U.S. DEPARTMENT OF ENERGY

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COMMERCIAL REFRIGERATION EQUIPMENT NOTICE OF PROPOSED RULEMAKING PUBLIC MEETING ON TEST PROCEDURES

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PUBLIC MEETING

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WEDNESDAY
DECEMBER 5, 2013

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The Public Meeting met in Room 8E-089, James Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C., at 9:00 a.m., Doug Brookman, Meeting Facilitator, presiding.

PRESENT

DOUG BROOKMAN, Meeting Facilitator, Public Solutions, Inc.
TIM ANDERSON, Hussmann Corporation
ASHLEY ARMSTRONG, Department of Energy
JEFF BAUMAN, National Refrigeration and Air Conditioning Products, Inc.
MARY DANE, Traulsen Refrigeration
BRUCE HIERLMEIER, Zero Zone
CHARLIE HON, True Manufacturing Company
BYRON HORAK, Intertek
STEVEN KING, Royston, LLC
CHARLES LLENZA, Department of Energy
MASSOUD NESHAN, Southern Store Fixtures, Inc.
JOE SANDERS, Traulsen Refrigeration

RON SHEBIK, Hussmann Corporation (via teleconference)
NICK SCHRINER, Arneg USA
LOUIS STARR, Northwest Energy Efficiency Alliance
ANWAR SUHARNO, Royston, LLC
JENNIFER TIEDEMAN, Department of Energy
COLLIN WEBER, Navigant Consulting
SARAH WIDDER, Pacific Northwest National Laboratory
LAUREN ZELINSKI, Air-Conditioning, Heating, and Refrigeration Institute

ALSO PRESENT:

LAURA BARHYDT, Department of Energy
GREGORY ROSENQUIST, Lawrence Berkeley National Laboratory

A-G-E-N-D-A

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

9:01 a.m.

MR. BROOKMAN: Good morning, everyone. Welcome. This is the U.S. Department of Energy's public meeting on the test procedure for commercial refrigeration equipment.

Today is December 5, 2013 here in the Forrestal Building in Washington, D.C. My name's Doug Brookman from Public Solutions in Baltimore. I'm glad to see you here this morning.

We're going to start with welcoming remarks from Ashley Armstrong.

MS. ARMSTRONG: So I'd just like to welcome you. My name is Ashley Armstrong. I oversee the development of all the test procedures coming out of the Department as well as some of our testing and compliance efforts here.

We appreciate you guys all taking the time to travel and we also appreciate

those participating by webinar.

The purpose of today is really to gain your feedback. So we encourage you to ask a lot of questions, provide us your opinions on things. It really will help us get to a better answer in the end.

And we're looking forward to the discussion. So thanks again.

MR. BROOKMAN: Thank you. Let's do introductions; that's where we typically start. Start to my immediate left, your name and organization.

MR. ANDERSON: Tim Anderson, Hussmann Corporation.

MR. HIERLMEIER: Bruce Hierlmeier, Zero Zone.

MR. NESHAN: Massoud Neshan, Southern Store Fixtures.

MR. HON: Charlie Hon, True Manufacturing.

MS. DANE: Mary Dane, Traulsen.

MR. SCHRINER: Nick Schriner,

Arneg USA.

MS. ZELINSKI: Lauren Zelinski, AHRI.

MR. HORAK: Byron Horak from Intertek.

MR. BAUMAN: Jeff Bauman, National Refrigeration.

MR. KING: Steven King, Royston LLC.

MR. STARR: Louis Starr, Northwest Energy Efficiency Alliance.

MS. TIEDEMAN: Jennifer Tiedeman, DOE general counsel.

MS. ARMSTRONG: Ashley Armstrong, DOE.

MS. WIDDER: Sarah Widder, Pacific Northwest National Lab.

MR. WEBER: Collin Weber, Navigant.

MR. ROSENQUIST: Greg Rosenquist, Lawrence Berkeley National Laboratory.

MR. BROOKMAN: Okay, thanks to

all of you. And again, welcome. Thanks for being here so we can get an early start on this day.

All of you received a packet of information as you came in this morning and I'm going to do a very brief agenda review. Immediately following this agenda review there is an opportunity for anybody that wishes to do so to make brief opening remarks, summary statements about issues that matter to you at the outset here.

Following that we're going to hear a rulemaking history and timeline, and then proceeding immediately toward a description of the test procedure scope and definitions.

We'll take a break midmorning round about 10:30 or so and then clarifications to the test procedure. And another break it has listed at noon-ish. We'll see how that goes, see how far we are along at that point.

But then whenever we get there other test procedure issues. And then again, projected to end today around 1:15 or so.

As we get close to closing another opportunity for anybody that wants to make statements for the record, raise additional issues, make sure your issues are fully covered. So that's the plan.

I'd ask for your consideration if you would please speak one at a time. Please say your name each time you speak. Say your name for the record and there will be a complete transcript of this meeting. If you could keep the focus here, put your cell phones on silent mode and limit sidebar conversations.

Be concise and share the air-time. And I'll be queuing individuals by name as best I can. I wish to encourage follow-on comments. Sometimes the back and forth is very useful to the Department as they consider the merits of these arguments.

For those of you that joined us by the web, welcome. The Department of Energy is trying hard to make these meetings successful via the web. We hope the transmission quality is good and is working well for you.

Please keep your phones on mute as you listen. And you can raise your hand in the software program and our webmaster will insert you in the conversation and hopefully that will work.

And if not you can send your questions or comments via the software and she'll hand it to me and then I'll read it into the record and we'll get that bit of information into the conversation here.

So, I think that's all the preliminary stuff. I see Charles Llenza is at the microphone. And Charles Llenza for a rulemaking history and timeline.

Oh pardon me, do opening remarks first. I skipped a step. Let's do opening

remarks first. Anybody that wants to make an opening statement. No opening statements? Okay. So I didn't skip a step. Charles Llenza.

MR. LLENZA: Okay, I'm just going to go over quickly on a little bit of a format here.

Today's meeting is to present the proposed test procedure for commercial refrigeration equipment. It's actually amendments to the actual test procedure that's in place.

And we encourage the participants to provide a summary of your comments in written form if possible and provide that and send that in through our -- to the docket and through our email system.

This Notice of Proposed Rulemaking comment period closes on January 13, 2014.

You will see these issue boxes as we go through the presentation. These are

particular questions that the Department is interested in finding answers to and these are -- we've highlighted some of these questions in the presentation but a list of the issues are in the NOPR document and that's available at that link.

We also have a process or a procedure on how to submit comments. Please include the docket number and the RIN number.

And things should be sent to the email on the slide. It could be sent via postal or courier to Brenda Edwards and that's the address. Again, January 13, 2014 is the end of the comment period.

Let me start with a little bit of the rulemaking history. EPCA as amended directs that the test procedure for commercial refrigeration equipment determined to be generally an industry testing procedure and rating procedures developed or recognized by ASHRAE or by ANSI. And here's the reference to the ANSI standard.

The initial test procedures for self-contained refrigerator freezers and equipment went into effect January 1, 2005.

EPCA also states that if ASHRAE 117 is amended, the Secretary must rule and amend the DOE test procedures to ensure consistency with the amended ASHRAE 117 standards unless certain findings are made clear and convincing.

If a test procedure other than ASHRAE 117 is approved by ANSI the Secretary must review. And at least once every 7 years DOE must conduct an evaluation of the test procedure. This is by statute.

In the current CRE test procedure, On December 2006 DOE established a test procedure for commercial refrigeration equipment using the commercial test procedure from ARI Standard 1200-2006.

That standard also happens to refer to the ASHRAE Standard 72-2005 as the test method.

DOE adopted AHAM Standard HRF-1-2004 for measuring refrigerator compartment volume. This is all part of the current test procedure that was adopted by the Department.

On February 21, 2012 DOE issued a test procedure final rule which amended the first established test procedure. And that test procedure updated references to the industry's test procedures, incorporated a method for evaluating the energy impacts and allowed commercial refrigeration equipment which cannot achieve the specific rating temperature to instead be tested at the lowest temperature at which it is able to operate.

In today's proposed test procedure revisions since the publication of 2012 test procedure DOE has received several inquiries from interested parties.

So, this is a summary basically of those, but not exclusive but a summary of the highlights of these inquiries.

The inquiries had to do with the applicability for the DOE test procedure and the current federal energy conservation standard to various equipment and features, the definition of certain terms, the proper configuration of the use of certain components and features, the proper application of certain test procedure provisions, and the compliance date for certain provisions specific to the DOE test procedure of 2012.

So the NOPR proposes a number of test procedure revisions in response to these inquiries. Some of them are listed but there's others included in the actual NOPR.

During the summer of 2013 DOE initiated a negotiated rulemaking process for certification for commercial heating, ventilation, air conditioning and refrigeration and water heating equipment.

During these negotiations discussions were held for the treatment of

certain features of product attributes specific to commercial refrigeration equipment under the DOE test procedure.

There's been some consensus reached regarding treatment of these features and it was agreed that these clarifications be codified in a future rulemaking which is part of what we're trying to do with our NOPR.

This test procedure NOPR contains proposals reflecting these positions agreed upon through the negotiated rulemaking. So this was just adding a few other parameters to this revision of the TP NOPR.

We'll use the regular TP NOPR approval process which will be -- the already published NOPR and thea comment period. Once that comment period will close, we will go back and deliberate upon the comments and come up with a final rule and that would then be published at some future date.

And that's online and can be

looked up at the link that's provided here on this web page, on this slide.

A little bit of the timeline. We published October 28. Today we are having the TP NOPR public meeting. We're looking at spring 2014 for a final rule and the proposed final rule has an effective date 30 days after publication. And that's what I have for my part of the presentation.

MR. BROOKMAN: Okay. Questions or comments before we proceed? Okay, I see none. Sarah Widder?

MS. WIDDER: All right. Thank you, Charlie and thanks, Doug.

As I said before my name's Sarah Widder and right now we're going to go through some slides that present a few clarifications to DOE's test procedure scope and particularly some definitions that will help codify those clarifications of scope.

So first, this is the definition, DOE's definition of commercial refrigeration

equipment that we're all pretty familiar with. So, a commercial product, not a consumer product, designed and marketed for -- not designed and marketed for medical, scientific and research purposes, operates at chilled or frozen temperatures, stores merchandise horizontally, vertically, or semi-vertically, has doors or no doors in a variety of configurations, is designed for pull-down temperature applications or holding temperature applications and can be self-contained or remote.

So, that is a very large or very broad definition. And that covers a lot of commercial refrigeration equipment that you all manufacture or we all use, some of which DOE has set standards for, but not all.

So, there's some types of commercial refrigeration equipment that DOE does not currently have standards for. And this slide just clarifies that. CRE's test procedure is applicable to some types --

similarly, DOE's test procedure is applicable to some types of commercial refrigeration equipment and there are some types of commercial refrigeration equipment that cannot be tested using DOE's test procedure. And those two things are not perfectly aligned.

So, DOE's CRE test procedure is applicable to all the equipment for which DOE has established standards and in addition, for example, this griddle stand you can see in the slide can be tested using the DOE test procedure and representations regarding the energy composite of that equipment should be made using the DOE test procedure, although it's not covered by standards.

The equipment on the right, prep tables and salad bar tables, buffet tables that are also refrigerated and fall under the scope of commercial refrigeration equipment cannot be tested under DOE's current test procedure and so they are not subject to the

same requirements regarding representations and are not subject to standards.

This is just a clarification of the scope of CRE's standards. All three of those types of equipment that were given as examples before are not currently covered by energy conservation standards.

And as we all know these standards are listed at 10 CFR 431.66 and any new standards for equipment would be added to that section.

To clarify this scope, since there are some types of commercial refrigeration equipment with drawers that could physically resemble chef bases or, you know, more unique types of commercial refrigeration equipment the DOE proposes to differentiate this equipment by establishing a specific definition for chef base or griddle stand. That definition is listed here.

Chef base or griddle stand means

commercial refrigeration equipment that is designed and marketed for the express purpose of having a griddle or other cooking equipment placed on top of it that is capable of reaching temperatures hot enough to cook food.

And with that we reach our first request for comment. DOE is requesting comment on this definition and how it applies to the type of equipment DOE is wishing to exclude from standards at this time.

MR. BROOKMAN: Is this a new definition?

MS. WIDDER: This is a new definition to be added to 10 CFR 431.62.

MR. BROOKMAN: Charlie?

MR. HON: Charlie Hon, True Manufacturing. Question for you. Under the same classification there are other units which are not -- they're basically the same as doored units but have drawers instead of doors. Are they going to fall under a

special classification as well?

MS. WIDDER: This definition is just with regard to equipment that is designed to be placed in extremely hot environments under a griddle.

Those types of equipment that have drawers and not doors, but are in other ways similar to conventional commercial refrigeration equipment will be addressed later in the slides. But yes, we'll get to that in a few slides.

MR. HON: Okay. Because the only issue with these products is they have to have a lot of capacity.

MS. WIDDER: Right.

MR. HON: Because of the heat load on top of them.

MS. WIDDER: Right. Thank you.

MR. BROOKMAN: Thoughts on this proposed definition? Massoud.

MR. NESHAN: Massoud Neshan, Southern Store Fixtures.

Could you go back to your slides where you were showing cases that -- right here. What is so difficult about testing or using the DOE test procedure on the equipment shown on the very right-hand side?

MS. WIDDER: Well, the issue with the DOE test procedure and applying it to this equipment is that it's not representative of their use. So there's not provisions in the test procedure to specify whether these pans that contain the food and the temporary door above them should be open or closed or for how long, or what types of test packages should be placed in those bins.

So it's just not specific enough for this type of equipment and not representative of their use in the field which is what's required for a DOE test procedure.

MR. NESHAN: Yes, but that equipment in the middle, there's no temporary

door opening, closing, or anything, just open display. Isn't it?

MS. WIDDER: Well, but similarly it has the same problem with pans. And the DOE test procedure doesn't specify how test packages should be placed in those pans, how they should be filled, how they relate to calculation of the refrigerated volume, for example.

So the DOE test procedure would describe the refrigerated volume behind these doors that are on the lower part, but doesn't describe whether or not the pans are included in the refrigerated volume calculation. And those types of specifics are important to get right so that this equipment is rated consistently among manufacturers and test labs.

MR. BROOKMAN: Byron.

MR. HORAK: Are there plans to specify the loads in the door openings for this type of product in the near future?

MR. BROOKMAN: Are you talking about the middle one?

MR. HORAK: Both of those, actually.

MS. WIDDER: Both of them. They're not being considered in this rulemaking.

MR. HORAK: Okay.

MR. HON: Charlie Hon, True Manufacturing. There is an NSF test procedure to verify these products but it is still -- it would require additional add-ons to that test procedure because it's run with certain products, certain media samples, a long list of information. But it is run using the ASHRAE 72 test standards at the pace of the product with additional add-ons.

MR. BROOKMAN: If I'm not mistaken we still haven't received any comment on this proposed definition. So I guess no comment. How should we take that? One or two individuals have just given me a

thumbs up. I guess that's --

MS. WIDDER: Agreement.

MR. BROOKMAN: Massoud?

MR. NESHAN: Yes, Southern Store Fixtures. You have in this one on what the definition, it says that cooking equipment. Why not warming equipment? Wouldn't the warming equipment be part of it? Could it be covered? It has to be only cooking?

MS. WIDDER: So, the DOE's understanding of this type of equipment and what makes it unique is the increased refrigeration capacity that's required to have cooking equipment that is extremely warm on top of it, hot enough to cook food. So that's how it's been defined here.

We welcome comment on whether or not this definition would need to be expanded to include warming comment, and if so, how it could be expanded.

The key would be to differentiate whether or not that type of commercial

refrigeration equipment that is associated with warming equipment is really in fact from a technical design standpoint different than the type of griddle stand, chef base and griddle stand we're attempting to define here.

MR. BROOKMAN: Is warming equipment covered?

MS. WIDDER: Not under commercial refrigeration equipment.

MR. BROOKMAN: Okay. Charlie.

MR. HON: Charlie Hon, True Manufacturing. We have sold these types of items to people who put a warming cabinet on top of them, but we designed for the harsh case because the vast majority of the product is sold with either -- especially the chef's base stand with usually fairly high temperatures for cooking steak.

MS. WIDDER: Right.

MR. HON: And that's where the majority of the market is. So if we sell

anything else it would be the same type of equipment.

MS. WIDDER: Thank you, Charlie.

MR. BROOKMAN: Okay, thanks. I think we've covered that one, yes? Let's move on.

MS. WIDDER: Okay, there we go. So, this is just another clarification of how DOE's test procedures and standards are applied to equipment.

We're all familiar with the definition of a basic model for commercial refrigeration equipment and each basic model of commercial refrigeration equipment, that's the unit that is certified to DOE for comparison and compliance with standards. And it's rated and tested and subject to those standards based on the equipment class to which that basic model belongs.

And we've just received some questions from -- some inquiries from interested parties regarding the application

of test procedures and standards to equipment that are shipped with after-market doors for equipment that's offered for sale from the manufacturer with doors as an optional accessory.

Regardless of how that unit is shipped that unit must be tested and certified as equivalent to a basic model shipped with doors pre-installed, similar to other optional accessories that affect energy use.

Okay, moving on. This is just a reminder of DOE's categorization of commercial refrigeration equipment, how we determine which equipment goes in which class.

And we have a comment. I wonder if I have a request for comment? Okay, let's take it.

MR. BAUMAN: This is Jeff Bauman from National. I apologize, if I can step back a little bit, Sarah.

MS. WIDDER: Yes.

MR. BAUMAN: When they say that the equipment is offered for sale with doors as an optional accessory, I'm just trying to get clarification on that. Because you could have -- two areas where I think that is some manufacturers make open cases that do doors. Some manufacturers make drawer units, they're primarily sold with drawers, but you can get doors on them.

MS. WIDDER: Yes.

MR. BAUMAN: So you would have to test it. Can you just explain how that would work with both? You'd have to list it with doors as well as drawers?

MS. WIDDER: Yes. So, to the extent -- Ashley can go ahead.

MR. BAUMAN: Okay, I think there's a hole there, yes.

MS. ARMSTRONG: You picked the one hole, you did. You got it.

So, slide 24 is meant to

distinguish the difference between open and closed. So, regardless of whether -- if you ship the unit integrated with doors, or if you ship them in a separate box as add-on doors it's a closed unit. You need to certify it, you need to test it, you need to be compliant with the closed standards.

