheet to develop annual time series of energy and economic impacts and this provides us with the national summations of impact for the defined analysis periods.

We utilize the shipments model to estimate the total stock of walk-in coolers and freezers in the service in any year and we utilize the LCC to estimate costs and energy use per unit in any given year.

Next, we aggregate the costs and energy use by vintage for all years in the analysis period and report estimates of energy use at the source of production in terms of quads, and we report estimates for economic impact as change in the net present value in the constant base year dollars.

More details on this can be found in 10.3 in the Framework Document.

We use this to account for time value of money throughout the defined -- the defined lifetime throughout the discount rates. So the more detail in this process that we can have through industry comments, the more information the better. This is a really important step.

So the last item, 10.1. The Department seeks comment on its plan to develop NES spreadsheet models for estimating national impacts of energy conservation for walk-in freezers/coolers.

MR. BROOKMAN: The last bit of analysis for the Preliminary Analysis. Ellis.

MR. E. CRAIG: I have a comment that we really haven't dealt with per se, but let's say that in this process of defining this R value, that we decide that it's not fresh but it's an average of life-cycle of this product and it jumps up. It doesn't change the law because the law is in existence and there may not be any installation out there that can do it in four inches because now we've said it's an aged R value or we take in other considerations which means that the walk-in is going to get bigger and bigger to get that R value. So you might have an eight-inch walk-in instead of a four-inch walk-in now and that would be a huge impact on everybody.

Shipping is going to be big. We’ve thought about that ourselves. As these products get more thicker, they’re going to end up being more -- and then they -- the users of the walk-in whose space because now they can’t store as much stuff in it because they’ve got 10-inch walls on both sides and they’re losing 20 inches of space on all four walls. You begin to see some impacts that might happen if we take into consideration probably some of the impracticality of some of these R values that we’re dealing with. If we look at them in real use, they probably aren’t going to be performing the way we think they are.

I just want to bring that up because no one’s talked about that, but there was a debate at the beginning of this year to decide whether to make a six-inch walk-in panel out of expanded polystyrene to meet the R value, say, for a cooler or to go to a different installation and keep it smaller and the decision was, well, the customer truly was a little bit more resistant to going to a thicker wall panel.

Well, some of this all may come out to find out that this really could end up being a lot bigger walk-in to provide this government-mandated R value and if it does, then you’re into a lot -- a different kind of costing than we’ve been talking about here that

would have a huge impact on everybody in the industry.

I just want to bring that to everybody's attention because we're dealing with fresh R values right now which everybody's happy about and we're living with and we're doing our thing, but I think as we get to looking at this, it's going to be kind of shocking to what spec was really written and it was not a very practical one to start with that can be attainable in a four-inch panel and be realistic.

MR. BROOKMAN: Okay. Thank you. Yes, Steve.

MR. DUNLAP: I'd like to see an analysis on the transmission losses through conduction R value.

What component, what contribution does that make to the cooler? In other words, is it a big value in terms of infiltration? What's the biggest of the loads?

You could tie that back into your Life-Cycle Analysis, as well, because I have a hard time believing that R value, even with age over time -- of course, we do have floors that are real crucial as far as picking up heat from the ground, but still I have a hard time thinking that there's going to be a substantial economic value of having -- let's say it degrades over time to an R-28 from an R-35. I don't know what the numbers are, but there would be a substantial payback

in achieving these higher R values.

MR. BROOKMAN: Do you think that that's about the magnitude of the degradation that would be experienced?

MR. DUNLAP: I just threw that out. I'm not an expert in the installation or performance of installations.

MR. BROOKMAN: Okay. Barbara.

MS. FABIAN: Barb Fabian, Owens Corning. We have seen from case studies the effect of moisture and from a panel that would have started off at four-inch of an R-32, it went down to a four-inch of an R-8 with the moisture that was picked up in it.

MR. BROOKMAN: And how long did it take to get there?

MS. FABIAN: About 10 years.

MR. BROOKMAN: Ten years.

MR. DUNLAP: And question. What was the source of the moisture?

MS. FABIAN: The humidity, the doors opening, the defrost in the facility.

MR. BROOKMAN: Penetration --

MS. FABIAN: The normal --

MR. BROOKMAN: -- of the surface as much?

MS. FABIAN: Pardon me?

MR. BROOKMAN: It was penetration of the surfaces?

MS. FABIAN: There were penetrations in the surface by the racks being attached to the wall, thermometers being attached there, and forklifts banging into it.

