

BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the matter of Building Energy) Docket No. 12-BSTD-01
Efficiency Standards Revisions)
for Nonresidential Buildings) 45-Day Language Hearing

CALIFORNIA ENERGY COMMISSION
HEARING ROOM A
1516 NINTH STREET
SACRAMENTO, CALIFORNIA

MONDAY, MARCH 12, 2012
9:00 A.M.

Reported by:
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APPEARANCESCommissioners Present:

Karen Douglas

Staff Present: (* Via WebEx)

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 Mazier Shirakh
 Gary Flamm
 Payam Bozorgchami
 Ron Yasny
 Patrick Saxton
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 Refrigeration Institute (AHRI)

*Frank Morrison, Baltimore Aircoil Company

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*Ira Richter, Heatcraft

Bill Callahan, Associated Roofing Contractors of the Bay Area
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Reed Hitchcock, Asphalt Roofing Manufacturers Association

Jamy Bacchus, Natural Resources Defense Council

Lee Shoemaker, Metal Building Manufacturers Association

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INDEX

	PAGE
Introductions/General Information about 2013 Title 24 Rulemaking Calendar	
Martha Brook	5
Revisions to Sections 120.0 to 120.6 - Mandatory Requirements for Space Conditioning and Covered Processes	
Martha Brook	7
Revisions to Section 120.7 - Mandatory Insulation Requirements	
Mazi Shirakh	14
Revisions to Section 120.8 - Building Commissioning	
Martha Brook	16
Revisions to Sections 110.9 and 130.0 to 130.5 - Nonresidential Mandatory Lighting Controls and Building Power	
Gary Flamm	29
Revisions to Sections 140.0 and 140.1 - Nonresidential Performance and Prescriptive Approaches	
Martha Brook	37
Revisions to Section 140.3 - Prescriptive Requirements for Building Envelope	
Mazi Shirakh	38
Revisions to Section 140.4 - Prescriptive Requirements for Space Conditioning Equipment and Covered Processes	
Martha Brook	66
Revisions to Sections 1406. to 140.8 - Prescriptive Requirements for Indoor Lighting, Outdoor Lighting, and Sign Lighting	
Gary Flamm	89

INDEX (Continued)

	PAGE
Revisions to Sections 140.9 - Covered Processes	
Martha Brook	87
Revisions to Section 141.0 - Nonresidential Additions, Alterations, and Repair	
Mazi Shirakh/Gary Flamm	90
Lunch	125
Title 24, Part 11 - Nonresidential Voluntary "Reach" Standards	
Martha Brook	125
Revisions to Nonresidential Appendices	
Mazi Shirakh	126
Revisions to Nonresidential ACM Approval Manual	
Martha Brook	143
Public Comments	149
Adjournment	208
Certificate of Reporter	209

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

2 MARCH 12, 2012

9:05 A.M.

3 MS. BROOK: Good morning. This is Martha Brook.
4 While we're waiting for our Lead Commissioner to arrive,
5 I'm going to go ahead and talk about the emergency exit
6 procedures for this room and also, just to make sure, for
7 those of you who haven't been here before, that you know
8 where the restrooms are located, they're just on the
9 other side of the atrium in that direction. In the case
10 of an emergency and the building needs to be evacuated,
11 we ask you to follow staff out of the building and just
12 keep up with us because we're going to be running like
13 heck to get out of the building, so just pay attention.
14 And what we're going to do is meet outside, across the
15 intersection at the Roosevelt Park over there, and that's
16 where we'll ask you to follow us. And that's all I have
17 to say about that. We'll get started very quickly.
18 Thanks.

19 COMMISSIONER DOUGLAS: Good morning. Welcome to
20 this hearing on the 45-Day Language for the Title 24
21 Standards, 2013 Update. Let me ask staff to kick this
22 off.

23 MS. BROOK: Okay, great. I'm Martha Brook. I'm
24 one of the Program Managers for the 2013 Standards
25 Update. And Mazi Shirakh is the other one and he'll

1 arrive when he arrives. I'm sure it will be very
2 shortly. And do you want to have the other introductions
3 here?

4 MR. FLAMM: I'm Gary Flamm, Supervisor for the
5 Building Standards Development Unit.

6 MR. BREHLER: Pippin Brehler, Office of the Chief
7 Counsel, advising staff on legal matters.

8 MS. BROOK: And here comes Mazi.

9 COMMISSIONER DOUGLAS: So Mazi Shirakh is here,
10 and let me also introduce -- I'm Commissioner Karen
11 Douglas. I think I neglected to mention that. To my
12 right, Galen Lemei, my Advisor; to my left, my Advisor,
13 Jennifer Nelson. So, welcome.

14 MS. BROOK: Okay. So today we're going to cover
15 the updates to the Nonresidential Building Updates to the
16 Standards and we're really only going to cover what staff
17 believes are the substantive changes. We have an Initial
18 Statement of Reasons, an ISOR document that is posted on
19 our website that explains every single change to the
20 language, including just typo and the editorial-type of
21 clean-up language.

22 So what we'd like to do is go through the day and
23 we have breaks in between sections for comments, and then
24 we have a section at the end for general comments. And
25 so if there is anything that any of you think are

1 important that staff has failed to bring up, then that
2 would be the time that we would like you to come up and
3 talk to us about that.

4 So that's the agenda that you have, there are
5 some hard copies out in front for you to follow our day-
6 to-day. This is just a quick look at the things that are
7 coming up on the calendar. We have today and tomorrow
8 for the 45-day language hearings. We'll release 15-day
9 language on April 11th. We're scheduling an ACM Workshop
10 to discuss the performance compliance approach to the
11 Standards on May 3rd, and then we have on our calendar an
12 adoption hearing for these Standards on May 9th.

13 So we're going to jump right into it. The first
14 section we're going to cover is the Mandatory
15 Requirements for Space Conditioning Equipment, Section
16 110.2, and some of the updates for the equipment
17 efficiency, basically we updated this section to match
18 the ASHRAE 90.1 Standards, and also the non-AHRI Standard
19 Water Cooled Chilling Equipment Efficiency Requirements
20 have been updated to match ASHRAE 90.1. And there is
21 heat rejecting equipment, we added closed cooling tower
22 efficiency requirements in Table 110.2(G).

23 We have a new section in this Mandatory
24 Requirements chapter on Evaporative or Open Cooling
25 Towers, this is the measure where we're saving water,

1 this update in the Nonresidential Standards, significant
2 water savings from the installation of controls that
3 maximize the cycles of concentration for cooling towers.
4 And then a requirement that you document the maximum
5 cycles of concentration for the specific cooling tower
6 that is getting installed using a Commission provided
7 calculator. And requirements for flow meters, overflow
8 alarms, and efficient drift eliminators.

9 On to Section 120.1, Requirements for
10 Ventilation. Under this section of Operation and Control
11 Requirements for the Minimum Quantities of Outdoor Air,
12 we've added Occupant Sensor Ventilation Control Devices
13 as a type of control suitable for a Demand Control
14 Ventilation. So the new requirements for the
15 functionality and installation of these Occupant Sensor
16 Ventilation Control Devices have been added. We
17 specified where the Occupancy Sensors will be required.
18 Basically what we're doing is we're taking advantage of
19 the fact that these Occupant Sensors are going to be
20 installed for lighting control, and so they're very cost-
21 effective to add the functionality to also control
22 ventilation during unoccupied periods for these spaces.
23 So this is the only occupancy-based ventilation control
24 requirement that will be in the Standards for HVAC
25 systems without economizers. This means that, for

1 smaller HVAC systems that don't have an economizer
2 requirement, but still serve high density spaces such as
3 classrooms or conference rooms, that these spaces that
4 are often during the day completely unoccupied can now
5 reduce ventilation rates.

6 And the other reason that we're able to do this
7 as far as the indoor air quality is because we require a
8 daily pre-occupancy purge; this is really a good
9 mechanism to really get good clean fresh air into the
10 building every morning, and this actually allows us to
11 reduce ventilation rates during unoccupied periods
12 without having a detrimental effect to the indoor air
13 quality.

14 What we'll be adding for 15-day language through
15 discussions with our consultants and stakeholders is that
16 we're actually going to require a fan cycle control
17 sequence to make sure that, even though we're shutting
18 off the fan completely during unoccupied periods, that if
19 the space continues to be unoccupied throughout the day,
20 but it does get some average ventilation rate over the
21 course of that unoccupied period, to maintain an average
22 rate that is equivalent to our lowest rate in our
23 standards. So that's the intent of that proposed change.

24 For the Design and Control Requirements for
25 Quantities of Outdoor Air, we have requirements for VAV

1 Systems to install dynamic controls that maintain outside
2 airflow rates within 10 percent of our requirements. And
3 for constant volume systems that have measured outside
4 airflow rates, that measurement needs to be within 10
5 percent of these requirements.

6 For Section 120.2, Required Controls for Space
7 Conditioning Systems, under the section for Shutoff and
8 Reset Controls for Space Conditioning Systems, we've
9 added requirements to set up and set back the temperature
10 set points by two degrees and use these occupancy sensors
11 I was speaking about to control the ventilation rate for
12 unoccupied classroom, conference rooms, and multi-purpose
13 rooms.

14 Under the section for Economizer Fault Detection
15 and Diagnostics, we've added that all economizers for
16 Air-Cooled Unitary Direct Expansion Units greater than
17 equal to 4.5 tons are required to have fault detection
18 and diagnostic systems, and we've specified the
19 requirements for this fault detection and diagnostic
20 capability in Nonresidential Appendix 9.

21 Section 120.3, Requirements for Pipe Insulation,
22 we've updated the insulation levels in Table 120.3 to
23 match ASHRAE 90.1.

24 For Section 120.5, Required Nonresidential
25 Mechanical System Acceptance, we've relaxed the

1 requirement for Acceptance Testing if Economizers are
2 factory installed. So the only time you need to do an
3 Acceptance Test for an Economizer now is if it's a field
4 installation. We've added new Acceptance Tests for
5 Supply Temperature Reset and Condenser Water Reset
6 Controls. And we've added a requirement that, if you use
7 an Energy Management Control System to function as a
8 thermostat, that that control system must functionally
9 meet the thermostat requirements in Section 110.

10 120.6, Mandatory Requirements for Covered
11 Processes, so the only covered process we had in this
12 section, in the current Standards, is refrigerated
13 warehouses; we've modified the requirements for
14 refrigerated warehouses, we've added definitions for
15 freezers and coolers, which are the more robust
16 definitions and work better with the industry
17 stakeholders than the frozen storage and cooled storage
18 definitions we have in the current standards.

19 We've clarified which sections apply based on
20 size and type of refrigeration system configurations, and
21 also which requirements apply to newly constructed vs.
22 altered refrigerated warehouses. We've revised the space
23 and surface installation requirements for the warehouse
24 building and clarified the requirements for variable
25 speed fan-powered evaporators. We've increased the scope

1 of design temperature requirements for fan-powered
2 condensers to include water-cooled condensers, and we've
3 added condensing temperature reset controls.

4 We've also added efficiency requirements for fan-
5 powered condensers, we've clarified the requirements for
6 variable speed screw compressors. Screw compressors must
7 now vary compressor volume and response to pressure. We
8 have freezer and cooler infiltration barrier
9 requirements, and we have added Acceptance Tests for
10 Electric Resistance Under-Slab Heating Systems,
11 Evaporator Fan Motor Controls, Condensers, and Variable
12 Speed Compressors, and they're located in Nonresidential
13 Appendix 7.10.

14 The rest of this Section 120.6 is new for the
15 2013 Update. It includes our Standards as they apply to
16 New Covered Processes, the first one of these is
17 Commercial Refrigeration. This applies to Retail Food
18 Stores greater or equal to 8,000 square feet of
19 conditioned floor area. We have requirements for
20 Variable Speed Condenser Fans, Condensing Temperature
21 Reset Controls, Minimum Condensing Temperature Set
22 Points, Efficiency Requirements for Fan-Powered
23 Condensers, Compressor Suction Temperature Reset
24 Controls, Liquid Sub Cooling Requirements for Low
25 Temperature Parallel Compressor Systems, Display Case

1 Lighting Occupancy or Time Switch Controls, and HVAC
2 systems must recover a portion of available heat from the
3 refrigeration system without a significant increase in
4 the greenhouse gas emitting refrigerants in the system.

5 Moving on to the next Covered Process for
6 Enclosed Parking Garages, basically we're adding
7 requirements to modify the ventilation exhaust rate of
8 garages with design exhaust rates greater or equal to
9 10,000 CFM, cubic feet per minute. So these garages must
10 now automatically detect contaminant levels, reduce fan
11 airflow 50 percent or less, which maintenance of
12 acceptable contaminant levels. Fan motor demand during
13 this reduction period must be less than or equal to 30
14 percent of the design fan power, at 50 percent of the
15 airflow. The Carbon Monoxide concentration must be kept
16 at less than 25 ppm at all times, ventilation rate of .15
17 CFM per square feet, and for all scheduled occupation.
18 So basically the garage, even if it's not being occupied,
19 if it's scheduled to be occupied, must meet this minimum
20 ventilation rate. The specifications for the Carbon
21 Monoxide Sensor Count and Location, Calibration and
22 Monitoring have all been added. And the Ventilation
23 System Acceptance Testing has been added in the
24 Nonresidential Appendix.

25 The next Covered Process is Process Boilers.

1 This applies to boilers greater or equal to 2.5 million
2 Btus per hour; they must have a combustion air positive
3 shutoff. The combustion air fan motors that are greater
4 than 10 horsepower shall be variable speed, or have the
5 motor demand limit control such that the motor demand is
6 less than or equal to 30 percent of the power at 50
7 percent of the airflow.

8 Boilers that are greater or equal to five million
9 Btus per hour must maintain excess oxygen by no more than
10 five percent by volume, and boilers greater than 10
11 million Btus per hour must maintain excess oxygen at less
12 than three percent by volume.

13 Finally, the last Covered Process for the 2013
14 Update is Compressed Air Systems. This applies to
15 Compressed Air Systems greater or equal to 25 horsepower.
16 There are requirements for the Trim Compressor and
17 Primary Storage required. A Compressed Air System
18 Controller must be installed and the Compressed Air
19 System must be functionally tested with our Acceptance
20 Tests in the Nonresidential Appendix.

21 MR. SHIRAKH: So this next section is the
22 Mandatory Insulation Requirements for Nonresidential
23 Buildings. Under the current Standards and the previous
24 cycles of Standards, we've never had these requirements
25 for Nonresidential Buildings, there was no mandatory

1 requirements for insulation. We're changing that this
2 time around for several reasons. You know, we feel
3 building envelope efficiency is basically the first line
4 of defense, is the most efficient way to move towards
5 Zero Net Energy, especially if you're considering
6 tradeoffs against renewables, or even mechanical
7 equipment; it's good to have some minimum insulation
8 requirements.

9 This will not impact the Standards design budget,
10 it just basically puts some limits on how much you can
11 tradeoff against insulation. So these requirements in
12 120.7 are for new construction, we have similar
13 requirements in 140 -- I'm sorry -- yes, 140.1, which is
14 Alterations to New Buildings with some modification,
15 they're roughly the same, but we're only presenting here
16 for the new construction.

17 So for roof insulation, the requirements depends
18 on, for metal buildings, the weighted average U-Factor
19 must be equal or less than 0.098; for wood frame weighted
20 average, U-Factor must be equal or less than 0.075.

21 Wall insulation, again, the requirement varies
22 based on type of construction. For metal buildings, the
23 U-Factor weighted average must be equal or less than
24 0.113. Metal frame weighted average U-Factor must be
25 equal or less than 0.098.

1 For Mass Walls, light mass walls, U-Factor less
2 than 0.44; for heavy mass, it would be less than 0.69.

3 Wood Frame weighted average U-Factor must be less
4 than or equal to 0.110.

5 Floor insulation, again, it varies depending on
6 the construction. Raised mass factor must be -- that are
7 greater than three inches of light weight concrete over a
8 metal deck, the weighted average U-Factor must be 0.69 or
9 less. Other floors, the weighted average U-Factor of the
10 assembly must be equal or less than .071.

11 MS. BROOK: Okay, the next section is 120.8,
12 Building Commissioning. This is a new section for the
13 2013 Standards Update. For those of you who don't know,
14 Building Commissioning is actually a requirement for all
15 buildings in the State of California. It's been in Part
16 11 of the Building Code, that's the Green Building
17 Standards. And so what we've done this time is we've
18 basically copied the Building Commissioning text from the
19 Part 11 and moved it into Part 6. So by and large, the
20 most systems that get commissioned in commercial
21 buildings are energy-related, and so our stakeholders
22 actually encouraged us to have all energy requirements in
23 one section of the Building Code, and so we're relocating
24 the Building Commissioning text from Part 11 to Part 6
25 with this update. And we'll be talking to the Building

1 Standards Commission about how they want to encourage
2 commissioning of non-energy-related systems in Part 11,
3 going forward.

4 So we took the existing text, we removed
5 redundant requirements, and we added design review
6 requirements. So the summary of the Commission
7 requirements in Part 6, it includes an owner or owner
8 representatives project requirement, so that it must be
9 documented. The basis of design must be documented. And
10 then what we're inserting new is a design phase design
11 review, which I'll talk about next. We have
12 Commissioning measures that need to be shown in the
13 construction documents, there must be a commissioning
14 plan produced. There must be functional performance
15 testing, which we do pretty -- we do a substantive job of
16 that with our non-residential acceptance tests. There's
17 a requirement for documentation and training of the
18 energy systems and a commissioning report.

19 Design Phase Design Review is basically, you
20 know, recommended as an improvement to the Code-related
21 Commissioning process because it basically makes a better
22 communication happen between the contractor and the
23 building owner. So what we've included here is Design
24 Review requirements and they vary by building size and
25 system complexity, so it's pretty simple for small

1 buildings to do their own design review check-off, and
2 for larger more complex buildings that actually requires
3 a third-party design reviewer be part of their design
4 team. In the schematic design phase, there's a
5 requirement for a kick-off meeting with the owner, the
6 design team, and design reviewer, and a completed design
7 review checklist. At the construction design phase, they
8 have to complete the design review compliance form that
9 lists items that need to be checked, and they have to
10 confirm that they have been checked. So they're pretty
11 simple requirements, but we think really make the
12 commissioning process more comprehensive and really get
13 people to think about it earlier in the design process.
14 And we do have examples of the design review checklist on
15 our 2013 Standards website.

16 So the last of the 120 sections is Mandatory
17 Requirements for Commercial Boilers, and the last time we
18 talked about this, this was included in the same section
19 as process boilers, and our stakeholders told us that
20 that was confusing because it was actually existing
21 within a covered processes section of our standard, and
22 so we've pulled it out here to make it clear that for
23 commercial boilers there are also some mandatory
24 requirements.

25 So very similar to process boilers, for

1 commercial boilers greater or equal to 2.5 Btus per hour,
2 they must have a combustion air console shut off. The
3 combustion air fan motors that are greater than or equal
4 to 10 horsepower must be variable speed, or have motor
5 demand limit controls such that the motor demand at less
6 than 30 percent of design power is accomplished at 50
7 percent of the airflow. Boilers that are greater or
8 equal to 5 million Btus per hour must maintain excess
9 oxygen less than or equal to five percent by volume. And
10 the exception to this is that, if you have a boiler with
11 greater or equal to 85 percent thermal efficiency, you
12 don't have to meet the excess oxygen by volume
13 requirement.

14 So that's a stopping spot in our presentation
15 that we would welcome anybody in the room to come up to
16 the podium to ask questions or provide comment on those
17 sections of the standard you just heard about, and we can
18 also take comments online.

19 MR. SHIRAKH: Mike, you're on.

20 MR. GABEL: Thank you. Mike Gabel, Gabel
21 Associates. On Mandatory Measures 120.7, I'm just
22 reiterating briefly one comment I made to you in writing
23 on metal frame walls; the concern is that, for high-rise
24 buildings, the incremental costs of adding continuous
25 rigid insulation is very high, and I would still

1 encourage staff to take a look at that. In the studies
2 we did for the cost-effectiveness studies of Reach Codes
3 in 16 climate zones, something like \$6.00 to \$8.00 a
4 square foot incremental cost because the fire safety
5 rules in that whole assembly cause a great increased
6 expense. So, whether you want to look at that again for
7 2015 language, I don't know. But --

8 MR. SHIRAKH: Actually, it may be the case that
9 we changed the 45-day language, but the slide didn't
10 change. I think we may have actually incorporated your
11 comment.

12 MR. GABEL: Okay, because I --

13 MR. SHIRAKH: But I'll check.

14 MR. GABEL: Okay, because I would encourage you
15 to go back to the retrofit -- you have mandatory measures
16 now for alterations only. For that one assembly, I would
17 consider that --

18 MR. SHIRAKH: Yeah, I think we've actually
19 captured your comment. I'll check and look into it.
20 Thanks.

21 MS. BROOK: Do we have any other comments in the
22 room? Do we have any comments online?

23 MR. YASNY: Yeah, there is.

24 MR. ROY: Can everyone hear me?

25 MR. YASNY: Yes.

1 MR. ROY: Okay, I have a couple of comments with
2 respect --

3 MS. BROOK: Excuse me, sir. Could you just
4 introduce yourself for us, please?

5 MR. ROY: Yes, Martha, sorry about that. My name
6 is Aniruddh Roy. I represent the Air-Conditioning,
7 Heating, and Refrigeration Institute (AHRI).

8 MS. BROOK: Great, thank you.

9 MR. ROY: Sure. My comments are with respect to
10 the tables, you know, 110.2(A), 110.2(D), and 112(E) for
11 Package Terminal Air-Conditioners and Heat Pumps, the
12 first one being the unitary air-conditioners and
13 condensing units, one is I think the size categories that
14 are mentioned in the table, there are some greater than
15 and equal to signs that are missing. You have greater
16 than 65,000 Btus per hour, but for the 90.1 ranges, it
17 should be greater than or equal to. So I think there are
18 some inconsistencies with those tables.

19 MS. BROOK: Okay.

20 MR. ROY: Also, for air-conditioners, water-
21 cooled and air-conditioners evaporative cooled, I think
22 you're missing the range, 65 to less than 165. So I
23 would encourage CEC to look into those ranges.

24 MS. BROOK: Okay.

25 MR. ROY: And also, for the water cooling

1 packages, in the first row for air-cooled with condenser,
2 you have under Path B efficiency NA with a superscript d.
3 That superscript d is not consistent throughout the
4 table. There are some NAs that are missing, that
5 superscript, whereas, in the 90.1, those superscripts are
6 present.

7 MS. BROOK: Okay.

8 MR. ROY: And also, you know, the footnotes of
9 the table where it says less than 36 Fahrenheit --

10 MS. BROOK: Uh huh.

11 MR. ROY: -- design chilled water supply
12 temperature, I think there is a little bit of variance
13 from what is there in the 90.1 table. Also the 32
14 Fahrenheit is actually less than, equal to 32 Fahrenheit
15 instead of the less than that has been testified in the
16 CEC document, so again, just some inconsistencies. Also,
17 with respect to the package terminals, the reference to
18 the standard could be HRI vs. ARI.

19 MS. BROOK: Okay.

20 MR. ROY: So these are just some general comments
21 regarding the tables. And another comment I have is with
22 respect to commercial refrigeration in 120.6.

23 MS. BROOK: Uh huh.

24 MR. ROY: There is a statement which says
25 "upright low temperature refrigerated display cases that

1 are designed for a supply air temperature of five degree
2 Fahrenheit or lower shall utilize reach-in glass doors,"
3 and again, I understand where the CEC is coming from, but
4 one concern of ours is that, with respect to this
5 mandatory requirement, it's varying from what the Federal
6 Regulation allows manufacturers to do because, right now
7 under the Federal Regulations, manufacturers are allowed
8 to produce low upright temperature display cases that are
9 open, and essentially this requirement in Title 24 would
10 ban the use of such an equipment class for those
11 manufacturers.

12 MS. BROOK: Uh huh. Okay -- is that the only
13 thing you have on commercial refrigeration?

14 MR. ROY: Yes, yes, Martha.

15 MS. BROOK: Okay, so thank you very much for
16 pointing out those inconsistencies in the equipment
17 tables, we'll definitely fix that because our intent is
18 to basically replicate ASHRAE 90.1, so any mistakes that
19 are just mistakes and not intended, so we'll fix that.
20 In regards to the commercial refrigeration display case
21 stores, we actually took your comment that you provided
22 to us earlier and responded to it by removing that
23 requirement. We agree with you that it's basically a
24 Federal preemption issue, and it's probably not a huge
25 deal for California because, based on our industry

1 exports, they tell us that everybody is already using
2 doors on these display cases, but we have removed that
3 requirement. So please take a look at our 45-day
4 language and, if you still see it there, then I would be
5 surprised, but it's not intended to be there.

6 MR. ROY: Yeah, again, the 45-day language which
7 is on the website, it's on page 128, I still see that
8 language in there, so that's why --

9 MS. BROOK: Okay, good, I'm glad you did because
10 I thought we had taken care of that. So thank you very
11 much for your comment. Anything else?

12 MR. YASNY: Frank. Is Frank Morrison online?

13 MR. MORRISON: Yes. My name is Frank Morrison
14 and I'm with Baltimore Aircoil Company. I'm here
15 speaking for TC8.6, the ASHRAE Technical Committee on
16 Cooling Towers and Evaporative Condensers.

17 MS. BROOK: Uh huh.

18 MR. MORRISON: And we have some comments
19 regarding some of the definitions and things, which we
20 can send to you.

21 MS. BROOK: Okay.

22 MR. MORRISON: I don't think we should take time
23 right now to go over those, they just basically clarify
24 open and closed circuit cooling towers. But the two
25 substantive changes, one is on the minimum efficiency for

1 cooling towers --

2 MS. BROOK: Uh huh.

3 MR. MORRISON: We had been working with the CEC
4 on that and I know you had some high numbers that you
5 would have liked to have seen, but we voted on an
6 increase on open-circuit axial fan cooling towers to 42.1
7 Cpm per horsepower. And based on your limitation for
8 air-cooled chillers, we feel that's a reasonable number
9 to increase that to.

10 MS. BROOK: Okay.

11 MR. MORRISON: And we can send you a sheet on
12 that to document that.

13 MS. BROOK: That would be great.

14 MR. MORRISON: Okay. And the second one has to
15 do with the water control for blow down.

16 MS. BROOK: Uh huh.

17 MR. MORRISON: I believe that's on page 74 and
18 75. There are some clarifying wording we'd like to see,
19 but the two substantive changes there is we'd like to see
20 the LSI increased from 2.5 to 2.8 as the upper limit.

21 MS. BROOK: Uh huh.

22 MR. MORRISON: And the second one is the
23 exception would be for towers -- currently, it says less
24 than 150 tons. Because of the limitation on air-cooled
25 chillers is 300 tons, we'd like to see that at 300 tons;

1 that way, the market under 300 tons is on a level playing
2 field.

3 MS. BROOK: Okay, it would be very helpful to get
4 your written comments so that we can understand them in
5 greater detail and converse with you about that in the
6 next few days.

7 MR. MORRISON: Okay.

8 MS. BROOK: Okay.

9 MR. MORRISON: We can send those in. I know -- I
10 see Gary Klein is on the line, he may also want to add
11 some comments on the LSI issues.

12 MS. BROOK: Okay, thank you.

13 MR. MORRISON: Thank you. Oh, should we send
14 that to you, Martha?

15 MS. BROOK: That would be best, yeah. Uh huh.

16 MR. SHIRAKH: And to myself.

17 MS. BROOK: Yeah, cc Mazi Shirakh. That would be
18 great.

19 MR. MORRISON: Okay, will do. Thank you.

20 MS. BROOK: Do we have any other comments, Ron?

21 MR. SHIRAKH: It would also be helpful, you know,
22 if you want your comments to be entered into the official
23 record, to send it to our docket so it becomes a part of
24 the record for the rulemaking.

25 MR. YASNY: If they send it to dockets and cc

1 Martha and Mazi, that would work out great.

2 MR. SHIRAKH: Yeah, generally if you send your
3 comments directly to the docket, they will docket it and
4 then will notify the staff and we all get a copy of it
5 and it's docketed.

6 MR. STENANECK: Martha?

7 MS. BROOK: Yeah, this is Martha.

8 MR. STANONIK: I had my hand raised, but I'm not
9 sure I'm connected. This is Frank Stanonik with HRI
10 also.

11 MS. BROOK: Yeah, hi Frank. Go ahead.

12 MR. STANONIK: Hi. I just wanted to make a quick
13 comment. Obviously there's a short period between when
14 the language came out and this hearing, and I just wanted
15 to let you know that, you know, we're still reviewing the
16 commercial boiler requirements with our members, so just
17 because we don't have any comments at the moment, I just
18 want to alert you there still may be some written
19 comments to follow. I'm not sure that we're totally in
20 accord with where this ended up.

21 MS. BROOK: Okay, so I guess I would just
22 encourage you to send those in as quickly as possible.
23 Obviously, the 45-day comment period is still open, but
24 the sooner that you get them to us, the more time we have
25 to work with you on it.

