

BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the Matter of:) Docket No. 14-BSTD-01
)
Draft Language 2016 Building)
Energy Efficiency Standards)
Revisions for Residential and)
Non-Residential Buildings)

STAFF WORKSHOP

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

MONDAY, NOVEMBER 3, 2014
9:00 A.M.

Reported by:
Kent Odell

APPEARANCES

Staff Present

Mazi Shirakh, Project Manager for 2016 Update of
Building Standards Office
Peter Strait, Building Standards Office
Pippin Brehler, Chief Counsel's Office

Presenters

Mark Alatorre, CEC, Building Standards Office
Jim Benya, Davis, California
Payam Bozorgchami, CEC, Building Standards Office
Bruce Wilcox, Support Contractor for Building Energy
Efficiency Standards
Danny Tam, CEC, Building Standards Office
Dee Anne Ross, CEC, Building Standards Office
Simon Lee, CEC, Building Standards Office
Farakh Nasim, CEC, Building Standards Office

Also Present (*Via WebEx)

Robert Raymer, California Building Industry Association
(CBIA)
Jim McGowan, Executive Director, Building
Standards Commission
George Nesbitt, HERS Rater
Jon McHugh, McHugh Energy
Meg Waltner, Natural Resources Defense Council (NRDC)
Mike Bachand, CalCERTS
Randall Higa, Southern California Edison
Ken Nittler, Enercomp, Inc.
*Aniruddh Roy, Goodman Manufacturing Company
*Mark Nowak, Steel Framing Alliance
Gene Thomas, Ecology Action
Mike McGaraghan, Energy Solutions, on behalf of the
California IOUs
Wayne Stoppelmoor
Corrine Wilder, Universal Lighting Tag
*Behzad Eghtesady, City of Los Angeles
Dimitri Kontoyannis, NORESCO, CBECC-Com Leadership Team
Jim Kemper, Los Angeles Department of Water and Power (LADWP)
John Arent, NORESCO
*Frank Stanonik, Gas Appliance Manufacturers Association
Erik Bluvas, Green Creative

APPEARANCES (Continued)

Jim Gaines, Phillips Lighting
Lorne Whitehead, Professor, University of British Columbia
David Wilds Patton, Patton Lighting and Design
Greg Merritt, CREE, Incorporated
Alan Suleiman, Sacramento Municipal Utility District (SMUD)
Mike Hodgson, ConSol, supporting the California Building Industry
Association
Michael Siminovitch, U.C. Davis
Richard Haring, Philips Lighting
Michael Jouaneh, Lutron Electronics
Michael Kachala, Hinkley Lighting
*Garrett Doss
*Thomas Enslow, Adams Brodwell Joseph & Cardoza, on behalf of the
California State Pipe Trades Council
Andy Laurel, QC Manufacturing
Elena Karpina, Owens Corning
Timothy Moore, Integrated Environmental Solutions
John Woestman, XPSA
Heidi Hallenstein, Energy Solutions, on behalf of
California Utilities
David Ware, Knauf Insulation
Roy Harvey

I N D E X

	<u>Page</u>
Introductions/General Information about 2016 Title 24	
Mazi Shirakh	10
Part 1, Administrative Regulations - 10-101 thru 10-114	
Mazi Shirakh	20
Part 6, Subchapter 1, Sections 100.0 thru 100.2 - General Provisions	
Mazi Shirakh	37
Part 11 - Voluntary Reach Standards	
Farakh Nasim	39
Subchapter 2, Sections 110.0 thru 110.10 - Mandatory Requirements for Manufactured Devices	
Mazi Shirakh	48
Subchapter 3, Sections 120.0 thru 120.9 - Mandatory Requirements for Nonres, High-Rise Res and Process	
Mark Alatorre	53
Subchapter 4, Sections 130.0 thru 130.5 - Nonres Lighting Mandatory Requirements	
Jim Benya	64
Subchapter 5, Sections 140.0 thru 140.5 - Nonres Envelope and Mechanical Prescriptive Requirements	
Payam Bozorgchami	79
Mark Alatorre	80
Subchapter 5, Sections 140.6 thru 140.9 - Nonres Prescriptive Lighting Requirements	
Jim Benya	87

I N D E X

	<u>Page</u>
Subchapter 6, Sections 141.0 t hru 141.1 - Nonres Additions and Alterations	
Peter Strait	99
Subchapter 7, Sections 150.0, Subsection 150.0(k) and Joint Appendix 8 (Residential Lighting)	
Mazi Shirakh	121
Section 110.7 & 150.1 Instantaneous Water Heating	
Danny Tam	176
Subchapters 7, 8, and 9 - Sections 150.0 thru 150.2 - Residential Mandatory and Prescriptive Requirements	
Bruce Wilcox	179
Alternative Calculation Methods Adopted Manuals	
Dee Anne Ross	221
Reference Joint Appendix 4, 5, and 10	
Payam Bozorgchami	231
Simon Lee	232
Residential Appendices	
Mark Alatorre	244
Payam Bozorgchami	245
Nonresidential Appendices	
Mark Alatorre	250
Simon Lee	252
Additional Public Comments	254
Adjournment	255
Reporter's Certificate	256
Transcriber's Certificate	257
CALIFORNIA REPORTING, LLC	5
52 Longwood Drive, San Rafael, California 94901 (415) 457-4417	

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P R O C E E D I N G S

NOVEMBER 3, 2014 9:02 a.m.

MR. SHIRAKH: Good morning. We're going to get started. I'm Mazi Shirakh and I'm the Project Manager for the 2016 Update of the Building Standards. Today we're here to present our draft language for the 2016 Update. It's going to be a very packed agenda. As you can see, we're basically presenting the entire update, which includes the changes to the Standards language, as well as any changes to the ACM Manuals and also the Reference Appendices.

Just a quick, I guess some of the logistics. In case of emergencies, we'll go to the atrium there and go out through the main doors, and there will be a person and you'll follow him to the park across the street. Hopefully nothing will happen. The restrooms are across, and we no longer have a cafeteria, so if you want coffee, you have to kind of browse around the neighborhood.

I would like to ask everyone to fill in the sign-in sheet or attach your business card so we know who is participating and, also, when you want to make a presentation you can come up to

1 the podium there, introducing yourself and your
2 affiliation, and preferably giving the Court
3 Reporter a business card so he can have the
4 correct spelling of your name.

5 The entire presentations today will be
6 transcribed and the transcripts will be available
7 in about a couple of weeks.

8 There are a couple of minor changes to
9 the agenda. At 11:45 a.m., Sections 141 through
10 141.1, Peter Strait will be presenting this, not
11 me, and then in the afternoon immediately after
12 lunch we're going to switch the first two topics.
13 The Lighting section will be presented first and
14 then we'll go to the Building Envelope. We're
15 trying to do this to accommodate the schedules of
16 some of the stakeholders. Other than that, the
17 schedule is the same.

18 There is an opportunity for a few quick
19 comments after each presentation. As you may
20 guess, we don't have a lot of time for back and
21 forth debate if you want to get home before
22 midnight, and so there will be some opportunity
23 for comments and, you know, if you have more
24 substantial comments, we are providing until
25 November 24th. For commenting, we would

1 encourage you to make your comments in writing
2 and docketed, that is our preferred way of
3 receiving comments anyways.

4 I have a presentation, most of you have
5 seen this in the past, but I'll go through it
6 quickly and if you want to snooze through this,
7 you're more than welcome.

8 MR. RAYMER: Bob Raymer with California
9 Building Industry Association. Regarding today's
10 agenda, I know it's packed, we're going to be
11 submitting most of our comments in writing by the
12 24th. It has come to my attention, though, that
13 there are a couple State agencies that are here,
14 that are interested in the last item on the
15 agenda and I was wondering, we could still keep
16 it at the last item, but could there be
17 capability of at least taking their comments
18 sometime earlier today?

19 MR. SHIRAKH: So that's related to the
20 High Performance Attics and Walls?

21 MR. RAYMER: No, that's related to the
22 Green Building Standards, Part 11.

23 MR. STRAIT: Just really quickly, it
24 wouldn't make sense to take comments before we
25 have that presentation. We might be able to move

1 that presentation earlier in the agenda, but we
2 were trying to make sure we covered all of the
3 Regulations, they're the back on the Mandatory
4 Provisions, so it make sense where the voluntary
5 lands.

6 MR. RAYMER: Sure.

7 MR. RAIT: Is there a specific time that
8 would be -- like a time that people have to leave
9 or would be unable to attend?

10 MR. MCGOWAN: Good morning. I'm Jim
11 McGowan, Executive Director at the Building
12 Standards Commission. Yeah, if we could perhaps
13 address this before Noon, that would be very
14 helpful. Most of us need to go back to the
15 office at that time.

16 MR. STRAIT: What we'll do, then, is
17 before we break for lunch, we'll get to your
18 topic, that might shift the time we break for
19 lunch a little bit later, but hopefully that
20 won't take too much time.

21 MR. MCGOWAN: That would be great. Thank
22 you very much.

23 MR. SHIRAKH: And my standard word of
24 caution is the times here are very approximate,
25 but I can guarantee we'll deviate from that. So

1 bear with us and we'll try to keep it as close as
2 possible.

3 So we're going to be talking about the
4 authority that was given to us for updating the
5 Standards, the 2016 Standards Update Schedule,
6 and the Update Process, and a few examples of the
7 typical measures we're considering for both
8 residential and nonresidential buildings, and
9 have a quick discussion about California Advanced
10 Home Program, the CAHP Program.

11 The initial original authorization for
12 updating the Building Standards was actually
13 given to us in the Warren-Alquist Act in 1974,
14 which was signed by then Governor Reagan, and
15 further policies and directives have followed
16 throughout the years, the most recent one is
17 Governor Brown's Clean Energy Job Plans, and then
18 we also have the Zero Net Energy goals and goals
19 and policies by other agencies like the
20 California Air Resources Board.

21 This graph basically depicts our march
22 towards Zero Net Energy. The first one here back
23 in the '70s, this is kBTUs per square foot, you
24 know, our buildings back then used in excess of
25 100 or 110 kBTUs per square foot per year. These

1 were buildings that were built with single pane
2 windows, aluminum windows, hardly any insulation
3 in the heat ducts, and so forth. So we've done a
4 really good job of bringing this and currently we
5 are at this level, I'm sorry, we're here, which
6 is about 22 kBTUs per square foot, per year. So
7 a radical improvement from 110 to 22. And this
8 is our goal for ZNE, which is about 10 or 12, so
9 we are very close but we are not quite there, so
10 that's what we're working on today.