MR. BROOKMAN: Yeah.

MR. DUNLAP: And actually, that brings me back to the same thing, is that, if infiltration and door openings allow that much moisture, it causes additional defrost, it causes maintenance and operational issues with people chopping down, trying to get the ice off the ceilings and things of that nature, I just feel like that the door performance is a critical element to this whole envelope.

MR. BROOKMAN: Okay.

MR. DUNLAP: I'd be curious. There's another parameter that I'd like to throw out to this group, is how many of the walk-in coolers and freezers are sold today that have doors that exceed three feet nine inches because there's a good number of those and the door is even more of a critical part of this scenario. So how much surface area does the door comprise?

MR. BROOKMAN: Okay. Thank you. So additional comments on this last Slide 60, National

Impact Analysis, and specifically National Energy Savings and National Net Present Value Impact?

MR. WILLIAMS: Grant Williams. If I could?

MR. BROOKMAN: Yes.

MR. WILLIAMS: I'd just like to remind everyone that the Department would really appreciate any kind of information you'd like to include in your written comments on these matters. This would be -- these are all really good questions that we'd like to take a look at.

MR. BROOKMAN: Okay. So I'm wondering. We're now about to go into the NOPR Analyses.

Let's take a break now. That's what I was thinking. It's now 3 o'clock. I think we're almost caught up, not quite.

(Recess.)

MR. BROOKMAN: Okay. So let's do start. We're starting now. Okay.

The discussion's been really good today. We've really continued to kind of stay on focus and really make good progress. We still have quite a bit to cover. So let's launch right back into it and our next speaker is Grant.

NOPR and LCC Subgroup Analyses

MR. WILLIAMS: All right. So after we finish

our Preliminary Analysis, we move on to the NOPR. I'm sorry?

MR. LLENZA: Go ahead.

MR. WILLIAMS: Okay. Which is the Notice of Proposed Rulemaking. All right.

So after we revise our -- excuse me. After we revise our Preliminary Analyses according to comments from industry, advocates and other interested parties, we move on to the Life-Cycle Cost Subgroup and as I mentioned before, the purpose of the Life-Cycle Cost Subgroup is to analyze the economic impact of standards on those customers who may be disproportionately impacted by the rulemaking compared with the general user.

So in order to compare potential impacts, we'll evaluate the variety of ways in which the electricity prices, energy use and installation costs, if any, how that may affect the net present value for this particular subgroup.

So our method is essentially the same. We extend the Life-Cycle Cost Analysis to examine the impacts for the defined subgroup and we do this essentially by duplicating the process but with a different set of assumptions in terms of the energy prices, like I mentioned, installation costs, energy

use, et. cetera, maintenance costs, and we change those assumptions to be more particular to this particular subgroup, and then we run the Energy Analysis Model, again the Life-Cycle Cost, excuse me, model, and we come up with a set of numbers and data points for them.

So the Department seeks input as to what customer subgroups the Department should consider in the present rulemaking, examples of possible subgroups the Department could consider appropriate for walk-in coolers and freezers, include independent grocery stores and small convenience stores.

MR. BROOKMAN: And we've heard some of this already and perhaps there's some others we've missed. We've heard, in addition, florists and what was the fourth one? And pharmacies and -- but maybe there's some other subgroups that you would note that are big users.

Steve.

MR. COMBS: Yes. Steve Combs, ICS. There's what we in the industry refer to as the mom and pop restaurants, you know, those guys that are not national chains. They may only have one or possibly two or three stores and they may be very region-specific or locale-specific.

MR. BROOKMAN: Gotcha. They may need to have

a big walk-in fridge.

MR. COMBS: Right.

MR. BROOKMAN: Right.

MR. COMBS: They would definitely be ones that would need to be considered.

MR. BROOKMAN: Okay. Thank you. Okay. Any additional comments on this?

(No response.)

MR. BROOKMAN: Okay.

MR. WILLIAMS: The next step in the NOPR is the Manufacturer Impact Analysis.

Manufacturer Impact Analysis

MR. MARANTAN: Okay. The Manufacturer Impact Analysis, the purpose is to assess the impacts of standards on manufacturers. Some other purposes include identifying and estimating the impacts of subgroups of manufacturers which is separate from the subgroups of consumers that may be more severely impacted than the rest of the industry as a whole.

An example of this might be a small manufacturer compared to a large manufacturer and the size we’ve seen classified by the number of employees for other rulemakings.