1 MR. STANONIK: And there is one thing I wanted to
2 mention because I did -- I did look at the comments you
3 had sent back to us and I think perhaps on this issue
4 about parallel positioning controls, which would apply to
5 boilers over five million, I think maybe I'm a little
6 concerned we actually may have been talking on two
7 different -- information from, let's say, two different
8 perspectives. And what I'm talking about is our comments
9 were related to new boilers which we believe really don't
10 come with this equipment, and I think some of the
11 information you may have seen in the studies was really
12 looking at what people were doing to boilers that existed
13 in the field to comply with NO_x Regulations. And so I'm
14 going to research that a little bit and hopefully clarify
15 that because I think it does make a difference,
16 obviously, in Title 24 when we're talking about new
17 boiler installations.

18 MS. BROOK: Okay, great. Yeah, so I'm not
19 surprised, this is technical stuff and it's going to take
20 a few iterations for us to work with you on it, so just
21 again, as soon as possible, that would allow us to
22 continue talking about it.

23 MR. STANONIK: We'll work as quickly as we can.

24 MS. BROOK: Okay, thank you.

25 MR. STANONIK: Thank you.

1 MR. YASNY: Ira Richter.

2 MR. RICHTER: Yeah, this is Ira Richter from
3 Heatcraft on the refrigerated heat recovery section
4 120.6. The way it's written, it seems like it's limited
5 to space heating. Would you consider expanding that to
6 other heat reclaim applications such as automobile water
7 heating?

8 MS. BROOK: That's an interesting point. Yeah,
9 so that's a good suggestion. We can talk about it with
10 the other industry stakeholders and see -- basically,
11 we're just saying that you should reclaim heat and the
12 most obvious place to do that is space heat, but I can't
13 think off the top of my head why we wouldn't also
14 consider water heating applicable.

15 MR. RICHTER: Yeah, I'd just like to say that hot
16 water heating is probably the most common application at
17 this point in time.

18 MS. BROOK: All right, well, let me talk to our
19 consultants who guided us through the complex world of
20 commercial refrigeration and, if you could send me a
21 note, I would make sure that I could get back to you on
22 that?

23 MR. RICHTER: All right. Thank you very much.

24 MS. BROOK: Thanks. All right, now we're ready
25 for lighting, I think.

1 MR. FLAMM: Okay, the next series of slides are
2 going to be on lighting controls. We're going to talk
3 about Section 110.9 has been edited for clarity. Self-
4 contained lighting controlled devices have been moved
5 from Title 24 and have recently been adopted into Title
6 20, so that it is official now, they are officially
7 adopted into Title 20 already. Lighting control systems
8 are going to remain regulated by Title 24 and lighting
9 control systems are no longer going to require to be
10 certified to the Energy Commission, but they will be
11 required to have an installation certificate.

12 Information about track lighting integral current
13 limiter, some of the elements that were in Section 130
14 have been moved to Section 110.9 for clarity. The same
15 for Supplementary Overcurrent Protection Panels and
16 Residential High Efficacy LED Luminaires, Light Engines,
17 need to be certified according to our reference Joint
18 Appendix JA8.

19 Relative System Efficiency requirements that we
20 had for earning a power adjustment factor, this was not a
21 requirement, this was only for earning a PAF. Those have
22 been removed to not conflict with pending Federal ballast
23 luminous efficacy requirements that are expected to be
24 adopted federally soon. And because we're basically
25 requiring more -- increased dimming of linear fluorescent

1 T5/T8 systems, not dimming but controls, that Power
2 Adjustment Factor has gone away.

3 Section 130.0, Luminaire classification and power
4 has been edited for clarity. The different types of
5 systems are incandescent systems with ballasts, low
6 voltage lighting, track lighting, LED and miscellaneous.
7 There were a number of requirements for recessed
8 luminaires, basically a floor below which they cannot be
9 labeled. All of that table has been simplified to say
10 that it cannot be less than, it has to be greater than or
11 equal to 50 watts per socket. Because of some
12 misinformation, the standards never have recognized
13 permanent adaptors, but we're seeing it in the language
14 just for clarification. And another clarification
15 statement is that lamps do not change the classification
16 of a luminaire. And there is a global statement that
17 says lighting control must comply with Section 110.9.
18 That statement existed in the current standards in a
19 dozen places, so rather than keep stating it over and
20 over, we just put it into one place here.

21 The NA-8 default luminaire power options, this is
22 a voluntary table. If somebody doesn't want to follow
23 the Section 130 requirements for determining luminaire
24 power, they can use these default tables. We've gotten
25 rid of most of it. The only things that are remaining

1 are more current technologies, efficiency technologies,
2 and the thought was that, if you're using an old
3 technology, then you need to provide documentation of
4 what that exists. We did get comments from Mike Gabel in
5 the workshop that maybe we should replace some of that
6 and I've wrestled with that and you kind of have to guess
7 or leave it all there, or just go the direction we're
8 going and have only efficient technologies. So when we
9 get to that point, Mike, if you want to comment more
10 about that.

11 Section 130.1, or the Application of Lighting
12 Controls, the area controls -- the basically manual on
13 and off controls -- have been edited for clarity and to
14 clarify that it could be a dimmer. There's a requirement
15 that separately controlled lighting systems, that general
16 lighting has to be separately controlled from other
17 lighting systems, floor display, wall display, windows
18 display, case display, ornamental, basically everything
19 needs to be on its own control. And then, if you're
20 using track lighting for multiple purposes, then the
21 general display, ornamental, special effects lighting,
22 shall each be separately controlled.

23 Multi-level lighting controls, this is for rooms
24 where the room is greater than 100-square-feet and the
25 installed lighting power is greater than a half a watt a

1 square foot, you have to meet the multi-level
2 requirements in Table 130.1(A) and 130.1(A) basically has
3 different levels of lighting control, depending on the
4 type of technology that's installed. In addition to
5 that, each luminaire has to be controlled with a manual
6 dimmer, lumina maintenance, tuning, automatic
7 daylighting, or demand responsive, so it's one of the
8 following.

9 Section 130.1(C), which used to be (D) and it was
10 moved for clarity to (C), basically a requirement for
11 automatic shutoff controls. There are requirements for
12 occupant sensing devices, automatic time controls, a
13 signal from another building system, or other device that
14 automatically shuts off the lighting when the space is
15 typically unoccupied, that's basically just clarification
16 language, clarify that no countdown timer switches shall
17 be used. Now, the Standards have never recognized
18 countdown timer switches as an automatic time switch and,
19 again, because of misinformation, this has been
20 specifically added to the standards. However, in doing
21 so, there was some discussions with stakeholders where we
22 now actually allow these countdown timers in smaller
23 bathrooms and closets that are less than 40-square-feet
24 if the countdown timer is less than or equal to five
25 minutes in duration.

1 The requirements for Partial On Occupant Sensors
2 to be added in addition to shutoff, so this is to shut
3 off the lighting partially in aisle ways and open areas
4 and warehouses, in library book stacks and corridors and
5 stairwells. And there are requirements for partial
6 occupant sensors in some spaces instead of shutoff, so in
7 stairways and common areas, basically in high-rise
8 residential and dwelling units, hotel/motels, and partial
9 off occupant sensors in parking garage parking areas and
10 unloading areas.

11 Section 130.1(D), which used to be (C) again,
12 that was rearranged for clarity, clarification
13 definitions on what are daylight zones. There are
14 mandatory daylight controls that no longer have the off
15 ramps that we used to have. All skylit daylit zones and
16 primary sidelit daylit zones shall be shown on the
17 building plans. Luminaires that are in skylit daylit
18 zones shall be separately controlled from primary sidelit
19 daylit zones, there are requirements for the daylighting
20 control device installation and operation, and there are
21 requirements -- new requirements for parking garage
22 daylighting controls.

23 Demand Responsive Controls -- staff is
24 considering changing this language from 45 to 15-day
25 language. Basically, what the language says is, if you

1 have a building greater than 10,000-square-feet, which is
2 being reduced from a current standard of 50,000-square-
3 feet for only retail, but this is all buildings now, and
4 if you have Section 130.1(B), it's required, then you
5 have to basically put in this Demand Responsive Control.
6 So there are some conflicts in that current language in
7 that we are looking at complete buildings and areas
8 together, it's kind of like mixing apples and oranges, so
9 we are looking at proposing different language, similar
10 intent, but different language for 15-day language.

11 Section 130.1, Outdoor Luminaires, simplified to
12 basically say incandescent luminaires that are rated
13 greater than 100 watts shall be controlled by a motion
14 sensor. And the luminaire cut-off requirements have
15 changed from the old IES definition of cut-off to the new
16 IES definition of bug, which is basically backlight-
17 upright glare, and the wattage threshold is being reduced
18 from 175 to 150 watts.

19 Indoor lighting, controls for outdoor lighting --
20 actually the header on this slide is wrong -- photo
21 controls or astronomical time switch controls are
22 required to automatically turn off the lighting during
23 daytime. Outdoor lighting needs to be controlled
24 independent from other electrical loads, basically
25 pedestrian height luminaires, those are mounted greater

1 than or less than 24 feet, need to have a motion sensor
2 to reduce them partially when no one is around, a
3 requirement for part-night device on motion sensors on
4 specific areas, and basically for outdoor sales, building
5 facades, etc., another option for centralized time clock
6 for building facades, ornamental, outdoor lighting.

7 Section 130.3, Signed Lighting Controls, there's
8 no substantive changes; however, it's been edited for
9 clarity. Section 130.4, the Acceptance Requirements, the
10 section has been edited and split into two different
11 subsections. There are acceptance requirements, which
12 site non-residential appendix NA-7, and the acceptance
13 requirements are for automatic daylight controls, shutoff
14 controls, demand responsive controls, and outdoor
15 lighting controls. The other section of 130.4 are
16 installation certificate requirements. These are
17 basically where the Standards are not mandatory, but
18 credit is given, or additional power can be earned, a
19 requirement for an installation certificate to be signed.
20 So that includes lighting control systems, as I said in
21 the earlier, that's Section 110.9, Lighting Control
22 Systems are still regulated by Title 24. And Energy
23 Management Control System has to have the installation
24 certificate, line voltage track lighting, integral
25 current limiters, and supplementary overcurrent

1 protection panels if interlocked lighting systems are
2 being claimed, if somebody is earning Lighting Power
3 Adjustment Factors, and if additional wattage is being
4 claimed for a video conferencing studio, all of those
5 require an installation certificate.

6 The new section is 130.5, Electrical Power
7 Distribution Systems, what is newly required is user
8 accessible metering for buildings in accordance with
9 Table 130.5(A), and a requirement for disaggregation of
10 electrical loads basically on bigger buildings. There
11 are minimum voltage drop, which are identical to ASHRAE
12 90.1. Their requirement for circuit controls for 120-
13 volt receptacles, so basically half of the receptacles in
14 each private office, open office, reception, kitchenette,
15 and copy room, need to be on an automatic control to
16 allow the user to turn off those sockets, those
17 receptacles. There are specifications for what a demand
18 response signal must be and there's a requirement that if
19 you're going to install an energy management control
20 system, that it has to provide all of the applicable
21 functionality that are in the standards. And those are
22 the lighting control requirements. And any comments?

23 MR. SHIRAKH: Anything online?

24 MS. BROOK: I feel like I need to scream "wake
25 up!" I can't believe nobody has comments. They must not

1 be listening. Okay, we're moving on to Section 140.1.
2 This is just a general section of the Standards where we
3 explain the Performance Compliance Approach and the term
4 "Energy Budget," so we clarified the basis of the
5 performance compliance approach in the section, basically
6 got rid of a lot of confusing text, and boiled it down to
7 just a few concise paragraphs, and we also clarified in
8 this section that the compliance software approval
9 process is documented in the Nonresidential ACM Approval
10 Manual, this is also explained in our Administrative
11 section. And over to Mazi.

12 MR. SHIRAKH: So this 140.3 used to be 143, is
13 where we describe the Prescriptive Requirements for
14 Building Envelope, and the most significant change here
15 has to do with nonresidential roofs. There are two
16 kinds, there's steep slope, there's basically no change
17 from 2008. Still, we are asking or requiring a
18 reflectance of .20, which is the existing requirement and
19 the thermal emittance hasn't changed until .75. Related
20 to low slope roofs in all climate zones, the minimum aged
21 solar reflectance is proposed to be raised from the
22 current .55 to .65. And that's the age reflectance. And
23 the thermal emittance remains the same, and then you can
24 also comply using an SRI of .78. What we are proposing
25 to do in the 15-day language is provide a prescriptive

1 alternative where you can trade-off insulation for
2 reflectance, which is reflected in this table here, you
3 can go all the way down to .50, you know, if you provide
4 an additional R-12 on the roof. So this is meant to
5 basically provide more flexibility for the roofing
6 industry and if they have existing products, that doesn't
7 quite mean the .65, that wouldn't shot them out of the
8 market, you know, they can put a little bit additional
9 insulation and still install their products. In addition
10 to this, they can also use the compliance offer trade-off
11 approach. We're hoping to have a version of this
12 software which will allow relatively simply tradeoff.
13 You know, we used to have an overall envelope equation
14 which was kind of unruly, we could never tame it, and
15 we've decided to abandon that and instead come up with a
16 simplified compliance software approach, which hopefully
17 will make it easy, and the idea of this software is that
18 you don't have to do a full-blown simulation, the
19 software will neutralize many of the non-relevant fields.
20 So you can only do the tradeoffs for the fields that you
21 want. So that is the changes related to roofs.

22 We also have several proposed changes for side
23 fenestration windows and there's a four bullets here,
24 there's a lot of changes, we haven't captured any of
25 them, just not room here, we have basically

1 representative numbers; you know, to see the full
2 changes, you need to go to the 45-day language or the
3 NOPA. And the first bullet for non-residential
4 buildings, these are all weighted average U-Factors. For
5 fixed windows here, we've proposed to be no greater than
6 .36; again, this is a partial listing. These U-Factors
7 will change whether it's operable window or fixed window,
8 in blocked glass, so we've only presented the typical --
9 for one of the examples here. The second bullet for
10 nonresidential buildings, area weighted performance
11 rating, relative solar heat gain, and a coefficient again
12 for fixed windows will be no greater than .25. The third
13 bullet for nonresidential buildings, Area Weighted
14 Performance, the VT transmittance, again, just for fixed
15 glass is proposed to be no greater than .42. And for
16 dynamic glazing, these are the electrochromatic windows
17 that kind of change with any amount of daylight and these
18 are very cool products, but still rather expensive. The
19 U-Factor SHGC and VT will be listed. They can use the
20 listing on NFRC label and it's going to be the lowest of
21 those values; basically, we're giving them the highest
22 possible credit for these products.

23 For skylights, same as before, you know, the
24 numbers here are only for one product out of many
25 possible, so you need to go to the language. For

1 nonresidential buildings, again, area weighted
2 performance, the U-Factors for glass curb mounted
3 skylights no greater than .58; for non-residential
4 buildings, area-weighted performance rating for solar
5 heat gain for the same product is .25, no greater than
6 .25. And the third bullet is for non-residential
7 buildings, area weighted visual transmittance for curb
8 glass mounted skylights, no greater than .49.

9 There are new requirements for air barriers in
10 Section 140.3(A)(9), this is a continuous air barrier to
11 control air leakage into the conditioned space, shall be
12 installed to building envelope in Climate Zones 10
13 through 16, and then there are some exceptions. And they
14 can be met by testing of the material assemblies or the
15 entire buildings, so there are two ways to comply, you
16 can test a building and if it passes the test, then
17 you're in compliance. Section 140.3(B), this was the old
18 overall envelope measure, which I just mentioned, and
19 we've been having problems with these equations, we
20 couldn't tame it; in 2008, we tried to go to an Excel-
21 based spreadsheet, which we ended up with about 900
22 coefficients, and so forth. So we basically tried to
23 abandon it and go to the performance software. There is
24 also a possibility that, through the Compliance Manual,
25 we can come up with another alternative, you know, when

1 we have more time to go back and revisit this.

2 Some changes and new requirements for minimum
3 daylighting requirements in large spaces, the current
4 threshold is 8,000-square-foot under the roof; we're
5 dropping that down to 5,000, so more buildings will have
6 to comply.

7 Greater than 50 percent of the floor area in the
8 skylit daylight zone, it changed to 75 percent. Now, it
9 used to be that 50 percent of your floor area had to be
10 within the skylit daylight zone, whether it was top
11 skylight or side lighting. Basically, the requirement is
12 that this changed to 75, so more of your floor area now
13 has to be within the skylit zone.

14 And there is no longer a minimum skylight area or
15 effective aperture requirement, you know, we basically
16 abandoned the effective aperture. We have provided a
17 version of the effective aperture as an alternative to
18 the Prescriptive Requirements, but that is just an
19 option. People can use or not. It's not a requirement.
20 Comments?

21 MR. CALLAHAN: Hi, my name is Bill Callahan, I'm
22 Executive Director of Associated Roofing Contractors of
23 the Bay Area. I'm representing my association today, as
24 well as the Union Roofing Contractors Association, which
25 is a counterpart organization in Southern California.

1 Between us, we represent about 100 Union Roofing
2 Contractors in the State, we employed about 3,000 Union
3 Workers in the last year, and we performed over four
4 million hours of work in roofing, primarily in commercial
5 and industrial. We need -- what we are large companies
6 that deal with difficult work. We very very rarely ever
7 see a flat roof with no skylights and no penetrations.
8 We see roofs that are littered with machinery and
9 equipment, HVAC units, photovoltaic panels, difficult for
10 us to do work, but it's the kind of work that requires a
11 very skilled workforce in a capitalized company, and that
12 requires more moxie than your average roofing company
13 needs. And from a regulatory point of view, what we need
14 is flexibility, we need to offer our customers, who tend
15 to be pretty demanding, folks like laboratories and
16 refineries and research institutions, University of
17 California, we need to give them compliance options, give
18 them the roof they want at an affordable price and,
19 because our guys tend to be good and employ people like
20 me to explain codes to them, ones that are within the
21 regulations and within the law. And right now, we've got
22 a fair amount of flexibility. We can put on a cool roof,
23 we can put on a non-cool roof, and put above-deck
24 insulation to compensate for it, or we can put on a non-
25 cool roof and go under the roof deck to compensate. And

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1 by eliminating the overall energy TDV approach in
2 140.3(B), you're taking flexibility out of our hands.
3 You're taking something we have now and removing it, and
4 all we've got left is the promise that, at some future
5 point, there may be software that might allow us to do
6 what we're doing now. But it seems to me premature to
7 remove what we have and that we can use successfully, and
8 replace it with a promise that something will be
9 developed in the future. Frankly, the track record of
10 developing compliance software around here is not
11 particularly impressive, honestly.

12 Now, it may be true that trying to apply that
13 approach to an entire building envelope is difficult.
14 There are a lot of components to a building, but we're
15 talking about a roof, you're talking about a handful of
16 equations -- I can do it, and I don't have a doctorate in
17 mathematics, my members can do it, I've explained to them
18 how to do it, I've written a compliance manual, Payam
19 vetted the calculations, we know how to do it, it's not
20 rocket science, and it is useful to us. We'd like to
21 keep it.

22 Now, I want to go to one other section to explain
23 why this whole thing bothers me a little bit, and my
24 members. If you go to proposed exception 1, to Section
25 141.0(B)(1)(b), and that's on page 230 of the 45-day

1 language, that says the overall envelope energy approach
2 to Section 140.3(B) may be used and the standard building
3 shall be based on the higher roof/insulation ceiling
4 insulation value of the following, and it goes on to
5 explain what your options are, what parameters you have
6 to stay in with. Every one of my colleagues who looked
7 at this said, "Oh, this is cool, nothing has changed. We
8 can still do what we've been doing and that's great. We
9 have flexibility." But it's only when somebody like me,
10 who is a little obsessive compulsive, actually traces
11 back the reference to 140.3(B) to find out that it's not,
12 it's not there anymore. That's a problem. My guys
13 thought that they were going to keep what they had, but
14 in fact you're proposing to eliminate it and, again, what
15 we end up with is a promise that there may be something
16 in the future, you know, if the Executive Director
17 approves it, and if it meets certain criteria. But we
18 have no alternative right now, nothing in hand. For the
19 time being, or until such time as somebody comes up with
20 a new formula, a new approach, a new software, and nobody
21 should hold their breath on that one, options are taken
22 off the table. The area below the roof deck is now off
23 limits and we can't deal with that. I see you're
24 disagreeing.

25 MS. BROOK: I do disagree, but go ahead, keep

1 going.

2 MR. CALLAHAN: We don't think you should do it.
3 We think you should keep it, or if you're concerned that
4 the overall approach to an entire building is too
5 complicated, then live in a choose to individual building
6 components, or retain the components that we have, the
7 cool roof multiplier, the couple of tables we need to
8 figure out what do we need to do to substitute insulation
9 for a non-cool roof. Very simple solution, you want to
10 remove it in the future, replace it with something
11 better? Great. But we were told back in October when
12 this was first proposed for removal that you were working
13 on the software; we haven't seen anything since.

14 MS. BROOK: Yeah, so this is Martha, and first
15 off, we gave you right there the tradeoff for insulation,
16 so we've definitely given you the availability to
17 tradeoff insulation --

18 MR. CALLAHAN: The term is continuous insulation
19 that is defined throughout the Energy Code as insulation
20 above the roof deck.

21 MS. BROOK: So we're only --

22 MR. CALLAHAN: And if you look at the values, the
23 difference you go below because the roof rafters, so --

24 MS. BROOK: You need to come to the table. So
25 are we only giving them the tradeoff above the roof deck?

1 MR. BOZORGCHAMI: Currently, yes.

2 MS. BROOK: Okay, so this approach gives you the
3 tradeoff above the roof deck, we have -- we've always
4 had, because we are mandated to have, the performance
5 software that you can tradeoff anything for cool roofs,
6 so you always have that approach, we're not taking
7 anything away from that, but what we are doing is we're
8 taking away an equation that was significantly flawed and
9 we could not defend it, it's not defensible in the way it
10 exists in the current Code, and we did not feel
11 comfortable continuing that into a future Code update.
12 And so, because we didn't have the resources to replace
13 it, we are providing the mechanism of the compliance
14 software, the performance approach, to allow those
15 tradeoffs to happen. And if industry really wants this
16 one envelope-only tradeoff mechanism, they could work
17 with us, we have an open source software collaborative
18 established for the compliance software, they can come
19 into that collaborative and help us get what you want.
20 So we want to work with you, but we can't continue in
21 Code to have a flawed mechanism for tradeoffs. It's just
22 not appropriate.

23 MR. CALLAHAN: Well, from my personal opinion, I
24 don't know that it's flawed, there's nothing in any of
25 the documentation to say it's flawed, it says it's

1 complicated. We did trade business cards in October and
2 I volunteered to help work with you, I haven't heard from
3 anybody in the Energy Commission in five months.

4 MS. BROOK: Right, so --

5 MR. CALLAHAN: Instead of what we had was a
6 reserved section --

7 MS. BROOK: Uh huh.

8 MR. CALLAHAN: -- and a deletion, now we have,
9 well, what appears to all of us to be a promise that
10 we're going to replace it with something in the future if
11 certain conditions are met and, again, we just haven't
12 seen a lot of --

13 MS. BROOK: Right, but you --

14 MR. CALLAHAN: -- production.

15 MS. BROOK: -- but you have to depend on the
16 performance approach for this for now, that is a promise
17 you can count on because it's a mandate, we can't
18 implement the Standards without the performance software.
19 So you always have that approach. And if we have time
20 and resources, working with you hopefully to help on the
21 resources side, we can get a simplified envelope tradeoff
22 approach that works for all your members.

23 MR. CALLAHAN: Well, that's something we'd like
24 to have now and have it before we have to give up what we
25 have. And, again, it's something we use that we all

1 understand, and that I've written a manual about, and
2 it's useful to us. To give it up in exchange for
3 something we can't see -- and we've been down that road
4 before.

5 MS. BROOK: But what you have now is not -- is
6 something that we can't defend as professional staff at
7 the Commission, and proceeding down a Standards update.
8 We don't feel comfortable that that approach is really
9 appropriate the way that it's designed now, it's flawed.

10 MR. CALLAHAN: Well, for each individual envelope
11 component? Or for the entire --

12 MS. BROOK: So the problem is that it's so
13 complex and it has so many different parameters, and we
14 can't trace back to understand how it was developed to be
15 able to defend it, and we really think we need to do that
16 work before we could promote it in the standards.

17 MR. SHIRAKH: Mr. Callahan, maybe another
18 alternative, we have that table in front of you for
19 continuous insulation, there's nothing to prevent us to
20 create another table for other types of insulation. And
21 we can basically add that as a prescriptive alternative.

22 MR. CALLAHAN: That would be nice.

23 MR. SHIRAKH: We can do that with 15-day
24 language.

25 MR. CALLAHAN: Yeah, it would be nice to have

1 before the next Code cycle --

2 MR. SHIRAKH: I'm not talking about before the
3 next Code cycle, I'm telling you in the 15-day language,
4 we can expand, have another table that has the batt
5 insulation --

6 MR. CALLAHAN: The batt insulation, or blown-in,
7 or whatever that we could refer to, that would be great.

8 MR. SHIRAKH: That's what I'm offering.

9 MR. CALLAHAN: That would be terrific and we
10 would not have a problem with that.

11 MR. SHIRAKH: The mic, Payam, don't let him get
12 away with it.

13 MR. CALLAHAN: Okay, thank you.

14 MR. SHIRAKH: Thank you.

15 MR. HITCHCOCK: Good morning. Reed Hitchcock
16 with Asphalt Roofing Manufacturers Association. I have
17 more detailed comments I'm going to share later because
18 they don't make sense now until the afternoon section is
19 over. But I just wanted to indicate support for some of
20 the concerns that Mr. Callahan raises. And we have a
21 fundamental problem with backing proposals, especially
22 we're moving ACMS, we're taking this out, what have you,
23 until all of those things are in hand. Until we can
24 really see what it looks like, it's a very slippery slope
25 to say, "Yeah, we agree," "No, we don't agree." Again, I

1 think there's a lot that still needs to be worked out and
2 it feels like this meeting is very very premature. But
3 again, I'll comment more later, but I did want to support
4 my colleague.

5 MR. SHIRAKH: Okay, thank you.

6 MR. BROOK: So are your members just concerned
7 with below deck insulation?

8 MR. HITCHCOCK: Oh, no, we have concerns across
9 the board.

10 MS. BROOK: No, I mean for this tradeoff
11 approach.

12 MR. HITCHCOCK: No, no, I mean, any type of
13 insulation is a tradeoff, is something that we want to
14 see.

15 MS. BROOK: So would you be satisfied with Mazi's
16 proposal to just have another tradeoff table for below
17 deck insulation?

18 MR. HITCHCOCK: On the issue of insulation,
19 possibly. I'd have to see what the table looks like. I
20 mean, right off the bat, you know, we've said before
21 going down simply to a tradeoff of a .50, we think limits
22 still a lot of products, if you look at the CRC database.
23 But again, that's an argument for --

24 MR. SHIRAKH: I mean, we've picked .50, but if
25 you have to go lower, we can go lower for more

1 insulation, it will be -- you want to consider batt
2 insulation? I mean, there is nothing to prevent --

3 MR. HITCHCOCK: There should be as many
4 alternatives as possible.

5 MS. BROOK: There is, it's called a performance
6 approach.

7 MR. SHIRAKH: There is the performance approach.

8 MR. HITCHCOCK: It doesn't exist yet.

9 MR. SHIRAKH: No, we have a mandate --

10 MR. HITCHCOCK: I understand that, but you don't
11 have a mandate to make it work.

12 MS. BROOK: It never exists at this time in the
13 Standards.

14 MR. SHIRAKH: The Standards cannot become
15 effective if we don't have the software.

16 MR. HITCHCOCK: But until you can see at least to
17 some extent what that looks like, especially, "Oh, you
18 know, the other day when we talked, we took that out of
19 the Code and we put it into the ACM." Well, that's
20 great, now that's one more factor in the Code that we
21 can't see or comment on as part of this cycle. And,
22 again, you have to understand, that's very dangerous for
23 our industry and, you know, my testimony later is on
24 behalf of 16 trade associations that couldn't be here.

25 MS. BROOK: Uh huh.

1 MR. HITCHCOCK: And so, again, I don't want to
2 preempt any of that because there are factors on new
3 construction and reroof in that, but it is concerning.

4 MR. SHIRAKH: Okay, so for now, we'll be happy to
5 work with you to expand these tables so that you will
6 have something in front of you.

7 MR. HITCHCOCK: I think the other important thing
8 there is sort of a common understanding of what working
9 together is because that's been an issue in the past.
10 Thank you.

11 MR. SHIRAKH: Okay.

12 MR. GABEL: Mike Gabel again. Relocatable
13 Classrooms, I think you still have window-to-wall ratio
14 in there. I would strongly recommend taking out window-
15 to-wall ratio and just setting it as the value for 20
16 percent window-to-wall ratio or higher, which is a .26
17 SHGC. I mean, it just seems odd to continue that
18 paradigm and that metric, and I think you're not going to
19 give up anything by doing that.

20 MR. BACCHUS: Jamy Bacchus, Natural Resources
21 Defense Council. I applaud the Committee on what they've
22 been doing at the Commission and I'll point out, in the
23 case reports on the SRI and the roof reflectance that we
24 didn't capture any non-energy benefits like urban heat
25 island effect, so if you start allowing really really

1 dark low Albedo roofs and tradeoff with more insulation,
2 that would be saving the same energy to the customer, but
3 it doesn't have the same societal impact.