11 This is the 2016 Schedule Update, the
12 process got started back on April 4th of this
13 year in a forum at SMUD that was jointly
14 sponsored by the CBIA and the CEC, and subsequent
15 to that we had stakeholder meetings that were
16 held throughout the state by the California IOUs
17 who are partners in the Standards development
18 effort. And then after that we had staff
19 workshops in June through August.

20 And we're here today presenting the Draft
21 Standards which represent the result of all the
22 work that was done since April, and most of you
23 should have seen the Standard language, the
24 proposed language, because they have been
25 presented several times in the workshops and the

1 stakeholder meetings.

2 In January of this year we will be
3 releasing the 45-day language, which is basically
4 the launch of the official rulemaking process,
5 and in April, if needed, which it usually is, we
6 will release the 15-day language. Adoption will
7 be in May of next year, 2015, and the effective
8 date is January 1, 2017. So that gives us a year
9 and change to work on our Compliance Manuals and
10 Compliance software and all of that and basically
11 get things ready for the launch dates.

12 These were the various stakeholder
13 meetings and staff workshops that we held here at
14 the Energy Commission and basically we're done
15 with that process. As those of you who are
16 familiar with the Standards Update, it is
17 comprised of two steps, the pre-rulemaking and
18 the rulemaking. We are still in the pre-
19 rulemaking process, which is the more less
20 official phase of this where we hold staff
21 workshops, often they are not attended by the
22 Commissioners, they are not required, so that's
23 where we are. And then the rulemaking, which is
24 the official rulemaking, it will be presided by
25 the Lead Commissioner and will start in January.

1 And we have, as I mentioned, we had
2 stakeholder meetings and these were sponsored by
3 our utilities, IOUs, PG&E, Edison, Southern
4 California Gas, Southern California Gas Company,
5 and we also received substantial assistance this
6 time around from SMUD, and participation from Los
7 Angeles Department of Water and Power.

8 Again, those meetings were held here and
9 the rulemaking, again, will be starting in
10 January and will be in this room.

11 So the big emphasis for the 2016
12 Standards is on Residential Buildings, not
13 Nonres, and simply because the ZNE goal for the
14 Residential Standards is 2020, which is not far
15 in the future, whereas the ZNE goals for Nonres
16 is 2030. And we had a big substantial update to
17 the Nonresidential Code last time around, 2013,
18 so we have shifted our emphasis to Res for this
19 time around.

20 And to get to the ZNE, we are adopting a
21 slightly different approach than in the past and
22 rather than emphasizing on specific measures, we
23 are basically defining the performance levels
24 for, say, high performance attics or walls. And
25 then providing the industry and opportunity to

1 basically, through various techniques and means
2 and products and procedures, meet those
3 performance levels. So there's not going to be
4 one particular way of getting to the ZNE for high
5 performance attics, there's many. And what's
6 important from our perspective is the performance
7 level, it's not what measure it isn't, and we'll
8 describe some of those here today. The same
9 thing goes for the walls.

10 And the builders and manufacturers can
11 come up with additional solutions as long as it
12 has the same efficiency potential, and they have
13 actually been doing this. The industry, the
14 manufacturers have come up with new techniques
15 and products and insulation products, the
16 builders themselves have been experimenting, so
17 it's been very encouraging.

18 And the different builders, based on
19 their preference, will choose a set of solutions
20 that's unique to their business, again, what's
21 important is the performance. Free market will
22 settle on the most promising solutions and we're
23 going to be creating some buildable prescriptive
24 packages that if a builder doesn't want to use
25 the performance path and they want to go

1 prescriptive, hopefully we'll have some
2 opportunities in there where they can use the
3 prescriptive without going to performance.

4 These are some of the ideas for high
5 performance attics. As you know, you can have
6 roof deck insulation equivalent to R6 continuous
7 insulation with radiant barrier either above or
8 below deck. And so that's basically our
9 benchmark for the performance level. There's a
10 lot of different ways of getting there, you can
11 have batt insulation underneath, what we've seen
12 people using is called the box netting, you can
13 have unvented attics, you can have vented attics,
14 you can have sealed attics, you can move the
15 ducts into the conditioned space. So again, a
16 lot of choices there.

17 And so the builders will have to pick one
18 of these either from up here, or they can choose
19 something from down here, or they can suggest
20 another solution if they want. The same thing
21 goes for the walls. High performance walls
22 define a U-factor of about .048 to .050, and I
23 think we're going to settle right in that range.
24 And there's all these different ways of getting
25 to that, or there could actually be different

1 solutions, too. So again, what's important here
2 is this number, you know, this is up to the
3 builders and their choice.

4 We're also providing a photovoltaic
5 tradeoff and we're expanding that for the first
6 time that the builders can actually use, you
7 know, the photovoltaic tradeoff to trade away
8 either the high performance attic or the high
9 performance wall, or both. There's a minimum
10 requirement of a 2 KW system. And again, some of
11 them are going to gravitate towards the PV
12 option, and some of them are probably going to
13 gravitate towards high performance attics and
14 walls. And there are also other compliance
15 options available like the high performance
16 windows or advanced whole house fans that they
17 can take advantage of.

18 The other big measure that we're
19 considering is the tankless water heater. It's
20 the first time we're actually moving from
21 standard storage water heaters with an energy
22 factor of .62 to tankless with an energy factor
23 of .82.

24 High efficacy lighting, that's a big
25 energy saver this time around. We're basically

1 moving the entire building, taking advantage of
2 the advances in LED technology and the variety of
3 choices, and the efficiency improvements and
4 basically we're moving towards all high efficacy
5 lighting in residential homes perhaps with just a
6 few exceptions, and controls, which will be
7 presented.

8 For Nonres, the goal here is basically to
9 stay with ASHRAE so we don't fall behind the
10 national standards, you know, basically to keep
11 up with that while we're working for Res. And so
12 we're updating our equipment efficiencies,
13 envelope U-factors, some indoor and outdoor
14 lighting improvements, again, keeping up with
15 ASHRAE, and we've done a lot of clarifications.

16 These are some of the costs that we have
17 come up with, and I do want to note that these
18 are staff's and CASE Team's, you know, we're
19 still working with CBIA to finalize some of these
20 numbers. But our estimate is for high
21 performance attics about \$900.00 for high
22 performance walls, about \$500.00 tankless, about
23 \$725.00, and high efficacy lighting about
24 \$525.00, for a total of between \$2,600 and \$2,700
25 for the package, which to me this is very

1 reasonable for a ZNE approach, and I call this
2 "bargain ZNE."

3 We're also working very closely with the
4 CPUC and the California IOUs on this high
5 performance homes, the CAHP Program, and the goal
6 of the CAHP Program is to provide both financial
7 incentives to builders to adopt and build more
8 efficient buildings, and prior to 2017, the
9 effective date, you know, the utilities will be
10 providing incentives for the builders to adopt
11 high performance attics, walls, and so forth, and
12 water heater and lighting.

13 And the CAHP Program also provides
14 support for builders training. Some of the
15 measures we are recommending here requires a
16 change in building practice, which means that the
17 trades will have to be trained and so we're
18 working with the utilities basically to deliver
19 that, and we have asked the CBIA to join us to
20 basically have a direct input into this process.

21 Standard Measures, everything we adopt
22 has to be cost-effective, we use lifecycle
23 costing which is the net present value, which
24 includes a variety of costs and benefits over the
25 life of the measure. Where most residential

1 buildings are considered on a 30-year life basis,
2 nonres is typically 15 years, except for building
3 envelope that is 30, if I recall correctly.

4 So that's the life of the -- the TDV is
5 also part of the lifecycle cost and time
6 dependent valuation. In the past we always used
7 average energy rates to calculate the energy
8 benefits and costs, now we've move the TDV which
9 is basically a metric that captures the variation
10 of energy prices based on time. As you can
11 imagine, an energy that's produced during a high
12 demand period on a summer afternoon is far more
13 expensive than an energy that's produced on a
14 typical evening. So the TDV also captures the
15 cost of the transmission and distribution and so
16 forth. Typically, TDV favors energy savings that
17 happens on peak during high measures that save
18 energy on peak like air-conditioning, insulation,
19 rather than say outdoor lighting.

20 Any questions on this part of the
21 presentation?

22 Okay, so we're going to move to the
23 actual presentation. Again, because of the time
24 constraint we're not going to be presenting the
25 actual language that is presented, and this has

1 been the typical practice of the past, you know,
2 we present the concept, the ideas, the language
3 is online and has been posted since October 23rd
4 and it will be there if you guys want to check it
5 on your own. We also have the language here,
6 too, if there's a specific measure that somebody
7 wants to take a look at, we can bring that up.
8 But by and large, we're just going to be talking
9 about the general concepts and the ideas, and not
10 going through all the specific changes, the
11 strike-through's, underlines, because there just
12 will not be enough time for that.

13 I also want to acknowledge that
14 Commissioner McAllister has joined us in the
15 back, and I don't know if Andrew wants to make
16 any statements? Thank you. Just for the record,
17 Commissioner welcomed everybody and thanked
18 everyone for attending.

19 So going through some of the changes, and
20 I'm sorry this is kind of small, let me see if I
21 can make it bigger, so starting with the
22 Administrative Regulations, Part 1, currently
23 there isn't that many changes, we have made a few
24 changes as you can see here, most of them are
25 clarifications and minor edits to various actions

1 that are listed here.

2 And again, just following with Sections
3 10-103b(D) and (F) and (J), again, just minor
4 changes and clarifications to various sections
5 and nothing major.

6 What I would like to bring your attention
7 to is this section, it is 10-103(a)3B. Currently
8 there are no changes proposed to the draft
9 language related to this measure, but we would
10 like to provide this to you so you can basically
11 give us some feedback on what is going on here.

12 A little bit of background is, for low
13 residential buildings there is a requirement
14 right now that all forms will have to be updated
15 into the HERS Providers Data Registry, and this
16 started basically in 2008 when for the first time
17 we created HERS Provider Data Registries and we
18 asked all features in the building that has a
19 HERS feature to be updated into a HER Provider
20 Data Registry. And then in 2013 we expanded that
21 to include all residential forms to be updated
22 into the Data Registries.

