

BEFORE THE
CALIFORNIA ENERGY COMMISSION

Staff Workshop on Draft) Docket No. 10-BTSD-01
2013 Building Energy)
Efficiency Standards)

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Reported by:
Peter Petty

 **ORIGINAL**

APPEARANCES

Commissioners Present:

Karen Douglas
Galen Lemei, Her Advisor

Staff Present:

Martha Brook
Mazier Shirakh
Jeff Miller
Gary Flamm
Ron Yasny

Also Present

Attendees (* Via WebEx)

George Nesbitt
Russell King, CalcERTS
Richard Duncan, SPFA
Mike Gabel, Gabel Associates
Erik Emblem, JCEEP
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P R O C E E D I N G S

1
2 NOVEMBER 7, 2011

9:05 A.M.

3 MS. BROOK: This is Martha Brook and we're going
4 to start our November 7th workshop for updates to the
5 2013 Building Energy Efficiency Standards. We have our
6 Commissioner here, Karen Douglas, and her Advisor. And
7 do you want to say anything, Karen, before we start?

8 COMMISSIONER DOUGLAS: Not really. I would just
9 like to say good morning, welcome everyone to the Energy
10 Commission and go ahead and kick it off.

11 MS. BROOK: Great, thanks. Okay. We think we'll
12 probably be done by noon today or earlier, but we're here
13 all day if we need to be to answer any questions that
14 attendees have.

15 Today's agenda, we're covering the Reference
16 Appendices, that's the Joint Appendix, the Residential
17 Reference Appendix, and the Nonresidential Reference
18 Appendix. We're also covering the ACM Approval Manuals
19 and some discussion about -- continued discussion about
20 the Reach Standards. We've introduced the Reach
21 Standards before. We're trying to think more about how
22 to deal with the Reach Standards for Additions and
23 Alterations, and that's what we want to talk about today.
24 We're certainly not final on that, we still have a lot of
25 discussions left to do, but we wanted to kick that

1 discussion off with this public workshop.

2 We also want to visit this Revised Rulemaking
3 Calendar, which should be posted. We've basically given
4 ourselves some more time to resolve the comments that we
5 heard at the October 13th and 14th workshops and the ones
6 we'll hear about today, so we've pushed the adoption date
7 for the standards back to May and we expect this to be
8 the final schedule. We don't have any more room in the
9 adoption process with working with the California
10 Building Standards Commission to change the schedule any
11 more than we already have. So that's up online if you're
12 interested in it.

13 And the first topic for today's agenda is the
14 Reference Appendices and Mazi is going to start with
15 that.

16 MR. SHIRAKH: Okay. This presentation is going
17 to go back and forth between myself and the other staff
18 here, depending on the sections.

19 Just a little bit of history on the Reference
20 Appendices. The Joint Appendices were introduced in the
21 2005 Standards for the first time. It had only four
22 sections, J1, which was the Glossary, J2 was the Weather
23 and Climate Data, J3 was the TDV information, and J4 was
24 the U Factor, C Factor, and Thermal Mass. And this Joint
25 Appendices was going to serve a common reference for all

1 standards related documents. Before we introduced the
2 JAs, we really didn't have a proper place to put all the
3 material that's common to all standards documents, we
4 kind of used the ACM Manuals for that purpose, which was
5 not the right thing to do because the ACM Manuals are for
6 software development and approval, not a repository for
7 things that we didn't know where to put.

8 And then the JAs were renamed to reference
9 Appendices in 2008 and was expanded to not only include
10 the Joint Appendices, but also Residential Appendices,
11 and Nonresidential Appendices. And this has really grown
12 in volume.

13 And what we did in 2008, we basically looked
14 through the other documents, especially the Res and
15 Nonres ACM Manuals and there was a lot of information
16 still that was not related to software development, so we
17 moved those into this document, and that allowed us to
18 basically stream down the ACM Manuals and use them for
19 the purpose that they were intended.

20 So, again, this is the format of the Reference
21 Appendices and you can see that where the old JA had only
22 four chapters, now we're going to JA8. The first four
23 are the same, JA5 is the new appendix we're introducing
24 this time around and that has to do with the technical
25 specifications of the USD or the communicating

1 thermostat, upgraded old thermostat, which is going to be
2 part of this round of standards. JA6 is the HVAC Fault
3 Detection and Diagnostic and used to be called the CID
4 Specifications, but we think there is more to Fault
5 Detection than just the CID, so the concept of the
6 chapter is the same, we've just expanded it and we'll
7 talk about the details of it a little bit more.

8 JA7 is the new Registry Requirements and that
9 used to be called the JA9; there was a JA7 in the 2008
10 Standards that has to do with the SPF, the spray foams,
11 and that information has been deleted and moved to RA 3.5
12 and JA4, so we had a hole here and we used that to insert
13 the new Registry Requirements, and these have to do with
14 the electronic filing of the forms that are supposed to
15 be uploaded in some data registry and then to the
16 repository. Jeff Miller has put a lot of time in and,
17 you know, he can talk about this a little bit later.

18 And JA8 is the testing of the LED Lighting and
19 that's basically the same information we had from last
20 time around.

21 The Residential Appendices, RA1, this is a new
22 chapter. There was a RA1 before which had to do with the
23 HVAC sizing and that information has been moved to the
24 Res ACM Manual. So, again, we created a hole here and in
25 its place we're putting the Special Case HERS Procedures.

1 And Jeff Miller will talk about that.

2 RA2 is the Residential HERS Verification Testing
3 and Documentation; it is the same as before, except the
4 data has been updated. Same thing with RA3, it is the
5 same topic as before and the information has been updated
6 and we'll show you some of the details. RA4 is the
7 Eligibility Criteria for Energy Efficiency Measures, same
8 information as before, but updated. RA5 used to be the
9 Interior Mass Capacity for All Electric Package, and
10 since we don't have the All Electric Package anymore,
11 we've deleted the RA5, so it no longer exists.

12 The Nonresidential Appendices, that's NA1, is the
13 Nonresidential HERS Verification Testing and
14 Documentation Procedures. This is for small commercial
15 buildings less than 5,000-square-foot, where if they have
16 a duct system they have to do the duct testing and
17 sealing, which is done through the same procedures that
18 are developed for the residential side. So it's very
19 similar information.

20 NA2 is the Nonresidential Field Verification and
21 Diagnostic -- again, very similar to Residential
22 information.

23 NA3 is the Fan Motor Efficiencies, same
24 information as before.

25 NA4, Compliance Procedures for Relocatable Public

1 Schools, hasn't changed much.

2 NA5, it used to be the Overall Envelope TDV
3 Energy, it's been deleted because we're not going to have
4 the Overall Envelope Procedure before, this has become a
5 compliance option, we'll have it in a different fashion,
6 but it's not going to be part of the rulemaking
7 requirements.

8 And NA6 is the Alternative Default Fenestration
9 Procedures to calculate thermal performance. NA6 is the
10 place where we had all the defaults for Fenestration
11 Products, both vertical and horizontal. And people could
12 use these if there was no NFRC label, they could use
13 these procedures. So it's still here with some changes.

14 NA7 is the Acceptance Requirements for
15 Nonresidential Buildings and same information as before,
16 but greatly expanded since we have more things that
17 require Acceptance Testing, for instance, the process
18 loads that we've introduced in the Nonresidential
19 Standards. We'll talk about that a little later.

20 NA8 is the Illuminance categories and Luminaire
21 Power, so these are basically the Default Luminaire Power
22 for various luminaires in case manufacturer data is not
23 available, these levels can be used. And I think Gary
24 Flamm has done some major surgery on this, too.

25 NA9 is the new Nonresidential Fault Detection and

1 Diagnostics, so this is a new chapter and we'll include
2 some of the details. NA10 is the Nonresidential
3 Documentation Procedure and that's another new chapter
4 that Jeff Miller has been working on.

5 Now a little bit more detail for each of these
6 chapters; there's going to be an opportunity to ask
7 questions at the end of this, but if there is something
8 you want to ask and you don't want to wait until the end,
9 raise your hand.

10 MR. NESBITT: One quick question. George
11 Nesbitt. Not all of the new chapters have been posted
12 yet, so like that new, and then the other thing is you
13 reposted all the Appendix Chapters; have any of those
14 gone through changes since the October? Because at this
15 point, it would be nice as we're in the process if
16 changes can be marked either in different colors or in
17 some way so we can see what has changed since last time.

18 MS. BROOK: You mean the changes to the Standards
19 since October? You said "Appendices," but that's what
20 we're talking about today, so...

21 MR. NESBITT: Yeah, you reposted all of the
22 Appendices for today's meeting with a new date on them,
23 but whether or not they have changed since you posted
24 them for the last workshop.

25 MS. BROOK: Okay, we didn't post the Appendices

1 for the last workshop, so are you talking about the
2 Standards sections or the Appendices? Because the
3 Appendices, we're talking about today.

4 MR. NESBITT: Yeah.

5 MS. BROOK: And they have changed since October;
6 we weren't ready to talk about them in October, which is
7 why we're talking about them today.

8 MR. NESBITT: Okay.

9 MS. BROOK: And for all the Standards sections,
10 we are going to be having a summary document soon,
11 hopefully in the next week or so posted, that explains
12 every change since the October workshop. But we're not
13 going to do that in the Standards documents themselves,
14 we're just going to have summary explanation of changes
15 since October.

16 MR. NESBITT: Okay, because you did repost the
17 Reach standard for today --

18 MS. BROOK: Right, because we're talking about
19 that today. That's right.

20 MR. NESBITT: Yeah, okay. Because I just --
21 there's so much to go through.

22 MS. BROOK: There is.

23 MR. NESBITT: Has anything changed since --

24 MS. BROOK: As far as the Standards sections that
25 we talked about in October, we will have a summary

1 document that explains any significant changes since that
2 date. We don't have that posted yet, we haven't finished
3 that yet, but we'll do that soon.

4 MR. NESBITT: Okay.

5 MS. BROOK: So that should get us in a pretty
6 good place because we're talking about the Appendices
7 today, so I think we take your comment seriously and we
8 appreciate it and we will be --

9 MR. NESBITT: It's just there's so much to go
10 through that if you've got to hunt for what's changed --

11 MS. BROOK: No, that would be impossible.

12 MR. SHIRAKH: I do realize that we haven't
13 posted, for instance, JA7 and that's because we just
14 aren't anywhere far along enough for us to post it, but
15 we'll do it this week. Jeff is saying yes.

16 So JA1 is the Glossary. In the Standards,
17 there's a lot of definitions, mostly in Section 101, also
18 in other sections. And those definitions in the
19 Standards only cover the definitions that are used within
20 that document only, but there are other definitions that
21 are used in other documents like the ACM Manuals. And
22 all of that is captured in this document, that's what
23 that is, so this is the Standards definitions and some
24 more.

25 And in every round of Standards, we're going to

1 go through those definitions, we change them, update
2 them, add new ones, delete new ones. So same thing here,
3 you know, deleted obsolete terms, modified existing
4 terms, added key terms used throughout referenced
5 Appendices, and so that leaves a list of a few that have
6 been either modified or changed, Air Barrier and Air
7 Leakage, Building Commissioning, Continuous Insulation,
8 Data Registries, Fenestration definitions, Global Warming
9 Potential Value, Hoods, Lighting, Micro Channel Mini-
10 Split Pumps, and Nonresidential Occupancy Types, Particle
11 Size Efficiency, Pressure Boundaries, Replacement Air,
12 Roof Recover Board, and Vapor Retardant. This is not an
13 all-inclusive case, there's a lot more than this, they
14 are just a representative sample.

