

BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the Matter of,)
)Docket No. 10-BSTD-01
Draft 2013 Building Energy)
Efficiency Standards)
Revisions)

**Draft 2013 Building Energy Efficiency Standards
Revisions for Residential Buildings and General
Requirements**

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

FRIDAY, OCTOBER 14, 2011

9:03 A.M.

Reported by:
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Commissioners Present

Karen Douglas

Commission Staff Present:

Mazi Shirakh
Martha Brook
Gary Flamm
Patrick Saxton
Leah Lentz
Danny Tam
Jeff Miller
Dave Ware
Bruce Wilcox, consultant

Also Present (*on phone):

Mike Gable, Gable Associates
Mike Thompson, CBPCA HERS Providership
Tom Garcia, CALBO
Ken Nittler, ENERCOMP
George Nesbitt, Environmental Design /Build CalHERS,
Passive House California
Erik Emblem, Joint Committee on Energy and Environmental
Policy
Jon McHugh, McHugh Energy
Avery Kintner, Empowered energy
Nehemiah Stone, Benningfield Group
John Steinberg, EcoFactor
Dan Varvais, Bayer Material Science
Mike McGaraghan, Energy Solutions
Yanda Zhang, Heschong Mahone Group
Eric DeVito, Cardinal Glass Industries
Mike Fischer, Kellen Company
Jim Francisco, Sierra Consulting
*Roger LeBrun, Velux America
Gary Talbott, Five Star Performance Insulation and the
Spray Foam Alliance
Michael Morgan, Performance Foam Tech
Rick Peterson, Eagle Roofing Products
Frank Klink, 3M
André Desjarlais, Oak Ridge National Laboratory
Sarah Deukmejian, ACS Building Products
Ed Osann, NRDC
Pat Eisler, PG&E
Abhijeet Pande, Heschong Mahone Group

Bob Raymer, California Building Association
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Cathy Chapelle, Heschong Mahone Group
Reed Hitchcock, the Asphalt Roofing Manufacturers
Association
Eric Banks, BASF Corporation
Mike Hodgson, ConSol for CBIA

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P R O C E E D I N G S

OCTOBER 14, 2011 9:03 a.m.

COMMISSIONER DOUGLAS: Good morning. Welcome to the Building Energy Efficiency Standards Committee Workshop on the standards. Today we are going to cover a busy agenda, focusing primarily on the residential sector and I'll ask staff to get us going here.

MR. SHIRAKH: Okay, Commissioner Douglas. I'm Mazi Shirakh. So the presentation today, the topics in the morning are going to be mostly the administrative sections of the standards which are common to both res and non-res, definitions and then, after that, we'll get into the residential sections 150.1 and .2 and then we'll finish this afternoon with a brief discussion of the REACH standards. So the presentations today will go back and forth between myself, Gary Flamm, Patrick and Martha.

So we'll start with--so this is the schedule for the remainder of the proceedings. From here on out, November 3 is going to be preparing the express terms like ISOR, NOPA and EIR and the forms 399 and I guess the dates that are of most significance is the efficiency hearing scheduled for January 9. That would be to hear the 45 day language and the 15 day language is going to be followed on March 14 and adoption at a

1 Business Meeting on April 4.

2 With that I'm going to turn this over to Gary
3 Flamm who is going to do the definitions.

4 MR. FLAMM: Excuse me. Good morning. First
5 we are going to cover the proposed changes in Part 1,
6 the Administrative Code, Section 10-102 Definitions. The
7 definitions have been edited for clarity. There have
8 been a few definitions added. Note that there is still
9 an ACM, alternate calculation method, approval manual
10 and there's a new definition. ACM Reference Manual.
11 There's a number of other definitions, I'm not going to
12 read the list, but the definitions support clarity and
13 other changes to the standards.

14 I want to turn this back over to Mazi.

15 MR. SHIRAKH: So there's been many changes to
16 subsection 10-103. This is the section that describes
17 the permitting requirement, the type of compliance
18 documentation that needs to be submitted. A lot of
19 these changes are clarifications but there are also some
20 new material here, some obsolete language which was
21 deleted; we reorganized this section so that it will
22 flow better in a more logical way.

23 Number 3 is that we introduced a way for
24 enforcement agencies to create simplified compliance
25 documents. This was requested by CALBO for simple

1 additions less than 300 square feet and alterations that
2 does not involve a HERS verification feature.

3 Basically, now we're letting the Building Departments to
4 come up with their own forms or procedures or compliance
5 for these projects.

6 Number 4 is, then again, the same thing that
7 is trying to simplify the procedure for small products
8 where we can simplify alterations to residential
9 buildings to submit Certificate of Compliance which is
10 CF1R to Enforcement Agencies in conjunction with
11 Certificate of Installation which is CF6R. This is
12 offered as a convenience for situations in which HVAC
13 replacement applies only to projects that requires HERS
14 verification for when REACH enforcement agency does not
15 require building design plans. It's an attempt to make
16 this a little bit easier on Building Departments.

17 Number 5 is an update from within Section 10-
18 103 we refer to the Reference Joint Appendix JA-9 and
19 this is a new appendix that we are creating that has
20 specifications for the electronic documentation
21 registries and depositories.

22 And other changes include the expanded
23 documentation author signature requirements to all
24 documents Installation Certificate which is again CF1R,
25 Acceptance requirement, and Certificate of Field

1 Verification and Diagnostic Testing. In order to
2 accommodate Administrative Assistants that are
3 responsible signers of the documents required for
4 registration of the procedure. The whole attempt here
5 is to create accountability for who is responsible for
6 the document, who can sign on behalf of the installers.
7 So there's some language included in here.

8 Another change to 10-103 is Item 7. In 2008
9 we introduced the requirement for the residential forms,
10 CF1R, 6R and 4Rs, to be uploaded into a data registry.
11 The intent here is to have some kind of electronic
12 record of compliance documentation. For this round of
13 standards, we're proposing to expand that to the
14 nonresidential forms that would include Certificate of
15 Installation, Acceptance forms and basically all
16 nonresidential forms will be required to be uploaded to
17 a registry.

18 Number 8 is the language that would authorize
19 the creation of a documents repository, central
20 documents repository, which could reside here at the
21 Commission or at a third-party. The intent of this
22 repository is that all of the forms that are uploaded
23 into the registries will automatically have the
24 documents uploaded into the repository. We can then use
25 that for various agency enforcements, program

1 development, evaluation and also some other purposes.

2 10-106 was the—there were some changes in
3 there. It's only for clarity.

4 10-107. This is language that basically
5 clarifies—we've always had this authority for the
6 Executive Director to come up with procedures and
7 techniques that are equivalent to what's in the
8 standards or the related documents. This just clarifies
9 that languages and makes it more explicit that in
10 between cycles the Commission can come up with
11 procedures that are not new regulations but could be
12 equivalent as long as they are deemed to be equivalent
13 to the existing procedures.

14 10-109 was just reorganized for clarity,
15 general requirements; application; compliance software,
16 alternative component packages, exceptional methods,
17 data registries and repositories. Just clarifying
18 language and inserted a new subsection to address the
19 data registries which I previously talked about.

20 10-110, again this is just clarification
21 language. This is another new requirement is that the
22 Executive Director may charge a fee to recover the costs
23 of processing and reviewing applications with the
24 exception of Section 10-106 applications.

25 Gary, do you want to take this one?

1 MR. FLAMM: So moving on to 10-111. Labeling.
2 Clarified the differences between manufactured and site-
3 built fenestration. Manufactured fenestration requires
4 air leakage testing and site-built fenestration does
5 not. Clarified that manufactured fenestration requires
6 a label for each product where as site-built does not.
7 It requires one label for multiple fenestration
8 products. And there are some NFRC clarifications that
9 have been inserted.

10 Certification Requirements. Added VT language
11 because it is used in Part 6. And added the Component
12 modeling approach software tool, CMAST, to allow
13 manufactures and specifies to use this program to
14 acquire an NFRC certified label.

15 Section 10-113 was edited for clarity.

16 And Section 10-114. Determination of outdoor
17 lighting zones, and administrative rules for use. The
18 requirements for requirements for amending local
19 ordinances have been removed to be consistent with
20 changes made to Section 140.7 (The outdoor lighting
21 power requirements).

22 Okay. Any comments on what we've covered thus
23 far?

24 UNIDENTIFIED SPEAKER: When are they due?

25 MR. SHIRAKH: Actually, yesterday we announced

1 that it would be October 31, that's Halloween. Don't
2 make it too scary.

3 MR. GABLE: Mike Gable, Gable Associates.
4 Just a couple of quick comments in this section on 10-
5 103, 2C. I wanted to add—I wanted to make sure that the
6 Commission added something about the local Enforcement
7 Agency having the authority to require the compliance
8 software input file, the electronic file. I made these
9 comments to you in person and in writing previously. I
10 think that if you don't give local Enforcement Agency
11 with the authority to see the computer input file, there
12 are many buildings for which you can't really enforce
13 the standards. You can't really see what's going on
14 with how they model things. So I think that it's really
15 important to include that.

16 On 10-109, I'm just curious about the public
17 domain versus the compliance software. Does the public
18 domain have to meet the ACM Manual requirements or not?

19 MS. BROOK: It does. Yeah.

20 MR. GABLE: It does. Okay. Thanks. And,
21 finally, on 10-111 I won't go into this today but
22 yesterday I talked about CMAST software. My
23 understanding of CMAST is that it doesn't meet the
24 requirements of 10-111. It does not publish, at least
25 annually, a directory of product certified and de-

1 certified within its program. So we wanted to talk to
2 NFRC about CMAST and how that can work under those
3 rules. Thanks.

4 MR. THOMPSON: Good morning. Mike Thompson,
5 Director at CBPCA HERS Providership. The new forms that
6 you talk about, especially the abbreviated ones that
7 apparently municipalities will have discretion over.
8 Will they require registration by a HERS Providership?

9 MR. SHIRAKH: No because we're not changing
10 any of the registration requirements for the
11 residential. It's exactly the same as 2008.

12 MR. THOMPSON: Okay.

13 MR. SHIRAKH: So these are only features that
14 did not involve the HERS verification requirement which
15 currently do not have to be uploaded into the registries
16 so I don't think it should impact you.

17 MR. THOMPSON: Got it. Thank you very much.

18 MR. SHIRAKH: Is that correct, Jeff Miller?
19 Are you there?

20 MR. GARCIA: Tom Garcia, representing CALBO.
21 I just wanted to clarify or make a couple of comments
22 about the 10-103(a)1C which is the part where you're
23 talking about allowing building departments to make
24 their own compliance form. I think CALBO's position, or
25 request, was that we actually just say there are

1 specific cases where we don't need compliance forms so I
2 want to work with you on that language or allow you to
3 take a second shot at that because I think just allowing
4 building departments to make their own form can, in some
5 cases, make it confusing for contractors. So I'd like
6 to-

7 MR. SHIRAKH: So what you're saying is-our
8 language would allow you to basically-

9 MR. GARCIA: But you're still saying that you
10 need a form. I'm saying that there are cases, for
11 example water heaters, where really there's no need to
12 have a form because the standards are very clear on
13 what's necessary and it's one or two numbers that we
14 have to check. And, by just issuing the permit, we can
15 in fact enforce the standards.

16 MR. SHIRAKH: So should there be any kind of
17 record that-

18 MR. GARCIA: I don't think so. We issue a
19 permit for a water heater. We go out and inspect it to
20 the proper energy factor and installation of pipes and
21 we're done. The standards are very clear on what's
22 necessary.

23 MR. SHIRAKH: Okay.

24 MR. GARCIA: I'm just saying that we need to
25 get back to cases where the standards are clear and

1 there's no need for additional paperwork—

2 MR. SHIRAKH: Okay.

3 MR. GARCIA: It slows the process and
4 frustrates people. So we should look at the cases where
5 that's necessary and make an exception specifically for
6 those.

7 MR. SHIRAKH: Okay.

8 MR. GARCIA: I had another question on Section
9 10-103(e)1E. I'm not quite sure what that section is
10 intended to do. It's about having an engineer record or
11 an engineer review the documents. You kind of brushed
12 over that and I wasn't quite clear on what we're doing
13 there.

14 MR. SHIRAKH: Do you know what that is? I
15 think you need to come up. Okay. We'll look at that
16 language. We can work with you offline.

17 MR. GARCIA: Again, I'm not just quite-it was
18 brand new and it was kind of onerous.

19 MR. SHIRAKH: Unfortunately I don't remember
20 all the subsections in my head.

21 MR. GARCIA: Okay. Thanks.

22 MR. SHIRAKH: Thank you. Mike?

23 MR. HODGSON: Mike Hodgson, ConSol. Good
24 morning, Commissioner. Just a couple of housekeeping
25 things, one of which is that the PowerPoint that you

1 presented yesterday did not—was not the same one that
2 was on the web so if you could upload the most recent
3 copy that would be very helpful. And it was just at the
4 very end, there were a couple of slides that were
5 different. And today's PowerPoint has not been posted
6 yet. So it'd be helpful for those of us trying to
7 follow electronically to have it posted as soon as
8 possible.

9 MR. SHIRAKH: Okay.

10 MR. HODGSON: And that way we can take notes.
11 I know we're not talking about the residential
12 appendices today, at least that's my understanding, but
13 is it the intent to adopt the residential appendices and
14 language along with the standards?

15 MR. SHIRAKH: Yes.

16 MR. HODGSON: And is that a requirement to do
17 that?

18 MR. SHIRAKH: The residential appendices, they
19 need to be adopted at the same time as the standards so
20 are the ACM Approval Manuals but we're actually making a
21 change to the Approval Manuals. There's going to be two
22 ACM Manuals. One is going to be adopted and one is
23 going to be approved.

24 MR. HODGSON: Yeah. The appendices in 2008
25 really got much more robust than they had been

1 previously and we've used them with clarifications and
2 trying to figure out how to interpret the standards. My
3 suggestion is if there's a way not to adopt them so we
4 don't have to go through a rulemaking when we want to
5 change language, I would suggest that we explore that.
6 I don't know if that's legally possible but those
7 residential appendices really come down to the nitty
8 gritty of enforcement and other issues, and other than
9 every three years it would be nice to be able to have
10 access to them.

11 MS. BROOK: We actually think we do have the
12 ability to make periodic updates because there's some,
13 correct me if I'm wrong, but I think we added some
14 disclaimer language in there that says, "Under approval
15 of the Executive Director" we could make some
16 modifications.

17 MR. SHIRAKH: For instance, JA-4 which has the
18 building assemblies in there and we have specific
19 language in there that allows us to continuously update
20 that section.

21 MR. HODGSON: As long as we have access so
22 that we don't have to go through a rulemaking—

23 MS. BROOK: Right. Right.

24 MR. HODGSON: Or—

25 MS. BROOK: We can definitely check with our

1 Legal Counsel on that—

2 MR. HODGSON: Right.

3 MS. BROOK: to see if that's a requirement
4 that the appendices get adopted. I think that's a very
5 good—

6 MR. SHIRAKH: And that language that I just
7 put up there in 10-107, that gives us further authority
8 to adopt procedures that are equivalent to what's in the
9 standards. So that gives us some flexibility. I
10 understand what you're saying but the problem is in
11 reference to when we actually have standard requirements
12 in it.

13 MR. HODGSON: Right. I understand the
14 standards—okay. We would really like access to them
15 rather than in a formal rulemaking process.

16 MR. SHIRAKH: It would be nice if we didn't
17 have to adopt them. I admit that.

18 MR. NITTLER: Ken Nittler with ENERCOMP. One
19 of my business activities, I operate an NFRC laboratory
20 and we do the so-called CMAST ratings. I was just
21 reviewing this language here in 10-111(d)4 and while I
22 certainly support getting CMAST, it's really properly
23 called the Component Modeling Approach, into the
24 standards. This language, I don't think, is quite in
25 the right spot. So I would certainly work with you to

1 get it-

2 MR. SHIRAKH: Okay.

3 MR. NITTLER: properly placed.

4 MR. SHIRAKH: Can you work with Nelson on that
5 one and send him an email?

6 MR. NITTLER: Perfect.

7 MR. SHIRAKH: Thank you.

8 MR. NESBITT: George Nesbitt, Environmental.
9 Design/Build, CalHERS Passive House California. First
10 off, I'd like to start with HERS Rater with a small 'r,'
11 I believe it was Commissioner Douglas and the Commission
12 that in February of 2010 that at my and CalHERS request
13 had staff capitalize all the 'r's' in Rater, it's a
14 title as Architect and Engineer are. So I suggest we
15 retrain all the Commission spellcheckers to capitalize
16 the 'r' in Rater as well as the 'p' in Provider.

17 On the section on the Certificate of
18 Compliance. I'm thinking partly in performance method,
19 the thing is not all inputs that you put into the
20 software necessarily come out on the compliance forms.
21 Although, you do say that all the features have to be
22 included on all the forms.

23 Also on the-

24 MS. BROOK: Hold on there, George.

25 MR. NESBITT: Sure.

1 MS. BROOK: So are you recommending that they
2 are all reported on the forms, is that what your comment
3 is?

4 MR. NESBITT: I'm saying that all inputs are
5 not necessarily show up on the compliance forms.

6 MS. BROOK: I know. Is that a good thing or a
7 bad thing?

8 MR. NESBITT: That's a bad thing.

9 MS. BROOK: Okay. Thank you.

10 MR. NESBITT: Yeah. Because there are things—
11 it's gotten a little better in the 2008 but there are
12 and perhaps it's more of an EnergyPro issue than a
13 MICROPAS. There are things that you can't manipulate
14 specifically the solar space heating fraction that I
15 have raised in the past.

16 So on the small alterations and small
17 additions on the simplified forms; I'd like to say yeah.
18 Every jurisdiction being able to come up with their own
19 form does not sound like a good idea. I believe you
20 have forms for change outs for each climate zone that
21 have all the requirements. I think perhaps what is
22 needed is rather than, maybe on the simple stuff, rather
23 than requiring a form that says you're going to do it,
24 maybe just make it clear that you have to present the
25 CF6R which says that you did it and to the standard.

1 MR. SHIRAKH: Did you just hear what Tom
2 Garcia said? That he doesn't want any forms at all. So
3 go and talk to Tom about it.

4 MR. NESBITT: Well, I mean, if-then let's put
5 the water heater make and model and efficiency right on
6 the permit. I don't care either way. I think your
7 intent is to simplify or to make it easier on the one
8 hand yet if everyone comes up with their own different
9 form, it's a total mess.

10 MR. SHIRAKH: But what Tom is saying is no
11 forms at all.

12 MR. NESBITT: Well, I'd say installation
13 certifications may suffice for a lot of the simpler
14 stuff and that may be the answer. That may not be on
15 the form but it is the right form.

16 Also, you kind of mentioned a form for
17 mechanical ventilation yet we have a CF6R Mech 5 that is
18 specifically for that yet the language kind of says,
19 "Well, you need to submit documentation, blah, blah,
20 blah." Yet we do have a specific form saying that the
21 ventilation form meets 622.

22 The other thing is in this section as well as
23 elsewhere, you often use the term-well you need field
24 verification and diagnostic testing according to
25 appendix chapter whichever one it is. Yet I think it

1 would be better to make it clear anytime that most of
2 those are HERS measures to make it clear that "this
3 requires HERS Rater verification according to" as a
4 constant reminder that this requires a HERS Rater
5 because it's often forgotten and not enforced.

6 And then on software approval, Pat Splitt
7 mentioned maybe having some sort of public forum as the
8 approval process. I would say at the moment, the only
9 public forum for the software is to file an official
10 appeal to de-certify. Perhaps when stuff is submitted
11 you'd like those of us in the industry to review it
12 before you certify it and before we have to file
13 complaints. And I'll leave it at that for this section.

14 MR. SHIRAKH: Thank you, George. I forgot to
15 mention that it would be nice if speakers gave a
16 business card or spell their name for the Court
17 Reporter. Thank you. Erik?

18 MR. EMBLEM: Good morning. I'm Erik Emblem
19 with the Joint Committee on Energy and Environmental
20 Policy. Commissioners, Staff. I just wanted to say so
21 far you're doing a great job. It's a tough job you have
22 going.

23 On this particular section when you get into
24 the administrative portion, we have a lot of questions.
25 I think the big change that will affect our contractors

1 in particular is the State of Registry for
2 nonresidential forms. I'd like to keep things simple
3 but my people that I work with, they like to keep
4 lawyers in the background. Obviously we sent this over
5 to one of those guys. Number one, our lawyer says there
6 may be—he says—he can't see that you have the authority
7 to do it. I always drop back to say, "Is this
8 potentially a good thing?" And I think it is. He
9 thinks that maybe you need to review that and look at,
10 that maybe the Commission is stretching their arms a
11 little farther than the public code says. So take a
12 look at that.

13 Let's look at it from a practical standpoint.
14 I've been an advocate for a long time and we've been an
15 advocate for a long time for streamlining a process to
16 make it easier for contractors to get permits and to
17 process paperwork. We know that in today's world the
18 best way to do that is electronically.

19 From a labor standpoint, we like the idea of
20 validation and clarification and substantiation that the
21 work being done is the work that you're getting paid
22 for. I think that's where you're going with this. From
23 a [inaudible] protectoral perspective we're in favor of
24 it. But the problem that we see right now is we think
25 it's premature and that we don't have the infrastructure

1 behind it in place, nor do I think you'll have it in
2 place by January 1, 2015. Now, I work with this Western
3 HVAC Performance Alliance on several committees. And
4 the long-term plan has asked us to transform the HVAC
5 industry of one that is kind of haphazardly come
6 together through various processes and, according to
7 reports, on a consistent basis does not quality install
8 and quality maintain systems. In order to do that, we
9 need to make sure that the infrastructure we're building
10 around it in codes and standards is also put together in
11 a way that the public is getting value from it and the
12 contractors are getting value, we streamline the process
13 and the intended objectives are met. We'd like to work
14 with you in creating this registry in a format that will
15 work good for our industry and perhaps, in some beta
16 form between now and the next code cycle, we'll have
17 something that's up and running and we'll get volunteer
18 contractors to work with you on submitting forms and how
19 the forms will go in and what the data is on those forms
20 and how it's going to be used. That's a concern to them
21 as some of their clients may not like that information
22 all over the place. So to protect the building owners
23 and the information that's on those forms.

24 I think moving forward that's something to
25 look at on that but in this code cycle it's premature

1 and we'd like to work with you. In the end I think the
2 objective is right.

3 MR. SHIRAKH: You may have noticed that we've
4 have a delayed implementation day.

5 MR. EMBLEM: Yes.

6 MR. SHIRAKH: That was January 1, 20-

7 MR. EMBLEM: 15.

8 MR. SHIRAKH: So that gives us nearly four
9 years.

10 MR. EMBLEM: Right.

11 MR. SHIRAKH: You don't think that's enough
12 time to work out our differences?

13 MR. EMBLEM: Well, I don't want to say that we
14 have a lot of differences, to be honest with you. What
15 I'd like to say is that to meet the intended objectives,
16 I think to put it in this code, to write it in a statute
17 or into the code, it sets the wheels in motion. Let's
18 face it. We haven't done a good job on the HERS side.
19 We haven't done a good job of getting the Providers to
20 upload the information to the Commission. Nor have we
21 on the Commission side done a good job of what we're
22 going to do with the data once we receive it. In other
23 words, what's there now and what have we done with it?
24 Have we actually gone through all of the forms to date
25 and utilized the data from those forms to move forward?

1 Or are we moving forward just from anecdotal information
2 that's coming in through various code authorities on
3 jobs that are being permitted? And then ignoring all
4 the other ones that haven't been permitted. I just
5 don't think we're there yet. Like I said, we're not
6 against it. It's something that I think is that we
7 ultimately want to end up there and we'd like to work
8 with you on it and we'd like to—

9 MR. SHIRAKH: We'd be happy to work with you.
10 As far as the authority, we have actually checked with
11 our attorneys and they're okay with this.

12 MR. EMBLEM: That's why we have attorneys on
13 both sides. And, again, I'm not there with that but the
14 attorney did question that.

15 The other thing is the document author and I
16 said this yesterday and I'll say it again. The
17 information on those forms is critical. The person
18 filling out those forms has to understand data
19 gathering, understand instrumentation and understand
20 building operations. It can't just be a person who was
21 sent out in the field and said to fill out a certain
22 piece of paper and bring it back to the office. Now I
23 notice that there's going to be signatures on both of
24 the forms so that the license party is also going to
25 sign off on the forms. I guess what's not clear is if I

26

1 sign off on that form as the licensed party, am I taking
2 responsibility for the data on the form? Is that your
3 intent?

4 MR. SHIRAKH: Can you respond?

5 MR. MILLER: Okay. Jeff Miller, Energy
6 Commission. The intention is that there be one person
7 to take responsibility of the person who is licensed to
8 take responsibility for the information on the document.
9 So the information is yes, the license person would
10 determine whether the information provided on the
11 document was what he would want to take responsibility
12 for.

13 MR. EMBLEM: Okay, that's important to us. I
14 think for all practical purposes there is a clear
15 delineation on the form that the person signing the form
16 is taking responsibility for the data on the form. And
17 I think that will help out a lot.

18 Again, I'm going to come back to my point
19 about the person filling out the forms needs to be
20 certified. If we look at the HVAC industry as a whole,
21 beyond just compliance certificates, we have a problem
22 out there with quality installation and quality
23 maintenance, both in residential and nonresidential.
24 One of the fixes that we have determined in the long
25 term plan and the workforce education and training is to

1 drive our workforce and to drive our industry toward
2 certifications. I think this is a perfect place to lead
3 the way and set the example for us requiring
4 certifications, basic certifications, for people who
5 fill out these forms so that we know that the person who
6 fills out the form has a skillset and an ability to
7 collect the data and to insert the data on the forms
8 correctly. With that, I'll rest. Thank you.

9 MR. SHIRAKH: Thank you, Erik.

10 MR. THOMPSON: A little follow up to that.
11 Good morning, Jeff.

12 MS. BROOK: I'm sorry but can you introduce
13 yourself again?

14 MR. THOMPSON: I beg your pardon. Mike
15 Thompson. CBPCA HERS Providership. We have wrestled
16 with this question now for a long time and we posed
17 questions related to this to the Energy Commission and
18 what has come out of that is an Energy Commission
19 interpretation that doesn't fit what's going on in the
20 real world. The fact is today that the forms and the
21 regulations have gotten so complex that most contractors
22 don't understand them, especially small contractors and
23 it presumes they're computer literate which many are
24 not. What we find in the field is that many Raters
25 actually take over the job for the contractor. They'll

1 fill out the compliance form. They'll fill out the 6R,
2 right. Because the contractor wants nothing to do with
3 it. It's out of his realm of expertise. The way they
4 do that is that the contractor will give the Rater his
5 login. Well, the Energy Commission has said that's not
6 appropriate and we have promoted that amongst our Raters
7 but I can assure that that still goes on.

8 What I want to propose going forward is maybe
9 a different scheme that creates a role for the Rater
10 where he can take over this role for the contractor. I
11 think that one, it's realistic and two, if we built it
12 in that way that a Rater can assume these
13 responsibilities it would take care of what the
14 gentleman said about some sort of certification. Right
15 now the Commission told us that we are to fill out, for
16 each contractor, a list of people who can sign for him.
17 My understanding is that it's supposed to be people
18 within his office, his secretary or whatever. But
19 that's not to include the Rater. Again, it's just not
20 realistic of what's happening in the field and, I think,
21 as we go forward that's going to become a bigger
22 problem.

23 MR. SHIRAKH: Is it true that the Rater can
24 actually do that as long as he's not doing the
25 verification? Is that correct?

1 MR. MILLER: The documentation author role
2 that we've proposed is intended to address the
3 assistance that these contractors and others need, the
4 administrative assistance that they need and actually
5 are receiving now under the table by receiving their
6 login. So by providing opportunity for a non-licensed
7 person to assist with document preparation makes it
8 possible for the licensed person to keep their username
9 and login private and the digital and electronic
10 signature stuff that will be introduced is going to
11 create more of an emphasis on the significance of the
12 signature that that licensed person provides. I think
13 we're addressing the concern that you're expressing.

14 MR. THOMPSON: Well the fact is that no matter
15 what security you put in, if somebody hands a login off
16 to somebody else that circumvents any kind of security
17 no matter how sophisticated it is. And that's what's
18 happening today and that's what going to happen in the
19 future. I'm suggesting we at least look at a way of
20 formalizing that process. HERS Raters are certified,
21 they're audited. That is a role that they can
22 conceivably fill in the future. It would take a great
23 burden off of especially the smaller contractors.

24 Thank you.

25 MR. SHIRAKH: Thank you, Mike. Any other

1 questions on that administrative section? Anything
2 online? Jon McHugh?

3 MR. MCHUGH: I just have a couple of questions
4 since I haven't looked at this too closely. My
5 understanding is that in general these forms are filled
6 out by the responsible party, the contractor, etc., and
7 sort of the hammer out of all of this is that they're
8 licensed. Now if the contractor is handing over to this
9 third-party to fill out the forms, where is the
10 liability path for that contractor and now that this
11 created, potentially, a kind of big legal quagmire for,
12 "Well, I asked you to fill out these forms." It's not
13 my fault that the HERS Rater filled this out
14 incorrectly." It's their problem. It's their
15 liability." I'm just wondering kind of if somehow
16 responsibility is being diluted or diffused by what's
17 being proposed. I don't know the answer; I'm just
18 asking the question.

19 MR. MILLER: So this convention is well
20 established with a certificate of compliance where the
21 persons who learned how to operate those compliance
22 software have been put into place to assist the
23 designers with the energy calculations. So there's a
24 relationship between those two parties that's a business
25 relationship and I'd say it's comparable to the

1 relationship between a tax preparation person and a
2 citizen. If we have a documentation author role and a
3 responsible person role, I think you're familiar with
4 that, with tax preparation.

5 MR. MCHUGH: Right.

6 MR. MILLER: And that's the essence of this.
7 The responsibility is the business relationship then
8 between those two parties.

9 MR. MCHUGH: And when I have my tax preparer
10 prepare my taxes, they always send me a copy and I still
11 have to sign the form. Are you intending that in the
12 same case that when you have the HERS Rater help fill
13 out the documentation that at the end of the day the
14 responsible person is still signing and saying I've
15 reviewed what this person has done and as far as I know—
16 is that your intent?