23 So the issue here is that there is a
24 perception that there are too many forms and too
25 much information is being gathered into the data

1 registries, and we're looking for a way of
2 basically streamlining that process. The
3 background is, again, this started in 2008, and
4 we expanded it in 2013. One of the issues that
5 we are grappling with is the number of forms that
6 there are out there, 120 plus forms. And there
7 is a couple of different reasons for having so
8 many forms, one of them is that in the past we
9 had one single form, like MIC-25 (phonetic) which
10 was a long form, it had different sections in it.
11 But for any particular project, the installer had
12 to basically do only one or two of the sections,
13 the rest of it would be blank. And so to deal
14 with that situation, we broke up the Form MIC 25
15 into five different sections, A, B, C, D, E, and
16 so forth. So for any particular building, the
17 person, the installer who will be filing the CF2R
18 will be only signing one of those forms, not all
19 six or seven. So that's one of the reasons why
20 there's the appearance that we have so many forms
21 is because we had to break them up.

22 The other reason for breaking the forms
23 up was the person that does the CF2R, the
24 Certification of Installation, they have to sign
25 for their work, and generally people didn't want

1 to sign a form that had a lot of blank tables and
2 pages that wasn't part of their responsibility.
3 They only want to sign for the work that they've
4 done, so that was another reason why we broke up
5 these forms.

6 Again, the result was that there was this
7 appearance that there are just too many forms,
8 all of a sudden we went from like 44 forms to
9 120. We did add some forms, to be fair, but a
10 lot of them was actually the result of this, you
11 know, we have nine different CF1R's, the
12 Certificate of Installation. But again, for any
13 project you only need one of them, and especially
14 if you use the Performance path for compliance,
15 the CBECC-Res, a lot of these forms are generated
16 internally, which is not obvious to the building.

17 So the golden objectives for this
18 registration process includes the following: To
19 complement the local enforcement agencies
20 compliance efforts by ensuring that responsible
21 persons document and certify their own work. So,
22 you know, you have documentation that a
23 responsible person has signed, and provides that
24 to the Building Department. Also through
25 transparency establish liability and

1 accountability, and provide a clear record that
2 is consistently and systematically kept to
3 support the enforcement. You know, you have
4 basically a responsible person signing their
5 form, uploading the registry that provides a path
6 for enforcement actions. Provide information
7 For future Standards. You know, by having these
8 registries there will be a lot of information
9 that we can use for future Standards development
10 efforts. We are already doing some of this by
11 looking into the registries, we can actually see
12 what the typical duct leakage results are. And I
13 know we're seeing this commonly, for instance,
14 that four or five percent is being achieved in
15 the field, and we're doing this now without
16 having to go through some expensive RD&D project
17 like using the EPIC, the information is just
18 there. Or, if you want to see what type of
19 framing people are using in the buildings to move
20 towards high performance attics, we can look in
21 the registries and see, you know, are people
22 using 2 X 4's, 2 X 6's, and things like that. So
23 it does provide an opportunity for us to do a
24 better job of doing future Standards development.

25 Again, it does support and augment the

1 RD&D efforts, the registries were augmented and
2 in some cases entirely replaced for very
3 expensive R&D projects, and we're already seeing
4 the fruits of some of these measures.

5 The Utilities and the CPUC can use the
6 data that's in the registries for future program
7 incentives and training program efforts, and
8 improve on what they have based on the knowledge
9 they'll gain from the buildings.

10 And also, we can use this data in the
11 registries to simplify the Standards. By having
12 this information in the registries, we could
13 actually go sometime in the future and look and
14 see what provisions of the Standards people are
15 actually using and what provisions are actually
16 never used, and it could very well be that 10,
17 15, 20 percent of the provisions in the Standards
18 are never used by anyone. So this will give us
19 an opportunity not only to eliminate those forms,
20 but also maybe eliminate the Standards language
21 that is associated with them, along with all the
22 referenced appendices and so forth, so we can
23 actually look in there and be informed about what
24 sections we can eliminate.

25 So the reason we are talking to you about

1 this today is basically to get your feedback on
2 what we can do to have this information that we
3 can use for enforcement standards development,
4 incentive programs, without basically going
5 overboard where we are collecting too much
6 information, and how we can use this now that
7 we're moving into this electronic media, how we
8 can basically take advantage of that by reducing
9 redundancies and so forth, and have a very
10 concise set of forms that the people can use for
11 compliance and, you know, meet our other
12 objectives without being overbearing.

13 There are some suggestions what we can
14 do, one of them is basically not to collect
15 CF2Rs, which is the Certificate of Installations.
16 And we want to hear from you. Is that a good
17 idea or a bad idea, not having the Certification
18 of installations, the CF2Rs. Or, going back to
19 the way it was in 2008 and only require
20 registration for HERS verified measures and not
21 collection the CF2Rs electronically for non-HERS
22 features. And this would basically mean that the
23 information related to high performance attics
24 and high performance walls will not be collected,
25 the CF2Rs, unless they become HERS verified

1 measures.

2 And I should mention that the difference
3 between CF1R and CF2R is that CF1R is the
4 Certificate of Compliance, it sets the benchmark
5 for the building, the performance levels for the
6 building that has to surpass, but it doesn't say
7 specifically what measures are used to achieve
8 that performance level, it's in the CF2R is where
9 you actually get the details like I use high
10 performance attics, I use box netting, I use R30,
11 and so forth, so that detail is in the CF2R, not
12 CF1R.

13 So again, the second one was going back
14 to the paper CF2Rs that was collected by the
15 Building Departments in most cases, and sometimes
16 they retained them, sometimes they didn't.

17 We've also heard comments about the
18 signature process being too cumbersome, so we
19 wanted to hear from you guys who have been using
20 this about how we can improve that process so
21 it's not so burdensome.

22 And again, we want to improve the
23 usability of the system and what's the best
24 process for collecting data for the future
25 program development evaluation process. You

1 know, you are out there, you're using this, and
2 let us know what you think, let us know how we
3 can improve it, what information really needs to
4 be collected and what we can get rid of, and how
5 we can improve the entire process. So that's
6 basically the reason for this. Again, there's no
7 associated language change with this, but it is
8 very likely that we will have some meetings in
9 the future. Did you want to add anything to
10 that? Any questions on this? Bob?

11 MR. RAYMER: Bob Raymer with California
12 Building Industry Association. We'll get our
13 comments in to you hopefully well in advance of
14 the 24th. What appears to be a three-page sort
15 of a primer with these questions on it, can you
16 make those available on your website?

17 MR. SHIRAKH: Yeah, we will.

18 MR. RAYMER: Great. That will help us
19 tailor our comments. Without getting into --
20 there are some good suggestions that are going on
21 here and we'll respond to those -- I can tell you
22 that, given past practice, there is always a
23 spike in permit applications that we're going to
24 see in the first quarter of each year, 2015
25 shouldn't be any different. One of the things

1 that have helped make the current compliance
2 problems less of an issue right now, even though
3 there's been a lot of objections from energy
4 consultants and the building officials about
5 CBECC, the documentation, and effectively
6 compliance, in general, is that there was a drop-
7 off in permit applications. We hadn't inspected
8 that for the second -- I'm sorry -- the end of
9 the second quarter and all of the third quarter,
10 that's something that's happened, we've downsized
11 our permit suggestions for our projections should
12 be around the same as it was for 2013, which is
13 unfortunate, but it's helped sort of not put this
14 on front and center, but it's going to become
15 front and center within probably the next three
16 to five months. And so to the extent we could
17 get the Energy Consultants, the Building
18 Officials, the Registries, and the CEC staff sort
19 of in the same room to maybe focus on just those
20 issues would be very helpful because it will
21 become a very noticeable problem in the first
22 quarter of next year. Thank you.

23 MR. SHIRAKH: Thank you, Bob. George.

24 MR. NESBITT: George Nesbitt, HERS Rater.

25 I think there is a lot of valuable data that we

1 can get, I mean, I've long wondered how many HERS
2 verifications are there in California and where
3 and what types. So for not collecting data, and
4 if it's not available, it's useless.

5 I think we should keep collecting not
6 only the CF1Rs, the 2s, and the 3s, although one
7 of the issues of course is garbage in, garbage
8 out, we get CF1Rs that don't look like the
9 building, we get 2Rs that don't actually reflect
10 what they did, and with a little luck you get a
11 3R with a HERS Rater who will contradict and
12 actually write what reality was.

13 I'd like to congratulate the Energy
14 Commission on being in the software business,
15 thank you, and I'd say there is no reason to have
16 120 compliance forms. You're in the software
17 business. So I think there's really only three
18 forms, a 1, a 2, and a 3. While prospectively or
19 for ease of compliance sometimes you might have a
20 form that is specific to an alteration versus an
21 addition versus new construction, that's fine,
22 but especially when we get to the 2Rs and the
23 3Rs, there's no reason not to have one form.
24 It's all the same information. How many times do
25 we need to write the project address and name and

1 all that? There's no reason why we can't print a
2 form with the appropriate measures, filled out
3 and signed by the appropriate party, and printed
4 in one condensed document that is hopefully only
5 10 or 20 pages and not 100 pages, so --

6 MR. SHIRAKH: But that is actually
7 consistent with what we're suggesting is, one of
8 the things that happened when we went from paper
9 to electronic, we basically take paper forms
10 largely and turn them into electronic without
11 really going through and taking advantage of the
12 electronic opportunity to do some of the things
13 you're suggesting.

14 MR. NESBITT: Yeah, I mean, I think
15 perhaps it might be useful to give someone a
16 specific form for a specific measure that has the
17 information there, but when it comes time to
18 print it out, there's no reason to have everyone
19 be its own form.

20 MR. SHIRAKH: We agree with you, and can
21 you wrap up because we've got to move on, and
22 submit it in writing to us, please. Jon?

23 MR. MCHUGH: Thank you. Jon McHugh,
24 McHugh Energy. Removing the CF2Rs, I think,
25 would be a huge mistake, and the issue is that

1 we've kind of entered into the 21st Century, yes,
2 there's a dislocation the first time out of the
3 chute, and I'm sure that some of this is in
4 response to some of the bumps along the way as we
5 started off the implementation of the Standards.
6 However, the registries are really critical in
7 terms of supporting each of the 500 plus local
8 jurisdictions.