What she hasn't gotten to yet, slide 26, the drawers, when she gets there --

MS. WIDDER: Yes, we'll get there.

MS. ARMSTRONG: -- we're equating drawers with doors. So it's like a singular unit. You wouldn't necessarily do them both. But she'll get there.

MS. WIDDER: Yes, we'll get there.

MS. ARMSTRONG: Twenty-four is open versus closed.

MR. BAUMAN: Okay, thanks for clarification.

MS. ARMSTRONG: The Department is

aware that some people are putting doors in a separate box and saying, you know, these aren't closed cases. And in the Department's eyes those are closed cases.

MS. WIDDER: Okay, so that's a pretty clear issue. If there's no other comments we'll move onto clearly the most interesting issue which has to do with drawers versus doors.

So, DOE interprets the term "door" to mean any movable component of the commercial refrigeration unit that when closed separates the interior refrigerated space from the ambient air which is what makes it closed, and when opened provides access to the refrigerated product inside the CRE unit which is the intention of the door.

By that definition DOE considers drawers to be doors for the purposes of compliance under DOE's regulatory program since a drawer would also meet both of those criteria. So compliance for equipment with

drawers is determined based on the standard level for the equipment class with doors as tested in accordance with DOE test procedures.

So, in answer, like Ashley said, just reiterating a piece of equipment with opaque doors or opaque drawers would be in the same equipment class and subject to the same standard.

If it was a clear door versus opaque drawers those equipment would be different because it would be transparent versus closed cases.

MR. BROOKMAN: Massoud?

MR. NESHAN: Yes, Neshan with Southern Store Fixtures.

Based on this definition the night curtain, it becomes a door then. Because any moving component is considered to be a door. And meets the definition of separating the refrigerated area from the outside and all that.

MS. WIDDER: Yes.

MR. NESHAN: The night curtain becomes a door which is not accurate.

MS. WIDDER: Well, and clearly not the intent. It is -- definitely DOE's intent is a permanently affixed movable component.

And that's a good comment, Massoud. We'll take that under consideration.

MR. HON: Unfortunately there are a lot -- Charlie Hon -- there are a lot of night curtains that are permanently affixed, factory-installed.

MS. ARMSTRONG: So we should say excluding night curtains and that would do it, right?

MR. BROOKMAN: Are night curtains enough of a distinctive descriptor?

MS. WIDDER: They're defined in our regulations.

MR. BROOKMAN: Okay.

MR. HON: I think it would be very clear then.

MR. BROOKMAN: Okay, great. Thank you. That was productive.

MS. WIDDER: Yes, great.

MR. BROOKMAN: Additional comments here before we move on?

MS. WIDDER: We have a request for comment on the next slide so can I just get there?

MR. BROOKMAN: Please do.

MS. WIDDER: All right, great. So, this is just -- DOE recognizes that probably some of this confusion came from the fact that "door" is not defined in our current regulations.

And so, to clarify, DOE is proposing to establish this definition of "door" in 10 CFR 431.62. "Door" means a movable panel that separates the interior volume of a unit of commercial refrigeration equipment from the ambient environment, is

designed to facilitate access to the refrigerated space for the purposes of loading and unloading product, and is affixed such that it is not removable without the use of tools. This includes hinged doors, sliding doors and drawers.

And as we just discussed on the previous slide we may add an explicit exclusion of night curtains.

MR. BROOKMAN: Okay. One way or the other.

MS. WIDDER: So we do, we request comment on this proposed definition, and in particular, specifications that the term is inclusive of drawers.

MR. BROOKMAN: So, comments on this definition. No additional comments.

MS. WIDDER: Okay.

MR. BROOKMAN: Massoud.

MR. NESHAN: Yes, Neshan. One point of clarification.

MS. WIDDER: Sure.

MR. NESHAN: A door means a movable panel part that meets all those three definitions?

MS. WIDDER: Correct.

MR. NESHAN: So if it only meets two of them it's not considered a door then, right?

MS. WIDDER: Correct.

MR. NESHAN: Okay, good. Thank you.

MR. BROOKMAN: Louis.

MR. STARR: Just a question. Just kind of following up on what he said. So, if the drawer comes out it's not fixed then. Does that mean it's not a door anymore?

MS. WIDDER: Right. Well, that's a very good comment. That will be something we have to consider in establishing a final definition.

MR. HON: Charlie Hon. A lot of doors -- this is a very bad definition

because a lot of doors are lift-off. You open the door, lift it off and take it off to clean it. They just were built so they just literally lift up.

MS. WIDDER: So perhaps instead of number 3 we just establish the exclusion of night curtains and don't talk about how it's affixed.

MR. HON: That's a bit of a loaded gun.

MS. WIDDER: All right. Thank you for that.

MR. BROOKMAN: Thank you, Charlie. Okay. Additional comments on the definition? Charlie?

MR. HON: Charlie Hon. There's also some issues there because number 3 is so ambiguous because sliding doors slide out and can be removed the same way. So there would be a major ambiguity there as well.

MS. WIDDER: Right.

MR. HON: Drawers are the same

way. So number 3 is a disaster in every aspect.

MS. WIDDER: All right.

(Laughter)

MS. WIDDER: We appreciate your comments.

MR. HON: I could use every one of those to my advantage because every one of them would take them out of classification.

MS. WIDDER: Okay.

MR. HON: Because hinged doors can be lifted off, sliding doors, you just lift it up and pull them out, maintain your draw cord, and drawers quite often have a quick release pin and away you go.

MS. WIDDER: So, if we ignore number 3 --

MR. HON: Number 3, every one of the categories would get you trouble.

MS. WIDDER: Okay. So, but if we ignore number 3 and we pretend that that's not part of the definition, but would number

1 and number 2 with the explicit exclusion of night curtains added be a sufficient definition? Or would you also find issue with that definition?

MS. ARMSTRONG: Well, the other option is to not have a definition at all.

And so we did it for a reason. We felt there was a need for one and we were filling the need. But it sounds like it may be also causing more harm than good. We could leave it ambiguous and then it would be DOE's discretion.

MR. HON: This is Charlie Hon again. The first sentence in number 3 is the problem. Affixed such that it is not removable without the use of tools, that's the problem. Because all those -- there are samples of every one of those that have releases on them or something where you don't need a tool other than your index finger to remove them. That's where the problem comes in. They all would fit the standard and

should fit the standard as a hinged door, a sliding door, or drawers. But the use of tools is a problem.

MS. ARMSTRONG: Okay. So, when you go to write your comments I think we have all heard that number 3 should just be scrapped altogether regardless of whether we decide to -- if we decide to ultimately adopt a definition.

But when you go to write your comments, if you do end up writing additional comments, if you could think about the idea, the premise here is that we were trying to make clear that a door in DOE's reg is not just, you know, it's a hinged door, it's a sliding door, it is drawers. It is all these things. It's not just, you know. So, is there a better way to do this? So I ask for your feedback on that. Okay?

MR. BROOKMAN: Okay. We have a comment via the web from Joe Sanders, or a question, in fact. How does it affect the

cabinet volume calculation versus drawers? And I think we're getting into this later. Ashley?

MS. ARMSTRONG: We're going to get into the TDA calculation later.

MR. BROOKMAN: Yes. So Joe, hang on with that question and we'll try and address that. Jeff?

MR. BAUMAN: I'll just say that will be volume calculation not TDA --

MS. WIDDER: Right.

MR. BAUMAN: If it's not a glass -- unless you have a glass drawer somewhere.

MS. WIDDER: Right. And I think that the clarification there is that the volume calculation for a drawered unit and a doored unit would be the same.

MR. BAUMAN: And I -- I only speak for Jeff but I think there would be questions about with a drawer unit you have I'll say fixed components inside which in some of the ways volume are calculated there

may be considerations of not considering those part of the volume of the cabinet of a drawer unit.

MS. WIDDER: And Joe or anyone else is of course welcome to submit comments on that.

MS. ARMSTRONG: So, I'm not as familiar with how you would actually -- I've never tried to take the volume calculation of a drawered unit. But I've done it for -- my understanding is it's similar to residential and I've done it plenty of times for residential and there are plenty of -- in the HRF document it pretty much will take care of it. At least that's my understanding. You don't believe it will? Okay, so then we need to deal with it.

MR. BAUMAN: I'm not familiar but I think there would be considerations too for pan capacity. I would think of it as a good way to do that would be considering pan capacity of the unit and how much can you put

in the drawers.

You know, you might have a different numbers you're using for what the allowable energy is and such, but if you talk about the volume of a refrigerator is supposed to be how much can the refrigerator hold.

If you're talking about a drawer unit it's how much product can you put in that. How much product space do you have. I'm not saying -- we'll cover that in our comments or whatever. You don't need to answer now. But I'm just saying those are the types of things that may be.

MS. ARMSTRONG: Yes, I mean when you cover in your comments I ask -- if you're talking about how much the drawer can hold, I mean my distinction is going to -- what's the difference between how much a drawer can hold and what the refrigerated space is? Is there a difference?

MR. BAUMAN: Yes. Yes and we'll

cover --

MS. ARMSTRONG: And what should be accounted for. And so that's where -- I mean, you know.

MR. BAUMAN: Now, my actual comment was agreeing with Ashley. Surprise.

(Laughter)

MR. BAUMAN: I actually, I think the idea, and I don't know what this would do to your having to modify your documents, but I think -- I want to think I understand why you're covering doors as hinged doors, sliding doors and drawers, but I think to a layman or even anybody reading it, you read doors, you're thinking doors. Versus going into where the standards say doors and saying doors are drawers.

You know, I think you can cover -- you can say doors cover hinged doors and sliding doors. I think saying a drawer is a door is not intuitive and would be more confusing for people who aren't necessarily

reading through the 350 pages of definitions and things.

MS. WIDDER: Right. In response to that a little bit. And Charlie, this might be what you were going to say.

It's difficult for the Department of Energy to change the referenced test procedure which is ASHRAE 72-2005 unless we were to incorporate all the relevant provisions into the CFR directly, to change every instance of door to door plus drawer, or door and drawer.

However, there's a draft, a proposed draft of ASHRAE 72-2000 -- maybe it'll be 14 by the time it's done -- that does just that.

MR. BROOKMAN: Okay. Additional comments here? Okay.

MS. WIDDER: Okay. Related to closed refrigerators, doors and drawers, DOE also in reviewing the definitions of application of the test procedure realized

that there's not a clear differentiation or definition for differentiating closed cases from -- or closed solid cases from closed transparent cases and determining transparency of a door or material.

Much of this currently seems up to the manufacturer. There's been some recent AHRI interpretations related to determining transparency. And also in Appendix D there's a small definition of transparency that references greater than 65 percent light transmittance.

And that's currently part of the DOE test procedure. However, it's not explicitly codified. So, to clarify the test procedure DOE prefers a quantifiable method for determining light transmittance which is currently not established in the DOE test procedure or any of its reference documents.

DOE proposes to use an ASTM method for determining the -- a test method for determining solar transmittance of sheet

materials using sunlight.

This is typically applied to fenestration products but in reviewing the document DOE finds that the most broadly applicable document to determining light transmittance through intended-to-be-transparent materials, it's the basis for other industry standard test methods that are applied to fenestration products typically.

To incorporate this into the CFR DOE is proposing a definition of "transparent" as follows. "Transparent" means greater than or equal to 65 percent light transmittance as determined in accordance with ASTM Standard E1084-86(2009).

And the definition of the standard at normal incidence which is directly perpendicular to the door. And a lot of people might be thinking now do we have to apply this definition to every door that we sell and the answer is no.

This definition will be applied to determine transparency when there may be an issue. For example, if the Department were to test a case and wanted to determine whether or not a door was transparent because there was some ambiguity, or if there was some coverings of opaque material this test procedure could be applied to determine transparent material from opaque material.

But it is not -- equipment is not required to be tested to this standard in order to be incorporated into a piece of commercial refrigeration equipment. It's basically like a tiebreaker. And Ashley might have something to add to that.

MS. ARMSTRONG: I don't.

MS. WIDDER: Okay.

MR. BAUMAN: Well, this is Jeff Bauman from National. Will that be -- what you just said, Sarah, will that be included in the documentation or whatever with the definition that you won't have to test -- do

a test and clarify this? It will only be --

MS. ARMSTRONG: I've got it. So, that's the reason for putting it in the definition. You have fair warning how we will determine if there's an issue with whether or not something is transparent or not.

If you want to use it, you may, but it's not required as part of the test procedure. Right? But yes.

MR. BAUMAN: Understood. And I understand that now because I'm sitting across the table and see the smiling face and explanations that I appreciate. But if you're going back to the final NOPR or the final notice, will that be --

MS. ARMSTRONG: I'll hand you the transcript and you can hand it back to me if I ever tell you something different.

MR. BAUMAN: Okay.

MS. ARMSTRONG: And we'll -- I mean, we'll -- I don't know that we'll

clarify it --

MR. BAUMAN: I'm not worried for myself, for other people that are referenced.

MS. ARMSTRONG: Yes. I don't know how we'll clarify it, but we'll try to make that as clear as possible.

MS. WIDDER: Well, and if you also look at the reg text that -- if you're going to submit written comments, if you just look at the regulatory text that's at the back of the NOPR document there's -- the definition is established there.

And if you had recommendations about incorporating that, or language that could be incorporated to indicate its -- the optional nature of the requirement we would welcome those comments.

MR. HON: Charlie Hon, True Manufacturing. I have some real serious questions about this because you effectively, if it's below 65 percent light transmittance therefore it becomes a solid door. Thereby

requiring less energy -- changes the energy allowance a great deal.

The majority of the losses through transparent doors are because of the difference in insulation capacities on a glass door versus a solid door. There's not the fenestration issues that are that severe unless you happen to put it right in direct sunlight.

So this could be a real stickler because if we're trying to do what we do which is save energy we're starting to put tinting into glass. And if we get too much tint on a piece of glass theoretically we could discover that we had 64 percent at a light transmittance at a certain -- I am assuming this is a fairly broad spectral range.

But if we drop to 64 percent light transmittance it suddenly falls under solid door which is more stringent. I'm not sure this is a very good idea at 65 percent.

MS. ARMSTRONG: So I think you understand the intent. Is there a better way?

You know, I think what we were trying to do is saying how do you determine if something is transparent or not. And this is one way, a definitive way, one could argue not a descriptive way. I mean it is a test. You can tell one way or the other.

But I get your point, especially with the standards rule going on.

MR. HON: Right. This is Charlie Hon again. Sixty-five percent may be the number that I'm concerned about.

Because we run some pretty dark shading into some wine cooling type designs. And it may not be 65 percent transmittance, but it's still performing as a glass door. The objective is to see through it.

And it may be that we may want to -- I'm going to go back and do some testing to see if that 65 percent number is

realistic. Or it may need to be 45 or 50 percent. But I think that 50 may be a number that's workable.

MR. BROOKMAN: Okay, thank you. Massoud?

MR. NESHAN: Neshan, Southern Store Fixtures. I also have an issue with this. When you have a self-serve counter display case a lot of times you put a mirror finish one way, or see-through mirror finish sliding doors in the back. That cuts down on the obviously how transparent the glass is. That's by the customer of course. How would that be treated?

MR. BROOKMAN: In the back of the cabinet?

MR. NESHAN: In the back of the cabinet, correct. I mean, all of a sudden you end up with a solid door in the back? That's --

MS. WIDDER: I don't -- oh, so there's glass on the back of the cabinet but

it's mirrored?

MR. NESHAN: One-way, yes. You can see from the back but not, you know, there is coating on --

MS. WIDDER: So, yes. This would be normal incidence from the exterior of the case. We'll have to clarify that. So if you're able to see through the glass and it meets the criteria in the direction, the intended direction of viewing, we'll have to work on that definition. So if you have suggestions please help. Or please submit them.

But in the intended direction of viewing if it meets the definition I think that would be the intent. If it's not optically transparent from both directions that it would still be glass. Transparent.

MR. WEBER: Collin Weber from Navigant. Just to pile onto that. I don't think the service over counter definition as it was proposed or as it was included in the

act last fall specifies a solid or transparent door at any point so I don't think there would be a conflict.

MR. NESHAN: Neshan again. It may not be included. However, when you're looking at a door, I mean based on the definition you have -- that case has doors on it. When we are calculating the TDA, the clear glass on the back falls as part of TDA. If it's not all of a sudden transparent anymore impacts it overall TDA and that's what the point is.

MR. HON: Charlie Hon. There are units in the industry which are not service over counter at all. They're just pass-through units, double-doored, or they -- the service people behind the unit can see what's in the unit. And they have a glass reflective panel on it which is kind of in the flower cases.

MR. BROOKMAN: Okay. Very helpful, very constructive additional

comments here before we move on. So do write really descriptive comments here to help the Department.

MS. WIDDER: Thank you.

MR. BROOKMAN: Thank you.

MS. WIDDER: Similarly to this definition of "transparent" DOE determined that there are not clear definitions in the CFR to apply that definition of -- that proposed definition of "transparent" to closed solid cases and closed transparent cases, or cases with solid doors versus transparent doors.

DOE determined to define these terms with respect to the equipment families that DOE uses to apply standards which is the closed solid and closed transparent terminology.

And to clarify this, DOE proposes to establish these two new definitions in the CFR, closed solid and closed transparent, as follows. Closed solid means equipment with

doors and in which more than 25 percent of the outer service area of all doors on a unit is not transparent, applying the proposed definition of "transparent" that we just saw.

Closed transparent means equipment with doors and in which 75 percent or more of the outer service area of all doors on a unit is transparent.

MR. HON: Charlie Hon. My concern on these definitions is specifically there's a series of units that are out there. Number 1 is that they're pass-through units. Quite often solid doored on one, glass doored on the other.

Yet technically the glass doors on the front may only have some trim around them which technically drops them below 50 percent that way because the solid doors on the back and the partial solidness of the front doors would drop you below 50 percent. And pass-through units are notoriously bad

because you still have heat loss, the additional door gaskets and things like that. But then you would immediately turn all those into solid units which is additional requirements on loading.

So, I would suggest that it would not say all units. It would say -- if you're going to do the 75 percent rule which unfortunately there is -- I'll get into the second argument in a second, but I would say whatever percentage we end up with on all units on one side of the unit.

Because pass-through units are usually never glass in glass. That just doesn't happen. But yet they're still every bit as transparent and the heat loss issues exist off the glass doors as they do off the others.