17 MR. MILLER: Absolutely.

18 MR. MCHUGH: Okay. Thank you.

19 MR. SHIRAKH: Thank you, Jon. Any other
20 questions or comments on this section? So we'll move
21 on.

22 MR. FLAMM: So now we're moving back into Part
23 6, Section 100.0. It used to be section 100. There was
24 a new subsection that has been created to cover
25 processes that Martha discussed yesterday. We added in

1 another exception to section 100(f). Basically it says
2 when you can deem a building to be one kind of
3 occupancy. Currently, the current language says for
4 mechanical and, I believe, envelope requirements you
5 take—if 90 percent of the condition floor area is one
6 type of condition occupancy you can deem that to be that
7 one occupancy. However, the conflict is that lighting
8 applies to both condition and unconditioned spaces
9 equally so that the Exception 1 does not quite cover the
10 need so this is saying that okay when you have a
11 combined conditioned plus unconditioned space that is 90
12 percent one type of occupancy you can deem that space to
13 be that one occupancy. So it's just to be in line with
14 where the standards are already.

15 Section 100.1 Definitions have been edited for
16 clarity. There have been new documents that are
17 incorporated by reference so all of those have been
18 cited. There are version number documents incorporated
19 by reference and those have been updated. If anybody
20 catches one that we didn't update, please let us know.
21 There have been new definitions added to support changes
22 made to other Sections of Part 6. And deleting
23 definitions no longer needed.

24 So a lot of definitions are migrating into
25 groupings and into master groupings. A lot of these

1 master groupings already exist but these are basically
2 the new master groupings under which if you're looking
3 for a definition related to fenestration you're going to
4 look for fenestration first and then the definition
5 under that. And there's lighting terms and lighting
6 controls. In the current standards, nonresidential
7 complete building occupancy types and area function
8 types are in one section. For clarity they have been
9 broken into two separate sections. Outdoor lighting
10 terms, they're the same. Sign lighting terms are the
11 same. And residential space types are the same. So
12 those are basically master definition groupings. So
13 added new definitions and replaced definitions & cited
14 other code. For example there were—the 2008 standards
15 were probably the first standards in the nation the
16 listed LED definitions. Prior to this there were no
17 nationally recognized standards. IES RS—or actually,
18 LM-79 came out about the same time that we adopted our
19 2000 standards. So anyway what we've done is we deleted
20 all of the LED definitions and we cite ANSI/IES RP-16-10
21 for those definitions now.

22 So Section 100.9, I wonder if we can break
23 here for questions—

24 MR. SHIRAKH: Why don't you complete the 100s?

25 MR. FLAMM: Okay, I'm going to complete the

1 100s, excuse me.

2 So Section—it used to be Section 119, now
3 100.9, has been edited for clarity and as I stated for
4 those who were listening yesterday, Section 119 are
5 basically lighting controlled devices. The 130 sections
6 are lighting control applications but 119 are the
7 requirements for devices and systems.

8 So we've recently proposed, and I believe we
9 are at 45 day language for Title 20; the lighting
10 control devices have been moved to Title 20 and taken
11 out of Title 24. What that leaves in Title 24 is
12 lighting control systems. So lighting control systems
13 and lighting control devices currently have to be
14 certified through the Energy Commission and so that
15 means many times one off systems, let's say a grocery
16 store, have to certify that system to the Energy
17 Commission and it's pretty clumsy. So the new
18 requirements say that if lighting control system that's
19 meeting the requirements, functional requirements, of a
20 lighting controlled device you no longer have to certify
21 that to the Energy Commission but you have to do
22 acceptance test, or basically an installation test, that
23 it meets all of the requirements.

24 So track lighting integral current limiter is
25 basically a lighting fixture, track lighting fixture,

1 that has a circuit breaker in the fixture itself and
2 it's recognized that it may not be as much wattage as
3 might be—as the standards might normally require it to
4 be calculated as. So there were elements of track
5 lighting integral current limiters in several sections
6 of the standards and they were moved for clarity into
7 one section and the same with supplementary overcurrent
8 protection panels. And these residential LED luminaires
9 have to be certified to the Energy Commission in
10 accordance with Reference Joint Appendix JA-8. I'm
11 going to go over that in a little bit some more on that.

12 In section 146 currently we offer a—Title 24
13 offers a Power Adjustment Factor for dimmable ballast
14 with minimal relative system efficiency. So that table
15 has been moved from section 146 to section 119 or 100.9.
16 The existing RSE for which we have been giving a PAF
17 becomes Tier 1 for all linear fluorescent and we've
18 entered a Tier 2 for the Power Adjustment Factor.

19 MS. BROOK: Hold on, just for clarification
20 for everybody. Patrick noticed that it's really
21 supposed to be 110 point—go back up because the—

22 MR. FLAMM: So how do I go back?

23 MS. BROOK: Yeah, just do previous.

24 MR. FLAMM: I can't even see that far.

25 MS. BROOK: Keep going up, up, up, up. A

1 couple more.

2 MR. FLAMM: Oh, there it is. There's
3 previous.

4 MS. BROOK: So it should be 110.9.

5 MR. FLAMM: Excuse me.

6 MS. BROOK: For everybody in the audience and
7 on the phone, we got a little bit out of order. We're
8 trying to go section by section and we just covered the
9 lighting 110 section when we were in the 100 section.

10 MR. FLAMM: Later today I'm going to talk some
11 more about the Reference Joint Appendix 8, I believe
12 it's with the residential lighting standard so this is
13 an unfinished topic at this point. So I'm going to turn
14 it over to Patrick.

15 MS. BROOK: And say that then, Patrick.

16 MR. SAXTON: The same section problem is here.
17 This should actually be Section 110.10. It's a new
18 section. The purpose is to prevent building design from
19 precluding future installation of solar energy systems
20 due to the layout of the building. And studies cited in
21 the case reports show that in many cases, particularly,
22 the commercial sector, only 30 percent of existing
23 buildings are compatible with solar and with state's
24 long-term goals we'd hopefully like to influence that in
25 a more positive way.

1 The solar zone is defined as being portion of
2 the roof designated and reserved for the future
3 installation of a solar energy system and wanted to
4 emphasize that it is on the roof. This does apply to
5 all building types but there are different thresholds
6 for those building types. For those single family
7 residences, it's going to be limited to production
8 housing with 10 homes or more and within each
9 subdivision 70 percent of the homes. To acknowledge
10 that there are steps in the planning process where
11 developments with street and lot layouts are currently
12 approved but the homes have not applied for permits by
13 the effective date of the standards, we're trying to
14 delay the implementation of this requirement for those
15 particular homes such that only newly designed
16 subdivisions at the effective date of the standard will
17 need to meet this requirement.

18 For those 70 percent of homes, they would have
19 a solar zone requirement of 250 square feet, an
20 exception for residential buildings that are three
21 stories or greater, with a total floor area less than
22 2,000 square feet can reduce that solar zone to 150
23 square feet in that case.

24 There's a pretty broad exception for additions
25 and alterations that they do not have to meet this

1 requirement unless there is an existing solar zone. So
2 that wouldn't come into play for quite a few years.

3 For multi-family buildings the threshold is
4 greater than, for applying this requirement, is greater
5 than or equal to eight dwelling units or with central-
6 the central water heating system. Those thresholds
7 align with other proposals in the standards for multi-
8 family water heating.

9 The solar zone is 30 percent of the roof area,
10 excluding any skylight area or a provision for an
11 alternate space somewhere on site but not on the roof.
12 However it increases to 45 percent of the roof area
13 equivalent. Again the same type of exception for
14 additions or alterations unless there is a preexisting
15 solar zone.

16 For nonresidential and hotel/motel buildings,
17 three stories or less, the requirement would be 40
18 percent of the roof area, again minus any skylight area.
19 The alternate on-site off-roof space would be equivalent
20 to 60 percent of the roof area. Same exception for
21 additions and alterations however if the roof space is
22 increased by 20 percent or greater in an addition the
23 solar zone requirement would apply to the addition only.

24 So these are the different thresholds for the
25 different building types. These requirements apply in

1 all cases when a building must meet the solar ready
2 requirements. The solar zone can be divided into
3 multiple, noncontiguous areas as long as each section
4 has 80 square feet or greater. Each section can have a
5 dimension no smaller than five feet in any direction and
6 that's to just make sure that the solar zone itself is
7 actually useable. Any solar energy system that's
8 installed at the time of construction, including ground
9 mount systems, would be applicable toward the solar zone
10 requirement. There will be a note that the solar zone
11 must comply with any fire requirements that will be in
12 2013, Title 24 Part 9, excuse me. The background there
13 is that California currently has guidelines from CAL
14 FIRE that are applied to the layout of a PV system on a
15 rooftop and those guidelines were used as the basis as
16 the guidelines for the 2012 International Fire Code
17 which will then be in turn used for the model 2013 Part
18 9 code. By the time the solar ready requirement becomes
19 effective there should actually be codified requirements
20 for the [inaudible] space.

21 The solar zone itself must be located on
22 either a flat roof or between an orientation of 150 and
23 270 degrees. One of the important features to make the
24 solar zone actually usable is that it be either shade
25 free or minimally shaded, and to that end there are no

1 obstructions allowed within the solar zone itself. When
2 an obstruction is present it must be at a distance from
3 the solar zone that's at least 2 times the height
4 difference between obstruction and solar zone. That
5 will definitely use some graphics in the compliance
6 manual to help explain that. The shading requirements
7 applies to all on-roof obstructions, all existing off-
8 roof obstructions at the time of construction and future
9 or planned that are known to the permit applicant. An
10 example of that would be in a subdivision, the builder
11 ill know at some point which buildings are going next to
12 each other and an adjacent two-story home may share a
13 one-story home. It would not include things like where
14 there's an adjacent lot with a different owner and you
15 won't' know what will be there in the future.
16 Obstructions that are completely north of solar zone
17 will not have to meet the shading requirements.

18 There is a requirement to place on the
19 construction documents the designed dead load and live
20 load for the solar zone. This doesn't change any
21 structural requirements; it's just a reporting of the
22 designed loads. One of the frequent costs for retrofit
23 solar projects is having to do a structural analysis and
24 very often that analysis finds that the structure is
25 adequate. By including this on construction documents,

1 it's hoped that some jurisdictions would accept that and
2 be able to avoid the cost of a future analysis.

3 The construction document should also indicate
4 a pathway for both conduit and plumbing from the solar
5 zone or the alternate off-roof space back to the main
6 electrical service and the water-heating system because
7 this zone—this reserved solar zone is applicable to both
8 solar electric or solar thermal systems.

9 And, since this information is then being
10 recorded on construction documents it's very important
11 that it be provided to the occupant so that they have an
12 opportunity to make use of it in the future and realize
13 some of the benefits.

14 These last requirements would be applicable
15 only to single family residences and they have to do
16 with the main electrical service panel ratings and
17 configurations. A significant one would be that there
18 would be a minimal busbar rating of 200 amps because
19 this directly affects the capacity of a PV system that
20 could be connected in the future. Additionally a space
21 for a future circuit breaker would be located at the
22 opposite end of the main breaker or the incoming input
23 feeder. This mirrors a requirement in the California
24 electrical code and the combination of those first two
25 items would hopefully prevent another frequent costly

1 item for retrofit projects where the main service either
2 has to be replaced or completely reconfigured. The
3 space should be marked and hopefully it will still be a
4 space in the future if somebody decides to install a
5 solar system. That's the end of this section.

6 MR. SHIRAKH: Okay. So I'd like to hear
7 comments on this material that Gary Flamm presented
8 definitions and also the solar zone.

9 MR. HODGSON: Mike Hodgson, ConSol
10 representing CBIA. First comment is thanks. Most of
11 the suggestions we added, especially on the subdivision
12 maps by SP1 were included and that's great because
13 that's a very important part because we already have
14 those lots already on paper and we're not going to
15 change them.

16 I must admit I'm still confused about the
17 potential shading of a two story building next to a one
18 story building. It sounds like it doesn't matter. I
19 want to make sure that's clear because we really don't
20 know where one story and two story buildings go on lots.
21 I mean lot size predicts some of that but many of our
22 lots are similar in size. I want to understand that
23 language a little bit better.

24 The one issue that we did bring up was
25 expanding the area where the solar zone would be

1 eligible and I think you have 150-270 and we requested
2 110-270. The reason for the request is for the SEAT
3 analysis, which is the Subdivision Energy Analysis Tool
4 that PIER funded and the work was done by NREL. There
5 was a paper at ACEEE a couple of years ago that said
6 that area made less than 10 percent, that range varied
7 less than 10 percent in annual incident radiation and
8 that was a comment that we made back in August to the
9 docket. So we would like that considered. Thank you.

10 MR. SAXTON: I'd be happy to talk with you
11 more about that. I agree it's about a 10 percent energy
12 difference, with TDV it's a noticeably bigger
13 difference.

14 MR. HODGSON: I see. Okay. Let's have that
15 discussion.

16 MR. SAXTON: Yeah. Let's schedule—

17 MR. SHIRAKH: With the one-story, two-story,
18 isn't that addressed by that 70 percent rule that—
19 basically we're leaving it up to you guys to decide.

20 MR. HODGSON: Well the question is what if you
21 have—in a normal market it's two-thirds two-story
22 buildings, one-third one-story buildings. That means do
23 all those one-story lots no longer apply and that is
24 basically 33 percent so you can't build on the lots
25 where you have a smaller, narrower lot where you

1 planned. Not really sure because you don't know that
2 based—I mean if you looked at the market today, it's
3 probably 60 percent single story and 40 percent two-
4 story. Not a problem but a market five years from now,
5 if we go back to a market where it was in 2005 and 2006,
6 you basically have two-story buildings. So when you put
7 a one-story building next to a two-story building or two
8 two-story or maybe a three-story or three two-story
9 buildings surrounding the lot, what happens to the solar
10 zone? If you have more than a third of those then that
11 means some of those lots you can't build on at all. Or
12 you put in a two-story home.

13 MR. SHIRAKH: Is it the case always that if
14 there's a single story next to a two-story that the
15 single zone could not be eligible for a solar zone? I
16 mean is that always the cause?

17 MR. HODGSON: I don't know that, Mazi. We
18 need to look at that, and that's just my concern is that
19 I don't think we have a lot of thought of actually going
20 out and looking at subdivisions in a typical market and
21 whether the 30 percent number is the correct one or not.
22 The language seems to imply that if there's a two-story
23 building—if you build a two-story building next to a
24 one-story building and the solar zone is now covered,
25 it's okay. That's how I read that language.

1 Now does that mean it's included in the 30
2 percent, I think that's your presumption. It's not
3 necessarily how I read the language but we need to kind
4 of work on clarification of that but if that's the
5 intent then we're concerned about that.

6 MR. SHIRAKH: Okay. Thank you.

7 MR. SAXTON: The 70 percent was meant as a
8 relief for those situations so we may need to discuss
9 that more and the two-story, one-story was just an
10 example. We're not being prescriptive of what does or
11 doesn't qualify.

12 MR. HODGSON: Right.

13 MR. SAXTON: I think it depends more on the
14 setback, the side lot setback, than the actual roof
15 heights.

16 MR. HODGSON: I can tell you what the setback
17 will be.

18 MR. SAXTON: I think Bob was talking about it
19 going down to three feet—

20 MR. HODGSON: That's correct.

21 MR. SAXTON: So that will be very difficult.
22 So we should talk more for sure.

23 MR. HODGSON: Thank you.

24 MR. KINTNER: Avery Kintner with Empowered
25 Energy in San Diego. I'd like to echo the comments that

1 Mike made regarding the effect on product mix and
2 plotting as it relates to obstruction and shading.

3 I also had some concern on landscape and
4 planting of trees. If you're—and some of which is
5 outside the control of the developer or the building,
6 eventually the trees are going to create shading on
7 solar. I can drive through many areas here in
8 Sacramento that are mature and beautiful and take
9 advantage of passive shading. So it's unclear to me how
10 this recommended provision is going impact the choice of
11 landscape and the choice for builders and developers and
12 future homeowners as it relates to shading and
13 obstruction of solar on rooftops.

14 I also was a little unclear on if this was all
15 times of the day. Certainly morning and evening hours,
16 shadows are cast differently than during major
17 production period of solar power so there is really no
18 guidance that I've seen so far that has been developed
19 around that. Have you had internal discussions in that
20 regard?

21 MR. SHIRAKH: Yeah. In my view, on the
22 landscaping is that we can't really predict that and
23 it's really out of Title 24 control what happens to
24 landscaping. Again, we're not requiring the systems to
25 be installed. A lot of these are where you set aside

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1 space on the roof so in the future the homeowner may or
2 may not use that to install solar systems. We can only
3 predict so much at this stage in the permitting time and
4 that's why we put these rules that only 70 percent of
5 the homes need to actually comply with this space that
6 they're going to set aside and that we're leaving it up
7 to the developers to decide. I don't know if you have a
8 reaction to that-

9 MR. SAXTON: I would say that it would impact
10 builder installed landscaping choices but homeowner
11 installed landscaping would fall into that category of
12 unknown to the permit applicant and, absolutely, by the
13 time that a solar system was installed in either case it
14 could be mature landscaping and impact the reality but.

15 MR. KINTNER: Is the perceived zone of the
16 solar zone—is there a certain time of day the
17 obstruction is being measured versus outside—morning or
18 evening?

19 MR. SAXTON: We could talk about that but it's
20 more geometrically and spatially based than sun path
21 based but I'd be happy to talk with you offline about
22 that.

23 MR. KINTNER: Okay. My second question has to
24 do with communities that may be designed in the future
25 where the developer has chosen to set aside an area for

1 a micro utility scale solar to serve the community and
2 in those cases are there any provision that will be made
3 to give flexibility to the developer to solve renewable
4 energy strategy on a community basis outside of a
5 rooftop by rooftop strategy.

6 MR. SAXTON: I would say that generally the
7 Energy Commission is supportive of that type of system.
8 Of course the current tariff situation doesn't allow
9 that in California except for co-ops. If that changes
10 in the future, we would definitely support language that
11 would allow for that.

12 MR. KINTNER: So the current code would still
13 require 70 percent solar zone if-

14 MR. SAXTON: I think we would not want to
15 allow for that offset if we don't believe there's a
16 realistic chance that tariffs are going to change to
17 allow for that system to be built in the near future.

18 MR. KINTNER: Thank you.

19 MR. SHIRAKH: Thank you. Nehemiah?

20 MR. STONE: Nehemiah Stone with the
21 Benningfield Group. I have two questions related to
22 multi-family, I think I know the answer to one of them
23 but I need to ask it anyway.

24 Some multi-families built in urban areas is
25 infill and is already--all of the buildings around that

1 are going to be there and in some cases you have zero
2 solar access on the roof or virtually zero. Does that
3 mean you can't build that building?

4 MR. SAXTON: Yeah. That was one of the
5 reasons for the single family homes we reverted back to
6 the subdivision construction only but infill is very
7 difficult to deal with and we need to give some
8 additional thought to that.

9 MR. STONE: I'm just talking about multi-
10 family.

11 MS. BROOK: SO in this case we wouldn't be
12 required, right? Because it's not in a subdivision.

13 MR. SAXTON: Well, no. For multi-family we
14 don't have that. We don't have that exception.

15 MS. BROOK: Okay.

16 MR. SAXTON: We don't have that exception
17 right at the moment and we do need to address it.

18 MR. STONE: Okay. The other is that when
19 you're not dealing with urban infill a lot of times
20 multi-family new construction is there's four or five
21 buildings in one project. Is there a provision for
22 allowing for the same amount of solar on a couple of the
23 buildings and serving all five buildings? Or are you
24 really requiring 30 percent of the roof area on each and
25 every building? And if that's the case, you probably

1 need to design an exception because that's where you
2 can't do it on some buildings and as long as you meet
3 the need, it should be acceptable.

4 MR. SAXTON: I would definitely discuss that
5 with you offline. Again, it gets really difficult in
6 the current tariff environment. For affordable housing
7 communities what you suggested would work very well.
8 For market rate housing, multi-family it would probably
9 not work in most cases.

10 MR. STONE: The PUC just stated their
11 intention, this last spring if I remember correctly,
12 that they want to expand that tariff to all multi-tenant
13 not just to the NSHP and the MASH which would mean then
14 that it would be eligible everywhere.

15 MR. SAXTON: Yeah. Their decision was very
16 nuanced and it still remains that if you're behind a
17 single point of delivery which is generally going to be
18 every building that for market rate housing you can't
19 share across service delivery points.

20 MR. STONE: You have that same problem whether
21 it's affordable or market rate.

22 MR. SAXTON: They have made a special
23 allowance for affordable housing that that rule does not
24 apply. We should talk.

25 MR. GABLE: Mike Gable. I think I have sort

1 of a more generic comment after hearing the previous
2 comments on the subject and that is maybe staff needs to
3 think about a more generic solar access definition where
4 if a building, aside from subdivision which can keep the
5 70 percent or whatever you work out with CBIA, it's just
6 more generic for all buildings of some solar access
7 definition where if a building doesn't have the access
8 essentially, regardless of what type it is, you're
9 exempt. Why don't you think about that a little bit.

10 MR. SHIRAKH: Thank you, Mike.

11 MR. NESBITT: George Nesbitt. First on the
12 solar ready. So single-family only in subdivisions of
13 10 units or more, correct?

14 MR. SAXTON: Correct.

15 MR. NESBITT: Multi-family only if it's 10
16 units or more or all multi-family?

17 MR. SAXTON: Eight units or more.

18 MR. SAXTON: Okay. I must have missed that.
19 I got up too early. I missed that on the train. In the
20 definitions you define ACCA Manual J, Manual S and
21 Manual D but what we usually forget is Manual T which is
22 one of the most important and that's actually getting
23 the grills at the end of this system designed right.

24 The air barrier definition says the insulation
25 must be in contact with one side. Yet, I think that

1 needs to be changed to either in contact with at least
2 one side and/or in contact with the air barrier with an
3 's' so an air barrier or air barriers in the case of
4 walls.

5 On the duct system, I guess it was not totally
6 clear. I think what you're trying to say is that if 75
7 percent of the duct system is new it is considered as a
8 new duct system say for purposes of duct leakage whereas
9 if it was less than 70 percent you'd consider it as an
10 existing duct system and it would have to meet the 15
11 percent. I think that's what you're intending to define
12 but it did not read to me very clearly.

13 MR. MILLER: Jeff Miller. The thing we're
14 trying to capture is how to differentiate between an
15 entirely new system in an alteration situation versus a
16 system that's an altered system.

17 MR. NESBITT: Right.

18 MR. MILLER: And the requirement is different
19 for the two. This is our draft proposal for how to do
20 that.

21 MR. NESBITT: Right.

22 MR. MILLER: And if you have comments, we're
23 really open to that.

24 MR. NESBITT: Yeah. It wasn't really entirely
25 clear. I think early on what people figured was that

1 they left the sheet metal boots at the registers, they
2 replaced all the rest of the ducts in the system yet it
3 was an existing system yet there's nothing stopping you
4 from sealing it effectively. So I think that's what-I
5 read it as your intent although I didn't find the
6 wording to be too clear, I guess.

7 MR. MILLER: I'll be open to your suggestion,
8 if you have a better one.

9 MR. NESBITT: Yes. Then under window
10 definitions, I'm going to jump ahead to the default U-
11 value and solar heat gain tables-actually just to the
12 solar heat gain coefficient table.

13 You have clear glazing and tinted glazing but
14 it's not defined. We either need to define it there or
15 in the definition section with windows.

16 MR. SHIRAKH: What's not defined? Tinted?

17 MR. NESBITT: Tinted is not defined. I think
18 most of us would understand what clear is. Is a low-E
19 code tinted? I mean there's the bluish and the greenish
20 so I think that's missing as a definition.

21 MR. SHIRAKH: Okay.

22 MR. NESBITT: Nothing on lighting. I can't
23 illuminate you on that.

24 MR. GABLE: Mike Gable again. I forgot a few
25 things. On 110.7 limiting air leakage, I don't want to

1 take much time on this, can staff simply explain the
2 distinction between this sanction and prescriptive
3 requirements around air leakage that are new in either
4 res or non-res? Is there a sort of simple way of
5 explaining? Because a lot of this stuff looks like much
6 of the stuff that's in prescriptive. Does anyone on
7 staff want to take that on or we can do it offline.

8 MR. MILLER: You're talking about envelope
9 leakage, yes?

10 MR. GABLE: Yes.

11 MR. MILLER: That's not my area. That's you
12 and Payam.

13 MR. GABLE: We can do it offline then. And,
14 finally, on Section 110.6 on eliminating the center of
15 glass calculation as a default value. I still want to
16 suggest that it shouldn't be eliminated yet. It should
17 be reduced from 10,000 to maybe 1,000 square feet. We
18 should keep it as a safety valve for some unresolved
19 issues about CMAST and the prescriptive values or put
20 something in there that—a default calculation to prove
21 by the Executive Director so leave it open about what
22 that other thing might be just to leave the chance that
23 we have to work out some temporary solution that we
24 don't anticipate with the new standards. Thanks.

25 MR. SHIRAKH: What would that do if we kept

1 1,000 square for nonresidential building?

2 MR. GABLE: The idea being that—for small
3 projects where it's a limited amount of glass involved,
4 if there's going to be problems or issues with the new
5 standards and looking at CMAST values and getting
6 certified values, it may be a lot of overhead involved
7 with dealing with that in the first year or two of the
8 standards until we know kind of how that's all going to
9 work out so we can talk more about that offline.

10 MR. SHIRAKH: All right. Thank you. Any more
11 questions on definitions and solar zone? Online? Okay.
12 Moving right along.

13 MS. BROOK: Mazi asked—this is Martha—this is
14 Section 110.2 and we've updated the air conditioners and
15 heat pump efficiency tables to reflect the new federal
16 appliance efficiency standards.

17 MR. SHIRAKH: So this one is the upgradable
18 setback thermostats. This is a mandatory requirement
19 for newly constructed buildings and covers almost all
20 residential units and some nonresidential occupancies
21 where currently setback thermostats are installed. The
22 requirement is that they should have an upgradable
23 setback thermostat instead of just a regular setback
24 thermostat. And the upgradable refers to the fact that
25 there will be a port that can receive a communication

1 module. That communication module will upgrade the
2 thermostat from a setback thermostat to the
3 communicating thermostat so that's where the term
4 upgradable refers to.

5 When the subdivision is built the thermostat
6 is installed, the setback thermostat, and then after
7 occupancy, if the homeowner chooses, in cooperation with
8 the local utility they can get a module and insert that
9 into the thermostat and then they can enable the
10 communication and then take advantage of the various
11 utility programs that are offered.

12 So then the language is such that all unitary
13 heating and/or cooling systems including heat pumps that
14 are not controlled by a central energy management
15 control system shall have an Upgradeable Setback
16 Thermostat. If there is any kind of EMCS System that is
17 controlling their air conditioning system then this UST
18 will not be required.

19 The USTs that will go into newly constructed
20 buildings shall not have onboard communication devices
21 so when it is installed it is basically a setback
22 thermostat. And again, the upgrading will be up to the
23 occupant and the local utility.

24 When it is enabled, there will be some default
25 offsets of +/- 4°F for both price and emergency events.

1 The occupant will be in full control of the device
2 including the override functions. Even after installing
3 the module when the thermostat becomes enabled, the
4 communication part of it, if there is a DR event of
5 either price or emergency the occupant will have full
6 control of either changing the set points or actually
7 overriding the event and basically restoring the
8 thermostat to the conditions that existed before the DR
9 event.

10 In existing buildings, we do allow onboard
11 communications, USTs that have onboard communications.
12 The reason for that is basically the homeowner is
13 already there and if they want to make that choice, it's
14 up to them. They can have onboard communication.

15 We have presented this concept in several of
16 our workshops and the stakeholder meetings. Recently, I
17 know we've have some comments from stakeholders such as
18 from NEMA and Honeywell. We're still in negotiation
19 with them. It seems as if our differences our narrowing
20 somewhat. There are still a few technical issues
21 remaining. We'll have more stakeholder meetings perhaps
22 not next week but the following week to work through the
23 remaining issues.

24 One of the other subjects is that within the
25 code language is that we refer to Reference Appendix JA-

1 5 which is the technical specifications for the
2 thermostat. That document is under construction, has
3 not been fully developed and is not posted. We will
4 post that as soon as we have it. The contractors are
5 working to make that available as soon as they can. I
6 must also mention that this is actually, this effort, is
7 being sponsored by the IOUs, PG&E, SCE and SDG&E.

8 So with that I'll actually take any questions
9 related to the USTs that are in the room or on the line.

10 MR. STEINBERG: John Steinberg from EcoFactor.
11 This has come up a couple of times before and Mazi, as
12 you were explaining the scenarios in which a UST would
13 originally would be placed on a wall and eventually get
14 a module plugged into it. You refer to a scenario in
15 which, it seems to me, is likely to occur which is that
16 a utility is the one, in effect, sponsoring the module
17 that the module communicates with a utility. I just
18 want to reiterate our strong desire to make sure that
19 everybody keeps in mind that that's not the only
20 scenario in which a communicating module will be plugged
21 into a communicating thermostat. It's entirely possible
22 that a consumer will elect will plug in a radio that
23 communicates with a completely independent service
24 provider that may or may not have any relationship with
25 the local utility. I think that understanding needs to

1 inform all of the provisions of the old 112 about what
2 can and cannot be done with a UST that has a plug-in
3 radio installed.

4 MR. SHIRAKH: I agree. I just described one
5 scenario but the ports, the module is there and the
6 capabilities are much more digestible so.

7 MR. STEINBERG: Absolutely. As long as it's
8 clearly stated and understood that that's not the only
9 way in which these radios are intended to be used, then
10 I don't think we're going to have a problem.

11 MR. SHIRAKH: In fact there's nothing in the
12 code language that says this is the only communication
13 for the utilities and in the technical specifications is
14 where we can address it. I'll ask you to work with
15 Jeremy-

16 MR. STEINBERG: I'd be happy to do so.

17 MR. SHIRAKH: Thank you. Any other questions
18 related to the communicating thermostats? Anything
19 online?

20 So now we're actually moving into Section 150
21 which is the mandatory requirements for newly
22 constructed buildings. There are numerous changes in
23 these sections. In Section 150.0 (a), (c), and (d) we
24 increased the level of mandatory minimums for ceilings,
25 walls and floors. The ceiling mandatory requirements

1 went from R-19 to R-30; for walls it went from R-13 to
2 R-15, and for raised floors it went from R-13 to R-19.

3 Section 150.0(j). The water systems piping
4 and insulation. We have new requirements here. All
5 nonrecirculating hot water piping of $\frac{3}{4}$ inch (19 mm) or
6 larger must be insulated now so that would be a
7 mandatory requirement if you have hot water that is
8 coming off of either the hot water heater or the
9 manifolds if they're $\frac{3}{4}$ inch or larger they must be
10 insulated.

11 The maximum length of 1 inch (25 mm) piping in
12 a nonrecirculating domestic hot water distribution
13 cannot be more than 15 feet (4.5 m). The exception will
14 be the pipes that are dedicated for tubs. They can be
15 longer than 15 feet.