9 You know, historically if you think about
10 it most Building Departments after the building
11 had their final Certificate of Occupancy, all
12 that data essentially went into the trashcan and
13 for the first time we're really looking at
14 maintaining this data, ideally going further than
15 just the registries, but actually a repository
16 where there's a central database that keeps this
17 information.

18 And, you know, everybody has heard more
19 than once that Building Departments are too busy
20 to focus on the Energy Standards, that, you know,
21 life safety and fire and all those kinds of
22 things are more important. Well, that's why we
23 have building professionals, that's why there's
24 contractors licenses and designers licenses, etc.
25 and by maintaining this data in a database you

1 actually create the liability trail as the method
2 of making sure that people are paying attention,
3 regardless of whether or not the overburdened
4 local jurisdiction is fully paying attention. So
5 if there's a discussion about that we're going to
6 essentially put into the memory hole again what
7 people have said that they're going to install in
8 the building, I think that would be a huge
9 mistake.

10 And then in terms of the Codes and
11 Standards Program, there's always been this
12 desire to actually know what's going on in terms
13 of what measures people are actually adopting.
14 And in terms of the streamlining of the
15 Standards, I'm assuming that there's a number of
16 places in the Standards where we've created a
17 bunch of paperwork and text in the Standards for
18 something that maybe one-tenth of one percent of
19 the population actually uses as an efficiency
20 measure. Well, if we don't collect this data, we
21 won't actually know all that kind of information,
22 so I think you should think carefully about
23 stopping half way into the 21st Century and look
24 at actually going further in terms of
25 streamlining the tools, potentially shrinking

1 down the forms where there's blanks in them, and
2 all those sorts of things and, as George has
3 mentioned, you know, having to fill in the
4 address 10 times, all those kinds of things are
5 the things that can be done with software. So
6 thank you very much.

7 MR. SHIRAKH: Thank you, Jon. That lady
8 had, and then Mike Bachand after that.

9 MS. WALTNER: Meg Waltner with NRDC.
10 I'll be brief since Jon covered most of my
11 points. But we would have strong concerns with
12 eliminating the CF2R also. This is data that's
13 not collected elsewhere and is useful for future
14 standards updates, for creating the liability
15 pathway and, yeah, it doesn't make sense to
16 eliminate it at this point. Open to discussions
17 about how to consolidate the forms or make things
18 more streamlined, but would be strongly concerned
19 with eliminating them entirely.

20 MR. SHIRAKH: That's so much. Mike
21 Bachand.

22 MR. BACHAND: Mike Bachand, President of
23 CalcERTS. I just want to say that the
24 handwritten forms back in 2004 and '05 and '06
25 were massive problems, we know that; now we've

1 come to another end of the rainbow and we've got
2 massive problems from maybe too much stuff,
3 unwieldy things. There is some middle ground
4 here, I think it's very important to find that
5 middle ground and we'll be making extensive
6 comments about this process. The non-HERS forms,
7 you know, that's an interesting question, there
8 is a lot of data in there. And then I would also
9 like to recommend that there be a little bit more
10 presence from the Building Departments during
11 this process. There's a comment in your
12 presentation here about wanting to help the
13 Building Departments, well, we may not know what
14 that help means, so let's bring them to the table
15 more than they've been at the table because we
16 talk a lot to Building Departments that, you
17 know, are upset that they didn't feel they had
18 input necessarily. So we will be putting a lot
19 of paperwork in your thing later.

20 MR. SHIRAKH: Thank you, Mike. Randall.

21 MR. HIGA: Randall Higa, Southern
22 California Edison. I have a clarification
23 question and that is, I'm assuming because this
24 is a 2016 Title 24 workshop that this registry
25 issue would only apply to 2016, and that for 2013

1 we would still be moving forward with the same
2 assumptions on the registry?

3 MR. SHIRAKH: Yes, 2013 is already done.
4 We have essentially developed all of the forms,
5 the 120 or so that we mentioned, we've done.
6 We've developed all the priority 1 and 2s and
7 we're dipping into priority 3s. So the
8 groundwork, the leg work has been done, you know,
9 the infrastructure is largely built. And the
10 2013 is there and it's going to continue. The
11 question here is what we can do in the future to
12 basically make it easier for people to comply
13 without having them put the address five times,
14 or entering the same information over and over,
15 or making the signature process simpler, you
16 know, do everything we can do to retain our
17 golden objectives related to the Standards
18 development and the incentives programs without
19 making people do more work than they have to.
20 And we don't use these forms, we are familiar
21 with them, you know, the people out there are
22 actually using them day in and day out, and they
23 can better tell us how we can improve this.

24 MR. HIGA: So to be clear, the registry
25 will still be utilized for the 2013 Standards as

1 planned?

2 MR. SHIRAKH: Yes, yes, that's how we'll
3 go forward.

4 MR. HIGA: Okay, thank you.

5 MR. SHIRAKH: So I think we have one
6 online comment. Peter, how do I get that? We're
7 going to take a couple more comments and then
8 move on.

9 MR. STRAIT: I don't see any raised
10 hands.

11 MR. SHIRAKH: Okay.

12 MR. STRAIT: For those who are attending
13 remotely, you'll have a raise hand button that
14 you can click and that will let us know that
15 you'd like to comment. For people that are
16 attending solely by phone, we'll open up for
17 these call-in users likely right before we hit
18 lunch. We probably won't have time to check you
19 after each individual topic, but we'll give you a
20 chance to speak before we go to lunch and before
21 we end for the day.

22 MR. SHIRAKH: Okay, so now we are moving
23 to Part 6, which is the Energy Regulations and,
24 again, as you can see here in the Definitions
25 Sections, we only have a handful of changes and

1 basically -- this is far fewer changes than we've
2 seen in the past to the Code language throughout.
3 Usually in the past when we talked about changes
4 to the Definitions itself, it took several pages,
5 but this 2016 does by and large represent a very
6 narrow and focused effort, so, you know, you're
7 not going to see the type of changes that you've
8 seen in the past and it's going to represent that
9 here, just a few minor changes.

10 So what we're going to do is switch to --
11 I'm going to ask Farakh to do the Part 11, the
12 Green Building, and then we can get comments from
13 the stakeholders and everybody.

14 MR. STRAIT: And just so people are
15 aware, we are running a little bit behind
16 already. Going forward, there's going to be a
17 three-minute, basically a shot clock for people
18 that are getting up to give comments. The
19 comments we've seen so far would have fit within
20 this easily and, of course, we'll take more
21 information in the written format after this
22 workshop. And hopefully if we get caught back
23 up, we can no longer do that, but we're going to
24 shift, just to formally state, we're shifting the
25 agenda to bring the discussion on Part 11, which

1 is the Voluntary "reach" Standards, the CALGreen,
2 and discuss that now.

3 MR. NASIM: Good morning. So in the
4 interest of time, I'll try to run through these
5 pretty quickly so everyone will have the chance
6 to comment.

7 My name is Farakh Nasim and I'll be
8 talking about the proposed changes to the
9 CALGreen Code, Part 11.

10 So like we've mentioned earlier, sections
11 where there were no changes being proposed, I'm
12 not going to be discussing those, or you won't
13 see those, so we'll be skipping over quite a few.
14 But Section A4.201, there were some minor edits
15 made to that section and then there were some
16 clarification made that local jurisdictions
17 adopting these measures have to submit an
18 application and receive approval from the Energy
19 Commission prior to their Codes becoming
20 effective locally.

21 In Section A4.203, the Performance
22 Approach for Newly Constructed Buildings, there
23 were some revisions made to the lighting
24 prerequisite requirements. Closets are now
25 included in the list of rooms that must have

1 permanently installed high efficacy lighting, and
2 in addition, there's a new requirement all the
3 spaces listed in that second bullet must now have
4 vacancy sensors. And then Single-Family, Multi-
5 Family, and Residential Parking Lots must have
6 high efficacy outdoor lighting.

7 In addition, we've introduced a new Tier
8 3 Zero Net Energy option. To reach that Tier 3
9 level, the building must have all of the
10 prerequisites in the section listed here. In
11 addition, each building must be individually
12 inspected and shown to comply with the Tier 2
13 requirements. And lastly, the building must have
14 an energy design rating of zero or less, as shown
15 on the CF1R Compliance Form.

16 Section A4.204, Performance Approach for
17 Additions, the first change that's been made
18 here, alterations to low-rise buildings no longer
19 need to comply with these requirements. Within
20 the section itself, there's some general language
21 clean-up, and then in the Tier 1 and Tier 2
22 Performance Standard Requirements, there are
23 exceptions now to both Tier 1 and Tier 2 that
24 buildings getting a whole house rating prior to
25 any proposed modification may waive the Tier 1

1 and Tier 2 performance requirements.

2 In addition, four additions, there's some
3 lighting changes that are identical to the
4 lighting changes that were made for the newly
5 constructed buildings, so closets, kitchens,
6 bathrooms, utility rooms all must have high
7 efficacy lighting and they must be controlled by
8 vacancy sensors and, again, outdoor lighting
9 shall be high efficacy for single-family and
10 multi-family buildings, and outdoor lighting for
11 residential parking lots.

12 Lastly, we made some minor edits to the
13 checklist for the residential occupancies. That
14 was the only change for that.

15 Moving on to the nonresidential voluntary
16 measures, again, the same clarification about an
17 application being required and approval being
18 required from the Energy Commission before these
19 Codes can be adopted locally. Within the
20 Performance Approach for Nonresidential
21 Buildings, we've made some revisions to the Tier
22 1 and Tier 2 prerequisites, specifically to the
23 outdoor lighting requirements. Outdoor lighting
24 must be no greater than 90 percent of the allowed
25 outdoor lighting power as defined in Section

1 140.7 of Part 6.

2 For interior lighting, we've stated that
3 interior lighting power density shall be no
4 greater than 90 percent of the total allowed
5 indoor lighting power density defined in Section
6 140.6 of Part 6. And we've removed interior
7 lighting requirements for additions and
8 alterations to high-rise building units and
9 hotel/motel guest rooms.

10 The checklist for nonresidential
11 occupancy had some minor edits to it, and I
12 believe those were the proposed edits. And I'll
13 open it up for any comments in the room. Bob
14 Raymer.