You also have a second set of issues on half doors quite often which is the top half of a set of doors is glass and the bottom half is solid. And those can be

problematic if we start classifying everything into 75 or more glass rather than 50 percent.

MS. WIDDER: So, just to clarify, you think 50 percent would be a better number here?

MR. HON: It depends on what -- number 1 is 50 percent on pass-through units is -- even 50 percent you probably have to drop to 45 because your technical definition was the frame around the door making it not -- you're actually losing part of it. So about 45 percent on pass-throughs. And if you have half and half doors, half glass, half solid, how do you define that? That's open for the Department to figure out what they want to do there. Because there's ratio differences there.

MS. WIDDER: Right. So the one issue that -- and I understand the difference in stringency of standards. But I would also

encourage everyone here and those on the webinar to think about in submission of their comments is the application of the standards.

So for those cases you're describing, Charlie, their standard is still based on total display area. And as that total display area, for example, is 45 percent of the doors that's also going to have an impact on the standard they have to meet.

MR. HON: You have a problem there because if you're talking self-contained equipment it has nothing to do with total display area. It's all internal volume.

MS. WIDDER: For self-contained. Yes.

MR. BAUMAN: This is Jeff Bauman from National. Agree with Charlie on both points. And again, as we're designing, if you're designing like Charlie's example the door that's got -- I'll say most units,

probably 50/50 is the cutoff when you design or you'll upsize the refrigeration system with the -- type of the system. You're reflecting where you would design that product at, if it's got glass doors in the front or solid on the back, where a lot of units if it's got a glass on one door, the right's glass and the other's left, about that 50 percent is where you're going to cut off and say you need to upsize that unit if it needs to be done. So I think 50/50, somewhere in there.

Going on with that I think Charlie's point about the percent, the way the definition is with the surface area of the door. I don't know what better definition would be and I'd think about that.

But it's somewhere where you can account for 50 percent of the doors excluding the frame because one guy could have a wider frame. Then you get into what your area and

what the definition of a glass door versus a solid door is. And it may be better to go in that direction rather than talking about the specific area of the door, 50 percent of the doors are -- 50 percent of the area of doors are glass or solid. So, I'll think about that.

But I think trying to get away from considering the border of the door non-transparent which the way this is written it would needs to be done. And I agree again that a 50/50 split, somewhere in that area, would be more applicable with how products are designed.

MR. BROOKMAN: Okay, thank you. Additional comments here? Charlie?

MR. HON: Charlie Hon. One thing we may want to add into the definition, let the Department just look at it is there is a difference between the size of a door and the size of a door opening.

A door opening is usually much

smaller than the door itself because you have your gasket material and everything else around it to keep it. So we may want to look at that very carefully and possibly consider ratio using the door opening size rather than the door frame size. Because the front surface of the door could be very, very large with a 3- or 4-inch frame around it for support reasons. But it really doesn't do you any good because the door opening on the actual case itself may be substantially smaller.

MR. BROOKMAN: Okay.

MS. WIDDER: Thank you for those comments.

MR. BROOKMAN: Anything else here? Nothing additional.

MS. WIDDER: Okay. This is sort of changing gears a little bit from the closed transparent versus solid definitions.

But another area that the Department believes needs clarification in

their definitions and scope of commercial refrigeration equipment is the application of standards for hybrid equipment versus non-hybrid commercial refrigerator-freezers.

DOE's regulations obviously currently cover commercial hybrid refrigerators, freezers and refrigerator-freezers and non-hybrid commercial refrigerators, freezers and refrigerator-freezers.

There appears to be some confusion regarding the differentiation of hybrid from non-hybrid equipment. And to clarify this the Department is proposing changing the definition of commercial hybrid refrigerator, freezer, refrigerator-freezer which is currently defined at 10 CFR 431.62 and breaking it into two definitions, a commercial hybrid definition to just specify what is commercial equipment and then explicitly defining refrigerator, freezer and refrigerator-freezer. And I've got a slide

that sort of clarifies all this.

First we're going to talk about the definitions and then there will be a slide that sort of hopefully helps out all these confused looks in the room.

So, the definitions that the Department is proposing in addition to removing the current definition of commercial hybrid refrigerator, freezer or refrigerator-freezer are "commercial hybrid" means a unit of commercial refrigeration equipment consisting of two or more refrigerated compartments that are in two or more different equipment families as defined at 10 CFR 431.66 which is where all those standards, the standard table is, and which is sold as a single unit. So that would be two compartments in the same piece of CRE that are from different equipment families.

A commercial refrigerator-freezer non-hybrid is a unit of commercial refrigeration equipment consisting of two or

more refrigerated compartments where at least one refrigerated component is capable of operating at or above 32 degrees Fahrenheit, meaning meeting the definition of refrigerator, and another component is capable of operating below 32 degrees Fahrenheit, meeting the definition of freezer.

So, to bring all these together we've got examples. On the very left-hand side we have a commercial refrigerator-freezer that meets the new definition of commercial refrigerator-freezer that the Department is proposing.

You can see it's one unit. It has two transparent doors so it's in the same equipment family, vertical closed transparent. One component is at zero degrees Fahrenheit and one is at 38 degrees Fahrenheit. Or it could be slightly different temperatures but one meets the freezer temperature range and one meets the

refrigerator temperature range. But it does not meet the hybrid definition because they're both vertical closed transparent.

Commercial hybrid refrigerator is a unit where both of the components are the same temperature class, but are in different equipment families. So in this example the one on the left is glass. It's a vertical closed transparent refrigerator.

And the one on the right that's blue is -- a different color blue is meant to indicate a solid door. It's vertical closed solid in this example. So two equipment families, vertical closed transparent and vertical closed solid, but the same temperature classes. So that would meet the definition of commercial hybrid refrigerator, meeting the commercial hybrid definition and the refrigerator definition, but not the commercial refrigerator-freezer definition.

And on the right-hand side now we meet both commercial hybrid and commercial

refrigerator-freezer definitions. We have two different components. One which has a glass door and is at zero degrees Fahrenheit meets freezer definition, and one has a solid door, vertical closed solid, and is at the refrigerator temperature. So it meets both the definition of commercial refrigerator-freezer and commercial hybrid.

And hopefully that clears things up a little bit. We're going to establish all these definitions in the CFR and DOE requests comment on the clarity and sufficiency of these definitions for commercial hybrid and commercial refrigerator-freezer.

MR. HON: Charlie Hon, True Manufacturing. Your definition of a model with two components, middle section there, two components greater than 32 degrees. Looks like one has a solid door, one has a glass door. How do you define two components?

MS. WIDDER: They would be -- the two refrigerated spaces would be physically separated. Not necessarily thermally isolated, but physically separated. So they're -- where there's a black line there would be a solid wall separating the refrigerated compartments. Perhaps that's not common.

MR. HON: Charlie Hon. More common is -- this is an unusual circumstance. I'm still confused by this because why can't -- there's also no discussion up there of freezer-freezer.

MS. WIDDER: Well, freezer-freezer would apply same as this center column except for they would both be zero degrees. But physically separated.

If they're not physically separated -- maybe this will help. If they're not physically separated compartments they -- both doors which are a different type open to the same compartment. This is just a

commercial refrigerator and you would apply the definitions of transparent door -- closed transparent and closed solid and transparency that we've proposed previously to determine its equipment classification. So in our current definition if this doesn't have any other doors this would be a transparent -- this would be a solid unit.

MR. HON: I am totally confused. I'm sorry.

MR. BROOKMAN: This, the middle example, Charlie, that's not something you see in practice?

MR. HON: There are -- there are becoming popular dual temps but there's really -- the most common use of this is wine coolers where you have half the compartment's for white wine and half for red wine. And there's usually about a 10 degree difference in storage temperatures. But they would definitely be above the 32 degree Fahrenheit rule. But they do not necessarily have a

solid separator between the two, but more of a solid shelf between the two so that you limit the air flow crossover. That's what I'm concerned about.

MR. BROOKMAN: Solid shelf. It's not a vertical?

MR. HON: Well, you can -- how do you define it? It doesn't say they're vertically separated on any of the definitions above.

MR. BROOKMAN: Right. I see, right.

MR. HON: Horizontal separation would happen more commonly. And that's what I'm looking at here is that there's a possibility because it's not defined as a vertical separation.

And in the item up there it's greater than 32 degrees which may or may not be the case. But defining a separation. Because most shelves in commercial refrigeration are porous, whether they be

wire shelf racking or different things, but not all of them are. And one of the ways you can separate and differentiate temperature gaps is by having a solid shelf.

MR. ANDERSON: Tim Anderson, Hussmann. Sarah, I think that the definitions that you put forth are relatively clear.

One thing that's not clear to us is how would DOE handle a piece of hybrid equipment? Let's just say it's a hybrid refrigerator that contains at least one compartment that's not covered by the DOE test procedure.

So, for example, I have half of a cabinet that's a service over counter and half of that same cabinet, it's a complete unit, is a salad bar. And keep in mind that this could be a self-contained cabinet with one unit.

MR. BROOKMAN: Ashley.

MS. ARMSTRONG: Good question.

It meets the definitions, let's put it that way.

So I'm going to go with my preliminary off-the-cuff answer. We will officially I guess think about this a little more.

My initial response would be if it meets the definition, which that would, it would be subject to our test procedure provisions and our standards for the service over the counter.

Now, that being said, if there's an issue because part of it's not like the salad table or the buffet table or whatever is not covered. So let's say you believe that the measurements coming out of the test procedure would be representative, you need to get a waiver. Does that make sense?

So in other words, if we're making you account for the entire refrigeration system but you believe that's not representative of its use because only

part of it is covered you need to apply for a waiver and you need to explain why and how you would do it. That's my best off-the-cuff answer.

MR. ANDERSON: Yes, I understand. So, if it were a remote refrigerator and you could separate the two circuits --

MS. ARMSTRONG: That would be easier.

MR. ANDERSON: -- so to say we would assume that the service over counter portion would be tested, and that energy counted, and the other portion would kind of be --

MS. ARMSTRONG: I would say don't assume anything. If it specifically doesn't tell you to do that in the test procedure, come to us and get that.

MR. ANDERSON: Okay, thank you.

MR. BROOKMAN: Yes, Jeff.

MR. BAUMAN: I have confusion I guess similar to Charlie's. And to me what I

think may be missing here is whether a unit has one refrigeration system, one cooling system and it could share two separate cooling, two evaporator coils, or whether it's sharing air between the two spaces. Because there's some units that could run, like Charlie mentioned the wine coolers that will run at a little bit different temperatures and they'll share air between the two compartments. They have one evaporator. My interpretation of what I'm reading here is that type of thing would be more of a hybrid. If you have a unit that's -- again, we build commercial refrigerator -- refrigerator refrigerators that are two temperatures but they're developed just like a dual temp and they have two refrigeration systems, insulated walls between the two.

So to me that would be more consideration for the definition is whether they have a shared refrigeration system or

two separate systems.

MS. ARMSTRONG: Okay.

MR. BROOKMAN: We have two questions that are coming from participants on the web. Ron Shebik asks "For hybrids, do they have to share the same refrigeration system or unique systems?"

MS. WIDDER: As the definitions are currently proposed, no, they don't need -- it can be either. These definitions apply whether there are separate refrigeration systems or the same refrigeration system.

We just received comments on perhaps considering that differentiation in addition to the proposed definitions here.

MR. BROOKMAN: Okay. And Joe Sanders writes "The middle example is currently purchased by McDonald's." No physical separation exists between the interiors except for a wire shelf.

MS. WIDDER: I wouldn't -- not having physically seen the unit.

MS. ARMSTRONG: It's a refrigerator.

MS. WIDDER: Right. I would not think that it would be a hybrid refrigerator since they share the same refrigerated compartment and they're not physically separated.

MR. BROOKMAN: And they're the same temperature.

MS. WIDDER: And they're the same temperature. So they would -- they would actually not be on this slide. They would be a commercial refrigerator.

But I've not seen the wire shelf so I'm just going to assume.

MS. ARMSTRONG: Let me just read this one because it's going to require some follow-up.

So Joe also asked if DOE could publish the formula used to calculate maximum daily energy consumption for each example.

Okay, but I'm not exactly sure

what you're asking so I prefer that we just follow up offline. I mean, I'm happy to give you whatever additional information that we can to help clarify this, but I can't answer the question because I don't quite understand it.

So I'm going to move to Charlie. But Joe, we can follow up separately. You know how to reach me.

MR. BROOKMAN: Okay, Charlie.

MR. HON: Well, I think that the -- I think the middle classification would be more clear if people looked at it.

Because if you take a service over counter unit, quite often they have a lower level refrigeration which would be closed door type unit down below them. And they're all operating at the same conditions, but quite often a butcher shop doesn't want to put all of his meat out in the same conditions under the lights. So he puts one piece of meat out and then once it's sliced

up he'll go and pull another piece from down below. And I'm assuming that's basically what the concept of a commercial hybrid is about.

MS. WIDDER: Correct. That's a good example.

MR. BROOKMAN: Jeff?

MR. BAUMAN: And there are some refrigerators that are built with -- two-door units with air flow down the middle and it's got panels with louvers or openings in it to distribute air to both sides.

Those have never been as far as I know considered as -- I've never considered that a hybrid. I don't know anybody -- maybe other people. But it's just a single temperature.

Both have doors but there's panels in the middle because for air flow reasons, for customer reasons or whatever that's how you want the air flow going. But that would be considered a hybrid? It's just

a single temperature.

MS. WIDDER: If it's physically separated with a wall which is what I'm understanding, yes, that would be a hybrid unit.

MR. BAUMAN: Okay. We'll have a lot of comment about that.

MS. WIDDER: Okay.

MS. ARMSTRONG: There may be a better way to do this, and it may be that it needs to be thermally isolated components or something -- maybe that's where you were drawing your line. So, think about that in your comments. It doesn't have to be this way.

We get a lot of questions about this generally. So we're trying to come up with a way to address them that provides guidance to everyone.

I can tell you I probably get several a week alone just on hybrids. And especially if you guys were to look -- I

don't know how many of you have tried to look online, but if you look at the hybrid templates for certification right now that are online, just creating those was a very difficult task, let alone trying to use them. So I can understand where you're coming from.

So what we're trying to do is simplify this. We have standards on the books for hybrid. It's very clear how you calculate those. It's just a matter of people are saying, well, I can't tell if my unit's a hybrid.

How do I tell that? So, where should DOE draw the line? Should it be a thermally isolated component -- or compartment. I'm sorry, not component, compartment.

Or if it's not and it's just a wall and you do have some sharing which is typical of residential, you know, is that something that you consider one compartment,

a single compartment? Or what if you have some sharing but they're at different temperatures? What do you do? So, that's where we're going.

MR. BROOKMAN: Steven.

MR. KING: Yes, Steve King with Royston LLC. Back to the Hussmann comment.

It's basically like in a salad bar situation. It's a percentage ratio how much would be salad bar, then how much would be basically considered refrigerated space.

MS. ARMSTRONG: So, I get that part. That's what you do today. That's not in our regs. It is for the determination of which standard applies. It's not necessarily in our regs for determining volumes and other things that you need.

So that's where we're going here. We're trying to figure out what do you guys do today to determine. And I'm not sure you all do it the same way based on the questions I've gotten.

MR. BROOKMAN: Neshan.

MR. NESHAN: Neshan, Southern Store Fixtures. In the middle configuration you put that they have to be from two -- from different equipment families.

MS. WIDDER: Correct.

MR. NESHAN: Is that a requirement, or they can be same family?

MS. WIDDER: In order to be a commercial hybrid unit they have to be from different equipment families. Two compartments from different equipment families.

If they're not from different equipment families -- so, for example, in the center example if both of those were clear doors it would just be a commercial refrigerator.

MR. NESHAN: Except, you know, for example, for a -- whether it's a closed door or open display case there are certain temperature requirements, 38 plus or minus 2.

And then we have the lowest operating temperature equipment. They might be exactly the same type of equipment, but temperature requirements are different. So that would not be considered hybrid?

MS. WIDDER: No, because those are subject to the same -- they're not separate equipment families. Right? So, that would be more like our example over here on the right.

MR. NESHAN: Hold on, hold on. What do you mean they are not the same? Physically they are not but temperature-wise they're different.

MS. WIDDER: Yes, but temperature does not differentiate equipment families. So --

MR. BROOKMAN: You've got to use the microphone. We want this on the record. Please say your name.

MR. SUHARNO: Anwar Suharno from Royston LLC. If you have a dual temp unit on

a single compartment you can switch back and forth between low temp and medium temp. You will have different --

MS. WIDDER: Yes, we're going to get to that one too.

MS. ARMSTRONG: That is not a hybrid. I can tell you that one.

MS. WIDDER: Those are not hybrids. But those are also -- so, like our example on the very left, that it's two compartments, both with glass doors that have different temperatures, that's not a hybrid unit.

The configuration of doors on the geometry of the unit is what determines equipment families. If you look at those -- I wish I had a slide of this. There's a table in the CFR where you look up standards. It's in 431.66 and there's column headings. And one of the headings is equipment family.

And you'll -- things like vertical closed transparent, semi-vertical

closed transparent, solid, open. Those are the terms that are in that row and so those are the things, whether it's transparent, solid, or open. And it's geometry, horizontal, semi-vertical, vertical are the things that determine equipment families.

The temperatures are a separate differentiator, but they're not used to determine whether or not it's a hybrid.

MR. NESHAN: Neshan again here, Southern Store Fixtures. But when you're testing the equipment one of the provisions of it is that we can test the case to lowest temperature that that case can operate at.

MS. WIDDER: Right, so --

MS. ARMSTRONG: No, I disagree. So, if you cannot operate at the rating temperature required then you are required to test at the lowest temperature it's capable of operating only if you cannot meet the temperature in the regs. So, you just don't get to pick, you have to prove that you

cannot meet the rating temperatures in the reg, the integrated average temperatures in the regs. And if you cannot then it goes to the lowest.

MR. NESHAN: Correct. No, I understand that.

MS. ARMSTRONG: Okay.

MR. NESHAN: But we have a floor display case. I will not be able to test that at 38 degrees. I will be testing it at 50 degrees. You see?

MS. ARMSTRONG: If that's the lowest it ever goes.

MR. NESHAN: Correct. But then, however, they are from the same product family. But --

MS. ARMSTRONG: You're okay.

MR. NESHAN: -- according to this you are telling me that I cannot.

MS. ARMSTRONG: No, no, no, it's not.

MS. WIDDER: No, you can still

rate that.