16 Section 150.0(m)11 is that duct leakage is now
17 a mandatory measure. This duct leakage is now a new
18 requirement to the standards although up to this point
19 it was a prescriptive requirement and all we're doing is
20 basically moving it from prescriptive to mandatory
21 section. It's something that needs to be done for the
22 system to work right and it's routinely being done. I
23 think it kind of simplifies it and has the support, I
24 think, of the Building Departments.

25 MS. BROOK: We just want to do a timeout, just

1 for a second, Mazi. This is a process check for
2 everyone on the phone and those of you in the room. Our
3 agenda says that we'd get to this item this afternoon so
4 we are definitely ahead of schedule so if any of you on
5 the phone or in the room know of people who are wanting
6 to hear about the specific recommendations for mandatory
7 residential requirements, we're doing it now. We're not
8 going to revisit it this afternoon.

9 MR. NESBITT: Martha, Mazi. We've, I think,
10 skipped over the Section 110.6-110.8, the mandatory
11 envelope measures for all occupancies.

12 MS. BROOK: Okay.

13 MR. NESBITT: So do we want to—

14 MS. BROOK: SO what we'll do is, Mazi is going
15 to keep going through 150. I'll go back upstairs
16 because I was supposed to put the slide deck together
17 and make sure that I have that section for 110—

18 MR. NESBITT: Okay.

19 MS. BROOK: And then we'll do it. Does that
20 make sense, Mazi?

21 MR. SHIRAKH: Yeah. And, in any event, we're
22 way ahead of schedule so we may not be here until five
23 but that's the way these things work. We can't predict
24 the number of comments we get. You know sometimes we
25 think it's a straight topic with no comments and we get

1 a lot. I was actually expecting a lot of comments on
2 the UST and we didn't get any.

3 So, anyway, just continuing. The maximum
4 length of 1 inch is limited to 15 feet except for—oh,
5 we're talking about 150.0(j), the duct leakage. Now the
6 new requirement is just being moved from 151 to 150 so
7 it's going to be a mandatory requirement.

8 These are the lighting changes so I'm going
9 to—

10 MR. FLAMM: This is Gary. I'm going to do the
11 lighting section of 150.0(k). The changes to lighting
12 have been edited. The section has been edited for
13 clarity. The—We've replaced the luminaire efficacy
14 table which basically set a threshold of 30, 40, 50 or
15 60 lumens per watt with a default list of high efficacy
16 versus low efficacy luminaires. The concern was have is
17 that a lot of Building Inspectors and contractors didn't
18 know how to interpret luminaires based on 30, 40, 50 or
19 60 lumens per watt and they asked for a default table
20 instead. What we basically said is that base
21 fluorescent is high efficacy. LEDs that have been
22 certified through the Commission are high efficacy, high
23 intensity discharge are efficacy. Incandescent track
24 lighting, a few other lightings, are low efficacy. So
25 neither the Building Departments nor the contractors

1 need to worry about high efficacy versus low efficacy.

2 One of the reasons that—another reason that we
3 removed is that is because there are ENERGY STAR lamp
4 standard, there are Title 24 lamp standards and we
5 really no longer need to dry the efficiency of
6 fluorescent and LED through Title 24.

7 So lighting in bathrooms. In the current
8 standards, every room is one of three classifications.
9 Lighting in bathrooms is in a group called, in the 2008
10 standards, bathroom, utility, laundry and garages. And
11 the requirement is that each luminaire has to be high
12 efficacy or controlled by a vacancy standard. So what's
13 changing is that a minimum of one high efficacy
14 luminaire shall be installed in each bathroom. And that
15 can be on a toggle switch or that can be sensor. All
16 the remaining low efficacy lighting will continue to be
17 required to have a vacancy sensor.

18 A requirement that vacancy sensors are
19 installed in garages shall use ultrasonic dual
20 technology or other method for occupant detection which
21 does not rely on line of sight. So this will assure
22 that these vacancy sensors will work.

23 A clarification for low-rise residential
24 buildings with 4 or more dwelling units, multi-family
25 dwelling units. If there is outdoor lighting not

1 covered elsewhere in Section 150.0(k) it shall comply
2 with nonresidential outdoor lighting Standards. Outdoor
3 lighting, nonresidential outdoor lighting, is regulated—
4 it has been regulated since 2005 and it was inadvertent
5 that basically for apartment complexes which multi-
6 family dwelling units have to meet the outdoor lighting
7 standards.

8 So low-rise multi-family residential
9 buildings. Currently it says that common areas have to
10 be high efficacy luminaires or controlled by an occupant
11 sensor. To differentiate between a multi-family
12 building that is predominantly dwelling units versus a
13 multi-family building that is predominantly something
14 other, let's say you have an office with a gym and
15 etcetera rooms. We've broken it down into two
16 classifications. If there's less than 20 percent common
17 areas in a building the current requirements remained.
18 But if there are greater than or equal to 20 percent
19 common areas, actually it's greater than, those areas
20 shall meet nonresidential lighting requirements.
21 There's a new requirement that lighting installed in
22 multi-family corridors and stairwells have an occupant
23 sensor to reduce lighting power by at least 50 percent
24 when no one is present.

25 Appendix JA-8, Reference Appendix JA-8, was

1 put into the 2008 standards because at that time there
2 were no national standards for the testing of LED
3 luminaires. What we required in 2008 was in order for
4 any LED luminaire to be classified as residential high
5 efficacy LED it had to be tested in accordance with
6 Reference Joint Appendix 8. About the same time that we
7 adopted our standards, IES adopted LM-79 which became
8 the nationally recognized testing protocol for LED
9 luminaires. So Appendix JA-8 has been modified. It now
10 cites the testing protocol in LM-79 but elements of JA-8
11 were retained. It's been edited for clarity. One of
12 the confusions is that the requirement to certify LED
13 luminaires only applies to residential luminaires and
14 there have been a number of products certified through
15 the Energy Commission that are not residential
16 luminaires. There are even housings that are not
17 complete luminaires that have been certified. This is
18 an attempt to clarify some misinformation.

19 Basically, an LED luminaire must be certified
20 to the Energy Commission in order to be classified as a
21 residential high efficacy LED. If it is not, it shall
22 be classified as low efficacy regardless of its
23 efficacy. The 30, 40, 50, 60 lumens per watt table that
24 we had in Section 150.0(k) has been moved to JA-8 and
25 the numbers have been changed.

1 The JA-8 establishes a minimum color
2 temperature for indoor and a color temperature range for
3 outdoor, not a minimum, but a color temperature range
4 for both indoor and outdoor. There is a minimum color
5 rendering index of 90 that has been established. A
6 clarification that no incandescent sockets of any type
7 shall be classified as a LED luminaire. There are
8 minimum testing lab requirements and there are labeling
9 requirements.

10 I'm turning it over to Mazi.

11 MR. SHIRAKH: Okay. Section 150.0(m)12, these
12 are mandatory requirements for air filtration. Labeling
13 of air filter grills specifies requirements for labeling
14 of filter grills for design airflow rate and design
15 pressure drop to assist homeowner in selection of
16 correct replacement air filter products. That
17 basically—this is designed so that the homeowner, when
18 they go out and buy these filters, they choose the right
19 filter for their home.

20 The second bullet, air filter efficiency -
21 specifies a minimum MERV 6 efficiency consistent with
22 ASHRAE 62.2 requirements.

23 A pressure drop specifies use of air filters
24 that perform at a maximum clean filter pressure drop of
25 25 Pascals as rated using AHRI Standard 680, for the

1 applicable system design airflow. This is requirement
2 for pressure drop. More stringent requirements (smaller
3 values for allowed pressure drop) may be specified by
4 system designers or by 150.0(m)13.

5 And the fourth bullet is labeling of air
6 filter products and requires air filter products shall
7 be labeled by the manufacturer to disclose the AHRI
8 Standard 680 performance ratings for airflow rate, the
9 initial and final resistance or pressure drop, dust
10 holding capacity and particle size efficiency. They all
11 have to be disclosed. This will enable the home owner
12 to select an air filter that will work properly in their
13 system.

14 Again, all these labeling requirements are
15 designed to help both the homeowner and the designer to
16 select the right filter that will work in the homes.

17 Section 150.0(m)13A. These are Duct System
18 Sizing and Air Filter Grille Sizing.

19 The first bullet establishes the mandatory
20 requirement to either have a size return-to properly
21 size the return duct and the filter grills in accordance
22 with the tables that's going to be in the standards
23 150.0-A and B or basically test the system to make sure
24 you get the proper fan watt draw and air flow
25 requirements. You have to do one of them, not both.

1 You either do the return duct design and the grille
2 sizing or you can test the system. Either one of them
3 passes and it's good.

4 The second bullet has to do with the zonally
5 controlled system. Basically this bullet says that in
6 every mode, the zonal system must pass the air flow
7 requirement and the fan watt draw. It also, the last
8 sentence says bypass ducts are not allowed to be used.
9 You can use zonal systems as long as it's not a bypass
10 duct and if you do use a zonal system it must pass the
11 CFM requirements and the fan watt draw in every zone.
12 The requirements for this are included in the Reference
13 Appendix RA-3.3.

14 Section 150.0(0) is ventilation for indoor air
15 quality. We've already referred to the ASHRAE 62.2 for
16 these requirements. The change here is that we'll be
17 referring of the most recent ASHRAE, 62.2 which are the
18 2010 versions and the addendum that comes with it. It's
19 that clarification.

20 The second bullet is the requirement of
21 installation and performance of both whole-building
22 ventilation and for local ventilation exhaust. That's
23 the bathrooms and the kitchens fans. They must be
24 verified by a HERS Raters. So, basically, it's adding a
25 HERS Rater requirement to the existing 2008 requirements

1 for these strategies to deal with these air quality
2 requirements.

3 And the third bullet is to add requirements
4 that continuous operation of central forced air system
5 fans used in central fan integrated ventilation systems
6 is not a permissible. Basically you can't use your
7 central air handler system to meet the indoor air
8 quality requirements because those are energy hogs so
9 you have to use one or the other strategies.

10 So this is a new requirement for fenestration
11 products. Basically we never had mandatory requirements
12 for windows in residential units before and now there is
13 one and it's a U-factor of 0.57. And there is no SGHC
14 requirement.

15 MS. BROOK: Okay. Just to clarify. I think
16 the confusion is that on our agenda we talk about
17 revisions to the mandatory envelope requirements in 110-
18 110.8 and you're talking about them in 150. So maybe
19 you could explain where they actually reside and which
20 one is right and which one is wrong.

21 MR. SHIRAKH: Okay. I need to look at that.

22 MS. BROOK: Okay.

23 MR. SHIRAKH: So any comments on Section 150?

24 MR. VARVAIS: Yeah. I'm Dan Varvais. I'm
25 with Spray Foam Alliance and Bayer Material Science.

1 Let me start by saying the SPFA appreciates all the
2 efforts we've had working with the Commission and
3 rewriting JA-7 and the work we've done on developing a
4 new open cell compliance option that's yet to be adopted
5 and the language that's been incorporated into the RA-3
6 document. It's an exciting time right now for us to
7 have this access to all this building science and all
8 the information we have to improved energy efficiency
9 and make that all part of the 2013 Title 24
10 documentation.

11 Unfortunately, we can support the minimum R-
12 value changes, going from an R-13 to an R-15 and an R-19
13 to an R-21 because it really limits the amount of
14 products that can be used. And I think we could reach
15 the same objective by having the insulation on the
16 outside of a building.

17 If I'm building a house in Southern California
18 with two-by-four wall construction and code now says I
19 have to put in an R-15 insulation inside that cavity,
20 there's one product that—maybe two products—that will do
21 that. It will exclude cellulose. It will exclude open
22 cell foam. It will exclude most cotton batts and
23 there's only handful of fiberglass products that will be
24 able to do that.

25 MR. SHIRAKH: I don't think we specified that

1 it has to be cavity insulation. It just says it has to
2 be R-15.

3 MR. VARVAIS: That's what I'm saying. There's
4 not that many products available that will do that.
5 It's a specialty product. And I want to make that
6 point.

7 In cleaning up some of the other language in
8 the code yesterday afternoon when this comment, I'll
9 make and say it on the tables from 150. I talked about
10 the note when everybody was dying to go to lunch about
11 that if you have a high-rise hotel/motel with close cell
12 foam it requires that that product be inspected, a
13 third-party inspector to go in and take a look at it. I
14 talked to staff about that after the meeting and I found
15 out that the purpose of that language was to make sure
16 that the insulation is installed correctly.

17 If it's important enough for—if the quality of
18 the insulation is important for one product than it
19 should be equally important for all the products. One
20 of the goals that SPFA has with this code cycle is that
21 we're able to go through and address all the issues for
22 all insulation products that in the 2013 version of the
23 code it's represented fair and equal across the boat.
24 Because to have a requirement on a high-rise building if
25 you use spray foam, it's the—the language can be

1 construed dispunitive because now the property owner has
2 to pay more money for somebody to come out and do the
3 inspection for the spray foam insulation but they don't
4 have to do it with the other products. See what I'm
5 going with that?

6 One of the things, in conjunction with that,
7 this year I had the privilege of attending HERS training
8 through CalcERTS. The training that they did was
9 outstanding. I've taken training for 20 years, various
10 organizations across the United States, CalcERTS
11 training was by far the best I ever attended. But
12 they're really limited on the material they have to
13 train HERS Raters about the proper application and
14 inspection methods for spray foam. So even when you
15 have that requirement in there, when the HERS Rater
16 shows up, they're really not prepared to do what's
17 written in the code right there.

18 Spray Foam has been working with RESNET.
19 We've signed a memorandum of understanding to help train
20 their trainers so understand the proper installation
21 techniques and what to look for when installing spray
22 foam. We'd like to make that same offer to the Energy
23 Commission and to the HERS trainers in California too.

24 If there's a requirement for one insulation
25 product, we'd like to see that requirement be spread

1 across to all insulation products. If there are
2 compliance credits for the application of one product,
3 we'd like those compliance credits to be available to
4 all products. Thank you.

5 MR. SHIRAKH: Okay. Thank you so much. Have
6 you talked to Payam about your concerns?

7 MR. VARVAIS: Yes, I have.

8 MR. SHIRAKH: Okay.

9 MR. STONE: Nehemiah Stone with the
10 Benningfield Group. Two issues on multi-family. One in
11 the—in what you were showing about water heating. Your
12 slide said 15 feet of 1 inch pipe maximum but the text
13 of the standard says 150 feet. It does say 4.5 meters
14 so it's obviously not 150 feet but that's just a typo
15 you should fix.

16 In the application of that though, I wonder if
17 you thought through—I'm not against reducing the amount
18 of hot water loss but I'm wondering if you thought
19 through all of the implications of this because if you
20 have a smaller multi-family building, six units, what
21 this essentially does is require even that small
22 building is to go to a recirc system because—in order to
23 meet the fixture unit requirements, you can't do that
24 with something other—with something smaller than 1 inch
25 pipe and so by saying you can't have more than 15 feet

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1 of 1 inch pipe, now you're going to have to go to some
2 other kind of system.

3 The other is on 150(o) and it's actually part
4 of the language that you're not proposing to change.
5 That looks a little odd to me. It says "All dwelling
6 units" which means not single family but multi-family
7 too and then the standard that's referenced 62.2
8 Ventilation Requirements for Low-Rise Residential. And
9 then what's required in order to make sure that you've
10 met that is diagnostic testing. The diagnostic testing
11 for high-rise is not mature yet.

12 As you know, we have a PIER contract with you
13 and with Western Cooling Efficiency Center to figure out
14 what exactly needs to be done there. In a lot of high-
15 rise you're not going to be able to—diagnostic testing
16 isn't going to show you that you can't meet 62.2 the way
17 buildings—the way ventilation typically works.

18 I don't know whether the intent was for it to
19 just apply to low-rise residential but it does say all
20 dwelling units. Thanks.

21 MR. MCGARAGHAN: Mike McGaraghan. I just
22 wanted to ask if you guys could flash back to that slide
23 since we got to Section 150 a little earlier than we
24 anticipated. I know in case anyone was trying to call
25 in and we went through it real quickly and a lot of

1 these comments are about the water heating, insulation
2 sides. So at the beginning of Section 150 it might be
3 helpful if we can flash it on the screen and perhaps
4 leave it on the screen for some of the discussion. I
5 think Yanda Zhang may have a comment on this too.
6 Thanks.

7 MS. BROOK: [Off-mic]

8 MR. MCGARAGHAN: So while Yanda is—I think
9 this may be the first time that he’s seen this slide so
10 hopefully he’s online and is taking a look at this now.
11 We wanted to flag this for a minute because I think
12 there’s a discussion that’s ongoing between the Case
13 team and the Commission and there’s been some sort of
14 last minute communication last night between Danny Tam
15 and Rob Hudler and so some of these values, I think, are
16 different from what was in the original proposal.

17 MS. BROOK: That’s right.

18 MR. MCGARAGHAN: And we’re stuck with these
19 but—

20 MS. BROOK: We’re not stuck with them but we
21 should probably take it offline. But if Yanda wants to
22 make any kind of comment now in regards to what Nehemiah
23 said as far as the—as far as multi-family can’t meet the
24 requirements, that’d be good. Otherwise, we’ll move on
25 to mechanical ventilation.

1 MR. ZHANG: I can make a quick comment. This
2 is Yanda with the Heschong Mahone Group.

3 MS. BROOK: Can you speak up a little bit,
4 Yanda?

5 MR. ZHANG: Can you hear me better now?

6 MS. BROOK: Yeah, that's a little better. A
7 little higher would be even better.

8 MR. ZHANG: So I have two comments, maybe the
9 first is in response to Nehemiah's comment about small
10 size multi-family. My understanding is that the
11 recommended requirements—are we talking about the—

12 MS. BROOK: No, we're not. In fact, I don't
13 even know if this is what you worked on, Yanda. This is
14 Mark Hoeschle's recommendation. So—

15 MR. ZHANG: Right. So what I was about to say
16 is that maybe we can talk later—this is Mark Hoeschle's
17 proposal which is related to single family water heating
18 system.

19 MS. BROOK: Okay. We'll talk later about the
20 multi-family things.

21 MR. ZHANG: Right. Two things. The mandatory
22 requirement for pipe insulation. 150(j) is not listed
23 here. It describes pipe insulation requirements which
24 are also linked to Section 123, now 120.3. Basically
25 the code has relatively uniform part insulation for

1 (indiscernible). Yesterday we didn't make a comment
2 because I think it's more important to make comments
3 here.

4 What we noticed was that Table 123(a) has been
5 changed to be consistent actually with 90.1. Along with
6 that we also noticed that the row for reinsulation, pipe
7 insulation, has been deleted and combined with space
8 heating requirements. In our case studies, space and
9 water heating, we've done cost effective analysis and
10 demonstrations for pipe less than 2 inch for
11 recirculation systems. Insulation with 1.5 inch is cost
12 effective. We, in some way, recommend that the table be
13 revised to reflect that recommendation. Basically for
14 pipes less than 2 inch should be set around 1.5 inches.

15 MS. BROOK: Okay, Yanda. Actually, I know
16 that staff is actually discussing this right now
17 upstairs and so we will get back to you about the pipe
18 insulation tables. All right?

19 MR. ZHANG: Sure. I just want to make
20 comments to be on record. We did discuss with
21 Commission staff yesterday.

22 MS. BROOK: I think the discussion is ongoing
23 and we'll continue until we get it resolved. Now Bruce
24 can you come up and talk about mechanical ventilation
25 and respond to Nehemiah's comments please.

1 MR. WILCOX: Yeah. I'm Bruce Wilcox. I'm a
2 consultant to the Commission on the Residential
3 Standards Development.

4 Nehemiah, I don't believe there's any intent
5 to try and apply 62.2 to high-rise residential. I
6 didn't quite understand your question but 62.2 is
7 definitely—the scope excludes high-rise residential. I
8 don't think there's any intent that it should be applied
9 so if there's some fault in the language here we should
10 get that straight. Does that answer your question?
11 Thank you.

12 MR. GABLE: Mike Gable. Real quick, I think
13 the fenestration requirement should be moved to either
14 in front of installation or right after installation
15 because it's tucked in the back of the section. It's
16 really important that you want to let people know that
17 it's really there. So I'd move it up, if you would.

18 MR. SHIRAKH: When you do that, then it changes
19 all the other numbers and then we have to update all the
20 manuals and everything else.

21 MR. NESBITT: It's too much work, Mike.
22 George Nesbitt. I had noticed the 150 foot on the 1
23 inch pipe and thought, "My gosh, that's a lot."

24 MR. SHIRAKH: Actually it is—what it does is
25 we put a dash across 5 but you can't see the dash.

1 MR. NESBITT: Okay.

2 MR. SHIRAKH: Because we deleted—it was 10 and
3 we put a dash across zero—I'll fix that.

4 MR. NESBITT: Yeah. Yeah. I would definitely
5 have to agree with Nehemiah on a multi-family—

6 MR. SHIRAKH: It was 10 before and we tried to
7 change it from 10 to 15 and I think maybe—

8 MR. NESBITT: Leave it at 10, cut it down to
9 5. Cross out the 1. I mean, definitely, for a smaller
10 multi-family without recirc you might not be able to do
11 that.

12 On the 62.2 just because that came up too.
13 These are, of course, all the low-rise mandatory
14 measures so they don't apply to the high-rise. I think
15 in the language, once again, you've referred to field
16 verification and diagnostic testing. It should be clear
17 that that's HERS Rater.

18 On lighting, just—I think the lighting is
19 pretty good, generally. Although, ultimately, I think
20 we need to make lighting and residential a budget item.

21 On the bathroom, the requirement for one high-
22 efficacy light, what I can see is that you put in a 13
23 watt bulb in the fan and then 500 watts of incandescence
24 on both sides of the mirror. I guess the only real
25 thought would be to either it all has to be high-

1 efficacy or we need to use the 50 percent rule like we
2 do with kitchens and make them put in more high-efficacy
3 lights to justify their low-efficacy lights which is
4 ridiculous. That's the only thing. You could have no
5 high-efficacy wattage and it's not used and they use
6 only low efficacy.

7 Question on back draft dampers. Would that
8 apply to a heat recover ventilation? Because I don't
9 think most of them have back draft dampers built in.
10 Usually we're thinking exhaust devices, kitchen/bathroom
11 exhaust. So. Any thought on that at the moment?

12 MR. MILLER: I'm not familiar enough with the
13 heat recovery devices to answer your question.

14 MR. NESBITT: Okay.

15 MR. MILLER: I think the intention definitely
16 is for bath fans. I think it should be applied to those
17 devices.

18 MR. NESBITT: It's a fan that does both supply
19 and exhaust, so it's typically balanced ventilation;
20 whether you recover energy from it or not-

21 MR. MILLER: If it creates a leak, a potential
22 leak, it seems like there's an issue. But, again, I
23 would have to look at the technology to answer your
24 questions.

25 MR. NESBITT: Because I don't think back draft

1 dampers are commonly built into those.

2 On the water heater section, we have now
3 requirements that basically make the water heater high
4 efficiency ready. You need a condensate drain; you need
5 to have an electrical outlet. You either need to have a
6 flue or rather a vent, actually it would be a flue if
7 it's sealed combustion it'd be a vent but it's not. Or
8 the ability to put one in but it only applies to if
9 you're installing a gas water heater currently. I would
10 think that if you're putting in an electric water
11 heater, you would still want to have the condensate
12 feature in because you may want to put in a heat pump
13 water heater and I believe you'll need a condensate for
14 that. You may want to have an electrical outlet there
15 because the whole idea is partly that you're ready for
16 solar as well as any other high-efficacy, efficiency,
17 water heater. I think whether—we wouldn't necessarily
18 want to require that they have a gas hookup because they
19 may not have gas but it should be as ready to be
20 converted into something else.

21 On the slab edge insulation you're required to
22 have slab edge insulation with a heated floor slab yet
23 the section doesn't actually offer or reference what
24 you're required to have. It talks about moisture
25 absorbent and what not but you don't make any reference

1 to what the required insulation level is for slab edge.
2 On pipe insulation, and I kinda raised this
3 yesterday, the tables are set up. You've got
4 conductivity per inch that's required for the different
5 temperature ranges and then you have a separate table
6 that has, for the difference ranges and size of pipe,
7 that you need a certain minimum thickness of insulation.
8 For almost every range it's 1 inch of insulation and the
9 conductivity is equal to about an R3.4 or R4. That's
10 sort of the range. Every piece of pipe insulation that
11 I've been in has been less than 1 inch yet the R-value
12 has been R-4 or R-5. It would be better than rather
13 than expressing a thickness of pipe insulation, what the
14 minimum R-value of the insulation is. Because I don't—
15 it's actually hard to find the insulation I buy in 1
16 inch. It's not stocked. I would also say that a lot of
17 the insulation in home centers and hardware stores, it's
18 all 3/8s and 1/2 wall that's in the R-2.5 range.

19 Then where you define the minimum insulation
20 levels for ceilings, walls and floors. The language
21 says, so the ceiling insulation has to be at least R-30
22 for a framed assembly. Is that a framed roof rafter
23 assembly or a framed attic assembly and what is the
24 spacing? Because it doesn't say. Is it a 16 ounce
25 center, is it a 24 ounce center? Because those things

1 do matter.

2 You also have a section that says if you're
3 doing continuous insulation it has to be at least equal
4 to the framed insulation but we haven't actually fully
5 defined which assemblies those are. We should—it should
6 probably also include the equivalent U-value of the
7 assembly just so it—and also the statement that you have
8 to at least have an assembly that is equal to or better.
9 Although, that's what all of our understandings are it
10 doesn't actually say that.

11 And then one other comment on mandatory
12 measures. We have, like I say, slab edge insulation is
13 required for heated slab, 62.2 is a mandatory measure,
14 we've got mandatory duct testing now. Those should also
15 still be on the package listed. The package is a list
16 of mandatory measures, effectively. And such things
17 also, especially the slab edge insulation on the
18 performance compliance forms. It does not come up on
19 the form because it's a mandatory measure because you
20 don't get credit for it. Yet, if it says R-0 what's the
21 likelihood that the enforcement agency is going to
22 enforce that? And I've had personal experience with
23 that. Whether you get credit for it or not in the code,
24 it should still be on the compliance form. It should be
25 on the package list. This is just a reminder that this

1 is a requirement rather than saying it's mandatory so we
2 put it off on another form which may or may not have
3 attention paid to it.

4 MR. SHIRAKH: I'm not sure what you're
5 suggesting here. Mandatory requirements used to have
6 their own checklists. We were told to basically get rid
7 of it and put it in CF6R. That's where they reside now.
8 What are suggesting? That we put them back in CF1R or?

9 MR. NESBITT: Yeah. I mean they are currently
10 their own form. I mean right now it's still MF1R.

11 MR. SHIRAKH: There is no MF1R. I mean
12 there's the MF1R that's just a list, there's no check
13 boxes or anything on MF1R.

14 MR. NESBITT: Right.

15 MR. SHIRAKH: It's in CF6R is where the
16 certificate of installation is where the installer will
17 basically say that I've installed this and that. So I'm
18 not sure what it is that you're suggesting.

19 MR. NESBITT: What I'm saying is when we list
20 out packages and also on CF1Rs there are definitely
21 certain things that need to be reinforced as it's a
22 requirement rather than pushing it off to the 6R which
23 happens at the end, if it's actually even happened.
24 Because it's not enforced. I had a heated slab project
25 a long time ago and the Title 24 said R0 and I asked the

1 Energy Commission but it's required because most people
2 leave it off. It's required but most people leave it
3 off. I put it in because that was my legal
4 responsibility. So if it's not there, especially on the
5 1R, the mandatory measures, it's less likely.

6 MR. MILLER: Jeff Miller. We have mandatory
7 HERS verifications now and it presents a new
8 implementation challenge for us that I don't know if
9 we've worked out all the details yet. There will be
10 decisions that have to be made at the mandatory measure
11 level and captured in documentation. I think the
12 installation certificate is the way we will address your
13 concern.

14 MR. NESBITT: I'm just saying that if it's
15 listed in the package requirements for all the climates
16 it's just another reminder rather than being pushed off
17 to the side with other things. And if it's a mandatory
18 measure, why shouldn't it be on the compliance
19 documentation. That's another reason for it not to be
20 enforced.

21 MR. MILLER: So how the packages are
22 structured, that's not my area but the documentation, I
23 am looking at. Clearly there's going to have to be a
24 way for people to understand what the mandatory measures
25 are and to comply with them and to document them and we

1 went in to address that.

2 MR. SHIRAKH: Okay. Thank you, George. Mike?

3 MR. HODGSON: ConSol representing CBIA. I
4 have some questions and I need some education so we'll
5 start with the simple ones first.

6 Ceiling insulation. You're going from R-30-
7 you're going from R-19 to R-30, for example. And on the
8 mandatory feature form which we still use but we don't
9 check any boxes anymore, it says R-19 and that's the
10 minimum. But the way the code is written it says that
11 you can basically use a weighted average. I just want
12 to understand that by going to 30 we can still have an
13 R-19 cathedral ceiling and an R-38 ceiling as long as
14 the weighted average is okay or above 30 then we can
15 move forward?

16 MR. SHIRAKH: Yes.

17 MR. HODGSON: Okay. Then I think there's
18 going to be an issue on some of the forms. One of the
19 issues right now is that it says R-19 and we really
20 believe it's R-19 and we can't go below it. When we go
21 to 30 we're going to have an issue on the mandatory
22 feature form. We'll figure that out.

23 MR. SHIRAKH: It's a weighted average. We
24 haven't changed that.

25 MR. HODGSON: Right. Okay. No, I know it's

1 not changed. It's just the way it's interpreted in the
2 field.

3 MR. SHIRAKH: Okay.

4 MR. HODGSON: First real comment has to do
5 with the R-15 wall insulation. Now that we have some
6 experience using the modeling for 2013 it looks like we
7 can actually meet compliance cost-effectively in some of
8 the mild climate zones with R-13 batt insulation. So we
9 really would appreciate maintain R-13 as the minimum
10 wall insulation. However there's probably a bigger
11 issue there and that is by specifying R-15, basically
12 you're specifying R-15 batts because what you're
13 requiring is cellulose which is a spray product or a low
14 density foam which is a spray product which can't get 15
15 in between the two-by-four cavity then they have to go
16 to a foam insulation. That really puts that industry in
17 a competitive disadvantage if the builder can cost
18 effectively meet compliance at whatever you set the
19 target to be with an R-13 batt and now they're being
20 pushed to do something more that their competitor's not.
21 I don't think that's the way the Energy Commission
22 intends these things to do. They really want a level
23 playing field with choices so that we have competitive
24 pricing. I think that mandatory feature should be
25 rolled back to R-13.

1 MR. SHIRAKH: Okay.

2 MR. HODGSON: Compliments to staff on
3 filtering labeling. I know it's been a fun issue among
4 us for several years. I'm not sure what legal authority
5 you have to do that but more power to you.

6 Also, I would like to know if the filter
7 manufacturers have been informed of the labeling
8 requirement and, if so, what's the reaction?