15 JA2, this is the Weather Data, you know, we have
16 changed our Weather Data this time around, actually
17 significantly. Our Climate Zone Referenced Cities have
18 been changed and some of the data has been updated, so
19 all of that is captured in this Joint Appendix. It
20 includes City Zip Code description and removed the
21 description of WYEC2 Climate Weather Data Format -- and
22 what does that mean, Martha? Do you know?

23 MS. BROOK: It's just a type of a weather format
24 file that we're not using any longer.

25 MR. SHIRAKH: Okay, thank you. JA3 is the Time

1 Dependent Valuation and in every cycle of Standards, we
2 update this data and this Joint Appendix captures that.

3 JA4 is the one that is a very voluminous appendix
4 and this has all the U Factors, C Factors, and Thermal
5 Mass for all the assemblies for both residential and
6 nonresidential. This would be the walls, ceilings,
7 roofs, this would include both metal frame and steel
8 frame, and it would include assemblies that have
9 insulation in the cavity, as well as a continuous
10 insulation. So based upon that information, you can go
11 in there and actually find a U Factor for an assembly,
12 and same information for the C Factor and thermal mass.
13 And this is a living document continuously being updated,
14 not only at the time of Standards Update. We
15 continuously update this, even between the Standards as
16 new assembly information comes forward. And Payam and
17 Dave Ware have been working on this and there's quite a
18 few changes in here and you should probably take a look.

19 The JA5 is the Technical Specifications for the
20 Upgradeable Setback Thermostats. This is a new chapter
21 and we think we finally have a proposed Standard for the
22 USDs that's going to be part of the Standards. And we
23 had one of our contractors develop the technical
24 specifications for these devices, and these are the major
25 topics that they have covered from introduction to the

1 HVAC System interface, the expansion interface,
2 communications interface, human/machine interface,
3 override functions, restoring temperature offsets and set
4 points, and onboard communication devices. And this
5 chapter covers both the USD that goes into new
6 construction, which only has the communication module as
7 an insert, and also the USD that goes in existing homes,
8 which could have the communication module onboard. So
9 that has been posted.

10 Reference Appendix JA6, this is the Fault
11 Detection and Diagnostics. Again, this is what used to
12 be called the CID, or Charge Indicator Device. And it's
13 been renamed to include broader topics than just the CID.
14 The JA6 124 Optional Functionality Section, revised to
15 include more options. And for instance, there will be
16 Self Diagnostic Reporting and Data Access, so these are
17 optional capabilities for these devices. For instance,
18 CID is included, installed as part of the system, when
19 the temperatures outside are less than 55 degrees, you
20 can use the CID and not do the refrigerant charge. The
21 purpose of this subsection here is to make sure the CID
22 actually is working, or at least is aware of its own
23 existence and it actually can feel its extremities, where
24 its toes and fingers are, because the idea is that you
25 cannot turn on the air-conditioning and actually test it

1 because the temperature outside is too cold. We were
2 going to make this a mandatory requirement, but we're
3 actually backing away from that and making this an
4 optional capability.

5 And the same thing with the Data Access Port, we
6 were going to make this a mandatory requirement, but
7 we're making this an optional capability. And what this
8 does, it actually allows the technician to use this data
9 access port and they can attach their instrument and take
10 information that would first allow them to verify that
11 the CID is working properly, and also use that data to
12 get all the information that the CID is getting, like the
13 temperatures of the suction line and discharge and so
14 forth, all the information that you need to calculate or
15 do the procedure right yourself. It would have been nice
16 to have it as a mandatory requirement, but it turns out
17 the market is not ready for this, so we're making it an
18 optional capability.

19 JA611 Target Temperatures Split has been added
20 and JA6 through Saturation Pressure Temperature Sensors,
21 they've been added too.

22 Reference Appendix JA7, this is the Registry
23 Requirements, and I'll let Jeff Miller talk about the
24 details of this.

25 MR. MILLER: Okay. Good morning, this is Jeff

1 Miller. So the purpose of this Appendix is to provide
2 specification for the functionality and the technology
3 that should be used by Data Registries to support the
4 registration documentation processes that we have
5 introduced in 2008.

6 So we've actually eliminated Data Exchange, any
7 specific information on Data Exchange, but other than
8 that the information will describe the rules and
9 responsibilities for the people that operate Data
10 Registries and explains how authorized users would
11 interact with the Registries. It will describe some of
12 the documentation procedures and the revision
13 requirements are pretty important for keeping the
14 documents configured properly in the Registry so that we
15 know which documents have parent-child relationships,
16 which ones belong to the same projects, and which ones
17 don't.

18 The Electronic and Digital Signature Requirements
19 are well developed and very important and they're
20 presented here, as well. And there will be many
21 references to a Registry Requirement Reference Manual
22 that would be recommended for approval by the Commission
23 in the same manner that the Alternative Calculation
24 Method Manual will be recommended for approval by the
25 Commission. And that's after adoption.

1 MR. SHIRAKH: So actually there was an old JA7
2 which has been removed and the information that we just
3 talked about has been inserted, and the old information
4 from JA7 has been removed and moved to RA3.5 and JA4.

5 JA8 is the Qualification Requirements for
6 Residential Luminaires and LED Light Sources. And Gary
7 Flamm, do you want to talk about this?

8 MR. FLAMM: Thank you. This is Gary Flamm. We
9 first introduced JA8 in the 2008 Standards. Prior to the
10 2008 Rulemaking Proceeding, there were no national
11 recognized standards for LEDs, for testing of LEDs, for
12 LED Definitions, and we put all of that information into
13 the 2008 Standards. At the same time we were adopting
14 our Standards, there were national standards being
15 developed, and so what we've done is we basically kept
16 JA8 for the Functionality of LED, but we're now citing
17 these other standards of these other nationally
18 recognized standards now, so we've removed testing
19 protocol and we're now citing LM7908.

20 We also kept the testing lab requirements, what
21 is a qualified testing lab. We've introduced
22 requirements for correlated color temperature for color
23 rendering index for minimum efficacy. A lot of
24 information that was in the Standards was moved to JA8
25 for clarity. Table 150C has been moved to this JA8,

1 Sections 119, 130D -- that should be 130D -- and 150K
2 requirements for LEDs were all moved to JA8.

3 MR. SHIRAKH: Thank you, Gary. So a lot of
4 changes to Residential Reference Appendices, and Jeff
5 Miller has been working on this, so I'm going to turn it
6 back over to him.

7 MR. MILLER: RA1 for 2008 Standards contains HVAC
8 sizing methods that the compliance software uses. We
9 determined that that information is best placed in the
10 ACM, and so it's been moved out of RA1 and, in place of
11 that information, we've created a new document to present
12 special case verification diagnostic and testing
13 procedures, and at least for this round of Standards, is
14 specific to refrigerant charge verification. So we have
15 two methods presented, one is a liquid line temperature
16 charging method and the other is winter setup for
17 standard charge measurement procedure. And I don't think
18 I need to go into the details. Oh, still me.

19 All right, HERS Verification Testing and
20 Documentation Procedures is well established in our
21 documents, it gives direction to all of the people that
22 participate in the compliance document process for which
23 HERS verification is required. There are very few
24 substantive changes made to RA2 this time around, but I'm
25 just going to read these bullets. So it's been updated

1 to eliminate obsolete language. There were references to
2 phasing in the registry requirements that are not needed
3 for 2013, and there are other instances of obsolete
4 language.

5 We updated descriptions of the registration
6 procedures. As we've implemented them and begun to work
7 with them, we understand them a little differently and so
8 that's been clarified. We've added references to JA7,
9 the Registry Requirements, and RA1 Special Case
10 Protocols, we organized and revised for clarity, there's
11 quite a bit of that. We added Documentation Author Role
12 in document registration procedure descriptions for
13 installing contractor and HERS Rater. The documentation
14 Author Role is intended to provide an opportunity for a
15 person, an administrative level person, to assist with
16 creating these documents and it makes it possible, then,
17 for the important -- the responsible persons who have to
18 take responsibility for the information to just review
19 the document and then sign it because we do require them
20 to take responsibility for the information.

21 We've added language to clarify whole building
22 compliance approach. This has to do with multi-family
23 buildings. There's some HERS verifications that are not
24 possible when the Certificate of Compliance has been
25 created using the whole building compliance approach and

1 this is to ensure that the compliance software does not
2 offer these HERS verification opportunities for that
3 particular kind of document.

4 We clarified a procedure for HERS verification
5 compliance when the outdoor temperature is colder than
6 55°. This is just a nuance in the way that a document
7 would be created during the winter. When the weather is
8 cold during the wintertime, it's not possible to do a
9 regular refrigerant charge verification procedure, and
10 this is awkward for everybody. We would really like to
11 find a way to do this better, but as it stands, we just
12 had to find ways to work around it, so this is intended
13 to assist with that.

14 RA2.8, we deleted language making HVAC system
15 equivalent to dwelling unit for alterations. I think I
16 won't say much about that.

17 Reference Residential Appendix RA3, there's a lot
18 of revision in this appendix. The first section, 3.1,
19 Residential Field Verification and Diagnostic Test
20 Protocols for Duct Systems, there's a procedure --
21 actually, let me just say generally that many of these
22 procedures are clarifications of opportunities that have
23 been made available by the compliance software for
24 performance, that haven't been well represented in these
25 protocols. And so these are not new, but the language is

1 new and the attempt is just to clarify what we already
2 understand. So I don't think I'm going to read all those
3 bullet numbers. Is that okay? Yeah?

4 So we've revised and expanded Verified Duct
5 Design language to explain better what that is intended
6 to entail. Basically, it's a requirement to have a duct
7 design submitted to the enforcement agency and then used
8 to actually build the duct system in that way and also be
9 used to verify that the duct system was installed in that
10 manner.

11 Verification of 12 linear feet or less of duct is
12 given a protocol in this appendix. Verification of ducts
13 located in conditioned space, the same. Verification of
14 supply duct service area reduction, the same.
15 Verification of grade ducts on ceiling, the same.
16 Verification of deeply buried ducts, the same reason, to
17 clarify.

18 3.1-2 gives the compliance criteria for duct
19 leakage. And this table has become more important
20 because, now that duct leakage is mandatory, we need to
21 make the compliance criteria available at the mandatory
22 level and, rather than bringing all of the details of
23 that down into 150.0, we're just referencing this table
24 from 150, and we would be doing the same thing from 151
25 -- or, 150.1 and 150.2.

1 So here's some of the additions: Sealed and
2 tested new duct systems in multi-family, regardless of
3 duct system location. Six percent of total duct leakage,
4 that's for pressurization; 12 percent for leakage to
5 outside method. And we've eliminated one of the
6 verification protocols which was called 60 percent
7 reduction in leakage. It was very difficult to enforce
8 and subject to abuse.

9 Verification of low leakage ducts in conditioned
10 space, basically just updated to give more clarification
11 language, not any change there, really. Verified low
12 leakage air handler with sealed and tested duct system.
13 We have a method of test now available for low leakage
14 air handlers, ASHRAE 193, so that's been referenced now
15 in the criteria for compliance as given based on that
16 method.

17 Verification of mandatory return duct design,
18 this is a new requirement in 150.0 M13 and we think that
19 this would be a very easy verification for a HERS Rater
20 and not so easy for a Building Official, and so we've
21 proposed to have this be verified by a HERS Rater. Same
22 true with the next verification, mandatory air filter
23 device design required by 150 M12.

24 A couple of additional items in 150 are
25 represented here to be verified by HERS Rater

1 verification of bypass duct prohibition and zonally
2 controlled central forced air system. These protocols
3 are going to have to be flagged and the mechanism for
4 doing that, I think, will likely be via an installation
5 certificate, flagging HERS verifications from the
6 mandatory measures is a new challenge for us.