15 MR. RAYMER: Thank you. Bob Raymer with
16 the California Building Industry Association.
17 First off, we have a number of comments with
18 regards to the reference to the mandate on local
19 jurisdictions when they go above and beyond the
20 energy efficiency standards, we would hope that
21 the CEC would augment their language and make
22 reference to not only the CEC needs to approve
23 the ordinance that gets sent up here, it's an
24 administrative process. The requirements of
25 Public Resources Code 25402.1H2 also say that the

1 cost-effectiveness study needs to get done at the
2 local level. Now, the CEC doesn't have the
3 authority to review that for competency and all
4 that, but that's something that has to get done
5 and in many cases we've seen local jurisdictions
6 not be aware of that, so if you could reference
7 both of those requirements, that could be very
8 helpful.

9 With regards to Zero Net Energy, we
10 raised some concerns with this back on August
11 6th, we're not concerned with the CEC trying to
12 provide guidance on how to get to Zero Net
13 Energy, that's not what we're saying here. We
14 have a concern with you calling it Tier 3. And
15 we would prefer that you sort of segregate this
16 from ACD's Tier 1 and Tier 2 and provide a
17 guidance section on how you would suggest that
18 you get about getting to Tier 3, what the Zero
19 Net Energy package would be. The jurisdictions
20 could definitely use that. Some of the concerns
21 we have right now is that, regardless of whether
22 or not it's a voluntary or mandatory measure, you
23 still have to meet all the nine criteria that the
24 Building Standards Commission has. And when you
25 look at your definition for Energy Design Rating,

1 part of the calculation here is that you're going
2 to have to calculate the plug load and all of
3 that, and while there's certainly ways to do
4 that, there should also be a disclaimer noted
5 that the value that the assumptions come up with
6 may have no basis in reality. The plug load that
7 is associated with the house my wife and I live
8 in, you know, 2,400 square feet, but we're too
9 old geezers who don't have a lot of plug load
10 necessarily as opposed to a family of seven where
11 you've got five kids, young and teenagers, you'd
12 have a remarkably different plug load there. And
13 getting to Zero Net Energy, while you could make
14 certain assumptions, they just may have no basis
15 in reality.

16 What we're suggesting is that the CEC
17 pull back from calling it Tier 3 so it wouldn't
18 necessarily be confused with Tier 1 and Tier 2,
19 reference the stuff that is mandated, the
20 prerequisites for Tier 1 and Tier 2, that's fine,
21 however, simply make it a guidance section where
22 you're providing very useful things that the
23 jurisdictions should give consideration to, and
24 not necessarily lead them to believe that you've
25 already worked all this out.

1 And lastly, there's a lot on solar that
2 still needs to be worked out. As you indicated
3 two years ago in your cost-effectiveness study,
4 net metering, I'm hoping it gets worked out
5 before 2020, I doubt seriously it's going to be
6 worked out and in place by 2017, and there's a
7 host of other solar issues related to labor,
8 etc., that may not be worked out. So with that,
9 guidance as opposed to a Tier 3. Thank you.

10 MR. NASIM: Thank you for your comments.
11 Any others in the room?

12 MS. WALTNER: Meg Waltner with NRDC. I
13 just wanted to stand up and support the addition
14 of the Tier 3 for Zero Net Energy. As you know,
15 we have a 2020 goal of Zero Net Energy for
16 residential and we have two editions of the
17 Standards, this one and the next one, to get
18 there. We think it's critical to have that
19 pathway in CALGreen this time around if we're
20 going to achieve that goal by 2019, so we support
21 the addition of the Tier 3. Thank you.

22 MR. NASIM: Thank you.

23 MR. MCHUGH: Jon McHugh, McHugh, McHugh
24 Energy. I'm supportive of the Tier 3 and
25 actually I'm kind of surprised, Bob, that you're

1 not interested in it as a Tier 3, because we had
2 earlier meetings where there was a concern about
3 the whole issue of liability, and I remember at a
4 meeting, this was at a ACEEE Conference where
5 there was an architect there who was saying, "You
6 know, ZNE? It's easy to hit, it all depends on
7 what the customer is willing to spend, and
8 there's about seven different definitions of ZNE,
9 so depending on where they're at, you know, we
10 can use one of these seven definitions." And I
11 think the importance of the ZNE tier is actually
12 to have a state defined definition of what is
13 ZNE, and it reduces the liability for your
14 builders. I would think that you'd be extremely
15 interested that, if someone essentially follows
16 the rules that are listed in CALGreen for this
17 ZNE Tier, there's not going to be a problem
18 about, "Hey, my bill doesn't match," or, "I'm not
19 having a zero bill." Hey, our ZNE house is a
20 house that meets the CALGreen ZNE Tier, so it
21 creates a lot of clarity, it creates clarity for
22 the policy issues that are imbedded in the ZNE
23 definition, it creates clarify for the utility
24 programs that are assisting the market in
25 developing ZNE ready models, so I'm actually

1 surprised that there would be a down side to
2 this. That being said, there's a lot of things
3 that have not yet been filled in yet in terms of
4 the design rating, and so we're of course very
5 interested to see what that looks like. Thank
6 you.

7 MR. NASIM: Thank you, Jon.

8 MR. NESBITT: George Nesbitt, HERS Rater.
9 About two and a half years ago, Andrew McAllister
10 and the other Commissioners signed a nice
11 proclamation for the first new single-family Net
12 Zero home built in California, which I certified.
13 And hopefully our 80-unit multi-family project
14 will come in Net Zero, we haven't finalized
15 things, but we're getting closer. I noticed in
16 the Residential addition section that one of your
17 options is if you have had a HERS rating
18 according to the Title 20 HERS Regulations, yet
19 when you get to new construction, we're still
20 talking about an energy design rating, your Tier
21 3 level, is energy design rating with a score of
22 Net Zero, which is really a HERS score, so we
23 should really actually ask for a HERS rating, or
24 at least you should have the option for a real
25 HERS rating, as DOE's what used to be Challenge

1 Home, which is now the Zero Energy Ready, or
2 whatever it is, the program in California, one of
3 their options for compliance on the energy
4 modeling is actually using the California HERS
5 Rating System. Thank you.

6 MR. NASIM: Thank you, George. Are there
7 any other comments in the room? Seeing no one,
8 anyone online?

9 MR. STRAIT: I'm not seeing any raised
10 hands.

11 MR. NASIM: So seeing no hand raised
12 online, we'll go ahead and move on to the next
13 section, but certainly I encourage written
14 comments on Part 11, and we look forward to
15 working with any stakeholders who do have issues
16 with the proposed language.

17 MR. STRAIT: Sorry for splitting the bill
18 like this, we're now going to return to
19 Subchapter 2, Sections 110.0 through 110.10, and
20 afterwards we will then take comments on
21 Subchapter 1, Sections 100 through 100.2, and 110
22 through 110.10. Thank you.

23 MR. SHIRAKH: So this Subsection contains
24 a lot of information about the various equipment
25 and their performance levels, and we haven't

1 really made any substantial changes to this
2 section other than to keep up with ASHRAE and
3 other national standards, so that's basically
4 most of the changes to this section.

5 Looking at the 110.2, the Mandatory
6 Requirements for Space Conditioning, again, it's
7 basically getting rid of some obsolete dates and
8 keeping up with ASHRAE for unitary heat pumps and
9 air-conditioning, updating the EER and the COP
10 requirements to again keep up with the ASHRAE,
11 and it's pretty much the same for terminal air-
12 conditioners, the water chilling packages, and
13 the other equipment, it's basically keeping up
14 with ASHRAE, the boilers. And nothing major.

15 110.3, Mandatory Requirements for Water
16 Heating, is isolation valves, instantaneous water
17 heaters with an input of greater than 6.8
18 KBtu/hr., must have isolation valves on both
19 sides of the water supply. For fenestration
20 products, there's a requirement that the added
21 requirements of pet doors must also meet the 0.3
22 cfm/ft² when tested according to ASTM E283 at 75
23 pascals.

24 Some clarification to fenestration
25 labeling requirements, to clarify the

1 requirements for temporary labels for
2 manufactured products.

3 Mandatory Requirements for Insulation,
4 Roofing Products, and Radiant Barriers has been
5 deleted from this section and has moved to
6 Section 120.7. Some of the things we've done
7 this time is, if there was a specific requirement
8 for residential or nonres, instead of keeping
9 them in the 110 sections, we've moved them to
10 actual sections for both the Res and Nonres that
11 applied to that particular measure.

12 110.9 used to be 119, this is the
13 Mandatory Requirement for Lighting Controls and
14 Devices, huge changes to this section. In 2013,
15 we moved big chunks of the requirements from
16 Title 24 into Title 20. And this time around, we
17 don't really have very many changes except for
18 some minor change to occupancy sensors, that they
19 can't have more than 20 minutes of wait time for
20 it to turn off the lights.

21 That concludes my edits for this. Any
22 questions on these subsections? Ken.

23 MR. NITTLER: Good morning. Ken Nittler
24 with Enercomp. I also have some business
25 interests related to doing NFRC ratings. I have

1 a couple comments on 110.6, which relates to
2 fenestration, and I'll follow-up with written
3 comments if necessary. In 110.6(a)1 and
4 110.6(a)5A, which both deal with air leakage,
5 we've provided some language to provide some
6 alternatives on how to label air leakage on
7 fenestration products that's consistent with
8 what's done in the IECC, so I'll work with you on
9 that. A second issue is in 110.6(a)2, 3 and 4,
10 all three of those sections have an exception
11 that basically exempts site-built fenestration
12 from having an NFRC rating at below 1,000 square
13 feet. Given that our standard itself, you can't
14 really achieve the prescriptive values without
15 having an NFRC rating, it seems kind of
16 counterproductive at this point to maintain an
17 exception that says, "But you don't need one in
18 certain cases." So I'll be working to propose
19 some language on that, as well.

20 MR. SHIRAKH: Thank you, Ken. What Ken
21 actually referred to is an important comment and
22 we'd like to hear from everybody else related to
23 this off ramp for site-built fenestrations. They
24 can use in some cases the values in our
25 Standards, and not follow the NFRC procedures for

1 site-built fenestration. We want to hear from
2 you guys. Our preference is to actually go along
3 with what Ken is saying, but we want to make sure
4 that we're not doing something here that has
5 unintended consequences. So thank you for that
6 comment. George? This is 110.0 through 110.9
7 and Ken was commenting on 110.6. Jon?