9 MR. MILLER: Jeff Miller. I'm not aware that
10 we've communicated with any filter manufacturers
11 directly. But what I can tell you is that there's a
12 proposal introduced into the Title 20 process to require
13 labeling on all filter products. Although it's really
14 preliminary in terms of whether it will be accepted into
15 the next rulemaking I was told by staff it is a very
16 candidate for the next rulemaking. And there's good
17 reason for us to anticipate that air filters would be
18 required to be labeled and that would be in place in
19 time for the effective date of the next--

20 MR. HODGSON: Well, we will pledge any
21 assistance needed from CBIA to help in that and support
22 that effort. I volunteer Bob Raymer and all of his
23 time. No, it's a very important issue.

24 MS. BROOK: Right. And, in the meantime, we
25 can communicate with the actuary committee that we have

1 communicated with in the past about in regards to filter
2 labeling. That's a really good place where
3 manufacturers go to discuss technical issue. That's a
4 good way for us to connect with that industry.

5 MR. MILLER: You said ASHRAE, did you mean
6 AHRI?

7 MS. BROOK: Yeah.

8 MR. MILLER: Okay.

9 MR. HODGSON: And the question then becomes if
10 we're specifying the correct spec? Whether if it's a
11 MERV or some other specification that the filter
12 manufactures want. The point is that we want a good
13 label and we want to be able to understand the pressure
14 drops. So however we can help you, let us know. Okay.

15 We still have—the building industry still has
16 significant concern about the prescriptive return
17 requirements. They're basically doubling in size. The
18 other alternative is to drive toward performance
19 testing. I think that's something the Commission should
20 actually look it. In the performance world for HERS
21 Raters, probably the weakest link is the return air
22 grille. We really don't have equipment in the field
23 that accurately measures that. The way the standards
24 are written currently with a larger, basically doubling
25 the size of the return grille, you're going to be—

1 builders are going to be choosing a less cost method
2 which is going to be performance and then rolling the
3 dice as to whether or not they're going to pass that.
4 It's not a good situation and the most accurate that we
5 can make those tests, the better. That's a piece of
6 equipment we don't have. We use the piece of equipment
7 but I'd say it's plus or minus 20 percent. That's a
8 little too large of a range to be accurate.

9 Last comment is that I was a little surprised
10 by the 1 inch pipe regulation. The last conversations
11 we've had that the compact design was going to be
12 removed as part of the regulation. This sounds like
13 this is going back to the compact design?

14 MR. SHIRAKH: No.

15 MR. HODGSON: No. Okay.

16 MR. SHIRAKH: The compact design is still in
17 the language that's posted but that's going to be
18 removed. We basically posted it with that language but
19 there was nothing here that talked about compact design.

20 MR. HODGSON: Okay.

21 MS. BROOK: We did actually remove it and it
22 hasn't been reposted yet.

23 MR. HODGSON: Okay. But there is a regulation
24 on 15 feet of 1 inch pipe maximum for hot water.

25 MR. SHIRAKH: So we went from 10 feet to 15

1 feet.

2 MR. HODGSON: Right. Okay.

3 MR. SHIRAKH: Or 150 according to the
4 Nehemiah.

5 MR. HODGSON: I think it's 150 right,
6 Nehemiah?

7 MR. SHIRAKH: Compact is out.

8 MR. HODGSON: Okay. Thank you.

9 MS. BROOK: And we'll be reposting probably, I
10 would say, within a few days because of in the process
11 of preparing for the workshops we found some things that
12 we've already cleaned up and it hasn't been reposted.

13 MR. HODGSON: Great. Thank you.

14 MR. DEVITO: Eric DeVito for Cardinal Glass
15 Industries. I guess first a housekeeping matter.
16 Should we be addressing the 110 mandatory measures now
17 or is that going to come up again later?

18 MR. SHIRAKH: No, this—

19 MR. DEVITO: Okay. So this is it. If we have
20 any issues with 110 mandatory, we should raise that now.
21 Okay. I'm actually going to focus on 150, at the moment.

22 I gave a brief introduction about Cardinal
23 yesterday. We're a U.S. glass manufacturer. We make
24 low-E. We make IG units. You name it, float glass.
25 Very supportive of implementing, and I applaud you, for

1 implementing a mandatory maximum fenestration U-factor.
2 It was discussed yesterday with other envelope
3 components why a mandatory minimum or maximum are
4 necessary because it prevents backsliding and it
5 prevents really bad practices from according. We
6 certainly support including fenestration in the mix of
7 other mandatories.

8 The IECC has actually had mandatory
9 fenestration maximums since 2004. So California is
10 jumping in and at least is going to be instituting a
11 measure that will stay on plane with the IECC.

12 MR. SHIRAKH: Do you know what their level is?

13 MR. DEVITO: I do. It's—I'm going to get to
14 that in a second, actually.

15 MR. SHIRAKH: All right.

16 MR. DEVITO: Excuse me. The obvious reasons
17 for fenestration are comfort; comfort is very tied to
18 energy use. If an occupant is uncomfortable, they will
19 adjust the thermostat. Peak, that's a reason to have an
20 SGHC maximum, which you haven't proposed. Also, HVAC
21 sizing.

22 So, what the IECC does for California, they do
23 it a little differently. They set a U-factor maximum
24 for certain zones, colder zones, and then there's a
25 break point at which it switches, where it sets an SGHC

1 maximum for climate zones that have more of a cooling
2 requirement.

3 So for California to take the IECC
4 requirements and mesh them together would be a 0.48 U-
5 factor which would be the maximum that would apply to
6 certain zones in California. In other California zones,
7 the IECC would put a 0.50 SGHC maximum. And what the
8 IECC does in essence it does require low-E. It would
9 require low-E for all of California, some form of low-E.
10 Not the extra low solar that we've been talking about
11 but just some form of low-E which makes sense. There
12 really is no reason to allow clear glass other than
13 maybe a passive solar exception which we've detailed in
14 our written comments. But that issue aside, we think
15 that it makes sense for California to be a little more
16 aggressive with your standard. Lowering the U-factor
17 below 0.57 we think all the way to the IECC's 0.48 would
18 make sense and adding an SGHC maximum.

19 In our written comments, we repropoed the 0.4
20 U-factor maximum, 0.4 SGHC max because we saw your
21 current standard has those, basically, as the
22 prescriptive values.

23 And, just another point of clarification, we
24 don't have the SGHC in zones where you have that
25 requirement. So if it's no requirements, obviously

1 they'd be exempt from the max. We think that makes
2 sense. Otherwise another alternative, if you're not
3 willing to go that far, would be to match the IECC 0.48
4 U, 0.50 SGHC which we'd certainly be supportive of.

5 MS. BROOK: And are those mandatory
6 requirements in the IECC?

7 MR. DEVITO: Yes.

8 MS. BROOK: Okay. Thanks.

9 MR. SHIRAKH: So I think the issue with having
10 a mandatory SGHC was—had to do with passive homes and
11 solariums and things like that.

12 MR. DEVITO: Yes.

13 MR. SHIRAKH: Is that an issue? I think it
14 was Ken Middler—

15 MR. MIDDLEL: No.

16 MR. SHIRAKH: It wasn't you?

17 MR. DEVITO: We—our comments that we submitted
18 to the docket had some ways to deal with it. Number
19 one, in an area where weighted averages go away.
20 Really, if you're going to allow passive—forget the
21 solarium for a second but a passive solar design. It's
22 really the south face that matters. So you could either
23 flat out exempt the south face from the max or it could
24 be gotten through the area weighted average. You can
25 have a lower SGHC on the others and you can go higher on

1 the south. You could design certified passive solar
2 acceptance if you wanted to get real complicated. In
3 other ways there are ways to do it. I wouldn't throw
4 the baby out with the bathwater so to speak. If that's
5 your concern, we can craft a way around it.

6 MR. SHIRAKH: Actually we had—originally in
7 the SGHC requirement, I'm trying to remember why we took
8 it out. Does anybody else have any objection to adding
9 it? The SGHC mandatory? Like the IECC?

10 So maybe we'll make an exception for passive
11 solar then it's probably good.

12 MR. DEVITO: Right.

13 MR. SHIRAKH: All right. We can consider
14 that.

15 MR. DEVITO: Okay. Thank you.

16 MR. GABLE: Hi. This is Mike Gable again.
17 There are a lot of implementation problems when you set
18 a mandatory measure as a floor to be too restrictive.
19 We have performance standards, we have prescriptive
20 standards for a reason and you have to demonstrate
21 overall efficiency. So the question is why be overly
22 aggressive with the mandatory measure, especially since
23 this is the first window fenestration in the state. I
24 think there's a lot of law of unintended consequences.
25 If you set values that are too restrictive, you're tying

1 people's hands unnecessarily. It can be really
2 difficult and perhaps a backlash. While you're still
3 meeting the overall efficiency that the Commission wants
4 but you're tying hands component by component into a
5 building.

6 MR. SHIRAKH: Right.

7 MR. GABLE: Because philosophically you have
8 to be really careful that you don't do that. I think,
9 in my opinion.

10 The other thing is, for example, right now you
11 have the Table 116(a) which lists dual pane, non-metal
12 fenestration. I would almost point to that and say I'm
13 going the other direction. Because operable custom wood
14 windows are 0.58, doors are 0.53. You have difference
15 values. The other thing is that you don't have any
16 allowance for garden windows, greenhouse windows or
17 skylights as something different from the 0.57 that
18 you're proposing. I would look at that carefully to and
19 maybe look at Table 116(a) and say non-metal, dual pane
20 is the floor. For SGHC I think having some value, not
21 no value, is probably—and I think it's good to have
22 something there. The problem is defining passive solar.
23 You could use the performance method; you could get the
24 passive solar effect by glass that's a little off of
25 south. So you just have to be really careful in

1 thinking through the implications of that decision.

2 MR. SHIRAKH: I think those are the reasons we
3 took it out. I must mention the reason that we are
4 making the mandatory requirements a little bit stricter
5 is basically because we feel building envelope is really
6 important as the first line of defense for efficiency.
7 Especially when we start getting into some sort of
8 trade-offs with photovoltaics and so forth. Those are
9 the reasons that we are recommending some of these
10 measures but I understand what you're saying.

11 MR. GABLE: If you're going to outlaw any kind
12 of custom assemblies, that's fine. Just be aware that's
13 what you're doing and you're going to have to face some
14 issues around it, that's all.

15 MR. SHIRAKH: Thank you, Mike. Nehemiah?

16 MR. STONE: Nehemiah Stone, Benningfield
17 Group. One of the—and this is similar to what Mike said
18 but a little bit different. Passive solar has a pretty
19 specific definition and if you're going to make an
20 exception for it, you're going to have to make a pretty
21 specific definition in the standards. If you do that
22 then places where it makes sense to have a real high
23 SGHC and something else is shading but you don't meet
24 the rest of the passive solar definition. You don't
25 have enough solar mass, for example, as targeted. You

1 still shouldn't have a maximum SGHC that's allowable.
2 If you—as long as the effective solar heat gain
3 coefficient is low enough, the fenestration product
4 itself does not need to have a low SGHC. Then you're
5 still going to meet the requirements even if it's not
6 passive solar, meet the needs. Excuse me. Thanks.

7 MR. SHIRAKH: Thanks.

8 MR. FISCHER: Mike Fischer. I'm speaking for
9 myself although indirectly representing the insulation
10 interests. We're interested in looking at where trade-
11 offs work and we've been hearing about the windows side
12 of it. I do have some history in that area. I will say
13 that some of the issues that were raised related to
14 sunrooms or solariums, that's why the IECC has separate
15 language in there for those elements. They requires
16 that it be separated from them in structure, controlled
17 by separate equipment, separate thermostats. I know
18 because I drafted that language.

19 IECC also includes an exception for up to 15
20 square feet which gets you your sun garden windows.
21 Those solarium windows. The IECC also includes some
22 other provisions that make sense for this. I would say
23 passive solar is a great thing. I have it on my house
24 in upstate New York and Eric has heard that before. I
25 have trees that block the sunlight on the southern side

1 of my house in the summer and in the winter time, those
2 leaves are gone and I get passive solar. So there's
3 more than one way to do it. I don't know if you can in
4 a prescriptive part of the code address those issues.
5 As much as I would love to say put in windows that have
6 a U-factor of 0.10 and sell my clients more insulation,
7 tempting as that might be, it's not good practice.

8 As I said yesterday, I'll use the example
9 today of the area weighted average. You've got to put
10 limits on it otherwise you send your kid to the beach
11 with SPF 50 on one side of his body and he gets burned
12 on the other. You have to have choices. You've got to
13 let the builders have some opportunities. You've got to
14 let designers have some opportunities but you also have
15 to put these things within certain parameters. I would
16 suggest to look at the IECC for some of these little
17 issues that can be resolved. It's simple language.
18 Thank you.

19 MR. SHIRAKH: Thank you. Mr. McHugh?

20 MR. MCHUGH: Hi. So this is Jon McHugh,
21 McHugh Energy. I'm kind of wondering if some of these
22 issues about passive solar, if this is not something
23 that can be captured in the compliance software. I'd
24 like to hear what the staff's consultant has to say
25 about whether the software will capture the passive

1 solar issue. So even if you use a SGHC to set the
2 performance baseline, if indeed the passive solar issues
3 are captured then through the software.

4 MS. BROOK: That's an invitation for you
5 Bruce, to come up and defend your software. Our
6 software.

7 MR. WILCOX: I thought it had to be a public
8 domain, is that what we're calling it? So it's not
9 yours or mine.

10 MS. BROOK: Theirs.

11 MR. WILCOX: So I think the passive solar is
12 pretty well handled for the current calculations for
13 residential. I think some of the commenters have
14 brought up the issues that when you're talking mandatory
15 measures then that's all outside of the performance
16 standard. I don't think you want to be in a situation
17 where if you're going to get a passive solar credit then
18 you have to go to some extraordinary efforts to justify
19 not putting in a low solar gaining window in your
20 passive solar design. I think you have to be really
21 careful with that. I think that's an argument for not
22 having mandatory SGHCs.

23 MR. SHIRAKH: I think that we've kind of heard
24 all of these arguments and we decided it's probably
25 safer not to have it for this time around. Unintended

1 consequences. So I think I'm inclined to leave it out.

2 MR. NESBITT: Yeah. And one of the other
3 things with these other higher mandatory measures is in
4 the software what's going to keep me from putting in R-
5 19? I mean, currently when you put things in the
6 software that is less than a mandatory you can do it.
7 You can do it as a new assembly. If we're allowed to
8 area weight average is the computer going to be set up
9 so that if I put in some R-19, that if I don't put in
10 enough R-38 somewhere else that it's going to say,
11 "Sorry, George. You don't meet the mandatory minimum."

12 MR. SHIRAKH: I'd say, "Sorry, Jack." I don't
13 know.

14 MS. BROOK: Well that's just a software
15 implementation issue.

16 MR. NESBITT: Yeah.

17 MS. BROOK: It's not a core function. That
18 can be dealt with.

19 MR. NESBITT: Right. It's not something that
20 I think we're doing very well right now with
21 mandatories.

22 MS. BROOK: Yeah.

23 MR. NESBITT: It's pretty-

24 MS. BROOK: Yeah.

25 MR. NESBITT: A couple of-I just wanted to hit

1 on one thing on the mandatory equipment. I used to
2 think that setback thermostats were always required and
3 most people I talk to still do, yet there's the
4 exception for four furnaces, wall furnaces, most room
5 type heaters. And I'll ask a Jon McHugh as to why. Why
6 would—so someone fills up their house with a bunch of
7 room heaters. Why wouldn't we want them to be setback?
8 I mean, I can think of one answer in the sense of
9 electric baseboard. It's very expensive to do a line
10 voltage thermostat that's electric resistant. You know,
11 functionally there just seems no reason why we wouldn't
12 want it to be setback.

13 MR. SHIRAKH: The exception is been there.

14 MR. NESBITT: Right.

15 MR. SHIRAKH: Nobody has looked at it. You're
16 the first ones bringing it up.

17 MR. NESBITT: Then, since you said you wanted
18 comments on the mandatory enclosure section two, I had a
19 couple more things that I had brought up earlier.

20 There's an exception that allows you to put
21 insulation on removable ceiling tiles which a 2,000
22 square foot building is not insignificant and it just
23 seems like that's a practice we shouldn't allow.
24 Period.

25 In 2005 the window default table had a credit

1 for low-E and also for a large enough spacer size. In
2 2008 those disappeared and now there's only a penalty if
3 you have true divided lights or two smaller space sizes.
4 I'd like to ask that we get those back.

5 The other thing is that we need defaults for
6 triple pane windows and I'm especially speaking from the
7 passive house standard size here that a fair number of
8 people are importing windows that are not NFRC rated and
9 you take a real hit because of that.

10 I don't know why there were removed.
11 Obviously you would like windows to be NFRC rated.

12 MR. SHIRAKH: That's the reason-

13 MR. NESBITT: That's the main reason.

14 MR. SHIRAKH: The whole thing is to move
15 people towards NFRC labeling using CMAST other than
16 using default tables because default tables don't work
17 the way they're supposed to.

18 MR. NESBITT: Yeah. It would still be a large
19 penalty over what you would get if you had rated it.

20 MR. SHIRAKH: Especially in residential,
21 there's really no reason not having NFRC labels anymore.

22 MR. NESBITT: Other than there are small
23 enough manufacturers where people are starting to import
24 from elsewhere and-

25 MR. SHIRAKH: Get them rated.

1 MR. NESBITT: And anyway. The other thing is
2 there's--so there's the whole section on windows and
3 there's the whole section on roofing and it's quite
4 detailed in all of the requirements. Yet those sections
5 are almost exactly the same in 10-110 in the General
6 Requirements Section. You go through all of that at
7 length there as well as in this section. It just seems
8 having the same thing in that detail in two places
9 either leads to it not being the same, it doesn't belong
10 in one or the other or maybe it just needs to be
11 referenced back to the other. So.

12 MR. SHIRAKH: Okay. Mike?

13 MR. HODGSON: Mike Hodgson, ConSol. Just kind
14 of a format review question. In looking at the 150
15 attachment that you've posted, typically in code
16 language you have existing code and then you have
17 strikeout and then you have underlined. If it's
18 typically underlined it's new language. And in what you
19 have, you have underlined and bold. I'm trying to
20 figure out what you mean by that.

21 MR. SHIRAKH: We don't mean anything by it.

22 MR. HODGSON: If it's--I'll just give you an
23 example. Just so we can interpret what you've done.
24 Well, there's a lot of examples. I think--well, it
25 doesn't matter. It's HVAC systems bypass ducts. That

1 whole section is new but it's not only underlined and in
2 grey, rather than red, I don't care about the color but
3 then you have blue bold text and then you have blue not
4 bold text. I'm trying to figure out what you mean.

5 MR. SHIRAKH: The different colors and the
6 underlined—

7 MR. MILLER: I think we posted some changes
8 and whatever was changed from the first posting—

9 MR. HODGSON: Okay.

10 MR. MILLER: may look different.

11 MR. HODGSON: And that's fine. I'm just
12 trying to—

13 MS. BROOK: We'll clean that up.

14 MR. HODGSON: Well, it doesn't need to be
15 cleaned up. I just think there's need to be a legend.

16 MS. BROOK: Well, I think it needs to be
17 cleaned up.

18 MR. HODGSON: I think there's a tint behind it
19 but we just don't know what it is.

20 MS. BROOK: I don't think so. I think its
21 multiple authors and we—you know, we did direct staff
22 that all changes needed to be reflective from the 2008
23 standard but we're not sure that we caught all of those.

24 MR. HODGSON: Okay. And I think that these
25 are all 2013 new language but it looks like it's been

1 revised.

2 MS. BROOK: Right.

3 MR. HODGSON: That's what you're trying to
4 highlight?

5 MS. BROOK: That's what we need to clean up;
6 we're trying to clean that up.

7 MR. SHIRAKH: Different colors means different
8 staff worked on it in different colors.

9 MR. HODGSON: Give us the color code—

10 MR. SHIRAKH: The 45 day—

11 MS. BROOK: No, no, no. No color coding.

12 MR. MILLER: Bill, are you blue?

13 UNIDENTIFIED SPEAKER: No, I'm not. They
14 didn't give me a color.

15 MR. SHIRAKH: Any other questions?

16 MR. FRANCISCO: I'm Jim Francisco with Sierra
17 Consulting. I'm here on behalf of the California Spray
18 Foam Association. Mr. Varvais spoke about the R-15
19 versus the R-13. There's a real problem there because
20 you have limited who can apply insulation into a wall.
21 Our organization has gone through, not only the 150 set
22 of pages but we've spent a long time going through the
23 appendices of JA-4. There are a lot of misstatements.
24 There's a lot of assumptions and we're not happy with
25 any of them to be quite honest.

1 We think that you have done a disservice to
2 the foam industry in this state. We would like, once
3 again, for the fourth time this summer and for about the
4 twentieth time in the last seven years to offer to bring
5 our building scientists in to answer questions so you
6 have a better understanding of who we are and what we
7 do.

8 We're a major industry in this state, we pay
9 our taxes, we pay fees, we pay licenses and we think
10 it's time that we got recognition for who we are and
11 that means we get a chance to have our input on this.
12 That's all I've got to say.

13 MS. BROOK: Okay. Okay. Thank you.

14 MR. FRANCISCO: Jim Francisco with Sierra
15 Consulting.

16 MR. SHIRAKH: Any other questions on 150.0?

17 MR. LEBRUN: Yes. This is Roger Lebrun.

18 MS. BROOK: Can you repeat your name? It got
19 cut off.

20 MR. LEBRUN: Sure. Roger Lebrun representing
21 Velux America.

22 MS. BROOK: Okay. Thank you.

23 MR. LEBRUN: I'm going to address mandatory
24 maximum U-factor for fenestration and I wanted to point
25 out that it seems that that single number limit must be

1 a vestige of the 2008 of code philosophy when skylights
2 and windows were both assigned the same prescriptive U-
3 factor. That has been, most appropriately, corrected in
4 the 2013 version that I'm looking at so far in the table
5 I'm looking at in 150(c). Please review whether 0.57 is
6 an appropriate hard limit for skylights that have a
7 prescriptive maximum of 0.55. It doesn't make a lot of
8 sense if you're looking to allow some tradeoff with
9 fenestration, particularly skylights; you're basically
10 taking that option away.

11 MR. SHIRAKH: Not to make this applicable to
12 skylights but we may have done it inadvertently, thank
13 you.

14 MR. FRANCISCO: Thank you.

15 MS. BROOK: Any other online comments?

16 MR. SHIRAKH: I would like to suggest maybe,
17 Commissioner Douglas, if it's okay that we break for
18 lunch because we have other topics coming up.

19 COMMISSIONER DOUGLAS: Yes. I think that's a
20 great idea. So let's break early for lunch and come
21 back at 1.

22 MR. SHIRAKH: Okay.

23 COMMISSIONER DOUGLAS: Thank you.

24 [Session break. Group resumes at 1:04 p.m.]

25 COMMISSIONER DOUGLAS: All right. Welcome

1 back from lunch. Do we have everybody? Mazi? Martha?

2 MR. SHIRAKH: Good afternoon. I think we're
3 going to get started.

4 So we're going to start the afternoon session
5 with Section 150.1 which used to be 151. These are the
6 Prescriptive Requirements for Newly Constructed
7 Buildings. Again, we're just showing you the major
8 changes. Not all the requirements in this section.

9 150.1(b). This is the section that describes
10 the performance standards. This used to be a long
11 section within this chapter. We have actually deleted
12 most of those requirements from this section and moved
13 it to the residential ACM Manual. There's just a
14 paragraph left in there that briefly describes the
15 process but most of the requirements are going to be
16 described in the ACM.

17 Section 150.1(c). This section describes the
18 insulation requirements. Two big changes. This time
19 around related to insulation, the roof deck insulation
20 that everyone talks about, this would be the requirement
21 to add some amount of insulation at the roof deck.
22 Either above or below in climate zones 9-15.

23 So in those climates zones 1-15 for the—if the
24 above deck insulation option is chosen, it would be R-4.
25 This would be continuous insulation. Above the roof

1 deck, below the roofing layer. If it's below deck
2 insulation it'll be R-13. This would go between
3 rafters.

4 The other big change in this section is
5 related to the walls. In the heating—excuse me, in the
6 cooler climate zones, the proposed requirement is R-21
7 between the rafters—the joists of the framing and R-4
8 continuous insulation. This would presume that two-by-
9 six framing would be used instead of two-by-four and in
10 the milder climate zones, 2-10, the requirements are R-
11 15 plus 4 inch of continuous insulation. And in those
12 climate zones, two-by-fours will continue to be used.

13 150.1(c)1. That's a QII, Quality Insulation
14 Installation; this would be a mandatory requirement in
15 all climate zones. I'm sorry. A prescriptive
16 requirement in all climate zones. This was a compliance
17 option under the 2008 standards.

18 150.1(c)3 is the fenestration requirements.
19 Another relatively significant change. The fenestration
20 U-factors 0.32 in all climate zones and SGHC of 0.25 in
21 climate zones 2, 4 and 6-16. There's a couple of three
22 climate zones here, milder ones, where the SGHC didn't
23 make sense.

24 Skylights will have a U-factor of 0.55 and
25 SGHC of 0.30 in all climate zones.

1 Some clarification and changes. The first
2 bullet—this is Section 150.1(c)7. This used to be F7
3 for those of you who are familiar with F7 where all the
4 heating and air conditioning requirements were. This
5 has changed to (c)7. Most of this is related to
6 illumination of the performance language in the section
7 that I mentioned above. We're in the middle of
8 renumbering everything.

9 So in the 2008 standards we had this
10 requirement for saturation temperature measurement
11 sensors or STMS. These were devices that were meant to
12 be put into the air conditioning system on the suction
13 and discharge to allow people—I'm sorry. This was a
14 device that was supposed to be installed on the coil,
15 outside coil, that would allow people to measure the
16 saturation temperature without actually putting gauges
17 on the air conditioning system. What we found was this
18 was not received well. It wasn't working really good in
19 reality. The manufacturers didn't come up with a
20 procedure in trying to estimate where the saturation
21 region is within the outdoor coil is kind of a tricky
22 endeavor. We're removing this language and instead
23 substituting it for a requirement of saturation pressure
24 measurement sensor or SPMS.

25 So STMS are out. SPMS are in as an alternate

1 method. These would be alternate ports that would be
2 put on the suction and discharge that would allow people
3 to electronically measure the pressure of the
4 refrigerant and be used for a refrigerant procedure.
5 These are the same devices that would be used for any
6 CID or charge indicator display that will hopefully be
7 available by the time the standards would be effective.

8 The second bullet has to do with how we're
9 going to treat mini-splits and multi-splits for which
10 there are no known way of measuring or verifying the
11 refrigerant charge. So we're providing an alternative
12 method for these devices. We're allowing the weigh-in
13 method in installation for the installation certificate.
14 For these devices, the alternative would be to have
15 higher SEER or EER instead of—in lieu of the refrigerant
16 charge verification. So we have created a table that
17 gives the equivalent values for these systems.

18 So these are requirements for domestic hot
19 water systems for systems that serve multiple dwelling
20 units. This specifies a minimum solar fraction for
21 serving multiple dwelling units. The solar fraction
22 would be 20 percent in climate zones 1-9 and a solar
23 fraction of 35 percent for climate zones 10-16.

24 For systems serving individual dwelling units
25 with electric resistant water heating systems, solar

1 fraction of 50 percent would be required prescriptively
2 or people can use the performance and not do this if
3 they can trade it away.

4 Section 150.1(c)10 is space conditioning
5 ducts. Currently there are three insulation levels for
6 ducts allowed in the standards. 4.2, 6 and 8. In this
7 proposal we're basically getting rid of the 4.2 in very
8 mild climate zones so there are only going to be two
9 levels throughout the state, 6 and 8. And R-6 in climate
10 zones 6-8 and R-8 in climate zones 1-5 and 9-6 will be
11 6. So anyway, we're getting rid of the 4.2 and
12 replacing it with R-6.

13 150.1(c)11. Central fan integrated
14 ventilation systems. Just clarifies that these systems
15 must be HERS verified.

16 150.1(c)12. Roofing products. Low-rise steep
17 slope, all roofing products must have the reflectance of
18 0.20 and an emittance of 0.85 in climate zones 10-15.
19 This is not a big change from 2008 except for the
20 emittance and we've received comments that the 0.85
21 emittance may eliminate some products so we'll be
22 looking at that and we may revert back to 0.75. But it
23 hasn't been really decided yet.

24 Section 105.1(c)13. Ventilation cooling.
25 Prescriptively whole house fans will be required in

1 climate zones 4 and 8-15.

2 I will take comments on this but I would also
3 like to go back to one of the topics that was presented
4 this morning related to spray foam and also the
5 mandatory requirement in the walls that was proposed to
6 change from 13 to 15.

7 At lunch time we had a discussion and I think
8 we all agreed we're going to revert back to R-13 for the
9 mandatory requirement in the walls.

10 For the ceilings, we proposed going from R-19
11 to R-30. We actually may institute some exceptions for
12 that for ceiled attics but we need to actually define
13 what that is. So we'll work with Bruce Wilcox on that.

14 There were also some comments on the spray
15 foam and Dave Ware, do you want to respond to that
16 comment quickly? And then we'll take comments on this
17 section.

18 MR. WARE: Dave Ware, CEC Staff. We've worked
19 very closely actually in the last several years with the
20 spray foam industry. Mr. Jim Francisco in particular.
21 Jim, he didn't—he was not specific in his comments to
22 you, Commissioner. But one of his concerns and Jim, I'm
23 assuming you're still—and if I'm characterizing you
24 incorrectly or not being as wide breath as you want me
25 to do, please correct me, Jim.

1 One of Jim's concerns is, in the context of
2 spray foam, what the Commission currently allows as an
3 R-value listing for those product types misrepresents
4 their true performance. That may be true however what
5 the Commission has to rely on and what building
6 officials have to rely on in the field is tested
7 information and information that is listed in the Bureau
8 of Home Furnishings and Thermal Insulation "Insulation
9 Directory of Certified Insulation Products".

10 So what the Commission has established in the
11 context of spray foam, right or wrong, is that when you
12 go through those listed products by the various
13 manufacturers, they list the R-value per inch. There's
14 a wide range of R-value per inch. So the Commission
15 chose a conservative place to land on one of those lower
16 values. Currently for open cell product types, low
17 density materials, we list a 0.36 per inch value for
18 light density material. I think that is wrong of Jim's
19 concerns, that that is too low.

20 Our feeling is that staff is somewhat
21 handcuffed because there's a lack of tested information
22 provided by the spray foam industry that would allude to
23 something different than that, number one. And number
24 two is that from a field inspection point of view
25 related to this class of product type, there's no way of

1 telling what the actual installed R-value is. There's
2 no labeling of the material in the field. There's no
3 information that is traditionally left on the site in
4 the way of labeling or on the cans for the recipes of
5 the part A and part B materials that makes up the
6 installed product at the job site.