MS. ARMSTRONG: Let's talk offline. Because that's not a hybrid. You're not talking about a hybrid here.

MS. WIDDER: A lowest application product temperature case --

MR. NESHAN: No, I understand. But they're combined in the same frame. There are two pieces.

MS. ARMSTRONG: I get it. I get it. We can go from there.

MS. WIDDER: So we welcome comments on that. For that case you would test -- okay, we'll just keep going.

MS. ARMSTRONG: It's the first example, it's not the second. It's two different rating temperatures. It's not a hybrid. So you're going with --

MS. WIDDER: You'd go 38 and 50.

MS. ARMSTRONG: Yes, you're going a side that's at one rating temperature and a side that's at 50. That's the difference

there.

MR. BROOKMAN: The one on the left.

MS. ARMSTRONG: Well, it's his -- it's looking at it -- it depends.

MS. WIDDER: On the left but different numbers.

MS. ARMSTRONG: Yes.

MS. WIDDER: Okay?

MS. ARMSTRONG: So it allows you to do what you're describing, it's just not hybrid that allows you to do what you're describing. Okay?

MR. BROOKMAN: Okay? Additional thoughts, comments here. This is complicated. I think we're getting -- there's going to be more. Let's keep going.

MS. WIDDER: Yes, okay. Similarly around temperatures there are three different temperatures that are referenced in the DOE test procedure and application of standards. The rating temperature which we

were just discussing, the operating temperature of the equipment, and the integrated average temperature which is the temperature measured during the test procedure.

DOE has received inquiries from interested parties about the relationship of these temperatures and how to determine equipment classification versus how the equipment is tested.

So DOE proposes to establish new definitions for rating temperature and operating temperature in the regulations to help clarify the application of these terms and what these terms mean.

The rating temperature is in the standards table at 431.66(d)(1). That's the table of standards. It describes the integrated average temperature at which a model of commercial refrigeration equipment should be evaluated in accordance with the DOE test procedure unless that piece of

equipment is rated in accordance with the lowest application product temperature provision which is only applicable if it can't meet the rating temperature for that equipment class. So that's the rating temperature.

The operating temperature is also present in the same table. And it refers to the range of integrated average temperatures at which the unit of commercial refrigeration equipment is capable of operating.

So for refrigerators that's greater than or equal to 32 degrees, or I forget where the equal to is. For freezers it's less than 32 degrees and for ice cream freezers that's established in the definition.

And then the integrated average temperature is in the test procedure, 431.64, is the average refrigerated compartment temperature determined in accordance with the DOE test procedure for commercial

refrigeration equipment. And that's defined in the regulations currently as the average of all test package temperature measurements taken over the course of the test.

So, to clarify this, DOE is proposing these two new definitions on the left in the box, the integrated -- the rating temperature means the integrated average temperature a unit must maintain during testing. And the operating temperature is the temperature range of -- the range of integrated average temperatures at which a commercial refrigeration unit is capable of operating.

Similarly, DOE is proposing new definitions for the equipment we've been discussing, commercial refrigerators, commercial freezers and commercial refrigerator-freezers that similar to the definition for ice cream freezer incorporate these operating temperature conditions into the definition. So it's more clear.

A commercial refrigerator operates at greater than 32 degrees Fahrenheit. And the definition proposed is a unit of commercial refrigeration equipment in which all refrigerated compartments in the unit are capable of operating at or above 32 degrees Fahrenheit.

A commercial freezer, the operating temperature established in the standards is less than 32 degrees Fahrenheit.

A unit of commercial refrigeration equipment in which all refrigerated compartments in the unit are capable of operating below 32 degrees Fahrenheit is the proposed definition.

And a commercial refrigerator-freezer is a unit that has one compartment that is capable of operating at or above 32 degrees Fahrenheit and one compartment that is capable of operating less than 32 degrees Fahrenheit as we previously defined.

And then the ice cream freezer

definition is the existing definition that's in the regs right now.

This very last slide I think brings up the type of equipment that was referenced previously. Some models feature operating temperature ranges that cause the model to span multiple equipment classes. Do you want to comment first? Sure.

MR. BROOKMAN: Charlie.

MR. HON: Charlie Hon. Am I mistaken? I thought it was -15. On this temperature ice cream freezer. Okay, thank you.

MS. WIDDER: That's not proposed to change, so if it was -15 then that was an error.

MR. HON: Okay. I just wanted to clarify because I'm going --

MS. WIDDER: An editorial error.

MR. HON: Okay, just wanted to verify.

MS. WIDDER: I apologize for

that.

MR. HON: No problem.

MS. ARMSTRONG: The rating temperature is -15.

MS. WIDDER: Yes, I think the rating temperature is -15 but the definition is -5.

MS. ARMSTRONG: That's correct.

MS. WIDDER: Yes.

MR. HON: Why would you have it when you couldn't reach the definition? Wouldn't it just be a freezer?

MS. ARMSTRONG: It's anything less than -5. So it goes down.

MS. WIDDER: So a freezer -- I'll just read the definition for everyone. A commercial freezer that is designed to operate at or below -5 degrees Fahrenheit, and that the manufacturer designs, markets and intends for storing, displaying, or dispensing of ice cream is an ice cream freezer and it's rated at -15 degrees

Fahrenheit. Does that help clarify?

MS. ARMSTRONG: Right, that's the difference. The slide's accurate, it's just that it's -- anything under -5 is considered an ice cream freezer if it's got the other intended for ice cream. It's just you have to test it at -15. If you can't get down to -15 that's when the LAPT things kick in.

MS. WIDDER: Right.

MS. ARMSTRONG: This is why we have questions on rating temperatures and integrated average temperatures, by the way.

MS. WIDDER: And hopefully these definitions help clarify. If they don't, please --

MR. BROOKMAN: So, thank you, Ashley. We have a question from Charity Njau. Pardon me if I butchered your name. "Does this mean that commercial wine cellars are covered products?"

MS. WIDDER: Commercial wine cellars?

MS. ARMSTRONG: Chillers.

MS. WIDDER: Chillers. A commercial --

MS. ARMSTRONG: Yes.

MR. BROOKMAN: Cellars.

MS. WIDDER: If it's a unit, if it meets the definition of commercial refrigeration equipment as defined and meets the definition of commercial refrigerator defined here then yes.

MS. ARMSTRONG: So, what this is trying to show you is that --

MR. BROOKMAN: Ashley Armstrong.

MS. ARMSTRONG: Oh, sorry.

MR. BROOKMAN: Go ahead.

MS. ARMSTRONG: What this is trying to show you is just because it can't be tested at the rating temperature doesn't mean it's not covered and subject to DOE's test procedures and standards.

So what we're trying to make clear here is that the definitions are based

on operating temperature, and the operating temperature, there's large ranges.

And so just because something operates, for a wine chiller it may be above 32 and maybe it can't operate at the rating temperatures prescribed in the test. Well, you still have to test it. You have to test it at the lowest temperature it's capable of operating. You just aren't excluded.

And that's what we're trying to make clear with this. There's a difference between determining scope of coverage. It meets the definition, period. And something that can't be tested because it's not capable of reaching that rating temperature.

MR. BROOKMAN: Yes, Bruce.

MR. HIERLMEIER: In remote equipment how cold the unit can get often depends on how large the condensing unit system is.

So, when we test in our lab we can put a small condensing unit system on it

for that test and not be able to get very cold. You could go to a different test laboratory that has a system that's designed to run 10 or 15 cases at one time and they can get very cold.

So there's an inconsistency in a remote system as to how cold the unit can get because it's actually based on the test equipment that can be supplied at any given point in time. It's not like a self-contained that has a condensing unit in it. You turn it down, the condensing unit runs flat out and it's finished.

So, how does DOE plan to make that a uniform test?

MS. WIDDER: There are provisions in the lowest application product temperature definition and test procedure that establish specific requirements for remote cases that I am not remembering off the top of my head but have to do with setting the suction temperature on the remote case at a

temperature that allows you to maintain the intended rating temperature, the lowest application temperature for that equipment.

But I would encourage you to review that and to the extent that it's not sufficient please submit comments.

MR. BROOKMAN: Collin, do you want to add in here? No? Okay. Nick.

MR. SCHRINER: On the integrated average temperature, I don't know if you're familiar, above 32 degrees by NSF-7 you have to be able to maintain a temperature below 41 degrees.

On the integrated average, say you have to turn down your evaporator to maintain this below 41 degrees by NSF-7 standards. Does DOE care if our integrated average is below the specified 38 degrees if we can get an average of 36 to maintain? Or is it -- because usually we do that test at once.

MS. WIDDER: So that's also -- in

the previous, the 2012 test procedure final rule in addition to the lowest application product temperature DOE established provisions that equipment tested in accordance with NSF-7 at lower test -- internal refrigerated temperatures could be submitted for compliance with DOE's energy conservation standards. However, you're still subject to the same standard as if that equipment was rated at the prescribed rating temperature.

MR. SCHRINER: So as long as we meet the 38 or below --

MS. ARMSTRONG: In the future.

MS. WIDDER: In the future, not today.

MS. ARMSTRONG: The key here is that we added those provisions to apply with amended standards. So, they do not apply today. So right now you're required to meet the rating temperature +/- 2 irrespective of NSF.

We did address this comment and going forward in the future, and what I mean future, it's going to be compliance with amended standards. We don't know the date yet. You guys know the NOPR still is out. So it is in the future some ways down the road.

MR. SCHRINER: So in other words we're going to have to perform two different tests. One day get our integrated average --

MS. ARMSTRONG: You could petition for a waiver to test at a lower temperature and explain why. You could do it that way. Right now that's what our regs require, yes.

MR. BROOKMAN: Anything additional?

MS. ARMSTRONG: You could submit comments to this NOPR that we should consider modifying that too, or at least consider it, and see if DOE -- and why we should allow it now, the use of it now. I'm just telling you

what our regs are right now so it's clear.

MR. SCHRINER: I'm confused I guess. What does NSF-7 really matter to DOE as long as their integrated average is 38 degrees? Can we just run a test to meet DOE standards and to meet NSF standards?

MS. ARMSTRONG: Ideally, yes. And we've acknowledged that that should be the ideal scenario. And as long as the NSF standards are more conservative, so a lower temperature would give you a more conservative rating and that's what you choose to do. We don't require that but that's what you choose to do. I think that was our acknowledgment in the 2012 rule.

The problem was we did not adopt those requirements for now. So, when you submit comments if you believe we should adopt those requirements for implementation now please explain why.

MR. SCHRINER: Thank you.

MR. BROOKMAN: Okay. Sarah, did

you finish presentation on 36?

MS. WIDDER: No, I did not. We have to get there.

MR. BROOKMAN: I'd like you to do that.

MS. WIDDER: Yes.

MR. BROOKMAN: Yes.

MS. WIDDER: And this is the last slide. But it does relate to the definitions of commercial refrigerator and commercial freezer that we just discussed.

DOE is aware that some models of commercial refrigeration equipment feature refrigeration systems or integrated average temperatures, operating temperatures that span the range of multiple equipment classes as we've just defined them.

For example, a CRE model with an operating temperature range of 15 degrees to 36 degrees meets the definition of both a commercial refrigerator and a commercial freezer.

This is a hypothetical case. I don't know that it actually exists.

DOE proposes that equipment capable of operating within multiple equipment classes would have to be tested and certified as each of those equipment classes. So this case would have to meet the requirements for a commercial refrigerator and a commercial freezer.

Now, because this case can only operate down to 15 degrees Fahrenheit the lowest application product temperature provision would be applicable for this case when rated as a freezer.

Now we request comment on our definitions. DOE requests comment on the definitions for operating temperature and rating temperature. We previously discussed the definitions for commercial refrigerator and commercial freezer, and the application of those definitions to variable temperature equipment.

MR. BROOKMAN: So we'd like to hear comment on 34, 35 and 36. And let's do that now. And then shortly we're going to take a break. Any additional comments here?

These are new proposed definitions. It would be very helpful for the Department to receive some preliminary feedback on these if you can offer it here. Ashley?

MS. ARMSTRONG: So, Ron on the phone asked how do you differentiate without changing nomenclature. And I'm not sure I understand the question. Yes, let's unmute him.

MR. BROOKMAN: Can he speak -- yes.

MS. ARMSTRONG: I mean, really what this is saying is that if you have a model and it operates as a refrigerator and it operates as a freezer.

So you design a model that you had such a wide operating range that it

essentially spans a refrigerator and a freezer.

And the user basically is allowed to toggle between the two, whatever one they want to use depending on the application.

We're saying you have to do both. You have to run the test as if it was a refrigerator, you have to run the test as if it was a freezer and you have to certify that. You have to be compliant with that.

MR. HON: This is Charlie Hon. I am assuming this means only if -- some units can cross over but we don't intend them to and we don't market them that way. We would only market them, say, as a freezer, especially something like an ice storage cabinet which operates in the mid-twenties. That thing could be turned warm enough to where it would technically fall in the refrigeration category, but it never is marketed as that. It is exclusively marketed for an ice case.

MS. ARMSTRONG: So, I will say you've got the intention correct. That was the intention.

Our operating temperatures are pretty distinct. They cut off. So if you believe we should provide additional clarification for the wiggle room you're welcome to submit comments. If that makes sense.

MR. BROOKMAN: I'm noting that on 34 there are two new definitions and on 35 there are three.

MS. ARMSTRONG: Ron, you're unmuted if you want to explain to me your question. If I didn't clarify.

MR. BROOKMAN: About nomenclature. We can't hear you if you've unmuted your phone.

MS. ARMSTRONG: All right, well we can follow up later if it happens to come up. Or I can follow up offline if he has more.

MR. BROOKMAN: Any thoughts on these definitions? This is my last prompt.

MS. ARMSTRONG: Let's do a break before we move into the next section.

MR. BROOKMAN: Yes, let's take a break. It's 10:35 almost. We're due for a break. I'm in no hurry to get out of here today. I know some of you might be --

(Laughter)

MR. BROOKMAN: -- might be facing weather though when you depart. So I'm thinking that we should try and press on and get this done before we break for lunch. Our original end time is supposed to be 1 o'clock-ish.

So go and get coffee, get a piece of fruit, or a pastry, or something to sustain you through probably a 1 o'clock or so end time, okay? And let's go quickly to get coffee.

You know, you must wear a badge inside the building. The restrooms are on

both ends of the hall. Coffee's on the ground floor, down the elevator shaft to the ground floor and it's there to the left.

So good progress, really good progress, good commentary. We will resume at 10 until 11, 10 until 11.

(Whereupon, the foregoing matter went off the record at 10:34 a.m. and went back on the record at 10:54 a.m.)

MR. BROOKMAN: At my peril, at our mutual peril I want to -- since you had time to think about it and talk about it during the break any additional thoughts on slide 34 and 35? Particularly about the definitions. The comment so far on definitions has been very, very helpful. Any additional thoughts on that before we move on?

MS. ARMSTRONG: I think we're good.

MR. BROOKMAN: You think we're good, okay. Okay, nothing additional then.

Yes, yes, Bruce.

MR. HIERLMEIER: The only thing I thought without reading the standard that in the past if you had a dual temperature unit you tested at the lowest temperature it could obtain. And I don't know if this changes it and now you have to test also at the medium temperature because that will have an impact on the performance of the equipment.

Most equipment requires additional energy to reach low temperatures. Some of that energy is backed out automatically when a customer switches to a higher temperature level. Some of that energy is now -- like fan motors typically are two-speed due to the cost.

So, that could minimize the utility of some of this equipment for some of our customers. We don't sell a lot of them but the ones that do have them like dual temps.

MR. BROOKMAN: Okay. Okay, thank

you. Okay, so we're going to move on --

MS. ARMSTRONG: Can I actually?

MR. BROOKMAN: Yes, Ashley.

MS. ARMSTRONG: Can I ask a question about that though? Are you telling me then that because you have to test at the medium temperature as well? How would that impact the -- I mean, if you're already testing at the low temperature, the more consumptive temperature, and you have to test at the medium temperature because it now is a freezer and a refrigerator.

I understand that you may not have been running the test before so if you told me that's additional tests, that's additional testing cost, I get that part.

But why is it a utility issue unless you have to actually change the design to meet the standards?

MR. HIERLMEIER: Well, changing the design to meet the standards will increase the cost to the customers.

MS. ARMSTRONG: Does it not meet the standards now?

MR. HIERLMEIER: It potentially wouldn't meet it as a medium temp. It would meet it as a low temp at the lower one, but all the energy isn't necessarily backed out when it's run as a medium temp. All the door heat isn't backed out --

MS. ARMSTRONG: And your position is you should be allowed to sell a refrigerator, a single unit that operates as a freezer and a refrigerator as long as it meets the standards in one configuration. Is that your position?

MR. HIERLMEIER: Yes, the lowest temperature.

MR. STARR: This is Louis Starr with NEEA. How about another option is that they make the refrigerator so that it can't operate. In other words, if they lock it out in the hardware so it won't operate in those other modes then that would be fine.

In other words, if they're not expecting to meet the standards and it's not going to be operated in that mode if it's locked out. That could be an option.

MS. ARMSTRONG: I think they're offering it for sale specifically to be operated in that mode. And they're saying it should only have to be tested and compliant with one of those options.

MR. BROOKMAN: Louis, you want to comment?

MR. HON: This is Charlie Hon. I have a question. Is that because of marketing of the product at two temperatures?

MS. ARMSTRONG: Are you asking me? What do you mean?

MR. HON: Okay. If we would -- we have some equipment that it can drift over.

MS. ARMSTRONG: So I get the drifting. I'm saying actually dual temp that is meant to be a refrigerator and a freezer

and you just have like a toggle or something like that.

It seems like I'm hearing that the position -- I didn't understand the utility argument. I only understand the utility argument if it's such that one of those positions isn't compliant and requires a redesign.

MR. HIERLMEIER: When it moves up to the medium temp it would require a redesign. You'd have to change more of the loads to use less energy at medium temp.

MR. BROOKMAN: Okay, Bruce. Thank you. Did you wish to comment more, Louis?

MR. STARR: Well, it just -- it seems to me that if they're marketing to operate in multiple temperature ranges and multiple classes then it needs to meet the efficiency requirement of those cabinets if that's the specific marketing. That would seem like the logical thing to me.

MR. BROOKMAN: It needs to be compliant.

MR. STARR: Right.

MR. BROOKMAN: However many categories of product that you wish to play in.

MR. STARR: Correct.

MR. BROOKMAN: Yes, yes, Tim.