8 MR. MCHUGH: This is more a comment about
9 nonresidential requirements, but I don't know if
10 you're covering this again in the nonresidential
11 section today.

12 MR. SHIRAKH: We're going through this
13 systematically through the sections, so...

14 MR. MCHUGH: Great, okay. So in Section,
15 well, back at the Calendaring Workshop that the
16 Energy Commission held, my colleague here, Heidi
17 Hallenstein, had provided a presentation about
18 water efficiency and California is still in a
19 drought, notwithstanding the nice rain we had
20 over Halloween, and the only recommendation that
21 actually was for Title 24 Part 6 was to add a
22 section 110.2G, which would be a prohibition on
23 once-through cooling, and this would match what
24 is in the ASHRAE Standard 189, the standard for
25 the design of high performance green buildings,

1 and given our climate and our water efficiency
2 needs, I think it makes sense.

3 MR. SHIRAKH: Thank you, Jon.

4 MR. MCHUGH: Thank you.

5 MR. SHIRAKH: Any other questions on this
6 section in the room? Anything online?

7 So unless there are any additional
8 comments, we're going to move into the next
9 section, which is Subchapter 3, Sections 120.0
10 through 120.9, and Mike Alatorre will present
11 this section.

12 MR. ALATORRE: Good morning. I'm going
13 to be presenting the changes to Section 120.0 to
14 120.9. So we're going to create some new
15 sections, 120.2(f)2 and (f)3. This is going to
16 expand on when dampers for air supply and exhaust
17 equipment need to automatically close. The prior
18 area was only for fan shutdown and we're
19 proposing that it also happen during unoccupied
20 periods and during setback periods. There's
21 exceptions to each of those requirements. For
22 unoccupied periods, there's an exception for
23 during pre-occupancy periods during or if the
24 zone is unable with an occupancy sensor and when
25 you get an override signal to provide outdoor air

1 ventilation. For the setback period, there's an
2 exception for if it's equipped with an
3 economizer.

4 There is not going to be any new sections
5 here, but we are going to clarify language in
6 120.2(i), we're going to clarify that it is for
7 both a standalone and integrated, an FTD. Also,
8 we're removing or we're going to add or clarify
9 that if the system, only for systems that are
10 capable of heating, then they should require
11 heating faults. And also, we're clarifying how
12 the faults are going to be annunciated or how
13 they're going to be reported. That's, again, not
14 changing the requirement necessarily from the
15 2013 standards, but clarifying and giving more
16 direction of how that process should take place.

17 We removed examples of unitary dx systems
18 and references to AHRI in the scope of 120.2, and
19 also any references to refrigerant pressure
20 sensor accuracy since the FTD is not required to
21 detect any refrigerant faults.

22 We're adding a section to 120.2,
23 120.2(j), and this is now going to require Direct
24 Digital Controls; under the 2013 requirements, it
25 was only a voluntary requirement, and now it's

1 going to be required during certain applications.
2 Those are defined in Table 120.2(a). Also, we're
3 going to require that the DDC have certain system
4 capabilities such as monitoring zone and system
5 demands, information transfer between zones and
6 the distribution system controllers, and the
7 distribution system controllers and the heating
8 and cooling controllers.

9 We're going to also require DDC to detect
10 zones and systems that are driving reset logic
11 excessively and report that to the operation
12 manager to change the strategy. We're going to
13 require that the DDC allow the operator to remove
14 certain zones from the strategy. And we're going
15 to require trending and graphically displaying
16 inputs and outputs and resetting heating and
17 cooling set points.

18 Another new section is going to be
19 120.2(k), it's going to require Optimum Start-
20 Stop Controls for these DDC to Zone System
21 levels. We defined in 100.1 what Optimum Start
22 Controls and what Optimum Stop Controls need to
23 be.

24 There was a change to 120.3, most of it
25 was clarification, but there was one change in

1 the table and that's realigning it with the 2008
2 residential insulation table. When we went from
3 2008 to 2013, we merged the table in 120.3 and
4 150, one thing that was lost was for piping that
5 was serving space cooling systems between 40 and
6 60 degrees, 1.5 inches smaller in diameter. The
7 Nonres table had a .5 requirement for insulation
8 thickness when the Res had a .75. So we're
9 proposing to bring it back up to .75.

10 Another new section is 120.6, and this is
11 for elevators we're going proposing to regulate
12 the lighting and ventilation fan that serves that
13 elevator, the light power density. We're
14 recommending it to be at .6 watts per square foot
15 or less and for the ventilation fan for elevators
16 without air-conditioning to be at .33 watts per
17 cfm or less. Also, Occupancy Controls for when
18 the elevator is not in use for more than 15
19 minutes.

20 Another new section is 120.6(g) and this
21 is for escalators and moving walkways, only for
22 those that are found in airports, hotels and
23 transportation function areas. Speed controls
24 are being proposed to reduce the speed when
25 they're not occupied and the speed is going to be

1 determined by ASME A17.1. Yeah, this was an
2 ASHRAE alignment -- both this section and the
3 elevators was also in alignment with ASHRAE.

4 There is some more cleanup language in
5 120.7 and 120.8. In 120.7, as Mazi mentioned in
6 his presentation, that we moved the requirements
7 for insulation placement specific to nonres
8 buildings from 110.8(e) and we placed it in
9 120.7(a)3, and the same thing for the demising
10 wall insulation requirement we moved from
11 110.8(f) to 120.7(b)7.

12 One more clarification was made in 120.8,
13 we removed a reference to 120.6, which is the
14 section that regulates covered processes. 120.8
15 specifically states that it doesn't apply to
16 covered processes, so we needed to make that
17 clarification. Any questions? Jon?

18 MR. ROY: This is Aniruddh Roy with
19 Goodman. Can you hear me?

20 MR. SHIRAKH: Yes, we can.

21 MR. ROY: Okay, actually this question is
22 on Section 140, I don't know if it's appropriate
23 to raise it, but it has to do with economizers
24 which I guess there are mandatory requirements in
25 120, as well. Would it be appropriate to raise

1 it now or sometime later?

2 MR. SHIRAKH: We're going to present 140
3 before noon, so it would be appropriate to hold
4 your comment until we get to that section. It's
5 going to come up in probably the next half hour
6 or something.

7 MR. ROY: Sounds good.

8 MR. STRAIT: As a quick note to folks who
9 are attending remotely, please raise your hand
10 first and wait to be acknowledged, rather than
11 jump in. Thank you.

12 MR. MCHUGH: Jon McHugh, McHugh Energy.
13 My first question has to do with the requirements
14 for DDC, so the requirements that require DDC,
15 and yet we have other requirements for DDC to the
16 Zone. Could you describe when the requirements
17 for DDC require just DDC-type controls, Direct
18 Digital controls, versus DDC to the zone?

19 MR. ALATORRE: I believe the requirement
20 is for DDC to the zone all the time, like in one,
21 the table, let's see, so in 120.2(j), the start
22 of it says "DDC to zone is required when..." and
23 then the table gives you the specifics as to when
24 it is required.

25 MR. MCHUGH: Okay, excellent.

1 MR. ALATORRE: And it gives you building
2 type, size of the system, and so forth.

3 MR. MCHUGH: And it's not just for DDC,
4 but DDC to the zone, okay. Thank you.

5 A question came up the other, someone was
6 asking me about when do the JA5 thermostats
7 apply, and I was looking through that language
8 and it says it applies to unitary single zone
9 air-conditioners, heat pumps, and furnaces. And
10 I think it would be desirable to define those
11 terms. The term "unitary" is confusing. When I
12 think of unitary, I think of a rooftop unit, but
13 in a lot of cases a lot of people say that a
14 split system is unitary, even though it seems
15 counterintuitive, and then if you look on the
16 Internet you'll actually find that some people
17 believe that mini splits are unitary. And so the
18 question is, what is unitary? You guys don't
19 define it anywhere here, and when I've looked
20 around, I think the definitions are confusing.
21 So for this section, I think it would be highly
22 desirable to have that definition. Thank you.

23 MR. ALATORRE: Thank you.

24 MR. NESBITT: George Nesbitt. I have a
25 comment on Section 120.7(a)3, which is roof

1 insulation, and it's the exception for up to
2 2,000 square feet of insulation, like on top of a
3 T-bar ceiling. I think we all know that that
4 doesn't work and that we should remove that
5 exception.

6 MR. ALATORRE: Thank you, George.

7 MR. NESBITT: I had a comment on Section
8 110.10(e), I'm sorry that I didn't process
9 earlier, which is the solar ready section, so
10 it's 110.10(e), it's the single-family
11 requirement for a 200 amp bus. If your intent
12 was to follow the National Electric Code, that's
13 actually not the requirement. The requirement is
14 that the bus has the capacity to handle the load,
15 that's not a requirement for, say, a 200 amp
16 panel or a panel with a 200 amp bus, so either
17 that should just be eliminated because it's in
18 the Electrical Code, or it should be changed to
19 equal what's in the Electrical Code.

20 MR. MCHUGH: I'm sorry, was he talking
21 about the Section 110.10 about the PV stuff?

22 MR. SHIRAKH: Yes, that solar-ready zone.

23 MR. MCHUGH: So I was involved in that
24 description of the bus bar, and what that came
25 from was work with, oh, gosh, Brooks Engineering,

1 who does a number of trainings for SMUD on PV
2 systems, and the idea was to increase the
3 capacity of the bus bar because this was a very
4 inexpensive method of making houses solar-ready.
5 I think the cost was like \$50.00, and if you try
6 to do this after the fact, it was over \$1,000.
7 So I wouldn't recommend making those changes
8 unless you look carefully at the rationale behind
9 that language. Thank you.

10 MR. SHIRAKH: Thank you, Jon. Any other
11 comments on this section? I think we have one.
12 Okay, Mark Nowak, you're on, you can make your
13 commend.

14 MR. NOWAK: Thanks. Mark Nowak with the
15 Steel Framing Alliance. My comments actually
16 address 127.B and later on this subchapter is
17 coming upon on Sections 150 through 150.2, so to
18 be efficient, I'll just state them once and not
19 repeat them later when that other section comes
20 up. And basically during the investor-owned
21 utility workshop, we and others raised some
22 concerns over the mandatory insulation
23 requirement in 120.7, and it seems like here they
24 weren't changed to address the concerns that were
25 raised and, in fact, in 150 it kind of takes an

1 opposite direction by making it more difficult to
2 comply.