7 So the Commission has taken the conservative
8 view that these values are listed in the Directory and
9 that, I just over lunch looked at the Directory again
10 and there's actually values that are listed below the
11 0.36 that we currently allow for open cell product
12 types, so what the Commission has been using at an
13 established R-value per inch is still reasonable. We
14 have asked the industry, both Jim's organization and the
15 National Spray Foam Alliance to work with us in coming
16 up with a mechanism in dealing with the labeling issue.
17 If we could figure out a way, if they could help us
18 figure out a way or if they could propose a way that
19 would be somewhat fail safe if you would, from an
20 enforcement standpoint in the field. We would be happy
21 to land with that but until that happens we are somewhat
22 saddled with the currently the 0.36 value that we allow
23 for open cell products and the 0.58 value per inch that
24 we allow for closed cell material.

25 I believe that's the crux of what Jim's main

1 contention is. Thank you.

2 MR. SHIRAKH: Jim?

3 MR. FRANCISCO: That wasn't what I was aiming
4 at but I'll start there. We offered a program, Payam
5 and I worked on it, almost four years ago where labeling
6 would be placed on the barrels that would be taken off
7 and attached to the certificate at the site.

8 It was a concern of CEC that foamers spraying
9 out of trucks would not think about changing the
10 material and you would never know the difference.

11 First of all, when you're doing inside walls,
12 which we were consistent of, 95 percent of all the
13 foamers use drums. They do not use trucks. It would be
14 just as easy to say that if you use a truck you have to
15 go with a standard value. If you're using drums, take
16 the label off and we will certify it. That's what we
17 were aiming for.

18 Dave Ware and Payam have worked very hard with
19 us on that. My problem is—with that whole thing is that
20 there have been issues that have come up, concerning
21 things like unvented attics and different times like
22 that, that we feel the engineers here are not familiar
23 with. We would like to have a meeting with the
24 engineers being a one-day meeting to bring in the
25 building science people to sit down and say, "This is

1 our view and this is why it's our view" so you know
2 where we're coming from.

3 I stood here yesterday and watched a
4 conversation on glazed windows for an hour and twenty
5 minutes. A very involved conversation. At the end
6 there was an, "Oh. We'll have to get together and have
7 a meeting on that. Talk to so and so and we'll set it
8 up." We made a comment yesterday that we were very
9 concerned and the comment was, "Oh. We'll have to get
10 back to you." We just feel that we need to have the
11 access to explain who we are, what we do and why the
12 product should be used in certain areas. That's all we
13 want to do.

14 MS. BROOK: If you can give us some specifics,
15 and you don't have to do it know, we can do it.

16 MR. FRANCISCO: Okay. If somebody will give
17 me a contact number, I will send it to you.

18 MS. BROOK: Yeah.

19 MR. FRANCISCO: I sent you some materials
20 which went back to Dave.

21 MS. BROOK: Because—

22 MR. SHIRAKH: You have Payam's contact
23 information.

24 MR. FRANCISCO: Okay. I'll send it to—

25 MS. BROOK: So, for example, if you want to

1 talk about sealed attics we would bring some people to
2 the table and if you want to talk about spray foam
3 insulation in another context we might bring some other
4 people.

5 MR. FRANCISCO: It would have been nice to
6 know this—

7 MS. BROOK: So.

8 MR. FRANCISCO: four months ago when we kept
9 offering and we're right now down to the finals here and
10 you're starting to do your language. And it's kind
11 like, "Oh. Are we going to have wait now for another
12 three years."

13 MS. BROOK: All right.

14 MR. FRANCISCO: It's really been frustrating.
15 You can't imagine how frustrating it's been for us.

16 MS. BROOK: Okay.

17 MR. FRANCISCO: All right?

18 MS. BROOK: Mm-hmm.

19 MR. SHIRAKH: Thank you, Jim.

20 COMMISSIONER DOUGLAS: Thanks for being here.
21 We will be sure to follow up with you.

22 MR. SHIRAKH: Please identify yourself and
23 your affiliation.

24 MR. TALBOTT: Gary Talbott. I'm here with
25 Five Star Performance Insulation and also with the Spray

1 Foam Alliance. And, again, thanks to everyone here that
2 we've worked with over the years and tried to come up
3 with some answers to some interesting situations. Now
4 that, particularly, foam is becoming an insulation of
5 choice these days. Years ago it wasn't necessarily the
6 case so we're kind of the icebreaker here, so to speak.

7 From a contractor standpoint, and we talked
8 earlier about this on a number of subjects, any time
9 that we sign something we are putting our license on the
10 line. Whether somebody pulled out some documentation
11 and then did it for us or background but anytime you
12 sign something, it's a legally binding document so we
13 could be held liable for this.

14 My thoughts are on identifying foam that's put
15 in a house, and I do this with batting insulation, is
16 that we have a card that's attached to the building when
17 we're done that states exactly how many inches we
18 applied, it states what the product is, it states what
19 the R-value is per inch which is listed in the Bureau
20 and we can verify that.

21 For instance, I don't have any—the insulation
22 is a low different when we're blowing the insulation
23 into a ceiling but we do put an attic card up there.

24 I know we've been going around and around with
25 colors and everything else of the number of years. I

1 think we could address that with verifying by a card.
2 It seems to be an acceptable application for the ceiling
3 insulation. We could maybe adopt that on to that.

4 And then again with the comment on the wall
5 insulation. We've been working to have that done. We
6 also have the-back to the R-13 and I want to thank you.
7 I think that's going to make some sense to everybody
8 here. So, thank you.

9 MR. SHIRAKH: Thank you. Please come up to
10 the-

11 MR. MORGAN: Good afternoon. Michael Morgan
12 for Performance Foam Tech. As an insulation contractor
13 I have to leave an insulation certificate at every
14 single job that we do. That states the manufacturer,
15 the R-value per inch, the amount of inches done. So
16 many of the inspectors that we deal with over the years-
17 that's a binding piece of paper. A lot of them don't
18 come and even inspect because that is the inspection. A
19 lot of our contractors get the nod to go ahead and
20 drywall per this piece of paper. It's a standing
21 practice and has been for quite a while, to fill out
22 that piece of paper and leave it with the contractors-

23 MR. SHIRAKH: If I understand the issue
24 correctly, it's the verification by the Building
25 Departments. They cannot tell the difference between

1 the product that is R-7 per inch versus R-5. I think
2 that's the issue. Because when someone is inspecting it
3 how can they tell which product was actually installed.
4 I understand that you can leave a card or a form but how
5 do you actually tell which product was installed? And I
6 think that's the crux-

7 MR. MORGAN: Well, for code, there's a
8 labeling requirement so on the barrels, they have a
9 sticker on them that says what they are, what their R-
10 value is, what their flame spread is. So that's if
11 somebody wants to poke their nose in the trailer during
12 the time of spraying then when you're leaving, you're
13 mandated. It's not a suggestion. It's a mandate that
14 you leave this insulation certificate and it clearly
15 says what brand, what R per inch it is and how many
16 inches you did. You are the duty sworn inspector of
17 that job. Me being the contractor I am also the
18 inspector. It's a very common practice for inspectors
19 to bend a knee to that. Okay Contractor, go ahead and
20 drywall. We know that-make sure that you have in place
21 that insulation certificate before that guy goes. We
22 need to see that. If we come back and see rock and
23 don't have that, there's an issue. So. It's been
24 addressed. I think it's not broken.

25 MR. SHIRAKH: My understanding is the

1 resolution of this issue doesn't depend on adoption of
2 the standards. We can do that. We have to address this
3 but it's not part of the 45 day language. We'll need to
4 work on this.

5 MR. MORGAN: Excellent. Thank you.

6 MR. SHIRAKH: Thank you. Any other comments
7 on the 150 insulation stuff. Mike?

8 MR. HODGSON: Yeah. We'll stick with 150 for
9 the time being. The question I have, and I'm glad you
10 brought it back up, I wasn't thinking of it and I think
11 Bruce alluded to this just now. We do have condition
12 attics that are going on with condition foam. Typically
13 that's an R-22. When that happens, I'm thinking the R-
14 30 requirement would (indiscernible) that. So I think
15 we need to think about that. Because that is probably
16 one of the more efficient ways we see buildings going
17 and we want buildings to go. We may have to-

18 MR. SHIRAKH: Well that's what Bruce talked
19 about at lunch.

20 MR. HODGSON: Yeah.

21 MR. SHIRAKH: So-

22 MR. HODGSON: And I think it's a great idea to
23 go to R-13.

24 MR. SHIRAKH: Yeah.

25 MR. HODGSON: And I'll reserve my comments on

1 the package until you say they're ready to go.

2 MR. SHIRAKH: Is there any other comments on
3 150?

4 MR. NESBITT: George Nesbitt. I have to tell
5 you as a HERS Rater I've been out to jobs where R-13
6 went in the two-by-six walls despite the fact that it
7 was on the CF1R, on the subcontractor's contract. It
8 just wasn't on the installer's truck. The Building
9 Department wouldn't have had a problem with it. The
10 General Contractor wouldn't have had a problem with it.
11 I had a problem with it. I've been in attics that were
12 under blown. You gotta come back. You actually have to
13 insulate to the R-value that it says. So just because
14 someone says that they did something on a form doesn't
15 actually mean it happened. We could call them perjury
16 statements in some cases. And I don't mean that to be
17 totally—I'm a contractor. For the record, I'm a
18 licensed general contractor. I install insulation.
19 It's just that is one of the realities in the
20 marketplace.

21 We currently—so currently in the Appendix
22 lookups for spraying insulation, it's assuming a low
23 density foam or a cellulose or a fiberglass. Yet,
24 ironically, in QII we've only allowed high density foam
25 and yet none of the assembly lookups reflect the higher

1 R-value per inch. Then also, yes, it's becoming more
2 common to have unvented roofs and we don't have an
3 appendix lookup for unvented roofs. We have ventilated
4 rafter roofs but not unvented.

5 MR. SHIRAKH: George, are you talking about
6 JA-4?

7 MR. NESBITT: Yeah. JA-4. So we have
8 ventalized rafter roofs but not unvented rafter roofs.
9 Also—well, on a recent job that happens to be low
10 density foam during QII on it, the industry tends to
11 push a lower R-value because foam is superior yet the
12 computer says R-19 is—or R-22 is worse than R-30,
13 because it is. While it may be better in real
14 performance compared to say a vented roof rafter with
15 fiberglass, that may be the case, but I insisted on this
16 job. I said, I told the architect, "You have to stay
17 with R-30. You're going to get severely penalized and
18 we're trying to do rebate programs and what not." So
19 less R is less good.

20 I will, since—you said QII was in each
21 climate? It's not 5-10 in the package.

22 MR. SHIRAKH: You're probably correct.

23 MR. NESBITT: Yeah. And then, just on the
24 insulation, you're going to talk more about the package
25 requirements and the different R-values or do you want

1 me to address-

2 MR. SHIRAKH: Unless there are no more
3 comments on 150 then I can move to 150.

4 So there are a couple of more comments on 150-

5 MR. NESBITT: Okay.

6 MR. SHIRAKH: If you can hold on and then
7 there are comments online too.

8 MR. PETERSON: Rick Peterson, Eagle Roofing
9 Products. Also representing Rick Olson, the TRI. A
10 couple of issues here on 150.1 on the R-4 above the
11 deck. I already talked to Payam but I wanted to bring
12 it into a formal discussion. We were concerned at the
13 TRI that it could possibly raise a wild and urban
14 interface issue and I guess, Payam, you said-

15 MR. SHIRAKH: Is that a fire issue?

16 MR. PETERSON: Yeah. A wild/urban interface.
17 It's adding the extra fuel above the deck.

18 MR. SHIRAKH: Yeah. We've talked with the
19 state fire marshal about this. Basically the roofs that
20 use the insulation and put it between the deck and the-
21 they have to get retested for either Class A, B or C.
22 So that is a requirement.

23 MR. PETERSON: We were also wondering if added
24 footnotes at the bottom would help in describing what
25 the choices would be.

1 MR. SHIRAKH: The choices would be explained
2 in our compliance manual.

3 MR. PETERSON: Right. Just referencing it-

4 MR. SHIRAKH: Okay.

5 MR. PETERSON: And that brings me up to the
6 second point in 150.1 on the ¾ inch airspace. We
7 presume that it's still in the calculator? We talked to
8 Payam about that and he said that it was still there in
9 the performance-150.1? Ohh. 150.2. Okay. So I'll save
10 my comments for the next session. Thank you.

11 MR. SHIRAKH: Thank you. Tom, did you have
12 any comments? And then, sir, you can come after Tom.

13 MR. GARCIA: This is Tom Garcia, representing
14 CALBO. Every once in awhile I try to stay back and just
15 let these things go in the meetings but I wanted to
16 clarify a couple of last comments. (Indiscernible) do
17 not just accept the insulation certificate. We do do
18 the inspections. Contrary to what George is saying, an
19 inspector wouldn't just settle for an R-13 in a two-by-
20 six stud wall if the plan calls for R-19 or R-21. I
21 needed to make it clear that as a general course of
22 business, Building Inspectors do do the job of
23 inspecting buildings.

24 MR. SHIRAKH: Thank you, Tom.

25 MR. MORGAN: Further clarification. I believe

1 the question was how does the inspector know the R-
2 value. You walk up and you've got yellow foam. One
3 yellow foam has one R-rating. One yellow foam has
4 another—it's yellow foam when they walk up. The
5 question was how does somebody know the R-rating and the
6 certificate is the vehicle for that. If the trailer is
7 not going to be inspected during the time of insulation
8 when you can read it off of the B barrel the only
9 vehicle for that is now whether somebody tried to
10 purposely or accidentally not put enough of it in. That
11 is an inspection area.

12 MR. SHIRAKH: I think then what you're
13 proposing would work if the Building Inspector or the
14 HERS Rater was there at the time so they could inspect
15 the truck. I guess the question becomes what if that
16 doesn't happen and the guy shows up three hours later
17 after the truck has gone?

18 MR. MORGAN: Well that explains—the
19 certificate is the bond. That's the product used.
20 That's its R-value. There's unfaced fiberglass that
21 doesn't say on it what manufacturer it is and what R-
22 value it is at a glance but that insulation certificate
23 says there's cellulose blown in. It doesn't say the
24 manufacturer when you walk up or the R-value so.
25 There's a vehicle in place to leave that information

1 behind and to challenge that information. I think it's
2 there.

3 MR. SHIRAKH: Okay. Thank you. Mike and then
4 that gentleman.

5 MR. HODGSON: I'm sorry. Just a real quick
6 question. On the table of 150.1(c) which is basically
7 the new Package A.

8 MR. SHIRAKH: Package A. Right.

9 MR. HODGSON: There's a footnote, because of
10 the editing it gets kind of cumbersome to look at, but
11 I'm just trying to understand what footnote 3. Bruce,
12 I'm on the roof deck insulation. Footnote 3 says, "Air
13 permeable insulation materials installed directly below
14 the roof deck shall be covered with Class 2 vapor
15 retardant." Can you explain that?

16 MR. WILCOX: The best explanation is that I
17 asked for that footnote to get deleted and I thought it
18 had been done.

19 MR. HODGSON: Okay. All right. So can we
20 delete that footnote?

21 MR. WILCOX: I'm sorry.

22 MR. SHIRAKH: I think Dave Ware wants to
23 respond. Yeah. We can set up here.

24 MR. WARE: The footnote's intent is to
25 acknowledge that there are some climate zones that have

1 some moisture dynamics because of the temperature ranges
2 that when insulation is placed below the deck we need to
3 be cognizant of it. So the purpose of the footnote is
4 to say exactly what it says except for we forgot to
5 express which climate zones that footnote would apply
6 to.

7 MR. SHIRAKH: So presumably climate zone 16,
8 right?

9 MR. WARE: Climate zone 16. That help?

10 MR. HODGSON: Yeah, it did.

11 MR. WARE: And just to add, that footnote
12 would then be consistent with the requirement
13 limitations or concerns that are expressed in the IECC
14 code and was also recommended to us by—in the Supporting
15 Moisture Report to the work Bruce Wilcox has done on the
16 above deck insulation.

17 MR. HODGSON: Okay. I think I understand
18 Dave's comments but currently that footnote is for roof
19 decks and it's in climate zones 12-15 and in climate
20 zone 16 there's no requirement for roof decks.

21 MR. SHIRAKH: That's the reverse. Okay.

22 MR. WILCOX: That's why I asked for it to be
23 deleted.

24 MR. SHIRAKH: Yeah. We understand. Footnote
25 number 3 is messed up.

1 MR. NESBITT: George Nesbitt. In the
2 Berkeley/Oakland area there's a lot of jurisdictions
3 that have outright not done insulation inspections in
4 the past. Although it is changing.

5 MR. SHIRAKH: I don't want to get into this
6 with-

7 MR. NESBITT: No, no. Yeah, yeah. But I
8 guess with the change in the building code they are
9 starting to, although they still don't know what they're
10 looking at in some cases. But, I think, on the spray
11 foam, with cellulose and fiberglass you have a
12 relatively tight R-value per inch on a spray in.
13 Unfaced batts are sprayed with ink as to the R-value.
14 Maybe not necessarily the manufacturer. The
15 manufacturer doesn't matter. The spray foam between low
16 and high density we've got definitely a lot more
17 variation in R-value per inch. I think in that sense
18 yes, identifying what there is is a lot more difficult
19 without, like you say, someone actually seeing what gets
20 sprayed or what's labeled on the container. It is then
21 really a matter of them saying I sprayed this and it has
22 these values. We either have to accept that or we're
23 really not-

24 MR. SHIRAKH: I actually have a question for
25 you.

1 MR. NESBITT: Sure.

2 MR. SHIRAKH: Is it reasonable to schedule the
3 HERS Rater to be there at the same time that they're
4 spraying? Is that practical? Or is it like even one
5 out of every three times they can do it? It's kind of
6 like sampling. Is it something that-

7 MR. NESBITT: I would say in the context of
8 trying to do something as QII and not having worked with
9 an installer, yeah. I've been out on the site while
10 they're spraying and have had them add more because
11 based on the R-value per inch they told me and I look up
12 at the rafters and I say, "No. I don't think you have
13 the seven inches you say you do."

14 MR. SHIRAKH: But my question is are we able
15 to schedule you to be there at the same time that
16 they're doing it?

17 MR. NESBITT: I don't think it's totally
18 unreasonable. I don't think it's always going to be
19 practical. It's not-you know depending on the job, the
20 scale of the job, how long they're going to be on the
21 site. I mean, ideally, if we're doing QII we're doing a
22 pre and a post. Or if we're just doing a basic utility
23 program verification it would just be a post and is it
24 the R-value? So we wouldn't necessarily be there. So
25 even doing QII we wouldn't necessarily plan on being

1 there while they're spraying. For me, as a Rater, I'd
2 much rather tell them what they need to do to make it
3 right while they're there then say bring your truck back
4 out and fix it. I'd rather make it less painful and
5 less expensive. Personally I always try to come in
6 early to make sure that we're on track. But I'm not
7 going to say that's going to happen as a matter of
8 course.

9 MR. SHIRAKH: Okay. Well, I have some ideas
10 but we can talk about this later-

11 MR. NESBITT: Yeah.

12 MR. SHIRAKH: And not resolve it here.

13 MR. NESBITT: Yeah. I think on some end we
14 trust cellulose and fiberglass. We're going to have to
15 trust that they've installed the product. I think we
16 can distinguish high density from low density through
17 touch and probing but beyond that I think it's
18 difficult.

19 MR. SHIRAKH: Thank you. Whoever wants to
20 come up.

21 MR. VARVAIS: Dan Varvais with SPFA. I don't
22 want to get into this ad nauseam anymore but we can come
23 up with a very simple labeling program, following the
24 requirements that the state uses for the Cool Roof
25 Rating Council with what they label. We have tester

1 products listed with the Bureau of Home Furnishings. We
2 have tested R-values. We have offered to put a label
3 system like this together. We can solve it in 15
4 minutes offline.

5 MR. SHIRAKH: Okay. Thank you.

6 MR. VARVAIS: So.

7 MR. THOMPSON: Mike Thompson. I'd just like
8 to address your questions. I think to expect a HERS
9 Rater to be there at a specific time is going to add
10 tremendous complications, probably another \$250 to most
11 jobs.

12 MR. SHIRAKH: Actually, what I'm thinking is
13 if that's the requirement but even if it happens once
14 out of every three times. As long they don't know if
15 you're going to be there, that's kind of like sampling
16 basically. If they'll take a chance and they don't want
17 to do it but there's a good chance that the HERS Rater
18 is going to be there. Something along those lines is
19 what I'm thinking. This is not the forum to be forming
20 new ideas. We can talk offline.

21 MR. FRANCISCO: I'd like to make one final
22 comment. Jim Francisco, Sierra Consulting. And to sort
23 of close this off, for your information too, I realize
24 that there's a large concern from the CEC that these
25 contractors are going to cheat. It comes up over and

1 over and over again. The industry is very well
2 regulated by itself. Every time that we have found a
3 problem in the field we have jumped on it to correct it
4 immediately. The only problem we've ever had is with
5 the State of California just as because when we ask for
6 somebody's license to be taken away, they give it back
7 to them in six months because it's a revenue problem.
8 But every time that we have found a problem, we have
9 moved with the state to correct it. Just for your
10 information.

11 MR. SHIRAKH: Thank you.

12 MR. TALBOTT: Gary Talbott. I wanted to
13 address what Mike from ConSol brought up about the
14 footnote in relationship to a vapor barrier and climate
15 zones. There are some foams that are designed, that are
16 manufactured, to qualify as a Class 2 vapor retarder and
17 there are foams that don't as well. I would say suggest
18 maybe a clarification on that footnote would be some do
19 require that.

20 MR. SHIRAKH: I don't think that comment had
21 to do with product availability. I think the footnote
22 has the wrong climate zones.

23 MR. TALBOTT: Oh. Okay. All right. But we
24 do do that. And as far as ceilings and under roof decks
25 as a contractor for inspectors to verify what we put up

1 there. All right. Because sometimes when we're, for
2 instance, depending on the product we use, it could be
3 10 inches of insulation under a roof deck. We install
4 attic rulings up right up against the roof deck. Now
5 this has a dual purpose.

6 For us, for instance, when we're applying
7 these products, you get up in the roof and you're
8 spraying and you're doing multiple layers at a time,
9 you're almost in a snowstorm so you don't have real
10 references, so to speak sometimes. And again with
11 inspections as well, that gives us a guideline. So
12 there again there is a simple way that we've developed
13 so that we provide those to the inspectors so they can
14 make sure we're using the product. We put an attic card
15 there which specifies what we did, product and R-value.

16 MR. SHIRAKH: I thank you. I think we
17 understand that we need to come to some resolution on
18 this.

19 MR. KLINK: Hello. My name is Frank Klink.
20 I'm with 3M. I do have a written comment here and it's
21 really aimed at both yesterday and today for both the
22 commercial as well as the residential side but I'll
23 restrict my comments here just to the residential
24 portion of it. But I'll give you a copy of it.

25 MR. SHIRAKH: Can you send this to us

1 electronically too?

2 MR. KLINK: I can. I lead the laboratory for
3 3M's Minerals Division. We're a leading granule
4 producer supplying the asphalt and granulated metal
5 roofing industry. We support approximately 60 of our
6 customer's plants around the country including six here
7 in California from our four roofing granule plants
8 including one here in Corona, California.

9 Starting with the original development of
10 ceramic coated roofing granule more than 79 years ago,
11 we have been pioneering numerous innovations in the
12 roofing industry including algae resistance and more
13 recently solar reflectance granules to enable cool
14 roofing. We continue to find this as an area that we
15 want to innovate in and continue to invest in.

16 We certainly recognize and value the
17 leadership the State of California in encouraging
18 manufactures to develop ingenious, cost effective
19 products to improve energy efficiency. The code changes
20 that you enacted in 2005 and 2008 are driving change and
21 will continue to do so for many years yet to come as
22 roofs are replaced, as manufacturers develop more
23 products in response to them, as code awareness builds
24 and as enforcement increases.

25 Both solar reflectance and solar emittance are

1 straightforward to measure and have impact on local and
2 global climate. We encourage the CEC to be open in the
3 code to develop—to recognize the development of roofing
4 products and assemblies that can increase building
5 energy efficiency via additional mechanisms such as
6 insulation or convective venting.

7 Recent publications from Oak Ridge National
8 Labs state that improvements in the thermal management
9 strategies of the roof and the attic space have
10 demonstrated the potential to reduce residential energy
11 use by 20-30 percent in both hot and cold climates. Our
12 research we've done at 3M tends to lead us to support
13 that statement.

14 While they contribute focusing solely on the
15 solar reflectance and thermal emittance when testing and
16 rating the energy performance of rating roofing products
17 limits what we can consider, narrow where manufacturers
18 focus their development efforts and reduce what
19 improvements we can ultimately realize.

20 You've achieved a lot in these last two code
21 cycles on improvements in the solar reflectance of
22 roofing in California. We feel that it'd be more
23 beneficial to shift your development efforts and to
24 encourage ways to directly measure the total energy
25 performance of roofing products in the future. This

1 will not only encourage those who have picked up the
2 challenge of increasing their product's solar
3 reflectance in response to the current code but coupled
4 with directly measuring the energy performance of the
5 roofing products should motivate the development of more
6 energy efficient roofing products in the future. Thank
7 you.

8 MR. SHIRAKH: Thank you for your comments.
9 Andre?

10 MR. DESJARLAIS: Good afternoon. I'm Andre
11 Desjarlais; I lead building research at Oak Ridge
12 National Laboratory.

13 As an advocate of getting above sheathing
14 ventilation included in the 2008 version of Title 24 I
15 was disappointed that in review of the new version that
16 it's been removed from the list of footnotes as a cool
17 roof exception. I'd like to offer the proposal that CEC
18 reinstate above sheathing ventalization as a cool roof
19 exception both for residential and nonresidential
20 construction in steep slope in new and retrofit.

21 There seems to be two contentious issues
22 associated with the use of above sheathing ventilation.
23 There are some opinions that above sheathing ventilation
24 doesn't save energy. I'd like to offer some evidence
25 today that that opinion is a minority opinion and that

1 the bulk of the evidence, both nationally and
2 internationally, shows that it actually saves more
3 energy than the cool roof requirement that you're
4 introduced into the building code.

5 Secondly, there seems to be a question about
6 whether this form of roofing compromises the fire safety
7 of roofing. I'd like to address that comment as well at
8 the end of my presentation.

9 But first, I'd just like to talk about the
10 energy considerations. All of this work kind of goes
11 back to a thesis by Dr. Hollands who published in the
12 Journal of Heat Transfer back in 1976 and said that if
13 you have an inclined air space and you preferentially
14 heat one said like you do in a roof when the sun strikes
15 the roof, that you draw air up through that cavity
16 through natural convection and that gives you free
17 cooling. I have a copy of his paper here and many
18 others. I won't read them but I will give them to you,
19 Mazi, so that tonight when you try to fall asleep you
20 can read them.

21 MR. SHIRAKH: Why don't you read them for the
22 record?

23 MR. DESJARLAIS: But I don't have electronic
24 copies of all of them. This is going to be my
25 filibuster. I hope you have a lot of time,

1 Commissioner, for the rest of the afternoon. I'm going
2 to sit here until I get my way.

3 MR. SHIRAKH: Senator Desjarlais.

4 MR. DESJARLAIS: The Oak Ridge National
5 Laboratory has been investing both sheathing and
6 ventilation for the last six years. We have about a
7 dozen publications. I have three of them in this
8 package. One of the things that we've done is that
9 we've developed a computer simulation of above sheathing
10 ventilation which we've attached to our attic model. In
11 the 2008 cycle we demonstrated in California climate
12 zones 1-16 that the use of above sheathing ventilation
13 was equal to adding 15-20 points of solar reflectance to
14 the roofing surface which is more than what you're
15 requiring in your steep slope requirements today. I
16 think what we've done is we've ended up throwing away a
17 more energy efficient technology than we're requiring in
18 a code.

19 The State of California has actually
20 undertaken this research as part of a PIER project. Oak
21 Ridge National Lab instrumented an above sheathing
22 ventilation home in Fort Irwin and you have a report
23 somewhere in archives that shows this technology saves
24 energy compared to cool roofing.

25 We're not the only U.S. researchers that have

1 done this work. Back in the 1990's Florida Solar Energy
2 Center published a paper in ASHRAE that demonstrated the
3 energy savings associated with above sheathing
4 ventilation. Two years ago Roodvoets, Mallinger and
5 Banks published a paper in RCI that extolled the
6 benefits of roof sheathing ventilation as a means of
7 controlling roof surface temperature. Numerous national
8 publications but there are also international ones. In
9 2007 a gentleman by the name of Dr. Ono from Japan
10 measured 25 degree temperature drop in the surface of
11 his roof temperature, of his roof, comparing a tile roof
12 directly attached to the surface versus a tile roof with
13 above sheathing ventilation.

14 Also in 2007 Nigel Cherry, of LaFarge in the
15 UK, modeled the energy savings of above sheathing
16 ventilation. He showed that in climate zone 15 in
17 California you could save up to 15-35 percent of the
18 roof's energy simply by the addition of above sheathing
19 ventilation.

20 And finally in Germany the Deutshes Institut
21 fur Normung, DIN, their standard 4108 which is entitled
22 Thermal Protection in Energy Economy of Buildings
23 requires use of above sheathing ventilation in German
24 construction.

25 I think the bulk of the information, of the

1 testimony, internationally and nationally suggests that
2 this is a good idea. And to simply throw it away
3 because it's inconsistent with one set of experiments I
4 think is foolhardy.

5 I want to talk a little bit about fire since
6 several people said above sheathing ventilation may
7 compromise the fire performance of roofing.

8 We're not talking about something new today.
9 Above sheathing ventilation is a very, very common
10 practice in the State of California. In Northern
11 California my colleague Mr. Peterson, his company and
12 all tile companies, mount their tile products on battens
13 which create above sheathing ventilation. And since
14 they represent about 80 percent of new construction,
15 you've already got a huge number of roofs within the
16 state of California that have this technology and the
17 number of roofs are growing every day.

18 I think what you need to do is give these
19 people a fair shake so that they can claim the energy
20 benefits of the way that they're creating in installing
21 roofs as opposed to just giving people one choice or one
22 option.

23 If the issue is of drawing embers from within
24 the airspace, I can't believe there aren't any
25 engineering solutions such as vents or blocks that can

1 be put along the perimeter of—I mean it seems crazy to
2 say you'll get embers up there. There have got to be
3 ways of blocking that.