A third one is to examine the impact of cumulative regulatory burden on the industry and I’ll

define that term briefly here. Cumulative regulatory burden for our purposes is the burden imposed on a manufacturer by several different federal regulations. For example, if the Department of Energy is imposing an energy conservation standard and the manufacturer also has to comply with, let's say, an EPA requirement for refrigerants and they may have to comply with, you know, recycling requirements from another federal agency, all that is compounded, and we want to take that into account when setting the energy conservation standards because we know that that cumulative burden can exist.

The method we used to conduct the MIA, the Manufacturer Impact Analysis, is the Government Regulatory Impact Model. Basically, this is a spreadsheet tool that analyzes the cash flow of the industry, not one particular manufacturer, but it's a build-up of all the manufacturers to an industry cash flow analysis.

The second tool we use is an interview with manufacturers. This is when the Rulemaking Analysis Team visits manufacturers who are willing to invite us to their facilities and we discuss the impacts, the key issues, the production, the engineering, the marketing, any number of things that are important to the

manufacturer in terms of this rulemaking.

We conduct that after the Preliminary Analysis is posted and we use the analysis -- we use that opportunity to gain more insight into what the manufacturers will have to deal with in terms of complying.

So again that happens after the Preliminary Analysis, so I expect that would be some time late -- some time next year, we would conduct that.

One other opportunity I mentioned is to meet with manufacturers for the Engineering Analysis and that happens after this framework. So some time this year we'll be meeting with manufacturers for the Engineering. So I do want to mention that.

The output of the Manufacturer Impact Analysis is the industry net present value, also the subgroup net present value, and other impacts.

This is a diagram of what the Manufacturer Impact Analysis consists of and I'll break this down for you. We conduct an industry profile which is largely based on publicly-available data that I mentioned earlier for the Engineering.

We also create a Preliminary Manufacturer Impact Analysis Interview Guide, send that to the manufacturers and meet with them during the

Engineering, so all that is wrapped up into Preliminary Analyses.

Phase 2 is the development of a preliminary Government Regulatory Model, the cash flow analysis that I mentioned, and an interview guide for the regular manufacturer interviews.

Phase 3 is prior to the NOPR where we go our and visit the manufacturers and conduct subgroup analysis and, finally, we assess the direct employment competition and cumulative burden and we post that as part of the results of our Manufacturer Impact Analysis in the NOPR TSD or Technical Support Document.

So we have three questions here for the Manufacturer Impact Analysis. What procedures should DOE follow when scheduling interviews and requesting information? We would like comment on the establishment of manufacturer subgroups for walk-in coolers and freezers, and, finally, what regulations or pending regulations should DOE be concerned with in terms of cumulative regulatory burden?

MR. BROOKMAN: Charles.

MR. LLENZA: Charles Llenza, DOE. I just wanted to mention the fact that after the Preliminary Analysis is done, the information that goes in TSD format will be out there and what we do at each step is

we continuously update the database of information.

So as we get more information in and as our modeling becomes better model based on comments and addressing the information that we're getting, you get a better picture of the modeling and it's updated until we go into the phase -- after Phase 3, it becomes almost final at that point.

MR. BROOKMAN: Okay. Tony, you okay? Okay. So three questions, and I think the Department would like to hear, as they anticipate trying to find a way to connect with manufacturers, how you would like for them to do that, what kind of constraints you operate under, how much lead time you need, peak seasons, down seasons, that kind of stuff.

Is it slower in the wintertime for you all? I thought I heard that earlier, just for an example. It would be nice to have this on the record.

(Laughter.)

MR. BROOKMAN: Daryl, thank you.

MR. ERBS: Daryl Erbs. Our business definitely is seasonal and a lot of it is driven just by construction periods. People can put in restaurants and other new facilities much more easily during the nicer months. Winter just tends to be slow from a construction period and that really drives when we can

deliver product to new sites. So there's definitely seasonality and winter would be better.

MR. BROOKMAN: For visits from the consultant team?

MR. ERBS: Yeah. Definitely.

MR. BROOKMAN: Okay. And they will be, of course, seeking all kinds of detailed information in the interviews.

Additional comments. Yes, Talbot.

MR. GEE: This is Talbot from HARDI. Just a process question.

Because of the wide variety of components that are put together to make these end users, will you have to come up with a sample of manufacturers for every single component and do this for every piece? How will that work?

MR. MARANTAN: I think that's one of the things we have to consider. I'm hearing that there's a large refrigeration component, a large panel or box component. So those are the two we're going to target from the outset.