3 And my basic concern is that the
4 mandatory requirements when applied to the
5 Performance Approach just are not appropriate,
6 they basically don't ensure a more cost-effective
7 design, in fact they discourage builders and
8 designers from using the Performance Approach and
9 seeking out efficient and cost-effective
10 solutions that are proscribed in the Prescriptive
11 Approaches.

12 And we don't have any problem with
13 minimum prescriptive insulation requirements,
14 just when they're applied to the performance
15 compliance path, they just take the flexibility
16 of that approach, the minimum goals that are in
17 the Code now, they dis-incentivize people to use
18 the simulations to develop a better performing
19 building.

20 And in the last Code cycle, this actually
21 came up, the same thing, and we recommended a
22 solution and that would be to use the same
23 language that's in the Nonres section for the
24 Residential, and that would be to require the
25 minimum insulation requirements for framed walls

1 to be equivalent to what can be fit into the
2 cavity and not to go beyond that to include
3 continuous insulation because that's really where
4 the approach becomes less cost-effective and
5 discourages people from using performance
6 designs. So we would encourage that and we'll
7 put these comments and solutions into some
8 comments, as well.

9 MR. SHIRAKH: Thank you. We have one
10 more comment online, Mr. Roy, you're on.

11 MR. ROY: Yes. Thanks, Mazi. So I
12 wanted to ask this to Mark. Mark, you know,
13 Table 120.2-A, the DDC applications and
14 qualifications that are being added or proposed,
15 I wanted to ask you guys if these are the only
16 applications that DDC is going to apply towards,
17 or are these just specific examples, but it could
18 go beyond these applications, as well, depending
19 on the space conditioning product that is
20 equipped with a DDC.

21 MR. ALATORRE: So that table is the
22 mandatory requirements, so if your system or your
23 building, if you hit the trigger in that table,
24 then it's a mandatory requirement for you to
25 install DDC. If you want to install on a system

1 that is not listed, you can voluntarily.

2 MR. ROY: Okay, so that system does have,
3 let's say it's not a chilled water plant, but
4 some other unit, if it has a DDC it has to meet
5 the requirements of that section, correct?

6 MR. ALATORRE: No. I mean, I think it's
7 only specific to the systems that are listed in
8 that table.

9 MR. ROY: Okay. Thank you.

10 MR. SHIRAKH: Okay, I don't see any other
11 comments. Anymore in the room?

12 So we're going to move to the next
13 section which is 130 through the 135 series.
14 These are the Nonresidential Lighting Mandatory
15 Requirements. And Jim Benya will be presenting
16 this section.

17 MR. BENYA: Good morning. My name is Jim
18 Benya from Davis, California, here in support of
19 staff's work on -- I'll be speaking about both
20 Sections 130 through 1.0 for 130.5 and also 140.0
21 through 140.9. I'll be doing that a little bit
22 later.

23 Okay, I'll start off with -- we'll skip
24 over that, we'll go straight to 130.0. The
25 improvements and changes that have been made in

1 130.0, and they're primarily general requirements
2 under the Watts Rating, a simplification of
3 language, prohibitions against LED 2 lights being
4 removed, and removed the screw-based prohibition
5 for high efficacy lighting. That's an important
6 topic, it's going to come up a couple times today
7 because it's a major policy shift made possible
8 by changes in federal law.

9 130.1 is Indoor Lighting Controls that
10 must -- that shall be installed. In general,
11 there have been some wordsmithing here that's
12 pretty important. It simplifies the multi-level
13 control requirements that were introduced in
14 2013, requires a manual dimmer when luminaires
15 are dimmable, which again was sort of available
16 in 2013, but this is an improvement. It
17 eliminates Options A through E, which required an
18 additional automatic lighting control function.
19 It's a simplification that was badly needed and
20 very welcome.

21 Under the Automatic Shutoff Requirements
22 under 130.1(c), it simplifies the automatic
23 shutoff inputs. There's an exception, (c)(1),
24 the exception 3, which has been changed to allow
25 .05 watts per square foot of continuous lighting

1 in all buildings, it was just offices in 2013.
2 And it clarifies it for offices 250 square feet
3 or smaller, multi-purchase areas, etc., that
4 either a partial-on occupancy sensor or a vacancy
5 sensor must be used. Also it controls automatic
6 shutoff. There were some corrections in the
7 language correcting partial-on/off to partial-off
8 in a couple of instances.

9 There's an important change in Table
10 130.1(a) which changes the top range of the
11 fluorescent steps to 75-85 percent, which makes a
12 four-step type of ballast non-dimmable comply, it
13 eliminates the use of Table 150.B regarding a
14 high efficiency luminaire at the door of a hotel
15 guest room.

16 130.1 again controls photo sensors, it
17 allows photo sensor control locations also to be
18 in a locked box or a box requiring a tool for
19 access.

20 130.2, Outdoor Lighting Controls and
21 Equipment, a clarification on how the word
22 "outdoors" is used, a clarification on "Automatic
23 Schedule Control," changes in dimming reduction
24 from 40 percent to 40 to 90 percent, and deletes
25 outdoor sales lots and outdoor sales canopies

1 from Exception 1, which is a 1,500 watt limit.
2 These are all pretty minor, not any real
3 significant impact upon design, a few minor
4 adjustments there.

5 130.2, again, circuit limits. This is
6 important because it's juggling a little bit on
7 how much power you can control at once in an
8 outdoor application. And it basically adds an
9 exception, allowing a filling station canopy
10 lighting to exceed a 1,500 watt limit. But it
11 deletes outdoor sales lots and outdoor sales
12 canopies from the same benefits.

13 130.2, again, in the uplighting and glare
14 limits, this is important, you're going to see
15 this a couple of times. It adds Lighting Zone
16 Zero to your choices. Lighting Zone Zero is a
17 situation which normally occurs in National
18 Parks, wilderness areas where no continuous
19 lighting should be used, and so although it's
20 listed, it basically lists many of the provisions
21 as "you can't put any lighting or controls there
22 except under very special circumstances." So
23 Tables 130.2(a) and (b) were modified to include
24 Lighting Zone Zero, and to change the
25 nomenclature.

1 130.4, Lighting Control Acceptance and
2 Installation Certificate Requirements. There are
3 some modest adjustments to these certificate
4 requirements to change some of the language and
5 make some grammatical corrections, but that's
6 about it.

7 130.5, Electrical Power Distribution
8 Systems, it moves the Terms and Phrases Statement
9 to the end of the section, really cleans up some
10 issues with service metering, simplifies,
11 clarifies, adds specific meter requirement, adds
12 sub-tenets of metering requirements, adds an
13 exception for when the utility provides metering,
14 which was really a big improvement. And the
15 exception clarifies and eliminates extraneous
16 language under a disaggregation of power, to
17 revise the general language and allow 10 percent
18 of the load to be aggregated. This is a very
19 good practical consideration and I think it's a
20 significant improvement. It allows for additive
21 and subtractive measures to determine energy use.
22 In case you didn't know what disaggregation is
23 all about, it's wiring the building so that
24 there's one point at which you can measure
25 lighting, and another point at which you can

1 measure HVAC, another point you can measure
2 everything disaggregated from the total. But
3 it's not always practical, and these improvements
4 make it more practical to eliminate certain
5 exceptions -- by the way, I put these all on the
6 list, so if you want to go back and look at
7 individual ones, it should be very easy to do
8 that.

9 Voltage Drop, this was introduced in the
10 2013 Standard. The proposed changes here
11 simplifies voltage drop requirements and provides
12 exceptions for change circuits to an existing
13 system. These are important improvements, making
14 it more useful.

15 Receptacle Control, part of 130.5, also
16 added in 2013. These improvements make some
17 important tweaks and makes it a bit more
18 understandable and easier to apply in buildings.
19 It prevents countdown timers, requires providing
20 controlled circuits and marking of them for open
21 office areas, requires controls for at least 50
22 percent of hotel guest room outlets with a 30-
23 minute shutoff, and eliminates some extraneous
24 language like the word "nonresidential" in the
25 plug strip requirement.

1 That's all for me, for now. Questions?

2 MR. THOMAS: Gene Thomas with Ecology
3 Action. We're curious about the 130.0(c)6(B),
4 that removal of the language about linear LED
5 replacement of fluorescent fixtures not meeting
6 Part 6, and you alluded to the other one on screw
7 base being a result of a major policy shift based
8 on federal standards. Could you elaborate on
9 that a bit, because the elimination of that text
10 is of concern to us?

11 MR. BENYA: Well, I can certainly
12 understand that, Gene. For everybody who doesn't
13 know what we're really talking about here,
14 tubular LED lights to replace fluorescent bulbs
15 are a very controversial part of our industry
16 today. And in this proposed language staff has
17 chosen to say, well, we're going to take it out
18 and we'll see what happens, because part of the
19 problem with the 2013 Standard is that, when it
20 was developed, the tubular LEDs weren't very good
21 stuff, and they were misleading in their sales
22 information, they just weren't very good. But
23 they've gotten a lot better and I think it's a
24 good time to raise the discussion, and I
25 appreciate your raising the question, but so far

1 it's in for that point.

2 The policy switch that we're talking
3 about is allowing a medium-based luminaire,
4 particular in residences, to be counted as a high
5 efficacy luminaire if it has a JA8 compliant lamp
6 in it. That's really more of a residential
7 discussion because the regulations for sockets
8 are going to go away because of the elimination
9 of so many bulbs due to federal law. I think
10 this is a good one for you to weigh in on, and
11 I'm looking forward to seeing your comments.

12 MR. THOMAS: Okay, thank you.

13 MR. MCGARAGHAN: Mike McGaraghan, Energy
14 Solutions, on behalf of the California IOUs. I
15 just had a quick comment and will follow-up in
16 writing on this too, but you went through a
17 couple of changes around the outdoor lighting
18 controls, and in particular the automatic
19 scheduling control. We think that there's an
20 opportunity to improve the clarity in that
21 section, there's essentially four control types,
22 the control that turns the lights off during the
23 day, the control that allows you to turn off the
24 lights for part of the night, the control that
25 allows you to occupancy-based dimming for part of

1 the night, and there was kind of a fourth
2 control, specifically called a Part Night
3 Control. So switching the automatic scheduling
4 control, or you're removing the automatic
5 scheduling control and replacing it with a photo
6 controller astronomical time clock actually
7 increases the complexity of that section and I
8 think there's an opportunity to streamline and
9 just have it A, B, and C, and include all three
10 of those types, the daylight control, the part
11 night control, and the dimming control. So
12 that's what we'll follow-up with a proposal on in
13 our written comments. Thanks.