7 It's awkward when you haven't written the slides
8 and you don't know what they are saying yet. I'll launch
9 into that -- add language to accommodate approval of new
10 verification protocols when they become available. Since
11 the response verifications -- okay, so we're into the
12 Refrigerant Charge section here, 3.2. We recognize that,
13 as new technology becomes available manufacturers may
14 recommend that their systems be charged in a different
15 manner than what our standard procedure would allow, and
16 a good example of that is the liquid line temperature
17 method that we've placed into RA1, and so we've put some
18 language into RA3.2 that makes it clear that, if you have
19 a verification protocol that you prefer to use, there's
20 an avenue for you to get that approved and we'll place it
21 in RA1. So, sensory response verifications have been
22 updated. Digital gauges are specified now instead of
23 analog gauges. Saturation temperature measurement
24 sensors has been deleted and saturation pressure
25 measurement sensors have risen up to take their place. A

1 specification for those are in JA6.

2 Compliance tolerance for passing HERS
3 verification widened to allow for inevitable differences
4 in measurement. I think I'll let that stand as it is.
5 Minimum system airflow for refrigerant charged
6 verification, the temperature split method has been
7 deleted. And for the usual situations for newly
8 constructed buildings for new or replacement HVAC
9 systems, the method of demonstrating required airflow is
10 via the 150.0 M13 duct design, or fan watt draw. Fan
11 watt has as part of its protocol a measurement of 350 CFM
12 per nominal fan in addition to the watt drawn
13 measurements, so it's either a return duct design that,
14 according to that table in 150.0, or the fan watt draw
15 protocol, either one of those would satisfy minimum air
16 flow requirements for refrigerant charge.

17 The Weigh-In Procedure is allowed, that any
18 temperature, and there are other situations in 150.1
19 where weigh-in is really the only way for us to bring
20 HVAC system installers and manufacturers into our
21 regulatory process because they are not equipped -- their
22 systems do not accommodate the type of measurement that
23 our standard protocol would require. And weigh-in is our
24 option for these folks into these systems until they can
25 provide us with a protocol for verifying the refrigerant

1 charge in their systems. And the Temperature Split Table
2 has been deleted because the temperature split method has
3 been deleted.

4 Instrumentation Specifications are updated. Flow
5 Capture Hood Device and Measurement Procedure has been
6 deleted. In its place, a Powered Flow Capture Hood
7 Device and Measurement Procedure has been added. And
8 also, a Digital Utility Revenue Meter Measurement Device
9 and Procedure has been added.

10 For Charge Indicator Display, we've given some
11 direction on how to verify these. It won't be possible
12 for a HERS Rater to really do much more than turn the
13 system on and observe what kind of information the charge
14 indicator display device reports. And it's not clear to
15 me that it will be possible to visually inspect the
16 presence of one, other than the display that is given or
17 is expected to be mounted next to the thermostat, so
18 these protocols try to address that concern. We do
19 expect that a HERS Rater should be able to verify the
20 presence of a charge indicator display and determine
21 whether it's likely to be functioning.

22 The Matched Equipment Procedure has some language
23 to give additional direction for where to go to get
24 information to verify the indoor and the outdoor quail
25 units and, in this case, the AHR Directory is a pretty

1 important resource for us and we want to make sure people
2 know how to use it.

3 MR. SHIRAKH: So, RA3.5 is the Quality
4 Installation Procedures and this existed in the previous
5 cycle of Standards, we're just updating the information,
6 RA3.5 updated and separated, the quality installation and
7 installation procedures for individual insulation types.
8 So, you know, we have different procedures for different
9 types of insulation, a new terminology section applies to
10 all the insulation systems. A single QII procedure
11 covering both closed cell and open cell SPF has been
12 added. And there's a note here, it says "this section is
13 still a work in progress. Staff is working to include
14 all ICFs and SIPs." So this is one of those sections of
15 the Referenced Appendices that is continuously being
16 updated as staff works with the stakeholders.

17 MR. MILLER: We're requiring HERS verification of
18 mechanical ventilation systems. The only type of
19 mechanical ventilation that we're requiring verification
20 of is the whole building ventilation air flow rate
21 required by ASHRAE 62.2, and there are a variety of
22 methods available to meet that required airflow given in
23 ASHRAE 62.2. The constant -- or continuous is a better
24 word, I think -- continuous operation exhaust fan airflow
25 can be easily measured using available instruments.

1 The intermittent ventilation control strategies
2 are less easy to verify and we're requiring that
3 manufacturers of these systems, or devices, or controls,
4 submit evidence to the Energy Commission that these
5 systems will provide the amount of outside air required
6 by the standard. And so the systems that meet that
7 approval will be listed on our website, along with the
8 protocols that they suggest for use in verifying their
9 systems. Also, supply ventilation systems are going to
10 be addressed in that manner, as well. The reason for
11 this is that it's difficult to measure them, and so what
12 we want is for the manufacturers of these systems to
13 provide us with what they propose the HERS Rater would do
14 to verify these airflow rates.

15 MR. SHIRAKH: And RA5 is the Interior Mass
16 Capacity. This section has been removed. So the Res ACM
17 Manual will provide thermal mass capacity modeling
18 groups, so it's no longer in this document.

19 So the NA5 was the Overall Envelope TDV Energy
20 Approach. This was a procedure that has been in the
21 Standards for a long time and it's mean to provide
22 tradeoffs within nonresidential buildings for envelope-
23 related measures, so one could use this method to do,
24 say, tradeoffs between envelope and insulation and cool
25 roofs. It's been somewhat of a challenge and we've never

1 been able to get this to work quite right. In 2008, we
2 changed it substantially and we thought that we got the
3 methodology right, but the procedure became very
4 complicated and cumbersome, to the point that it was hard
5 to use. So we're proposing to remove this from the
6 Standards language and we'll reintroduce it later on in
7 the Compliance Manuals as a compliance option once we
8 have more time to figure out the details of it. So NA5
9 is gone.

10 NA7 is the Acceptance Requirements for
11 Nonresidential Buildings. Every cycle of Standards, we
12 revisit NA7 where, you know, there are the procedures for
13 Acceptance Testing for various systems, HVAC and
14 lighting, and a few building envelope measures, you know,
15 the changes will have to reflect the changes in the
16 Standards, as well as other comments we get. People out
17 there are experiencing this, doing this, and they give us
18 their feedback and we try to change it in order to make
19 things a little bit simpler. So we added a Table of
20 Contents.

21 NA7.2 revises Introduction for clarity and NA7.3,
22 Rules and Responsibilities has been revised. NA7.3.1,
23 Responsible Person, Rules and Responsibilities have been
24 clarified. NA7.3.2, Field Technician Requirements have
25 been added, it's a new requirement, and the documentation

1 Author Requirements have been added, this is a new
2 requirement. Again, this is very similar to the other
3 documentation author material that was presented since
4 the Acceptance forms will have to be updated to a
5 Registry, along with these other forms, so that's why
6 this requirement has been added.

7 We have revised some of the Acceptance Tests,
8 again, based on the feedback we've got from stakeholders
9 and people who are out there doing this. And we have a
10 new Acceptance Test. Revised Acceptance Test include
11 NA7.4.1.2, this is Commission's Fenestration Label
12 Certificate, which has been clarified. NA7.5.1.1., this
13 is VAV Outdoor Acceptance, Expanded Construction
14 Inspection, to include outdoor airflow sensors and
15 controls, calibrations, certificates, and Pre-Occupancy
16 Purge, and functional testing for these systems have been
17 clarified.

18 NA7.5.1.2, Constant Volume Outdoor Air Acceptance
19 has been expanded, construction inspection to include
20 outdoor air provisions and Pre-Occupancy Purge. Revised
21 Acceptance Test 7.5.3, Air Distribution System, expanded
22 construction inspection to include duct system adhesive
23 tapes and Chiquita sticker?

24 MS. BROOK: Oh, that's my little note to make
25 sure that we clarify that because, right now in the

1 Standard it says that we'll put a sticker on the side of
2 the unit and that's all it says, so that's a joke, but
3 it's probably in poor taste. So the standard right now
4 is very unclear, so a Chiquita sticker could actually
5 comply, and that's why I put it up there, so that we
6 would get back to it and clarify that.

7 MR. SHIRAKH: Okay, so the Chiquita is not going
8 to require a formal proposal.

9 NA7.5.4, Economizer Controls. Economizers are a
10 constant source of concern and so we are constantly
11 revising Acceptance requirements based on the feedback we
12 get. Expanded Construction Inspection to include
13 sensors, dampers, thermostat and actuators, and
14 functional test added to confirm damper position control
15 and economizer use for partial cooling. These are all
16 based on the feedback we get from the field.

17 NA7.5.6, Applied Fan Variable Flow Controls.
18 Expanded construction inspection to include airflow
19 modulation device and functional tests for these devices
20 has been clarified.

21 NA7.5.8, Supply Water Temperature Usage Controls.
22 The functional tests for them have been clarified, you
23 know, this was an existing requirement and, again, based
24 on the feedback from the field, we are changing and
25 clarifying some of these tests.

1 7.5.9, Hydronics System Variable Flow Controls,
2 expanded construction inspection to include static
3 pressure locations, set point, and reset controls, and
4 the functional test steps recorded and clarified.

5 7.5.11, Fault Detection and Diagnostics for DX
6 units, expanded construction inspection to include
7 hardware, air temperature sensors, and controllers. We
8 removed the eligibility criteria and added functional
9 tests for temperature sensors, excess outside air,
10 economizer operations, and refrigerant diagnostic
11 sensors. So, you know, the changes that you saw there up
12 to this point was changing or modifying existing
13 requirements. This section has actually added new
14 acceptance testing because of the new systems that we're
15 proposing to be included, or as part of the
16 Nonresidential Standards.

17 NA7.5.15, Supply Air Temperature Reset, 7.5.16,
18 Condenser Water Temperature Reset Controls, NA7.10 is the
19 Refrigerated Warehouse Refrigeration System. You know,
20 we introduced the Refrigerator Warehouses into the
21 Standards into 2008 and we came up with Acceptance
22 Requirements for them, and so we're either adding new
23 things or clarifying some of the requirements for the
24 warehouses.

25 NA7.10.1, Electric Resistance Under-Slab Heating

1 System is a new requirement. NA7.10.2 is the Evaporator
2 and Evaporator Fan Control Variable Speed Control, that's
3 a new requirement. NA7.10.3, Condenser and Condenser Fan
4 Motor Variable Speed Controls, a new requirement,
5 therefore new Acceptance Requirements. NA7.10.4,
6 Variable Speed Screw Compressors, also a new requirement.

7 NA7.6, Indoor Lighting Acceptance Requirements,
8 Gary, do you want to say something about that?

9 MR. FLAMM: Sure. This is Gary Flamm. 7.6 has
10 been amended to reflect changes in Sections 131. As a
11 matter of fact, 7.6 to 7.9 are the Lighting Control
12 Acceptance Tests and there's been a cascading number of
13 sequence changing because of additional sections added,
14 so 7.6 just reflects changes to Section 130.1. Something
15 new is 7.7, is Indoor Lighting Installation Requirements,
16 so there are a number of cases where an Installation
17 Certificate will have to be signed for lighting control
18 systems that are installed in lieu of lighting control
19 self-contained components. An Energy Management Control
20 System has to be certified that it meets the
21 functionality of the lighting control system. Track
22 Lighting Integral Current Limiters, there was a labeling
23 problem that the manufacturers had in shipping out
24 product with labels as required certified, so we're
25 changing that to an installation requirement of Track

1 Lighting Supplementary Overcurrent Protection Panel to
2 treat it equitably with Track Lighting Integral Current
3 Limiter, we're doing the same thing. Interlocked
4 Systems, this is where somebody in certain applications
5 can put in a redundant lighting system and only have to
6 claim the highest wattage system. We are going to
7 require that installation certificate if somebody is
8 going to claim that.