MR. BROOKMAN: On the equipment side. Yes, Steve.

MR. DUNLAP: And also doors.

MR. BROOKMAN: And doors, yeah. Thank you.

MR. MARANTAN: Yes.

MR. BROOKMAN: You consider doors as being separate, yeah, and functionally -- beyond functionally, dynamically, efficiency-wise, it's entirely different.

MR. DUNLAP: Yes, it is, and it's fundamental to the operation obviously to enter/exit and that's where a lot of the energy inefficiencies in what we just heard earlier, was that R values drop because of moisture and one thing to think about is where does this moisture enter.

Can you possibly develop a specification around the cabinet, that maybe it's a pressure differential type of test on a sample cabinet. It gives you integrity that the vapor barriers are there, construction is tight, that you've checked the panels, whatever type of design is being used, and use that as a criteria because if you're going to lose your R value, that's unbelievable, you know, by that much, that people are pulling these things out simply because they can't maintain the product load.

MR. BROOKMAN: Yes, sir. Your name, please.

MR. MINELLI: I'm Fred Minelli with Kysor Panel. I thought what I heard was that the metal skins were abused, misused, punctured, urethane was

comprised. That's how you're going to lose R value. An encapsulated panel with metal skins, not ruptured, will hold its R value.

MR. BROOKMAN: Okay. Thank you. Karim.

DR. AMRANE: Karim Amrane, AHRI. In addition, I think you need to look at component suppliers, compressor manufacturers, motor manufacturers, things like that, as subgroups that could be impacted by this rule.

MR. BROOKMAN: Okay. Good. That's helpful. Yes, Steve.

MR. COMBS: Steve Combs, ICS. One helpful categorization there on Item 12.2 as far as the subgroups would be site-assembled versus factory-assembled.

MR. BROOKMAN: Could you speculate about what the proportions are there?

MR. COMBS: Well, in our business it's about 50/50, 50 percent of our product is site-assembled and the other 50 percent obviously would be factory-assembled, but the factory-assembled product may be a very useful concise observation for the DOE to make as far as the longevity or the life-cycle cost of the product itself.

MR. BROOKMAN: Thank you. Daryl.

MR. ERBS: Daryl Erbs. Also under 12.2, I think it would really be useful to look at food service, so restaurant and other, you know, food prep kitchens, so it could be an institution, but basically, you know, food service for serving on the premises as one group.

I think convenience stores deserve special treatment because of the construction of the box is different, particularly with the glass doors, and then I really think grocery stores are another subgroup because again they're larger and the amount of product flow in a grocery store, I think, is very different from a lot of the other applications.

So they really ought to be looked at as different subgroups, in my opinion.

I had a comment on 12.3, too, if --

MR. BROOKMAN: Please do.

MR. ERBS: -- I'm allowed? The one that I think you should make sure you keep track of in terms of pending regulations would be cap-and-trade, I mean especially as we increase efficiency of products, we add more refrigerant. We're very concerned about what that cost of the refrigerant could be by 2015.

MR. BROOKMAN: Right. Karim.

DR. AMRANE: Karim Amrane, AHRI. I would

like to add to that. I think we've made the comment before and I think it's still relevant here. You know, we're expecting the cap-and-trade legislation in the next few years and at least in what we've seen so far, the impact on HFC refrigerant could be significant.

So I think that's something that DOE has to monitor and to follow very closely, and we've shared some studies with you before and we can share that again, if you want.

On additional regulatory burden, I think we need to look at what states are doing. The State of California is writing regulations right now on walk-ins and that will have an impact on manufacturers and that has to be factored in, as well.

MR. BROOKMAN: Okay. Thank you. I was curious. Daryl, can you stand back up? Okay. So as I think about retail generally and there's all kinds of gradations that are happening between super big box, big box, medium box, all that kind of -- is that the way the grocery stores are oriented? Should there be subgroups, different -- do you know? Would you --

MR. ERBS: I'm going to ask Fred to come back up. He's better qualified.

MR. MINELLI: You're talking about the breakdown?

MR. BROOKMAN: Yeah.

MR. MINELLI: The breakdown of groups in supermarkets?

MR. BROOKMAN: Yeah.

MR. MINELLI: The big box clubs and then standard supermarkets and little mom and pop supermarkets and boxes vary a great deal from 8X10s to 20X75X20. It would not be unusual in the big box.