MR. ANDERSON: Tim Anderson, Hussmann. So, kind of further on that point. Looking at the second bullet on slide 36 it says DOE proposes that equipment capable of operating within multiple equipment classes. Is a better word than "capable" "intended?"

My concern is that we certainly have low-temperature cabinets that are only ever intended to operate at low temperature. But certainly you could connect them to a remote condensing system and operate in an evaporating temperature that made the equipment medium temp. So it's capable of operating at medium temp, but that's not our

intent. It's not marketed that way.

MR. BROOKMAN: You're not shipping it that way.

MR. ANDERSON: It's a remote case. It's a component of a larger system.

MS. ARMSTRONG: He doesn't know, yes. So I think that gets somewhat -- that's a different point but it somewhat gets to my point that I made to Charlie earlier.

You know, the way we've defined it in here, those operating ranges are cut and dry. If it falls below it goes into this dual -- if it falls below or above in capability it goes into that other bucket.

So if there is additional language that you would like the Department to consider about marketing, intended operation, in addition to capability we would need to understand how you draw the line, why we should draw the line.

I mean, someone could also offer one -- I'll tell you the counter. Someone

could offer one and say, you know, it has a toggle button very clear that says -- I'm just making this up, by the way -- it says refrigerator on the left, it says freezer on the left. But oh, well, I didn't intend for it to ever be used as a refrigerator. So how do we bridge that gap is what I'm asking.

I'm not saying you do that, I'm not saying anybody in the room would ever do that. I'm just saying that's the counter.

MR. NESHAN: Neshan, Southern Store Fixtures. On dual temp cases, especially remote, not necessarily -- even if it's a dual temp case, not necessarily the case would have a toggle switch.

MS. ARMSTRONG: I'm simplifying.

MR. NESHAN: Yes. It is at the discretion of the refrigeration equipment manufacturer to have the control or the switch at the rack or at the case. So if they have it at the rack the case manufacturer would have absolutely no idea if

the case is going to be used for a medium temperature application or not.

MR. BROOKMAN: Ron, we hope, is unmuted and he wants to speak. So Ron, hopefully you can get in here. Speak. We're not hearing anything, Ron. Let's try it again in a little bit. We're hoping to hear from you. Let us know. Emily will let us know when you can get back in here.

Okay. I think we covered that sufficiently for right now. Let's go to Collin.

MR. WEBER: All right. Thanks, Doug. So right now we're going to move into talking about some additional clarifications to the test procedure.

The first of these will be with respect to treatment of equipment features and accessories. And so what this stems from is the summer 2013 reg neg sessions which most of you in this room were part of for CC&E of commercial HVAC refrigeration water

heating equipment and in which issues were raised by participants regarding treatment during the test procedure of specific equipment features, components and accessories which may be in place on certain basic models of CRE.

The following slides discuss some specific features and components and accessories, and present proposals on how these items should be treated under the test procedure. These are basically intended as proposed codifications of what was agreed upon through consensus vote during the reg neg process.

So hopefully this should move fairly quickly and smoothly because most people have seen this before and voted in approval of it. So we're just going to go through these on a feature-by-feature basis.

The first of these features, customer display signs and lights. These are additional signage, exterior, outside the

body of the refrigerated cabinet for the purpose of advertising the product. Optional, not integral to the cabinet and do not serve to illuminate product which is inside the body of the cabinet. So it's completely exogenous to the function.

The proposal from the reg neg was that supplemental lighting existing solely for purposes of advertising or drawing attention to the case and which is not integral to the case would not be operated during testing under the DOE test procedure.

And so as an administrative note we don't have any comment boxes on all of these. If there are any comments, interject at any point.

MR. BROOKMAN: I think that's the way to go. Comments here? No comments here.

MR. WEBER: All right. Second feature, condensate pan heaters and pumps. Many CRE types come with means of removing condensate, melt water. Some do it in a

completely static manner using wicking kits and that sort of thing.

However, others come equipped with electric resistance heaters that vaporize the water and others come equipped with pumps which pump the melt water to an external drain similar to how a remote condensing case would be set.

The proposal that heaters and pumps would be installed and operational per ASHRAE 72 under the accessories section for the entirety of the test including stabilization of pull-down, steady state and performance testing period.

It was agreed during the reg neg that clarification would be added that prior to the start of the stabilization period the condensate pan should be dry.

And then for the entire period of the test following the start of that official stabilization period any condensate generated will be allowed to accumulate reflecting

effectively field conditions unhindered. And water would not be manually added or removed at any point during the test.

MR. BROOKMAN: Comments on this proposal? Yes.

MR. HIERLMEIER: Bruce from Zero Zone. We have a number of customers that use remote equipment in strip mall type applications. So the floors are not cut with floor drains. They may be leasing the stores and not want to spend it. They opt to use condensate pans to dissipate that heat.

In the modeling that DOE did when they did self-contained equipment they modeled in condensate pans as part of that energy use. They did not model in condensate pans as part of the energy use for remote equipment.

So, in part now they've changed the rules. Self-contained get extra energy whereas remote cases don't get that energy use capability.

So it effectively eliminates the ability for that customer base to use a store that does not have a floor drain, damaging the utility of our equipment in their application. So in the past those pans were shipped -- generally they're shipped loose. Customer may put them on top of the case, may put them someplace else, may power them separately from a wall outlet. And now they won't have those options anymore.

MS. ARMSTRONG: Why won't they have the option? You have to test it this way and it has to be compliant when tested this way.

MR. HIERLMEIER: Your modeling allowed for it in the self-contained. Included that energy level.

MS. ARMSTRONG: I get that part.

MR. HIERLMEIER: It did not include the energy level in it. So your energy levels are set too stringent to allow

this to apply.

MS. ARMSTRONG: Okay.

MR. BROOKMAN: Tim?

MR. ANDERSON: I'd like to echo all of Bruce's comments. If this applies to remote cases it will preclude the use of condensate pans on any remote cases basically because of the stringency of the levels.

It's also important to note that the volume of this application of condensate pans on remote cases, and I can only speak for Hussmann, is less than 1 percent. I mean, it's the exception, it's not the rule. But it will reduce the utility of the equipment for that -- for those customers.

MS. ARMSTRONG: I'm going to point out Hussmann participated in the negotiations.

MR. ANDERSON: And Ron feels very strongly. And if he could speak he would. Ron feels very strongly that the discussions in the working group were pertaining to self-

contained cases.

MR. BROOKMAN: Maybe, Ron, we'll invite you again to unmute your phone and try and speak. Not working. Emily says it's not working. Sorry, Ron. Ron, if you want to write out some comments then Emily will -- questions or comments we'll read them into the meeting here. Do our best. Lauren?

MS. ZELINSKI: I just wanted to echo what both Hussmann and Bruce had said earlier.

I would say from AHRI's perspective almost all of our manufacturers would agree that on remote cases including the condensate pan is an optional feature that very few people use. And so causing all of those to be tested would not meet the setup of this unit.

MR. BROOKMAN: Okay. Louis?

MR. STARR: This is Louis Starr with NEEA. In these cases that you're talking about why wouldn't just a small pump

that would pump it over to some other drainage thing work in that application instead of using a pan heater?

MR. ANDERSON: Tim Anderson, Hussmann. Certainly a pump would be an option. These are customer requirements that we're fulfilling.

MR. HIERLMEIER: Bruce from Zero Zone. In some applications in these stores there's not an immediate drain available. You're in a store where there's no place to pump it off, or local health inspectors take a dim view of pumping condensate water a long distance as well.

MR. BROOKMAN: Other comments here before we move on? We have a comment from Ron I think.

Ron says "Cases tested at LAPT, now that LAPT is common terminology, do we still need to apply for a waiver when testing this way?"

MS. ARMSTRONG: So, the answer --

the proposal would be that you do not. But the caveat there is until the final rule is effective you will. So, once the final rule is out and if DOE ends up adopting the LAPT provisions as proposed in this rule it gets rid of the waiver process for that, although until that happens, until the rule is effective you will still have to go through those procedures.

MR. BROOKMAN: Ron continues. Cases that operate at two different rating temps, how will these be certified?

MS. ARMSTRONG: So, if the -- it's going to depend on if they span multiple operating temperatures. That's how we discussed it. So it's not about rating temps so much as operating ranges such that they fall into refrigerator, freezer, or like ice cream freezer. And so that's how that goes.

If there are multiple rating temperatures then that's going to -- and they're multiple rating temperatures such

that the LAPT is a different number and it cannot be tested at a rating temperature, that's a different question. But still within the same operating temperature range.

So, they're both refrigerators. One can only get down to 50, one can get down to 40, neither can get down to the rating temperature. That's a different question. So I don't know if that's what he's asking.

MR. BROOKMAN: He continues. When speaking with Laura B. I understood that you would need uniqueness in the nomenclature for two different ratings? Testing at NSF temps, I thought this was already allowed in the regs. Condensate heaters --

MS. ARMSTRONG: Hold on, go back to the one. So, I think I made clear the NSF thing earlier. It's not in the current test procedure required today. It's in the test procedure that will be required in the future. So yes, DOE did address it but it's not required today.

My comment still stands. If you feel that it should be required today please explain, et cetera.

MR. BROOKMAN: Does that address two different ratings? Okay. And then test standard NSF temps.

MS. ARMSTRONG: That one I just addressed.

MR. BROOKMAN: I thought this was already allowed in the regs. Condensate heaters, the test method for self-contained only, this is not spelled out.

MS. ARMSTRONG: The negotiations, I will say that slide said nothing about self-contained versus remote. There's nothing in the slide, there was nothing on the vote. It's all documented.

Now, you may submit your comments but there was nothing there. There are plenty of people in the room that were there. You may have had different intention but there is nothing on the slide there.

MR. BROOKMAN: And finally from Ron, "In the working group I mentioned that remote cases were not part of the heated pan discussion."

MS. ARMSTRONG: What I just said stands.

MR. BROOKMAN: So written comments on these specific issues I think would be very, very helpful. Tim?

MR. ANDERSON: One last comment on the heated condensate pans for remote equipment. In effect, what will happen is that the end users of the equipment will purchase condensate pans separate from the cases, probably from a separate manufacturer, and will install them themselves, and you know, bypassing UL safety regulations.

So I don't think you're going to preclude that energy from being spent, you're just going to have the end users find a way around it. And in my opinion the equipment will not be properly sized and potentially

not as safe.

MR. BROOKMAN: Ashley?

MS. ARMSTRONG: Okay, so just to take a step back. So, explain to me, do the remote cases -- what is the percentage of remote cases today that actually get sold with condensate pan heaters or pumps? From the manufacturer.

MR. ANDERSON: Tim Anderson from Hussmann. I can say for Hussmann it's less than 1 percent.

And like Bruce mentioned earlier, the application is typically where a retailer will go into an existing space, often a small format store, could be a strip mall or something similar. And they don't want to add in thousands and thousands of dollars to trench the floors to add in floor drains.

MS. ARMSTRONG: So, you believe across the board regardless of whether that unit is offered for sale with the use of a condensate pan heater, if it is a remote case

it should not be tested with the pan heater or pump? That is what your belief is? That's not what our proposal is, but clarifying what your belief is.

MR. ANDERSON: Certainly. Tim Anderson. My belief is that it's such a low volume exception that it should be exempted from the test procedure.

MS. ARMSTRONG: Okay.

MR. BROOKMAN: Louis.

MR. STARR: This is Louis Starr with NEEA. If they install these after-market pan heaters are they going to be connecting into your equipment with those pan heaters?

MR. ANDERSON: Tim Anderson. No, they would just be connecting to the electrical. You do mean an electrical connection?

MR. STARR: Right. I mean, I'm trying to see how it's going to affect the UL rating of your machine, that's what I'm

trying to get at. Because they'll have to reply with the national electrical codes.

In other words, any electrical device you install is going to have to be --

MR. ANDERSON: Certainly. But if you're --

MR. STARR: So, if they're not connecting your equipment, they're complying with electrical codes, there's no real safety issue it seems to me.

MR. ANDERSON: If they don't size the pan properly you can run into other issues. Not electrical issues. Water on the floor which can create lawsuits for the retailer. You know, you can create other issues there aside from electrical issues.

MR. STARR: The other thing is as far as the difference between adding a condensate pump as opposed to adding an electrical pan heater it costs a lot of money to put a fairly sizable electrical load.

If the place is cooking food they

have ways of draining stuff there already. So connecting into a pump does not have to be directly located above where it's draining to. You can have a pump and it can pump 15-20 feet from its location.

So if they're draining stuff in the restaurant I don't understand why they're not able to connect into a plumbing connection. I mean, as when I used to do design that's what I would do is I would go find an appropriate receptor. I wouldn't go and say hey, let's find an electric pan heater.

I'm trying to understand the design sense, why someone would come in afterwards and decide to put in a pan heater rather than just putting in a condensate pump that has a very small connection.

MR. ANDERSON: It's Tim Anderson. The retailers that we're typically selling to are not restaurants. These are small grocery stores, dollar stores, things of that

nature. Not places where they're preparing food.

MR. STARR: Right, but they're going to have to get a permit to put their stuff in, right? In the code. In other words, a design engineer or somebody that's a design professional is going ahead and designing this stuff and outfitting it such that it's meeting code.

So all these things still apply and the best design is still -- that's probably why you're only selling 1 percent is because it doesn't make a lot of sense to do it that way.

MR. BROOKMAN: Steven.

MR. KING: Yes, Steve King with Royston LLC. We have to keep in mind concurring with Hussmann even local law and local building laws around the United States do not support floor drains anymore. So that's all the way down into the local codes.

And as you say, point of purchase

equipment such as this with a new store build is not going to have a drain system in some local municipalities, so.

MR. BROOKMAN: We're about to move on. Yes? Here we go.

MR. WEBER: All right, thanks. The next feature under discussion was anti-sweat heaters on display doors.

Many transparent door cases come with them obviously, serve to evaporate condensate water. In some instances manufacturers might equip their cases with higher than standard anti-sweat power due to expected operation in adverse conditions, high ambient, high humidity, that sort of thing.

The proposed resolution agreed on through the reg neg sessions was that DOE proposes that anti-sweat heaters should be operational during testing under the test procedure with some further explanation that models of the user-selectable setting must be

turned on and set to the maximum usage position.

Models featuring an automatic control system that's not adjustable by the user must be operating in the automatic state. And if a unit is not shipped with a controller from the point of manufacture but is intended in all cases to be used with a controller the manufacturer must make representations of the basic model based upon the rate of performance as equipped and tested with the appropriate compatible controller.

MR. BROOKMAN: Comments on this proposal? Yes, Bruce?

MR. HIERLMEIER: Bruce from Zero Zone. Just as we go through some of these other ones it seems somewhat random as to which things get to be turned on and which ones don't.

So customers that have outdoor markets or poor air conditioning, they have

to spend more money to have automatic controls. In some of these other areas they get to have filters. They can direct the air flow. It doesn't have to be tested with these item. They get to have more utility without more expense, whereas some of our customers with poor conditions have to spend more money to get the utility out of the equipment.

MR. BROOKMAN: So, how would you suggest this be modified?

MR. HIERLMEIER: We'd prefer to allow the user in an adjustable situation to be able to turn it down and the equipment be set at -- one that would be marked for 75-55 percent relative humidity.

MR. BROOKMAN: But that's for the user, or for the tester?

MR. HIERLMEIER: During test and then the user would have that as well so that -- again, you're relying on the user to turn down his equipment to use the least amount of

energy as possible because it's in their best interest as well.

MR. BROOKMAN: Okay, thank you. Additional comments here on anti-sweat door heaters? Okay.

MR. WEBER: Next feature, UV lights, usually included for sanitation purposes. And it was agreed that UV lights should not be turned on during the test procedure.

Temperature displays and alarms. Illuminated displays providing visual information on equipment operating status. Also, alarms that would notify if a case fell out of the specified operating -- or the desired operating range. Proposal is that these items are simply integral to the function of the equipment and would be enabled during the test as they would be used in normal field operation.

MR. BROOKMAN: Comments on illuminated temperature displays and alarms.

MR. WEBER: Next item, non-permanent condenser filters. Manufacturers may offer models equipped with these sorts of filters to prevent particulates from blocking the air flow. And the agreed upon proposal was that non-permanent filters should be removed during the test.

MR. BROOKMAN: No controversy there? No comment.

MR. WEBER: Security covers. An option to include straps for the devices to secure the condensing unit, preventing theft or tampering. And the proposal is that security devices should be removed during testing under the DOE test procedure.

Next item, grill options. Manufacturers may offer optional grills that are used to deflect air flow in unique applications such as rear mounts near to a wall where the air flow needs to be directed upwards.

The agreed-upon position during

the reg neg sessions was that, if present, non-standard grills would be removed during testing.

Coated coils. Evaporator coils, and condenser coils as well, generally coated and specified for use in environments where there would be exposure to acids or oxidizers. Treated with additional coating such as an epoxy or polymer to prevent corrosion or other deterioration.

Existing test procedure accurately accounts for the performance of all types of coils including coated coils and therefore there's no explicit proposal or change to anything because it's already captured.

MR. BROOKMAN: Comments here? No comments.

MR. WEBER: Misting or humidification systems usually put in place to maintain the quality of products such as fresh produce, seafood or meat. And if

present, these systems would be left inactive during the test.

MR. BROOKMAN: Yes.

MR. NESHAN: Neshan, Southern Store Fixtures. If this is -- obviously this is done for specific applications. If misting systems and humidification systems are not to be operational during testing where in reality they would be used during the operation, why the previous slide which was the coil? I mean, the coated coil is -- it must be tested. However, this is not allowed to be tested.

MS. ARMSTRONG: Correct.

MR. BROOKMAN: Ashley?

MS. ARMSTRONG: Correct.

MR. NESHAN: So why?

MS. ARMSTRONG: Because that's what we negotiated.

MR. NESHAN: Well, negotiated because you're forced to accept it because basically the issue was that if this --

because there were other parties involved. And if that was -- if coated coil are not to be tested then that could also be waived from the unitary units. I'm not sure which part of it it was. Isn't that's correct?

MS. ARMSTRONG: Please, I don't think anyone was forced to vote a certain way.

MR. HON: Charlie Hon. On the negotiations the discussion was coated coils are integral, built into the system and always in use 100 percent of the time.

These other items are very -- they are very transient. You can set them wherever you want to. They're beyond the control of the design. It's purely on control of the operator. And that's where a lot of the changes came from.