9 Power Adjustment Factors are credits where
10 somebody doesn't have to claim they put as much energy in
11 as they did, so one of the requirements for earning a
12 power adjustment factor is an installation requirement.
13 And Video Conferencing Studios, in order to get the extra
14 wattage for that, one would have to do an installation
15 requirement.

16 And then the Outdoor Lighting Controls were
17 updated to reflect the change in Section 130.2.

18 MR. SHIRAKH: And we also have completely new
19 requirements in the Standards for Reflective -- I think
20 it says 120.6.7.8, and these have to do with commercial
21 kitchens, in parking garages, in laboratory hoods, in
22 compressed air systems. These are what we used to call
23 "processed loads," which traditionally we did not
24 regulate, but again, in 2008 we started regulating some
25 of the process loads, which made sense. It started with

1 refrigerated warehouses, and now we're expanding to these
2 systems and come with these acceptance requirements that
3 have been added to NA7.

4 MR. FLAMM: Section NA8, Luminaire Power, has
5 been around for a long time. The majority of information
6 in that document is dated, has technologies listed in it
7 that are actually not even installed anymore. And so
8 it's been reduced. If I had to guess a percentage, by
9 about 75 percent. It only has default wattages now for
10 common efficient technologies. It will allow the
11 contractor/designer to use default wattages if they don't
12 have manufacturer data. So it's been updated -- it's
13 been modernized.

14 MS. BROOK: This last Nonresidential Appendix NA9
15 is new, it's to cover the requirements for Economizer
16 Operation of Air-Cooled DX Units, that's in Code Section
17 120.2(i). So the Fault Detection Diagnostic Requirements
18 for these DX Units are described in NA9.1 System
19 Requirements. I'm not going to list all of those. And
20 then I think the next page, Mazi talks about the faults
21 that need to be detected by this FDD system, and those
22 include air temperature failure or fault, not economizing
23 when the unit should be economizing, economizing when the
24 unit should not be economizing, damp or not modulating,
25 and excess outdoor air.

1 MR. SHIRAKH: Those are the real high level
2 changes to the Referenced Appendices, except this is a
3 massive document and we would encourage you to read it on
4 your own and send us any comments that you have. We
5 forgot to mention the comment period would be, I would
6 say, by Friday of next week we would like to have your
7 comments on these documents, if possible.

8 Any questions or comments on -- Russ?

9 MR. KING: Hi. My name is Russ King, I'm the
10 Vice President of Technical Services for CalCERTS, the
11 Home Energy Rating system here in California. And I just
12 wanted to compliment staff on their hard work and their
13 openness and willingness to accept suggestions from the
14 field and from the Raters. Most of the changes to the
15 protocols that I've seen are basically improvements,
16 clarifications, fixing loopholes, and things like that.
17 And I wanted to know if there's going to be a way for
18 early adoption if we choose to start using those in
19 advance of the formal adoption or implementation of those
20 Codes.

21 MR. SHIRAKH: You mean prior, basically changing
22 the 2008 Standards? That's what you are talking about.

23 MR. KING: If there is a protocol that's been
24 improved, is there a way we could start using it early?

25 MR. SHIRAKH: Not without opening the Rulemaking

1 for 2008, unfortunately. I don't know of any other way.

2 MS. BROOK: But let's -- we'll bring that back to
3 our staff and Management and we'll get back to you.

4 MR. KING: Thank you. Because there's been
5 definite improvements. Most of the changes are based on
6 things we've been doing, problems we've been finding in
7 the field, and it's just clarification of language, and
8 so for some of the things, I don't see why we couldn't
9 just say, "Well, let's start doing it this way --

10 MS. BROOK: Right.

11 MR. KING: -- as soon as it's officially
12 adopted."

13 MS. BROOK: Okay, all right.

14 MR. SHIRAKH: We'll talk to some folks around
15 here and see if we can answer that for you.

16 MR. KING: Great.

17 MR. SHIRAKH: Thank you. Sir.

18 MR. DUNCAN: Hi. My name is Rick Duncan, I'm the
19 Technical Director for the Spray Polyurethane Foam
20 Alliance. We're a trade association, national trade
21 association, representing suppliers as well as
22 contractors involved in the spray foam industry. And I
23 just have a couple of comments I'd like to make about the
24 Reference Appendices.

25 First of all, I'd like to commend Dave Ware and

1 Payam Bozorgchami for the work that they've done in
2 moving our Appendix from JA7 to, I guess, now RA3.5,
3 there's been a lot of work done there. At the same time,
4 SPFA did submit some comments regarding some of the
5 changes that we did see in the new Residential RA3.5
6 section on spray foam and it looks like some of those
7 have been addressed. But I do want to comment that we do
8 want to continue to work together with CEC staff because
9 we have noticed a couple of things, and I guess what we
10 want to ensure is that spray polyurethane foam is treated
11 equally with other insulation products. Most
12 importantly, we're seeing that there are still tables
13 that contain minimum R Values based on the lowest or
14 least common denominator product that is recorded in the
15 Bureau of --

16 MR. SHIRAKH [presumed]: Home Furnishing?

17 MR. DUNCAN: Yes, the Bureau. And we wanted to
18 recognize that there are product differences and we would
19 like to see those product differences recognized as part
20 of the new RA3.5. The other thing is that we notice,
21 too, that in a couple of the sections in RA3.5 that spray
22 foam seems to be singled out in unvented attic
23 assemblies, it seems to require a special inspection. We
24 should note that all insulations will perform in the same
25 way, and should either require the same inspections, or

1 better yet, let's refer back to the CBC Section 806.4
2 because that already recognizes unvented attics as an
3 acceptable assembly. So those are just a couple of
4 notes. Again, we want to continue to work with the staff
5 here and be sure that our comments are heard, and wanted
6 to put that on record for today.

7 MR. SHIRAKH: Sure. And again, continue working
8 with Payam and David.

9 MR. DUNCAN: Thank you very much.

10 MR. SHIRAKH: Thank you. George.

11 MR. NESBITT: George Nesbitt. We have reference
12 for a blower door testing to ASTM E779, which is a multi-
13 point pressure and de-pressure test, which none of the
14 HERS providers or Home Performance, or anyone else
15 teaches that procedure, so most people in our industry do
16 not know how to run a blower door and actually pressurize
17 a building properly. There are other ASTM Standards, I
18 think it's 1827, that actually allows you to do a single
19 point pressure or de-pressure.

20 We need a HERS procedure for verifying solar
21 domestic hot water systems. You know, we're currently,
22 for many utility rebate programs, verifying everything on
23 the CF1R and that often includes a solar hot water
24 system. Yet, there's nothing about how to determine
25 whether or not that solar fraction is correct and no

1 procedure for making sure the system might achieve that.

2 In RA2.4.1, on Sampling, you allow the builder to
3 pick units to be sampled, yet I as a HERS Rater would
4 never let a builder tell me what to sample. You will not
5 tell me what I get to sample. We shouldn't allow it, it
6 should be the choice of the Rater if it's going to be
7 truly, you know, random and whatnot, it has to be the
8 choice of the Rater or the installers -- RA2.4.1.

9 You mentioned the multi-family modeling and, so,
10 currently in the software you cannot take certain HERS
11 credits unless you model it as unit-by-unit; the
12 difficulty is, you know, take a 100-unit building running
13 a hundred different files, it becomes unmanageable as an
14 energy consultant plus are you actually getting the right
15 answer when you run a unit from a multi-family building
16 split out? I doubt it. And it's really not clear to me
17 why, so like blower door is one of them. So we're
18 testing based off of leakage of a unit; how is that any
19 more right within the leakage for the whole building?
20 It's not. So it just doesn't seem to make sense and it
21 discourages HERS credits for multi-family.

22 And then on Sampling, I think you've made it
23 clear that if the HERS measures are the same -- it's kind
24 of conflicting because we define a unit type by square
25 footage, but then we say as long as the HERS measures are

1 the same, we can keep it in a group, which is good
2 because, in multi-family, once again, if you try to
3 define it by the floor plan, you know, you get into
4 sampling rates of 25, 30 percent, which gets to be a lot.
5 In RA3, in the credit for less than 12 feet of ducts and
6 unconditioned space, can you please define whether that's
7 ducts, ducts plus supply and return plenums, or ducts
8 plus supply return plenums and equipment? I believe, as
9 HERS Rater, I've been told you measure the diagonal of
10 the equipment, it's just -- please define --

11 MR. SHIRAKH: So what should it be, in your
12 opinion?

13 MR. NESBITT: I mean, perhaps 12-foot total
14 ducts, including the equipment in the plenum? You know,
15 I don't know if it matters and I don't know what
16 assumption the software is making, you know, as to
17 percentage of duct system, you know, it just probably
18 could be clearer.

19 MR. SHIRAKH: It could be clearer.

20 MR. NESBITT: Yeah. I just want to hit something
21 on the Residential Manual for ducts and conditioned
22 space. You show a drawing of ducts and it drops off
23 without an air barrier, with sort of -- and it's been
24 there since 2005, so hopefully come to 2013, we can show
25 ducts in conditioned space that are in conditioned space.

1 The duct leakage table -- so one of the things,
2 on the one hand we're trying to make the Code simpler and
3 reduce exceptions and, going through the table, the
4 numbers I pulled out were actually different than what
5 you showed on the slide earlier for multi-family. So you
6 know how different thresholds for single-family and
7 townhomes vs. multi-family, so either as a percentage of
8 air flow or duct leakage to the outside, so now we have
9 more thresholds to remember. And then on existing duct
10 systems, you've added a duct leakage to the outside
11 threshold, but you have not made a distinction between
12 single-family and multi-family for that, or even for fan
13 flow. So, I don't see why multi-family ducts should be
14 leakier. I think all ducts should be tight. And it's
15 going to be harder if we have two different leakage
16 targets, there's too much confusion.

17 Power flow hood. It doesn't exist on the market,
18 we keep hearing about it. I have done enough air flow
19 measurements with flow hoods and flow grids that, at a
20 return grill, you get a pretty accurate measurement with
21 a flow hood. I've gotten the same measurement with both
22 flow grid and flow hood at a return. I think for small
23 ventilation flows, chances are the power flow hood is the
24 best.

25 QII. You reference a .4 cfm per square foot at

1 three inches of water column in defining, I guess, the
2 total building air leakage. Is that square foot of
3 conditioned floor area? Thermal boundary surface area?
4 And, of course, a .3-inch water column is different than
5 the test pressure we test buildings at. We test at .2.

6 The last just couple quick items on the JA4, in
7 QII wall cavities, you have to fill the whole cavity,
8 right, with especially any air permeable insulation. So
9 in the wall assembly, the JA4, I forget which one the
10 wall assembly is, we show an R19 and a 2 X 8 wall, yet
11 QII tells us if that's an air impermeable insulation, a)
12 we can't pass it, it doesn't fill the cavity, b) I think
13 infrared pictures in Rick Chitwood's little test wall
14 tells us that that air space does not provide it, it
15 actually makes it perform worse, yet the U Value for that
16 assembly is better than an R21 and a 2 X 6, yet
17 everything we know tells us it should be worse. So
18 either we need to remove it, or clarify that you can't
19 use it with an air permeable insulation.

20 And then we were also, in the case study,
21 previously we talked about actually expanding the
22 assemblies so there's more choices, but basically they're
23 left as they are, which there are times, like JAM has
24 their spider which you can get an R23 in a 2 X 6 wall at
25 the right density, and yet we don't really have an

1 assembly for such things.

2 And then I think the last thing I'll touch on
3 right now is we also, for cellulose in walls and in roof
4 rafters, we say that cellulose has to be installed with a
5 binder. You wouldn't normally use a binder or add water
6 in a roof cavity. And in QII, the rules appear to allow
7 you to use, say, cellulose behind a net in a wall; you
8 would not use a binder, you would not add water,
9 typically. So we either need to remove that, or say that
10 cellulose in walls have to be installed with a binder and
11 water, or at a density of 3.5 pounds per cubic foot,
12 which is about the density you have to install cellulose
13 to not get settling. And I'll leave the rest for later.