MR. BROOKMAN: Okay. Thank you. Yes, Ed.

MR. OSANN: Ed Osann, ASAP. Somehow we seem to have drifted into the end-use subgroup as contrasted with the manufacturer subgroup.

I mean, this part of the analysis is -- this is the MIA, right, and you're looking at -- you're requesting information on and recommendations on manufacturer subgroups?

MR. MARANTAN: Yes, that's correct. I think the two responses earlier on Item 12.2 were very useful. I think we will consider that for the customer subgroups, you know, retail establishments, supermarkets, convenience stores, that sort of thing. 12.2 is directed at the manufacturer subgroups, something like small manufacturers as compared to average manufacturers in the industry or component manufacturers as opposed to the walk-ins, walk-in

manufacturers themselves. So there is a distinction.

What we're asking for here on 12.2 is manufacturer subgroups.

MR. BROOKMAN: Right. Daryl.

MR. ERBS: Daryl Erbs. Just to clarify, I was actually looking at it from a manufacturer's perspective and there are crossovers, but you'll find that the constructions, the preferred type of construction, and panel size capabilities tend to change in those different segments and so you'll actually find manufacturers who specialize mainly in one of those categories, although again they will sell into other applications.

MR. BROOKMAN: Thank you. Thanks for the clarification, too. Okay. So, also, additional comments. You see all three of them here. We've begun to talk about cumulative regulatory burden, the things that will affect the industry generally.

Other comments on that one specifically? Yes, Steve.

MR. COMBS: Well, I just noted four of the major agencies that all manufacturers typically deal with, the National Sanitation Foundation and then Factory Mutual on the fire, the burn testing, the Underwriters Laboratories, and for many of us Canadian

Standards Association.

MR. BROOKMAN: So do they have active ongoing additional regulatory investigations?

MR. COMBS: They do.

MR. BROOKMAN: Oh, they do. Okay. Michael Kido.

MR. KIDO: Just for clarification and a follow-up. Those are private organizations, correct?

MR. COMBS: I'm sorry. What was the question?

MR. KIDO: UL, NSF, and excluding CSA. Were most of those -- most of those organizations are private?

MR. BROOKMAN: Mike, you've got to speak into the mike.

MR. KIDO: Sorry. Most of those are privately-based organizations, correct?

MR. COMBS: Yes, they are.

MR. KIDO: Except for CSA. Okay.

MR. BROOKMAN: Karim.

DR. AMRANE: Karim Amrane, AHRI. I would like to add, also, as far as cumulative regulatory burden, there are certainly many factors when making walk-ins, certainly there's the mechanical system, but also impacted by other rulemakings, such as the central

air rulemakings or whatever, water heaters or whatever, and I think that has to be looked at, as well.

MR. BROOKMAN: Okay. Thank you. Okay. So that was useful. Let's keep moving on.

MR. MARANTAN: Okay. The next section is the Utility Impact Analysis.

Utility Impact Analysis, Employment Impact Analysis, Environmental Assessment, Regulatory Impact Analysis, & Final Rule Analysis

MR. SOMASUNDARAM: Good afternoon. I'm Sriram Somasundaram, Pacific Northwest National Laboratory.

The last three steps in the NOPR Analysis, actually four steps in the NOPR Analysis are actually impacts, impact assessments of what the trial standard levels will have on the Utility Grid, the Employment in the energy or the manufacturing industry, the Environmental Assessment as it relates to the utility impact, and then, finally, the Regulatory Impact Analysis is also done by DOE to mainly report on what are some of the secondary impacts of setting these energy conservation standards for walk-in coolers and freezers.

So the key output that comes out of the Notice of Proposed Rulemaking which will be published

in the Federal Register in the Spring of 2010 time frame will be the so-called Trial Standard Levels. So the Department will basically propose certain standard levels as what they are considering towards establishing the final standard and with those Trial Standard Levels, we will assess the impact on the utility, energy supplies, in this case the electric supplies, and so the purpose of this analysis is basically to get the overall -- assess the overall impact on domestic electricity supplies that would result from implementation of these energy conservation standards.

The method we have traditionally used for this is, first, to run the National Energy Modeling System, the NEMS, tool which in fact AEO or EIA uses for producing their AEO, Annual Energy Outlook, every year.

So this actually is -- the NEMS has a variant, NEMS-BT, which was exclusively developed for use by the Building Technologies Office of DOE, and using the energy savings calculated from the Rulemaking Analysis, corresponding to those Trial Standard Levels, we then translate that, those energy savings, to reduction in electrical demand faced by the grid and thereby not having to build certain power plants or

certain capacity.