4 MR. SHOEMAKER: Metal Building Manufacturers
5 Association. Our concern is with the competition there
6 seems to be now for the roof area. You know, we're
7 increasing the number of skylights to effect daylight and
8 we think that's good, we've seen these studies that show
9 the benefits of that. But in the afternoon session,
10 you're going to be talking about the solar-ready zone of
11 the roof, of 40 percent of the roof, and we're concerned
12 that we are running out of space up there in terms of
13 putting skylights and then now setting aside 40 percent
14 of the roof area for solar panels. We haven't seen any
15 real good studies of showing how that's all going to fit
16 on the roof, and having sufficient pathways,
17 firefighting, you know, it's going to be very congested
18 roof and we're just concerned about that. We'd like to
19 see some more layouts of how this is all going to fit on
20 the roof.

21 MR. SHIRAKH: Patrick Saxton here? Does he have
22 any -- go ahead, please.

23 MS. DICKIE: Amy Dickie from the Global Cool
24 Cities Alliance, and I wanted to also voice support for
25 the proposed changes, and also echo the comments from the

1 gentleman from NRDC that the added reflectance has the
2 urban heat island benefit and that's an important thing
3 to keep in mind when considering the tradeoffs. Thank
4 you.

5 MR. SHIRAKH: Thank you.

6 MR. HITCHCOCK: Reed Hitchcock with ARMA again,
7 Asphalt Roofing Manufacturers Association. Just in light
8 of comments on the societal benefit, there's a lot of
9 debate out there right now. My understanding is that the
10 CEC is about energy, not necessarily about heat island.
11 I encourage those that are interested in that space,
12 there's a great paper that's come out from Stanford
13 University that counters some of the common conceptions
14 and misconceptions about cool roofing and urban heat
15 island. So my only point is that my understanding this
16 is about energy and not society. Is that true?

17 MR. SHIRAKH: Yeah, I think we have a mission for
18 both, so...

19 MS. BROOK: Are there some key words you could
20 give us so we could find that Stanford University --

21 MR. HITCHCOCK: I can give you the actual title
22 of it.

23 MS. BROOK: Okay, great. Thanks.

24 MR. CALKINS: Good morning. My name is Jim
25 Calkins, I'm the local technical sales representative

1 from Sika Sarnafil here in California. Fundamentally, we
2 strongly disagree with any changes being made to the
3 Prescriptive Requirements in Title 24. To date, no
4 comprehensive compelling evidence of quantifiable
5 benefits have been presented justifying the proposed
6 changes.

7 MR. SHIRAKH: Which prescriptive requirement
8 are you referring to, sir? For the roofs?

9 MR. CALKINS: Yes, for roofs. Conversely, the
10 changes are likely to lead to significant disruption in
11 the marketplace, particularly in light of the very short
12 timeframe to implementation. These changes will not
13 benefit the State, nor the consumer, and may result in
14 the introduction of untested products rushed to market
15 without proper long-term testing. Untested products
16 carry a high risk of having shorter service lives for the
17 building owner, the ultimate waste of resources. The
18 CEC's willingness to move on some elements of the
19 original proposal such as reducing the emittance
20 requirement from .85 to .75 is recognized and
21 appreciated. There are, however, still numerous problems
22 with the current proposed language. There is absolutely
23 no credible scientific basis for having different
24 prospective reflectivity requirements for new
25 construction and alterations. Additionally, the

1 potential energy cost savings differential between .63
2 and .65 aids reflectance are at best in the order of one-
3 tenth of one penny per square foot per year. Considering
4 the numerous ranges of air in many of the parameters of
5 the model, the tolerance is in the measurements of the
6 property, etc., there is no statistical difference
7 between the two. If the prospective reflectance value is
8 to be increased from .55, it should be set at .63 for
9 both new construction and for alterations. Similarly,
10 there is no reason not to allow the insulation tradeoff
11 to be applicable to both new construction and
12 alterations. Low levels of compliance appear to be one
13 of the program's most serious issues, there are no doubt
14 many reasons for this, and although we believe this is a
15 critical problem, this is clearly not the forum to begin
16 these discussions. We are certain, however, that we can
17 all agree that increasing the complexity of the
18 prospective requirements by having differences in age
19 reflectance and Solar Reflectance Index Values, and in
20 the allowance for the use of insulation tradeoff between
21 new construction and alterations will only lead to
22 further confusion and, no doubt, even lower levels of
23 compliance. There is no need whatsoever, or any benefit
24 to be gained doing so. Prospective requirements should
25 be simple, transparent, and easy to understand for all

1 stakeholders. The data supporting the need for any
2 change is still sorely lacking and we believe maintaining
3 the status quo would be the best under the circumstances;
4 however, if changes must be made, we believe the
5 compromises we and others have proposed will allow the
6 CEC to achieve their objective by raising the bar with
7 each Code cycle, not eliminating, but reducing market
8 disruption. We appreciate the opportunity to communicate
9 our position to the CEC, and we urge you in future Code
10 cycles to engage the industry much much sooner in the
11 process, the adversarial situation created by inviting
12 industry's participation so late in the process could be
13 one of cooperation if the parties were not operating
14 under such difficult time constraints.

15 MR. SHIRAKH: So your compromised proposal is
16 .63 for both alteration and new construction?

17 MR. CALKINS: Correct.

18 MR. SHIRAKH: And I didn't quite understand
19 related to insulation tradeoff, what is your position on
20 that one?

21 MR. CALKINS: We're fine with that, it's just
22 making it uniform for all areas.

23 MR. SHIRAKH: And are you a member of ARMA?

24 MR. CALKINS: I'm representing Sika Sarnafil, a
25 membering manufacturer.

1 MR. SHIRAKH: Okay. Thank you, sir.

2 MR. CALKINS: Thank you.

3 MR. DEVITO: Hello. Eric Devito, Cardinal
4 Glass Industries. I've participated in these workshops
5 before and thank you again for the opportunity. A couple
6 of -- I'll keep my comments pretty brief -- specifically
7 on the fenestration Prescriptive Requirements, we worked
8 with staff a good bit and provided our comments. I still
9 have about three things that I want to bring out today,
10 1) the EA formula that got added to for the minimum VT
11 requirement, you know, we personally have not supported
12 that particular formula, we certainly understand staff's
13 reasoning for putting it in. We still do not support it.
14 At the same time, if it has to be there, we also don't
15 support the .11 factor, we've submitted comments on that
16 before. We thought a higher factor above .11 was more
17 appropriate, and our concern for that is that a .11, if
18 driven out in a 40 percent window-to-wall ratio, for
19 example, would equate to about a .28 minimum VT
20 requirement. Well, when you compare that back to the
21 prescriptive requirement, it's much lower than what the
22 Prescriptive Requirements are. We think it's a big
23 giveaway, particularly with curtain wall. And we've made
24 those comments known and we reiterate that position.
25 But, again, we would welcome the opportunity to continue

1 discussing that one, I won't dwell on it much longer
2 today. We have submitted written comments on that and
3 probably will do it again.

4 Some very specific comments, in the VT
5 requirement, I guess it would be 140.3(D), where the
6 language requires an area weighted average of visible
7 transmittance, you know, less than the values, it says
8 "or shall have a...," it gives the requirements of meeting
9 the table, and it says, "or shall have a VT determined in
10 accordance with NFRC," and then it says "or equation
11 140.3(B)." I think the "or" related to the NFRC
12 requirements doesn't belong there. 110.6 already
13 requires a minimum of VT be met. The way it's being
14 written here, it's almost as if you just, you know, get a
15 VT in accordance with NFRC 200, you've met the minimum VT
16 requirements. So I would like -- and I can discuss this
17 further with you afterwards -- I think that language
18 should be removed from (D).

19 The other question I have is with regard to the
20 U-Factors in the prescriptive tables. For the nonres,
21 pretty much every value in both tables for RSHG and VT
22 are identical between nonres and the hotel, except for U-
23 Factor. In the nonres table, it's .47, and in the high-
24 rise and the hotel table, it's .45. They're very close,
25 I think for market transformation reasons, there's no

1 reason why they can't be the same, whether it's .45 or
2 .47, I'm not really suggesting either one, I just think
3 whatever they are, they should be the same, maybe split
4 the difference and make them .46 just as an average, but
5 with all the values being pretty much identical except
6 for those two, the U-Factors, that is, I would suggest
7 that you make them the same. It would just be easier for
8 compliance. And that's all I have right now. Thank you.

9 MR. SHIRAKH: Thank you. Ken.

10 MR. NITTLER: Good morning. Ken Nittler with
11 Enercomp. One of my business interests is I operate a
12 business that does NFRC ratings, and I know quite a bit
13 about the rating of fenestration products. I'm looking
14 at the language on the dynamic products and I think it's
15 slightly a case of a slippery slope. I can't name too
16 many other products in the standards where we start off
17 by assuming the very best possible values. I understand
18 your arguments about the cost, however, again, I can't
19 name anywhere else where we start off by assuming the
20 very best values. I would suggest you reconsider using
21 the best values as a starting point. I think dynamic
22 glazing is a case where performance calculations with
23 reasonable assumptions about how they're controlled is
24 the ideal place to take care of that. And finally,
25 there's sort of a very -- at least do the following,

1 which is there is a real inconsistency -- most of these
2 dynamic glazings, some sort of power source is supplied,
3 you get, say, a lower solar heat gain; at the same time,
4 you get the lowest solar heat gain, and you get the
5 lowest visible transmittance. And what this proposal
6 here does is they get their cake and they get to eat it,
7 too. They get at the same time the lowest U-Factor, the
8 lowest solar heat gain, and the highest visible
9 transmittance. And those, I can sort of see, if you
10 really want to go lowest or something, but on visible
11 transmittance, then you should also use the lowest and
12 not the highest. But my real problem is from a Building
13 Code perspective, I don't know of too many other things
14 where we would choose to choose the very best performance
15 values. I don't know whether the assumptions in here
16 have included some of the power and energy that's needed
17 to make these products dynamic. So that would be my
18 suggestion.

19 MR. SHIRAKH: Actually, I talked to Nelson, I
20 don't know if he's here, this morning about this same
21 issue and he tells me this is basically what is in IECC.
22 Is that true?

23 MR. NITTLER: Well, I've been a participant at
24 the IECC for 20 years and don't let that confuse you as a
25 good Code choice!

1 MR. SHIRAKH: Well, it sure confused me.

2 MR. SAXTON: This is Patrick Saxton with the
3 Energy Commission. There was a prior comment about the
4 solar ready roof reservation for three-story and fewer
5 nonresidential buildings. We're actually going to cover
6 the solar-ready requirements tomorrow and Tuesday in more
7 detail, but there is information in the Case Report on
8 the amount of roof area obstructed, there's also an
9 alternative allowance for a space that's off the roof of
10 the building, and I could discuss that offline with
11 anyone who had additional questions.

12 MR. SHIRAKH: Thank you, Patrick.

13 MR. BACCHUS: Jamy Bacchus, NRDC. I'll echo
14 some of the comments made by Cardinal Glass that we
15 support the case author, Eric Shadd, from AEC's comments
16 initially that the effective aperture allowance for .11
17 over the window-to-wall ratio, that's gone, but
18 essentially the same formula is still there, which would
19 allow a dark glass in a high percentage of glazing.

20 MR. SHIRAKH: Well, we actually when we -- this
21 was a result of a long negotiation with them and Cardinal
22 Glass was very helpful and, you know, was very
23 instrumental where we landed. But we had to negotiate
24 with the other members. And so we had our Prescriptive
25 Requirements, the VT, SHGC, and the U-Factor, and then,

1 so as a compromise, we offered this modified formula and
2 when we had Mudit at HMG and John McCue and they all
3 looked at how much energy we were giving up -- we are
4 giving up some, but not a whole lot, I mean, as a whole;
5 this is a huge improvement over 2008.

6 MR. BACCHUS: Uh huh.

7 MR. SHIRAKH: And there is precedence in the
8 Code to actually step things in, kind of phase them in
9 and not go all at once to allow industry to adjust, so
10 this was a response to that. So, you know, our feeling
11 is that we're still saving a ton of energy, we have given
12 up some, and we're going to monitor to see how industry
13 responds. And if you have our registries and the
14 repositories, we can see what kind of glass is going in,
15 what type of practice it is, and based on that in the
16 next Code cycle, you know, we'll make adjustments as
17 needed.

18 MR. BACCHUS: Understood.

19 MR. CONTOYANNIS: This is Dimitri Contoyannis
20 with the AEC. We're a contractor to the Energy
21 Commission. We've also been heavily involved in the case
22 efforts here. And I just wanted to address a comment
23 made by the gentleman from Sika Sarnafil about the cost-
24 effectiveness of the cool roof proposal. I'd just like
25 to state for the record that every new proposed measure

1 that has gone through the case process needs to
2 demonstrate cost-effectiveness and there's a very
3 rigorous calculation methodology that has been specified
4 and released to the public, and all the proposed new
5 measures do meet the cost-effectiveness requirements.
6 Thanks.

7 MR. SHIRAKH: Thank you, Dimitri. Any other
8 questions or comments?

9 MR. YASNY: There's a Charles Cottrell online.

10 MR. SHIRAKH: Okay, go ahead, Charles.

11 MR. COTTRELL: Yes, this is Charles Cottrell
12 representing the North American --

13 MR. SHIRAKH: We're not able to hear you. We
14 hear every other word.

15 MR. COTTRELL: Hello. Okay, sorry. Charles
16 Cottrell, representing the North American Insulation
17 Manufacturers. I just wanted to state that our
18 association and members support the revisions to the
19 Title 24, but we do encourage CEC to work with the
20 roofing industry to try and resolve some of their
21 concerns regarding the cool roof issues. And I know that
22 there are some tradeoffs available, but believe that
23 maybe we could expand those to include different systems
24 and improve the overall usage or user-friendliness of the
25 new Title 24 provisions. Thank you.

1 MR. SHIRAKH: Thank you. And, again, I think
2 we've already committed to looking at perhaps expanding
3 this table that's on the slide, you know, to other types
4 of insulation and maybe going a little bit lower. You
5 know, we'll be working with the industry perfecting that
6 language. Thank you.

7 MR. COTTRELL: Sure. And we would offer to
8 lend whatever expertise we could to that process, so
9 thank you.

10 MR. SHIRAKH: Thank you. Any other questions
11 on this? Okay, if there are no other comments, we're
12 going to move on to the next section. Thank you.

13 MS. BROOK: Okay, Section 140.4, Prescriptive
14 Requirements for Space Conditioning Systems. In the
15 section on Power Consumption of Fans, we've removed the
16 requirement for variable air volume fans greater than 10
17 horsepower to be variable speed. This is replaced with a
18 new section I'll talk about later. And we've added
19 efficiency requirements for HVAC pump and fan motors from
20 1/12 horsepower to 1 horsepower.

21 For Space Conditioning Zone Controls, for
22 systems that have direct digital control, we've added
23 control requirements to reduce the degree to which
24 primary air is reheated. For economizers, we have
25 updated Table 140.4(A), the economizer tradeoff table

1 that allows you to install highly efficient air-
2 conditioning equipment instead of installing economizers,
3 we've updated the efficiency requirements needed for that
4 tradeoff, updated Table 140.4(B), the air economizer high
5 limit shutoff control requirements. We've eliminated
6 several types of economizer control types related to the
7 enthalpy controllers that have high maintenance costs and
8 are difficult to keep calibrated. So those are no longer
9 allowed to be used in the State of California.
10 Economizers and return air dampers on the individual
11 cooling fan systems have requirements for warranty, drive
12 mechanisms, reliability, leakage adjustments to
13 adjustable set points, stamp or control sensor locations,
14 sensor accuracy, sensor calibration data, prevention of
15 sensor false readings, and relief air systems. So these
16 are all new functional requirements for economizers and
17 return air dampers.

18 Interlocked controls such that mechanical
19 cooling only comes on when economizer is 100 percent
20 open, has been installed as a new requirement. And
21 direct expansion systems with economizers must be able to
22 stage or modulate cooling capacity for constant volume
23 systems less than 75,000 Btus per hour. They need to
24 have two stages of cooling capacity starting when the
25 2013 standards are implemented in January 2014. For

1 systems that are smaller, for 65,000 Btus per hour, this
2 requirement will kick in January 2016, again, for two
3 stages of cooling capacity. And then, for variable
4 volume systems starting in January 2014 that will require
5 three or four stages, depending on the size, and the
6 timing of these requirements have been negotiated with
7 HRI and their members, and are aligned with the proposed
8 work that is getting done in the new ASHRAE Standards.

9 For Minimum Chiller Efficiency, we have a
10 requirement that chillers must meet or exceed the Path B
11 efficiencies listed in the Table 110.2, that's the ASHRAE
12 Chiller Efficiency Table. The table itself includes Path
13 A and Path B, and we're requiring that Path B
14 efficiencies be met.

15 Limitation for Air-Cooled Chillers, it has been
16 modified so that chilled water plants can provide up to
17 300 tons with air-cooled chillers.

18 For Fan Control, this is a new section that
19 replaces the earlier Fan Control Limitations. The Fan
20 Control Systems must vary the airflow rate as a function
21 of actual load, either two-speed or variable speed with
22 fan motor demand limitations for constant volume systems,
23 two-stage fan controls required for variable volume,
24 commercial fan controls required. And, again, the timing
25 for this, direct expansion systems of 75,000 Btuh, and

1 chilled water and evaporative systems greater than or
2 equal to 1HP fan motor starting right away, January 2014,
3 and then smaller systems will have the requirement kick
4 in January 2016. That's all we have for mechanical
5 prescriptive requirements. Do we have any comments or
6 questions, or anything at all?

7 MR. MORRISON: This is Frank Morrison for
8 TC8.6, on the air-cooled chiller limitation, we had
9 submitted some comments earlier in the process, but two
10 that we'd like to still comment on are the first
11 exception to the air-cooled limitation, which is water
12 quality.

13 MS. BROOK: Uh huh.

14 MR. MORRISON: And our comment is that we'd
15 like to see that deleted because the industry offers a
16 wide variety of material construction options that can
17 handle virtually any water quality. And then the last
18 exception, which is for -- I'll use the quote -- "high
19 efficiency air-cooled chillers," it's been virtually
20 impossible to get this list of high efficiency air-cooled
21 chillers, so we'd either like to see that deleted or some
22 more visibility as to what this list is.

23 MS. BROOK: Okay.

24 MR. MORRISON: And we'll include those in our
25 comments to you.

1 MS. BROOK: Okay, that would be great. Thank
2 you very much. So, yeah, we're always looking for
3 exceptions that aren't particularly valid any longer, and
4 so we will definitely review these to see if we can
5 remove those. So thank you very much. Any other
6 comments?

7 MR. MORRISON: One other one.

8 MS. BROOK: Yeah.

9 MR. MORRISON: Have you gotten to page 187?
10 Would that include that on the fan speed control for heat
11 rejection equipment?

12 MS. BROOK: Yeah, we're there, uh huh.

13 MR. MORRISON: Okay. There is an ASHRAE 90.1
14 addendum that is going to come out for public review very
15 shortly and it basically has to do with controlling the
16 fans on heat rejection equipment.

17 MS. BROOK: Okay.

18 MR. MORRISON: And we'd like to see that also
19 included in Title 24 if for no other reason than they
20 stay in sync, but also that it would save energy. And
21 it's basically in a nutshell calling for when you have
22 moveable cells of heat rejection equipment to say open
23 circuit axial fan cooling towers, that you run all the
24 cells that you can in order to have the minimum fan
25 energy that is consumed when you're running on VFDs. And

1 what I can do is send in a copy of the addendum that's
2 going to be coming out, as well as our proposal, which
3 virtually matches that same 90.1 proposal.

4 MS. BROOK: Okay. At this late date, we'll
5 have to consider it in terms of -- I mean, if it's a
6 brand new requirement that nobody has discussed in public
7 before, we can't include it at this late date, but if
8 it's a modification to something else that we're
9 considering changing, then we might be able to fit it in
10 there, so we'll have to review your proposal and see
11 which bucket that falls into.

12 MR. MORRISON: Okay, well, it's supported by
13 TC8.6, as well --

14 MS. BROOK: No, I know there's a lot of good
15 reasons to do it, so it's more of a timing issue for us,
16 I think. So we'll do what we can. Thanks.

17 MR. MORRISON: All right. Thank you.

18 MR. YASNY: Online, there's Aniruddh Roy and
19 Darryl Klein -- Darren Klein.

20 MR. KLEIN: Yes, can you hear me okay?

21 MS. BROOK: Uh huh.

22 MR. KLEIN: Okay, yeah, I just concur with
23 Frank. I provided some supporting information to TC8.6
24 and I thought this time the Commission would still
25 consider input and changes, so I don't know where we

1 missed the deadline on that.

2 MS. BROOK: So I'm not sure that you have. We
3 need to look at the proposals, and if it fits into our
4 existing recommendations, then we can make the
5 modification. If it's a brand new requirement that we
6 haven't ever discussed in public before, it's not
7 appropriate to include it at this late date, so we'll
8 have to look at what your proposal is and see if we can
9 fit it in.

10 MR. KLEIN: Okay, all right. Thanks, Martha.

11 MS. BROOK: Thanks.

12 MR. ROY: Martha, this is Aniruddh Roy with
13 AHRI. I have a comment on fractional HVAC motors for
14 fans, that particular section. And I believe in December
15 we had provided you with an exception based on, of
16 course, our industry's conversation with you and Mark
17 Hydeman, and the exception was motors for belt-driven
18 fans do not require variable speed control; however, the
19 sheaths must be sized to ensure that the motor speed will
20 be within 10 percent of the rated nameplate speed. I
21 don't know if you have gotten a chance to review those
22 documents, but, you know, based on that discussion at
23 length, we had provided a rationale as to why that
24 exception should be added to this language based on the
25 availability of the products in the market currently.

1 And also, we had commented on the 29 percent full load
2 efficiency assumption for PSE motors in the study that
3 was conducted?

4 MS. BROOK: Uh huh.

5 MR. ROY: So I don't know if CEC, as well as
6 Taylor Engineering has gotten a chance to review that
7 exception. What we would encourage you to, again, review
8 that and let us know as to why that has not yet been
9 considered in this final language.

10 MS. BROOK: Okay, yeah. So is this in the same
11 letter that you have your other space conditioning
12 comments in? It's all in the same letter? Or is it --

13 MR. ROY: Actually, yeah, this was specific
14 just to the fractional --

15 MS. BROOK: Okay, okay, I'll look for that in
16 the docket and make sure that we address it. Okay, thank
17 you.

18 MR. ROY: And I'll definitely, before the end
19 of the day, I'll send that over to you again just as an
20 FYI.

21 MS. BROOK: That would be great. Thank you.

22 MR. ROY: Also -- absolutely -- also another
23 comment I have is, if you give me one second here, it's
24 with respect to Section 140(E)(4)(b), the driving
25 mechanism. And under that section, you know, there is a

1 sentence which was added by CEC in the 45-day language,
2 and what that sentence does is it adds towards the end of
3 the sentence "or tie bar and crossover side
4 interconnections, the gear or linkage interconnection
5 shall be located out of the airstream." And so there are
6 some additional damper requirements that were added in
7 the 45-day language and I think we submitted comments,
8 again, in December stating that we feel this is
9 unnecessary because you're already addressing damper
10 reliability testing in 140(E)(4)(c), as well as damper
11 leakage in 140(E)(4)(d). And so you're already
12 specifying damper requirements in there. And this
13 particular language adds an unnecessary prescriptive
14 requirement for manufacturers which we feel, you know, is
15 already addressed in those previous sections.

16 MS. BROOK: Okay, that sounds reasonable, yes.
17 Thank you very much. Anything else?

18 MR. ROY: And one -- I have two more comments.
19 One is on 140.4(e)(iv)(g), with respect to sensor
20 abrasion. We are currently doing a study which we'll
21 probably share with you very shortly, with respect to the
22 accuracies that are specified in that section. We feel
23 that those accuracies are extremely stringent and
24 difficult to achieve in the field while installation, and
25 also the language does not specify as to whether the

1 sensor calibration needs to occur during the
2 installation, or throughout the lifetime of the
3 equipment. So there is a room for confusion because
4 there's no clarity in that language, and so we feel that,
5 you know, CEC should consider those accuracies. I know
6 in your response to us, you told us that you might share
7 with us the studies that the consultant has done as far
8 as justifying those accuracies are concerned, so I'm not
9 sure if you've received that feedback from the consultant
10 yet.

11 MS. BROOK: Oh, okay, all right. So, yeah,
12 let's work together in the next several days and make
13 sure that we have those resolved. I appreciate that.

14 MR. ROY: Okay.

15 MS. BROOK: Anything --

16 MR. ROY: And my last comment is based on the
17 slides that you have. If you don't mind, could you pull
18 up the slide on the Path B efficiency?

19 MS. BROOK: Where do you want us to land?

20 MR. ROY: Okay, yeah, that's the slide. In that
21 slide, you state chillers must meet or exceed the Path B
22 efficiency listed in Table 110.2(D).

23 MS. BROOK: Uh huh.

24 MR. ROY: Now, I'm looking at the 45-day
25 language that is on the website right now and it states

1 in the footnote "must meet the minimum requirements of
2 Path A or Path B, however, both the full load COP and
3 IPLV must be met to fulfill the requirements of the
4 applicable path." So that language right now in the
5 footnote seems consistent with ASHRAE 90.1, the table in
6 there. So is this something that you are planning to
7 change to, I guess, you know, coinciding with what you're
8 saying in the slide?

9 MS. BROOK: I don't -- somebody needs to come
10 up here. Siram is going to help us with this. I think
11 that there's some confusion about how those ASHRAE tables
12 were put together. Hold on a second.

13 MR. THAMILSERAN: This is Thamilseran, staff
14 here at the CEC. In regard to the requirements specified
15 in that mandatory Table 110.2(D), came from ASHRAE and it
16 looks at both cost-effectiveness from Path A and Path B,
17 and processes that into the Standard. But this
18 Prescriptive Requirement is slightly on the higher side
19 where the Path B takes a higher efficiency into
20 consideration, therefore it comes from the prescriptive
21 requirement under the mandatory path.

22 MS. BROOK: Yeah, so does that make sense? So
23 the first section where the table is introduced are
24 mandatory requirements, but we've increased that
25 mandatory level to a prescriptive requirement that

1 requires Path B efficiencies, or that level of efficiency
2 traded off in the performance approach. Does that make
3 sense?

4 MR. ROY: Yes, it does.

5 MS. BROOK: Okay. Did you have anything else?

6 MR. ROY: That's all. Thank you, Martha.

7 MS. BROOK: Thank you very much.

8 MR. MCHUGH: So this is Jon McHugh. And I'm
9 actually going to talk about something that was earlier
10 this morning, but was related to mechanical, and so I
11 thought while we're talking about mechanical issues, and
12 actually it's in direct response to Mr. Roy's comments
13 this morning. He had brought up the issue about Federal
14 Preemption of requirements of doors or covers on vertical
15 display cases. Mr. Roy and I have discussed this earlier
16 in my role on the ASHRAE 189.1 Committee where the same
17 issue came up. And I believe he agreed to the resolution
18 that's going out for the second public review of Addendum
19 Z of 189, and my understanding is that the committee felt
20 that this does not violate preemption. The language is
21 "open refrigerated display cases shall be covered by
22 field installed strips or curtains or doors to comply
23 with the standard."

24 So the issue is that the Federal Standards do
25 prohibit states from requiring that manufacturers

1 manufacture their equipment in ways that are of higher
2 efficiencies than the Federal Minimum Standards, however,
3 there's no prohibition about field installed strips,
4 curtains, or doors. So I'd hoped that we would look at
5 similar kind of language be in concordance with the
6 ASHRAE Standards to get those savings.

7 MS. BROOK: Okay, so thank you for bringing
8 that up because now I remember what we decided about that
9 was, and I agree with you, that we could certainly
10 require field applied doors, but our analysis did not
11 determine that those were cost-effective, it just
12 basically didn't do the work. We didn't ever go there,
13 we never actually developed the cost-effectiveness
14 justification for field installed doors in our analysis,
15 so that's one of the reasons why we decided to drop it.

16 MR. MCHUGH: So I'll make sure that I enter
17 into the record the work that Ramin Faramarzi of Southern
18 California Edison has done on just that issue. They ran
19 a cost-effective program installing doors on display
20 cases. I'll be happy to submit that to the Commission.

21 MS. BROOK: Okay, thanks.

22 MR. MCHUGH: Mr. Roy, did you have any
23 comments? Or is that also your understanding of where we
24 ended up with ASHRAE Standard 189?

25 MR. ROY: Yes, I think with respect to that

1 addendum, we accepted the changes that 189 recommended.
2 I think we're going to be resolved on that issue with
3 ASHRAE 189.1.

4 MR. MCHUGH: Thank you.

5 MR. SHIRAKH: Thank you, Jon. Any other
6 questions on Mechanical Prescriptive Requirements? In
7 the room or online? So we're going to move to Lighting.

8 MR. FLAMM: The next set of slides are going to
9 go over nonresidential indoor lighting, outdoor lighting,
10 and sign lighting. And I see we're about an hour ahead,
11 so that means I can take an hour and a half on this
12 section?