14 MR. SHIRAKH: Thank you, George. Any other --
15 Mike.

16 MR. GABEL: Mike Gabel, Gabel Associates. Just a
17 few quick comments and questions. A question for staff
18 on the fault detection diagnostics. Mazi, were you
19 saying that there are going to be different incremental
20 levels or steps within that category for performance
21 method to get different levels of credit? Or will there
22 simply be one FDD sort of --

23 MR. SHIRAKH: For Res or Nonres?

24 MR. GABEL: Well, for either -- primarily
25 nonresidential, though, I'm thinking of.

1 MS. BROOK: The new FDD for the economizer
2 operation in air cooled DX units is not tradable, it's
3 under the mandatory section.

4 MR. GABEL: Okay. So there isn't anything under
5 the performance approach, I mean, there will be credit
6 for certain FDDs under certain system types, but not...?

7 MS. BROOK: Yeah, I mean, I don't think we're
8 changing anything there. Right now, I think the way we
9 deal with FDD in Nonres is we de-rate the baseline,
10 assuming that performance degrades if you don't have
11 fault detection.

12 MR. GABEL: Okay, thanks. On the Registry, Jeff,
13 quick comments and maybe we can talk offline, but right
14 now, when the Registry send back forms in PDF format, for
15 example, you know, they're locked up, you can't touch
16 them, you can't change them, we should talk a bit about
17 creating maybe an additional form that doesn't change the
18 body of the form, let's people add additional notes and
19 so forth that happen subsequently when they get stuff
20 back, so they can add additional notes -- the permit
21 applicants to the Building Department or something like
22 that. Also, some CAD programs still don't allow you to
23 draw PDF files into them and so you have to use JPEG or
24 image files, so there are sort of some technical issues
25 I'd like to sort of talk with you about offline a little.

1 MR. MILLER: Yeah, a continuation of what we've
2 talked about before, I'd like to engage you on that.

3 MR. GABEL: And then finally, Gary, on lighting,
4 it may be useful to keep around a few existing legacy
5 fixtures in the listing because people modify in existing
6 space the lighting and they'll keep a few old fixtures in
7 there, and you don't have to have a whole bunch of them,
8 but we can talk offline about that, too, having some
9 limited number available.

10 MR. FLAMM: Okay, we can talk about that.

11 MR. GABEL: Okay, thanks.

12 MR. SHIRAKH: Thank you, Mike. Sir.

13 MR. EMBLEM: Good morning, Commissioners, staff.
14 It's good to see you. Again, you know, I want to talk a
15 little bit about data registry and some of the
16 terminology I'm hearing here this morning talks about
17 document registry and data registry and intertwines them,
18 and I think currently the way the HERS system is set up,
19 that what is registered is truly a document and it's a
20 non-lineable data. Is it the intent of the Commission
21 that, if this data registry does in fact become part of
22 the Regulation, is it a data registry or a document
23 registry?

24 MR. MILLER: We've gone back and forth on that a
25 bit and we've settled on the term "Data Registry" because

1 we feel it encompasses both the data that is going to be
2 submitted to the Registry that represents the information
3 on the forms, on the documents, and also the non-editable
4 images that will be placed in the Registry. So we think
5 that Data Registry encompasses documents and data, that's
6 the idea.

7 MR. EMBLEM: Okay. I'm going to go back to
8 something I've said all along, that in order for
9 documentation to be valuable, 1) it documents to the
10 owner of the building the ultimate purchaser of the
11 product, that the systems within the building are
12 operating properly and up to the minimum Code at the
13 time. So that's important, that that data be verifiable
14 data and replicatable [sic] time in and time out, so it's
15 very important that that happen. The other piece of that
16 data, though, is to be used for the Commission to
17 evaluate whether the Code that they have promulgated, in
18 fact, is doing what it was intended to do. I think
19 that's the most important piece of this, is if we're
20 going towards Zero Net Energy in 2020 and 2030, as we
21 are, it's very important to stand back and evaluate and
22 benchmark what we've done along the way and is it
23 working; and if it's not working, reevaluate it and see
24 if it's necessary. And I think that's important as we go
25 forth with this.

1 I would like to go one more piece on this, and I
2 said this at the last workshop, you know, we do have
3 legal staff working on this, again, they still think that
4 the Commission does not have authority under Public
5 Resource Code 25942 to do this, as it specifically says
6 that you have the ability to create a Home Energy Rating
7 System for residential buildings in California. And as
8 we go into a data registry and we talk about registering
9 data from nonres, we feel that that's a stretch. Now, if
10 you go back and you look at the Commission's broad
11 authority to develop and implement Energy Efficiency
12 Standards, which you have, and that's what we're using,
13 then one would think that if there was a necessity for
14 enabling legislation to enable the HERS system, that it
15 was that important for public policy for that to happen,
16 that it's probably just as important, if not more
17 important, that this happen for nonresidential. So it
18 may be something to consider that perhaps, in order to
19 make this thing more properly, that we stand back and we
20 at least do what we did for the Home Energy Rating
21 System, and continue on looking at nonresidential, which
22 we support. We think that there needs to be a system for
23 verifying and documenting and registering how these
24 systems are performing in nonresidential. And I think
25 that this type of approach will also fit well with the

1 BEARS Rating System in AB 758. I just think it all needs
2 to come together and that we're not just saying, "Well,
3 we have the authority because we have the authority to
4 promulgate Regulations to go into nonresidential and
5 create all this registry requirements, whereas in
6 nonresidential, we had enabling legislation." So I think
7 it's just something to be considered. We're happy to
8 work with you on it because, ultimately, I think our
9 goals are the same. We'd like to see these things
10 implemented, we'd like to see them implemented correctly,
11 and that the ultimate result is systems that perform very
12 efficiently and that the building owners are getting what
13 they paid for. Thank you.

14 MR. SHIRAKH: I would kind of like to continue
15 the conversation maybe offline. I don't quite
16 understand, on the one hand you're saying that we don't
17 have the authority to have nonres registries, but then
18 you want to work with us to somehow make it -- what do
19 you have in mind?

20 MR. EMBLEM: When I say that specifically, in
21 your reference, you reference 25942, and we're saying
22 that you don't have the authority under that, according
23 to our legal counsel, to do that. You may have the
24 authority under other regulations that give you the broad
25 authority to develop standards. So in that respect,

1 that's why I'm questioning that. When I say that we
2 agree with you, that we want to see something different,
3 we agree with the thought that we need to move into non-
4 residential with the same rigor or more than we have with
5 whole energy rating systems, so we're with you on that.
6 But we think we need to drop back. And if there was the
7 premise that you needed enabling legislation to create
8 the HERS system, then the same thought should be for
9 enabling you to do the nonres, so that this question
10 doesn't come up again. As you know, the public policy
11 people in the Legislature think that all this is done in
12 a vacuum over here, and if you listen to the Energy
13 Committee at the Assembly and in the Senate, you heard it
14 time and time again, but you guys are pretty cavalier
15 over here about the way you do things. I say that, but
16 that's what the public policy people think. I think that
17 we need their help and we need their support as this
18 moves forward, so maybe we need to drop back and examine
19 this thing and work together to get some alignment
20 between AB 758, the nonresidential verification system,
21 then you have HERS already addressed with HERS and
22 handling 758, but we just miss that one piece where we're
23 talking about nonres. So, again, we're not against it in
24 principle, we're with you in principle, but we're not
25 sure that we have all of the pieces put together from the

1 regulatory process to move this thing forward and have
2 broad public support.

3 MS. BROOK: Okay, thank you, Eric, cool. We'll
4 get back with our legal counsel on that.

5 MR. SHIRAKH: Okay, any other questions on the
6 Referenced Appendices? Anything online?

7 MR. YASNY: Yeah. Abhijeet.

8 MR. PANDE: Hi. Can you hear me?

9 MR. SHIRAKH: Yes.

10 MR. PANDE: Hi, this is Abhijeet Pande with
11 Heschong Mahone Group. And on the IOUs, the case
12 process, we submitted two case reports addressing JA4 and
13 the table for U Factors. One of them specifically
14 addressed something that George mentioned a few minutes
15 ago, which is expanding the table for wood framed wall
16 assemblies beyond what we currently have to address
17 insulation materials that have higher insulation values
18 than what the table currently tells us. And then,
19 second, more important, it also made the table sort of
20 product neutral. Currently, it references batt
21 insulation and spray insulation separately, and what we
22 have proposed is an approach that addresses both of those
23 in a comprehensive manner. We also had proposed --
24 advised an updated table for SIPs, adding additional
25 supply types and thicknesses, as well as added two

1 tables, one for advanced wall framing techniques and one
2 for ICS. And I guess my question is just to sort of find
3 out if those are still considered, or is that an
4 oversight that they are not in the JA4 that is posted?

5 MS. BROOK: We're still working on that,
6 Abhijeet. We need more time to review all that
7 information to make it consistent with the other things
8 that we're doing with the ACM software. So we're
9 intending to update all of that consistently, at the same
10 time that we're going through our update to the ACM
11 Reference Manual, and so you should expect to see
12 significant updates to JA4, you know, using the
13 information that was provided in the case reports, but we
14 still need more time to review it and make sure it's
15 consistent with our other information.

16 MR. PANDE: Thank you, Martha. We'll be
17 available to assist as you guys need.

18 MS. BROOK: Okay, that would be great. Thanks.

19 MR. SHIRAKH: Any other questions online?
20 Anything in the room. Jon.

21 MR. MCHUGH: Good morning, Jon McHugh with McHugh
22 Energy. One of the things I noticed in the presentation
23 this morning is expansion of the Acceptance Tests, I'm
24 quite happy to see that, as the Acceptance Tests have
25 sort of changed the focus of Standards from the building

1 has the capability for doing something, to the building
2 is actually doing the -- or is operating the control as
3 per the intent of the Standard. However, it appeared
4 that there were some comments about that some of these
5 acceptance tests were actually just making sure that the
6 equipment is installed, and I think that's something that
7 is the difference between the Acceptance Tests where you
8 have a functional performance test and a installation
9 certificate, and I think it makes sense to keep the two
10 separate so that one indicates to the contractor that
11 there is a test involved, whereas the other one is
12 saying, "Yes, I'm certifying that this product is
13 installed as per the plans and has particular
14 specifications in the Standards."

15 MS. BROOK: So this is Martha. I think there is
16 some necessary overlap there. I mean, if I look at the
17 types of modifications we made for the nonresidential in
18 mechanical system tests, for example, there's definitely
19 more installation inspections. And are you suggesting
20 that we map every one of those additional construction
21 inspections back to the installation certificate?

22 MR. MCHUGH: So what I'm suggesting is, when
23 there is a particular Acceptance Test that all it has is
24 construction inspection and there is no function for its
25 test.

1 MS. BROOK: Oh, okay.

2 MR. MCHUGH: And, Gary, I think there are a
3 couple of yours that are in there that are like that,
4 right? That are --

5 MR. FLAMM: Right. I'd like to comment on that
6 because, Jon, you and I have been having this discussion
7 for a couple years. If you look at the title of the
8 Acceptance Test section, there's another fragment that
9 says "Acceptance Test and Installation Certificate." So
10 we expanded that. And then, in the lighting section, the
11 installation requirements are a complete separate
12 subsection, so if you look at the construct, we did break
13 them out separately, so we changed the scope of that
14 document by saying it's Acceptance Test and Installation
15 Certificate, and then in the Lighting, I separately broke
16 out those Installation Certificates in its own
17 subsection. So I heard you and that was working with our
18 consultant and, you know, trying to make you happy is how
19 we did that.