4 Even more interesting than that, Oak Ridge
5 published a paper last month at the 2011 International
6 Roofing Conference that was sponsored by the National
7 Roofing Contractors Association in Washington, D.C. and
8 we showed that you could actually draw the air from the
9 attic to feed above sheathing ventilation. That you
10 don't even need an outside source by simply creating a
11 slot in the roof deck, you can bring the air from a
12 ventilated attic into the airspace. So never having the
13 perimeter of that airspace completely closed.

14 In conclusion, I think we'd like to request
15 that you put above sheathing ventilation back into the
16 code as an alternate for solar reflectance. I think all
17 you'll be doing is giving credit to what's already going
18 on in the state of California. I think the amount of
19 information and literature is overwhelming in terms of
20 the amount of energy savings associated with it and I
21 think you can construct these things so that they're
22 safe from a fire perspective. Thank you.

23 MR. SHIRAKH: Is there any response to
24 Andre's? Thank you. You don't have this on electronic,
25 do you?

1 MR. DESJARLAIS: I have some of them. But
2 some of those are so old I don't think we have
3 electronic back then.

4 MR. SHIRAKH: Send me a link and I can do
5 searches. All right. Thank you.

6 MR. HITCHCOCK: Hi. Good afternoon. Reed
7 Hitchcock with ARMA, the Asphalt Roofing Manufacturers
8 Association.

9 Just real briefly, I'd like to sort of chime
10 in on the tail end of Andre's comment. Going back to
11 2005, organizations come here with the standpoint of
12 there needs to be options in the code. While above
13 sheathing ventilation doesn't generally impact asphalt
14 roofing directly it is a compliance option and it's an
15 energy savings options. So just to chime in on Andre's
16 comment I'd like to see that stay in there as well.

17 Also, I'd like to add on to the tail end of
18 Frank Klink's comments from a moment ago. Frank made
19 some very good points, I won't reiterate them, but I
20 think it's important that the Energy Commission consider
21 if there have been a lot of technologies driven from the
22 2008 requirements. Still working on getting the
23 acceptance. Still a well documented cost premium for
24 cool steep slope roofing g products and I think a change
25 at this point is problematic as we've discussed in other

1 offline inquiries in the emittance right now, we don't
2 support—we can get into the technical rationales and
3 what have you behind that but right now there doesn't
4 seem to be a good, solid technical basis behind that
5 increase. In the interest of consistency with the
6 existing code and across the board, keeping that at the
7 0.75 would be our preference at this point. We're still
8 working on getting acceptance of the products that have
9 been developed. So I do echo Frank's comments as well.
10 So I just wanted to share that with you.

11 I do also think that there's some impact from
12 the discussions yesterday on cost justification on this
13 side of the aisle and I think that needs to be a
14 discussion offline as we're talking about that issue as
15 well. There have been questions raised from the 2008
16 process, the cost justification numbers were questioned
17 on some pretty sound technical bases. I think that
18 needs to be part of the overall discussion on the costs.

19 MR. SHIRAKH: They have raised some questions
20 related to the 2008 costs and we have offered an
21 alternative to use the pre-2005 condition as the basis
22 and reset everything. I think we understand the
23 situation and we can talk on Monday and see what your
24 coalition thinks about that.

25 MR. HITCHCOCK: Very good. Thank you.

1 MR. SHIRAKH: Thank you, Reed.

2 MS. DEUKMEJIAN: I'm Sarah Deukmejian from ACS
3 Building Products. We are a steel building products
4 manufacturer, headquartered in Sacramento with four
5 manufacturing plants in California. We support the
6 efforts of the CEC, particularly as it relates to the
7 energy efficiency benefits of roofing products.

8 Metal roofing can provide these energy
9 benefits both through painted steel as well as the way
10 the roofing products are installed above sheathing. So
11 we request the inclusion of the above sheathing
12 ventilation as an exception to the cool roof
13 requirements.

14 MR. SHIRAKH: Thank you. Now do I understand
15 that we do allow credit for this in the performance
16 method? For the above sheathing?

17 MR. WILCOX: The airspace that's involved in
18 tile roof construction is included in the simulation
19 model for tile roofs in the performance method. There's
20 no credit because the current structure of the ACM rules
21 says that a tile roof gets compared to a standard design
22 tile roof. So they both have the airspace. Asphalt
23 shingles get compared to standard design asphalt
24 shingles. Neither case has the airspace. The airspace
25 is in there so we get a correct thermal calculation and

1 we get the right loads and all that stuff but there's no
2 compliance credit for airspace in a tile roof space
3 under the current rules.

4 MR. SHIRAKH: But both are on the standard and
5 proposed design unless we make asphalt the basis for our
6 standard design.

7 MR. WILCOX: Well, right.

8 MR. SHIRAKH: Okay. Thank you.

9 MR. DEVITO: Thank you. Eric DeVito with
10 Cardinal Glass Industries. I'll be very consistent with
11 the other comments that have been made yesterday and
12 today. We support where the staff is going with your
13 prescriptive requirements for windows, specifically.
14 The new values that you're proposing are the nice, next
15 progression where we believe you need to be going.

16 We've talked about the IECC and other national
17 standards. This would put California back on par with
18 the IECC. Right now the 2012 IECC basically requires
19 either a 0.35 or 0.32 U-factor for California and for
20 most of California a 0.25 SGHC at least where you
21 require it. So this puts you right where you need to
22 be. These are the right targets as far as technology
23 goes and the market transformation we've talked about
24 before.

25 The only other issue I'll bring up is the

1 product availability. This kind of came up yesterday
2 and I attempted to address this yesterday. I don't
3 think I did a very good job of it so I'll try to clean
4 that up a little bit.

5 In 2009, there's an NFRC certified products
6 directory that lists U-factor and SGHC. In 2009, which
7 is fairly dated now, over 51 percent of the products
8 could meet the standards that you're about to set. So
9 that's a—I believe that's a very high percentage and
10 obviously support for what you're doing.

11 The glazing that's required to meet your
12 requirement is not proprietary. It's made by four of
13 the six manufacturers, it's widely available.
14 Something, in terms of looking at product manufacturer's
15 listings of their products, I've looked at four national
16 manufacturers as an example. They have matrices of
17 hundreds of combinations which may look like they have
18 6,000 products or 3,000 products or whatever it is.
19 Maybe only 10 percent of them meet these requirements
20 but, again, that's not—that doesn't have any bearing on
21 the quantities that are manufacturer available. That's
22 just the whole breadth of options that are available
23 from that manufacturer. I wouldn't take to heart
24 something you pull off a website that says what the
25 manufacturer data means. That's not indicative of the

1 total number of products.

2 The only other point I would make is that in
3 my comments I submitted to the docket, I made a detailed
4 example of a picture window. That really is, probably
5 is, because it has the thinnest profile and not operable
6 it would probably have the hardest time at meeting these
7 new standards because of the majority of the glass. And
8 all of the manufacturers I just referenced, they all
9 have a picture window product that will meet these
10 requirements.

11 That basically from there on up indicates that
12 you're in the right direction. It's achievable and it's
13 the right way to go. Thank you.

14 MR. SHIRAKH: Thank you. Any other comments
15 on Section 150.1, the prescriptive requirements?
16 There's a comment online, Jon, then we'll get to you.

17 UNIDENTIFIED SPEAKER: This is from Eric
18 Banks. His comment is that BASF Corporation spray
19 systems, markets and sells spray polyurethane foam and
20 insulation systems in California.

21 We are an active participate with the Spray
22 Polyurethane Foam Alliance and Center for Polyurethane
23 Industry Foam Coalition. We agree with and support the
24 previous statements provided by Mr. Talbott and Mr.
25 Francisco and Mr. Varvais.

1 Spray polyurethane foam insulation is an
2 extremely useful material providing both insulation and
3 air seal that are critical to energy efficiency and
4 indoor air quality.

5 BASF Corporation spray systems is an active
6 participant in the SPFC industry groups and is more than
7 willing to assist with discussions related to SPF.

8 And then we also have a comment from Ed Osann.

9 MR. OSANN: Hello?

10 MR. SHIRAKH: Go ahead. We can hear you.

11 MR. OSANN: Good. This is Ed Osann with the
12 NRDC, Natural Resources Defense Council. I have a
13 couple comments on Section 150 of the mandatory with
14 regard to low-rise residential. 150(j) on water pipe
15 systems.

16 MR. SHIRAKH: Yes.

17 MR. OSANN: I may have missed this in an
18 earlier discussion or in the text but there doesn't
19 appear to be a requirement for insulation under slab in
20 nonrecirculating systems.

21 Additionally in nonrecirculating systems, I
22 believe the IECC 2012 is now requiring insulation
23 specifically to as far as the kitchen sink. The current
24 text calls for insulation for the first five feet.

25 MR. SHIRAKH: Yeah. Those are existing

1 requirements. They are not in Section 150; I think
2 they're back in 118 or 117, one of those areas. It
3 hasn't changed. That's why we didn't display it today.

4 MR. WILCOX: I think the answer is that there
5 is a requirement for buried pipes to be insulated.

6 MR. SHIRAKH: Yeah. And again we haven't
7 really changed anything but it's just not in 150. It's
8 in—we're just highlighting the changes today not all of
9 the requirements.

10 MS. BROOK: So we're encouraging you to look
11 at the mandatory section in 110—

12 MR. SHIRAKH: I believe in 115-188, in one of
13 those sections.

14 MS. BROOK: So because we think we have those
15 same requirements for insulating hot water pipers—

16 MR. SHIRAKH: Under slab.

17 MS. BROOK: Under slab.

18 MR. SHIRAKH: yeah.

19 MR. OSANN: Okay.

20 MS. BROOK: I don't know if we have the
21 kitchen insulation requirement. Does anybody know?
22 Insulating the hot water pipes to the kitchen? That's
23 what I thought. That's what I thought. So those are
24 existing in our current code and like Mazi said we're
25 just talking about changes to that code today.

1 MR. OSANN: Right.

2 MS. BROOK: Okay.

3 MR. OSANN: The third item, and again we may
4 have missed it, it appears to be an omission of demand
5 activation for recirculation pipes in domestic hot
6 water.

7 MS. BROOK: Okay. We'll take that comment
8 and—

9 MR. OSANN: Okay.

10 MS. BROOK: check with our staff.

11 MR. OSANN: Okay. All right. Thank you.

12 UNIDENTIFIED SPEAKER: What was the question?

13 MS. BROOK: Was there demand activation for
14 recirculation loops.

15 MR. OSANN: In domestic hot water. If that's
16 required.

17 MS. BROOK: Is it required to have demand
18 controls for recirc systems?

19 MR. OSANN: As opposed to timer—

20 MS. BROOK: As opposed to timers.

21 MR. NESBITT: Not currently. I don't think
22 you've made that a standard or a mandatory requirement.
23 Other than the multi-family—the multi-family recirc
24 systems that standard design would be a demand
25 controlled, in 2013.

1 MS. BROOK: Okay. Okay. Your comment is for
2 us to—you're encouraging us to consider using—giving
3 more credit or requiring demand control rather than the
4 other controls for record systems?

5 MR. OSANN: Correct.

6 MS. BROOK: Thank you.

7 MR. ZHANG: Can I make a comment? This is
8 Yanda with the Heschong Mahone Group.

9 MR. SHIRAKH: Yeah. Go ahead, Yanda.

10 MR. ZHANG: Regarding his question on
11 recirculation systems. The—for multi-family there is a
12 recirculation system we proposed demand control as a
13 prescriptive requirement so that energy budgets will be
14 set according to demand controls systems. For
15 compliance, other control systems can be used and their
16 performance will be different from demand controls. You
17 may have to come up with other measures to match with
18 the demand control in the prescriptive requirements.

19 MS. BROOK: Okay. But that's, again, for
20 multi-family. I think the question is in regards to
21 single family.

22 MR. ZHANG: Okay. Single family. The last
23 time I discussed this with Mark and Rob and Danny, I
24 think, I haven't checked draft code but the conclusion
25 we had is that the prescriptive requirement is no

1 recirculation systems in single family homes. If you do
2 have recirculation systems, then you're going to have
3 penalties for more distribution heat loss. But if you
4 have recirculation and demand control that recirculation
5 penalty will be less.

6 MS. BROOK: Okay. That's what I thought.

7 MR. ZHANG: So it's not required but they've
8 left it in compliance.

9 MS. BROOK: Oh. Okay. So basically we think
10 we are making—we're accounting for the efficiency
11 differences between demand control and other controls of
12 recircular loops in our performance approach for single
13 family because, again, recirculation systems isn't a
14 prescriptive requirement or isn't really referenced in
15 the prescriptive approach. But in the performance
16 approach it is allowed and the credits differ between
17 the types of control systems you use on that recirc
18 system.

19 MR. OSANN: Right.

20 MS. BROOK: So you wouldn't have seen that
21 because it'll be a rule that's implemented in our
22 performance compliance approach. So we'll—I'm
23 encouraging you now to pay attention to our listserv and
24 when we Notice and have a Workshop on our Performance
25 Rule Set which will be in the spring, then that's when

1 we'll be discussing the details of implementing the
2 performance approach.

3 MR. SHIRAKH: Thank you Yanda for the
4 clarification. Any other questions on sections 150.1,
5 the prescriptive requirement? Go ahead.

6 UNIDENTIFIED SPEAKER: Roger?

7 MR. LEBRUN: Yes. This is Roger LeBrun. Can
8 you hear me?

9 MR. SHIRAKH: Yes.

10 MR. LEBRUN: Thank you. On the prescriptive
11 for fenestration, the implementation of the table values
12 in 150.1(a)-3A you talk about area weighting the average
13 vertical fenestration U-factor but not the skylight U-
14 factor. Was that intentional? And, if so, can you give
15 me a reason?

16 MR. SHIRAKH: So you're saying how can we
17 allow area weighted average for vertical fenestration
18 but not for skylights?

19 MR. LEBRUN: That's the question, yes.

20 MR. SHIRAKH: I don't have the answer to that.

21 MR. LEBRUN: Okay. Well the same question
22 would relate to Section 4 under that same heading for
23 solar heat gain. And similar to a comment I made
24 earlier in the mandatory section, the second for U-
25 factor uses, for skylights, 8 square feet of skylights

1 can go up to 55, 0.55. Well that's the same number
2 that's in the table so the exception has little to no
3 value so I'm wondering if that was a vestige from the
4 2008 code that needs to be updated?

5 MR. SHIRAKH: Probably, yes.

6 MR. LEBRUN: And, also, I noticed in the
7 shading part, the exception there has been fixed from
8 what I had downloaded last week. But now you have it
9 repaired as far as relating to SGHC but it also gives
10 the same number as in the table. So again the exception
11 doesn't have much value.

12 MR. SHIRAKH: Okay. We can look at those
13 exceptions.

14 MR. LEBRUN: Thank you very much.

15 MR. SHIRAKH: Mr. McHugh?

16 MR. MCHUGH: Thank you, Mr. Shirakh. Jon
17 McHugh with McHugh Energy. Overall, the main crux of
18 this is Package A which sets prescriptive requirements
19 for buildings which, as many of us know, people don't
20 actually build buildings this way. It sets a
21 performance baseline and sets the energy budget for new
22 homes.

23 First off, I'd just like to endorse where
24 you've come out on in terms of the window properties.
25 Taking advantage of the technology that's readily

1 available and something that's an extremely cost
2 effective measure with minimal cost.

3 In addition, the insulation of roof decks
4 drops the attic temperature and creates a great benefit
5 to the energy consumption of buildings.

6 The place that I think I have a little
7 heartburn about and also I would like to try to clear up
8 the record. In the earlier meetings we had heard from
9 Bob Raymer that going from two-by-four to two-by-six
10 walls was going to have—you know we talked to various
11 people and that this was going to have this huge impact
12 on the forest, forest health, size of logs, logged etc.
13 I have contacted essentially all of the contacts that he
14 suggested, talked with the mill operator at the Quincy
15 Mill and talked with Steve Brink over at the California
16 Forestry Association and the fact of the matter is we
17 don't cut single size lumbar out of wood. To actually
18 maximize the amount of lumber you take out of a log, you
19 have multiple sizes and dimensions of lumber to maximize
20 the resource efficiency. If you look at the overall
21 consumption of wood in homes, the walls studs is but a
22 small fraction of that. In addition, new home
23 construction consumes about 35 percent of total lumber,
24 dimensional lumber products, sold to the state.

25 I think Bob and I have already talked about

1 this offline but I want to put it in the record that
2 there is not this environmental impact and, in fact, if
3 certain things are done in terms of engineered framing,
4 that sort of thing, you can actually reduce the cost of
5 the building and reduce the amount of wood in the
6 building. There are actually opportunities for the
7 industry to reduce their cost and increase energy
8 savings.

9 Recently we were involved in some discussions
10 and CBIA's Advisor's Counsel had provided cost data for
11 construction of buildings using 6 inch studs and using
12 R-21 plus 4 inch rigid insulation on the outside of the
13 building.

14 I took their cost data and combined that with
15 the energy simulations that I believe were done by Bruce
16 and Ken Nittler which is contained and documented in the
17 HMG Case Report on Increased Insulation of walls.

18 When I do that, I find a couple of things.
19 First off is that—and I described some of this earlier.
20 I think it was the presentation on the 23rd. That
21 there's a number of climate zones where the savings are
22 approximately twice the cost of the incremental cost.

23 So for climate zones 2-5, 9 and 10 which
24 currently the current Package A is proposing 4 inch wall
25 sections of R-15 plus R-4, taking the results of the

1 work, that cost information from ConSol and the
2 simulations done by the CEC's consultant. I put that
3 information together and I found that increasing
4 insulation in these climate zones is cost effective. On
5 average has a benefit cost ratio of 176 percent so
6 that's approximately twice the savings as the
7 incremental cost.

8 If I take a look at that and take the
9 extremely low construction rates that we're talking
10 about right now, the 22,000 homes instead of the typical
11 100,000 plus homes, this is actually a loss in wealth to
12 the state of about \$16 million. For at least each year
13 of new construction. If we look at, under normal
14 situations, with five times the number of homes built
15 we're looking at a net loss of wealth for the state of
16 \$80 million to the citizens of the state.

17 I commend all of the—many of the other
18 measures in here but this seems to be an egregious
19 lapse. Earlier I presented an evaluation I think it was
20 at the meeting on the 23rd which described the cash flow
21 analysis. When you start looking at benefit cost ratios
22 of around 180 percent, even if you look at the down
23 payment included, you find that you end up with a
24 positive cash flow after the first year. I'm just at a
25 loss as to what is the financial benefit. What is the

1 energy benefit for not looking at these particular
2 climate zones. In addition, these climate zones, in
3 terms of the projections of construction, what we're
4 talking about is not including the cost effective
5 insulation levels for those climate zones that make up
6 43 percent of the new construction activity. So,
7 essentially, almost half of the climate zones in the
8 state where we could be essentially requiring a higher
9 baseline, saving a fair amount of money for the
10 consumers in the state. I just guess with that, I'd be
11 interested in understanding the rationale behind
12 sticking to the lower efficiency standard for those
13 walls.

14 MR. SHIRAKH: You want a response from us?

15 MR. MCHUGH: Yeah, that'd be good.

16 MR. SHIRAKH: It's basically—I'll make a brief
17 remark about it. It's basically that it's not something
18 that we had proposed. It was not part of the package
19 that we had included in the cost. When we approached
20 CBIA and ConSol we didn't want to change the numbers.
21 We were concerned about the total cost of the packages
22 and how much impact it would have on the statewide cost.
23 There were several things that we tried to exclude, not
24 include, to keep the total cost at a reasonable level.
25 I don't dispute the energy savings in that. Cost

1 effectiveness is not the only measure that we consider
2 when we look at these measures in the packages.

3 MR. MCHUGH: Just related to that. The
4 climate zones that you're not including the higher R-
5 values are those climate zones that, essentially, have
6 lower costs associated with the packages because
7 understandably the higher costs of the packages are for
8 those hotter climate zones because those buildings
9 consumer a lot more energy and it's not surprising that
10 those houses might have more energy efficiency features.
11 This thing would actually—the places that would be left
12 off the list where it's cost effective to add more
13 insulation. Those are in the climate zones where the
14 cost of the packages are lower because, well, for the
15 other measures that's where it wasn't cost justified to
16 actually have other requirements. I think you might
17 find for many of these climate zones it might help level
18 out the total cost.

19 MR. SHIRAKH: I don't understand. The two
20 measures that you mention, the roof deck insulation and
21 the two-by-six, are actually the most expensive
22 measures. That would greatly impact the total cost of
23 the-the weighted average cost for the whole state. So,
24 again, it was an attempt to keep the cost more
25 manageable.

1 MR. MCHUGH: Thank you.

2 MR. NESBITT: George Nesbitt. A couple more
3 items on the 150.1. The central fan ventilation
4 requires HERS verification of the fan watt draw so it'd
5 be nice if it, once again, clearly states HERS
6 verification and on the package table it either needs to
7 say it right there, that it's a HERS measure or
8 certainly in a note.

9 My biggest—one of my big concerns is high rise
10 multi-family which currently the only HERS credit you
11 can get is duct testing. Therefore your compliance
12 margins are much smaller in high rise multi-family if
13 you take the same building and model it as low rise and
14 high rise, your compliance margin goes down in half.

15 So the new package requirement for domestic
16 hot water is going to be a—is going to have a solar
17 fraction as well as a well designed recirc loop with
18 demand control. Now high rise multi-family uses the low
19 rise multi-family—or uses the low rise water heating
20 budgets. We're going to be comparing a building that
21 already has a lot less options for credit when comparing
22 it to the best system which is going to make compliance
23 a lot harder. Especially on affordable housing to get
24 the California tax credits. They have to be 17.5
25 percent above code. This may become extremely

1 difficult.

2 The other—on the wall assemblies. I guess
3 you're saying—are you sticking with R-15 plus 4 for the
4 package? And the mandatory is going to R-13, right?
5 Okay.

6 MR. SHIRAKH: The mandatory has always been R-
7 13.

8 MR. NESBITT: It's going to stay?

9 MR. SHIRAKH: We're going to keep it at R-13.

10 MR. NESBITT: Are we going to require that
11 people build the wall that's R-15 plus R-4 or does it
12 have to have the equivalent performance?

13 MR. SHIRAKH: As a U-factor.

14 MR. NESBITT: Right.

15 MR. SHIRAKH: Whenever you have a U-factor it
16 means you can come up with other alternatives, right?

17 MR. NESBITT: I mean the tale just says R-15
18 or R-19 plus R-4.

19 MR. SHIRAKH: It's out there someplace that
20 there's an equivalent U-factor.

21 MR. NESBITT: There is? Okay. Maybe I missed
22 that.

23 MR. SHIRAKH: I'm getting two nods here.

24 MR. NESBITT: Okay. Maybe I missed that if it
25 wasn't I think we need to make it clearer both on the

1 package and on the mandatory requirements that you can
2 do the weighted average or you have to have an assembly
3 with an equivalent value. Just so that people don't
4 literally think they have to do exactly that. That they
5 have options. So. I think. Yeah.

6 It might not be a bad idea to put on the
7 Package Table that no recirc system is allowed under the
8 package. I'd have to say I imagine quite often recirc
9 systems are installed and they were never run on the
10 performance path. Even though it's not part of the
11 default, it's just one of those things that are often
12 ignored.

13 MR. SHIRAKH: Thank you, George.

14 MR. STONE: Nehemiah Stone, Benningfield
15 Group. Just a couple of clarifications to what George
16 said.

17 The tax credits are the minimum, better than
18 the standards of 15 percent, not 17.5. And you get more
19 credit for being 20, 25 or 30 percent better and
20 builders are taking advantage of that because you can
21 get there.

22 It's not—it really is not that hard except
23 when you have a building that has central ventilation
24 shafts. Then it's almost impossible. But if that's not
25 the case, then it's all right. I also recommend the

1 note George was talking about and putting at the bottom
2 of the prescriptive table that you not do that because
3 that table also applies to low-rise residential and you
4 have other details in the standards that say for water
5 heating systems that serve multiple dwellings and you
6 have more than eight units in the dwelling, then you
7 have to have recirc system as far as the prescriptive
8 goes. It would be very confusing to people to have a
9 note that says don't have—

10 MR. SHIRAKH: Don't have it.

11 MR. STONE: it. I would think it's clear
12 enough that people don't just read what's on the table
13 and say here's how I'm going to build. They use the
14 manuals. They use certified energy analysts to help
15 them out. It's not that confusing.

16 MR. SHIRAKH: That's a good point. For every
17 value that's Package A there's a paragraph in that same
18 section that describes the requirement.

19 MR. STONE: Yeah. That's a good idea.

20 MR. SHIRAKH: The table is just supposed to be
21 the summary.

22 MR. STONE: Actually, I have one other thing.
23 It's just a suggestion. I don't know if Yanda looked at
24 it or not but in 150.1(c)8D. There's a requirement for
25 all of these, if you want to have electric resistance

1 water heating, you have to do all of these other things.

2 One of the things that, seems to me, makes as
3 much as sense as all of these other things is or for
4 your electricity for the electric resistance hot water
5 comes from renewable source on site. That kind of then
6 cuts through all of the rest. Right now it says you
7 have to have that solar hot water system that provides
8 at least 50 percent. I don't know what the rest of it
9 is but it should just also say or on site renewable
10 energy.

11 MR. SHIRAKH: Oaky. Thank you. Pat Eisler?

12 MR. EISLER: Hi. Pat Eisler. PG&E. I'd just
13 like to follow up on Jon McHugh's comment. The analysis
14 that he described basically says that if the cash flow
15 is going to be positive in the first year like
16 insulation that he's looked at in various climate zones
17 that would actually increase the affordability of these
18 homes. I guess the question back to you once again why
19 the Commission should not go back to the drawing board.

20 MR. SHIRAKH: We've talked about this.

21 MR. EISLER: We have.

22 MR. SHIRAKH: Several times.

23 MR. EISLER: But not in front of Commissioner
24 Douglas.

25 MR. SHIRAKH: We have—

1 COMMISSIONER DOUGLAS: It's appropriate.

2 MR. SHIRAKH: We can discuss that. Again,
3 it's trying to keep the cost of the package manageable
4 and we had that scenario of Package A1 which had 50
5 percent savings and they were all deemed to be cost
6 effective but it would have cost about \$10,000
7 statewide. It's a--typically you have to consider other
8 factors and where you want to draw the line. It's a
9 policy question. What do you want to do with that?

10 MR. EISLER: Well, you know. From a high
11 level, the demand for housing in this state is going to
12 be driven by interest rates. The economy as a whole,
13 etcetera, etcetera. If you just look at that and the
14 fact that this will actually make the houses more
15 affordable, again, I'm just asking you to reconsider.

16 MS. BROOK: Appreciate that. Thank you.

17 MR. SHIRAKH: Thank you, Pat.

18 MR. MORGAN: Michael Morgan, Performance Foam
19 Tech. Responding to the learned gentleman to my right.
20 I'm a builder first and a foamer second. The goof alert
21 went off when I heard how insignificant the lumber
22 gobbling would be going from two-by-four to two-by-six.
23 That he quizzed folks and they said--it stands to reason
24 that a bigger stick eats up more trees. It doesn't
25 matter how you cut it. You've got to get a bigger stick

1 out of it. Bigger sticks weigh more on a truck and so
2 then you get less of them and it costs more to truck it.
3 It takes more nails; it takes three instead of two. And
4 it takes another guy to help you stand it up on a wall
5 than—so—and the hangers and the hardware and the depth
6 of the jams. And, so, collectively it's not
7 insignificant and it adds up. For the goal is to get a
8 higher performing house to meet that goal. Not all R-s
9 are the same, apparently. I've been spraying foam now
10 for a long time. A spray house performs different.
11 That insulation is much more expensive than batt
12 insulation. Already when we give someone a foam house,
13 I'm quite proud of the difference that we've given them.
14 It's getting harder and harder to afford that with oil
15 prices going up effects and it affects our product.
16 Just the willy nilly toss extra Rs everywhere we go.
17 When we're talking about it being a foam job, it's—they
18 can get back down to the two-by-fours but the foam is
19 costing more. If it's not foam then they're buying more
20 lumber. We are eating up some more forest. If it's
21 necessary, then it's necessary. If it's not then we're
22 gobbling something up that doesn't need to be gobbled
23 up. Maybe you are on the right track.

24 MR. SHIRAKH: Jon, do you want to respond to
25 that?

1 MR. MCHUGH: Yeah. Just briefly. So the
2 costs that I used were the costs that ConSol had
3 collected contractors or builders so they're not my
4 costs. They're the costs that are from the industry.
5 So, yes, the cost was more. The costs were about--were
6 around 60 percent of the value of the energy savings.
7 If you're just looking at it in terms of the present
8 valued cost then this is a lower lifecycle cost wall for
9 those climate cycles. It should be noted that climate
10 zones 6-8 I wasn't recommending going to the R-21 plus
11 4. Thanks.

12 MR. PANDE: Abhijeet Pande. Just a couple of
13 comments. First, in terms of the process, Mazi. We've
14 been looking at two-by-six for a while. It's not
15 something that was started at a late stage so, I think,
16 just to sort of clarify for everyone that the team has
17 been looking at for a long time along with the CEC, this
18 issue of two-by-six. We looked back at the two-by-six
19 for the climate zones where the CEC is recommending
20 those as part of the same effort. So if the analysis
21 has been going on for awhile and it's not something that
22 you're bringing in after the package is established,
23 just put that on the record.

24 Second point on the cost again. We have costs
25 from two data sources, as Jon mentioned. We have cost

1 from CBIA and from the contractors. We also have costs
2 from (indiscernible). They don't agree with each other
3 but either way you use them, the measure is cost
4 effective. Yeah, sure, you use more money but you get
5 more back from it. I don't think the first cost should
6 be an issue here.

7 MS. BROOK: Abhijeet, could you give a card to
8 our court reporter? Thanks.

9 MR. SHIRAKH: Thank you, Abhijeet.

10 MR. FRANCISCO: Jim Francisco with Sierra
11 Consulting. There was a study done five years ago by
12 Roger Morrison, the Chief Engineer for NCFI, myself and
13 the Forestry Department and the Bureau of Land
14 Management. It is not true that going to a less use of
15 lumber from the forest when making two-by-six walls.
16 Two-by-six walls come out of the heart of the tree. You
17 only get so many out of the heart of the tree where two-
18 by-fours come from the whole tree. That means you
19 increase the lumber, according to the Bureau of Land
20 Management, to the tune of about 198 additional acres a
21 year in the state just for the state. So when we're
22 talking about it, I understand that there are climate
23 zones where you need a two-by-six wall, maybe a two-by-
24 eight wall but you've got to be very, very careful with
25 it. The United States Forestry does not support this at

1 all. They understand the loss of forest that's going to
2 happen with these types of proposals.