So the Department, in this step of the analysis, is seeking input from interested parties on the proposed use of NEMS-BT and to conduct the Utility Impact Analysis.

MR. BROOKMAN: Comments on this? John.

MR. McHUGH: Just briefly, during the time of peak electrical demand, we'll typically be in an air conditioning mode for just about every commercial building. Economizers will be closed and so the additional load on the air conditioning system from a unit with an indoor condenser is going to have not only the impact of the walk-in but also the additional energy consumption of the cooling system.

MR. BROOKMAN: Additional comments on the NEMS-BT application here?

(No response.)

MR. SOMASUNDARAM: The next step is the Employment Impact Analysis.

Aris talked about the Manufacturer Impact Analysis where in fact the direct employment impact is assessed through the GRIM model, but there is also some indirect employment impacts resulting from shifting customer expenditures among goods and services and changing equipment and energy costs.

So these are respectively referred to as the substitution effect and the income effect, and this indirect employment impact in fact is assessed using an IMSET Model which is Impact of Sector Energy Technologies for evaluating this particular impact, and we have again traditionally used this model for all other product rulemakings and we intend to use the same model for this analysis, as well.

The Department requests feedback on this approach in assessing the employment impacts.

MR. BROOKMAN: Comments on this?

(No response.)

MR. BROOKMAN: Okay. No comments. Okay.

MR. SOMASUNDARAM: Moving on, the next step is the Environmental Assessment.

Like I said, this follows directly from the Utility Impact. So just as you have energy savings due to the energy conservation standards, there’s a direct impact on the environmental -- there are environmental impacts, as well, and the way we do this particular analysis is again the -- one of the outputs of the NEMS Model is what the emissions impacts or the reductions in emissions might be because of the energy savings due to the rulemaking.

We’ve also been looking at, in addition to

the CO_2 impacts, we've also been looking at direct environmental impacts from reduction of fossil fuel use at the building level and any measurable impact from NEMS in terms of sulfur dioxide and subsequent impact on SO_2 emissions into the air.

DOE also has recently been examining the economic results or economic impacts as a result of the reduced emissions, and there are three questions that we have in the Framework Document which are 15.1, 15.2 and 15.3, which again seeks input from interested parties on this particular methodology of doing the environmental assessment, and again specific comments on how to estimate the monetary values associated with the emissions reductions or on any widely-accepted values which may be used in DOE's analysis.

MR. BROOKMAN: So comments about the economic values -- yes, the economic values and potential monetary values associated with emissions reductions. John.

MR. McHUGH: The development of the California standards, there is a series of what's known as TDV or Time-Dependent Valuation. In that valuation, they have monetized values for the various pollutants, SO_X, NO_X, and CO_2.

At this point in time, the CO_2 is valued at

$1250 a ton and also depending on the time of year and the time of day, the values are higher because during the peak periods we're using less-efficient sources. That information is readily -- is on the California Energy Commission's website and is readily available.

MR. BROOKMAN: Thank you. And the final question, 15.3, asks about other environmental factors to be considered, should there be any.

(No response.)

MR. BROOKMAN: Okay. I see no additions.

MR. SOMASUNDARAM: The final step of the NOPR Analysis is the Regulatory Impact.

This particular step is warranted more because of DOE's assessment of certain non-regulatory approaches to supplant or augment energy conservation standards as a means of improving energy efficiency for these types of equipment.

In other words, there could be voluntary programs or rebate programs by certain utilities for this kind of equipment. There could be an ENERGY STAR kind of voluntary program in certain other types of equipment.

So we looked at an array of other non-regulatory ways of getting at the same energy savings and compared that to what the results would be of

setting these energy conservation standards. So we based the assessment here on actual impacts of any such voluntary initiatives to date and DOE will consider any information presented regarding these programs from again the interested parties to this process.

Right now, we are unaware of any non-regulatory initiatives at this point, but there may be certain things that utility companies might bring to our attention, and then 16.2 asks a specific question about are there specific subgroups of end users whom the Department should consider in its review of potentially-adverse impacts from standards developed under this rulemaking, and it's again a subgroup analysis where the impact might be disproportionately larger than the general user.

MR. BROOKMAN: John.