MR. STARR: This is Louis Starr. I think the other part is some things like coated coils inherently save energy in that the fact that if they're not coated they

become -- they quickly lose their use or abilities. So they actually are an energy-saving device. So I think that's the other part of what got decided to be as part of included and not included.

So, something that obviously will not save energy such as anti-sweat coils is not the same as coils when they get plugged and they're more inefficient. So having them coated makes sense in that case. So that's the other part of it that was kind of the deciding process on that.

MR. BROOKMAN: Any additional comments here? Yes.

MR. HIERLMEIER: Just to be somewhat of a pain -- Bruce from Zero Zone -- they could certainly test these energized at full on during the test procedure. So it runs completely just like they want the anti-sweat heaters on the doors to run at full.

So, and again, it's sort of one of these things where, okay, these people get

a certain utility. Energy doesn't matter as long as you keep your vegetables fresh which is fine. But in other applications all of a sudden energy becomes important and we don't care if you have to mop the floor.

MR. BROOKMAN: Moving on.

MR. WEBER: Next item under discussion during the negotiations was air purifiers. Supplemental purifying systems to remove contaminants from air which is recirculated within the body of the case.

The proposed position was that air purifiers should be inactive during testing under the DOE test procedure.

MR. BROOKMAN: No comments?

MR. WEBER: General purpose outlets. Some CRE units may come equipped with integrated general purpose electrical outlets which can be used to power additional equipment completely external to the refrigerator or freezer such as scales or slicers, for example, in a deli environment.

The agreed-upon position being proposed for confirmation here is that while testing using the DOE test procedure no external load should be connected to any general purpose outlets which are contained within the unit.

MR. BROOKMAN: No comments.

MR. WEBER: And I believe the final item, yes, is crankcase heaters. Some CRE units come with electric resistance heaters designed to keep the compressor at an optimal operating temperature during low ambient conditions such as if a unit was installed outdoors.

The proposal for codification here was that if present crankcase heaters should be operational during the test.

Under the proposal, however, if a control system is used to modulate the operation of the crankcase heater it should be used as intended according to the manufacturer's instructions. The intended

result of that being that at the DOE test conditions you generally would not see a crankcase heater activated.

MR. BROOKMAN: Okay. Yes, okay.

MR. NESHAN: Question. Neshan, Southern Store Fixtures. What happened to the crankcase pressure regulators? I thought we discussed that when we agreed. I mean, that's missing from here. Crankcase pressure regulators.

MR. BROOKMAN: Crankcase pressure regulators.

MS. ARMSTRONG: You're right, it's not included. So we'll make sure that's clear.

MR. NESHAN: Thank you.

MR. BROOKMAN: And the way it would be clear would be to state --

MS. ARMSTRONG: I don't know yet.

MR. BROOKMAN: Okay.

MS. ARMSTRONG: It was part of the package that went to ASRAC so we just

need to pull the language.

MR. BROOKMAN: Okay. Moving ahead?

MR. WEBER: Sure. So, that concludes the section specific to the outcomes of the reg neg sessions.

But there were some other clarification items that arose as a result of stakeholder inquiries and other avenues that we'd like to just address and seek comment upon.

The first of these involves the use of energy management systems during testing. The DOE test procedure states at this time that all devices that would normally be used in the field must be installed and operated in the same manner during the test procedure unless this is inconsistent with any requirement of the test procedure. This therefore includes energy management systems.

If normal field installation or

operation would be inconsistent with any test procedure requirement of which we'll give an example then the specific function that causes inconsistency must be disabled.

To give a little bit of concreteness to this, if an energy management system raises or lowers the cabinet temperature, modulates it such that the applicable integrated average temperature can't be maintained, then in this case the function of the EMS that varies the cabinet temperature would need to be disabled in order to enable the provisions of the DOE test procedure, that rating temperature, to be met.

Other functions, however, may remain enabled provided that they don't cause other effects that would cause the unit to violate provisions of the test procedure.

If those functions cannot be controlled separately, if it's a matter of the whole system, whole control scheme being

on or off, then that system would need to be disabled so that all provisions of the test procedure could be met.

MR. BROOKMAN: Comments on the foregoing? I see none.

MR. WEBER: All right. The second issue to be addressed for clarification discusses lighting.

DOE test procedure currently states that all devices that would normally be used in the field must be installed and operated in the same manner during the test.

ARI 1200-2006 and AHRI 1200-2010 specify that the measured energy consumption, TDEC or CDEC, shall include lighting loads.

Seventy-two states at 6.1.1 that all standard components such as and including lights, to paraphrase, shall be installed and used as recommended by the manufacturer.

Due to these explicit references to case lighting, DOE believes that the energy consumption associated with lights

installed on a model of CRE is intended to be captured during testing. It's just background mostly.

And in 2012 test procedure final rule DOE adopted specific provisions for the treatment of lighting occupancy sensors and schedule controls, establishing specific time periods during which these controls, variation in lighting may be turned off or dimmed during the test.

DOE wishes to clarify in response to some inquiries that are received that a mechanical light switch should not constitute an energy management system or a lighting control for that matter.

Models of commercial refrigeration equipment with lighting installed in the case and no energy management system shall be tested with lights on to their maximum illumination level for the duration of the test.

Any lighting controls of the

user-selectable setting must be turned on and set to the maximum usage position. An exception to this being models with solid doors with lighting controls that automatically turn off internal case lighting when the door is closed.

MR. BROOKMAN: Comments on this, on lighting testing. Yes, Bruce.

MR. HIERLMEIER: Bruce from Zero Zone. I had a question. If you have like an open case that has multiple shelves and customers can choose to buy a light under the shelf or not buy a light under the shelf does that case need to be tested with all the lights installed?

Or can you test it with the lights, you know, I have different basic models like a two-shelf lit case is one basic model, a three-shelf lit case, and basically break it up into basic models. So you can have different energy levels depending on the number of lights that you are selling at that

instant.

MR. BROOKMAN: And an unlit case would be another basic model.

MR. HIERLMEIER: Yes, or a top nose and bottom sometimes.

MS. ARMSTRONG: Let me think about that for a minute. Yes, let me think about that for a second.

MR. HIERLMEIER: I had a different question as well.

MR. BROOKMAN: Okay.

MR. HIERLMEIER: The standards now coming out and allowing energy levels to be used with automatic lighting controls, but I thought in 2012 you couldn't start using that testing procedure until the regulations got updated and in a sense reduced to account for that.

Is that still the case or would you be able to start testing once this is adopted and start testing with those controls in place without having to reduce the energy

level of the standard? Or do we have to wait till the 2017?

MR. WEBER: The next slide clarifies that.

MR. HIERLMEIER: Okay.

MR. WEBER: We're just taking comment at this point.

MS. ARMSTRONG: Go ahead.

MR. HON: Wait a second, I have a question before we go. Charlie Hon, True Manufacturing.

I have one concern about the statements here because certain occupancy sensors have a learning curve built into them where they learn over a period of time when to turn the lights on and off.

Unfortunately, during the test procedure the rooms are closed, there's no activity inside of the test room, so that if they're locked in there for more than a week or so they'll have learned to turn the lights off because there's no activity near the

unit. How do you deal with that?

MR. WEBER: Is there a manual override on those?

MR. HON: They can be programmed to override.

MR. WEBER: Okay. Because the way the test procedure currently reads it's a fixed time off. It's a fixed time off.

MR. HON: But there are many of them now that are learning curves built into them.

MS. ARMSTRONG: So by default they would be tested with this program. So, if they can't be -- I mean, right now if they can't be overridden such that the program could be applied to them then if you want credit for them you need to come get a waiver.

MR. WEBER: So, moving on to speak to the point that Bruce raised.

The way the NOPR has reorganized the language of the test procedure divides it

into -- proposes to divide it into two appendices with different applicabilities in time.

The first appendix would be what's relevant today and applicable today. The second would be what was being discussed earlier which is tied into revised standards and would be applicable at that time.

So, in the first appendix what would be on the books today and for use today would be that all lighting must be energized at the maximum illumination level throughout the whole test. And the exception would be for solid door models that include automatic controls such as just a pressure switch that disable case lighting when the door is closed.

In Appendix B this includes the material from the 2012 test procedure rule that was discussed as well as this clarification. All lighting shall be energized to its maximum illumination level

except for a model that's equipped with occupancy sensors or scheduled controls, or when a model is outfitted with other permanently installed automatic energy management systems that control lighting.

And if a unit that includes -- if a unit includes an automatic lighting control system it should be enabled during the test. If it's equipped with occupancy sensor and controls it should be tested in accordance with the provisions adopted specifically referring to those systems in the 2012 test procedure final rule.

MR. HIERLMEIER: So when would B start applying? Would that be when 2017 comes out? Would that be when this NOPR gets finished? Kind of what year I guess.

MR. WEBER: B would be tied to the compliance with new standards.

MR. HIERLMEIER: So it would be like 2017?

MS. ARMSTRONG: We don't know

what the actual date is, but roughly.

MR. HIERLMEIER: The 3-year --

MS. ARMSTRONG: Correct.

MR. HIERLMEIER: Okay. Thank you.

MS. ARMSTRONG: With the caveat that DOE has issued guidance, across-the-board guidance for all products that allows the use of amended test procedures early but as part of that guidance you would have to comply with amended standards early and certify such. So, that's -- this Appendix B is key to the provisions of the 2017-ish standards.

MR. WEBER: All right. Final issue for clarification was in response to an inquiry on test package temperatures.

Stakeholders inquired whether the DOE test procedure has specific requirements for the test simulators and filler packages that must be met prior to loading them into the unit at all.

ASHRAE 72 provides specific instructions as to loading of test simulators and filler packages. That's at 6.2. As well as with respect to temperature stabilization at 7.4. States that the unit must run till steady state conditions as defined in Section 3 are achieved. And then after steady state operation is reached the unit must operate for another period of 12 hours before it's deemed to be stabilized.

Therefore, DOE doesn't believe that the product simulators or test packages need to be at any specified temperature condition prior to loading before the stabilization or pull-down period even occurs.

If there's no questions on that then Sarah will address this final major section.

MS. ARMSTRONG: So, one quick question to all of you before Sarah starts talking. We have one section left and

there's a couple of minor things at the beginning but what we're going to get into I have a feeling will cause a lot of discussion which is TDA. And some of the slides -- I've rearranged some of the slides for TDA and I'm going to be presenting that part.

But before we do that does anyone need a 5-minute break? Just a quick 5-minute break. Because we will be pushing through so we can end this before lunch. So does anybody want a quick 5-minute break, go to the bathroom, do whatever you need to do, check email, make a quick phone call? And we reconvene in 5 minutes. Yes. So take a quick 5-minute break.

MR. BROOKMAN: Okay, 5 minutes. You know where the restrooms are.

(Whereupon, the foregoing matter went off the record at 11:39 a.m. and went back on the record at 11:48 a.m.)

MR. BROOKMAN: All right, let's start. The last few days have been very

frustrating here. We haven't been able to -- for web participants to join us and speak into the room. But now I think we have that fixed. So those of you that are joining us via the web, please feel free to raise your hand and we'll fit you into this conversation.

And, Joe, you had several comments. However, Ron, had several comments. Ron, do you want to speak now to cover anything that we may not have covered sufficiently from your perspective so far? Ron's not on right now, okay.

MR. ANDERSON: He said he lost the webinar.

MR. BROOKMAN: And in fact we had to reboot the webinar, so apologies for that as well.

Okay, now we're going to proceed. Are we ready to do this?

MS. WIDDER: We're ready.

MR. BROOKMAN: Sarah.

MS. WIDDER: Okay. So, we have a few, as Ashley mentioned, a few minor test procedure issues before we'll get into the other major clarification that DOE is proposing that Ashley will present regarding TDA. Just a few minor clarifications.

The first is around rounding of test results and certified ratings. The current DOE test procedure incorporates by reference ARI Standard 1200-2006 and then in the 2012 provisions which would be applicable with any amended standards, AHRI Standard 1200 -- you can't even see that -- there, 2010. New one.

So, those standards require that the energy consumption for covered equipment be expressed in terms of kilowatt hours per day and stated in increments of 0.01 kilowatt hours per day.

Similarly, since those standards are incorporated by reference in the DOE test procedure, DOE's -- the certified ratings

that manufacturers submit to DOE should also be reported in units of kilowatt hours rounded to 0.01 kilowatt hours per day.

One thing that was not clear was when that rounding should occur. And in the case that that has any influence on the certified value that one manufacturer test lab would get versus another DOE wishes to clarify that these calculations should be done using raw measured values and then rounded to 0.01 kilowatt hours at the end. And we will -- DOE is proposing to incorporate these requirements into the DOE test procedure to clarify.

MR. BROOKMAN: Comments here.

MS. WIDDER: Any comments? We request comment on the proposed rounding provisions and their applicability to the test procedure and the certification requirements. All right.

MR. BROOKMAN: No comments here.

MS. WIDDER: We'll move on.

MR. NESHAN: Neshan, Southern Store Fixtures. Just one comment. This rounding of the test results and the raw data, the raw data per ASHRAE Standard 72, it only carries to one decimal point. If you check.

MS. WIDDER: I'm not recalling that requirement, but the Department will certainly review that.

MR. NESHAN: All right, thank you.

MR. BROOKMAN: You, I presume, would like to have them be consistent.

MR. NESHAN: Yes.

MR. BROOKMAN: I just wanted that in the record.

MR. NESHAN: No, no, absolutely, yes.

(Laughter)

MR. BROOKMAN: Okay, thank you. Okay.

MS. WIDDER: Okay. Actually, I

have a follow-up question for Massoud. Are you saying that the CDEC and TDEC are only rounded to 0.1 kilowatt hours per day? Or the actual -- what is only rounded to 0.1?

MR. NESHAN: No, Neshan, Southern Store Fixtures. Obviously ASHRAE 72 has nothing to do with the CDEC and all that. It's just a method of testing and recording.

MS. WIDDER: Right.

MR. NESHAN: When you record temperatures and pressures and all that stuff.

MS. WIDDER: Right. And energy.

MR. NESHAN: And energy, carried to one decimal point. That's all I'm saying.

MS. WIDDER: So the energy in ASHRAE Standard 72 is only one decimal point.

MR. NESHAN: The BTU requirement, though, when you measure the BTU requirement of a remote display case it is one decimal point.

MS. WIDDER: Well, there's

certainly more significant digits in terms of BTUs though.

MR. NESHAN: Yes, but temperatures. I mean there is --

MS. WIDDER: Right, right. We'll certainly consider that in the subsequent -- how significant digits are carried through. Thank you.

MR. BROOKMAN: Okay, moving on.

MS. WIDDER: This is just some clarifying slides on the lowest application product temperature provision. There's been some discussion of that earlier today and also inquires that have been received by the Department regarding applicability of this provision.

In light of those this slide provides background on what is currently required and then subsequent slides provide proposed clarifications to the lowest application product temperature provision.

Currently, DOE defines lowest

application product temperature as the integrated average temperature closest to the specified rating temperature for a given piece of equipment achievable and repeatable such that the integrated average temperature for a given unit is within +/- 2 degrees Fahrenheit of the average of all integrated average temperature values for that basic model.

It's confusing and sort of a mouthful. The idea, the intent of this definition is that a manufacturer is to certify -- if a piece of commercial refrigeration equipment, a model, a basic model of commercial refrigeration equipment cannot meet the rating temperature for that equipment class the manufacturer would certify the lowest application product temperature.

The intent is that lowest application product temperature will be consistent across the units for that basic

model. So, for example, you couldn't pull -- you could not specify 8 degrees Fahrenheit and then have other models that maybe DOE would pull in enforcement that really can, in fact, either meet the rating temperature or meet something much lower than your specified lowest application product temperature. We would like consistency across units of a given basic model. So, in light of that, it was a confusing definition.

This is just another -- a little more background about when the lowest application product temperature applies. We discussed that it applies to a certain basic model of commercial refrigeration equipment that cannot be operated at the prescribed rating temperature, but all other requirements of the DOE test procedure apply.

Except that you have to test -- the rating temperature shall be +/- 2 degrees of the lowest application product temperature. The measured integrated average

temperature recorded during the test will be within 2 degrees of the certified lowest application product temperature for that piece of equipment.

So, here's an example. Hopefully this helps. The lowest application product temperature. So, for example, if a basic model freezer has an operating range from 8 to 28 degrees Fahrenheit and thus cannot operate at the prescribed rating temperature of zero degrees Fahrenheit for freezers that basic model would be tested as low as it can go which in this case is 8 degrees Fahrenheit.

In this case, if DOE were to randomly select a representative unit to test for compliance purposes that unit should be able to maintain an integrated average temperature between 6 and 10 degrees Fahrenheit, and that should be as low as it can go for that unit.

And it should not -- that unit

must not be able to operate at zero degrees Fahrenheit. That is the important part.

For many cases this is always the lowest thermostat setting. That's a clarification.

And when DOE conducts a test in accordance with the lowest application product temperature a lot of times that will be turning down the thermostat all the way. And so to the extent that that's consistent among units is what we're going for here.

MS. ARMSTRONG: I'm going to say one clarification.

MS. WIDDER: Yes, go for it.

MS. ARMSTRONG: Not a lot of times. We will be turning the thermostat all the way down. So, if for some odd reason your literature speaks to a certain operating range for your temperature and we happen to test a unit and we crank it down to the lowest thermostat setting and it is operating outside of that range we are going to test at

the lowest temperature the unit is capable of running. I just want to make that clarification.

And you are required to test at the lowest temperature that unit is capable of running.

MS. WIDDER: So, to clarify, DOE proposes to modify the lowest application product temperature provision. Hopefully this is a little more clear.

Lowest application product temperature means the lowest integrated average temperature at which a given basic model is capable of consistently operating, i.e., maintaining so as to comply with the steady state stabilization requirement specified in ASHRAE as incorporated by reference for the purposes of testing under the DOE test procedure.

The other part of turning down the thermostat all the way is that temperature when we're at the lowest

application product temperature still has to meet the stabilization requirements specified in ASHRAE. And so those are the two bounds that help us define what lowest application product temperature is.

And now that we're explicitly referencing ASHRAE 72-2005 DOE is proposing to incorporate by reference that standard which has always been the method of test inherent in AHRI or ARI 1200-2006 and AHRI 1200-2010. But now that's explicitly incorporated by reference in the DOE's test procedures in the CFR as well.

DOE requests comment on its proposed modification to the lowest application product temperature definition. Is it more clear? Are there other things that should be incorporated?