3 MS. BROOK: It sounds like there's a conflict
4 between different forestry departments.

5 MR. SHIRAKH: That's not what we found. We
6 talked to the California-

7 MR. FRANCISCO: I will try to get you the
8 information. It's been five years but I will get you
9 the information that we gathered. They used their
10 supercomputer back in Washington, D.C. to do the
11 calculations in California and they, at that time,
12 called your-called the Energy Commission and talked to
13 them about it.

14 MS. BROOK: Well then it has to be right. I'm
15 kidding. And because they used a supercomputer, that's
16 really their-

17 [LAUGHTER]

18 MR. FRANCISCO: Well, you know, it might be a
19 joking matter but it's not.

20 MS. BROOK: I'm sorry.

21 MR. FRANCISCO: There's a conflicting view
22 here. I just want to make sure. There are two sides to
23 the story.

24 MS. BROOK: It would be great to get-and we
25 have heard you say that a couple of times. It would be

1 good to get the documentation.

2 MR. FRANCISCO: I will try to find the
3 documentation, it's been awhile.

4 MS. BROOK: Okay.

5 MR. FRANCISCO: But we did a lot of work on
6 that.

7 MS. BROOK: Okay. Thanks.

8 MR. HODGSON: Mike Hodgson, ConSol
9 representing CBIA. I just wanted to make a couple of
10 general comments because I think this is going off into
11 other areas, I think, than we had anticipated at this
12 time.

13 Just to kind of respond to what the comments
14 on the table are. I think CBIA has worked very closely
15 with the Energy Commission and the consultants this
16 time. We're very close on costs. We can agree that we
17 can get the costs within literally hundreds of dollars
18 which normally is thousands of dollars.

19 So from working together we may not agree on
20 exactly what costs are but the packages we think are in
21 the \$4,000-7,000 range based on whether you're using
22 tile or asphalt roof.

23 When we do preliminary lifecycle costs on
24 that, in its entirety, the majority of the proposed
25 Package A are not cost effective and we'll present that

1 in public comments to the Commission and staff in a
2 short period of time. That is a concern. Obviously we
3 have a difference of opinion there and we need to figure
4 out why.

5 The larger concern, and I'm not saying that
6 cost effective is not a big concern, it is to us, is
7 that we're adding \$4,000-7,000 to the cost of a house.
8 That impacts affordability. The housing industry is a
9 fairly significant driver of the economy. We know where
10 the economy is right now in the state of California. If
11 you're going to have a negative impact on housing which
12 this does. It doesn't have a positive impact on
13 housing. Then we have to take that into consideration.

14 The point we're trying to make here is that
15 we're close on costs. I think we have a disagreement on
16 how we do cost effectiveness which we can come to
17 another discussion about. In the long term, that's
18 going to have a negative impact on the salability of
19 housing which, in turn, has a negative impact on our
20 economy.

21 MR. SHIRAKH: Thank you, Mike.

22 MR. STONE: Nehemiah Stone, Benningfield
23 Group. What Mike just said has been said every round of
24 standards that I can remember. From the ones that I was
25 first involved in and then when I was Chief Building

1 Inspector in Humboldt County. All the ones I was
2 involved in when I was here. All the ones since. When
3 we were going through the '92 standards and we did some
4 research here. I've tried to find it but nobody seems
5 to know where it is. But what we did is that we went
6 back in time in looking at the major costs, the two
7 major costs, of homebuilding. Labor and lumber. And we
8 took a standard home, a standard design, and looked at
9 the sale price of that over that same period. What we
10 saw was when costs of inputs were going up often the
11 sale price of the house was going down. When the sale
12 price of the house was going up, often it was the same
13 times that the inputs were going down.

14 The cost of the house to the public is more
15 tied to demand than inputs. That is true more than
16 almost any other sector that we can think of. It is not
17 driven by inputs, it is driven by demand. It's a
18 reasonable argument for BIA to say you're cutting into
19 our profits by adding these costs. We will make less
20 money than we would otherwise. But to say that it
21 affects the affordability of homes is absolutely wrong.
22 I would suggest that the Energy Commission replicate
23 that study with current, more current, data with maybe a
24 broader reach than just the one market that we looked at
25 at the time. But this same argument is trotted out over

1 and over again and it'd be nice to put that argument to
2 bed. Finally. Thank.

3 MR. SHIRAKH: Thank you, Nehemiah.

4 MR. GABLE: Mike Gable, Gable Associates.

5 Some of you know over the last many years we've been
6 doing a lot of work on cost effectiveness of REACH Codes
7 under the current standards, looking at seating current
8 code by 15, 20, 25 percent looking at cost. I think
9 that it's true that when people do research in
10 anticipation of a code they may over estimate the cost
11 of things because they can't figure out all the
12 permutations of how to meet code and exceed code.

13 We did our work pretty much after the 2008
14 standards were in effect, or about to be in effect. I
15 think that the \$4,000-7,000 is high. I think it may
16 very well be in the \$2,500-\$3,000 range and I think the
17 building industry will historically find very smart,
18 effective ways of reducing costs to meet code. Thank
19 you.

20 MR. SHIRAKH: Thank you.

21 MR. KINTNER: Avery Kintner with Empowered
22 Energy. I just want to comment on a couple of things
23 I've been hearing. I was a financial officer and a
24 national builder for 15 years in my career.

25 There are three major costs that drive the

1 costs for a builder. It's land and labor and materials.
2 Typically land is a residual value on a performa. The
3 builder considers all of the costs that are involved
4 with a project and they look at where they can position
5 a product and they make a bid on the land, based on what
6 that cost structure and that revenue structure is. I
7 think from a broader perspective it would be important
8 to remember that when we're looking at code that'll go
9 into effect or standards that will go into effect three
10 or four years from now, a pejorative amount of the costs
11 is going to be factored into the bid on a piece of
12 property four years from now. Which hopefully will not
13 be land that's owned today by the builder.

14 I think it's really important to consider the
15 effect of having a higher cost for a builder. If it is
16 going to be factored into future land purposes
17 consistently across the board for anyone who's
18 competitively bidding for land in the future that it's
19 really going to have an effect on the net land value of
20 what the builder might pay. The effect of that higher
21 cost and performa and the lower number land bid, if you
22 will, would be effectively a higher return on the
23 investment because you have less—it's \$7,000 upfront and
24 that comes off the land residual. That's \$7,000 I'm not
25 putting out on the land and holding the land for the

1 entitlement period until the chance I get to build it.

2 I think it's important to have a balanced
3 argument. We're not just talking about the effect of a
4 cost to the builder and the impact to profits solely
5 because there's \$7,000 of cost coming out. I think, in
6 the broader sense, when you're looking at the land
7 residual value that's factored into future land purposes
8 it actually contrives some good metrics from a return
9 standpoint for the builder. Especially if it's planned
10 for and it's known and people are bidding out in front
11 with the knowledge that that higher standard is going to
12 be coming down the pike.

13 I think that should be brought into the
14 conversation as far as how much the cost is to the
15 builder and what the impact is on their profitability.
16 I think that should also, the other point I wanted to
17 make is that I've been requesting and looking for a
18 roadmap for the builders to follow that helps them
19 understand today's code and the 2020 code objective. I
20 really feel that it would be important for the builders
21 to understand in 2014, 2015, 2017 what is the roadmap
22 and what does it look like from a cost perspective if we
23 are going to, in fact, achieve a 2020 objective. And
24 then we can have these discussions with the tradeoff
25 value of doing a higher standard now versus a higher

1 standard later. So that was essentially what I wanted
2 to share.

3 MS. BROOK: Thank you. Avery, would you be
4 able to help us find the sources of data that would help
5 us document that land residual value and how builders
6 make bids on land based on their-

7 MR. KINTNER: Sure.

8 MS. BROOK: That would be very helpful, I
9 think.

10 MR. KINTNER: Okay. Thank you.

11 MS. BROOK: Thank you.

12 MR. RAYMER: Bob Raymer, Senior Engineer with
13 the California Building Association. There are actually
14 four major costs looking back to 1992. Things have
15 changed. You've got your land. You've got your
16 materials. You've got your labor. But you've also got
17 fees.

18 Local fees, if you look at Rancho Cordova,
19 before you break ground and move forward with the house,
20 you've paid over \$100,000 in school fees,
21 transportation, park fees, etc., etc. It's quite a
22 laundry list. That is not uncommon through the state of
23 California. It is very common to see a six figure set
24 of fees. That's a fourth area that gets involved here.

25 Moving back to the affordability issue.

1 There's affordability of operating the home. Clearly if
2 you're paying smaller energy bills or if you're paying
3 no energy bills, that's a very good thing. That
4 provides you with a better cash flow on a monthly basis.
5 Clearly that's a good benefit.

6 There's' also the affordability of being able
7 to purchase the house. Unlike 1992 or at any time over
8 the last 30 years of developing energy regs, we find
9 ourselves in a bit of a predicament. This gets to the
10 standards in their totality right now and the rest of
11 the building code, particularly for Commissioner. I'd
12 like for you to understand that we're in the middle of a
13 four year period where we're seeing an unprecedented of
14 building code mandates take effect, unlike anything I've
15 seen in 30 years of doing this.

16 In particular, we had the last energy
17 efficiency standards update in 2010. That was about
18 \$2,000 per house. In 2011 we saw the imposition of the
19 HCDE mandatory green building standards, depending on
20 method of compliance and where you're at in California,
21 that'll range from \$500-2,000.

22 Most significantly, we're one of the two
23 states in the nation that chose to adopt the national
24 code provision requiring mandatory residential fire
25 sprinklers. Once again, depending on local add-ons, if

1 you simply comply with what the state is requiring
2 without any local fire department add-on, sprinklers is
3 about a \$3,000-5,000 price tag, at a minimum. That's
4 not counting any local fees. That's not counting any
5 add-ons for addition meters or whatever else that the
6 local fire department might have.

7 So just in the last two years we've added
8 about \$6,000-10,000 to the upfront cost of a home.
9 We're now looking ahead to the energy regs here. As
10 Mike indicated, we're looking at a low of the \$3,500 to
11 a high of the \$7,500 range. On top of everything else
12 that we've already done.

13 While the Energy Commission doesn't really
14 need to focus on what the state fire marshal does. We
15 have to. We have to comply with it all. And we have to
16 market it to the home buyer.

17 You also consider the unfortunate economic
18 circumstances that we find ourselves in and that 2007
19 was an absolute terrible year. We'll be providing all
20 this data to you in our submittal by the 31st. We would
21 have to increase production today by well over 100
22 percent just to get back to the state of being terrible
23 like we were in 2007. We're currently building at a
24 rate of 15 percent of normal. That's having a huge
25 impact. We're now in competition, new homes are in

1 competition, with the distressed properties that were
2 built three to four years ago. A property that may have
3 sold for \$450,000 right here in town is now selling for
4 about \$200,000. That creates a very difficult situation
5 where a 3,000 square foot home selling for \$200,000.
6 The builder who wants to market the newer home has to
7 effectively come up with a smaller square footage but
8 something that can compete with that home. We're very
9 concerned, since the lending intuitions—quite frankly
10 the lending institutions and the appraisers, really
11 don't do a very good job, if any job, of giving us
12 credit for higher levels of energy efficiency and solar
13 which is a huge problem. Once that problem gets
14 addressed. That'll be a game changer for a whole lot of
15 this.

16 Right now we have a hard time getting the
17 appraiser to even acknowledge higher levels of energy
18 efficiency. With that, we find ourselves trying to
19 market sprinklers, green building standards, energy
20 efficiency standards and now energy efficiency standards
21 plus. That is a real issue.

22 Furthermore, during the downturn the economy
23 as we hit 2007 and 2008, a lot of builders and some
24 divisions of large companies have kind of gone into
25 dormancy for awhile. They put plans on shelves. The

1 plans they put on the shelves in 2007 and 2008 are going
2 to need massive redrawing. They may have been very
3 marketable back then but they're not going to comply
4 with fire codes, energy standards and building
5 standards. They're going to have to do a major rewrite.
6 All of that needs to get done effectively overnight.
7 The homes that we'll be building January 1, 2014 should
8 be planned for right now.

9 By and large all of this is coming together in
10 a perfect storm. Unlike 1992, because we have to pay--
11 the homebuyer has to pay 15-20 percent down payment
12 instead of 0-5 percent, that's a big deal. And if all
13 of a sudden we've added \$10,000-20,000 to the total
14 price of the house that gets factored into the down
15 payment. You're knocking people out of the market. Yet
16 there will be people that will be able to afford the
17 home. That's not the issue but this will have an
18 overall impact on upfront affordability for California.

19 And we'll turn some numbers into you and if
20 you need help identifying all these different fees or
21 some of the other land things, we can help you with
22 that. I can tell you right now that the land value in
23 Rancho Cordova is negative numbers and it has been for a
24 couple of years. Thank you.

25 MR. SHIRAKH: Thank you, Bob.

1 MR. NITTLER: I've been standing there so long
2 I forgot what I was going to say.

3 [LAUGHTER]

4 MR. NITTLER: Ken Nittler with ENERCOMP. I
5 worked on the case study on fenestrations so we're back
6 up just a little bit. In this section in 150.1 Section
7 3 and 4 there was the issue of skylights.

8 Originally the case team or at earlier
9 workshops Rodger LeBrun testified and suggested that we
10 needed to do something about skylights so we looked at
11 them and our recommendation is a little bit different
12 than what showed up here.

13 After studying it for awhile, our
14 recommendation was first of all, you not add the
15 skylights to Table 150.1-c. What we proposed and what
16 did get written in here was that we treated skylights as
17 an exception prescriptively so that you could always add
18 at least one skylight and we specified the same
19 performance numbers that were found in the 2012 IECC.

20 We need to revisit this language and I'll work
21 with you folks to get it cleared up a little bit. Thank
22 you.

23 MR. SHIRAKH: Thank you. Any other questions
24 on Section 150.1 the prescriptive requirements?

25 MR. MCHUGH: I just have a couple of comments.

1 This is Jon McHugh, McHugh Energy.

2 One of the issues with affordability, I looked
3 at Zillow for some of the statewide costs of housing and
4 Bob's absolutely right. This actually—Bob and Nehemiah
5 are right. It's what all the houses are which drives
6 the cost of housing. If you look on a statewide basis,
7 the average cost is \$300,000 right now for the average
8 cost for a house in California. Some areas, of course,
9 are more and some are less.

10 I think one of the important things is that we
11 really want to help the building industry market all of
12 these added efficiency features. I believe there's a
13 proposal to look for the REACH codes for all new homes
14 and, ideally, a date certain rating of homes so that
15 consumers can actually see upfront that this older house
16 is the same size and in the same school district but I'm
17 going to be spending a couple more hundred dollars per
18 year on the bills for this house. I'd like to see what
19 the Commission and other interested folks can do in
20 terms of making this a reality. I think it's something
21 that we all agree on that's important.

22 MR. SHIRAKH: Thank you, Jon. Any other
23 questions online?

24 MR. OSANN: Yes. This is Ed Osann. During an
25 earlier comment on domestic hot water pipe installation,

1 staff referred back to, in the range of, 115 and 118
2 which are the mandatory requirements for all
3 occupancies. Quick check there indicates that there
4 does not appear to be requirements for insulation of
5 nonrecirculating domestic hot water under slab. There
6 are requirements for insulating heated slabs but not for
7 insulating hot water pipes themselves. Nor is there any
8 reference to the length of pipe that needs to be
9 insulated in nonrecirculating systems. So maybe it's
10 someplace else in the code but it doesn't appear to be
11 in the points referenced by the staff. We'd just like
12 to renew the request that this be considered.

13 MR. SHIRAKH: Bruce Wilcox—

14 MR. WILCOX: I think the section you're
15 looking for is in 150(j).

16 MR. OSANN: That was the point that I brought
17 up originally was 150(j) and the lack of reference to it
18 there.

19 MR. SHIRAKH: I think it's just a matter of
20 where it is. We need to look and find it.

21 MR. OSANN: Thank you.

22 MS. BROOK: I'm not going to send you off to
23 another code section.

24 MR. NESBITT: Yeah. George Nesbitt. It is
25 somewhere in 150. There is language that underground

1 pipes need to be insulated.

2 MS. BROOK: If you can send me or Mazi your
3 contact information, we can get back to you once we've
4 identified where it is in the code or if it's not in the
5 code we can confirm that with you.

6 MR. OSANN: Okay. And the speaker is?

7 MS. BROOK: This is Martha Brook.

8 MR. OSANN: Okay.

9 MS. BROOK: I don't know if we have our email
10 address on there. Mine is probably the easiest. It's
11 m-b-r-o-o-k and then the Energy Commission extension is
12 @energy.state.ca.us.

13 MR. OSANN: Okay. Thanks.

14 MR. SHIRAKH: Any other questions online?

15 UNIDENTIFIED SPEAKER: Elizabeth McCollum.

16 MS. MCCOLLUM: Hi. So I'm going to return to
17 the issue of increasing wood use and deforestation with
18 the two-by-six stud. If the average diameter of logs
19 used to mill these studs is nine inches, cutting a six
20 inch stud out of that is not going to increase the size
21 of tree that we're cutting down.

22 Also, we're just talking about the exterior
23 walls of a home not all of the walls of a home. If we
24 take the worst case which is a home built with two-by-
25 four studs, 16 inch on center to two-by-six studs, 16

1 inch on center the total impact is only a five percent
2 increase on that home. If we move it to 24 inches on
3 center, it's only 1.7 percent increase per home. At the
4 nationwide level if the total lumber use—of the total
5 lumber use in the state 35 percent is for residential
6 construction. Overall, even if every home is built to
7 two-by-six, 16 inch on center as compared to two-by-
8 four, 16 inch on center the increase is less than 2
9 percent. I just want to put things into perspective.
10 Yes, we might use a little bit more wood but it's really
11 not that big in the grand scheme of things.

12 MR. SHIRAKH: Thank you, Elizabeth.

13 MS. CHAPPELLE: Can I clarify—Cathy Chappelle,
14 Heschong Mahone Group that Elizabeth McCollum from HMG
15 did the initial case study on the two-by-six framing for
16 the IOUs.

17 MR. SHIRAKH: Our investigation into this so
18 far has also determined that there is not a significant
19 impact.

20 Okay. Any other questions on section 150.1,
21 the prescriptive requirements or the previous section?

22 One more online questions.

23 MR. LEBRUN: Rodger LeBrun.

24 MR. SHIRAKH: Go ahead, Rodger.

25 MR. LEBRUN: If you've got me with a raised

1 hand that was an error. I'm sorry.

2 MR. SHIRAKH: No other questions online?

3 Anybody in the room?

4 Okay. We're going to move to section 150.2.

5 These are the additions and alterations. So that first
6 bullet basically says that there are some requirements
7 for buildings that are less than 1,000 square feet and
8 glazing modification for less than 50 feet. In 2008
9 standards we just made some clarifications for them. We
10 didn't really significantly change them.

11 The exception 1 to 150.2(a) clarifies that for
12 additions less than 1,000 square feet, mechanical
13 ventilation for whole-building ventilation airflow is
14 not required; however, all other applicable requirements
15 of ASHRAE 62.2 will be required. For additions less
16 than 1,000 square feet you don't have to do the whole-
17 building ventilation airflow but everything else
18 applies.

19 Exception 2 to Section 150.2(a) where the
20 space in the attic or rafter area is not large enough to
21 accommodate the required R-value, the entire space shall
22 be filled with insulation provided such installation
23 does not violate Section 1203.s of Title 23, Part 2.
24 Basically this says that if you don't have enough space
25 in the attic, you just fill it as much as you can.

1 Exception to Section 150.2(b)1B Glazing
2 Properties. Replacement fenestration up to a total area
3 of no more than 50 square feet with a U-factor no
4 greater than 0.40 and in climate zones 2, 4, and 6-16, a
5 SGHC value no greater than 0.40. Basically this
6 exception defaults back to the 2008 levels for SGHC and
7 U-factor for small amounts of glazing.

8 Sections 150.2(b)1D and E eliminated the 60
9 percent leakage reduction method for duct ceiling
10 because we found that—this was subjective views and
11 could not be enforced or verified so that we're getting
12 rid of that exception. There are a lot of other
13 alternatives in there however that remains.

14 Section 150.2(b)1H Roofs. The reflectance and
15 emittance requirements have been changed to be
16 consistent with the prescriptive section that was
17 previously described. Basically it's a reflectance of
18 0.20; I can't remember all the climate zones and the
19 same emittance.

20 The off ramps for the ¾ inch above deck air
21 space and increased free ventilation area have been
22 eliminated. I think several speakers have already
23 spoken for this measure, I think Andrea and others.

24 The third bullet specifies that the
25 reflectance requirement for low-slope roof in alteration

1 is 0.63. This kind of mirrors the nonresidential
2 requirements for alterations. We were specifying
3 different reflectance which is 0.63. If you recall that
4 for new construction we're recommending 0.67.

5 The last bullet says provides continuous
6 insulation as a prescriptive alternative to the cool
7 roof requirements. Basically it's the same thing as
8 yesterday, where we allow tradeoffs between roof
9 reflectance and continuous insulation. There's a table
10 in here that will allow people to trade off
11 (indiscernible) insulation against reflectance.

12 Section 150.2(2) Performance Approach for
13 Alterations. This sets the ground rules for how the
14 performance budget is set for alterations for the
15 standard design and the proposed.

16 For ceiling, roof, walls, and floors it
17 provides partial credits for altered components that
18 exceed mandatory requirements. Basically what it's
19 saying is that for these system where roofs, walls and
20 floors. You have to meet the mandatory requirements for
21 those altered components. If you exceed the mandatory
22 requirements you will get a partial credit. However the
23 second sentence says provides full credit if 2013
24 prescriptive requirements are met. If you bring those
25 altered components to the full 2013 prescriptive levels

1 then you get the full credit. That's a big credit
2 actually.

3 For windows provides partial credits for altered
4 components that exceed the 2008 prescriptive
5 requirements because we didn't really have this
6 prescriptive requirements before and so now we're
7 basically saying instead of using a mandatory
8 requirements for fenestration and U-factor and SGHC we
9 are using the 2008 levels. If you bring it up to 2008
10 levels then there is no penalty or credit. If you
11 exceed the 2008 levels that it'll be a partial credit.
12 If you come up to the full 2013 prescriptive
13 requirements they'll be a whopping credit, actually.
14 The whole thing when they do alterations is to come up
15 to the 2013 levels.

16 Section 150.2(b)1F Altered Space-Conditioning
17 System -Mechanical. So it's basically this requirement
18 for refrigerant charge verification for alterations to
19 HVAC systems. It's been there since 2008 but there's
20 been some clarification for that language.

21 The second bullet is refrigerant charge
22 verification was clarified to be in climate zones 2, 8,
23 9, 10, 11, 12, 13, 14, and 15.

24 And added the same requirements for systems
25 such as mini-splits and multi-splits which we talked

1 about earlier today. Because some of the systems, it
2 not possible to do the refrigerant charge verification
3 and the air flow requirements like we do with the split
4 systems so we have other off ramps which is essentially
5 higher SEER and EER requirements.

6 Any comments on alterations 150.2?

7 MR. PETERSON: Greg Peterson, Eagle Roofing
8 Products also representing the Tile Roofing Institute.
9 I'd just like to, for the record, reiterate and reaffirm
10 Andre's statements on the air gap and ask that it be
11 restated in the residential additions and alterations.
12 If we're so fortunate to have it reinstated, it could be
13 dually referenced in the performance model, maybe as a
14 footnote.

15 Then, also, another point, and I already
16 talked to Payam about this, I'm not sure if this is the
17 section but where the ASTM standards are listed. A lot
18 of them, or at least some of them, ones that we saw were
19 outdated and we suggest either listing the standard
20 itself without the date or the correct date.

21 MR. SHIRAKH: Okay. That's a good comment.
22 Thank you. Payam, you know what's going on? All right.
23 George?

24 MR. NESBITT: George Nesbitt. Let's say like
25 when you open up a wall, my electrician friends tell me

1 that if you open up a wall you have to bring it up to
2 the electric code. Reading through this section again,
3 it would appear that anytime you alter anything or add
4 you have to meet all of the mandatory requirements for
5 all occupancies as well as all the 150.1 low-rise
6 residential mandatory requirements. And you have to
7 bring it up to the prescriptive level unless you do
8 performance. Certainly the practice has not been that.
9 People open up walls, don't insulate them, close them
10 back up.

11 One situation especially with ducts, duct
12 ceilings, being exempted in the heating only climates
13 like climate zone 3 San Francisco / Bay Area, let's say
14 you have a floor furnace and you put in a new central
15 heating system with ducts. The prescriptive requirement
16 would be that they have to be HERS rated. The practice
17 has never been that so removing the exemptions for duct
18 ceilings is extremely good. I look forward to that.

19 I had noticed that the refrigerant charge had
20 not exempted climate zones in the 2008 code although
21 they certainly taught us HERS Raters that it was only
22 for some of the climate zones.

23 I have to say that climate zone 4—you take San
24 Jose that whole area, large parts of zone 4 and climate
25 zone 3, you get into Benicia and Vallejo which are still

1 in zone 3. None of the builders are building houses
2 without air conditioners. Now granted you don't have as
3 big of a load or as big of a demand through a season but
4 certainly air conditioning is standard. I think
5 especially zone 4—persaonlly, I would say none of them
6 should be exempted but certainly zone 4 seems fairly
7 heavy air conditioning and I don't think it should be
8 exempted.

9 The language saying that if you have a cavity
10 with the rafters or walls or floors, if they're not
11 large enough you don't have to bring them up to the
12 prescriptive requirement is really good. It's just—I
13 think maybe it should be a little more clear that you
14 have to pick the right assembly. So if you have a two-
15 by-four, you should have to put in the R-15. Whatever
16 the highest R-value is for the frame size cavity is, it
17 should be what you have to put in. I think that should
18 be a little more clear.

19 Also think, back when we're talking about
20 definitions, the definition of an addition has always
21 been adding condition floor area and volume yet I can
22 think of projects or houses where people do not add
23 floor areas but they add volume. So let's tear out that
24 R-30 ceiling and go up to that two-by-four roof and make
25 a vaulted ceiling. We'll we've just done an addition,

1 although we have not added condition floor area, so I
2 would change the definition to adding condition floor
3 area or volume with the exception of the greenhouse
4 windows and I think bay windows as long as they don't go
5 down to the floor would be a reasonable thing to do.

6 The rule that when you're doing an existing
7 plus addition in the performance method, I'd say
8 generally when you're doing existing plus addition or
9 alteration compliance has been relatively easy. So the
10 rule has been, and continues to be, that if you do not
11 improvise an assembly to the current package requirement
12 you're then going to be compared to that requirement. I
13 think that as we have raised the minimums and we're
14 raising some of those requirements that will become
15 harder for existing homes. I think it's maybe not the
16 worst thing at the moment but we could see a point in
17 time where that will make compliance fairly hard.

18 I think I'll leave it at that for now.

19 MR. SHIRAKH: Thank you, George. Any other
20 comments to alterations and additions?

21 MR. DEVITO: Eric DeVito, Cardinal Glass
22 Industries. Just a point of clarification. I'm just
23 trying to make sure that I understand this correctly.
24 Right now there's a provision in this section for
25 replacement fenestration having to meet the prescriptive

1 tables which I think I mentioned yesterday and is even
2 more true for residential, for all practical purposes
3 there's not differences between a window for new and a
4 window for replacement. It's the same product so
5 there's no reason that it can't meet the same standards.

6 The exception under the performance approach
7 for fenestration and alterations for the .4 .4, I'm just
8 trying to get clear that a situation where you would
9 just replace the windows. You're not doing anything
10 else to the structure. You're just replacing the
11 windows. It can't—it can't now avoid meeting those
12 prescriptive tables by going under this section.

13 MR. SHIRAKH: The prescriptive still has to
14 comply with—if they want to comply prescriptively they
15 have to put in the 2013 levels.

16 MR. DEVITO: Right.

17 MR. SHIRAKH: If they use performance and,
18 again, you have to think within the context of additions
19 and alterations.

20 MR. DEVITO: Right.

21 MR. SHIRAKH: Like if they're doing an
22 addition and they're putting in more glazing, that they
23 cannot—like maybe it's more than 20 percent of the
24 condition floor area or the west facing and they want to
25 do some tradeoffs then they can go to the existing part

1 of the house and bring or change out some of the
2 windows. The way it's structured, if they come up to
3 the full prescriptive levels of 2013 they get a big
4 credit that they can use for tradeoffs against the
5 addition. At the minimum they have to come up to 2008
6 levels and still if they do that they won't get any
7 credit. If they go beyond 0.4, they get a small amount
8 of credit but, in reality, if they're doing an addition
9 and they go to 2013, they get a big credit which they
10 can trade off against with the addition that they're
11 doing.

12 MR. DEVITO: I do get that part of it. I
13 guess my concern is if you're just replacing the
14 windows, no other measure. You're not doing any other-

15 MR. SHIRAKH: If you're not using the
16 performance path you have to use the prescriptive and it
17 is the 2013 language.

18 MR. DEVITO: And replacement-just replacing
19 fenestration you have to use the prescriptive path.
20 That's your only option.

21 MR. SHIRAKH: Well, you have to trade if off
22 against something.

23 MR. DEVITO: But you have to do some other
24 measure. In other words, you have to do some other
25 measure. Just windows only and prescriptive is your

1 only option.

2 MR. SHIRAKH: Yeah.

3 MR. DEVITO: Okay. I don't know if there's a
4 way to make that clearer in here but as long as that's
5 the way you're going to implement it, I think that's
6 fine.

7 MR. NITTLER: Ken Nittler with ENERCOMP. I
8 think the language with which Eric is talking about is
9 150.2(b) Item 4. Hypothetically, if you were bringing
10 in an alteration in and the only thing you changed was
11 the windows, you could go in the performance path and
12 instead of using the new package, the 2013 values, you
13 could use the .4 .4. That was the only thing that you
14 did.

15 MR. SHIRAKH: No, you don't get any credit.
16 But I think I understand what you're saying.

17 MR. NITTLER: So there needs to be something
18 that--well, we need to think about.

19 MR. SHIRAKH: I understand what you're saying.
20 We might have upgraded a loophole here.

21 MR. GABLE: The way to close that loophole is
22 to simply to give no credit to the 0.4 until you get to
23 the prescriptive. We can talk about it but there's a
24 way that you can make it energy neutral so there's no
25 advantage to using the performance approach compared to

1 the prescriptive approach. We can talk about that.