13 MS. BROOK: Uh huh.

14 MR. FLAMM: Oh, thank you. So Section 140.6
15 has been edited for clarity. The number of watts that
16 are excluded for portable lighting, excluded from being
17 counted as being installed, has changed from .2 to .3,
18 and along with that, the wattage allowed to be installed
19 in the ceiling has gone down. So when two interlocked
20 systems serve a space, currently there are allowances
21 under certain circumstances, and that's been edited for
22 clarity and it requires an installation certificate now.
23 The reduction of wattage through controls where one could
24 earn a power adjustment factor has been edited for
25 clarity, and for consistency with the changes to Table

1 140.6A. Now that daylighting requirements are mandatory,
2 there are no more daylighting power adjustment factors in
3 the table. There's a new power adjustment factor for
4 occupancy sensors when installed in open spaces. The
5 whole list of wattage applications that are excluded from
6 being counted in that list, the lighting for video
7 conferencing studio has been removed and that function
8 area has been moved to the area category table and, along
9 with that, as somebody takes the additional wattage, they
10 have to do an installation certificate. We add an
11 exclusion for lighting in elevators that are meeting the
12 requirements of ASHRAE/IES 90.1, 2010.

13 The Tailored Method Narrative has been expanded
14 for clarity and one of the tables where we referenced the
15 IESNA categories for luminance values, our categories A
16 through G, has been changed to illuminance values to
17 match the changes from the 9th Edition Handbook to the
18 10th Edition Handbook.

19 There have been changes in the tables. Table
20 146(A), Lighting Power Adjustment Factors, have been
21 basically reconstructed and some changes there. The
22 Complete Building Method Table, some function areas,
23 lighting power densities have gone down. The area
24 category method, the same thing, and the Tailored Method,
25 a lot of the function areas that were in the Tailored

1 Method, that were similar to the area category method,
2 have actually been removed from this Tailored Method
3 Table and put into the area category table. So the
4 Tailored Method Table is much smaller. The mounting
5 height adjustments for wall lighting, display lighting,
6 and floor lighting display lighting has been changed.
7 The room cavity ratio equations, which used to exist in
8 the narrative, for clarity have been moved from the
9 narrative and put into the table and referenced.

10 And as I said, the illuminance categories have
11 changed from illuminance categories A through G to
12 Illuminance Lux in Table 146.6(G). The requirements for
13 outdoor lighting has been edited for clarity. Some of
14 the lighting power densities have been reduced, and what
15 was available for lighting power allowances for local
16 ordinances has been removed.

17 Requirements for sign lighting has been edited
18 for clarity even though there's no substantive changes.
19 The current standards do not regulate unfiltered signs,
20 those are signs in which the light bulb is the sign, and
21 there have been requirements added that, if you have a
22 neon sign where the neon light is the sign, or if you
23 have LED signs where the LED is the sign, those don't
24 qualify as internally illuminated or externally
25 illuminated signs, and the new requirements states that

1 they have to meet the efficiency requirements for LED
2 power supplies and for transformers for neon. They don't
3 fall under the watts per square foot requirements. And
4 those are basically the lighting changes. And I'm sorry,
5 I could not take an hour and a half to do that, but we
6 can have an hour and a half's worth of discussion if you
7 would like.

8 MR. THOMAS: Hi, Gene Thomas with Ecology
9 Action. And I had a question, a couple questions about
10 140.6-C as it relates to the watts per square foot
11 requirements for retrofits, which we'll get to after
12 lunch, but a couple things I noticed, housing, public and
13 commons in multi-family areas and dormitory areas were
14 deleted from the table, as were senior housing, and I was
15 curious as to your thinking on that, especially with
16 senior housing and the aging eye, and all.

17 MR. FLAMM: Sure. So there was confusion in
18 the Standards in the fact that those are really mixed use
19 buildings where you have residential-type areas and you
20 have nonresidential-type areas. So the anticipation is
21 that those areas that are common areas like hallways,
22 etc., are going to meet the nonresidential standards.
23 And there are already requirements for hallways and
24 public bathrooms, etc., but that the living quarters will
25 have to meet the residential lighting standards, which is

1 actually more favorable to the senior eye because there's
2 no wattage constraints in the residential Standards. So
3 in those function areas that are residential, there are
4 no requirements. I mean, there are no nonresidential
5 requirements, they will have to meet the residential
6 standards.

7 MR. THOMAS: And so that would be something we
8 would discuss after lunch in terms of the alterations and
9 repairs, implications of those kind of areas?

10 MR. FLAMM: Well, no, because when you look at
11 the definitions of nonres and residential function areas,
12 the living quarters are residential.

13 MR. THOMAS: And the common areas, as well? I
14 mean --

15 MR. FLAMM: Well, the common areas are already
16 defined in the table, there are already requirements for
17 hallways in the Standards. There are already
18 requirements for dining rooms. There are already
19 requirements for all these function areas that are
20 nonresidential. So they are already in the Standards.

21 MR. THOMAS: Okay. Okay, then the other
22 question related to tenant lease space. Is this any and
23 all lease space, even if the use is comprised of other
24 specific categories?

25 MR. FLAMM: So the tenant lease space fits into

1 the area category method and this is where you're looking
2 at room-by-room, and if there is not a tenant identified
3 at the time of the building permit, then the requirement
4 is to use the tenant lease space. And so your question
5 has to do with spaces like bathrooms, etc., I assume,
6 that only allow .6, is that the nature of the question?

7 MR. THOMAS: Well, yeah, or a lobby area, or
8 something like that. With respect to retrofits, we would
9 be talking about spaces that are leased, so would the --
10 in that case, would it be whatever has the higher
11 lighting power density would rule?

12 MR. FLAMM: You ask a good question, Gene. I
13 think that's a definitional question and I think we need
14 to do a better job of defining what is a tenant lease
15 space. From what you're saying, I can see that it's
16 broadly defined right now, and I think we need to have a
17 better definition than we currently have for a tenant
18 lease space.

19 MR. THOMAS: You could have a tenant lease
20 space that has an auditorium area and, you know, several
21 other areas here that have different and greater LPDs,
22 and so if it's a tenant that's already leased, as opposed
23 to a vacant tenant space, you would think those areas
24 would govern.

25 MR. FLAMM: I think we need to wrestle with

1 that and, from the inception of that concept, the whole -
2 - the rationale for developing that were basically strip
3 malls, etc., that were being defined as retail, and they
4 ended up being something else, and so a lot of light was
5 put into them. I think you're pointing out some flaws,
6 and I'll work with you on those.

7 MR. THOMAS: Okay. All right, thanks.

8 MR. SHIRAKH: Any other questions on lighting?

9 MR. YASNY: There's an Ira Richter online.

10 MR. SHIRAKH: Go ahead.

11 MR. RICHTER: 120.6 -- or should I wait for a
12 while?

13 MR. SHIRAKH: We couldn't hear all your
14 comments, you got cut out. Could you repeat, please?

15 MR. RICHTER: Yeah, I was kind of slow raising
16 my hand before you left the mechanical section. Can I
17 ask a question about 120.6?

18 MR. SHIRAKH: Yeah, please identify yourself.

19 MR. RICHTER: Yeah, I'm sorry. This is Ira
20 Richter from Heatcraft. I understood earlier than Item B
21 about the upright low temperature cases requiring doors
22 was an error. Is that still the case, that you're going
23 to be removing that part?

24 MS. BROOK: So we intended to remove it because
25 we didn't -- the staff and their consultants didn't do

1 the due diligence to prove that field installed doors are
2 cost-effective; however, Jon McHugh came and put on the
3 record that there is a study done by Southern California
4 Edison that did prove that field installed display case
5 drawers are cost-effective, so we need to figure out what
6 we're going to do there.

7 MR. RICHTER: So it's up in the air, then?

8 MS. BROOK: Yeah, but not for very long.

9 MR. RICHTER: Okay.

10 MS. BROOK: So my tendency would be to leave it
11 out, but I haven't seen the report from Edison and, you
12 know, so what is your opinion about -- what is your vote?

13 MR. RICHTER: My vote?

14 MS. BROOK: Uh huh. See, you're about where I
15 am.

16 MR. RICHTER: I would say the great majority of
17 customers that are using vertical cases at low temp are
18 using glass doors, but there are some grocery stores that
19 have exceptions.

20 MS. BROOK: Okay.

21 MR. RICHTER: I would probably go with -- I
22 would really need to consult my customers first.

23 MS. BROOK: Right. And our understanding is
24 that the vast majority are already buying because they
25 see it in their pocketbook the cost savings, they

1 purchase the display cases with doors, but anyway, so
2 we'll be glad to keep you in the loop on that one.

3 MR. RICHTER: Thank you very much.

4 MS. BROOK: Uh huh.

5 MR. SHIRAKH: Any other -- so with the
6 Commissioners' permission, I would like to propose maybe
7 we proceed because according to the agenda we're at
8 lunchtime, but we're ahead of schedule, so if it's okay,
9 we're going to cover some of the topics that would be
10 presented this afternoon; then, after lunch, we can
11 probably break out early.

12 So the next topic is going to be Revisions to
13 140.9, the Covered Processes.

14 MS. BROOK: Okay, so the other part of the
15 covered processes are the prescriptive requirements, so
16 these are areas where there are no mandatory
17 requirements, but there are prescriptive requirements
18 that you can trade away in the performance approach. So
19 the prescriptive requirements for computer rooms are that
20 an integrated economizer is required for each cooling fan
21 system to meet 100 percent of the expected load. And the
22 calculation method for the expected system load will be
23 approved by the Commission. Controls that prevent
24 reheating, re-cooling, or simultaneous heating and
25 cooling are required. Non-adiabatic humidification is

1 prohibited. There's a limitation on fan power and
2 requirements for two-speed or variable speed control on
3 fans with motor demand limitations, and there are
4 requirements for air barriers for containment to prevent
5 discharged air from re-circulating.

6 Prescriptive requirements for commercial
7 kitchens, we're trying to reduce short-circuiting of
8 kitchen exhaust hoods by limiting replacement error to 10
9 percent of the hood exhaust airflow rate.

10 Maximum exhaust flow rate requirements are
11 included in the new Table 140.9-A. Limitations on heated
12 or cooled makeup air for spaces with exhaust hoods are
13 included. For kitchens with Type I and Type II exhaust
14 hoods greater than 5,000 cfm, the transfer air must be at
15 least half of the replacement air, so this is transfer
16 air that would otherwise be exhausted, which is to say
17 that there is a requirement to make use of that for the
18 replacement air needed by the exhaust hood. The demand
19 ventilation controls are required for at or over 75
20 percent of the exhaust air system.

21 Energy recovery devices with recovery
22 effectiveness greater than 40 percent are required on 50
23 percent of the total exhaust airflow. And 75 percent or
24 more of the makeup air volume needs to be unheated, or
25 uncooled. And there will also be requirements for

1 kitchen exhaust system acceptance testing.

2 Prescriptive requirements for laboratory
3 exhaust systems, this is for laboratory circulation rates
4 less than or equal to the 10 air changes per hour, and
5 we're requiring that the zone exhaust and makeup airflow
6 rates shall be capable of reducing to regulated minimums
7 for circulation rates, or the rate necessary to maintain
8 pressurization, whichever is larger. So this is in
9 regards to when the hood is not operating at full
10 capacity, there could be reductions in the zone exhaust
11 and makeup flow air rates in the room where the
12 laboratory hood is.

13 And that's it for the Prescriptive Coverage
14 Process Requirements. Comments?

15 MR. GABEL: Mike Gabel. So without getting
16 into details, I just want to make sure you guys checked
17 the compliance software to make sure you can trade all
18 those things because, if you can't, you might want to
19 make them mandatory measures instead of prescriptive.

20 MS. BROOK: Well, part of our case analysis was
21 proposing the new system types that will be in the
22 performance standard for kitchens and laboratories, or in
23 computer rooms --

24 MR. GABEL: So as long as you're -- I just
25 wanted to make sure that all those things really can be

1 monitored, otherwise --

2 MS. BROOK: Yeah, and they are pretty simple
3 additions to the system mapping table in the performance
4 standard.

5 MR. GABEL: Okay.

6 MS. BROOK: Any other questions or comments?
7 Okay, moving on.

8 MR. SHIRAKH: So these are -- 141 used to be
9 149, these are the requirements for addition and
10 alterations for nonresidential buildings. This section
11 has been edited extensively, and a lot of it is for
12 clarity. We added exceptions for solar requirements for
13 additions and alterations not having a solar zone, I
14 think Patrick talked about that briefly. We added, when
15 a space conditioning system is altered, unitary systems
16 with an economizer shall have controlled systems that
17 cycle compressors off when economizers can provide
18 partial cooling.

19 These are the nonresidential cool roof
20 requirements. Earlier, we talked about the prescriptive
21 requirements for new buildings, and this is for
22 alterations and specifies that the reflectance
23 requirements for low slope roof is .63. You recall the
24 proposed reflectance for new construction was .65, and I
25 think there was a commenter who said that the two should

1 be the same. But for now, it's .63 in Climate Zones 1
2 through 16, so that's all throughout California.
3 Emittance, .75, hasn't changed since 2008. We've also
4 provided insulation tradeoffs against reflectance and, in
5 this scenario, you can go down to reflectance at .45
6 provided that more insulation is added. This was
7 basically in response to industry comments throughout
8 this process.

9 Steep slope roof requirements pretty much stays
10 the same as 2008. The reflectance and the emittance
11 remains at .2 and .75 SRF 16.

12 This is Section 141.0(b)1D, Altered Duct
13 Systems, that must meet the criteria of Section 140.4(I).
14 It clarifies the qualifications for entirely new
15 replacement duct systems, always a murky area in the
16 Standards, you know, what is an entirely new duct system,
17 so we've got a lot of comments and we've tried to
18 clarify. You know, a lot of times, and this is true in
19 residential, too, you change the air handler, or the
20 condensing unit, and part of the duct system, but not all
21 of it, so what does that mean? What kind of requirements
22 would apply? So we were tempted to clarify some of that.
23 We deleted the 60 percent reduction of duct leakage
24 compliance option, a requirement that was hard to enforce
25 and was rarely used; but instead we added the smoke test

1 protocol to the verification for accessible leak
2 compliance option. Go ahead, Gary.

3 MR. FLAMM: The lighting sections of Section
4 140.0. There's two basic constructs here, one are
5 Lighting System Alterations. Currently, if somebody
6 replaces 50 percent of the luminaires in a room, they
7 need to meet the current standards. And that's being
8 reduced to a threshold of 10 percent. So, in a room,
9 when greater than 10 percent of the luminaires are
10 replaced, there are requirements in the Standards that
11 must be complied with.

12 There's a new allowance, though, that if
13 somebody only installs 85 percent of what they're allowed
14 to install, according to the area category table, for the
15 multi-level lighting controls, they only have to put in
16 one step in the middle, you have 100 percent on, zero
17 percent off, and something in the middle. But if
18 somebody installs 100 percent of what they're allowed in
19 accordance with the area category table, then they have
20 to meet the new Table 130.1-A Multi-Level Lighting
21 Control Requirements. And so the significant difference
22 is the threshold has been reduced from 50 percent to 10
23 percent.

24 The new requirements are what we're calling
25 Luminaire Modifications-in-Place. This is where each

1 room -- well, once a building, what we define as a
2 building area, changes 40 luminaires within a year, then
3 they will have to look at each individual room in which
4 greater than 10 percent of the luminaires are what we
5 classify Luminaire Modifications-in-Place. That's
6 basically where ballasts are changed, significant
7 rebuilding of what we define a Luminaire Modification-in-
8 Place, and that also has the same allowance that if
9 somebody only installs 85 percent of what they're
10 allowed, they only have to do one intermediate control
11 step; but if they install 100 percent what's allowed
12 according to the area category table, they have to meet
13 all of the requirements, the control requirements of
14 table 130.1-A.

15 That's all I wrote on the Lighting Standards.

16 MR. SHIRAKH: One of the slides I showed under
17 the cool roof tradeoffs, I had mentioned the insulation
18 tradeoff goes down to .45 reflectance, now I was notified
19 that the actual language reflects tradeoff down to .25,
20 not .45. I just wanted to mention that. Any questions
21 on material that Gary Flamm just presented?

22 MR. THOMAS: Gene Thomas, Ecology Action. Some
23 different points and the first one in terms of
24 clarification, on your shall not's for lighting
25 modifications-in-place, number 2, shall not cause or be

1 the result of or involve any changes to panel board or
2 branch circuit wiring, including...," some other things and
3 then it says "dimmers and other control devices," and so
4 my question for clarification, are you talking about like
5 a panel level dimmer? You're not talking about putting a
6 dimmer switch in, are you? Because that would conflict
7 with --

8 MR. FLAMM: The Standards -- let me see if I've
9 got those with me, hang on, please.

10 MR. THOMAS: When I read "dimmers or other
11 control devices providing power to the lighting system,
12 shall not...," to me that's something that takes place at
13 the circuit panel as opposed to putting a dimmer switch
14 on the --

15 MR. FLAMM: So the intent of the language, I
16 would have to read the language again, is to define what
17 is regulated and what is an alteration that is regulated,
18 and what is not. So simply putting in a control, a self-
19 contained control in a box is not regulated, but once
20 you're doing the major wiring change-out, a panel change-
21 out, you're rewiring. At that point, it is an alteration
22 that is regulated by the Standards. So this language is
23 intended to differentiate between, you know, are you just
24 going to throw in an occupant sensor, or a dimmer in an
25 existing wall box? Or, are you going to put in a new

1 panel board?

2 MR. THOMAS: Right, okay, so that relieves our
3 concern on that one. First off, I want to say this is a
4 big advance over how it started out and it's been great
5 working with you and the case team on some of these
6 things to make it better, and I think that Table 141(D)
7 and (C) are great ways to do that. On 141.0-C,
8 requirements for alterations, on that -- it's the second
9 row down where it says "alterations that do not change
10 the area of the enclosed space or the space type," and in
11 that first column, it says "none," in other words,
12 quantity of existing affected luminaires per enclosed
13 space, I think that should be less than 10 percent, it
14 shouldn't be "none." So, in other words, if there are
15 less than 10 percent of the affected luminaires in the
16 enclosed space altered, then existing lighting power is
17 permitted, existing provisions are permitted, because
18 otherwise you are not saying anything about what happens
19 in --

20 MR. FLAMM: That sounds appropriate.

21 MR. THOMAS: Okay. And I would also say that
22 that same row, those same two rows should apply to 131.0-
23 D, so for Luminaire Modifications-in-place, where the sum
24 total is less than 40 Luminaire Modifications-in-Place,
25 then existing controls apply, and so forth. So it should

1 be consistent between the two tables.

2 MR. FLAMM: That sounds appropriate.

3 MR. THOMAS: Let's see what other questions I
4 had here. Going back, and I guess we'll talk offline
5 about the table 140.6-C, the Area Category Method, to
6 clear up what happens when you're in a leased space, I
7 mean, because about two-thirds of the businesses that we
8 retrofit are in leased space, so once again, we can talk
9 offline unless you want to discuss it here. We think
10 that the function areas of those in that leased space
11 should govern in terms of lighting power density as
12 opposed to just a leased space.

13 MR. FLAMM: I agree; it's not the same issue.
14 When a speculative building is being built and there's no
15 tenant, then that's why we have the tenant leased space.
16 But once you have a tenant, and I'm assuming your
17 alterations are where there's a tenant, there's already a
18 function area defined, and so if we need to capture that
19 in the language, I --

20 MR. THOMAS: Yeah, I would just be adding a
21 sentence at the appropriate place.

22 MR. FLAMM: Yes.

23 MR. THOMAS: And the one other thing I would
24 say is just I know there's been a lot of back and forth
25 in terms of the cut-offs, the 10 percent, and the 40

1 Luminaires, and trying to find that happy point where it
2 causes the least negative impact on the retrofit market,
3 and we still feel that the cutoff for Modifications-in-
4 Place should be 100. We think that the 40, besides its
5 impact on the retrofits, could still have a significant
6 impact on maintenance programs where they're doing group
7 re-lamps, and that goes back here, b) to qualify as a
8 Luminaire Modification-in-Place, 1) replacing lamps
9 and/or ballast, so that "and/or" means if you're just
10 replacing lamps and you replace 40 of them in a space at
11 a given time, then now it's a modification in place that
12 could trigger those other things. And I think that's --
13 I think it would be a lot better, still, if that were cut
14 off at 100. And then, referring back to -- I didn't have
15 this question earlier, but it came to me on 131.0 in
16 terms of the language on retrofit for socket fixtures,
17 and then there were some other language on linear LED
18 lamps. Since you're talking new construction there, as
19 opposed to retrofit, is this just you're talking of those
20 two things specifically in terms of how they're used to
21 determine lighting power? Or something else?

22 MR. FLAMM: Two components, how do you classify
23 a luminaire, and how do you determine an input wattage.
24 And basically, the construct in the Standards has been
25 it's the manufactured luminaire, whatever it's rated as,

1 so to change sockets or to change lamps does not change
2 the personality of the luminaire. So, are you asking
3 that, if you put in LED lamps, would that be recognized
4 as an LED Luminaire? I'm assuming.

5 MR. THOMAS: Well, there's a little confusion
6 between -- and when you're putting in new construction,
7 if you're putting in an LED linear luminaire, and you're
8 putting in a new LED linear luminaire, but you've brought
9 into it replacing lamps, which now moves it out of the
10 new construction into some kind of gray area. So I can
11 understand if the concern is to determine allowable
12 wattage, but you don't want to do something that's going
13 to put a break on the development and implementation of
14 really absolutely necessary new technologies, and you
15 know, LEDs and linear LEDs would be one of those that we
16 have big hopes for, and so if you could speak to that,
17 that would be good.

18 MR. FLAMM: So what you're suggesting presents
19 a significant loophole in defining what is a luminaire,
20 and how do you classify a luminaire, and how do you
21 determine the input wattage. I don't know how to do that
22 without undermining everything we have already in
23 classifying luminaires because, quite frankly, those
24 linear LED lamps, most of them do not match the optics,
25 and there are concerns, right. And so we don't want to

1 just open that door and all of a sudden allow LED lamps
2 to be classified as LED luminaires because that's a
3 significant change, and until there is a way to specify
4 the optics, matching the optics, I don't see how we can
5 do what you're recommending.

6 MR. THOMAS: I mean, I'm not necessarily
7 recommending that a change is needed there unless it's
8 affecting retrofits, because as it is right now, that's
9 with the exception of outdoor sign lighting, 130.0 is not
10 triggered. So it's not a concern from that standpoint.
11 If it's affecting retrofits, then that would be a
12 concern.

13 MR. FLAMM: Let's discuss this offline. Let's
14 see if we can come up with some conclusion. I'm very
15 concerned with, you know, I don't want to change Section
16 130.0, but maybe we may be able to do something in 141
17 without losing that precedence that we have.

18 MR. THOMAS: Okay, thanks.

19 MR. SHIRAKH: Bill, I'll get to you in one
20 second. There's one more slide left in this -- I kind of
21 jumped ahead a little bit. So continuing with
22 Alterations, there's two sections where Performance
23 Approach is discussed within this section, one is related
24 to existing plus additions for plus alterations. And the
25 language that was in 2008 and prior, I'm going to -- kind

1 of a source of entertainment because it's very hard to
2 understand, so we will work with Mike Gabel and CABEC,
3 actually we think we've come up with language that at
4 least I can understand, so it's an improvement. And I
5 think it's going to simplify things quite a bit.

6 There's also performance-related language
7 related to altered components and that's also been a
8 source of entertainment over the years, and I think we
9 finally, with the help of CABEC, you know, we've been
10 able to nail that down to a more workable and more easily
11 understood and hopefully simulated. We'll have parallel
12 changes in the residential Section 150.2, which we'll
13 present tomorrow.

14 So with that, I'll open it up again.

15 MR. CALLAHAN: Bill Callahan, Associated
16 Roofing Contractors, and Union Roofing Contractors
17 Association. And we are signed to a letter that we will
18 discuss in detail later, I think it's quite lengthy and
19 he doesn't want to interrupt your lunch. We agree with
20 everything he has to say, but there's a couple of points
21 I'd like to make. One was it was interesting earlier to
22 hear the statement that all of the various changes that
23 had been vetted through very rigorous cost-benefit
24 analysis. I think "rigorous" is too strong a term, at
25 least when it comes to the study that was done by

1 Architectural Energy Corporation about the cost-
2 effectiveness of changing the roofing standards. That
3 survey, that report, which is dated February 8th, Non-
4 residential cool roof cost summary, is based on 12
5 responses, three by email, nine by phone. The entire
6 State of California, 5,000 licensed contractors, 12
7 survey responses. I would submit that that is a
8 statistically insignificant survey sample. And when you
9 look at the table that arrays the results, it's an 11 X 9
10 table, 49 cells -- sorry, 11" X 9" -- it's 99 cells, 47
11 of them are blank, no information. So all of the data
12 points, it's just 52 percent of the entire table. And in
13 a number of cases, there aren't any data points at all
14 for different materials. I see three, I see one, I see
15 none, I don't see any explanation between the difference
16 for not applicable, and a blank cell, or don't know. But
17 I assume all of them are non-data points. So you really
18 don't have much to go by here. And if you look at them
19 closely, I represent Union Contractors, so I know a
20 little something about the prevailing wage, which is
21 normally Union wage; there's two columns in here for
22 Fresno, the one that is over to the right-hand side,
23 Fresno Prevailing Wages, is based on the wage rate of
24 \$35.70 an hour, that's a lot higher than in most of
25 Fresno and the surrounding counties, and yet the

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1 installed cost for the various roofing materials listed
2 here are considerably lower for the prevailing wage
3 contractor, the Union contractor, than the other Fresno
4 contractor whose affiliation isn't identified. It seems
5 suspect to me, and that's a big piece of your data. I
6 don't think this study is worth very much. I don't think
7 it's rigorous, I don't think it provides any cost
8 justification to the changes. Again, Reed, we'll talk
9 about that later.

10 I do like Exception 1 to 141(B)(1)(b), as I
11 mentioned earlier because it gives us the overall
12 envelope energy approach of 140.3-B, and there I suspect
13 your intention was to strike it out, but I like it the
14 way it is right now for the reasons I stated earlier, and
15 also because it's free. I just want on your website to
16 look at the software that is available for
17 nonresidential, none of it is free, I'd have to pay for
18 all of it, as would my members. So I kind of like things
19 that don't cost me much, especially since I don't have to
20 pay now.

21 You have a table which you brought up earlier
22 on the tradeoffs, I'm not going to get into whether the
23 underlying value is correct or not, but I think there's a
24 compliance problem here and I mentioned it in October.
25 You've got these tradeoffs here, and it tells you how you

1 can tradeoff insulation for reflectivity, and then you
2 move to the next page and you get the minimum insulation
3 requirements for retrofits. Now, right now it refers to
4 the wrong table, it needs to be updated to 140.C. What
5 I'm concerned about is, by having this first, and then
6 the minimum requirements second, people are going to read
7 through this, building officials and, believe me, I talk
8 to a lot of them, and say, "Okay, the guy is putting on a
9 .39 reflectivity, R16 is what he needs to trade off for
10 that," then he's going to get to the next page and he's
11 going to say, "Oh, well, wait a second here, they're not
12 going to move the roof equipment and an exception applies
13 and they don't have to have any insulation at all." I
14 don't think that's your intent, I think your intent is
15 that they're additive. And, at a minimum, what you need
16 to do is put in a note that says, "These insulation
17 requirements are in addition to," and not "in lieu of,"
18 the minimum insulation requirements that you've got set
19 off in what I think should be labeled 140(C). So that's
20 a typographical thing.

21 And that brings me to my final comment, which
22 does have to do with enforcement. I deal with building
23 officials a lot, and over the years, they've testified
24 here a lot. I can't remember any of them saying that
25 they enjoyed the Energy Code, understand it, some of them

1 even said that they won't enforce it. That's
2 problematic. I would be very interested to know if
3 somewhere out there there's a calculation of what the
4 proposed changes to roofing contribute to the overall
5 energy savings proposed in the 2013 Code. I suspect it's
6 a very very small amount of the overall savings that are
7 associated with everything you want to do, and I think
8 you could save a heck of a lot more money by
9 concentrating more on making sure that the Standards we
10 have are enforced, that they're understood and they're
11 enforced. Just last week, I got a call from a building
12 official in North Bay County, who advised me that one of
13 my contractors who had complained about a bid was wrong,
14 he complained about his attitude and a number of things.
15 Well, my contractor had complained because he was bidding
16 on a mixed-use facility, two two-story buildings, one of
17 them was going to be apartments, the other was going to
18 be offices, so you've got a low-slope, low-rise
19 residential, low-slope, low-rise nonresidential. Looking
20 at the Energy Code for low-slope, low-rise non-
21 residential in their particular climate zone, there's no
22 cool roof requirement. He actually told me, "We are
23 exempt from the Energy Code," and I had to say, "Well,
24 wait a minute, you're really not exempt, there's just
25 certain portions of it that may not apply. And by the

1 way, there's a difference between nonresidential and
2 residential, and in your climate zone, there is a cool
3 roof requirement for one of those two buildings. And,
4 oh, by the way, for both of them, you have insulation
5 requirements, as well." And all I'm trying to do is make
6 sure that my contractor has a level playing field with
7 everybody else. And yet the guy who was way under him,
8 and is probably going to get the job, is going to put on
9 a roof that saves that town money, but doesn't save any
10 energy, and that defeats your purpose. You know, the
11 metaphor may stretch a little bit, but I look at some of
12 what goes on here with changing from regular .5 to 8.55,
13 from .55 to .62 or .63, and we get a bunch of virtual
14 energy savings, and if we run it through our software, it
15 looks like we save a lot. But if people don't actually
16 apply those roofs, you don't save anything. It seems to
17 me that what we tend to do, stretching the metaphor, is
18 we rearrange deck chairs on the Titanic and we ignore the
19 breach in the hull. And if we were really concerned
20 about the breach in the hull, we might save the ship and
21 save energy. So I think a lot more effort needs to go
22 there and I think you'd be much better served to have
23 simple understandable Regs, which I think you largely do
24 now, that are consistent between new and re-roofing, and
25 make sure that people actually enforce them. That's

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1 where the big energy savings are. Thanks.