MR. McHUGH: The rating that -- John McHugh. The rating method that comes out of these regulations would assist utility programs to provide incentives for walk-ins that exceed the standards and that has traditionally been the method of setting incentives based on what is the regulatory minimum and then having some threshold above which incentives could be offered.

MR. BROOKMAN: Are you saying that that exists now?

MR. McHUGH: I don't believe that's the case. There's a program called Savings By Design which offers designer and owner incentives and has been involved with supermarkets for particular measures, measure-based, but for other products in the past where there's been a threshold standard, then that creates the opportunity to essentially more easily provide incentives.

MR. BROOKMAN: Thank you. Okay. So I'm certain the Department would appreciate among the manufacturers if you know of incentive programs that exist or sometimes a trade group will do a promotional sort of incentive-based thing and so if such -- if those things exist, the Department would like to know about that in your written comments.

Ed.

MR. OSANN: Ed Osann. I want to loop back to Question 15.2, Monetary Values Associated with Emission Reductions, and point out that there are now -- there's now a market for carbon -- for CO_2 emission allowances and encourage the Department to consider the market values that are now being reported.

MR. BROOKMAN: Thank you. Okay. So take another peak at 16.1 and 16.2 on Page 78. I think we've begun to address those.

Other comments on those before we move on?

(No response.)

MR. BROOKMAN: Okay.

MR. SOMASUNDARAM: Okay. The last step in this rulemaking process is, of course, the Final Rule Analysis.

So like I said before, there will be a public meeting right after we publish a Notice of Proposed Rulemaking, the NOPR, and following which there will be comments from you all to the Department which will dictate any changes or any final adjustments to the Trial Standard Levels, following which there will be a Department of Justice review of the Final Rule itself which -- to make sure that there is no anticompetitive impacts or issues related to that, following which DOE will revise the NOPR Analysis, set or establish a standard or standards for several of the product classes, equipment classes, and publish a final rule again in the Federal Register and that, as you saw in the morning, is due by the end of the year, calendar year 2010 or the first of January 2011. Sorry. End of the calendar year 2011 or first of January 2012. I misspoke.

That would be the law of the land three years after the publication of that final rule.

With that, I'll hand it over to Charlie to make some closing remarks and where you should send your written comments and so on.

Thank you.

MR. BROOKMAN: Thank you. Before you do, at this point in the day we also -- you have a question, Ed?

MR. OSANN: Yeah. I do, and I'm not sure it's been covered so far. I'd like to slip it in before the closing remarks.

Does the Department have the authority to -- is there authority for a federal labeling requirement for walk-in coolers?

MR. BROOKMAN: Michael Kido.

MR. KIDO: There is, but I don't think -- at this point we haven't -- yeah. Well, there's that. As a practical matter, I don't think we've -- we have one for these particular products, is that correct?

MR. OSANN: I'm sorry. Could you restate that maybe with the microphone on?

MR. KIDO: Sure.

MR. McCABE: Wait a minute. This is Michael McCabe. The answer to the question is yes, the Department has the authority. For the commercial products which are part of A.1, EPACT, EPCA as amended,

the Department of Energy has the direction for and responsibility for labeling rules for the commercial equipment, for most of them. I think there might be one or two where we're specifically directed to the Federal Trade Commission in the commercial sector.

MR. BROOKMAN: Good. Thank you. That's helpful.

Ed, additional follow-up there?

MR. OSANN: Well, just simply that nothing's been said today about labeling and presumably that would be folded into the NOPR, folded into the Final Rule on the efficiency standard or would that be subject to a separate rulemaking?

MR. McCABE: Michael McCabe. The answer is going to be a little bit more involved than what you expect but that's always the case.

If there is going to be mandatory federal labeling under the authority of EPCA, it would be handled in a separate rulemaking. It has not been identified as a subject of this rulemaking or the Test Procedure rulemaking that's been discussed.

However, going back to one of the slides, one of the last slides that Sriram was presenting, the slide on the Regulatory Impact Analysis, the Regulatory Impact Analysis is performed by agencies in response to

Executive Orders.

What the Administration is looking for is what are the impacts, the net impacts on the economy of alternatives to the approach and so we have, for other products we've looked at enhanced ENERGY STAR, we've looked at -- as Sriram was talking about, rebates and tax credits and the like, and certainly a labeling program can be examined there in order to look at what those impacts would be and it is entirely -- theoretically, it's possible, but we have never seen this to be the case, that some of the alternatives could have a higher benefit, net benefit to the nation than the regulatory approach and if that were the case, the agency could consider going to Congress for some changes in the legislation, but right now, we have the direction in the legislation to set the standards for dozens of products and we have not taken any action to make any -- to propose any changes to the legislative authority for any products based on the results of any regulatory impact analysis.