2 MR. SHIRAKH: Okay. Thank you, Eric, for
3 bringing that up.

4 MR. STONE: Nehemiah Stone, Benningfield
5 Group. I'm asking this question because as I read
6 through it I can't see the answer in it. When it says
7 that you're for an alteration or addition using
8 prescriptively you have to go back to 150.0(b) which
9 gives you the new construction performance method and
10 then it references all the prescriptive requirements and
11 mandatory requirements. That sets your standard budget
12 for—

13 My question is does that mean that the new
14 requirements for solar are included in the standard
15 budget for when you're doing an addition or alteration?
16 For water heating, well-anyway. It's just not clear if
17 that's the case and if it is, it sets a pretty high bar,
18 particularly—well, it seems to me that that's
19 particularly true for residential, not even high rise,
20 but that has less roof area per condition floor area
21 than single family homes do.

22 MS. BROOK: Your concern is with the solar
23 thermal requirement for electric water heating?

24 MR. STONE: Yeah. Well. That's one part of
25 it. Also, the requirement that for water heating there

1 is a requirement for solar in the new construction now.

2 MS. BROOK: You mean solar ready. Is that
3 what we're talking about? I'm sorry—So you're worried
4 about whether, basically, about not having solar access
5 whether it's thermal or electric.

6 MR. STONE: Let me restate the first thing I
7 said, Martha. I'm asking this question because I can't
8 really see the answer in there. I'm not saying it is
9 one way or the other but as I look at it, it looks like
10 when you're setting the standard budget when you're
11 doing an addition or alteration—

12 MS. BROOK: Mm-hmm.

13 MR. STONE: Means that you have to include
14 solar into that standard budget which means then that
15 you're—it sets a pretty high bar for something you're
16 not changing very much.

17 MR. SHIRAKH: So—

18 MR. STONE: If I'm reading your body language
19 correctly, Mazi—

20 MR. SHIRAKH: Well—

21 MR. STONE: I'm way off base here.

22 MR. SHIRAKH: No. No. Patrick can probably
23 answer that question better than I can.

24 MR. SAXTON: Well, I think—are you saying,
25 Nehemiah, specifically for multi-family with central

1 water heating that now has the prescriptive solar
2 fraction requirement?

3 MR. STONE: Right.

4 MR. SAXTON: I don't know the actual answer to
5 the question but I wanted to narrow the question. I
6 think the answer is probably yes that the answer is in
7 the budget but I don't know that for a fact. We'll have
8 to check.

9 MR. STONE: Okay. I'd like to talk to you
10 offline about that.

11 MR. SHIRAKH: IF you think that's a problem,
12 we can probably handle that through an exception.

13 MR. SAXTON: And then as far as the solar
14 ready stuff, its additions and alterations are excluded
15 from those requirements.

16 MR. STONE: Thank you.

17 MR. NESBITT: George Nesbitt. To actually
18 clarify the question on window replacements. So if you
19 did not want to meet the package requirements you would
20 run the building through the performance as a pure
21 alteration. You could put in whatever windows you want
22 and as long as you're net energy budget does not
23 increase, you've complied.

24 And it's all based on the vintage of the house
25 and the code when the house was built. As long as

1 you're not—it may be if you're altering other things and
2 you're not able to come up to the current requirements,
3 that may actually now force you to do a little bit more
4 than you had to just because some of those requirements
5 have increased. There's nothing potentially stopping
6 you from doing the performance path.

7 Actually on the window issue, I meant to talk
8 about it in the prescriptive, with solar heat gain
9 coefficients, the—in the heating climate zone 3 as well
10 as on the coast there is no requirement for solar heat
11 gain coefficient yet in the performance path the
12 computer is assuming about a 0.6 solar heat gain
13 coefficient. If you're putting in a new window in a
14 heating climate, you're required to meet a U-value but
15 you're not required to do anything on the solar heat
16 gain coefficient.

17 The problem is low solar heat gain coefficient
18 windows are the standard essentially for all the
19 manufacturers. It's what's in stock. Home Depot,
20 Lowe's, every lumber yard. That's what you're going to
21 get. So in the heating only climates, you're going to
22 put in a window that meets the U-value but has a much
23 lower solar heat gain coefficient which is actually
24 going to, in comparison to a higher solar heat gain
25 coefficient window, you're going to increase your

1 heating energy use.

2 I would say for the heating climates, we need
3 to set a solar heat gain coefficient that is the lowest
4 number because it's working against us. I've run enough
5 buildings, I've actually done enough multi-family HERS
6 II and I've showed the client, actually I get a higher
7 percentage improvement by going to a low solar heat gain
8 coefficient window yet these are buildings that have no
9 air conditioning. That reduces my heating budget less
10 than going to the high solar heat gain coefficient. I
11 get more credit on the cooling side but I don't have any
12 real cooling energy use. The performance method gets it
13 right because it will penalize you for the low solar
14 heat gain. Prescriptively, we're not getting penalized
15 for it when we should.

16 Just the other thing is that ASHRAE 62.2
17 should not be exempted for additions less than 1,000.

18 MR. SHIRAKH: It's not exempted. The only
19 thing that's exempted is the whole-house requirements.
20 All the other requirements still apply.

21 MR. NESBITT: Okay. Well, I would say 62.2
22 would apply to existing homes completely. I didn't read
23 it necessarily that way so I'll go back and read it but
24 I would say whole-house should apply.

25 MR. SHIRAKH: Any other comments on 150.2?

1 Anything online?

2 MS. MCCOLLUM: Elizabeth McCollum. I guess
3 have to unraise my hand. I don't have any other
4 comments.

5 MS. BROOK: Oh. Okay. You're officially
6 unraised.

7 MR. SHIRAKH: So we're going to move to REACH
8 Standards.

9 MS. BROOK: Well, it's the part you've been
10 waiting for. All day. Sorry. I don't know what
11 happened here.

12 So as I explained yesterday, I'll do a re-do
13 for those of you who weren't here. This code cycle
14 update, the Energy Commission will be adopting the
15 Energy Efficiency component of the Green Building
16 Standard here at the Commission within our part 6
17 rulemaking proceeding. In past years we've worked with
18 the Department of Housing and Community Development to
19 get energy efficiency sections updated. They manage the
20 entire green building standards update process. This
21 time we're going to be adopting here at the Commission
22 and then handing it over to the Building Standards
23 Commission for inclusion in the Green Building Code.

24 What we're proposing for the 2013 building
25 code update is that similar to what's in the current

1 standard it's 15 and 30 percent for Tier 1 and Tier 2
2 here explained as 85 percent for Tier 1 of the Part 6
3 Energy Budget. And we're also adding an additional
4 requirement for a calculated total building electricity
5 consumption of less than 10,000 kWh. For buildings
6 that—for homes that have a calculated exceedance
7 electricity consumption, an electricity consumption that
8 exceeds 10,000 kWh, that needs to be met either with the
9 energy efficiency or on site photovoltaic system to
10 reduce the calculated electricity load down to that
11 budget level.

12 And then for Tier 2, similarly, it's 30
13 percent better than Title 24 or 70 percent of Part 6
14 Energy Budget and calculated total building electricity
15 consumption drops to 8,500 kWh. So it's an equivalent
16 level of reduction of the cap of the electricity
17 consumption that gets set in the compliance software and
18 above that to be compliant with Tier 2 you would have to
19 use additional energy efficiency measures or on site
20 solar electric system.

21 And then there are a few prerequisites. The
22 prerequisites, again the prerequisites we're proposing
23 as mandatory so these are voluntary REACH standards but
24 if a local government adopts them as mandatory in their
25 jurisdiction then we would be basically specifying that

1 they should make these following measures mandatory for
2 all homes constructed under that REACH standard.

3 The first one is that Jon McHugh mentioned
4 earlier. It's a home energy rating system rating
5 computed by the compliance software and included on the
6 certificate of compliance. This will be—we're calling
7 it a "Design Rating" because it wouldn't require all of
8 the requirements of the HERS whole-house program in
9 terms of measurement and recommendations for
10 improvements. It would just be a rating based on the
11 consumption of the house that's estimated by the
12 Compliance Office Software.

13 The second prerequisite is Quality Insulation
14 Inspection. This is a prescriptive requirement as
15 proposed in our 2013 base standard. We think that this
16 is a really important measure and would like to get it
17 into as much homes as possible. We'll likely in future
18 base standards be making these a mandatory requirement
19 so we're proposing it as a mandatory requirement. We're
20 proposing it as a mandatory requirement under this REACH
21 standard.

22 The following item is in the current green
23 building standard for energy and that is that builder
24 provided appliances need to be ENERGY STAR label if
25 there is an ENERGY STAR available for those products.

1 The Indoor Lighting prerequisite is as
2 follows:
3 All permanently installed lighting is high efficacy with
4 vacancy sensor controls. Permanent lighting must be
5 installed in kitchens, bathrooms, utility rooms, and
6 garages at a minimum. Every room has either permanent
7 lighting or at least one switched receptacle. Builder
8 provided ceiling fans installed with ENERGY STAR light
9 kits.

10 For outdoor lighting, all permanently
11 installed lighting mounted to building is high efficacy
12 with photocontrol or time clock controls.

13 That's it. We can back up if anybody has
14 specific questions or you can come up and make any
15 specific comments that you want.

16 MR. THOMPSON: First of all, I want to
17 congratulate Martha and Mazi and Bill. This has been an
18 exciting two days.

19 MS. BROOK: Can you again for the record just
20 restate your—

21 MR. THOMPSON: I'm sorry. It's Mike Thompson,
22 CBPCA.

23 Seriously, it's been a great example of
24 collaborative rulemaking. I wish more agencies in the
25 state would follow your example.

1 The fact is though that this is the easy part,
2 what we've done here in the past couple of days. I
3 would like to make a special appeal to Commissioner
4 Douglas. I have many friends in the Enforcement
5 Division, I've worked with them for many years, they
6 have serious doubts about whether they'll be able to
7 implement the measures that are being included in this
8 final document. The fact is that they essentially can't
9 enforce the measures in the old rules.

10 I would ask you to do two things. First, I
11 would ask you to ensure that Enforcement has input,
12 adequate input, in to this process so whatever we come
13 up with they at least buy into. That they can enforce
14 what we come up with.

15 And, two, the end result of this, whatever
16 document we produce, I ask you to make sure that
17 Enforcement has adequate resource to enforce them.

18 And I suggest that that would be the first.
19 So I appreciate your attention to that. Thank you very
20 much.

21 MR. STONE: Nehemiah Stone, Benningfield
22 Group. Martha, unlike all of the other documents, I
23 couldn't find this one on REACH standards on your
24 website.

25 MS. BROOK: Yeah.

1 MR. STONE: So—

2 MS. BROOK: Anybody else have that problem?

3 I'm pretty sure that we posted it.

4 MR. STONE: All right. Speaking to what I saw
5 on the slides then, it looked to me then you're defining
6 residential to me as single family. I'm wondering if
7 there a parallel REACH standard for multi-family?

8 Obviously, the 10,000 kWh per year would be
9 per dwelling. Abhijeet was just showing me
10 (indiscernible) data that says in California it's closer
11 to about 8,000 usage right now in single family and
12 about 6,000 in multi-family. That's standard usage.

13 MS. BROOK: So are you suggesting that—so just
14 to answer your question, we do have a little bit of a
15 weird thing right now because the Energy Commission
16 defines residential and nonresidential buildings in one
17 way. HCD and Building Standards Commission do it
18 differently. So we have to be careful that we map our
19 codes back together in the right way. Our intention is
20 that there should be REACH standards for both
21 residential and nonresidential and multi-family falls in
22 one or another. So we want to make it right.

23 MR. STONE: (Inaudible)

24 MS. BROOK: Yeah. Exactly. So are you
25 suggesting that we change that limit to be a lower

1 number for multi-family dwelling units?

2 MR. STONE: I'm suggesting that it looks to
3 me--

4 MS. BROOK: It was based on single family
5 analysis.

6 MR. STONE: Exactly.

7 MS. BROOK: Yeah.

8 MR. STONE: That's what I--and there ought to
9 be a specific analysis done for multi-family to find out
10 what's the right level for REACH codes.

11 MS. BROOK: Okay.

12 MR. STONE: And it will be different.

13 MS. BROOK: Okay.

14 MR. STONE: For low-rise multi-family versus
15 high-rise multi-family. That's typically where the
16 codes make the distinctions at three stories or less and
17 four stories and more.

18 MS. BROOK: Mm-hmm. Mm-hmm.

19 MR. STONE: And that's where high-rise
20 residential falls into the, nominally, nonresidential
21 code. Anyway, the numbers are up there and made sense
22 sort of and Abhijeet, as I said, had just pointed out
23 the numbers show that typical homes now are below that
24 number.

25 MS. BROOK: Okay. Well--that's okay. If

1 they're below. I mean, it's not okay but they're
2 different but these—the number there is for a relatively
3 large house, single-family house. The idea is that at
4 some point because we have an energy intensity unity of
5 measure, at some point it gets a little unfair. The
6 larger and larger house gets easier and easier to comply
7 with as it turns out. Just because it's an energy
8 intensity unit. It's always been a bit harder for
9 smaller houses to comply than larger houses. At some
10 point, it just gets a little silly to keep extending
11 that linearly. We're kind of putting a cap on it. The
12 other thing is that we're putting a cap on it on the
13 place where it's very cost effective to do solar
14 installation because they're hitting the highest rates
15 at those levels.

16 MR. STONE: So you don't think it makes sense
17 to set the limits on reach code at or below what the
18 average home in California—

19 MS. BROOK: Well, the way that we did this
20 analysis and our justification for setting it at this
21 level is based on cost effectiveness of solar. That's
22 really driven by the rate structure in the state. You
23 have to get to that 10,000 level for it to be—to hit the
24 highest rates and therefore solar is very cost
25 effective. So it's not based on just average

1 consumptions, it's really on expected costs of that
2 energy and that's sort of how we set that limit.

3 MR. STONE: One more nugget to think about on
4 that then. Since the—the REACH code means you have to
5 be at least 15 or 30 percent below standards anyway.
6 Then having a kWh cap that is essentially 30 percent
7 higher than what the average home in California uses
8 right now means that you're encouraging people—it means
9 that it would be—the unintended consequences that you
10 would be encouraging people to move to more electric use
11 because if you're going to get to 30 percent below the
12 standards between your gas and electricity use and you
13 can use 30 percent more electricity than the average
14 home in California then what you're saying is, "Well,
15 let's reduce the gas use." to get to that 30 percent.

16 MS. BROOK: I don't get it but that's okay.
17 It's been a long two days.

18 MR. STONE: I don't have a chalkboard board
19 but—

20 MS. BROOK: I don't have one.

21 MR. NESBITT: George Nesbitt. I've been a
22 HERS II rater for a decade and through three trainings,
23 painful as it is. It's painful to pay for three times
24 let along sit through it, well okay. I did not sit, for
25 the record.

1 I want to quote from the Commission's HERS
2 booklet.

3 "The California Energy Commission has
4 developed the California Home Energy Rating
5 System, HERS, Program to cover almost every
6 type of residence in California. This
7 includes new and existing single-family homes
8 and multi-family buildings of three stories or
9 less."

10 Yet, the past three years since we were in
11 this room working on the HERS II Title 20 regulations, I
12 have heard time and time it does not apply to multi-
13 family and it does not apply to new homes. Hopefully
14 this will dispel that and, of course, the fact that
15 you're putting it into the REACH code for new homes will
16 dispel that too.

17 MS. BROOK: But it is clearly different and
18 that's why we need to name it something like a "Design
19 Rating" because it really isn't implementing all of the
20 rules of the HERS whole-house program.

21 MR. NESBITT: Well, the HERS Title 20
22 regulations and the HERS Technical Manual specifies how
23 to do a rating on a new home versus on an existing home.

24 There are some minor differences so and who
25 can actually produce this rating is regulated yet you

1 can buy EnergyPro and anybody can buy the CALCERTS
2 module and some of the other modules like the Green
3 Point rated module. They can all produce a HERS index
4 yet the regulation clearly says that only a HERS whole-
5 house home energy rater or a home energy analyst are the
6 only ones that can calculate an index so Green Point
7 rating calls theirs a Green Point Rating Index. Well,
8 it looks like a HERS Index, it walks like one, it quacks
9 like one. It's a HERS Index.

10 MS. BROOK: So just to be clear-

11 MR. NESBITT: It is quite clear in the
12 regulations that in a new home an analyst can produce
13 the Index, although they're supposed to be under the
14 direction of a whole-house rater, and if there's any
15 credit taken for any HERS measures, that data has to be
16 collected by a, forgive me, a Field Diagnostic whatever,
17 blah-blah-blah Rater. I'd call it a HERS Verifier
18 because that's just we've really been doing for the last
19 decade and with HERS II we now have a rating.

20 That's all there. It's clear. It shouldn't
21 be a matter of discussion.

22 Also, heard that we haven't defined net zero
23 energy. Well we defined it as net zero timed dependent
24 value three years ago. We may not like the definition.
25 We may not agree with it. No it's not perfect. To

1 Nehemiah's point yeah, probably some of the values when
2 doing a rating on a multi-family, some of those defaults
3 should probably be different than from doing the rating
4 on a single family. I believe from the 2004 RAS the
5 average residence uses about 20,000 kWh if you convert
6 the therms into kilowatts and add it together, maybe
7 it's 16,000. It's somewhere in that neighborhood.
8 Anyway, I'm assuming that the—Are your kilowatt
9 thresholds only electrical or is that total?

10 MS. BROOK: It's electricity.

11 MR. NESBITT: Okay. I'd say 8,500 or 10,000
12 or—it's still quite large.

13 MS. BROOK: So, again, we're not doing this
14 based on the stock of homes—

15 MR. NESBITT: Yeah.

16 MS. BROOK: We're doing it based on what—where
17 solar is a cost effective option because of the expected
18 rate structure of the high consuming home.

19 MR. NESBITT: So you're essentially taking a
20 usage amount that would give you a high enough bill that
21 makes solar cost effective based solely on the price of
22 electricity?

23 MS. BROOK: Yes.

24 MR. NESBITT: Okay. All right. I understand
25 that. I won't argue with it. I mean, I could argue

1 with it but okay. Where you came up with those numbers
2 I did not know. So. I guess that answers the question
3 of whether it's the right number-

4 MS. BROOK: Right. Right.

5 MR. NESBITT: I, for one, cannot wait to see
6 the HERS Rating System implemented and used more. I'll
7 be-I have a passive house project that's about 70
8 percent above code and right now it's modeled in
9 MICROPAS right now. I'm going to also model it in
10 EnergyPro and run the rating. I mean I've run ratings
11 on a variety. I've been working on 324 multi-family
12 units for tax credit allocations. I'm told it can't be
13 done, I guess, or that we have to somehow create a new
14 system for multi-family when the regulations already
15 tell us because it's all based on the Energy Code.

16 MS. BROOK: Okay. Thanks, George.

17 Do we have any other Green Building Standard
18 comments? Jon?

19 MR. MCHUGH: Yes. Hi. Jon McHugh, McHugh
20 Energy. I think this is a great move for preparing the
21 market for the next code cycle and preparing the
22 building stock for zero net energy by having this
23 potentially PV requirement or cap for these really large
24 spaces.

25 One of the things that I noticed in the

1 requirement, and I totally support this idea, about—for
2 REACH codes having a basically a residential lighting
3 requirement for all high efficacy. However, the history
4 has been that we spent a lot of time for the state and,
5 I think, looking forward for municipalities that might
6 adopt this standard. And having some fairly simple off
7 ramps for the high efficiency lighting requirement I
8 think is desirable so typically what happens is a small
9 fraction of the market wants to have lots of
10 incandescent lighting for the cherry cabinets, etc.
11 These typically higher income, more expensive homes and—

12 MS. BROOK: Does cherry look better under
13 incandescent light?

14 MR. MCHUGH: Well, because it's redder. It's
15 a redder light, so you know.

16 MS. BROOK: All right.

17 MR. MCHUGH: Yeah. So, anyway, what I'm
18 suggesting is that in addition to the PV allowance to
19 use for helping people meet the potential cap, also
20 allow a watt per watt trade off with low efficacy
21 lighting. If you look at PV systems, they typically
22 produce about somewhere between 1,200 and 1,400 full
23 load hours of peak energy generation. If you look at
24 residential lighting, typically it's around 1,000 hours
25 of operation or less so using something simple like

1 this, the state actually gets a little extra energy but
2 not much. It's fairly comparable and something fairly
3 simple for someone to comply with and to enforce.

4 Also related to the vacancy sensors, I would
5 recommend that you look at not requiring the vacancy
6 sensors in bedrooms and kitchens. I think requiring
7 these in the other spaces that are infrequently occupied
8 makes a lot of sense but I don't really want to set
9 people up to be disgruntled with a potential REACH code.

10 MS. BROOK: You said bedrooms and bathrooms?

11 MR. MCHUGH: Bedrooms and—no, no. Kitchens.
12 No, bathrooms are actually a great place—

13 MS. BROOK: Okay.

14 MR. MCHUGH: To put vacancy sensors. And then
15 the current standards also have, for garages, the need
16 to have the sort of dual technology or something that
17 uses something other than a light of sight technology.

18 MS. BROOK: I think we should be encouraging
19 dancing in the kitchen and if that's what it takes to
20 get the occupancy sensors to work then—

21 MR. MCHUGH: Yeah. Yeah.

22 MS. BROOK: What's wrong with that?

23 MR. MCHUGH: Okay. Thank you.

24 MS. BROOK: Sorry.

25 MR. MCHUGH: It's late. Anyway, thank you

1 very much.

2 MR. SHIRAKH: Actually, I agree with Jon but
3 for sensors in bedrooms.

4 MR. NESBITT: George Nesbitt. Now, at the
5 August 23 workshop, those of us on the phone got cut
6 off, we could hear you but you couldn't hear us and
7 those of us on the phone could talk to each other.
8 We're in there the whole time, raising our hand
9 chatting, we've got comments. Mazi is just--- I'm
10 emailing other people and they're emailing you and
11 finally we get an email, "Sorry. We haven't been
12 getting your chats."

13 MS. BROOK: That was the best (indiscernible)
14 we ever held.

15 MR. NESBITT: That was a disaster so if you've
16 asked why I don't like to do it on the phone, well.
17 That's why.

18 So you were talking about, in the REACH,
19 allowing credit for renewable—for certain, I forget, I
20 guess lighting appliances—

21 MS. BROOK: That's what Jon was suggesting was
22 an off ramp with PV for high efficacy lighting.

23 MR. NESBITT: Right. Well. So, in the HERS
24 rating system you model all of that and you get credit
25 for it.

1 I guess the one question I then have is that
2 you may need to define either your threshold is your
3 consumption before you've gotten credit for other
4 things. I'm not sure. It's—I don't know if—I mean the
5 way the rating system is supposed to work is that you're
6 supposed to get a rating for the building for all the
7 efficiency measures including lighting and appliances
8 and then you're supposed to get a rating number with
9 renewables. Now I'm assuming—so the question would be
10 if you want to have the two Tiers, the two thresholds,
11 is that going to include modeling all high efficacy
12 lighting and appliances and/or does the renewable count
13 to meeting that threshold? I guess that would really be
14 the big question. Currently you're not getting both
15 thresholds in the software. They do not come up on
16 reports.

17 MS. BROOK: Are you talking about with and
18 without renewables?

19 MR. NESBITT: With and without renewables.

20 MS. BROOK: Okay. All right.

21 MR. NESBITT: So.

22 MS. BROOK: We'll work with you on that.

23 MR. NESBITT: I guess the one thing you do
24 need to do is clarify what counts towards meeting that
25 threshold.

1 MS. BROOK: Okay.

2 MR. NESBITT: And ideally it is excluding
3 renewables, although I imagine you should just allow
4 whatever credits are allowed otherwise in the rating
5 system-

6 MS. BROOK: Okay.

7 MR. NESBITT: To account towards the
8 thresholds. Although you are requiring them, therefore
9 you should take credit for them.

10 MS. BROOK: Okay. Thanks. Any other
11 comments? No. If there no other comments on the green
12 standards, we are at the end of the day. If you have
13 general comments, this is a chance for anyone on the
14 phone or in the room--

15 MR. SHIRAKH: Yeah.

16 MS. BROOK: Nevermind.

17 MR. SHIRAKH: I have one. We actually found
18 the missing language for buried pipes after an
19 exhaustive search. It's in Section 151, I'm looking at
20 2008 standards, so I don't know if the commenter is
21 still online but it's section 151(f)7E. "All buried hot
22 water piping shall be insulated to meet the requirements
23 of Section 150(j)2 and B installed in a waterproof and
24 noncorrosive casing and sleeves." So basically that's
25 where it is. It's in the prescriptive section. I have

1 no idea why. It should be in the mandatory section.

2 MS. BROOK: Well, let's move it. Let's move
3 it to mandatory.

4 MR. SHIRAKH: I knew it was there someplace.

5 MR. GABLE: Mike Gable. Quick question.
6 Whatever happened to the idea of solar meeting up to 10
7 percent of the standard design to meet the code? Wasn't
8 there some talk about that among staff at some previous
9 workshop? Is that still hidden somewhere in some future
10 ACM Manual or is it--

11 MS. BROOK: Yeah. It's in that ACM Manual--

12 MR. GABLE: Okay.

13 MS. BROOK: It's in the code--

14 MR. GABLE: So there's nothing in the code
15 language that takes that on or address it--

16 MS. BROOK: Right. If you think it's
17 important then--

18 MR. GABLE: No. I just wanted to know if it
19 disappeared.

20 MS. BROOK: Yeah, no. It hasn't disappeared.

21 Okay. Any final comments before we turn it
22 back to the Commissioner?

23 MR. EMBLEM: Martha, this is Erik Emblem.

24 MS. BROOK: Hi, Eric.

25 MR. EMBLEM: I've been listening and it's been

1 a great meeting. I just want to compliment everybody.
2 The web and the phone today have worked great. It's
3 been great following you and all the quality of the
4 sound has been good. So if we can do this in every
5 meeting, it's a great way to meet. Thank you.

6 MS. BROOK: Yeah. I've heard. Somebody else
7 told me that the acoustics were really good yesterday so
8 that's good news. George?

9 MR. NESBITT: George Nesbitt. A couple of
10 question. So we're not directly going to have a
11 workshop for the appendices or-

12 MS. BROOK: I think based on the comments we
13 heard today, I think staff needs to talk about that. I
14 don't think that's a done deal.

15 MR. NESBITT: Okay. And then in coming
16 months, we'll have something for the ACM's Residential
17 Manual?

18 MS. BROOK: Yeah. It won't be-

19 MR. NESBITT: As they start coming out.

20 MS. BROOK: until after the adoption of the
21 standards.

22 MR. NESBITT: Okay.

23 MS. BROOK: We'll see the approval manual
24 soon. It'll be posted probably next week but not the
25 reference manual that has all the details to how the

1 software rules have to be applied.

2 MR. NESBITT: Okay. So the reference manual—

3 MS. BROOK: The one you probably care about is
4 the reference manual and it will be done after the
5 adoption of the standards.

6 MR. NESBITT: Okay. All right. Just some
7 general comments.

8 Definitely as we move toward our net 2020 net
9 zero energy goal as well as the goal of 40 percent
10 reduction in existing homes I think the HERS II system
11 has to become the basis of the Energy Code. Also, I'll
12 reiterate my big concern with the 2013 update which is
13 the potential impact on high-rise multi-family and want
14 to repeat my comment from yesterday on the phone that
15 currently in nonres you basically get no credit—you get
16 credit for doing everything right even though the
17 gentleman from (indiscernible) said this morning quality
18 insulation is not standard residentially or
19 nonresidentially. So, currently, you get no credit for
20 basically anything other than duct testing. You can't
21 get credit for QII or you don't get dinged for not doing
22 QII so really for nonresidential, especially high-rise
23 multi-family, we need to extend the HERS (inaudible).

24 WebEx has said George has run out of time.

25 Actually, I got dropped in and out yesterday a couple of

1 times.

2 MS. BROOK: Okay. So. And I did hear you
3 yesterday; you think that we need to provide more
4 credits for the measures in high-rise multi-family more
5 akin to how we provide those credits in single family?

6 MR. NESBITT: As well as nonresidential
7 because certainly quality insulation is installed
8 typically poorly as the fellow this morning said duct
9 leakage, air flow leakage, all of these are pretty
10 universal. That's something that I've been saying
11 although it hasn't been—it hasn't really been on the
12 table.

13 And then, I guess, the last thing that I'll
14 bring up is that Patrick Splitt had reminded yesterday
15 that currently at EnergyPro you can take credit for
16 solar hot water space heating. I referred to this back
17 in August of 2010 at the Commission during the CHEERS
18 decertification hearing and have brought this up once in
19 the past year at a workshop so this is not something
20 that is allowed by code so I would like to see some
21 action from the Commission Monday morning calling Martin
22 Dodd at EnergySoft and having it removed. And then
23 sending out a letter decertifying all previous versions
24 of EnergyPro because it's all too easy to mistakenly or
25 purposefully wipe out your heating budget.

1 I'd say also that there are a lot of issues
2 with EnergyPro in forums as well as the whole existing
3 Plus Addition method. You can actually not alter a
4 space heating boiler. You can't alter it. There's a
5 lot of measures. You cannot go from a preexisting
6 condition to an altered condition so I've been doing
7 these two large multi-family projects and I cannot model
8 it in HERS II which is based on the Energy Code. I
9 cannot model as intended and envisioned in the software
10 because there is not choice on the alteration tab. I've
11 got a long list of things. I would like to see some
12 action and very soon on the solar hot water because the
13 only—I'd rather not have to file a formal complaint. It
14 just—you know. It's messy. So I'd like to see action.
15 I'll leave it at that.

16 MS. BROOK: Okay. Thank you, George.

17 COMMISSIONER DOUGLAS: Thanks for your
18 comments. Let me ask in this closing round of comments
19 that commenters keep their comments high-level and maybe
20 see if you can get through them in three minutes or
21 less, if you possibly can. This is really—we've gone
22 through in great detail and we've had detailed
23 opportunities to offer comment in the individual
24 sections so this is about your overall impressions and
25 your parting words, the high-level thoughts you'd like

1 to leave us and in particular me with.

2 MR. STONE: In 30 seconds or less?

3 COMMISSIONER DOUGLAS: I would love that so,
4 go ahead.

5 MR. STONE: Martin Dodd is already aware of
6 the issue that George has brought up about boilers and
7 Doug Beeman and Martin and I are working on a solution
8 so.

9 COMMISSIONER DOUGLAS: Okay. Great. Thanks.
10 Thank you.

11 Other commentors? I didn't mean dissuade
12 anyone. I just want you to use your time very wisely
13 for the last 2-3 minutes of this workshop. Anyone else?
14 All right. I don't see anyone eager. What about on the
15 phone or on the web? Nobody. Okay.

16 I would like to thank everybody here for this
17 workshop. It's been a very interesting two days
18 especially for those of us who are steeped in and
19 fascinated by the ways building work. It's been a great
20 time.

21 [LAUGHTER]

22 COMMISSIONER DOUGLAS: Excuse me. So, with
23 that, we're adjourned.

24 [Meeting is adjourned at 4:05 p.m.]

25