2 MR. SHIRAKH: Reed, did you have any comments?
3 Okay, on the -- Bill -- Mr. Callahan, I had a question.
4 Related to the cost, you mentioned the 12 data points
5 that we have is not statistically significant. Can you
6 define what that term means? Not being statistically
7 significant?

8 MR. CALLAHAN: Well, it's been a while since
9 I've done survey research, but I did take a course at the
10 University of Michigan as an undergraduate, where most
11 Gallup Polling is done. And when you're looking at, you
12 know, 5,000 contractors, 12 gives you results that are
13 usually well outside several -- what's the statistical
14 term?

15 MS. BROOK: Standard deviations?

16 MR. CALLAHAN: There you go.

17 MR. SHIRAKH: Is that like, you know, when
18 people want to do a roof, they do standard deviation
19 analysis, analysis of variance, high score -- I mean,
20 that's what is implied in statistically significant. I
21 mean --

22 MR. CALLAHAN: No, statistically significant is
23 when you tell us that this measure is cost-effective and
24 you base it on 12 responses in a state like California.
25 Are you kidding me? When even the most rudimentary look

1 at this says, "Hey, how is it?" And I hate saying this,
2 representing Union Contractors, but generally speaking,
3 our roofs are going to cost more. You know, it's hard
4 for us to compete on a cost basis, and yet I see here
5 your results say that we're half as expensive as the guys
6 in Fresno that are non-Union? If that were true, my
7 contractors would have a lot more money and be a lot
8 happier, and they are not happy. And I've had a bunch go
9 out of business in the last couple of years because of
10 the recession. That makes me question the validity of
11 this survey. I mean, come on, do you do this in other
12 areas? Do you base deciding what you're going to do, you
13 know, with the electrical standards and the mechanical or
14 anything anyone else talks about? On 12 price points?

15 MS. BROOK: So --

16 MR. CALLAHAN: From 99 cell data -- cell table
17 -- and 47 of them are blank?

18 MS. BROOK: So just to the point of the
19 availability of cost data, everybody knows how
20 challenging it is for the public sector to obtain cost
21 data, and we certainly surveyed many more than 12 to get
22 12, it's just that by and large the private sector is
23 unwilling to provide cost data to the Commission, so we
24 try very hard to get it, and we've asked your members,
25 you and your members, over and over again to help us with

1 that, and --

2 MR. CALLAHAN: Well, I don't --

3 MS. BROOK: So it is a challenge.

4 MR. CALLAHAN: I agree, it is a challenge and I
5 don't know what you've done with Reed and ARMA, I haven't
6 been involved in that, but in my impression over the
7 years, is that based generally speaking when Commission
8 staff says "we," they mean you do a survey, you come up
9 with a result, and we're told it is solid, and we respond
10 to it.

11 MR. SHIRAKH: But we actually send inquiries to
12 --

13 MR. CALLAHAN: You send a lot of emails, I see
14 that.

15 MR. SHIRAKH: Well, we also use the published
16 data, the means data, prevailing wages, independently,
17 and in every single case, whether it was a survey data
18 with published data, we received -- the information we
19 got indicated that what we are proposing is very cost-
20 effective and there was not one single instance where
21 cost-effectiveness was an issue. But, yeah, we have only
22 12, plus the published data, but every single case it's
23 been widely cost-effective.

24 MR. CALLAHAN: Well, I'll let Reed talk about
25 how the industry feels, in general. I just know I got

1 this and took a look and said, "Wow, you've got to be
2 kidding."

3 MR. SHIRAKH: I mean, it would be nice if the
4 industry was more forthcoming, but this is what we have.

5 MR. CALLAHAN: It's hard to get, but it's also
6 hard to get on one month, or two months, or three months,
7 no, and that's what we continually get -- this cycle has
8 been going on for a while, and we've had a lot of
9 workshops, and a lot of stakeholder meetings, and not one
10 single one of them, not one, was any mention made of any
11 change being contemplated to the roofing centers, not
12 once. I was at every one of them. I was told repeatedly
13 no --

14 MR. SHIRAKH: I think the public record is very
15 clear on that one, I don't want to debate that, but we've
16 been going over this --

17 MR. CALLAHAN: Since October.

18 MR. SHIRAKH: No, sir, since April of -- about
19 a year and a half ago.

20 MR. CALLAHAN: No, I talked to --

21 MR. SHIRAKH: I don't want to debate that, but
22 if you can check the public record --

23 MR. CALLAHAN: I disagree, I was there. I'm
24 looking at a staff member right there who told me the
25 opposite, okay? In a meeting at Davis and --

1 MR. SHIRAKH: Again, the public record is
2 there.

3 MR. CALLAHAN: I have no problem with that.
4 Again, though, how can you point to something like this,
5 there's justification.

6 MR. SHIRAKH: Thank you.

7 MR. HITCHCOCK: Reed Hitchcock, Asphalt Roofing
8 Manufacturers Association. I'm going to read the
9 Coalition letter into the record in the afternoon because
10 we are ahead of schedule, I know there a people planning
11 to connect later today that may want to add comment at
12 that time. But to Bill's point, and the data collection
13 issue, if you go back -- and I think I say this again
14 later, but if you go back in the record, in the public
15 record, we've offered numerous times to help, but we
16 acknowledge -- and if you go back to the October
17 transcripts, you'll see it in plain writing -- we
18 acknowledged it takes time, it takes a lot of time, which
19 is why we can't support you ramming it through with
20 shoddy data, in a poor report. We're not saying it's not
21 cost-effective, we're not saying it is; we're not saying
22 that there's not good times to use cool roofs and not
23 saying there's not bad times to use them. But it's going
24 to take time to put together a meaningful robust analysis
25 and it's going to take probably a good part of the next

1 cycle. We are ready, willing and able. You responded
2 after the last meeting and said, "No, we're just going to
3 do this, we've got our guys working on it." Okay. And
4 we said at that time, it's -- you're not giving
5 yourselves enough time. And you said, "Well, we're going
6 to do this anyway." Okay, you did it and you got three
7 months worth of work, and three months worth of response,
8 so anyway, I'll read the Coalition position later, but
9 this is dodgy math. Thank you.

10 MR. RAYMER: Yes, Commissioner, Bob Raymer
11 representing the California Building Industry
12 Association. And while our primary focus is on
13 residential construction, I hadn't intended to make
14 comments today, but I would like to, I guess, reinforce
15 staff's concern about getting cost data, although I
16 wouldn't characterize it as industry unwilling to give
17 the data. Mike Hodgson and myself have had a heck of a
18 time getting cost impact data, particularly with this
19 update of the Standards. Unlike any other, I can't tell
20 you how many times we've made calls to businesses to
21 simply hear the recording on the other end of the line
22 saying, "This number is no longer in service." It's a
23 very different state that we're in right now as opposed
24 to previous updates of the Standard, and that has created
25 a heck of a problem. We, too, want to get this data.

1 It's very vital to us. And it's been the hardest of any
2 of the last, I'd say, 10 updates of the Standard to get
3 this kind of data. And when we get it, it's very lean,
4 it's usually somebody who just came on with the company,
5 if at all, and so we effectively have to take them from
6 start to finish. So I understand staff's concern about
7 the inability to get the data, but, believe me, it's not
8 because industry is unwilling, we just have to find the
9 people that are still there doing this. So with that,
10 once again, we look forward to continuing to work with
11 staff.

12 And also, you know, the roofing provisions have
13 been brought up off and on for some time. One thing I
14 did notice, though, with a lot of the case studies that
15 were going on that Console and CBI were attending in the
16 April, May and June time period, a lot of times we were
17 the only private sector group that was sort of there.
18 There was a lot of consultants, Energy Commission staff,
19 in some cases PUC staff, and consultants to the Energy
20 Commission, but these were very technical meetings and,
21 to get general industry representation there is very
22 difficult. It's highly tech meetings where you're
23 talking about .044 vs. .045, and that's a tough one.
24 It's hard to get people excited for six-hour workshops on
25 these types of intricate issues. I love it, you know,

1 Hodgson loves it, but then again, what can I tell you?
2 So anyway, we would get you that data if we had it, it's
3 just -- it's not like pulling teeth, we just have got to
4 find the mouth before we can pull the teeth. So, thank
5 you.

6 MR. SHIRAKH: Just to clarify, you know,
7 basically we're making the statement that we've sent a
8 survey to a lot of -- I wasn't questioning the
9 motivation, it was just a statement of fact that we got
10 very few responses.

11 MR. HITCHCOCK: I understand.

12 MR. SHIRAKH: That's all I was saying.

13 MR. HITCHCOCK: I understand and that is a
14 function of the economy right now, it's not that people
15 want to keep this data from you. Some sure do for trade
16 purposes or whatever, but for the most part, heck, if
17 they're going to keep it from me, you know, it's not that
18 they're doing that willingly, it's just that they're not
19 there.

20 MR. SHIRAKH: I'm glad Cathy Chappelle is here.
21 On the question of industry participation in the
22 stakeholder meeting, was it for lack of effort on our
23 part?

24 MS. CHAPPELLE: Uh, Cathy Chappelle, Heschong
25 Mahone Group, leading the IOU case effort. We started

1 this process when, what in 2010, early 2010, and we do --
2 the utilities presented the stakeholder meetings at the
3 request of the Energy Commission staff, and we had
4 outreach to all the various stakeholders, both from your
5 past Standards Updates, as well as additional information
6 from CBIA and other stakeholder groups, and we do have
7 the records of who was notified about those meetings, who
8 responded, who attended, and so forth, and we also have
9 some detailed information on all of the case reports of
10 who we, you know, tried to contact to get that
11 information, and I do agree with Bob that it's definitely
12 difficult when a lot of the industry, private businesses
13 have gone out of business, or people have moved on, but
14 we did do very due diligence of contacting industry and
15 we do have a record of that.

16 MR. SHIRAKH: Thank you, Cathy.

17 MR. DEVITO: Eric DeVito again, Cardinal Glass
18 Industries. One comment, I notice there's a new table
19 141-A for Altered Fenestration. I guess -- a couple
20 comments about it, really, 1) you know, generally the way
21 replacements and additions in fenestration, they usually
22 have no problem meeting the same requirements as new
23 because you're swapping out the same product. I can
24 understand possibly an alteration scenario where you're
25 leaving the existing frame and you're just swapping out

1 the glass, maybe that's what you're trying to capture,
2 but my comments would be, 1) with this table, you're
3 reintroducing the 16 different climate zones in non-res,
4 which we're not there now, so one option would be to go
5 back to the same approach you have in nonres and just say
6 one-size-fits-all standard, which I think makes a whole
7 heck of a lot of sense, and 2) you're bouncing around a
8 little bit on U-Factor and RSHGC, obviously because of
9 different climate zones, but one approach would be go to
10 the worst case scenario in the nonres, which would be .47
11 U, a .25 RSHG, and then I also am curious why no VT
12 requirement, as well. I mean, in a situation where
13 you're replacing the glass, even if the frame does stay
14 the same, there's no reason why that glazing can't meet
15 the SHGC and the VTs that you would want for new. So my
16 comments would be to re-tool this table somewhat,
17 simplify it, if you're going to keep it at all, simplify
18 it, and then introduce the VT and make the Standards
19 consistent with them. Thank you.

20 MR. SHIRAKH: Thank you. John, then Mike.

21 MR. ARENT: Thank you. John Arent, CEC. So I
22 was doing a good portion of the study for the cool roof
23 for nonresidential. So, as was mentioned, you know, it's
24 quite obvious and I will of course admit it, it is a
25 small sample of results that we got for cost data. We

1 did do a comprehensive effort, we worked with ARMA to
2 develop a survey that would address our needs, and we
3 contacted approximately 80 contractors throughout the
4 state. Of those, I got approximately two dozen to agree
5 to participate, but only got a few responses. So,
6 subsequently, I worked to gather results over the phone
7 which, of course, is a little bit less comprehensive than
8 a survey, and with regards to some of the blanks, maybe
9 the documentation wasn't quite done properly, but in some
10 cases, the contractors didn't work with particularly
11 roofing systems, so they didn't have a comment on price.

12 And I'd also like to mention that, in some
13 cases, one of the challenges was that the contractors
14 that did respond and give us prices weren't able to
15 sufficiently distinguish the costs of a product that
16 meets the current standards with a product that meets the
17 proposed standards. And so, so that end, I worked with
18 the Energy Commission to -- and they contacted
19 manufacturers and distributors so that we could determine
20 at least the component of price differences that was
21 attributed to different system materials, and I got in
22 those cases some confirmation from some of the
23 contractors that there shouldn't be an installation cost
24 difference, that the primary cost difference would be the
25 roofing product. So, you know, it is a challenge, of

1 course, and the data is limited.

2 And then I'd also like to respond to an earlier
3 comment made on the question about whether or not we
4 should have a different requirement for alterations vs.
5 nonresidential. I think the comment was made to have it
6 at .63 H Reflectance for both. You know, for
7 Alterations, there's a couple different things at play,
8 one is that there's obviously a limited number of
9 alternatives that you can do when you're re-roofing.
10 You're not going to replace your windows or put in some
11 other necessarily some air-conditioning equipment, so
12 your tradeoffs are limited, so we wanted to consider
13 that. And then the tradeoff table, it should be noted,
14 for alterations is based on a different design assumption
15 than for new construction. So you'll notice that the
16 required amount of insulation for alterations is lower
17 because there's an assumed less insulation underneath the
18 roof, so there's probably more comments to come later, so
19 I'll just leave it at that.

20 MR. SHIRAKH: Thank you, John. Mike?

21 MR. GABEL: Mike Gabel. On fenestration
22 alterations, I put this in writing, just want to mention
23 in the meeting, the staff in the 2013 Code has proposed
24 going back to referencing the existing opening, and we
25 didn't have that in 2008, we took it out for good reason;

1 I think we want to go back to not specifying the opening
2 because keeping track of openings in a building and what
3 glass is replacing whatnot, is insanely difficult, it's
4 never enforced, you want to keep it to the glass area
5 that is existing in an existing surface, and essentially
6 use that area as the reference for the amount of
7 alteration. And I proposed language in writing to you as
8 a new definition that simplifies that.

9 MR. SHIRAKH: Can you work with Nelson on that?

10 MR. GABEL: Yeah, sure.

11 MR. SHIRAKH: Thank you. Any other questions
12 on nonres alterations? Bill.

13 MR. CALLAHAN: One clarification, and I just
14 went back to all the workshop notices and agendas and so
15 on, the reality is in between our positions, the new and
16 at the time it was .70 proposal for nonresidential, it
17 was made on June 10th, so it wasn't April or May, but
18 neither was it September or October. You can review them
19 all yourself, but I just did.

20 MS. BROOK: That sounds right.

21 MR. SHIRAKH: That was a stakeholder meeting we
22 had, yeah.

23 MS. BROOK: Thank you.

24 MR. SHIRAKH: That sounds about right.

25 MR. YASNY: Online, there's Mudit.

1 MR. SHIRAKH: Go ahead.

2 MR. SAXENA: Hi, can you guys hear me?

3 MS. BROOK: Yes.

4 MR. SAXENA: Okay, thank you. This is Mudit
5 Saxena. I was a case author for the daylighting topic
6 for the IOU case team. In our report to the CEC, we
7 developed some language and cost justifications for
8 requiring photo control when there is lighting
9 alterations in daylit areas. We looked at cost of photo
10 controls, and also costs of installing them in a retrofit
11 situation, came up with a threshold which was more than
12 twice the threshold that we came up with for new
13 construction. I'm not able to find that in the 45-day
14 language. It used to be what was proposed as Section
15 149(B)(1)(I)(vi). Has that been taken out? And what was
16 the reason? Because we were able to show cost-
17 effectiveness to it.

18 MR. SHIRAKH: Nelson, do you know?

19 MR. FLAMM: No, that's mine. Mudit, when we
20 converted to the table and we cited, you know, 130.1(B)
21 and (C), I remember an earlier version of that table
22 where (D) was in there also, 130.1(D), and honestly I
23 don't remember what happened to it, if it was on purpose
24 or inadvertent that it was left off. I need to talk with
25 Jim Benya and with you offline to figure out what

1 happened there.

2 MR. SAXENA: Okay. Yeah, I'll be happy to talk
3 with you about it. If it got left out inadvertently,
4 they should definitely transfer it back in.

5 MR. SHIRAKH: Just one response to Mr.
6 Callahan. I think you are correct that June was when we
7 presented it, so basically that was a staff workshop.
8 What is not there is all the case stakeholder meetings
9 where the cool roof requirements were presented, and I
10 can ask Cathy Chappelle to actually give us the dates of
11 when the cool roof requirements were presented and who
12 was contacted. That would be appreciated. Any other
13 comments on nonresidential alterations? Gene.

14 MR. THOMAS: Gene Thomas, Ecology Action. It's
15 a clarification, really, for Table 141.0-C, Enclosed
16 Space type. Could you give some examples of what you're
17 talking about in terms of a change to a space type?

18 MR. FLAMM: So if you've got a space and let's
19 say it's an office and you're changing it to a retail
20 space.

21 MR. THOMAS: But you wouldn't like -- it
22 wouldn't count if you were changing -- you're taking an
23 office and now you're calling it an employee lounge?

24 MR. FLAMM: No, it's only if you're doing a
25 lighting alteration, anyway. If you're doing a lighting

1 alteration or Modification-in-Place, then it's effective.
2 Simply changing it doesn't do anything, but if you change
3 it and then you do the lighting, then that would affect
4 what you can do with that.

5 MR. THOMAS: Okay, I'm just trying to get the
6 sense of looking at, for example, the types, area types,
7 and so forth, and building types and the area category
8 method. So you don't necessarily mean changing from any
9 one of those to any other one, triggering the full Code?

10 MR. FLAMM: No, it's the alteration that
11 triggers the requirement of the Standards, not the
12 changing of the room.

13 MR. THOMAS: Okay, so in other words, you've
14 got the two different rows here, so alterations of
15 greater than, or 10 percent or greater, and LPD, 85
16 percent below, then only these controls are required and
17 multi-level things are required that do not -- if the
18 space type is not changed, but let's say you are
19 replacing more than 10 percent of the existing
20 luminaires, your less than 85 percent of the LPD in this
21 room, but you have changed it from an office to an
22 employee lounge, or something like that, that sole thing
23 doesn't trigger all of the other Code requirements, does
24 it?

25 MR. FLAMM: Well, most of the control

1 requirements are based -- are regardless of the function
2 area, the lighting controls. The multi-level controls
3 are based on technology; they're not based on where you
4 put them. So if you're changing from -- if you're doing
5 a modification, an alteration that makes you meet the new
6 Standards, it's going to be whatever the room is
7 functioning as is going to determine your lighting power
8 density, not your lighting control requirements because
9 the lighting control requirements are the same,
10 regardless of the room type.

11 MR. THOMAS: Unless you're changing the space
12 type -- unless you're increasing the area or you're
13 changing the space type, or you're increasing the total
14 lighting power, that's when it says "then these other
15 things come into play." So that's what I'm just trying
16 to --

17 MR. FLAMM: Right, if you change -- not simply
18 changing the -- if you change the space type in
19 conjunction with changing a wiring or luminaire
20 modification, then you have to meet the requirements
21 based on the new space.

22 MR. THOMAS: And that space type definition --
23 because you can't -- you know, I did a search for space
24 type definition, I did a search for some other things
25 that weren't in there, so the closest thing I could see

1 was Table 140.6(C) --

2 MR. FLAMM: So are you asking what is a space
3 type?

4 MR. THOMAS: Yeah, what comprises --

5 MR. FLAMM: Okay, they're the function areas,
6 the definitions of the area category, tailored method, in
7 Section 100.1, there are definitions of function areas,
8 so maybe we need to clarify that we're talking about
9 function areas there.

10 MR. THOMAS: Yeah, if you change "space type"
11 to "function area," then that would --

12 MR. FLAMM: Okay, I didn't understand what your
13 point was there.

14 MR. THOMAS: Okay, I think that does it, then.
15 Thanks.

16 MR. FLAMM: Thank you.

17 MR. CONTOYANNIS: Hi, Dimitri Contoyannis with
18 AEC. I'd like to speak a little bit more about the cool
19 roof measure. So there was a comment made earlier that
20 insinuated that it was fuzzy math that led to the
21 recommendation of the reflectivity --

22 MS. BROOK: It was "dodgy math," for the
23 record, yeah.

24 MR. CONTOYANNIS: Dodgy math, sorry. So I'd
25 just like to point out that the methodology used

1 throughout this case proposal, as well as many others,
2 involves using a widely adopted simulation tool that's
3 used throughout industry, and throughout many of these
4 case reports. The methodology by which the simulations
5 were prepared are clearly documented in the case report.
6 The results clearly demonstrate that cool roof proposal
7 leads to energy savings and TDV energy savings. The
8 methodology by which cost-effectiveness is calculated is
9 also available on the CEC website, and that cost-
10 effectiveness methodology, as I mentioned before, is
11 there, it's available, all the case reports use that same
12 methodology. Now, the response rate of the survey for
13 this proposal, I think we would have liked to see a
14 higher response rate, but all of the responses that we
15 did receive demonstrate the cost-effectiveness using the
16 cost-effectiveness methodology, as well as the RS Means
17 data, as Mazi pointed out, that is a widely used industry
18 source of cost data. So I think, you know, with the data
19 we had available, it can be shown that this cool roof
20 proposal is indeed going to save energy and is cost-
21 effective. Thanks.

22 MR. SHIRAKH: Thank you, Dimitri. Any other
23 questions or comments on nonresidential alterations?
24 Online? Shall we break for lunch?

25 COMMISSIONER DOUGLAS: Sounds great. We'll

1 break for lunch and give it one hour. Does that sound
2 about right? Or a little longer.

3 MR. SHIRAKH: Come back at 1:30.

4 COMMISSIONER DOUGLAS: All right, let's come
5 back at 1:30, then. Thank you.

6 (Recess at 12:05 p.m.)

7 (Reconvene at 1:37 p.m.)

8 MS. BROOK: Welcome back, everyone. Thank you
9 for rejoining us on the 45-day language hearing. Are we
10 ready to get going? Okay, so next on the agenda is Title
11 24, Part 11 on Nonresidential Voluntary Reach Standards.
12 What we're proposing to put into Part 2 is the
13 performance approach to be on Code Reach Standard, Tier I
14 would be an Energy Budget that is less than or equal to
15 the 90 percent of the Part 6 Energy Budget, or 10 percent
16 better than Code; Tier II would be an energy budget
17 that's less than or equal to 80 percent of the Part 6
18 Energy Budget, again, 20 percent better than Code. And
19 this would be verified through Energy Commission
20 certified compliance software.

21 There's two prerequisites that we're proposing,
22 one is for installed outdoor lighting power, which is not
23 covered in the performance compliance approach to be,
24 again, 10 percent better than Code, or less than or equal
25 to 90 percent of the Part 6 outdoor lighting power

1 allowance. And the second prerequisite is for service
2 water heating in restaurants larger than 8,000-square-
3 feet would have natural gas water heater with a minimum
4 95 percent thermal efficiency, or solar water heating
5 system that provides a minimum solar fraction of 15
6 percent.

7 That is it for the Reach Standard. Does
8 anybody have comments or discussion about what we're
9 proposing for the Voluntary Part 11 Standard? Anything
10 on the phone?

11 Okay, so at this time, we're going to switch
12 slide decks and talk about the Reference Appendices.

13 MR. SHIRAKH: So the Reference Appendices have
14 three parts, the first is a Joint Appendices, second part
15 is Residential Appendices, and the third is Nonres. It's
16 all part of the same document, but today we are only
17 going to be talking about the Nonres Appendices.

18 Tomorrow, we'll talk briefly about the Joint and the
19 Residential Appendices. But the history is the same.
20 Joint Appendices were introduced in 2005 and had only
21 four chapters, JA1 was the Glossary, JA2 was the Weather
22 Data, JA3 was the TDV procedure, and JA4 was a U-Factor,
23 C-Factor thermal mass data, and so forth. And the reason
24 we created Reference Appendices in 2005 -- or Joint
25 Appendices -- was because we need a place to put all this

1 data that is used by all Standard documents. Prior to
2 that, you know, we kind of used the ACM Manuals for this
3 purpose, which was not the right document for these
4 because ACM Manuals are supposed to be documents that are
5 used to certify the compliance software. So we have
6 pulled that out and put them in the Joint Appendices.

7 And then the document was renamed in 2008 to
8 reference Appendices, and that's where we had it under
9 Residential and Nonresidential Appendices. And we pulled
10 even more data out of the ACM Manuals and other documents
11 where this information didn't belong, and put them all in
12 here. And it serves as a common reference for all
13 Standard-related documents, and well aligned with ACM
14 Manuals for the sole purpose of compliance software
15 development and approval.

16 And so, again, we're going to move to the
17 Nonres data -- okay. So most of these are edits to
18 existing language, either a result of new requirements or
19 clarifications. NA2 is a Nonresidential Field
20 Verification Diagnostic Test Procedure that is basically
21 duct leakage for small constant volume system. These are
22 very similar to the Residential systems, these are
23 systems that are put into Nonres buildings that are 5,000
24 square foot or less, and they're constant volume system.
25 Again, very similar to residential systems. And these

1 are the only nonres systems that are subject to HERS
2 Verification procedures, similar to Res. And so these
3 were the changes basically, to update to eliminate the
4 ACM language, edited for clarity, added the smoke test
5 apparatus specifications, clarified the connections to
6 Plenum, and penetrations in air-handling unit, and air-
7 handling unit access doors.

8 The next one was revisions to NA2.1.4.2.2,
9 Sealing of All Accessible Leaks protocols to include
10 smoke test. The next section actually describes the
11 smoke test, the protocols. The next provision was the
12 visual inspection to delete the excessively damaged
13 inspection criteria that included an allowance for
14 systems to pass verification with a two-inch diameter
15 hole in the ducts, so, you know, we had to come up with
16 some procedures to eliminate this problem.

17 And the last bullet is eliminating requirements
18 for affixing a sticker to duct system to support the
19 results of the duct leakage test.

20 NA5 is the overall envelope energy approach.
21 As mentioned earlier, you know, we have proposed to
22 eliminate this procedure and replace it with a compliance
23 software fix, and so what is under NA5 has been
24 eliminated.

25 Nonres NA7, this is Acceptance Requirements for

1 Nonresidential Buildings. A lot of changes to this
2 section, a lot of them are through the feedback we get
3 from the public, people who are actually doing their
4 acceptance testing, you know, they always have
5 suggestions how to improve the procedure, and kind of for
6 clarity, change the things that don't work, and so we get
7 constant feedback. So a lot of the changes to this
8 section are a result of basically the experience people
9 are gaining in the field and then giving it back to us.

10 We also have new requirements in the Standards.
11 Martha showed all the process loads that we've added to
12 the nonresidential buildings, for instance, and all of
13 those have acceptance requirements attached to them. So
14 changes in this NA7 captures these changes.

15 Of course, we added a Table of Contents that
16 didn't exist before, revised the introduction for
17 clarity. There was a lot of work that has gone into
18 identifying the responsible person and the rules and
19 responsibility of different people who do acceptance
20 testing, so a lot of work has gone into this. You know,
21 who is the responsible person, the field technician, and
22 what is the definition of that, the documentation author.
23 So there are new definitions for these.

24 And for the NA7.3, we revised the Acceptance
25 Test Data and we have new tests. So for the

1 Documentation Author, the Commission's Fenestration Label
2 Certificate eliminates requiring verification and
3 required the documentation has been clarified. The VAV
4 Outdoor Air Acceptance expanded construction inspection
5 to include outdoor flow sensors, controls calibration
6 certificates, and pre-occupancy purge.

7 And for Constant Volume Outdoor Acceptance,
8 expanded construction inspection to include outdoor air
9 provisions and pre-occupancy purge.

10 For Air Distribution System, expanded
11 construction inspection to include duct system adhesive
12 tape for economizer control, expanded construction
13 inspection to include sensors, dampers, thermostats, and
14 actuators. And a functional test added to confirm damper
15 position control and economizer use for partial cooling.

16 For Supply Fan Variable Flow Controls, expanded
17 construction inspection to include air flow modulation
18 device and functional testing where clarified.

19 For Supply Water Temperature Reset Controls,
20 the functional testing was clarified.

21 Hydronic System Variable Flow Controls, the
22 expanded construction inspection to include static
23 pressure location, set point and reset controls.