I think hopefully our intent is clear, but it is difficult to write in words. And its proposal to incorporate by reference ASHRAE 72.

MR. BROOKMAN: Charlie.

MR. HON: Charlie Hon, True Manufacturing. ASHRAE 72-2005, the final review publication is in action right now and will be completed at the end of this year. So that probably needs to be considered as 2014 publication.

The second thing is that you're relying on mechanical sometimes controllers on some of these units. So, the mechanical controllers can change.

And I know good and well what I will do is dummy up the controller to run a little bit colder than a normal controller just so I don't run into a problem. But that way you have a very conservative number.

But 2 degrees Fahrenheit plus or minus on a controller turned all the way down I think is not repeatable at all. I think you're going to be 3 to 4 degrees at least.

MS. WIDDER: Just to follow up on that. If you have suggestions about a better

way that the Department could define the lowest temperature for a basic model such that it's consistent but also not allowing for manufacturers to just pick any number. That's the struggle we have.

MR. HON: This is Charlie Hon again. From our point of view we will be conservative and we will just dummy up the controller to where it runs slightly colder than we believe our standard product would ever get to and thereby guarantee that we would have a very conservative energy number.

But I cannot guarantee that we would be repeatable within +/- 2 degrees of where we said the unit was tested. But isn't it more important to be conservative and efficient in our efficiency number?

MR. BROOKMAN: Okay. So I thought the explanation was really quite clear. So additional comments on this proposed definition? Yes, Tim.

MR. ANDERSON: In Section 2.2 of

Appendix B, I'll go ahead and read this. It says for remote condensing equipment without a thermostat or other means of controlling temperature at the case the lowest application product temperature is the temperature achieved with the adjusted dew point temperature as defined in AHRI Standard 1200 set to 5 degrees colder than that required to maintain the manufacturer's lowest specified application temperature.

Can you comment on how you came about that number and illustrate in the example how that would be used? The example you had on slide 63.

MS. WIDDER: So, in the 2012 test procedure rulemaking the issue regarding the applicability of the lowest application product temperature to remote cases that do not have thermostats in the case was raised. And DOE recognizes that this is an issue.

So this was a suggestion received by manufacturers as part of the comments on

the NOPR. The way that it would apply here is if -- I can imagine physical limits in terms of refrigerant flow and pipe sizing that would limit how -- or the heat exchanger size that would limit the cooling that a case is capable of and that intended temperature would be your lowest application product temperature.

And then because there's variability in the sizing of condensers that can be attached to the remote case you would set the section temperature on that case such that you maintained the intended lowest application product temperature for that case. This is --

MS. ARMSTRONG: Minus 5, right?

MS. WIDDER: Yes.

MS. ARMSTRONG: We would do the same thing you would do. So in that case the example is not as applicable because the instructions are different. But DOE would do the same thing you would do in setting that

temperature.

MR. BROOKMAN: And say what that would be.

MS. ARMSTRONG: Well, he read it. I don't have it in front of me, so.

MR. ANDERSON: Okay. Tim Anderson. I want to make sure that I understand. So, I'm going to give an example.

I'm going to use the LAPT of 8 that was used in the example on slide 63. So if the LAPT for a piece of equipment is 8 Fahrenheit you would then -- and let's say that the dew point temperature, not adjusted dew point, dew point temperature to achieve 8 is zero. Okay? So that's basically the manufacturer's recommended set point to achieve an IAT of 8.

The adjusted dew point -- or, I'm sorry. So then you would take 5 below that. You would run the unit at a -5 adjusted dew point which equates to a -2 dew point. So

you would run the unit at -2.

MS. WIDDER: Yes, it sounds right. The adjusted dew point 5 degrees cooler than that required to maintain the lowest application product temperature. So yes, if the dew point is zero and then you go 5 degrees below.

MS. ARMSTRONG: Are you asking 5 degrees below the dew point or 5 degrees to get 5 degrees below the lowest application product temperature?

MS. WIDDER: No, the adjusted dew point to achieve the lowest application product temperature. Will you read it again?

MS. ARMSTRONG: Let's just take it offline.

MS. WIDDER: Yes, we'll --

MS. ARMSTRONG: I get your question though.

MR. BROOKMAN: Ron would like to speak. Ron, I think this can work. Welcome.

MR. SHEBIK: Can you guys hear me

now?

MR. BROOKMAN: Yes, we can hear you. Yay.

MR. SHEBIK: I appreciate it, but actually the question I had Tim Anderson worded it much better and he got the point across I believe.

(Laughter)

MR. BROOKMAN: What an anticlimax.

MR. SHEBIK: Sorry about that.

MR. BROOKMAN: Thanks, Ron. Okay.

MR. SHEBIK: Thank you.

MR. BROOKMAN: So, do we have additional comments regarding this revised LAPT definition?

MS. WIDDER: And I would say specifically on the case of -- or in the case of remote cases with no thermostat which we were just discussing, if there are specific comments about a better, or more clear, or

more consistent approach to describing the lowest application product temperature for those cases that's different than what is already on the books the DOE welcomes comment on that.

Okay, moving on then.

MR. BROOKMAN: Neshan, did you have something there? Neshan.

MR. NESHAN: Neshan, Southern Store Fixtures.

MR. BROOKMAN: I could see the wheels turning.

MR. NESHAN: Yes. But for the record most remote refrigerated display cases go out of the factory without a thermostat on them. I mean, it's hardly -- really exception to have a thermostat on a remote case.

MR. BROOKMAN: Really?

MS. WIDDER: Yes, but I also have another --

MR. BROOKMAN: The remotes.

MS. WIDDER: So I have a follow-up question. I understand that, but my understanding is that most remote cases can also meet their rating temperatures. That it's unusual for remote cases to be designed such that they cannot meet the rating temperatures because of the flexibility in the condensing unit.

MR. NESHAN: Well, if they cannot meet the rating then you're in trouble.

MR. ANDERSON: Tim Anderson. There are some low-temperature cabinets which are limited in terms of the evaporator and air flow, open cases typically. But you're right that the condensing unit side is typically never an issue until you get down to, you know. So it's more components in the case could be where your LAPT may be 8 rather than zero on a few cabinets.

MS. WIDDER: Okay. Yes, that was just -- I mean anyway, just wanted to clarify that.

MR. BROOKMAN: You got that?

MS. WIDDER: Yes, I got it. Thank you very much.

MR. BROOKMAN: Moving on then.

MS. WIDDER: Okay. And now Ashley is going to talk about TDA and AHRI interpretation.

MS. ARMSTRONG: Okay. So as I mentioned at the beginning of the webinar we got some preliminary questions and comments before today's public meeting about TDA.

So, I assume that everyone has read the proposal for TDA, DOE's clarification. So let me step through this real quick.

One is that I just want to make clear something. This has a little bit to do with this, but it's a little broad.

A number -- we understand that we've incorporated by reference portions of industry standards. Some of those are ASHRAE standards, they may be AHRI standards, they

may be AHAM standards in the case of volume.

We do want to clarify though, unless the Department has actually issued guidance through our formalized guidance process the guidance doesn't count for the federal test procedure.

So if one of those organizations decides to answer questions or issue guidance the way to get it into the test procedure would be to present it to DOE to move through DOE's guidance process.

Just because the guidance has been adopted either as an ASHRAE addendum if there is such a thing or an AHRI guidance document, it doesn't count for the purposes of DOE testing unless DOE has officially adopted through its guidance process and says it must be used. So I do want to clarify that.

If you have questions about the federal method of test once it becomes a federal method of test we would work closely

with ASHRAE in resolving them, we would closely with AHRI and everyone else, but they need to go through the formalized process at that point. Okay?

So, we know that there's five interpretations out there that AHRI has issued. I'm not going to go through them here because I think a TDA discussion is more useful at this point and you have our positions on them.

And now I'm going to move to the slides you don't have. I apologize you don't have them in advance. I've taken out the next set of slides to show you some illustrations.

So, we've gotten a lot of questions with regards to TDA in terms of how certain links are calculated for the purposes of TDA measurement.

So, you don't have these in your document. We will make them available right after the public meeting so that you do have

a copy.

But I wanted, for the purposes of discussion I wanted to present to you four different scenarios and start a discussion about TDA.

So, scenario 1 shows -- I'm going to present all four and then I welcome your feedback. Scenario 1 shows a case with the wall flush with the visible area. So you can see we have presented three different ways that the lengths could be calculated.

It could be the boundary of the refrigerated volume edge to edge. It could be B which is the entire continuous length which would be including the mullions. Or it can be C + D + E which is actually the sum of the lengths of the visible areas only. So I'm going to go to the next example.

So, why this matters is because we've come across -- we understand this is the way most commercial refrigeration equipment is designed with the boundary of

the refrigerated volume fairly flush with the glass. And the mullions are minimized such that you really are maintaining as much visible area as possible because you're trying to sell product. So when I go to the next scenarios keep that in mind.

Scenario 2. This is where the visible area is almost inset from the boundary of the refrigerated volume. So there's a difference. It almost comes around and overlaps and then the glass inlays a little bit.

So you can calculate length a couple of different ways. One would be the inside wall to the inside wall of the refrigerated volume. That is larger than the actual glass.

You can calculate it by B, the entire continuous length containing the visible area only. That would include the mullions though.

Or you can do C + D + E which is

the sum of the lengths just of the visible area. I think you know our proposal is C + D + E, by the way.

So, this case is a little bit of an oversize, egregious case. Because I realize that as a commercial refrigeration equipment manufacturer you're probably trying to maximize your visible area to sell product. But I wanted to show an example of why this matters from the Department's perspective.

So, for this one it's the same scenario too except for they have a really big mullion in the middle, like really big. And assume for the purposes of discussion that's a composite, it's foamed and it's just, you know, almost as big as one of the windows.

So then for this we have three ways of calculating TDA. Should it be the boundary of the refrigerated volume once again? Should it be the continuous length of

the visible area which would include the mullion? And in this case that's a very large portion. Or should it really just be the sum of the visible areas?

And then I'm going to go through scenario 4. And this is where the glass actually overhangs the refrigerated volume. So the internal is smaller than the glass itself, the refrigerated space. So the boundary of the refrigerated volume fits into where the glass is.

And for the purpose of this the entire continuous length of visible area would actually be larger than the refrigerated volume itself. And then obviously you can see the two ways to calculate just the visible areas.

So, I understand it may be hard because you don't have these slides in front of you, but when the Department was coming out with an interpretation or its proposal these are the scenarios we were trying to

think of. And so this is what we would like your feedback on. Because I understand that people may have a lot of feedback on what we should do.

MR. BROOKMAN: Okay, and maybe when you comment you can refer to the scenario that you wish to comment on. Who'd like to start? Tim? Which scenario?

MR. ANDERSON: Go back to the first one. Tim Anderson, Hussmann. The point that I would like to make and that I was trying to illustrate with the exhibit that we submitted was not so much that we have a problem with using one method versus the other.

It's that when the standard levels were set and the proposed standard levels were created for let's call it the 2017 rule that essentially the first one, length A, was used in all of those analyses.

So, you've already used this

method for setting your standard levels. If you are going to change it, that's fine, let's agree on a way to change it, but you also have to revise the standard levels accordingly.

If you subtract 10 percent of our TDA from our case you have to adjust the standard levels so that we're not unfairly penalized. That's the point that I want to make.

MS. ARMSTRONG: Right. So, I'm going to go on the record saying the Department will not adjust TDA in a manner that will increase the stringency of the standards you are required to meet today.

Now, what we want to get out of the discussion is what should TDA actually be. What is the best method that TDA -- how should TDA really be calculated?

So I'm going to turn the question a little bit in the sense that we get the standards point. We will deal with that.

But with my examples do you see the differences?

MR. NESHAN: Yes, Ashley. Neshan, Southern Store Fixtures. I mean, this obviously is very typical of a commercial refrigeration door cases manufactured in the United States and other places as well.

The second one that you had, this is really the only place, and Bruce mentioned you have seen this is when you have an ice storage or one of those units you see outside of a gas station in the self-ice in plastic bags. You would see a door and then the insulated on either sides.

And then the last one, the fourth one that you were showing, this one, I've never seen anything like this because I don't think anybody wants to open a door and then be in a non-refrigerated area because that would be a very, very difficult -- really you're penalizing yourself and it's not a

very good design.

But typically that number 1 is what everybody is familiar with. Our equipment is manufactured that way.

And by the way, this does not only apply to the door type cases. I mean, I'm talking about the reach-in door cases. It is also applicable to service over counter where you have the sliding doors in the back.

MS. ARMSTRONG: Yes, it's going to apply there.

MR. NESHAN: So it's -- and there are other equipment very similar to it.

So, the -- in my opinion the best way to do it is what we have been doing so far and how it was -- the TDA was calculated when the 2008 calculation was put together, to stay with that, how it was defined, and that would have been A, the first version, whatever.

MS. ARMSTRONG: So, how do you reconcile that with the definition of TDA

includes the projected areas for visible product? What do we do with A there?

MR. NESHAN: I don't know who would make a case like that.

MS. ARMSTRONG: But we have to write regs that are very clear and meet the intent of the projected areas -- meet that definition.

MR. NESHAN: This is Neshan. I don't have an answer because I've never seen anything like this.

MS. ARMSTRONG: Right. I mean, it's a tense point, right? I mean, the reason you see the difference there is because the mullion area really is about 10 percent. That's why you're seeing a difference.

And the question becomes does the mullion area really meet the intent of the TDA definition which is projected areas for visible product. I'm asking. It's a question.

MR. BROOKMAN: Yes, Bruce.

MR. HIERLMEIER: Bruce from Zero Zone. I mean, I think when we started looking at TDA a long time ago we never got really good correlation actually in the data. And we looked at our competitors' cases as a group and all that and said all right, how does TDA really compare to the energy use and shouldn't we be using volume for remote cases and all, and what about the depth of the case? Do you get a benefit if you've got a deeper case?

And it was kind of one of those you negotiate, you look at and say all right, we're just going to do TDA and we're going to do the length of the case. So we don't have a lot of engineering data to point out what's the difference in energy level for scenario 3 which you think would be a lot because you could have an insulated panel, doesn't have any glass heat, doesn't have any radiated components or anything. But we don't have

good numbers to tell you how much to add or cut out of that to regulate against it even.

MS. ARMSTRONG: Well, I think that's a different question, right? It's more the question of if we were -- we are providing guidance, more details about how TDA should be calculated. And the definition of TDA is projected areas for visible product. What should that guidance say?

I mean, are mullions are visible product? Please speak. I mean, this is meant to be a discussion.

MR. SCHRINER: Arneg USA, Nick Schriner. It depends on how close you are to the product. Because if you can get close enough you can see this. Are you talking a 10-foot straight on view?

MS. ARMSTRONG: I mean, it also depends on how big those mullions are, correct? If you have on that's 3 feet wide, don't know why you would do that, but if you have one that was 3 feet wide I would argue

you may not be able to see visible product on the other end ever.

MR. BROOKMAN: Bruce.

MR. HIERLMEIER: Well, when we were looking at these interpretations at AHRI we had toyed with, all right, you're going to put a person in front of the door. And we were actually looking at the vertical ones.

And we were like, all right, what if you had an angle and you said that person could look up 30 inches from this point and anything that you could project and see from that location would be considered visible space.

Ultimately vertically we said no, we're just going to go direct in horizontally. But we had looked at, sort of to Arneg's point, you know can you look sideways at it. At a certain distance out, at a certain position in front of that opening what can you see sideways? Anything you can see sideways you get to consider as

display area.

Things you can't see -- so like if B was wide, 6 feet wide, odds are you can't stand in front of it and see 3 feet to the side. But maybe you'd get, you know, another 10 or 12 inches, whatever you might be able to see. So, I mean that would be one method is you pick a point, you put some dimensions on it and that allows you to get beyond normal mullions.

MS. ARMSTRONG: So, I agree, that is one method. That is a little subjective, right? Somebody would have to make the determination of what you could see and what you can't. Sure.

MR. ANDERSON: So, just brainstorming. Tim Anderson, Hussmann. What if you used, and going back to the first one again, what if you used A but set a threshold for the amount of the thickness of the mullions that could be excluded?

You know, so you said A is the

length of the case unless, you know, the thickness of these mullions is greater than 15 percent of the overall A dimension, something like that. That may be a way to try to avoid the situations like you show in I think it was scenario 3.

MS. ARMSTRONG: Yes. So, we could do that. That's definitely an idea. I would argue you should use B. In your case A and B are the same for your standard cases.

Where B helps us is when you have the wraparound. And if you have a wraparound like you were explaining with the ice chest there is a difference there. And B would get you to what your mullion issue.

We could -- I mean this really -- scenario 1, 2, 3 and 4 was meant to generate ideas and a discussion. Our proposal was C + D + E.

MR. BROOKMAN: Say why.

MS. ARMSTRONG: I think that was the only way that -- well, A, you know, it

says projected areas for visible product, and B, you know, when you're just counting the glass minus the mullions you don't have to rely on an interpretation of can I see, can I not see, depending on how thick the mullion is, what's the materials of the mullions, whether it's insulated or not. You don't have to worry about those kinds of things. It's just the glass.

MR. BROOKMAN: Charlie.

MR. HON: This is Charlie Hon. There's also another set of scenarios that are even -- along with up and down directions, you know, you have a horizontal and a vertical direction which is not even included in your slides here.

But also, if you use the pictures and the descriptions in a lot of open cases you lose part of your visible display because a lot of open cases have a 6- to 12-inch ridge built up to capture the cold air falling down.

MS. ARMSTRONG: Right.

MR. HON: And then you lose all that as well. So that would go the reverse direction. Because if some of these other areas are discussed like the A scenario on that you would actually increase the internal display area for that unit.

MR. BROOKMAN: Sarah?

MS. WIDDER: So, just to follow up on Charlie's point. That is -- so these are only discussing length. The height measurement is also addressed in the AHRI interpretations and pretty clearly in the diagrams that are in Appendix D.

There's also some diagrams that the Department proposed to include in the CFR that help define H.

And the C + D + E method -- and actually if you go to scenario 4 it's actually F + G + H is the Department's proposal. And that's consistent with the Department's proposal for height.

So it would be height is in your case where there was that either a part of the air curtain or something that comes up over the display area you start from that to what you can see.

And that's consistent with AHRI that it really is the projected height dimension. And so part of the reason Department proposed this for the length dimension is it's consistent in both dimensions.

MS. ARMSTRONG: Right.