20 MR. MCHUGH: Thank you very much.

21 MR. SHIRAKH: Are you happy, Jon?

22 MR. MCHUGH: I'm very happy.

23 MR. SHIRAKH: Okay, if you're happy, I'm happy.
24 There's a few envelope-related Acceptance Tests that fall
25 into the same category. Any other questions in the room

1 or online on the Reference Appendices? Okay, so we're
2 going to move to the next section which is the ACM
3 Manuals.

4 MS. BROOK: Okay. So just to remind everybody
5 what we're doing differently this time for the ACM
6 Manuals, we talked about this at the August workshop, and
7 based on that we're bringing forward for adoption in the
8 2013 Update the Residential and Nonresidential ACM
9 Approval Manuals, which really focus on the process side
10 of getting compliance software certified at the Energy
11 Commission, and then all of the detailed modeling rules
12 for compliance software will be presented in the ACM
13 Reference Manuals that will be a developed posted option
14 and be approved by the Commission.

15 So the first up is Residential ACM Approval
16 Manual. Basically, this document describes the
17 compliance software vendor requirements, which include
18 for residential for the first time, the biggest
19 difference here, is that all compliance software must use
20 the Commission's Simulation Engine and Performance Rules
21 Processor, which we're calling the Compliance Manager.
22 And the document also summarizes the application items
23 that need to be -- so it provides a checklist for the
24 items that need to come into the Commission with the
25 Certification Application for software. It describes the

1 compliance reports that are required in the Compliance
2 Software, the Certificate Tests that will be performed on
3 the Applicant software, and then also the requirements
4 for the vendor to include a Compliance Supplement in the
5 Software User's Manual.

6 The document goes on to describe the processes
7 for approval, the certification of software, and the
8 challenges that can be made to any compliance software
9 tool. The application checklist includes the following,
10 it includes the Vendor Certification Statement, so the
11 vendor basically signs that his compliance software has
12 passed the tests and is functional as a piece of
13 compliance software for the intent of implementing the
14 2013 Standards.

15 The application also needs to include the
16 computer run results and the summary sheet for the
17 certification tests that a vendor prepared for this
18 submittal. It describes, well, another part of the
19 checklist is that the Compliance Supplement is provided
20 for Commission review, a copy of the compliance software
21 is provided, and the application fee. Now, traditionally
22 the application fee has been \$2,000, but staff is
23 proposing that we reduce that to reflect the fact that we
24 don't need to do the majority of the accuracy tests that
25 are included in the previous versions of the ACM Manual

1 because we are requiring the use of our Compliance
2 Manager Software, so there's no need to run those
3 accuracy tests, because you would be testing it against
4 the same piece of software that is our reference methods.
5 So there's no need to do that, and since that's a
6 significant amount of the testing that staff does for
7 these certification approvals, we're proposing that we
8 reduce the application fee in half, so from \$2,000 to
9 \$1,000. This hasn't been approved internally at the
10 Commission and that's why it's still a staff proposal at
11 this point.

12 The other changes here are itemized in red for
13 reporting requirements. We've heard from our
14 stakeholders that we need to include the kWh and therms
15 reported out in the Energy Use Summary of the CF1R, so
16 we'll be implementing that change.

17 There's also a change that's come through our
18 Compliance and Enforcement Unit and they've been working
19 with CALBO to propose a new table in CF1R that lists the
20 plan page numbers for a set of key building features that
21 allows the building official, then, to have a summary of
22 where to look for the things that he needs to be
23 reviewing. And as I just mentioned under the compliance
24 software test, we eliminated the accuracy tests and what
25 remains are the standard design tests, and they remain to

1 verify that the compliance manager software has been
2 integrated into the vendor software correctly.

3 So that's it for the Residential ACM Approval
4 Manual. The Nonresidential ACM Approval Manual is
5 similar in its changes. It includes the things that we
6 mentioned before, the application checklist, compliance
7 report, certification tests, and the compliance
8 supplement requirement. It also summarizes the processes
9 for approval of the certification and challenges, and all
10 of the details are of the reporting, the testing, and the
11 modeling rules, will be included in the ACM Reference
12 Manual, which will be approved by the Commission in 2012,
13 along with the ACM Reference Manual. And that summarizes
14 what we posted for revisions to the ACM Approval Manual,
15 and we're here to answer any questions or hear comments
16 if anybody has them at this time.

17 MR. GABEL: Mike Gabel, Gabel Associates. On the
18 overview, looking I guess on page ii [one one] of the
19 Residential Manual, let's talk about the Compliance
20 Manager. Martha, so that's the intent is to have this in
21 place and I guess my concern, as I've expressed
22 previously, but I'll repeat here, is whether there could
23 be language added to the document that would give the
24 Commission the right to approve something for compliance
25 software that included the functional capabilities of the

1 Compliance Manager, but not dependent on waiting for it
2 to arrive. I mean, my concern is that, if the Compliance
3 Manager is delayed that this document will allow the
4 Commission to approve ACMS that fulfill the intent and
5 the functionality of the Compliance Manager, but
6 hardwired into the software to make sure the Standards
7 take effect on time.

8 MS. BROOK: Uh huh.

9 MR. GABEL: Do you want to comment or --

10 MS. BROOK: I think that I really don't have a
11 comment. I think we'll consider that recommendation and
12 decide if we want to keep that door opened or not.

13 MR. GABEL: Okay. On the comment you just made
14 regarding the table for Plan Numbers, it gets back to my
15 comments on the forms for the Registry; if a consultant
16 doesn't know yet the final page numbers in the final
17 plans, and the permit applicant has to insert those
18 numbers after the fact, but the file is all locked up and
19 they can't edit the file or make -- I'm saying there's
20 still some logistical problems.

21 MS. BROOK: Yeah, I asked staff about that and
22 what they're trying to do is make sure that those
23 compliance forms don't get spit out until the
24 documentation is completed. So if there's a problem with
25 that, then we need to know about it because that's

1 actually the intent of our change, is to make that
2 happen.

3 MR. GABEL: Yeah, I mean, clients make changes
4 obviously to the drawings after we see them and that's
5 not a good thing, but the issue is whether they can do
6 legitimate corrections without having to go back to the
7 consultant first if there are some issues there that we
8 can work out.

9 MS. BROOK: Okay, thanks.

10 MR. GABEL: And just a question on the Standard
11 Reports. I'm noticing that there's a general description
12 of the Standard Reports, but the intention is that the
13 Technical Manual will have a full detailed layout or
14 specification of exactly what's in the forms, but you're
15 just trying to summarize in the Approval Manual what is
16 the essential components of those reports?

17 MS. BROOK: Right. I mean, the forms is a
18 classic example of why we need to have this sort of
19 separate approval process because it's too early to make
20 all those final decisions now, and if we locked them into
21 what gets adopted, then we'll be unable to change them
22 when we need to change them.

23 MR. GABEL: Okay, well, in addition to the
24 metrics you've outlined, CO₂ equivalent emissions would be
25 kind of a good addition recommendation --

1 MS. BROOK: Okay.

2 MR. GABEL: -- maybe in small print somewhere
3 where it's not confused with the main metrics, but there
4 are a lot of reasons why that would be really helpful.

5 MS. BROOK: Okay.

6 MR. GABEL: Let's see. I think there is another
7 issue which maybe is in here, but I want to make sure
8 that any compliance, any software inputs that affect the
9 compliance results, that they have to be listed somewhere
10 in the compliance forms. In other words, basically there
11 can't be something that the software file holds that
12 changes the output, that doesn't appear for the plan
13 checker, so that would be kind of a good addition.

14 You had suggested an idea, which I thought was a
15 good one, for nonresidential. The ACM is kind of a black
16 box where the person, the software user, doesn't know
17 what their building is being compared to, so perhaps an
18 on-screen display of the standard design assumptions, or
19 a form that can be generated optionally that lists the
20 standard design for that building as part of the ACM
21 Manual would be kind of a good thing.

22 MS. BROOK: I agree, that would be a good thing.

23 MR. GABEL: Yeah, it was your idea and I think
24 that was a good idea, so I'm reminding you.

25 MS. BROOK: Thank you for calling it a good idea

1 again.

2 MR. GABEL: As far as the tests go, the ACM
3 tests, and this would apply to nonresidential, as well, I
4 don't think there are either any or many tests on the
5 alterations and additions, functionality of the ACMs, and
6 I think that you need to devise some specific additional
7 tests to see if the existing additions and alterations
8 calculations and modeling is done correctly for both
9 residential and nonres as part of the certification
10 procedures.

11 MS. BROOK: So what you're saying is that you
12 don't think our standard design tests are comprehensive
13 enough for additions and alterations?

14 MR. GABEL: That's right.

15 MS. BROOK: Okay.

16 MR. GABEL: You need to do some more research on
17 that.

18 MS. BROOK: Okay.

19 MR. GABEL: Thank you.

20 MS. BROOK: Thank you.

21 MR. NESBITT: George Nesbitt. So I'll start with
22 kind of list to kind of follow-up on part of what Mike
23 talked about. I count about at least four items in
24 Energy Pro that calculate in compliance mode that it
25 probably shouldn't. I count --

1 MS. BROOK: Okay, first of all, I don't
2 understand what that means.

3 MR. NESBITT: Well, you can take credit for solar
4 space heating, which I've been saying for over a year --

5 MS. BROOK: Okay, so what you're saying is that
6 there's some problems with Energy Pro --

7 MR. NESBITT: Right.

8 MS. BROOK: Okay.

9 MR. NESBITT: So there's at least four items that
10 are allowing you to generate credit that you probably
11 shouldn't be getting. I count at least six items that
12 you cannot alter in existing plus alteration. There are
13 sort of at least two items that don't show up on reports,
14 including a new building if you want to put in less than
15 the default, I'm sorry, mandatory minimum insulation
16 level, you do not get an error message like you do if you
17 put in on an existing plus alteration. So if you put in
18 R0 roof insulation for a home built in the '80s, you'll
19 get a note under Special Features saying you're using a
20 lower -- a higher U Value than the default for that
21 vintage, yet when you're running a new building, you
22 don't get any kind of error message for that. So I'll
23 kind of set the details of that aside for the moment to
24 kind of hit on a couple other things.

25 The idea of self-certification, we don't have

1 Building Departments because we trust the building
2 industry to say they've built to Code completely on their
3 own, as well as we have HERS Raters, so self-
4 certification has not worked completely.

5 MS. BROOK: So just to be clear, the self-
6 certification is only the first step in the Commission's
7 certification process.

8 MR. NESBITT: Yeah, well, I'm going to say the
9 self-certification process, so not that software vendors
10 don't need to test their equipment, their software, but
11 then the CEC reviews it. So either what's happened is we
12 -- in that process, we don't realize that things are
13 happening that shouldn't, or we realize it and we allow
14 it to happen, both of which do happen in the real world.
15 And it also gets down to the idea of the whole, you know,
16 there are fixed and there are restricted inputs, and the
17 question is -- I guess Bruce left -- the Compliance
18 Manager -- I don't know why he left when we're talking
19 about the ACM -- will the Compliance Manager actually
20 contain all those fixed and restricted inputs, as well as
21 the responsibility for the outputs, so --

22 MS. BROOK: So definitely the outputs, we are
23 planning on generating the required reports within the
24 Compliance Manager so each software manager doesn't have
25 to have the function of completing reports, the

1 Compliance Manager will do that probably.

2 MR. NESBITT: Right.

3 MS. BROOK: But given that the vendor software
4 will have its own interface, it will still have
5 requirements that interface deal with restricted inputs.
6 So, for example, not passing to the Compliance Manager
7 inputs that are unacceptable. But the Compliance Manager
8 will still have to do that checking, it will still have
9 to check to make sure that the inputs are within range.