24 Functional test steps, they were reordered and
25 clarified.

1 Fault Detection and Diagnostics for DX
2 Expansion Units, expanded construction inspection to
3 include hardware, air temperature sensors, and
4 controllers.

5 We removed some eligibility criteria, added
6 functional tests for air temperature sensors, excess
7 outside air, economizer operations, and refrigerant
8 diagnostic sensors.

9 We've added New Acceptance Testing in this
10 procedure, in this chapter, for Supply Air Temperature
11 Reset, Condenser Water Supply Temperature Reset Controls,
12 Refrigerated Warehouses, which included Electric
13 Resistance Under Slab Heating System Evaporators and
14 Evaporator Fan Motor Variable Speed Controls, Condensers
15 and Condenser Fan Motor Variable Speed Controls, and
16 Variable Speed Screw Compressors. So they will all have
17 new Acceptance Test requirements.

18 Outdoor Lighting Acceptance Requirements, new
19 requirements for automatic daylight controls, automatic
20 shutoff controls, and demand responsive controls.

21 NA7 is the Lighting Control Installation
22 Requirements. Are these new requirements, Gary? Or are
23 they existing and they have been changed?

24 MR. FLAMM: These requirements were vetted
25 earlier, they're new to 2013 Standards.

1 MR. SHIRAKH: So these are new requirements for
2 Lighting Control Systems and Energy Management Control
3 Systems, Track Lighting Integral Current Limiters, Track
4 Lighting Supplementary Overcurrent Panels, Interlocked
5 Systems Serving a Single Area, you know, for using some
6 Power Adjustment Factors (PAF), there are acceptance
7 requirements. Is that correct?

8 MR. FLAMM: These are installation
9 certificates, this whole list.

10 MR. SHIRAKH: Yeah. So Videoconferencing
11 Studios, Extra Power Allowances, and for Outdoor Lighting
12 Acceptance Requirements, outdoor lighting automatic
13 shutoff controls.

14 For Nonresidential buildings, continuing new
15 Acceptance Tests for Commercial Kitchen Exhaust Systems,
16 this is the slide deck that Martha talked about this
17 morning, new requirements for process loads, so there are
18 associated acceptance requirements. Besides the
19 commercial kitchens, there are Acceptance Requirements
20 for Parking Garage and Compressed Air Systems.

21 NA8 is the Luminaire Power. I think Gary
22 worked on this section and he significantly reduced the
23 scope. Do you want to add something to that?

24 MR. FLAMM: Sure. The NA8 has been the default
25 wattage list and it's intended to be conservative. It's

1 an alternate option to determining wattage according to
2 Section 130.0. And most of the technologies in that
3 document are outdated technologies, so there's a lot of
4 legacy language that is not relevant to technologies
5 being installed today, and furthermore, all we left in it
6 were efficient technologies, so if somebody puts in
7 something other than the most efficient technologies,
8 they no longer have the option to use the list, they have
9 to prove otherwise according to the rules in Section 130.

10 MR. SHIRAKH: Thank you. NA9 is the
11 Nonresidential Fault Detection and Diagnostics (FDD), it
12 is a new section. And so we have new Acceptance Testing
13 for it. The things that are going to be tested will be
14 temperature and refrigerant sensors, Unit controller, and
15 the Unit controller shall provide system status for free
16 cooling, economizer when it is enabled, Compressor
17 enabled, Heating enabled, Mixed air flow limits the
18 cycle that's active. Unit controller shall manually
19 initiate each operating mode and Faults reported to the
20 management application, and FDD system shall be certified
21 by the Commission. So these are all the new requirements
22 for Fault Detection Devices.

23 Did you want to add something to that, Martha?

24 NA9 Fault Detection, again, continuing.

25 Specifies the requirement for Fault Detection, for the

1 Economizer operation and air-cooled Direct Expansion
2 units. The Faults that will be detected under this
3 procedure are Air temperature sensor failure/fault, not
4 economizing when it should, economizing when it should
5 not, dampers not modulating, and excess outdoor air.

6 So that's it for Revisions to Nonresidential
7 Appendices. Any questions?

8 MR. GABEL: Mike Gabel. So thanks, Gary. I
9 think I'm happy with the Luminaire Power Table. The only
10 thing I would add maybe, perhaps is low voltage halogens.
11 They're not the most efficient technology, but they're
12 still commonly used and people might want to have a
13 default value for those. I don't know if you have an
14 opinion about that.

15 MR. FLAMM: Are you talking about resurrecting
16 numbers that were already in there? Because, really, I
17 believe the old was just ballasted technologies, wasn't
18 it?

19 MR. GABEL: I don't recall any low voltage --
20 well, for example, it would take the lamp plus the other
21 auxiliary --

22 MR. FLAMM: Well, let's talk about it offline.

23 MR. GABEL: Okay. And then the other thing was
24 on Table 141.0(C), Standard Design for an Altered
25 Component. There is supposed to be third-party

1 verification of an existing window characteristic as part
2 of this deal we worked out about what alterations are
3 going to do and how they're going to work, and so I
4 probably want to have something in the Appendices that
5 say what the third-party verification involves as far as
6 windows. Thanks.

7 MR. KLEIN: Gary Klein, Affiliated
8 International Management. I have a comment regarding
9 Appendix A5, the Nonres Voluntary Measures. You've got
10 an item for service water heating in restaurants. I
11 appreciate that. I'm actually curious why we didn't
12 think of putting in the volume from the recirc loop or
13 other requirements that we have in the Res not voluntary
14 standards for Green? We put in something which I'll talk
15 about in more detail tomorrow, but it's 1E, Maximum Hot
16 Water Pipe Volume for Res; why not non-res? The pipes
17 can't tell what building they're in and it makes just as
18 much sense to fix the problem in all buildings, as
19 opposed to just residential building. I'm not sure we're
20 able to do anything about it at this point in time, but I
21 thought I should raise it because, if we're able to make
22 a change, I would therefore put in such language.

23 MS. BROOK: So, Gary, you helped us with the
24 residential proposal and we basically borrowed IAPMO
25 Green language for the residential sector. Are you

1 suggesting that they have the equivalent --

2 MR. KLEIN: It's identical. The language for
3 nonres is the same volumetric number you put in for res.

4 MS. BROOK: All buildings, they have those same
5 restrictions?

6 MR. KLEIN: Yes, they do.

7 MS. BROOK: Hmm.

8 MR. KLEIN: They do. So I'm proposing that
9 it's identical language and we might want to consider its
10 use.

11 MS. BROOK: Well, is there any documentation
12 that proves its cost-effectiveness for nonresidential
13 buildings? I'm sort of surprised that you could make the
14 same general proposal for residential construction as,
15 you know, the extensive variety we have in nonres, and
16 actually have those same volumetric limits applied in
17 nonres buildings.

18 MR. KLEIN: Absolutely a great question. So
19 the Energy Commission's bathrooms are a good example.
20 When is the last time you actually got hot water in the
21 bathroom over here? Have you gotten it since you've been
22 here as a Commissioner? I used to work here for 20-
23 something years, I've never had hot water in the men's
24 room, I'm assuming the women's room is sort of similar.
25 Thank you, I heard a verification, the ladies room is the

1 same. This is an office building, and this occupancy has
2 a problem. There is a water heater in this building
3 somewhere, I believe it, I've never actually seen it, but
4 I believe there was one put into the building. The
5 occupancy requires it. The problem is, it's eight miles
6 away from the source, the uses of the hot water. And by
7 the way, it's on a 24/7 recirc loop, we might be lucky,
8 it could be on a timer here, it is the Energy Commission.
9 But it's not delivering hot water to our fixtures. Why?
10 The rules by which the building was built allow run-outs.
11 This building is old. It may not have any limit to the
12 volume in the run-out or length if it was limited by
13 ASHRAE, which would have covered it, it would be a 100-
14 foot run-out, no volume, no diameter intended. So 100-
15 foot is going to be a one-inch pipe that's required
16 because it's so long, and given the bathroom layout, I
17 would assume that to be true based on IAPMO plumbing
18 rules, so that's got five gallons of water in it. We
19 retrofit with low flow fixtures. Good, it's going to
20 take 10 minutes of continuous use to clear out the pipe.
21 It isn't happening. I think I've made my point fairly
22 clear, that if you have intermittent uses in office
23 building-type occupancies, you actually want the water
24 heater really close. I would say it's true in all
25 building types. The more use you have, the more likely

1 you are to have a bigger boiler, or a bigger water
2 heating system, and then you're going to have, if you've
3 got a stack in a hotel, or you've got dorm rooms, or
4 you've got gymnasiums, you'd want the water heaters to be
5 big enough for the application, but you'd still want the
6 pipe to be designed right. So I think that the case is
7 that we can and should, the cost-effectiveness is
8 probably better in most applications anyway because you
9 want the water heater --

10 MS. BROOK: Well, I'm assuming that the
11 residential proposal was derived -- the volumetric limit
12 was derived from inefficient plumbing design in a typical
13 single-family dwelling, so I need the math and the
14 documentation that shows how you make that proposal and
15 how you turn it into something that works for this
16 building, and the size of this building and other
17 commercial buildings. I don't see how the volumetric
18 limits would --

19 MR. KLEIN: Would help you?

20 MS. BROOK: No, I know it would help; I don't
21 see how it could be practical to require those same
22 volumetric limits with the size of buildings and where
23 you have to locate a water heater in these buildings,
24 that you would need more capacity in the plumbing system.

25 MR. KLEIN: This building has, if we were to

1 look at the amount of hot water use relative to
2 everything else in the building, would you assume it's
3 pretty close to zero?

4 MS. BROOK: Well, yeah, especially since you
5 can't get it out of the amp.

6 MR. KLEIN: Well, you're just spending the
7 energy instead, so assume the real use is really small
8 because it is, we would be way better off with small
9 electric water heaters in every bathroom to supply the
10 load and, rather than a gas boiler or water heater up on
11 the roof.

12 MS. BROOK: So is there a study that has done
13 that for commercial buildings that we could depend on for
14 making this recommendation is what I'm asking for.

15 MR. KLEIN: I would say yes, but I'm not sure
16 what you need in the way of a study, so when we're
17 offline --

18 MS. BROOK: Well, whatever they use to -- well,
19 I shouldn't say this, but it would -- I am assuming that
20 they had such documentation when they made the decision
21 in the IAPMO Green Building Code to include this
22 requirement. So I'm asking for that same kind of report,
23 or analysis, or justification, so that we can understand
24 it and make use of it.

25 MR. KLEIN: I will see what I have to send you.

1 MS. BROOK: Okay.

2 MR. KLEIN: Obviously, we need it yesterday, I
3 understand the problem.

4 MS. BROOK: Right.

5 MR. KLEIN: I'm just -- we didn't think about
6 it when you and I worked on it, I realize that, I'm just
7 proposing if we can fix it, it would be worth fixing.

8 MS. BROOK: Okay.

9 MR. KLEIN: A related comment to this is that I
10 think, in our nonres, we essentially require -- do we
11 allow 24/7 research systems in nonres buildings?

12 MS. BROOK: I don't know.

13 MR. KLEIN: So if we're not, sorry, I don't
14 think we should allow 24/7 research systems in nonres
15 buildings.

16 MS. BROOK: Okay.

17 MR. KLEIN: I think we should be going to
18 demand controls, which I think is what the intent was,
19 the underlying intent in this section, anyway.

20 MS. BROOK: Uh huh, okay.

21 MR. KLEIN: I'll come back with comments of a
22 similar form tomorrow on the res section.

23 MS. BROOK: Okay, thank you.

24 MR. KLEIN: Thank you for your time.

25 MR. SHIRAKH: Any other questions on Nonres

1 Appendices? Online? Okay, we'll move to --

2 MR. EMBLEM: Are you taking questions from the
3 phone?

4 MR. SHIRAKH: Is there a question on the phone?

5 MR. EMBLEM: Yes.

6 MR. SHIRAKH: Can you speak up a little bit?

7 MS. BROOK: And introduce yourself, please?

8 MR. EMBLEM: Yeah, this is Eric Emblem with the
9 Joint Committee on Energy and Environmental Policy. Can
10 you hear me?

11 MS. BROOK: Yeah. Hi, Eric.

12 MR. EMBLEM: How you doing, Martha?

13 MS. BROOK: Good.

14 MR. EMBLEM: Mazi, how you doing. Listen, I
15 just want to reiterate my concern about the
16 enforceability of the Code at this point. I support
17 basically what you've done here and the addition of more
18 Acceptance Tests and more rigorous requirements. But the
19 concern I have is the ability to enforce it under the
20 current conditions that you have in the language.
21 Obviously, when you start putting the issues like demand
22 control ventilation and acceptance testing to verify it,
23 it's very important that the people that are carrying out
24 that verification process and documenting to those
25 acceptance forms know what they're doing. Under the

1 current process, I don't think that's happening.

2 Now, it would be nice if we could say that
3 these acceptance forms were being gathered and collected
4 by the various code authorities in the State of
5 California, but in general, they are not. And in
6 general, in fact, the proponents of the ones that are
7 being collected are not being filled out correctly. And
8 there's no way for the inspectors to understand whether
9 they're correct or incorrect. So in order for the Code
10 to work and for us to achieve the goals, we've got to
11 make sure that the systems are being installed properly,
12 and that when we've come to the determination that
13 acceptance tests are required, that the people that are
14 actually required to fill out those forms know what
15 they're doing. Now, we had a workshop on this the other
16 day, but I just wanted to go on the record here saying
17 that I feel, we feel, that the people who fill out
18 acceptance forms should be properly trained and certified
19 to do so. And I hope that we could work out how those
20 elements would come together and what those
21 certifications would be, but without that, I think that
22 we're doomed for further failure and less compliance, and
23 not more compliance with the Code. And I think to
24 adequately implement this, we're going to have to have
25 more compliance. That's all.

1 MR. SHIRAKH: Thank you, Eric. Any other
2 questions or comments on this section?

3 Okay, we'll move to the last.

4 MS. BROOK: The last section -- I don't know
5 why we're talking about residential today -- for
6 discussion today is the Nonresidential ACM Approval
7 Manual. As heard in previous workshops on this topic,
8 we've made substantive revisions to the ACM Approval
9 Manual. We basically modified the manual so that it
10 really just explains the process requirements for house
11 compliance software shall be certified, and these are
12 certified by the Commission. So it includes an
13 application checklist in the manual, and it also includes
14 the requirements for a compliance supplement to a
15 software user manual. And, again, it explains the
16 approval and decertification and challenge process for
17 compliance software.

18 And then a separate document in a
19 Nonresidential ACM Reference Manual will be a guideline
20 for the implementation of our performance compliance
21 approach and compliance software, that will be a separate
22 document that is approved by the Commission, but not part
23 of the rulemaking documents. And we'll entertain any
24 comments, or questions, or suggestions on the ACM
25 Approval Manual.

1 MR. GABEL: Mike Gabel again. So I put most of
2 these comments in writing, but I just want to stress
3 three quick points.

4 MS. BROOK: Okay.

5 MR. GABEL: One is I think Martha and we have
6 talked about that the software should, both onscreen and
7 in some form, print out a full description of the
8 standard design, which we've never had for 35 years --

9 MS. BROOK: Okay.

10 MR. GABEL: -- so that you can troubleshoot and
11 see, and also so someone can see what they're comparing
12 their building to in detail.

13 MS. BROOK: Uh huh.

14 MR. GABEL: That's one point. Another point is
15 that right now you have forms being printed out which, in
16 the new Code, will go into a Registry, and there will be
17 no access to sort of edit those forms, and right now the
18 software doesn't give you the ability to fill in the
19 fields in all those forms, so you can only fill in inputs
20 to change the numbers. So the compliance software has to
21 give you the ability within the program to put in notes,
22 or fill in the fields that appear on the forms, unless
23 you're going to let people edit the forms, they have to
24 go to the Registry by creating some special system where
25 they have access to some fields to edit it, and not to

1 other --

2 MS. BROOK: Right, and we are talking about a
3 report generator that would have some of that
4 functionality.

5 MR. GABEL: Okay, that would be great. And
6 then finally, the third point is, this is Res and Nonres,
7 but it applies to nonres, there are inputs into the
8 software that change the numbers that don't appear on the
9 Certificate of Compliance. In other words, there are
10 certain things you can put into the software in good
11 faith that you're modeling it correctly, but some of
12 those things don't ever appear on the forms that the
13 Building Department plan checks.

14 MS. BROOK: Yeah, and the challenge we have
15 here, I think, and I completely agree with you, we need
16 to figure out what is really important and what's not,
17 because I've seen the software implementation where, you
18 know, we have this thing, exceptional methods, and
19 basically every single wall and frame assembly was
20 printed out, and so this compliance form turned out to
21 be, you know, 20-30 pages, but nobody is ever going to
22 read that and so that challenge is to give the right
23 information, but in a way that it's actually useful to
24 the --

25 MR. GABEL: Right, so I think that's the

1 challenge. I think one approach is, if the Registries --
2 I think you did include the language and I thank you for
3 the inclusion of the software, the input file has to be
4 registered with the forms, that if someone has access to
5 the file, they can always go back into the file and look
6 at some of the things for enforcement purposes, but
7 you're right, you have to be somewhat strategic, but I
8 think big ticket items, I think anything that is
9 significant, even if it doesn't detail every input, it
10 alludes to the fact that those inputs were used to
11 describe the buildings so there's something special.

12 MS. BROOK: Okay.

13 MR. GABEL: But we can, you know, we'll talk
14 more offline, but I just wanted to make mention of that.

15 MS. BROOK: So the other thing that we're going
16 to talk about more on May 3rd at the workshop, but just
17 to remind everybody that we have been getting stakeholder
18 comments about, you know, as we drive the performance
19 standard to zero net energy, we need to allow more and
20 more flexibility in designs because they actually need,
21 in order to design the low energy building, you actually
22 need to have specific, you know, building and
23 application-specific schedules, for example. And right
24 now, our compliance software requires you to have default
25 schedules and not vary from them.

1 MR. GABEL: Uh huh.

2 MS. BROOK: So we've talked about being able to
3 have some sort of third-party verification of the input
4 file, or of the compliance process so that you can get
5 credit, but you have to do an extra step to verify that
6 you're not just gaming the system.

7 MR. GABEL: Right.

8 MS. BROOK: So --

9 MR. GABEL: So I think we're not going to do
10 that for this Code cycle, but you're thinking about the
11 next Code cycle?

12 MS. BROOK: No, I think we will do it this Code
13 cycle.

14 MR. GABEL: Okay, so let's talk more about
15 that. Thanks.

16 MR. NITTLER: Ken Nittler with Enercomp. This
17 comment probably applies both to residential and
18 nonresidential. As a software vendor, I've always had
19 some heartburn over the sections that talk about approval
20 and streamlined approval.

21 MS. BROOK: Uh huh.

22 MR. NITTLER: And I know some attempts were
23 made to cleanup that language, but basically this
24 language is language from the dinosaur era of computers
25 when software was sent out on those little flat things

1 called floppy disks and so forth. And now days, you
2 know, with Internet distribution, changes are made
3 frequently, it depends on the program vendor, and right
4 now this language says that full approval is needed when
5 any other change occurs that in any way affects the
6 compliance results. That's pretty broad. So I would
7 suggest we put our heads together and figure out some way
8 to soften that language to reflect the reality of how
9 software is distributed these days.

10 MS. BROOK: Yeah, we would definitely welcome
11 your suggestions as to the language in that manual to
12 that regard.

13 MR. NITTLER: And then I just want to say one
14 other thing. Some compliance software does print-out
15 every single input that goes into the compliance --

16 MS. BROOK: No, no, I know -- and I think
17 that's good, but that's also what I was complaining
18 about, right? Because if you get too much of that, it
19 just becomes like people don't pay attention to it
20 because you have five pages that say what your wall
21 assembly construction material is, so I think we have to
22 think thoughtfully about how to do that in an effective
23 way.

24 MR. RAYMER: Yes, Bob Raymer with California
25 Building Industry Association, and I would echo Mr.

1 Gabel's comments about the need for the ability to, when
2 you go into the registry to make in field changes, as we
3 went into the last set of Standards, or the current set
4 of Standards, that was a common issue that was talked
5 about in the seminars that we were giving, where there
6 was a rather intense amount of difficulty making these in
7 field changes to stuff that was being registered.

8 MS. BROOK: Okay.

9 MR. RAYMER: And that applied to only those who
10 knew there was a registry; unfortunately, as education
11 went on, more and more people learned that there was
12 something called a registry. So, anyway, we reiterate
13 those comments.

14 MS. BROOK: Okay, great. Thanks. Any other
15 comments on the ACM Approval Manual, on the phone or here
16 in person? Okay, I think we're ready for general
17 comments now.

18 MR. CALLAHAN: Ready? Bill Callahan with
19 Associated Roofing Contractors of the Bay Area, and Union
20 Roofing Contractors Association. And I spent the lunch
21 period, since I have no life, wandering the Web and the
22 Public Record, and I'm looking right now at the HMG
23 Website, and H-M-G.com/T24/meetings.htm. And that's
24 where there's a record of all the stakeholder meetings
25 that the utilities group held, and it's a pretty

1 impressive record beginning on March 17th, 2010, and
2 ending on June 1st, 2011, there were 48 stakeholder
3 meetings, and they cover a wide range of things,
4 Residential HVAC, Solar topics, ASHRAE 90.1, and so on,
5 and 48 meetings, 15 months. The process ended on June
6 1st, and that's the day that the nonresidential cool roof
7 proposal was unveiled, the very last day of the
8 stakeholder process, and the next to the last meeting,
9 there was a webinar in the morning, there was another
10 webinar the next day, so all this time was spent in
11 stakeholder meetings, but they were on topics that were
12 not of interest to us. We get it June 1st, pretty
13 radical proposal, I think, if you look at the comments,
14 which are on the website, and people were really
15 surprised at what happened. And within 10 days, we're at
16 a workshop trying to react with them, to staff, and those
17 comments go into the black box, four months later we get
18 a new proposal with some other new ideas, I believe
19 that's where the mandatory minimums idea was unveiled,
20 which is a pretty radical idea to us, and fairly
21 shocking. And then it's February 24th where we see the
22 next iteration of the Code, so 15 months of all these
23 hearings that were taking place, stakeholder meetings,
24 but for us, you know, eight months to get to the February
25 24th 45-day language, and 17 days to get between the

1 release of that language and today. And for us, a very
2 protracted, very compressed period of time. Now, maybe
3 it was left to the end because it's a minor topic, and I
4 think, in the grand scope of the whole Title 24, that
5 cool roofing probably is a pretty small contributor to
6 the whole thing. But it's what our members do for a
7 living, so it's pretty important to us. And, you know,
8 we would appreciate a little more time to work these
9 things out.

10 And I'll bring up a comparison in terms of the
11 way the process works. I've done a lot of work, and I
12 know Bob has over the years, with the Cal OSHA Standards
13 Board, we use advisory committees, they come up with an
14 idea, "Hey, we think it would be a good idea to raise
15 cool roofing from .55 to .70." We bring people together
16 and we talk about it. What are the real world problems?
17 What's good about it? What's bad? What would your
18 concerns be? And so on. And over the period of six
19 months to a year, we come up, usually, with a consensus
20 proposal that everybody agrees on, and there's no black
21 box. Here, part of our frustration is that these things,
22 from our point of view, get dropped on our head, we get
23 very little time to respond to it, and then it just goes
24 off into a black box until we see the next iteration. I
25 think you really really are better served to have a more

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1 collaborative process, and then you wouldn't have to
2 listen to me and a bunch of other people, perhaps
3 principally me, whining about these things, there would
4 be nothing to whine about because we'd have a proposal
5 that we all agree could work. Thank you.

6 MR. HITCHCOCK: Reed Hitchcock, Asphalt Roofing
7 Manufacturers Association. And, Madam Commissioner, if I
8 may, I've got a letter, a consensus document prepared by
9 14 trade associations, if I could read that?

10 "Dear Commissioner Douglas, On behalf of the
11 undersigned roofing industry and affiliated trade
12 associations and stakeholders, we're writing to comment
13 on the 45-day language posted to the CEC Website and to
14 be presented at the March 12-13 California Energy
15 Commission hearing on the 2013 California Building Energy
16 Efficiency Standards. We appreciate your consideration
17 of our collective concerns about the 45-day language.

18 While as individual organizations, we have
19 numerous concerns and positions related to this language,
20 which we'll share in more detail and testimony at the
21 March 12-13 hearing or in writing. The members of this
22 industry coalition share some critical fundamental
23 concerns with the language in its current form, many of
24 which have been stated before, but not addressed by CEC.
25 Cost Justification: As we've previously expressed, the

1 baseline cost used for justification in the 2005 Code and
2 again for 2008 were based on a Lawrence Berkeley National
3 Lab Report from 2002, that has been publicly demonstrated
4 and acknowledged by CEC staff to have used cost data that
5 was not representative of the real world cost associated
6 with cool roofing materials. Nor did this baseline data
7 accurately reflect premiums for cool roof versions of
8 existing roofing materials. The current prescriptive
9 requirement for low slope roofing of 0.55 aged solar
10 reflectance was based on that fallacious report, if the
11 CEC has taken the position that they cannot go backwards
12 in the surface reflectance requirements.

13 The proposed increases for 2013 continues to
14 sustain and validate this flawed data since the
15 justifications for the proposed increases of .63 and .65
16 for Alterations and new roofing, respectively, are
17 founded by comparison against the existing requirement of
18 0.55. When challenged by this industry at the October
19 workshop, the CEC opted to utilize their existing
20 consultants to conduct what is a quick and dirty cost
21 analysis, instead of considering the roofing industry's
22 strong recommendation to work collectively with our
23 industry to develop a strong, detailed and meaningful
24 cost justification analysis.

25 The CEC's approach appears to rationalize an

1 increase in reflectance based on a self-imposed mandate
2 to increase the requirement, regardless of benefit, as
3 opposed to living up to your obligation to California
4 consumers, building owners, and manufacturers to develop
5 a true cost justification analysis that takes into
6 account the numerous factors that have been raised over
7 the last several years in written comments and verbal
8 testimony from stakeholders and other parties interested
9 in the Code development process. By not conducting this
10 analysis in a proper, thoughtful, and responsible manner,
11 the CEC is regulating durable proven reliable products
12 out of the market, taking choice out of the hands of
13 Californians, and putting hundreds of manufacturing and
14 contracting jobs at risk, all based on flawed data that
15 has failed under scrutiny.

16 The cost analysis conducted by AEC is
17 seriously, if not fatally flawed in a number of
18 fundamental areas, 1) limited responses, the responsible
19 upon which the proposed Code is based is far too small to
20 draw any sort of conclusion. Three written responses and
21 nine phone interviews with no substantiation as to the
22 validity of the data, or the qualification of the
23 respondents to respond; 2) no statistically valid sample
24 size. There are not enough data points to show a range
25 of cost variability for each roofing material category.

1 The survey fails to pass any test of statistical
2 significance; 3) dubious labor rates...," as Bob mentioned
3 earlier, "...there is clearly an issue," sorry -- Bill --
4 "...there is clearly an issue with the labor cost when
5 Union Labor rates come in at \$225 an hour less than open
6 shop rates; and 4) lack of confirmation of underlying
7 premise. There appears to have been no attempt to
8 confirm that respondents were basing their feedback on
9 the 0.65 target, as requested.

10 In short, the AEC Cost Analysis contains very
11 little real cost data, and what little has been generated
12 demonstrates no validation of its accuracy. There is no
13 way that a reputable organization can seriously draw any
14 conclusions based on such an unsubstantiated and
15 extremely limited response. The roofing industry
16 formally restates our position that CEC should not change
17 the current 0.55 solar reflectance in this Code cycle,
18 and we reiterate our offer to work collaboratively with
19 the CEC to collect real world data, which can be used to
20 develop a robust, statistically significant cost
21 justification analysis document that can be used to set
22 fair, reasonable and sound solar reflectance requirements
23 for low slope roofs in California.

24 The State of California and the CEC are
25 responsible to set policy that offers as a benefit to the

1 citizens of California, their environment, and their
2 standard of living. It appears to the undersigned that
3 the CEC is operating with a mandate to make existing
4 standards more stringent, but without going through a
5 complete and thoughtful analysis that considers not only
6 the economic basis for the changes, which we understand
7 to be a mandate under the Warren-Alquist Act.
8 Consequently, the full picture of the science behind the
9 arbitrary changes that are being proffered, and the
10 ripple effects they will create, is not complete and very
11 poor science, at best.

12 In addition, we are concerned that current TDV
13 calculations used in Title 24 were established without
14 accurate consideration for the impact of increased
15 penetration of various renewable energy technologies over
16 time. Logically speaking, renewable energy penetration
17 increases the value of incremental power during the peak
18 hours of the day is expected to decrease, as indicated by
19 a recent report from Lawrence Berkeley National
20 Laboratory. As a consequence, as contracted renewable
21 energy resources become operational, the assumptions used
22 to derive the current TDV calculations will become
23 increasingly inaccurate for purposes of valuing
24 incremental energy savings. Failure to reflect this
25 phenomena in current TDV analysis will tend to overly

1 burden building owners and building materials
2 manufacturers with unnecessary increases in proscriptive
3 energy standards, especially proposed increases in the
4 minimum proscriptive solar reflectance of roofing
5 membranes, which are most closely tied to TDV values most
6 affected by increased renewable energy production.