MR. BROOKMAN: Thank you.

MR. OSANN: A follow-up question.

MR. BROOKMAN: Ed.

MR. OSANN: Would the nature and timing of the certification by manufacturers that covered

products are in compliance, would that be covered by this rulemaking?

MR. McCABE: There is a separate proceeding that we are -- we work on for each of the products when they are added which we -- the responsibility, however, for manufacturers to meet the standard and to be able to demonstrate compliance exists whether or not we have issued any certification and enforcement regulations, though there are many issues that have been raised during the course of today that are quite important that will need to be addressed and will be addressed through either this proceeding, through the Test Procedure, or potentially through the FAQs, if the certification and enforcement rules are not issued, you know, say at that point in time, and some clarification is necessary.

MR. OSANN: So the answer to that was typically, this may not be typical, but typically there’s certification and enforcement is a separate rulemaking?

MR. McCABE: Yes.

MR. OSANN: Thank you.

MR. BROOKMAN: Thank you. Thank you, Michael, and thank you, Ed. I learned something there.

Other Issues, Questions & Comments/Closing Remarks

MR. BROOKMAN: Anyway, we always provide at the end of the day or at least we try to provide the Department and those supporting the Department an opportunity for people to make final comments, draw attention to a point or two that they may have missed during the course of the discussion today.

Any other issues that you wish to raise or emphasize briefly? Talbot.

MR. GEE: Well, I'll just make -- this is Talbot from HARDI. I'll make the same offer I did during our residential process, standards process, too, is we're ready, willing and able to help if you want to visit any wholesalers who service these markets, as well, in addition to manufacturers, so you could get a feel for what the wholesale channel has to do for these products.

MR. BROOKMAN: Thank you. And if the Department and their consultant team wanted to follow up with them, was there a time frame that would work best? Do they also slow down in the wintertime?

MR. GEE: Yes, wintertime would be better.

MR. BROOKMAN: Yes, okay. So, of course, they'll be trying to schedule those things, yes.

Anybody else, closing remarks? John.

MR. McHUGH: There was discussion -- a couple

discussions about separate rulemakings and proceedings around certification, around the test standard, and I'm just interested to make sure that we're aware of -- are we on a mailing list so that we're given notice of these meetings, rulemakings, et. cetera, that also support this effort?

MR. BROOKMAN: Charles.

MR. LLENZA: Charles Llenza, Department of Energy. Yes, we keep a database of parties of interest and stakeholders and anybody that wants to be on the mailing list can send me their name and mailing list back.

MR. BROOKMAN: Is there one unified list and all relevant --

MR. LLENZA: We keep it for all the appliance standards, commercial and residential. So it's just a matter of where you want to be.

MR. McHUGH: Okay. Thank you.

MR. BROOKMAN: Thank you. So then, okay, from my perspective, I just want to thank you. We had a very constructive discussion today and I'll turn it back to Charles for closing remarks.

MR. LLENZA: I just wanted to thank you all for attending this meeting and providing us a lot of good information. I appreciate your patience with

this. We -- the best way to keep in touch with the Department of what's going on with this ruling would be through our website. We are very diligent about trying to post as soon as we are given the green light to do so internally with any information that's germane to this rulemaking process, including the Test Procedures, also, for the standards.

I also want to remind you that we have a deadline of February 12th for comments. I encourage you to try to make that deadline. I'm sure that at this point in time, we would be anxious to see what your comments are in written form. That will become part of the docket and we will address those as we go through the different steps here for the standards and the Test Procedures.

And again, the way of submitting your comments is on the slide here.

Thank you very much for attending. That's all I have.

(Whereupon, at 4 o'clock p.m., the meeting was concluded.)

REPORTER'S CERTIFICATE

This is to certify that the attached proceedings before:

UNITED STATES DEPARTMENT OF ENERGY

In the Matter of:

PUBLIC MEETING ON ENERGY CONSERVATION STANDARDS WALK-IN COOLERS AND WALK-IN FREEZERS EQUIPMENT

Were held as herein appears and that this is the original transcript thereof for the file of the Department, Commission, Board, Administrative Law Judge or the Agency.

Further, I am neither counsel for or related to any party to the above proceedings.

Debra Derr
Official Reporter

Dated: February 8, 2009