MR. BROOKMAN: Let me ask as an attempt to obtain some clarity, what's the downside in the Department's proposal CDE? From the manufacturing perspective. Yes, Nick.

MR. SCHRINER: I believe that -- didn't you already address that?

MS. ARMSTRONG: As long as we addressed his point. I mean, the Department is going on the record saying that --

MR. BROOKMAN: Some percentage of mullions, whatever.

MS. ARMSTRONG: No, no, no. I mean he's saying that the standard -- we can't by default --

MR. BROOKMAN: Oh, yes, right. Gotcha.

MS. ARMSTRONG: So as long as we address that issue do we think that this is the most clear and objective and equal way to go.

MR. BROOKMAN: Nick.

MR. SCHRINER: Another downside is a manufacturer could have bigger doors than their actual refrigeration area.

MS. ARMSTRONG: That's 4. So you wouldn't be able to count that. It would be F + G + H.

MR. HON: This is Charlie Hon. Door variance -- because if you're fairly wide door framing, you actually cover more than the mullion, you would be extended

beyond the edge of the mullion with your door frame. You can do that, we do in some areas, which would further change the dimensions up there. Because is it actually the glass, or is it the mullion?

MS. ARMSTRONG: It's the glass in our proposal.

MR. HON: And that would include the framing of the doors becoming a component as well.

MS. WIDDER: No, I'll clarify. It's not the glass. In that example it's the projection of visible area.

MR. HON: Straight line?

MS. WIDDER: Straight line.

MS. ARMSTRONG: Yes, straight line.

MS. WIDDER: What you can see through.

MS. ARMSTRONG: Yes.

MR. HON: Which would include mullion, glass -- I mean door frames,

whatever it would be, whatever it is obstructing the view is straight through.

MS. ARMSTRONG: Yes.

MR. BROOKMAN: Bruce.

MR. HIERLMEIER: I think what's challenging is the one that has the really wide mullion, if they're all the same volume cases would use the least amount of energy but would also be the least likely to be able to pass probably because you don't account for anything in the back wall, bottom, or ceiling to allow it to have some energy.

So you could wind up sort of an odd scenario that if manufacturers started saying we're going to put smaller doors on to save energy you actually can't pass the test by saving energy because of the back wall and ceiling doesn't get any additional allowance let's say. So you'd have to be careful with the formulas, how that would work out.

MS. ARMSTRONG: So, I'm not sure we're going to come to agreement. But if you

have ideas, like I said, what I wanted to do with this when I was thinking last night to give you some background behind the Department's thought process. That's why we drew these diagrams.

Ultimately we led to the proposal that's in the rule today. But if you have any comments on that we welcome that.

MR. BROOKMAN: Yes, we're seeking clarity here, to be clear, and not agreements at this point. So, additional thoughts and any written comments specifically. Bruce?

MR. HIERLMEIER: Well, to address the question I had, would the DOE entertain sort of a more complex formula where you have a TDA component for energy, but then you have another component for non-TDA space or volume or length?

So that would account -- this guy says all right -- it's almost like building two transparent door cases and a solid door case in that one really big one. So if you

said, all right, you get this extra component for your solid stuff maybe then it helps cover unique designs.

MR. BROOKMAN: Do these designs happen very often, these odd --

(Laughter)

MS. ARMSTRONG: It was my caveat when I presented the slide.

MR. BROOKMAN: It doesn't help you sell product, right? It doesn't maximize use of space.

MR. HIERLMEIER: Ice cases are sort of built like that, but a lot of them are self-contained when they're built like that. They have a small door. You open it up and you can reach. About the only product I've seen.

MR. BROOKMAN: Yes.

MR. NESHAN: Neshan, Southern Store Fixtures. Just one cautionary note. If you go back to the first case, if we were, I mean just for the sake of discussion, if we

were to eliminate the mullions what would stop us from also eliminating where there is no product, basically there is shelf, you know, for edge of the shelf.

There is no product in there, right? The edge of the shelf where you have all the shelves in the display case. There's no product where the shelves are. So you have a piece of metal that really is not usable space.

Also, in the inside, on the end panels when you have a glass end panel all these shelves have their solid area that you can't display product. So who says that we cannot eliminate those?

See, it becomes very complicated trying to calculate these things. It becomes really we have to sit down on a daily basis, do nothing but these kind of calculations which is really not the intent of I'm assuming this standard.

MR. BROOKMAN: Joe Sanders would

like to speak. Joe, welcome. Unmute your phone and speak clearly.

MR. SANDERS: I looked at the formulas. If these were all solid doors we would use volume to calculate energy consumption. Why wouldn't we do the same thing for glass door remotes? Instead of going through all this TDA discussion.

MR. BROOKMAN: Sarah.

MS. WIDDER: Well, that's related -- so the standard, the current standard that we have for remote transparent cases is based on TDA. So, if the Department continues to regulate based on a TDA metric in the standard the test procedure must provide a method for calculating that dimension.

MR. SANDERS: I hear you. I'm listening carefully. But if that's such a huge discussion point why don't they just simply switch to volume based upon a formula for remote transparent door cabinets like we do for self-contained and like you're doing

for remote solid door.

MS. ARMSTRONG: So I think the simple answer is that could be a way for the future. That's not going to be a way to fix all the questions we get now.

Bottom line is we have TDA now for the current standards and honestly, for the proposed ones. So we need at least a method to clearly identify how TDA should be measured now to the extent it's not already clear in our regs. And then if we decide to move to volume in the future we could consider that.

MR. SANDERS: One final comment.

MR. BROOKMAN: Please, Joe, go ahead.

MR. SANDERS: One final comment and I'll go. And this may be pretty much -- if volume is calculated on three dimensions why don't we -- for glass, and I'm only talking about glass door cases. Why don't we calculate TDA based on a two-dimensional area

which goes wall to wall, top to bottom as if you were calculating volume? And forget about what we're trying to do with mullions. Just leave TDA as a square footage calculated wall to wall, top to bottom without the third dimension depth involved.

MS. ARMSTRONG: I mean, my answer is going to be I do think that's what some people are doing now. I'm not clear that that's what -- that isn't what we proposed, but it has come to our attention that that is what some people are doing now. That's not what everyone is doing now.

MR. SANDERS: We don't make a lot of these cases, you know, probably next to about none. But to me that makes the most logical sense to step from a two-dimensional calculation which TDA is to a three-dimensional calculation down the road. So anyway, that's my comment and thank you very much.

MR. BROOKMAN: Thank you, Joe.

Thank you, Charlie.

MR. HON: Charlie Hon. During the original proposals, the original review of these product classes when the first NOPRs were published that was an item of discussion. But the only thing -- the problem was there was no database other than TDA information. And so they went with the industry standard for the grocery store type of equipment which is TDA.

MS. ARMSTRONG: Yes, I mean I think really, I mean one of the reasons we have said in the past that we went with TDA, I mean that's kind of the metric you guys use to sell your equipment, visible area, right? I mean, that's at least our understanding of it.

You're not putting in your marketing literature refrigerated volume. It's how much -- or you may be as well, but you know, it's how much can I see through it. What can I see my product?

Safeway doesn't really care how many yogurts you can see. They want to know -- at least depth-wise. They want to know from the front of it what is all that my customer will be able to see and hopefully purchase. I might have gotten that wrong, but.

MR. BROOKMAN: Bruce?

MR. HIERLMEIER: Bruce from Zero Zone. Also, Europe was doing TDA at the time. So when AHRI got going on it is sort of looking across the pond and what do they do, and oh, okay. You know, again, not a great solution but our best solution at the time.

MR. BROOKMAN: Neshan.

MR. NESHAN: Neshan, Southern Store Fixtures. You ask what would be recommended. What should be used at least for time being would be what was used to originally come up with the different levels of energy consumption when it was done in

2008. I mean, we should continue that which is basically what you have in case 1 and which is very also similar.

And I think your calculation in 2008 is a little bit more liberal compared to what AHRI has. Because AHRI has restricted at least the height from the top and the bottom. They put some restriction in the doors. But the length, still this.

MR. BROOKMAN: You're saying A.

MR. NESHAN: A, correct. Use --

MS. ARMSTRONG: Do you still believe it's A in this one?

MR. NESHAN: Not this one, no, no.

MS. ARMSTRONG: You believe it's B.

MR. NESHAN: No. Let me -- the way that it was done in 2008, the engineering analysis was the length of the case was used. The L, if I recall in the door cases, 12.7 dimension was used which is A and not the B

dimension.

I mean, you can go, and I have a copy of it if you want for those who are interested. The dimension that was used for calculating, or at least coming up with the analysis as to what TDA should be. And dimension A was used.

MR. BROOKMAN: It seems like this is an opportunity to revise that if we wanted to, if you wanted to do it.

I'm wondering if, just to ask another practical question, is there some recommendation here that makes it easier for the industry, that is significantly easier to implement?

MR. NESHAN: Neshan, Southern Store Fixtures. Yes. As I said use the 2008 method of calculation. Also, what is in AHRI standard 1200.

MR. BROOKMAN: Okay. Nick, you're shaking your head. You agree? Does that solve your --

MS. ARMSTRONG: I'm not saying the Department agrees.

(Laughter)

MR. BROOKMAN: But I'm -- you can imagine the Department here is looking for something, I believe, that has a lot of breadth of application, right? That's going to meet a lot of different conditions --

MS. ARMSTRONG: That is one way.

MR. BROOKMAN: -- as they emerge, right? That's going to -- go ahead.

MR. HIERLMEIER: I mean there's some things that customers go in and out of favor. We used to build our cases like scenario 2 and got pushed out of the market with that design. It just, customers didn't want to have spaces, you couldn't see through the glass door and all that. So we modified our design 15 years ago to account for it.

But customers change. They may decide they like this if it saves an extra, you know, 1 percent on energy. But that's

what -- some of these would just be customer driven. There wouldn't be a lot of sales at least initially because it wouldn't meet the other customer needs of displaying and selling food perhaps.

So if you left it as is, some of the other ones would be less frequent. They may get out in the marketplace and may have a benefit on their energy because they've got a big fat mullion.

MR. BROOKMAN: Let me go in a different direction with this. So are any of these proposals, are any of them just much worse than the others that the industry would not like to see? Charlie.

MR. HON: Charlie Hon. Just basic numbers there. The industry -- we're not heavily involved in this so I'm an outsider looking in. We have very, very little TDA-type equipment other than open cases. But -- and continuous cases is the big issue here.

But I'm one that believes that if we did it in 2008, whether it be A or B, or CDE, that's where the number was generated from so just stick with it.

MR. BROOKMAN: Tim?

MR. ANDERSON: Tim Anderson. For VCT display cases for supermarkets the industry wants the first one where the total display area is maximized.

MR. BROOKMAN: A.

MR. ANDERSON: Yes. Well, the first figure where you're not -- you don't have excessive blocking of the visible display area.

MR. BROOKMAN: And within figure 1.

MR. ANDERSON: Yes. They're in the business of selling food, not necessarily saving energy. They want to sell food. So we are constantly under pressure to minimize the mullions as much as possible.

Now, I'm not necessarily speaking

to service over counter equipment or other things. But for VCT equipment we're always under pressure to minimize those non-visible areas.

MR. BROOKMAN: So then on this scenario 1 are you an A, B, or CDE advocate?

MR. HON: Charlie Hon. I think you need to go to scenario 2 because A and B are the same.

MS. ARMSTRONG: So, the idea here is that when we provide some type of guidance it's going to be applicable to all.

And I realize that 99.5 percent of the cases may look like this. But is it fair to have someone do A here where all of you have A and B the same? Or should it be B where really for typical cases it makes no difference? It's the same. Your glass is at the edge of your refrigerated volume.

But for those who opt to make a design where your refrigerated volume is different from the edge of your glass the

definition of TDA clearly says visible product area.

MR. BROOKMAN: Bruce.

MR. HIERLMEIER: Actually, none of our cases that are joined together in the field are scenario 1 because all the doors have mullions. So the mullion, the edge of the door may get very near the edge of the case, but we'll still -- that glass will still get inset an inch and a half or so on each side.

So really scenario 2 is, although it's drawn a little fat, but that's really what we see with the edge of the door typically would go out to A.

MR. BROOKMAN: So that means it should be B?

MS. ARMSTRONG: I don't think your refrigerated volume though is -- right? I mean, your refrigerated boundary of your volume, doesn't that match up with --

MR. HIERLMEIER: No.

MS. ARMSTRONG: It doesn't?

MR. HIERLMEIER: Because the door has to be at the edge of the case and the glass starts in an inch and a half, inch and three quarters.

MS. ARMSTRONG: Okay.

MR. HIERLMEIER: So ours is more like number 2 with that line pressed up against that black edge of the door.

MS. ARMSTRONG: Okay.

MR. HIERLMEIER: In the industry I should say, really. For connected cases.

MR. BROOKMAN: B.

MR. HIERLMEIER: A. We use A, but A is closer. It's up against the edge of the door.

MR. BROOKMAN: Okay.

MS. ARMSTRONG: Okay.

MR. BROOKMAN: Any additional thoughts on this before we move on? Okay. Laura, did you want to?

MS. ZELINSKI: I would say --

Lauren, AHRI. I would say that I would agree with the A that we currently have.

But if we were going to go away from that and change some of the calculations I think that the percentage of mullion might be a good way to go from AHRI's perspective. You know, to consider that A volume or TDA that we currently have, but then take away what was overlaying the refrigerated space and the mullions from inside.

MR. BROOKMAN: Okay, thank you. Please.

MS. BARHYDT: Laura Barhydt, DOE enforcement. Two related thoughts.

One, everybody laughed pretty hard at scenario 3 and Ashley drew it more dramatic to make the point. But we have actually seen a case with a very large mullion in the middle. So it's not that large and it's not those percentages, but it's not a little line either. So keep that in mind when you think about in drafting your

comments that that's an extreme case but it's not out of the realm of possibility. It's not something that's just completely.

MS. ARMSTRONG: I will say we drew these -- we've seen all of them.

MS. BARHYDT: Yes.

MS. ARMSTRONG: So, the market may not like them, but they're there.

MS. BARHYDT: And then the related thought is that what I'm hearing is a lot of people say we make scenario 1. A fits scenario 1. We should stick with A.

And what we're saying is we agree most of the market is scenario 1, but it's not all of the market. And so how should it be calculated for scenarios 2, 3 and 4? They do exist. And so should it be scenario -- option A for all of those scenarios?

I know that that was the assumption that when this was originally written was that A and B would be pretty much equal, but they're not in all cases. And so

what do you do in those cases where they're not equal?

And what -- I think that what I've heard is that when you drafted it in 2008 and you said A and B are pretty much equal we're assuming that projected display area is equal to the length.

But what happens when they're not? And you're making that assumption. So how do we interpret projected visible area where that's not the case?

MR. BROOKMAN: Okay, thank you. Additional comments before we move on.

So, really the Department needs your best thinking in your written comments here.

MS. ARMSTRONG: So, we've kind of touched on this throughout the day. This is just a really quick overview.

What we did was we bifurcated the existing test procedures into two appendices, Appendix A and Appendix B. Appendix A will

be required to be used 30 days after publication of any test procedure final rule. Appendix B is compliance state of future standards. So, as Tim likes to call it, 2017-ish. And so just to make that clear.

Charlie, do you want to do this part?

MR. BROOKMAN: Yes. Neshan.

MR. NESHAN: Ashley, one question I have. Obviously the slides that you did not show. I mean, and this one.

MR. BROOKMAN: What number is it, Neshan?

MR. NESHAN: This is 70.

MS. ARMSTRONG: Figure H.

MR. NESHAN: Yes, the lower one, the one that is kind of a semi horizontal.

MS. ARMSTRONG: Yes.

MR. NESHAN: The way this arrow is shown, obviously it's not an engineering drawing, but it seems that that arrow needs to be pointing to the bottom of the

transparent product stop and not necessarily to the middle point.

MS. ARMSTRONG: I think that's why we pointed out that that's where it stops.

MS. WIDDER: That's the intent.

MS. ARMSTRONG: Right.

MR. NESHAN: Going to the bottom.

MS. ARMSTRONG: Yes.

MR. NESHAN: Another way of doing it, to be honest with you, going to the top and then coming down. Depending how you want to, you know.

MS. ARMSTRONG: That's why that's there. Right? So it's a -- because clearly that's where it stops.

MR. NESHAN: Yes, I know. But I'm saying that this could also could have easily been done. This is one area. This is another one.

MS. ARMSTRONG: Right. I got it.

MR. NESHAN: Two different ways

of doing it. Thank you.

MR. BROOKMAN: Thank you.

MR. LLENZA: This is Charles Llenza, Department of Energy. Just can you put that in your comments? Since you made comments here. Thank you.

MR. BROOKMAN: Okay. So, I think that's all that the Department intended to cover. Charles Llenza, do you wish to make closing remarks?

For my part, thank you all. This was a very productive meeting. We covered a lot of ground here very efficiently. Charles.

MR. LLENZA: I'm glad that you guys attended and we appreciate the comments presented today.

We also want to remind everybody that written comments are the best for the Department so that we can document and then respond to all your comments accordingly.

I wanted to provide here on this

slide the CRE TP web pages and the DOE contacts. As you can see the web page is up on the top and the commercial refrigeration equipment test procedure web page is the second web page.

I can be contacted for commercial refrigeration issues at that link. And then Ashley Armstrong's email address is there for contacting her.

I also wanted to just go back to the method of providing comments and remind everybody that to provide the docket number and the RIN number, and to use the -- what we have put here on how to submit comments for the comments for the test procedure.

And once again, also to remind parties that January 13, 2014 is the comment period closing date. So thanks for attending.

MR. HIERLMEIER: I had trouble with the email address --

MS. ARMSTRONG: Yes, it was like

the difference between --

MR. BROOKMAN: Okay, thanks Bruce.

MR. LLENZA: If you have any problems use my email address and just contact me on any of these and I'll make sure everything is running properly. It should be running properly at this point.

MR. BROOKMAN: Yes, Bruce.

MR. HIERLMEIER: Are we going to have the slides here that are new? Are you going to email them all to us?

MR. LLENZA: They will be posted as soon as we get back to the office, yes.

MR. BROOKMAN: So thanks again. Safe travels to everyone. Hope you make it home before the snow.

(Whereupon, the foregoing matter went off the record at 12:52 p.m.)

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C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Commercial Refrigeration Equipment
Notice of Proposed Rulemaking

Before: US DOE

Date: 12-05-13

Place: Washington, DC

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

Neal R Gross

Court Reporter