7 To avoid this potentially adverse effect, we
8 recommend the Commission reevaluate current TDV
9 calculations and models prior to the implementation of
10 any increase in solar reflectance.

11 Consistency in enforcement. CEC staff and
12 members of the roofing industry have shared concerns over
13 the enforcement of the requirements for roof surface
14 reflectance under Title 24. Since the adoption of
15 irradiative property requirements for roofing over seven
16 years ago, there has continued to be a disconnect between
17 what is required and what is, in fact, taking place on
18 buildings. This disconnect is exacerbated by significant
19 variation of local enforcement. Until such time as there
20 is equal application of requirements of this energy code,
21 any further stringency in its requirements seems to be
22 made without any regard for reality.

23 Clear, Concise, Consistent Code Language. The
24 approach taken by the CEC in the Draft Proposals for Low
25 Slope Roofing, despite efforts to simplify, will create

1 additional confusion in the marketplace. Whatever level
2 of surface reflectance meets with the cost justification
3 requirement should be consistent for new roofs and
4 alterations. As has been proven in the past, variable
5 requirements by location or application leads to
6 uncertainty and perplexity in the marketplace and
7 confusion for all involved in the process of selecting
8 the proper roof system for the building.

9 Summary. While we appreciate that the CEC
10 staff has considered comments received from our coalition
11 of industry organizations, individual manufacturers, and
12 other stakeholders, and has invested in working to
13 address some of the concerns that have been raised, we
14 remain deeply concerned that many of the issues
15 previously raised have not been addressed, which have
16 direct impact on the standards proposed. Because of
17 this, we continue to have fundamental concerns with the
18 overall process. We do understand that there are
19 alternative compliance options in the proposed language,
20 but it is critical that the CEC recognize that experience
21 with previous versions of the Code makes it abundantly
22 clear that, no matter how simple alternate means of
23 compliance may be, it is the prescriptive language in the
24 Standard that receives the focus of the California
25 building and consumer communities, and will therefore

1 have the greatest impact on the California market.

2 Your attention and response to our comments is
3 appreciated. As an industry, we all want to ensure that
4 the results of the 2013 Title 24, Part 6 process are
5 Energy Efficiency Standards that make practical sense for
6 the consumer and ensure that they continue to have choice
7 in their roofing selection, that fits the needs of their
8 home or building. The 2013 Standards should likewise
9 continue to support the goals of the Energy Commission
10 and the State of California and should be based on the
11 sound, scientific, technical, and economic facts and
12 data. As an industry, we remain ready, willing, and able
13 to assist the CEC staff to work through the science,
14 technology, and economics related to roofing materials
15 and systems. We urge you to accept this offer and to
16 work with our industry to come up with sound requirements
17 for roofing. Please don't hesitate to contact any of the
18 undersigned if you have any comments or questions
19 regarding this letter." Signatories to the letter are
20 myself, Dr. William Callahan, Associated Roofing
21 Contractors of the Bay Area Counties, Dr. James Hoff,
22 Research Director, Center for Environmental Innovation in
23 Roofing, Stanley Graveline, Vice President, Technical
24 Services, Sika Sarnafil, also for the Chemical Films and
25 Fabrics Association, Mark Thimons, Executive Director,

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1 Cool Metal Roofing Coalition, Tom Hutchinson, Technical
2 Director, and Ellen Thorpe, Associated Executive Director
3 for the EPDM Roofing Association, Matt Kolb, President,
4 National Coatings Corporation, Mark Graham, Associate
5 Executive Director, Technical Services for the National
6 Roofing Contractors Association, Penny Gift, President,
7 Reflective Roof Coatings Institute, John Ferraro, General
8 Manager, Roof Coatings Manufacturers Association, Marc
9 Connerly, Roofing Contractors Association of California,
10 Mike Ennis, Technical Director, Single Ply Roofing
11 Industry, Richard Duncan, Technical Director, Spray
12 Polyurethane Foam Alliance, and Ron Johnston, Executive
13 Director, Union Roofing Contractors Association.

14 MS. BROOK: Thank you.

15 MR. SHIRAKH: May I -- just a few points. Reed
16 mentioned that the 2005 cost for cool roof study was
17 flawed, and you brought that up several times, and you
18 will probably recall --

19 MR. HITCHCOCK: 2002.

20 MR. SHIRAKH: -- 2002 and 2005 -- that we
21 offered ARMA to actually disregard those cost studies and
22 we set our costs and savings and --

23 MR. HITCHCOCK: But if you recall, your
24 response was "tell us a number."

25 MR. SHIRAKH: No, we said we will ignore the

1 2005 and reset the basis to 2001 for both cost and
2 savings as if that study didn't occur. It took you about
3 two weeks and you basically decided you didn't want to
4 accept our offer. So we actually just offered to discard
5 that study, and you chose not to offer.

6 On the question of, you know, whether we were
7 responsive to the industry or not, it is true that June 1
8 was the first stakeholder meeting, and our proposal at
9 that point was .70 reflectance, .85 emittance. There was
10 no prescriptive tradeoffs for either existing buildings
11 or new construction. And as a direct result of what we
12 heard from ARMA and their members, we have substantially
13 changed all of those requirements. And we basically
14 dropped our emittance change, we reverted back to .75.
15 Initially, our reflectance offer was going down from .70
16 to .67, again, partly because of the comments received
17 during the workshops, some of their members suggested
18 that might be the appropriate level. We started offering
19 prescriptive tradeoffs against insulation, first for in
20 existing buildings, and subsequently in new buildings.
21 We further dropped our reflectance requirements from .67
22 to .65 again in response to many of the comments we have
23 heard. So, to suggest that, you know, we have been
24 operating in a black box is a bit of an exaggeration.

25 On the question of costs, it is in the eyes of

1 the beholder whether 12 data points plus published data
2 is too little or too few, I mean, we have adopted other
3 measures into the standards that had maybe less, maybe
4 more. The idea of going out with 80 surveys and getting
5 back 12 of them, and all of them happen to say it's cost-
6 effective, not one demonstrated that it is not cost-
7 effective. The odds of getting like that, actually, is
8 less than winning the lottery. And so on and so forth,
9 so, you know, we've listened to them, we've worked with
10 them, subsequent to the June workshop we had actually a
11 stakeholder meeting in Hearing Room B and the purpose of
12 that was cost, you know, we had many of the same members
13 in that room and they helped us to fashion a survey,
14 which we subsequently used to go out and get information,
15 and they offered to help us get costs for various roofing
16 products -- we never see any costs coming in after that,
17 even though this was several months ago. So basically
18 those are my points.

19 MR. HITCHCOCK: I would like to just address a
20 couple of those. We're probably going to disagree on a
21 couple of these points. When you talked to me about
22 disregarding the 2002 study, you did say we could go back
23 to the 2001 numbers, which are now, you know, 12-years-
24 old and irrelevant, given the conditions in the market
25 because the whole product availability, what things cost,

1 is not the same then as it is now. And you offered me,
2 you said, "You tell me what that number should be." That
3 was your statement to me, "You tell me what the numbers
4 should be." I can't in good faith just say, "Oh, Mazi,
5 you know, make it .22." There are processes that need to
6 be undertaken and we thought it would be very
7 irresponsible just to throw a number back.

8 MR. SHIRAKH: I remember what our offer was, to
9 disregard the 2005 and 2002 and go back to the baseline
10 of 2001 for both energy savings and costs, that was my
11 offer.

12 MR. HITCHCOCK: Okay, well --

13 MR. SHIRAKH: And then you did not accept.

14 MR. HITCHCOCK: No, I did not accept because
15 that's old information. We did offer, though, to work
16 with you to get current, good, real information, and
17 acknowledging that was going to take some time. That's
18 number one. Now I forgot what your second point was.
19 What was the second point --

20 MR. SHIRAKH: I remember my third point. We
21 talked about the 2005, I forgot my own points, we talked
22 about the costs, how many points, and --

23 MR. HITCHCOCK: I'm going to get an
24 understanding because you talked about working with ARMA
25 and responding, there were some things you responded to,

1 and --

2 MR. SHIRAKH: How we changed our proposals --

3 MR. HITCHCOCK: And you did change -- you
4 changed things in response to some of the points. Now,
5 understand, the letter that I read now is not ARMA, this
6 is the 14 associations, I contributed to this letter,
7 I'll have different ARMA testimony, you'll get to listen
8 to me again, but there is a very strong feeling in the
9 industry that there was very much a pick and choose
10 attitude about what comments did get responded to and a
11 number of professional associations, as well as
12 individual companies that submitted comment, but were
13 very upset that they never had any response at all from
14 the Commission.

15 MR. SHIRAKH: Essentially, we have only one
16 change related to 2008, it's the high reflectance. We
17 haven't changed anything else.

18 MR. HITCHCOCK: And there's disagreement over
19 whether there's cost-effectiveness.

20 MR. SHIRAKH: Yeah, so I don't know, we haven't
21 changed emittance, we haven't changed anything else, the
22 only change -- we haven't changed steep slope. The only
23 change relative to 2008 is .65.

24 MR. HITCHCOCK: And you're going to have me
25 sort of give away my little bit of testimony later, but

1 in 2008, do you recall having the conversation with me
2 where you said, "We know this is wrong, the baseline is
3 wrong, but we're not going backwards?"

4 MR. SHIRAKH: But again --

5 MR. HITCHCOCK: Do you remember that? It was
6 wrong. It was wrong then. It doesn't get any better
7 with age.

8 MR. SHIRAKH: I can't keep repeating myself,
9 and I'm just --

10 MR. HITCHCOCK: I mean, you're not changing,
11 but you still don't know if it works.

12 MR. SHIRAKH: We offered to disregard that and
13 start fresh from 2001 baseline.

14 MS. BROOK: So the proposal basically that Mazi
15 is suggesting is that we would assume we had no cool roof
16 standards, and then we would propose .63 and prove that
17 that is cost-effective from the point of view of not
18 having any cool roof standards.

19 MR. SHIRAKH: And you did not accept.

20 MR. HITCHCOCK: Yeah, it's more complicated
21 than that. And this is where, I mean, somebody made the
22 suggestion of, you know, sort of these working groups
23 that work together on these things, you know, sending
24 something like that in an email is a lot less productive
25 than sitting down with a group of experts around a table,

1 and having that discussion and working through it. But
2 there's a lot more that needs to be considered than just,
3 "Does this work?" We don't know. And what I told you at
4 the time was it's not as easy as just saying, "Yeah,
5 reset it." There's a lot of factors that have to be
6 considered and when you go through this whole process,
7 then you know.

8 MS. BROOK: Okay, the one thing I wanted to
9 mention in regards to the Time Dependent Valuation,
10 because it does factor into the cost-effectiveness
11 calculation, is that we have published on the website,
12 and we have presented in public workshop, the methodology
13 for the Time Dependent Valuation, and it does consider
14 the future that California is projecting for 33 percent
15 renewables and contributing to the electricity grid, so I
16 don't think your claims of our Time Dependent Valuation
17 not capturing renewables is correct.

18 MR. HITCHCOCK: I have to be honest, I didn't
19 contribute to that section, and so whomever did, I don't
20 recall who did. They would have to speak to that.

21 MS. BROOK: Okay.

22 MR. HITCHCOCK: Thank you.

23 MS. HARDY PIERCE: Good afternoon,
24 Commissioners, Martha, Mazi, and members of the CEC
25 staff. My name is Helene Hardy Pierce and I'm

1 representing GAF. GAF is the largest roofing
2 manufacturer in North America and a manufacturer with
3 significant manufacturing investments in California. I
4 have provided previous testimony regarding the 2013
5 Building Energy Efficiency Standards and I appreciate the
6 opportunity to do so again today.

7 First, I want to remind you that GAF offers our
8 roofing contractors, building owners, and homeowners, a
9 full line of low slope roofing solutions, including many
10 products that would meet these proposed 2013 Standards.
11 We have two state-of-the-art TPO roofing plants, a white
12 coatings business, of which we are primary, we
13 manufacture our own white coatings, to say nothing of a
14 full line of built-up and modified Bitumen products that
15 provide reflective light surfaces. Such is to say that
16 the issues I'm going to raise are not self-serving, from
17 the perspective that these Proposed Standards are not a
18 threat to our product line, they're not.

19 That being said, I have several issues
20 regarding the 2013 Standards. First, we do fully support
21 the letter and the issues raised from the Roofing
22 Industry Coalition. Obviously, we participate in several
23 of those organizations. The 2013 process, and even its
24 predecessors have to some degree and, Reed, I'll be
25 honest, Mazi was probably referring to some of my

1 comments, they ignored sound rationale issues that have
2 been raised, and for a body that solicits input, I and
3 other stakeholders are seriously concerned that the
4 majority of issues raised are wholly ignored. And you're
5 right, everything has been focused on Irradiative
6 properties and that's an issue I want to raise now.

7 There have been unintended consequences because
8 of this focus on Irradiative properties and it's been
9 undiminished, it has not let up, and some of the
10 consequences of this very focus are coming to fruition
11 today, much to the dismay of California building owners.
12 It is beyond the scope of this hearing, a hearing in this
13 format, for me to elucidate the design issues that arise
14 by simply painting a roof white. We've all been hearing
15 about it coming from the very top of our energy policy in
16 this country, but changing -- it's either painting a roof
17 white, or changing a membrane with a reflectivity of 0.25
18 to one with a reflectivity of 0.68, but suffice it to say
19 that today, in San Diego, our Director of Technical
20 Services, Mr. Bill Woodring -- and I was supposed to be
21 there, except I'm here -- is investigating several roofs
22 with moisture problems directly attributed to changing
23 only the irradiative properties of the membrane. And
24 when I mentioned problems, I'm referring to total
25 structural deck deterioration inside of two years. The

1 industry has been hearing anecdotally of such problems,
2 and it has started to investigate this phenomenon, and
3 there's a Dregger, Phil Dregger, a very well respected
4 roof consultant, who actually published in the February
5 issue of *Western Roofing*, and he talks about not just
6 membranes, but about painting roofs white and the same
7 problems. I raise this issue as a serious point. There
8 continues to be this focus on irradiative properties of
9 the roof by so-called experts, who in reality know next
10 to nothing about how a roofing system really works, nor
11 do they take into consideration the consequences of their
12 lack of expertise. Many in our industry have asked time
13 and time again that the California Energy Commission,
14 through Title 24, consider more than the irradiative
15 properties of the roofing membrane. If we are serious
16 about energy efficiency, we would be debating the energy
17 efficiency of the roofing system, and we wouldn't be
18 arguing about 0.1 or 0.8 change in reflectivity. It
19 would seem that this is the real conversation we should
20 be having. And shame on all of us, but our industry has
21 been asking for this conversation and we haven't been
22 getting it. I strongly recommend no changes to the 2008
23 Standards for Nonresidential Roofing, and that serious
24 consideration be given to the myriad of concerns raised
25 by our industry. We're a small piece of Title 24.6, but

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1 it would help with developing a valid cost justification,
2 addressing the concerns raised, and protecting California
3 consumers from the onerous consequences, potential
4 consequences, of what is being proposed. Thank you.

5 MR. SHIRAKH: Can I ask one question, Helene?
6 I recall from earlier conversations in workshops, you
7 were actually supporting the insulation tradeoff and
8 we've provided that, and we've actually allowed people to
9 go down to fairly dark -- now, why isn't that the viable
10 --

11 MS. HARDY PIERCE: The problem is the way it's
12 written, and Reed addressed it, the prescriptive
13 requirement of just make it white, lead a reflective
14 requirement is what contractors do and, in re-roofing,
15 where you have a roofing system that's designed that is
16 not -- does not take into consideration ventilation, it
17 doesn't take into consideration doing thermal
18 calculations and psychometric calculations, because the
19 roof worked, contractors don't do that. And because
20 that's the easiest path, they're not -- it's easier to
21 just put a white roof on, and that's what has been
22 happening since 2005, but you think about these roofs,
23 the ones that are marginal, what's happening is, you
24 know, a roof only gets re-roofed every 20 or 30 years, so
25 now, if they were roofed two or three years ago, and all

1 of a sudden, when I talk about total deck destruction,
2 I'm talking about the deck is gone, I mean, it's gone.
3 And that's this entire conversation about the insulation
4 tradeoff, if we really want to talk about energy
5 efficiency of the roofing system, insulation tradeoff
6 shouldn't be in an alternative manual, or a compliance
7 manual, it should be in Title 24.

8 MR. SHIRAKH: It is in Title 24.

9 MS. HARDY PIERCE: But made very very easy as a
10 prescriptive. And actually --

11 MR. SHIRAKH: It is, it is. I'm not lying to
12 you, it's in there.

13 MS. HARDY PIERCE: Okay, all the way down to
14 .3, but the focus off of the irradiative properties, so
15 that it's not just the easiest path is just put on a
16 white roof because the unintended consequences of that
17 is, if you ask roofing contractors in the State of
18 California, or you ask designers, they'll say, "Nope, it
19 says right here, .65 for irradiative."

20 MR. SHIRAKH: No --

21 MS. HARDY PIERCE: Mazi, we can argue, I'm
22 going to agree to disagree with you. Okay?

23 MR. SHIRAKH: No, but I just want to make a
24 clarification that this is not in the Compliance Manual,
25 it is right there in the Code, right below where it says

1 it's .65, there is another table that says you can trade
2 down to these levels, so it is right there in the Code.

3 MS. HARDY PIERCE: But -- okay, go ahead.

4 MR. SHIRAKH: And you mentioned, you know, you
5 have the company GAF that you work for actually has
6 products that -- these are products that are available
7 today and they have warranties, you know, in your opinion
8 you --

9 MS. HARDY PIERCE: Well, how do you think we've
10 been marketing products since 2008, given the current
11 Standards? Yes, yes.

12 MR. SHIRAKH: And they have warranties in
13 there, and you're not concerned about their durability?

14 MS. HARDY PIERCE: No.

15 MR. SHIRAKH: Okay, thank you.

16 MR. BOZORGCHAMI: Helene, one second. This is
17 Payam with the California Energy Commission. Helene, you
18 also have to take into consideration Bill Callahan's
19 proposal to look at insulation below the roof deck, so
20 we'll do that in the next few days also and get something
21 back.

22 MS. HARDY PIERCE: Actually, the problem is
23 that insulation below the roof deck is what is causing in
24 this the ventilation -- so you're talking about above?

25 MR. BOZORGCHAMI: No. So currently what we did

1 under Section 140.3 is we have an insulation tradeoff
2 down to .50, and then we're going to look at that and
3 we're probably going to drop it down a little before
4 there, too. So the insulation tradeoff will be in the
5 prescriptive package for new construction as also it is
6 for re-roofing.

7 MS. HARDY PIERCE: Down to .25 or .2?

8 MR. BOZORGCHAMI: We'll look into that.

9 MS. HARDY PIERCE: Thank you.

10 MR. SHIRAKH: Thank you.

11 MS. DICKEY: Hi, I'm Amy Dickie with the Global
12 Cool Cities Alliance and, briefly, we're a fairly new
13 organization that works with cities around the world to
14 support them in their development of cool roofs and other
15 cooling programs, and I wanted to comment on the Stanford
16 paper that was referenced this morning with respect to
17 each of the benefits that we believe cool roofs bring to
18 a city, and that is the energy savings at the building
19 level, and the Stanford paper acknowledges this benefit
20 of cool roofs, and if you think about just the building
21 system, then the tradeoff with insulation makes sense,
22 and that's why it's in the Code. But the second benefit
23 is that it reduces local air temperatures, it reduces the
24 urban heat island effect, and here the Stanford paper
25 also acknowledges and agrees and finds that white cool

1 roofs reduce local temperatures, and there's a great body
2 of literature that also supports this, it improves the
3 health, air quality, comfort. And the third is that
4 there is a global cooling benefit from cool roofs. And
5 here, the Stanford paper finds that -- their finding is
6 that cool roofs actually have a slight warming effect,
7 but they're modeling has a very wide range of uncertainty
8 around this finding, and it is very dependent on the
9 assumptions that are made, to the point where the authors
10 basically say that "our findings are that there is an
11 inclusive impact of cool roofs on global cooling." And
12 we should note that this is the only paper in what is a
13 small, but emerging body of literature on the impact of
14 cool roofs on global cooling. There are several other
15 papers that find that there is a cooling effect. And
16 there is a response from the Lawrence Berkeley Lab, Heat
17 Island Group, to the Stanford paper that gets deep into
18 the technicalities of the model, and I would refer
19 everyone to that. I don't want to go into it, but just
20 to summarize, the Stanford paper basically says cool
21 roofs are great at the building level, at the city level,
22 and hold your horses on the global cooling side. But I
23 just wanted to make that point of clarification. Thank
24 you.

25 MR. SHIRAKH: Thank you, Amy.

1 MR. FERRARO: Hi. I'm John Ferraro, General
2 Manager of the Roof Coating Manufacturers Association.
3 RCMA is the national trade association of manufacturers
4 of bituminous and non-bituminous roof coatings, and the
5 suppliers of the roof coatings industry. RCMA formally
6 restates our position that the CEC should not change the
7 current .55 solar reflectance in this Code cycle. Our
8 industry maintains this position because the baseline
9 cost used for cost justification continue to not be
10 representative of the real world cost associated with
11 cool roofing materials, as already mentioned by several
12 other of my colleagues. The proposed increases for 2013
13 continue to endorse this flawed data since the
14 justifications for the proposed increases for .63 for
15 alterations and .65 for new roofing are founded by the
16 comparison against the existing requirement for .55 aged
17 solar reflectance. The cost analysis conducted by AEC is
18 seriously flawed. The AEC's supposed cost analysis
19 contains very little cost data and, what little has been
20 generated, demonstrates no proof of its accuracy. CEC is
21 making existing Standards more stringent without going
22 through the complete and thoughtful analysis. RCMA
23 recommends that CEC skip this Code cycle so you can take
24 your time forming a better, simpler rule. The direction
25 the CEC is currently taking is dictated more by peak

1 energy reduction, which benefits mainly energy companies
2 and a small segment of consumers, rather than by a desire
3 to actually reduce energy consumption altogether. There
4 is a clear difference between peak savings and overall
5 energy savings. Peak energy savings means a reduction in
6 energy use when energy companies are nearing their
7 maximum production capacity. Energy savings, on the
8 other hand, means the reduction of total energy
9 consumption to heating or cooling a building year-round.
10 RCMA reiterates our offer to work together with CEC to
11 collect real world data. Once again, we appreciate the
12 opportunity to comment on the proposed changes. An
13 industry comment letter will be submitted to the docket
14 later today.

15 MR. SHIRAKH: Thank you for your comments.
16 Reed.

17 MR. HITCHCOCK: This is the ARMA testimony.
18 Reed Hitchcock, Asphalt Roofing Manufacturers
19 Association. Thanks again for the opportunity to speak.
20 I'll try not to go on for hours again. ARMA represents
21 the manufacturers of asphalt roofing materials, including
22 shingles, modified bitumen, and built-up roofing systems.
23 The products we represent are produced and applied within
24 the State of California, and the asphalt roofing
25 manufacturing facilities account for the majority of

1 roofing manufacturing facilities in the state. To say
2 we're disappointed with the 45-day language for low slope
3 nonresidential roofing would be a gross understatement.
4 We support the comments of the Roofing Industry Coalition
5 read into the record and would like to add some of the
6 following thoughts and comments and concerns to the
7 language that has been presented. I'd like to start by
8 reminding CEC staff of discussions we had leading up to
9 the 2008 Code cycle, it was during that process that the
10 staff acknowledged the 2002 report from Berkeley was
11 flawed, which served as the baseline assumptions for both
12 the 2005 and 2008 Code -- listen, I wrote this before I
13 knew what we were going to talk about. Despite that
14 acknowledgement, it was the position of the staff that
15 the Commission could not go backwards in terms of the
16 requirements for solar reflectance. We acquiesced,
17 despite our better judgment, but advised the staff that
18 our industry was willing, able, and ready to work closely
19 with the staff moving forward on future versions of the
20 Code to ensure a thoughtful and balanced Code to the
21 extent that would be possible without going backwards.
22 Periodically over the past few years, representatives
23 from the roofing industry, and as Bill Callahan pointed
24 out earlier, having inquired of the staff as to thoughts
25 or directions that could be shared related to the process

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1 for developing the 2013 Code. On numerous occasions, the
2 response coming from CEC staff was that we don't think
3 we're going to be making a change this cycle, we don't
4 see changing it, we may do some work with the exceptions.
5 It wasn't until that summer that we learned otherwise.

6 Building on the same bad science from that 2002
7 report, CEC staff and consultants came up with a
8 recommendation of .70 aged solar reflectance, an increase
9 of .15, which in terms of solar reflectance is a pretty
10 dramatic leap. The roofing industry questioned the
11 science, reminded the staff of previous discussions that
12 had taken place regarding the Berkeley report, and the
13 bad science serving as the baseline for the current
14 proposed Code. The staff and consultants went back to
15 work and came back with proposal .67 aged solar
16 reflectance, still without a new cost justification.

17 Our industry once again responded in unison and
18 strongly recommended that the current requirements be
19 maintained, flawed as they are, and that the CEC spend
20 the next cycle undertaking a thorough, thoughtful, and
21 sound cost analysis, looking at real world costs and
22 premiums for roofing systems in the California market.
23 Our industry also collectively offered to assist with
24 that process to whatever extent possible in collecting
25 cost information and market data to help build the robust

1 report needed in this situation, to ensure that
2 California consumers and building owners are able to
3 purchase the right roofing system for their home or
4 building, that they can achieve cost savings, that the
5 requirements under Title 24, Part 6, promise them, and
6 that they retain the aesthetic choice for the roofing
7 system that best suits their application, and that any
8 premium cost for a cool roof under the requirements of
9 Title 24 is outweighed by the energy savings of that
10 system.

11 Instead of that thoughtful analysis, the
12 decision was made to rush a quick and dirty analysis
13 through the consultants who had previously failed to
14 deliver any defensible proposals for increases in 2013.
15 The consultants experienced exactly what we feared and
16 expected they would; cost data that is extremely
17 difficult and time consuming to gather, and the time
18 between the October 2011 CEC Workshop and now, they were
19 able to collect just 12 sample responses to their
20 surveys, not even covering all of the roofing systems
21 sold in the California market, and certainly not enough
22 to implement Code that would take solid, reliable,
23 California-produced products off the market, even at the
24 current proposed solar reflectance levels of .65 for new
25 construction and .63 for re-roofing, which represent

1 decreases of 29 and 22 percent, respectively, of
2 available products in California, according to the CRRC
3 database.

4 MR. SHIRAKH: Could you --

5 MR. HITCHCOCK: So basically, at .65 --

6 MR. SHIRAKH: Yes.

7 MR. HITCHCOCK: -- you've got a reduction of 29
8 percent of available products, according to CRRC.

9 MR. SHIRAKH: This is on reflectance so long as
10 there is a reduction of about 30 percent?

11 MR. HITCHCOCK: Yeah.

12 MR. SHIRAKH: So there's 70 percent of products
13 in there that meet that requirement without any
14 insulation tradeoffs?

15 MR. HITCHCOCK: You're still taking off 30
16 percent of the products available to the market.

17 MR. SHIRAKH: But not if there is an insulation
18 tradeoff. They can put insulation in exchange for --

19 MR. HITCHCOCK: I'm going to get to that in a
20 minute.

21 MR. SHIRAKH: Okay.

22 MR. HITCHCOCK: As a reminder, there are 19
23 asphalt roofing plants in California which produce the
24 majority of the 250 million square feet of asphalt
25 roofing sold in California in 2010, which was widely

1 considered a down year for non-residential construction.
2 That varied approach is also a concern to ARMA and to
3 others. Without belaboring the point, different
4 requirements for different situations serve very little
5 real world purpose in terms of energy savings. And we're
6 talking about .202 percent, but will surely result in
7 confusion in an already confused marketplace trying to
8 understand what the CEC is attempting to accomplish.
9 Commission staff argues that there are energy tradeoffs
10 in the Code that will make it easier to make those
11 products available to Californians, but there are a few
12 problems with that concept. First, we can't see all
13 those tradeoffs, as many of them move to the ACMS, as
14 opposed to being part of the Code considered. Forgiving
15 our skepticism, but to go along with the restrictive Code
16 of this nature with the faith that the tradeoff
17 alternatives in the compliance manuals will be
18 satisfactory is a leap we cannot support, much less
19 endorse.

20 Beyond that, it's been the experience of our
21 industry that, particularly in light of the complete lack
22 of enforcement for the Codes heretofore, the existing
23 requirements, and certainly any increased requirement
24 encouraged cheating of the system by unscrupulous
25 business people, and also that regardless of what is in

1 the Code, what the marketplace sees and hears, especially
2 considering the convoluted means of trading off that have
3 been typical, is the reflectance number, plain and
4 simple. Why not instead offer the cool roof as an
5 alternative compliance against the insulation code? As
6 several have testified previously, insulation works in
7 all climates, not just the hot ones.

8 Let me be clear, our organization is not anti-
9 cool roof, we have cool roof solutions available, as
10 Helen said, just as our other roofing industry colleagues
11 do. And we do believe that there are situations where
12 cool roofing is the best approach to save energy. That
13 said, a cool roof is not the right solution for every
14 building, nor every climate in this diverse state. Once
15 again, we implore the Commission to leave the requirement
16 for low slope nonresidential roofing at the current .55
17 and take our industry up on the offer to work in
18 collaboration over the next Code revision cycle, to truly
19 and responsibly examine the cost benefits of cool roof in
20 an effort to determine what solar reflectance, if any,
21 makes sense for the people, businesses, and utilities in
22 the State of California.