10 MR. NESBITT: Right --

11 MS. BROOK: So it's not -- there will be some
12 responsibility of both parts there.

13 MR. NESBITT: I would say that, I mean, with
14 Energy Pro, there are so many different modules, you've
15 got Title 24 Compliance, you've got HERS, you've got --

16 MS. BROOK: Res and Nonres.

17 MR. NESBITT: -- you've got just noncompliance
18 modules, that the responsibility for the fixed and
19 restricted inputs is really the calculation engine.

20 MS. BROOK: Well, it's definitely going to have
21 those rules, they'll do range checks on everything, but
22 it's still a lot to work out between the link between
23 interface and the API, the Compliance Manager.

24 MR. NESBITT: Right. To me, it seems that the
25 actual software is really the interface for inputting

1 data and the interface for the visual output, and that
2 the Compliance Manager needs to make sure that, on a
3 compliance run, or a HERS 2 run, that it only accepts the
4 inputs that are valid.

5 MS. BROOK: Okay.

6 MR. NESBITT: And also, only gives -- and as Mike
7 said and I've said, also that -- well, Pat Splitt has
8 said it also -- any input that makes a difference in the
9 calculation has to be on the output because if it just --
10 it just makes it too easy to, you know, to take credit
11 for things that you shouldn't -- purposely or not.

12 And then just in talking about outputs, the --
13 well, several things -- like when we list assemblies, I
14 really think we need to add a column, so we did like
15 cavity R value, sheeting R Value, you know, frame type,
16 it would also be nice to know what the frame spacing is
17 on the outputs, as opposed to having to go to the
18 Appendixes and like figure out is that a 16 on center, or
19 a 24 on center. You know, as a HERS Rater, and even as a
20 Building Department, it's a lot easier to say "this is
21 R15, you know, 16 on center wood frame wall." And then
22 also potentially adding a column for the type of
23 insulation, and I would say that's important only because
24 we've got, as we've written the rules, I guess when you
25 use spray foam in high-rise and motels, you're supposed

1 to do QII with the HERS Rater, yet when you're in the
2 compliance software, there's nowhere that triggers
3 something on a report that says it, so it's probably
4 never been enforced because, unless it really says it
5 clearly -- and this also gets back to talking about the
6 whole -- especially with all the new HERS mandatory
7 measures, you know, how are you going to display that?
8 Or where, you know, part of that needs to be -- really,
9 it needs to be part of the CF1Rs, the proof forms, as
10 well as, yeah, in the Installation Certificates,
11 reminders that these are items that do require a HERS
12 Rater sign-off, as a way to reinforce. It's not about
13 getting credit under the Code, but it's about making the
14 Code clearer and easier to enforce, as opposed to leaving
15 it to a three-page list of mandatory measures that, even
16 though it's mandatory, you know, it doesn't hit you in
17 the face, so you don't think about, "Oh, I need that."
18 So I think that's all I have on the ACM at this point.

19 MS. BROOK: Great, thanks. Anybody else have any
20 questions or comments? Anybody online?

21 MR. YASNY: Ken Nittler, do you want to say
22 anything? Or do you want me to read? I guess I'll just
23 read. He doesn't have a very good interconnection. He
24 would like to recommend that language be added to
25 overview under approval that describes how and when

1 vendor software must be updated when new versions of the
2 Compliance Manager is released. He also recommends that
3 energy use summary include the percentage better than the
4 standard for use with the Reach Code.

5 MS. BROOK: Uh huh.

6 MR. YASNY: He says he does not see any language
7 that says the Compliance Reports are to be generated by
8 the Compliance Manager and that must be used by the
9 vendor.

10 MS. BROOK: Okay.

11 MR. YASNY: And language about full and
12 streamlined approval is pretty out of date compared to
13 current practice of updating software on the Internet.

14 MS. BROOK: Okay, great. Thank you for those
15 comments. Anything else from anybody anywhere? Okay,
16 just one second, I have to finish making this note to
17 myself.

18 Next up and last agenda item is a discussion of
19 our Reach Standards in terms of additions and
20 alterations. So this is important because, for the first
21 time, the 2013 Building Standards will include Reach, or
22 Green Building requirements for additions and
23 alterations, and so since our Reach Standards will be
24 placed into the Green Building Standards, which is Title
25 24, Part 11, we want to make sure that they work for

1 additions and alterations.

2 Also, we had some comments from our stakeholders
3 that because we're pushing our base standard
4 significantly to be more stringent, more energy efficient
5 this round, we want to make sure that we can still meet
6 these Reach Standards under a different kind of building
7 project scope, so these draft revisions sort of try to
8 address those comments. But we're not done yet, we still
9 have internal discussions to have and we want your
10 feedback and suggestions for how we take these
11 recommendations forward.

12 So for the Residential Reach Standards, what
13 we're currently thinking is that we would not require
14 anything above Title 24, Part 6, it's only the envelope
15 is added or altered, and this is because we're making
16 significant updates to the envelope for the base
17 standard. And when we did our own analysis for how to
18 cost-effectively get to 15 percent better than our base
19 standard, we looked at mechanical system improvements,
20 but didn't really look at envelope improvements as far as
21 getting cost-effective improvements. So it's not that we
22 wouldn't -- again, this is a voluntary standard so people
23 can certainly look to the envelope if they want to for
24 improvements, but we wouldn't require it, only if there
25 is no mechanical system included in the project addition

1 and alteration.

2 The other thing that our proposed revision does
3 is that it makes the Reach Standard really conditional on
4 how many mechanical systems are included in the addition
5 or alteration, so if you're doing a major addition or
6 alteration and your space cooling, heating and water
7 heating system are getting modified, then it would be the
8 same as for a newly constructed building, it would be 15
9 percent better than the base standard. But if you only
10 have one or two of those mechanical systems, then the
11 Reach standard would only require you to be five percent
12 better for each of those mechanical system additions or
13 alterations. So that's really the only change to the
14 Residential Reach Standards is this different way to
15 address additions and alterations.

16 For Nonresidential Reach Standards, we have
17 removed the commercial refrigeration prerequisite. This
18 is because, based on stakeholder response and some
19 information that we've been given by these stakeholders,
20 there's too much uncertainty about the energy use of the
21 secondary carbon dioxide systems, and this was actually
22 going to be a requirement in our Reach Standard, is that
23 all secondary systems would be CO₂ systems or equivalent
24 on the energy efficiency side. And the reason that this
25 was put into a Reach prerequisite is that it has

1 significant greenhouse gas emission reductions because
2 the refrigerant doesn't have global warming potential
3 that's significant compared to other traditional
4 refrigerants. But it only works in an energy standard if
5 that tradeoff between energy efficiency and greenhouse
6 gas emissions is neutral, and our understanding is that
7 there is too much uncertainty about that neutrality and
8 so we're not going to put it in as a prerequisite.

9 The other suggestion is that, again, because
10 we're making such significant improvements to the
11 Nonresidential envelope in the base Standards with our
12 fenestration updates and our cool roof updates and our
13 air sealing updates, that there would be no necessary
14 improvement above the base standard if only the envelope
15 is part of a newly constructed addition or alteration
16 building project. So now you can come up, Jamy, that's
17 it for the Reach Standards.

18 MR. BACCHUS: Jamy Bacchus, Natural Resources
19 Defense Council. One of my questions or clarifications,
20 last week I think CO₂ secondary coolant systems was in the
21 Reach, and you're saying now it's been taken out --

22 MS. BROOK: Uh huh.

23 MR. BACCHUS: -- of the proposal. Were there
24 other changes in there too?

25 MS. BROOK: No. The only thing that might have

1 happened is the current posted Reach Standard might have
2 inadvertently eliminated the very large restaurant solar
3 water heating fraction requirement, if that's true,
4 because I'm just thinking now that that might have
5 happened, but that's still under discussion. So that one
6 may or may not stay as a prerequisite.

7 MR. BACCHUS: One of my comments which is now
8 kind of a moot point, but would be to not just require CO₂
9 secondary coolants, but to open it up, then, to allow any
10 other non-HFC type refrigerants that people wanted to
11 look at -- ammonia, wanted to look at water, or CO₂ as
12 their refrigerant, they could still do that rather than
13 just being specific on one type of refrigerant for
14 commercial refrigeration systems.

15 MS. BROOK: Right. And really what is happening
16 here, Jamy, is that we're struggling because we don't
17 have a true performance standard for refrigeration
18 systems and that's what we really committed to doing for
19 2017, we don't have the modeling capabilities in current
20 software. You know, there's a handful of people, one of
21 which is our wonderful consultant, Doug Scott and VaCom
22 Technologies that do refrigeration modeling, but I mean,
23 the industry doesn't do refrigeration modeling right now.
24 And so we really kind of have to move that forward with a
25 little bit more time, we just weren't able to pull off a

1 complete performance standard for refrigeration systems
2 in this Code cycle. But that's our intent. And so, when
3 we started developing that prerequisite, it became
4 obvious that we were crying for a performance approach
5 when we didn't have one, and we were trying to force it
6 because we really need this tradeoff between efficiency
7 and emission reductions, and you need a good performance
8 tool to do that appropriately. And in the absence of
9 that, we just weren't willing to go forward and say "you
10 have to do it this way." Because ultimately that's
11 what's going to happen if a local jurisdiction adopts the
12 Reach Standard is that they would be making all these
13 supermarkets do it one specific way, or two specific
14 ways, or three. I mean, as many times as you discuss it,
15 you come up with another option that might be equivalent
16 because we all want a performance standard, we want to be
17 able to make these tradeoffs, and we just aren't able to
18 do that now. The whole point of a prerequisite for a
19 Reach standard is that it's a no-brainer, it's like
20 absolutely good all the time and we just didn't feel like
21 it was the case in this situation and so we pulled back
22 on that.

23 MR. BACCHUS: Well, thank you for reviewing it
24 and I would certainly be interested in continuing it at
25 the NRDC. I'm glad that the Commission is taking on

1 commercial refrigeration.

2 One other side comment. CalGreen is also
3 starting its focus group meetings on its new standards
4 and part of the Tier 1 and Tier 2 requirements for its
5 Reach were largely handed over to them by the CEC. And
6 have you already begun that conversation of what
7 percentages you would be looking at beyond Title 24 in
8 2013?

9 MS. BROOK: Yeah and just for your information,
10 if you haven't seen what's posted, first of all, we are
11 working with the Building Standards Commission and the
12 Housing and Community Development Department. We'll be
13 inserting what we've been talking about here into their
14 draft documents so that there will just be another
15 opportunity for people to review our energy requirements,
16 but we're intending to make all decisions about changing
17 them within this proceeding and not the Part 11
18 proceeding. But for residential, we're sticking with 15
19 percent for Tier 1 and 30 percent for Tier 2, or the
20 equivalent reduction in energy budget, and then for
21 nonresidential, we've dropped it from 15 to 10, so 10
22 percent and 20 percent, again because of stakeholder
23 concerns that it might be in some situations difficult to
24 get the 15 percent better than our base standard, which
25 is I think a testament to how much we are making our

1 improvements pretty significant this time in nonres.

2 MR. BACCHUS: But would those numbers change if
3 we change Package A, if certain measures make it in or
4 out? Would we reevaluate whether or not -- knowing that
5 there could be additional savings on the table?

6 MS. BROOK: You know, yeah, if something happens
7 and we don't end up where we want to be for residential
8 base, then we should revisit those Reach numbers.