23 MR. SHIRAKH: Thank you, Reed. Again, to
24 reiterate, the insulation tradeoff is not in the ACM
25 Manual, it is in the Code Standards, it's currently on

1 the 45-day language for existing buildings, and we're
2 going to have that same thing for new buildings, again in
3 the Standards --

4 MR. HITCHCOCK: But when does that become
5 official language?

6 MR. SHIRAKH: When we publish the 15-day
7 language, you'll see it on that. And we'll run it by you
8 so you're comfortable with the range in numbers, but it
9 will be in the Standards as an alternative to the cool
10 roof requirements, not in the ACM Manuals, not in the
11 Compliance Manuals. I wanted to make that very clear.
12 Thank you.

13 MS. BROOK: One question I would have, Reed, is
14 there any other technology that typically your members do
15 tradeoff for the cool roof requirement, other than
16 insulation?

17 MR. HITCHCOCK: I would defer to Helene on
18 that.

19 MS. BROOK: So for low slope, then, I mean,
20 that was our understanding also, that it really was about
21 insulation and that's why we didn't think it was a big
22 deal to get rid of the problematic overall envelope
23 approach, since we are providing the insulation tradeoff
24 for the cool roof requirements.

25 MR. HITCHCOCK: I think part of the concern is,

1 again, we're being -- we're here to talk about what we
2 know today and, you know, statements that it's coming are
3 hard to swallow until it's already there, and the
4 turnaround times are very difficult. You know, I tell
5 anybody that will listen, I have to be in Miami tomorrow
6 morning because I had a previous scheduled meeting, this
7 came up very quickly; all of the meetings that we've
8 participated in related to this cycle have been very
9 quick, we have very little time to review this language
10 before coming to these things. I mean, this is
11 information that would have been really helpful eight
12 months ago. But it doesn't get at some of the other root
13 issues that we have with the Code. You know, I
14 appreciate that you guys are looking for solutions --

15 MS. BROOK: Uh huh.

16 MR. HITCHCOCK: You know, I still think and our
17 industry still thinks that there's a flaw with the
18 proposed levels.

19 MR. SHIRAKH: Just one last point. I think I
20 heard you, like you said, the products that are under
21 cool roof, currently 71 percent meets our reflectance
22 requirement without any insulation tradeoffs. Correct?

23 MR. HITCHCOCK: According to the CRRC database.

24 MR. SHIRAKH: Without any insulation --

25 MR. HITCHCOCK: Understand that many of the

1 listings in the CRRC database are duplicative. Some
2 products are represented five, six times, depending on
3 product labeling.

4 MR. SHIRAKH: Fair to assume that, with
5 insulation tradeoffs, even more products would be the
6 requirement --

7 MR. HITCHCOCK: It would depend on the
8 tradeoff.

9 MR. SHIRAKH: Okay.

10 MR. HITCHCOCK: But you're still selling bad
11 science, Mazi.

12 MR. SHIRAKH: Thank you.

13 MR. HITCHCOCK: You're welcome.

14 MR. CALLAHAN: It's me again, Bill Callahan. I
15 just wanted to reinforce again how much this process from
16 our point of view looks anti-collaborative. Yes, there
17 have been changes made since the initial proposal in
18 June, but frankly, it's been a case of whack a mole, and
19 the June proposal, I've got it right in front of me, was
20 .70, and thermal emittance of .75. Into the black box we
21 go, everybody screams and yells, and says, "Hey, wait a
22 minute, we need to look at this closer." So then we get
23 to October and, yes, the thermal is brought down to .67
24 on the reflectance, but the emittance is pushed up to
25 .85. So you hit one mole, another one pops up, and now

1 we've got to figure out, what does that do to our market?
2 How do these two things play together? Now, eventually
3 we're where we are today is .67 and .63, and we're
4 finally at the point of discussing do those make sense,
5 but we're doing it in the context where we have very
6 little time to do it, or to have a discussion, and there
7 was an interesting reference that was made before to Phil
8 Dregger's paper, and I like this because my commercial
9 contractors are pretty good, they're very big, they work
10 for very important clients, that they understand that
11 when they put insulation below a roof deck, they have to
12 be careful about where they might be moving the dew point
13 and what might happen with moisture. I'm not a technical
14 expert in those things, but I know Phil has, he's
15 published several papers and he wants to come talk to my
16 members, but that's a discussion we should be having in
17 the context of all of this, instead of waiting for roofs
18 to fail, to find out about it and doing something about
19 it later; it would be nice if we all could sit down and
20 actually talk about how do the different components of
21 the roof work together and how can we save energy in a
22 way that's productive, instead of, "Well, this number is
23 too high, so we'll lower it, but we'll raise this other
24 one." And that's not collaboration, that's whack a mole.

25 MS. BROOK: Bill, I'm confused now because I

1 thought one of the earlier times you came up today you
2 were asking us to add insulation tradeoffs for below the
3 deck.

4 MR. CALLAHAN: Sure am.

5 MS. BROOK: And that seems contradictory to
6 what you just said --

7 MR. CALLAHAN: Oh, no, I'm just saying you have
8 to be careful about it and you have to know what you're
9 doing.

10 MS. BROOK: Well, that's the problem that we're
11 going to have setting a general requirement without, you
12 know, the necessary studies that would tell us that it is
13 or isn't a problem with the moisture under the roof deck.

14 MR. CALLAHAN: Well, we also have problems with
15 the Fire Codes and other parts of the Building Code that
16 have been raised in different venues as these cycles have
17 gone through, and I've been told, and I forget who told
18 me, but the response I got here, you know, three or four
19 or five years ago was, "Well, you know, the fire part,
20 that's part of the Building Code. That's another part of
21 Title 24. We don't worry about that." Here, we worry
22 about the Energy Code, and that's something that --

23 MS. BROOK: Our State Fire Marshal has to
24 actually review and approve our Energy Code, so we do
25 have to worry about it.

1 MR. CALLAHAN: Well, that's nice.

2 MR. SHIRAKH: And that actually --

3 MR. CALLAHAN: It's important, but I'm just
4 saying I'm not taking back that I think below deck
5 insulation is important, it's important to my members. I
6 don't think a nuclear power plant, or a refinery is going
7 to hire some guy off the street, they're going to hire a
8 big commercial company that knows what they're doing,
9 that's bonded, insured, that's got trained folks, and
10 they're going to do the calculation to figure out can
11 this option work, am I going to be moving the dew point
12 to a place where I'm going to undermine the roof?

13 MS. BROOK: So you're telling us not to worry
14 about it?

15 MR. CALLAHAN: I'm saying it's a concern that's
16 worth discussing, but we've never had that discussion.
17 We don't have discussions, we have testimony, is what we
18 have. And that's our problem. We have workshops and we
19 have testimony, but we don't have discussion.

20 MS. BROOK: Well, we consider our staff
21 workshops to be places where we have discussion, so, I
22 mean, hopefully you can participate in those.

23 MR. CALLAHAN: Well, again, there seems to me
24 to be little industry involvement in developing the
25 proposal, where we're involved is in reacting to what

1 comes out of the black box. Whack this mole, whack that
2 mole --

3 MS. BROOK: I think that we really have tried
4 to engage you to the extent possible; we asked your
5 members for help with the cost information and I think
6 Payam got help from Reed's group with actually conducting
7 the surveys, or at least getting the surveys out to the
8 members. So, I mean, we are attempting to --

9 MR. CALLAHAN: I have no knowledge directly of
10 what you've done with ARMA. All I know is the offers
11 that I've made over the years, none of which have been
12 followed-up on, other than calls I've made to CEC staff,
13 nobody has ever actually called me. Let me take that
14 back, one of your consultants called me about six months
15 ago because they were concerned about the exception about
16 the gravel surface grooves, and what would happen if that
17 was removed, and wanted a referral maybe for cost basis,
18 specifically to a Southern California-based commercial
19 roofing contractor who did that kind of work. I made the
20 referral. That's the only contact I've had with anybody
21 in the last year, easily. We have to do better than
22 this, we really do. Thanks.

23 MS. HARDY PIERCE: Helene Hardy Pierce, and
24 just a couple of points. To the issue that Bill was just
25 raising, it's not the large nuclear power plant, or Cal

1 Steel that's not going to hire a contractor who might
2 understand vapor calculations, but it's the apartment
3 building in Compton that is going to hire whomever, and
4 so because this applies everywhere, that conversation
5 should take place, and I wholly agree with what you were
6 saying. The other point is that, when we talk about
7 these insulation tradeoffs, I just want to raise the
8 question that, when we talked about insulation tradeoffs
9 in Hearing Room B, Mazi, six months ago, there were a lot
10 of questions raised about the values in the insulation
11 tradeoffs, and so I think that is still an open
12 discussion item, it wasn't ever really resolved, and I
13 can remember specifically Tim Kersey from SiPlast, now
14 Supreme, being very vocal about the values that were in
15 that table, and it kind of seemed to be a one-way
16 conversation, so I just want to make sure that we haven't
17 seen it, you say it's coming, that's great, but --

18 MR. SHIRAKH: We had it on the slide this
19 morning.

20 MS. HARDY PIERCE: -- in the new -- but down to
21 25 percent reflect -- the numbers were -- I am going to
22 speak for the people that were in that meeting -- we were
23 looking at those insulation values and there was the
24 appearance of a very strong penalty to use insulation vs.
25 a white membrane. And, Mazi, without looking at it, and

1 you saying it's going to be added to new construction, I
2 think that still will need to be looked at by the people
3 who --

4 MR. SHIRAKH: I agree with that --

5 MS. HARDY PIERCE: Is that fair?

6 MR. SHIRAKH: I agree. And I was actually
7 concerned myself about the initial R-Values that was
8 coming out. John or Dimitri, any of you familiar with
9 how the R-Values are calculated? But I do agree with you
10 that --

11 MS. HARDY PIERCE: And maybe it's not
12 appropriate today to take everyone's time, but I am
13 saying that, when you say we're going to have it and
14 we'll get it out, that we reserve the right to look at
15 those R-Values.

16 MR. SHIRAKH: I still want a response --

17 MS. HARDY PIERCE: I don't want anybody to say,
18 "Well, you agreed when we were in Hearing Room B that
19 these were good" because I can remember specifically --

20 MR. SHIRAKH: Yeah, we agreed that insulation
21 tradeoff was good, but we did not agree on the numbers.

22 MS. HARDY PIERCE: On the numbers. Thank you.

23 MR. ARENT: John Arent, CEC. Yes, I won't
24 speak at length about the numbers, but in terms of how
25 they were developed, we basically started, say, for new

1 construction with the prescriptive standards and used
2 simulations to predict the energy use for that case, and
3 then that serves as the baseline or a reference for
4 comparison. So the tradeoffs that you have are based on
5 regressions of simulations that show that you will --
6 basically to achieve the equivalent TDV energy use, Time
7 Dependent Valuation. And it's done similarly for
8 Alterations, and currently the table has tradeoffs down
9 to an aged reflectance of .25. And for the Alterations,
10 since we're assuming a starting point of less insulation
11 below the roof, it requires less insulation as a tradeoff
12 than the new construction.

13 Now, when you get down to those levels, .25,
14 .3, there is a lot of insulation required, it is
15 definitely a penalty, there's no doubt about it, but
16 that's the basis for that calculation. And I would like
17 to also comment on one of the gentlemen from the Roof
18 Coating Manufacturers Association, just to get at the
19 cost. For coatings, we got some cost data from
20 contractors, but that data didn't seem that robust in
21 terms of being able to distinguish different products, so
22 we worked with a Coatings Manufacturer to develop, well,
23 not to develop, but I mean he provided us with solid cost
24 data for several product lines that are used in
25 California, so that was the basis for the coatings aspect

1 of the cost study.

2 And finally, I know this is probably obvious to
3 most people in the room, so forgive me for saying the
4 obvious, but we talk about eliminating products from the
5 market by raising the standard, but it's actually -- a
6 number mentioned was about 30 percent of products, but
7 these products aren't completely eliminated by any means,
8 since we do not have a mandatory requirement, they can
9 always use either the tradeoff approach which is within
10 the proscriptive table, or the performance standards, so
11 there are options. Now, I understand people will look at
12 the proscriptive standards and use this as the basis,
13 possibly, for selections so that, you know, obviously
14 some products that have a less efficiency might be at a
15 disadvantage. But the products aren't eliminated from
16 market, as such. Thanks.

17 MR. SHIRAKH: And I think what we've heard is
18 about 80 percent of the new construction nonresidential
19 uses performance path anyways. Sir.

20 MR. HART: Good afternoon. My name is Peter
21 Hart. I'm an attorney here on behalf of the Asphalt
22 Roofing Manufacturers Association. I just wanted to make
23 sure I heard a couple of things correctly. Is May 3rd
24 the date when the final tradeoff calculations and
25 approaches will be made public?

1 MS. BROOK: No, that's a status update for the
2 compliance software.

3 MR. HART: Okay --

4 MS. BROOK: And we're not expecting to have the
5 compliance software done until the end of the calendar
6 year, it takes a long time to implement the performance
7 standard into the software. So we actually, if there is
8 going to be any change to what we're proposing here as
9 far as eliminating the overall envelope approach, and
10 instead having this insulation tradeoffs, you know, if
11 it's done within the performance software, it's not going
12 to be done and ready to talk about on May 3rd.

13 MR. HART: So when will that language be
14 available to stakeholders? When will those calculations
15 be available?

16 MS. BROOK: So, I mean, we can make any --
17 we're not -- we can address any changes -- we're going to
18 make any changes that we need to make by 15-day language,
19 but I don't -- the performance compliance approach isn't
20 part of this rulemaking, it's a compliance approach that
21 implements the standards that we're talking about today.

22 MR. HART: Okay.

23 MS. BROOK: And that's why, I mean, I think
24 it's a challenge to talk about the overall envelope
25 approach in terms of this rulemaking because we're

1 basically proposing that we don't have that approach for
2 this --

3 MR. SHIRAKH: Well, let me explain it this way,
4 maybe. Anything that goes into the prescriptive
5 standards will be part of the 15-day language. That
6 includes the insulation tradeoffs that we mentioned. We
7 have some of it already in the language; what you heard
8 today, we want to expand it to more insulation types.
9 The one kind that we have right now is the continuous
10 insulation. We heard that people want to consider like
11 batt insulation, so we can perhaps provide that, and that
12 will be in the 15-day language. We've also heard that,
13 you know, we're not going down far enough in the range,
14 you know, currently for new construction we're going down
15 to .50, we've heard other numbers, maybe .30 --

16 MR. HART: Right.

17 MR. SHIRAKH: -- so whatever we agree with them
18 will be in the 15-day language. This will not be
19 reflected in the compliance software by then. As Martha
20 said, that's developed even after adoption, but what
21 compliance software does is they use the prescriptive
22 standard as the baseline for establishing the standard
23 budget. So whatever goes into that prescriptive standard
24 will become the basis for compliance with the compliance
25 software.

1 MR. HART: Okay, thank you.

2 MR. FERRARO: Hi, John Ferraro, Roof Coatings
3 Manufacturers Association. We have a Board member, Steve
4 Heinje, from United Coatings, that has been trying to get
5 in online, but he has been unable to. He made some
6 changes to Table 110.8(B) that he will submit in writing.
7 Steve, I don't know if you're on the line right now if
8 you want to --

9 MR. HEINJE: Can they hear me?

10 MR. SHIRAKH: Yes, we can, loud and clear.

11 MR. HEINJE: What do you know? Hey. Well, is
12 this a handoff, Mr. Ferraro?

13 MS. BROOK: Yes.

14 MR. SHIRAKH: Go ahead, please.

15 MR. HEINJE: I'm just going to, just to get
16 this verbally on the record, you know, I sent a
17 Powerpoint to Mazi and Martha?

18 MS. BROOK: Yes, I received it, I saw it at
19 lunchtime. Uh huh.

20 MR. HEINJE: I'm just going to step through it
21 in a very general level. You've heard a lot of comments
22 from the industry coalition, and I just want to say I do
23 support our coalition and our concerns. But before I get
24 into this, I also just want to make a comment. You know,
25 Helene Hardy Pierce is one of the most respected

1 engineers in the industry; if she says she might be
2 having moisture problems, I would listen to her. And
3 last time, she commented on something that hasn't come up
4 today, but I think it's still relevant, you know, there
5 is a number of bodies that regulate, there's VOCs,
6 there's this, of course, issue of reflectivity that we're
7 discussing today, you know, there's tradeoffs in
8 insulation, there's the building envelope in the
9 engineering involved in a building, all of these come
10 into play on these roofs. And you know, I am concerned,
11 actually, about coatings, and I mentioned this last time,
12 in the winter and in places like Lake Tahoe, and
13 prescriptive standards getting in the way of providing a
14 good serviceable frame.

15 Anyway, but I want to focus in on something
16 very narrow, which is my segment, which is white roof
17 coatings, I'm a white roof coatings guy here. And Table
18 118(B), now called Table 110.8-B, has what I refer to as
19 a nested standard, it looks a little like an ASTM
20 Standard buried in the Code. And if you look at it, my
21 Powerpoint outlines this, it's essentially a derivative
22 of a standard for cool roof coatings called ASTM D 6083.
23 I attend this task group, on this task group at ASTM, I'm
24 heavily involved in coating standards for the industry.
25 And it -- some problems and I have a suggestion, okay?

1 So it has a number of tests that are put forward, but
2 because it is not ASTM 6083, how the test is run is not
3 defined. And this provides that, to me as a coatings
4 person who wants quality, adequate foam thickness
5 membranes applied in the field, I don't want to see white
6 roof on roofs and this standard does not set some things
7 in place, and because of the way it was written. So I go
8 through this thing in steps since we can't do this,
9 because we're not going through it as a group, you know,
10 nobody can see this, even though I'm looking at it as I
11 comment to you, and I basically show essentially you have
12 a standard here that is so open, I can get lots of things
13 to pass it, that you do not want going on roofs in the
14 State of California. And furthermore, that's number one
15 problem, is that it's really too open because it's really
16 written -- does not have all the necessary parameters
17 defined. But number two, there's no requirement for any
18 kind of third party or approved testing labs involved,
19 and the combination of no third-party test lab and a
20 poorly written protocol is really risky. So I look at
21 it, if you were looking at the Powerpoint, Martha, or
22 Mazi, you'll see I've got some grays, I've got a darker
23 gray, and one particularly worrisome line, and I get down
24 and I say this, what you really should do is rewrite this
25 table to basically say it's ASTM 6083, run as per ASTM

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1 6083 protocol, but with the following changes, that you
2 should define some way to establish a third -- I'm
3 jumping ahead because I know the entertainment value of
4 this presentation has to be excessive. If you merely
5 lower your flexibility standard and your initial
6 [inaudible], but basically make it a round ASTM 6083, I
7 offered some language, I think you will obtain the
8 benefits intended by this table, and you will have a more
9 useful Code going forward because I believe we need to
10 have some kind of third-party if you're going to write a
11 standard like this Table 110.8-B, somebody needs to say
12 this was really run right. I don't think self-
13 certification really is what the State of California
14 should be looking for. And then, in the process that
15 provides discipline into how those products are rated,
16 and what you're going to end up doing does go back to my
17 first comments, if you provide a more credible system, if
18 you -- you will end up pushing a business towards those
19 companies that have the most invested, who have
20 laboratories, who have engineers, who have chemists like
21 myself working on these things, and you're going to get
22 better products in the marketplace. I think Table 118(B)
23 as it was written in the last Code language was a
24 dangerous precedent, I did not like it. So, as a
25 consequence, a simplified and improved table, and I hope

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1 that that would be considered. Thank you so much.

2 MR. SHIRAKH: Thank you. We'll look at your
3 comments --

4 MR. HEINJE: [Inaudible] Products, LLC, we
5 changed our name, we made Hydrastop (ph.) United Coatings
6 Brand Products. I am, as Mr. Ferraro said, Vice
7 President of the RCMA, I'm also in Government Affairs of
8 RRCI, Reflective Roof Coating Institute, I am an ASTM
9 Task Group member who is deeply involved with this area
10 in the industry. Thank you so much.

11 MR. SHIRAKH: Thank you. We'll look at your
12 comments. I appreciate your comments. Just wanted to
13 mention that this table, 110.8(B) has nothing proposed to
14 change, there's no proposed changes for this round of
15 standards, actually it's been like that for a couple of
16 cycles, but that doesn't mean we can't look at your
17 comments. Thank you. Any other comments? John.

18 MR. MCHUGH: I'll try to be brief. This is Jon
19 McHugh with McHugh Energy. I'm here to speak in favor of
20 the current proposal for cool roofs. We've heard today,
21 you know, there's some controversy around the proposal.
22 I've been aware of many of the conversations back and
23 forth, there's been a back and forth and negotiations
24 around the requirements, there's been multiple, you know,
25 I think staff has been trying to address the concerns,

1 and when I first looked at this and originally .7 was
2 proposed, it was I thought a very comprehensive letter
3 from the industry that I believe was from Firestone, that
4 identified the manufacturers and, as I think someone in
5 this audience already mentioned, that there's basically
6 products that are re-labeled, and so in that letter they
7 identified essentially who are the primary manufacturers,
8 and how they're relabeled under a variety of different
9 places, and identified essentially the issues. And now
10 that you're finding that you're kind of running up
11 against the edge of the issues that were brought up in
12 that letter, which described that at .7, you know,
13 there's certain products that you can't hit any -- that
14 don't actually have product in those reflectance's. But
15 I feel that you have addressed those issues.

16 What I like about Bill Callahan's comments is
17 that he's suggesting, you know, a solution rather than,
18 "Oh, we don't have enough data, let's wait until the next
19 Code cycle," you know, frankly if the roofing industry
20 feels like there isn't enough data, I feel that the
21 burden of proof is on them to identify what they feel the
22 costs are, and what they feel the energy savings are.
23 You know, we started out with this a number of months
24 ago, you know, there's been, I would say, a few rocks
25 thrown at AEC at this meeting and, as I remember, the

1 roofing industry had an analysis that was based on a
2 correlation associated with warehouses, and was trying to
3 use that to apply to nonresidential buildings. And you
4 know, Dr. Dejolais admitted that this probably wasn't the
5 appropriate type of tool. So let's keep in mind the -- I
6 actually think the excellent analysis done by AEC using
7 advanced tools, and the very concept of reducing the
8 amount of absorbed radiation is huge in terms of energy
9 savings. And as is shown in the case study, we're
10 looking at around 200 gigawatt hours per year associated
11 with the change, that's a huge energy impact from a
12 single measure. And you know, the present value of those
13 buildings from one year's new construction and retrofits
14 is around a billion dollars. I mean, that's a huge
15 impact on our economy, so when you start talking about
16 job issues and issues associated with the wealth of the
17 state, I think that there needs to be some reevaluation
18 of what's important.

19 That being said, I think there's been a couple
20 of comments that have been brought up and I'm hopeful
21 that the roofing industry actually looks -- and the folks
22 that are here aren't representing the whole industry,
23 they're the ones who are most exercised, but that portion
24 of the industry that is here, that they try to work out
25 an accommodation with this proposal, try to ask -- Bill

1 has brought up -- are there some additional off ramps
2 that are needed for the flexibility that he needs.

3 Anyway, those are my comments. Thanks.

4 MS. BROOK: Thanks, Jon.

5 MR. SHIRAKH: Thank you, Jon.

6 MR. HITCHCOCK: I just had two clarifications,
7 1) I don't know what study you're alluding to in terms of
8 trying to sneak things in under warehouses, or what have
9 you, that's certainly not something our organization are
10 involved in.

11 MR. MCHUGH: So, as I remember, the beginning
12 of these workshops there was a study that used the -- it
13 was a consultant that was hired, they performed this
14 study --

15 MR. HITCHCOCK: That's not my organization.
16 And it shouldn't be characterized as the whole industry,
17 that's number one. Number two, a few times comments have
18 been made about the industry with the survey, and we did
19 not -- we did offer AEC a survey instrument that we used
20 as part of the 2008 process, which was a very complex
21 document and really got into a lot of detail in terms of
22 trying to get the best information that could be gotten,
23 but to the point, because there wasn't the time spent,
24 that was not something that was pursued with us in terms
25 of collecting any real data. So I just wanted to correct

1 that misperception because I heard that a couple times on
2 the record, as well.

3 MS. BROOK: So, for the record, is that you
4 didn't help us get cost data?

5 MR. HITCHCOCK: We offered to help you get cost
6 data with the understanding, with the detailed
7 discussion, that we knew it was going to take more than
8 the time between when that process started and when you
9 wanted to have 45-day language.

10 MS. BROOK: Thanks.

11 MR. SHIRAKH: This was several months ago --

12 MR. HITCHCOCK: It was in the October timeframe
13 and then there was a change, well, if you go back, there
14 was a change in contractor after June, or at least the
15 designated person at AEC that was working on it. And
16 that was a backstab, and then when Jon took it over, and
17 we got to talking about the October cycle, we shared the
18 survey instrument, I believe it was either directly with
19 Jon or through Payam, I don't recall. But that was after
20 CEC had already determined that you wanted to do your own
21 cost gathering and do it quickly.

22 MR. SHIRAKH: It wasn't supposed to be -- we
23 were hoping to do it to augment your effort.

24 MR. HITCHCOCK: Show me where you asked me for
25 that because I offered. Thank you.

1 MS. BROOK: Thank you.

2 MR. KLEIN: Good afternoon. It's Gary Klein
3 and I'm not going to talk about roofing.

4 MS. BROOK: Let's guess what you're going to
5 talk about.

6 MR. KLEIN: Hot water.

7 MS. BROOK: Yay.

8 MR. KLEIN: What a surprise. Sorry, I would
9 like to talk about Section 120.3, Table A, 120.3-A, Pipe
10 Insulation Thickness. I see that the Commission has
11 revised the table from what it used to be to more closely
12 align with what I believe is an ASHRAE 90.1 at the
13 moment?

14 MS. BROOK: Uh huh.

15 MR. KLEIN: I would note that, if my records
16 are correct, there's a couple of minor items incorrect in
17 the bottom line of the table. And I can either read them
18 into the record now, or just talk with you afterwards and
19 point them out, which I think is more effective.

20 MR. SHIRAKH: Now is --

21 MR. KLEIN: There appears to be a couple things
22 that weren't caught quite correctly. Other than that,
23 the table is in line.

24 MS. BROOK: All right. Thank you for reviewing
25 that, it's important. Thanks.

1 MR. SHIRAKH: Dimitri.

2 MR. CONTOYANNIS: Dimitri Contoyannis with AEC.
3 I'd just like to respond to a couple comments about the
4 analysis, the procedure used for the cool roofs analysis.
5 I've heard it characterized as "quick and dirty," and
6 also "bad science" during some comments made, and I'd
7 just like to describe the process that was used. First
8 off, we followed the procedure that all of the case
9 projects have followed, and this was a process put in
10 place at the beginning of the Code cycle. The cool roofs
11 project, we put together the reports, the documentation,
12 and everything in alignment with the procedures set forth
13 in the case process. Namely, we used the leading
14 building physics simulation tool that's available, that
15 accurately captures heat transfer through every layer of
16 the material, it's a tool supported by the Department of
17 Energy, it's widely considered to be the most robust
18 analysis tool available, and that is the leading building
19 science analysis tool, EnergyPlus.

20 Now, when we put the proposal together on the
21 cool roof reflective requirements, and it was deemed to
22 be cutting out eventually some products that are
23 available on the market, we used the same analysis tool
24 to determine the insulation tradeoff method, so it's an
25 equitable comparison between the reflectivity and the

1 tradeoffs for insulation. So, again, this is a very
2 rigorous analysis using industry-leading tools, following
3 the case procedures and, in fact, I'll also go on to say
4 that these tools are used for just about any Code
5 development procedure, whether it's in California or
6 elsewhere, the National Laboratories use the same set of
7 tools and a very similar process to put forth
8 requirements in other states, as well as for ASHRAE,
9 which is a national standard, ASHRAE 90.1, ASHRAE 189,
10 the Green Building Standard at ASHRAE follow a very
11 similar procedure for quantifying the savings for various
12 efficiency measures that are proposed during each Code
13 cycle. So to categorize this as "bad science," I believe
14 is a falsehood.

15 And I'd also like to point to the numbers that
16 Mr. McHugh called out, the energy savings, as well as the
17 dollar savings that can be attributed to this measure.
18 Thanks.

19 MR. BROOK: Dimitri. Do we have any other
20 comments in the room or online? Nothing online. Going
21 once, going twice.

22 COMMISSIONER DOUGLAS: All right, if there are
23 no other comments, I'd like to thank everybody for being
24 here today. We'll definitely look closely at your
25 comments, both comments we've heard and comments we'll

1 receive in writing. So appreciate your being here. And
2 with that, I guess we will resume tomorrow.

3 MS. BROOK: Yeah, we'll do residential tomorrow
4 and that should take care of the 45-day language.

5 COMMISSIONER DOUGLAS: Great. Well, thank you
6 everyone, again. And we're adjourned.

7 MS. BROOK: Thanks.

8 (Adjourned at 3:31 p.m.)

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