9 MR. BACCHUS: Good. Thanks.

10 MR. GABEL: Mike Gabel. On A5.2.2, the
11 performance standard for nonres, I think an important
12 technical fix to the language is to make sure that that
13 percentage represents a percentage of regulated energy
14 use components because, you know, when you add in
15 process, receptacle, and lighting in high-rise
16 residential --

17 MS. BROOK: Right, right.

18 MR. GABEL: -- you can't get those percentages.

19 MS. BROOK: Right, okay, no, that was an
20 oversight. Thank you.

21 MR. NESBITT: George Nesbitt. So originally the
22 Reach Code was only going to be for new construction, not
23 including additions?

24 MS. BROOK: Right now, the Green Building
25 Standards only apply to newly constructed buildings, but

1 in 2013, they'll be extended to additions and
2 alterations, that's our understanding --

3 MR. NESBITT: Okay.

4 MS. BROOK: -- of where they're going.

5 MR. NESBITT: Okay, and so you're suggesting --
6 so I guess if you do an addition, if you model an
7 additional loan, you would have to then meet 15 percent
8 because that's new.

9 MS. BROOK: Uh huh.

10 MR. NESBITT: Right?

11 MS. BROOK: Uh huh.

12 MR. NESBITT: Would that, as opposed to doing
13 whole building approach, existing plus addition where
14 you're doing tradeoffs?

15 MS. BROOK: Oh, so right now what we're proposing
16 for residential is that newly constructed is 15 percent,
17 but if you're doing an addition that doesn't have water
18 heating and cooling and heating included in that
19 addition, then the rules would not be the same. So the
20 additions and alterations is conditional on how many
21 mechanical systems you're effecting.

22 MR. NESBITT: Okay.

23 MS. BROOK: And that's just a proposal, it's
24 draft, we're not sure we're going to end up with it, but
25 we're trying to get some public response to that to see

1 if we're on the right track, or if it's going in the
2 right direction.

3 MR. NESBITT: Right. I mean, if you model the
4 addition by itself, I would think that you would view
5 that as construction because that's how we view it, but I
6 think it perhaps gets a little murky when you model
7 existing plus the addition because you're doing tradeoffs
8 with that existing, and so then does it have to be at
9 least 15?

10 MS. BROOK: And we're still trying to work
11 through all those different scenarios and make sure that,
12 you know, we think we are ending up in the right place.
13 We're not sure about that yet.

14 MR. NESBITT: And then, so for alterations, it
15 would be five percent for any system altered and no
16 requirement on the building enclosure?

17 MS. BROOK: No additional requirement beyond Part
18 6, yeah.

19 MR. NESBITT: Right. And that is because when
20 you model it, you would be compared to the current
21 package, what used to be Package D, the new Package A?

22 MS. BROOK: Uh huh.

23 MR. NESBITT: And so you wouldn't actually get
24 any credit unless you exceeded that, but that's the idea.

25 MS. BROOK: Uh huh.

1 MR. NESBITT: Yeah. And then each system would
2 mean five percent of your total budget for heating or
3 cooling, you'd have to show at least a five percent
4 improvement in that budget?

5 MS. BROOK: Yeah, that's what is proposed now and
6 that's what we need to talk about is, if you're doing an
7 alteration, can you get five percent of an improvement
8 just in the cooling system? Or is it five percent of the
9 total?

10 MR. NESBITT: I did an EEM recently, duct
11 insulation and duct tape, they were like 20 -- 15 to 20
12 percent each or something.

13 MS. BROOK: Okay, that's good.

14 MR. NESBITT: Generally, existing plus alteration
15 is not a hard path to comply with. I think what gets
16 complicated and I hadn't realized that if you don't
17 improve to the package requirement, so rather than
18 getting compared to the vintage, if when you do make an
19 alteration, say to a wall or a roof, if you do not
20 improve it to the current package requirement, you then
21 actually get compared to the package requirement rather
22 than the --

23 MS. BROOK: Actually, I think Mazi introduced it
24 a little different in October, introduced a little
25 different concept for additions and alterations in terms

1 of when you get penalized vs. when you get a credit. And
2 so we still have to finalize that, but it will likely be
3 different than it is for newly constructed where, you
4 know, maybe there's actually a little lower requirement
5 for some of the window alterations, for example. Do you
6 want to clarify that a little bit?

7 MR. SHIRAKH: What we're proposing is that, when
8 you alter a component, it becomes an altered component,
9 it has to come up at least to the mandatory requirement
10 for that altered component. And if that happens, then
11 there would be no performance credit or a penalty, if it
12 comes up to the mandatory requirement. If it goes beyond
13 the minimum mandatory, then there would be a credit
14 relative to what you're actually putting in and the
15 mandatory requirement. And then, if it comes all the way
16 up to the prescriptive requirement, then there will be a
17 big credit, so the idea is to basically encourage people
18 to put all the way to the prescriptive requirements and
19 that's true for both res and nonres; it's pretty much
20 written the same way.

21 MR. NESBITT: Yeah, I don't remember. I guess in
22 October, the language was still back to the package, but,
23 yeah, I mean, which actually at the moment means it's
24 about the same as it is now because most climates are 30
25 in the attic and in the walls.

1 MR. SHIRAKH: We kind of -- we got some comments
2 that people could use the performance path and just use
3 one component and not do the prescriptive and get away
4 with doing just the minimum mandatory requirement, so we
5 made it clear that, you know, to use the performance
6 path, there has to be some kind of a tradeoff, so you
7 can't just use it on a single component and get away with
8 only putting in a mandatory requirement for a single
9 component, let's say a wall. So we made some
10 clarifications to it, but the idea didn't drastically
11 change since 2008.

12 MR. NESBITT: Right. Yeah, I mean, it may just
13 be easier for alterations and even additions to say
14 either the additional loan has to be a minimum 15 percent
15 or just, say, for alterations you need X percent
16 improvement wherever you get it in this case, as opposed
17 to saying you have to get a certain amount, you know, on
18 each component. I mean, in theory you should be getting
19 an improvement on everything you improve because chances
20 are you're going from something below current efficiency
21 or you're --

22 MS. BROOK: So the real question is, I think,
23 have our base requirements for the residential envelope
24 gotten to the point where it's difficult to make cost-
25 effective improvements to that, which would be required

1 of you if a local jurisdiction adopts the Reach Standard
2 as mandatory. So that's really the issue is, is it
3 appropriate for envelope only additions and alterations
4 to still require a 15 percent improvement?

5 MR. NESBITT: Well, if it was an improvement over
6 your existing condition to your changed condition, yeah.
7 I mean, and actually for new construction, you're saying
8 it's 15 percent better in the HERS Index, so actually I
9 guess that's the other -- I mean, so for new it's a HERS
10 rating and it's 15 percent improvement. So I guess it's
11 probably just simpler to do it as an improvement,
12 existing to altered -- purely what the existing condition
13 is to the altered rather than getting into the whole idea
14 of, you know, what the Code is and all that. Yes,
15 mandatory measures always do apply, and that is what the
16 HERS Rating System does is it says this is your base case
17 existing, these are my changes, and this is my percent
18 improvement. And that's probably a lot simpler just to
19 make it a --

20 MS. BROOK: Okay, so now I'm finally getting it,
21 I'm getting what you're saying. What you want is similar
22 to what Mike Gabel was talking about privately to us,
23 which is you want to see additions and alterations be
24 dealt with in terms of an improvement to the HERS Rating
25 and just forget about everything else.

1 MR. NESBITT: Is that what I want?

2 MS. BROOK: I don't know, that's what I'm writing
3 down that you want.

4 MR. NESBITT: Well, actually I want the HERS
5 Rating to be the basis for the Energy Code for new
6 construction, which it will be, you know, in 2017, or
7 certainly by 2020.

8 MS. BROOK: But I'm close to what you were
9 suggesting.

10 MR. NESBITT: Yeah, yeah. Because I do think it
11 does get a little weird when we're comparing something to
12 a new Code, and you can't always get to new Code. I
13 mean, I've modeled my house, a 1923 Craftsman Bungalow, I
14 can remodel it to 75 percent above, well certainly above
15 2005 Code. You know, it's possible, it's not necessarily
16 inexpensive, you know, some things are less expensive
17 than others. But what we want is improvement, so it just
18 -- yeah. I mean, we want it simple.

19 MS. BROOK: I think those are both very good
20 points.

21 MR. NESBITT: And actually a lot of jurisdictions
22 are requiring, when you do additions currently, to get a
23 HERS Rating. So that certainly simplifies it; you're
24 showing an improvement and that's what we want. We want
25 an improvement. One of the beauties of the Energy Code

1 is you have to meet a budget, but how you meet that
2 budget is, you know, you've got some choice.

3 MS. BROOK: Okay, so the only other thing I need
4 to ask is, HERS Rating or HERS Rating, I mean, what we've
5 kind of pitched in the Reach Standard here is that it
6 would be a design rating, so it wouldn't be a complete
7 HERS process where you have to measure everything that
8 you have to measure for a HERS whole house rating. And
9 so I just wanted to clarify, are you talking about a HERS
10 design rating or the full blown HERS whole house rating?

11 MR. NESBITT: So I participated heavily in the
12 HERS 2 rulemaking and made plenty of written and verbal
13 comments. HERS 2 does not require any testing, there's
14 nothing in the regulations and the exact intent of the
15 Commission was "we do not want to require specific
16 testing as part of a HERS rating, in part to keep the
17 costs down." I mean, this is the exact language out of
18 staff or Commissioners, or both. So whether it's a new
19 building or an existing building, at a minimum, a HERS
20 rating is identifying all of the various assemblies, the
21 efficiencies, the NFRC ratings, whatever, all of that,
22 and running a computer model. Nowhere does it say you
23 have to do a duct test, you can use default assumptions;
24 nowhere does it say you have to do a blower door test,
25 you can use default assumptions. Now, obviously if you

1 want to select those as improvements, those require
2 testing to reach a certain target. And also nowhere in
3 the HERS System does it say, if I do a rating, and if I
4 produce a report for someone and I tell them "this is
5 what your house is, your house is 175 as it is, but if
6 you do the improvements, it'll be a 125." Nowhere does
7 the HERS rating actually require that I go back and check
8 that. So I don't think that, in that sense, yes, you're
9 asking for a design rating and, to me, what that means is
10 it's purely -- it's like the Energy Code -- tell us what
11 you think you're going to build and show us that you
12 think you can comply with the Code.

13 MS. BROOK: Okay.

14 MR. NESBITT: You know, whether or not you
15 actually do in the end is a whole enforcement issue, so,
16 yes, that's a design rating. And you can use -- so if
17 you have a diagnostic testing, you can use that as part
18 of the design rating, but obviously that would require
19 that the approved person does that testing and that you
20 have that information, and the Regulations are on the
21 existing home, it has to be the HERS 2 whole house rater
22 to do that diagnostic testing. On new homes, it has to
23 be a HERS 1 Rater, so someone who only does the Energy
24 Code verification. But the reality is the providers
25 require you to be both, so it's a HERS 2 Rater that has

1 to do the diagnostic testing in both cases.

2 MS. BROOK: Okay. All right, thanks for that.

3 Do we have any other comments on the Reach Standard as

4 they apply to additions and alterations? Or anything

5 else. If there are no other comments on the Reach

6 Standard, then we're open to the very final point of the

7 agenda, which is comments on anything related to the 2013

8 Standards that you've heard today, or that you want to

9 talk about.

10 Okay, so that concludes our agenda for today. We

11 don't think we're going to be having any other pre-

12 rulemaking staff workshops. We will take care of all

13 comments and future revisions to the Standards without a

14 public workshop. We are going to be spending the next

15 several weeks resolving the remaining outstanding

16 comments on our standard proposals, and working with you

17 to get resolution of those to the greatest extent

18 possible. Thank you for coming and thank you for your

19 continued participation in our update.

20 (Adjourned at 11:23 a.m.)

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REPORTER'S CERTIFICATE

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF,

I have hereunto set my hand this 22nd day of December, 2011.



PETER PETTY
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Notary Public