14 MR. BENYA: Good morning, Mike. And
15 thank you for those comments. I'm looking
16 forward to talking to you about them.

17 MR. SHIRAKH: Jon.

18 MR. MCHUGH: Jon McHugh, McHugh Energy.
19 Jim, you had pointed out that, you know, there's
20 some changes afoot in terms of how the Energy
21 Commission is looking at regulating screw-based
22 lamps in the residential occupancy, and I think
23 that in Section 130.0 right now, the language
24 doesn't really fully capture that. And there's
25 two issues with this section, 130.0(c). The

1 first one is a description of luminaire
2 classification of power, it talks about LED
3 lamps, integrated or nonintegrated, as defined by
4 ANSI IESPRP16210 (ph), and the first issue is
5 that those lamps are not to be considered "LEDs."
6 And the issue is that that ANSI IES Standard, as
7 I remember, includes GU24 bases, and so I
8 actually think that currently, unless you
9 specifically call that exempt, that portion of
10 it, you're actually saying that a GU24 LED lamp
11 which, you know, potentially some people are
12 using in commercial situations, would not be
13 considered an LED and therefore would not be able
14 to get the low wattage credit, essentially, for
15 it.

16 The second thing is that this still has
17 all this language about not allowing screw-based
18 lamps in this section, and I think at the end of
19 this section there should be an exception for the
20 luminaires that are covered by Section 130.0(b).
21 Section 130.0(b) is the section of the Standard
22 that describes all the spaces where the
23 Residential Standards apply, so it applies to the
24 dwelling units inside a high-rise, residential,
25 or those sorts of things, so that's my

1 recommendation there. I'm glad to see that
2 Section 130.1(b) is simplified. The section
3 where you talked about Section 130.1(d)1, which
4 talks about the daylighting controls, currently
5 the language says that they are not readily
6 accessible, and this is out of line with the
7 original language that was in the Standards since
8 2005, but was changed in 2013, and this is out of
9 line with the ASHRAE 90.1 Standard, as well,
10 those earlier Title 24 Standards and the ASHRAE
11 Standard actually talk about the calibration
12 adjustments being readily accessible, and that
13 has to do with the history of placing photo
14 controls directly on the photo sensor and them
15 being potentially 30 feet up in the air and not
16 being able to be adjusted. And so my
17 recommendation is that this language actually
18 clarify that the controls are to be readily
19 accessible, but allowed to be behind a locked
20 case, or under a cover. And that's sort of in
21 line with the National Electrical Code in terms
22 of their language associated with readily
23 accessible.

24 And we're going to talk about 140.6 later
25 on, is that right?

1 MR. BENYA: That's correct.

2 MR. MCHUGH: Okay, then I'll just stop
3 here. Thank you.

4 MR. SHIRAKH: Related to your comment
5 about Edison based for nonres, I think we
6 discussed that during the stakeholder meetings
7 and we decided we were just going to make that
8 option available for res, but not for nonres
9 because nonres is primarily dedicated sources.
10 But I think your point about a high rise
11 residential, that's a good one, we need to
12 consider that and make it clear because usually,
13 you know, when we develop forms or Codes, we
14 think about Res and Nonres, and multi-family is
15 always an afterthought, so I think that's a good
16 comment.

17 MR. BENYA: Yeah, I'm aware of some of
18 your comments that you've submitted previously
19 via email and I'm looking forward to sitting down
20 and working through these with you shortly.

21 MR. MCHUGH: Thank you.

22 MR. BENYA: Thanks, Jon.

23 MR. SHIRAKH: Any other comments in the
24 room? Peter, can you please check online?

25 MR. STRAIT: All right, we've got a few

1 hands raised. Aniruddh Roy, I'm going to unmute
2 you first. Is your hand simply raised from the
3 last topic? Roy, are you there? Okay, he put
4 his hand down. Okay. So we have one from
5 someone, Behzad (phonetic)? You are now unmuted.

6 MR. BEHZAD (phonetic): Good morning,
7 everyone, I'm (indiscernible).

8 MR. BENYA: Thank you, Behzad.

9 MR. BEHZAD: You're welcome.

10 MR. STRAIT: All right, we have a hand
11 raise from a Corrine Wilder, but she's not
12 associated her log-in here with an audio source,
13 so I'll get back to her in a moment. We also
14 have one from Wayne Stoppelmoor. Wayne, I'm
15 going to unmute you. You're now on the air.

16 MR. STOPPELMOOR: Hi. Thank you. Hi,
17 Jim. I noticed in the 130.5(b) that
18 desegregation of the loads is still permissive,
19 rather than actually required. I'm just
20 wondering, as we know with some of the other work
21 we've done, the more monitoring you do, the more
22 energy you save, so why not require monitoring of
23 the separate loads?

24 MR. BENYA: Boy, that's a real good
25 question. Thanks, Wayne. We'll bring that up

1 again, we'll have that discussion in the next
2 couple of weeks. There is no question the cost
3 of energy measurement has gone down, and with the
4 cost of energy measurement going down, some
5 things become cost-effective again. So far they
6 haven't passed that test, but they could. We'll
7 make sure we take a look at that as we go through
8 the final review. Thank you.

9 MR. STOPPELMOOR: Okay. Thanks, Jim.

10 MR. STRAIT: All right, in order to
11 figure out which call-in user is Corrine, I'm
12 just going to unmute the call-in users.

13 MS. WILDER: Can you hear me?

14 MR. STRAIT: Yes, you are call-in user
15 35.

16 MS. WILDER: Thirty-five, okay, good to
17 know. Sorry about that, Peter.

18 MR. STRAIT: Not a problem.

19 MS. WILDER: And this is Corrine Wilder
20 with the Universal Lighting Tag. My question
21 pertains to the changes proposed in Table 130.1-A
22 which is the changes to the four-level linear
23 fluorescent requirement. From what I saw, the
24 requirements show a change from 80 to 85 percent
25 down to 75 to 85 percent. And my question is,

1 was the intent to relax this Code? Because it
2 effectively allows bi-level switching products to
3 be entered back in, and be used to comply with
4 the requirements now.

5 MR. BENYA: Good morning, Corrine. First
6 of all, it's a correction, it was always intended
7 to be 75 percent, but there was a typo in the
8 2013 Standards, so admitting to that, you can now
9 see that it was intended, that under some
10 circumstances you could use step to ballast to
11 achieve this requirement. Not many, because if
12 you read the requirements very carefully, you
13 still have got to illuminate the same area, you
14 can't use checkerboard patterns and things like
15 that, you have to illuminate the same area in the
16 same way. So if you had a four-lamp luminaire
17 with two two-step ballasts, you might be able to
18 do it. But things like that are going to be
19 pretty uncommon and not particular cost-effective
20 anymore compared to dimming. So it's an intended
21 clarification and correction of a typo from 2013.

22 MS. WILDER: Okay, very good. Thank you.

23 MR. STRAIT: All right, I am not seeing
24 any other hands raised. Oh, Wayne, your hand is
25 still up, do you still have a comment you wanted

1 to make?

2 MR. STOPPELMOOR: I'm sorry, I'll lower
3 my hand, I'll do that now.

4 MR. STRAIT: Not a problem, thank you.

5 MR. SHIRAKH: Okay, if there are no more
6 questions in the room and online, we're going to
7 move to the next topic, which is Subchapter 5,
8 Sections 140.0 through 140.5. And presenters
9 will be Mark Alatorre and Payam Bozorgchami.

10 MR. BOZORGCHAMI: Even though Mark's name
11 is out first, I'm going to go ahead before him.
12 My name is Payam Bozorgchami with the California
13 Energy Commission, Building Standards. What I'm
14 going to talk about today is Section 140.3, this
15 is the prescriptive requirements for building
16 envelopes, nonresidential, and high-rise
17 residential.

18 What we did was, as Mazi said earlier, to
19 stay in line with the Federal Energy Code, we're
20 proposing to review and update the U-factors for
21 opaque envelope systems or assemblies. We used
22 the 90.1 as our benchmark to do the analysis and
23 we looked at different ranges of assemblies that
24 would be cost-effective for California. Tables
25 140.3-B and C are for nonresidential and high-

1 rise residential buildings. When we came up with
2 those view factors, the proposed, we looked at
3 Table 140.3, which is the Aged Solar Reflectance
4 and Opaque Envelope Insulation Tradeoff U-
5 factors, we updated those.

6 Table 140.3-D is the Portable School
7 Systems and we are in the process of changing
8 those, we have not done those yet as we're still
9 working on the nonresidential building envelope
10 requirements. And we're doing a lot of cleanup
11 on the tables to make them much more easily
12 writable.

13 MR. ALATORRE: Thank you, Payam. There
14 was a clarification to Sections 140.4(e) and (m).
15 For the changes to 140.4(e)1, 4, and 5, we
16 clarified when economizers are required. We had
17 discussions with stakeholders and the term
18 "cooling fan system" wasn't well understood and
19 there's a recommended change for that section to
20 now say "cooling air handler." The capacity of
21 54,000 Btu is still the same.

22 We clarified dampers are to be capable of
23 modulating to fully open or fully close instead
24 of basing it on supplying 100 percent of the
25 design supplier quantity. The acceptance testing

1 for this measure, they didn't actually measure
2 air flow, it only verified that the dampers
3 actually opened and closed, and so that was
4 stemming from that.

5 We removed repetitive language about
6 capacity in 140.4(e)(4) and we also removed the
7 effective dates that trigger multi-stages of
8 cooling and fan speed, given that the dates that
9 were there were going to be already passed by the
10 time of the effective date of January 1, 2017.

11 Also, we added the economizer damper
12 leakage will be certified to the Energy
13 Commission, that when tested according to the
14 AMCO Standard 500.

15 There was a new section created, 140.4(n)
16 and that was for the mechanical system shutoff.
17 This proposal was for there to be interlocks on
18 operable windows and doors that open to a zone
19 that has a thermostat. When the door windows
20 open for more than five minutes, the HVAC system
21 shuts off. I wanted to make a point to say that
22 the ventilation fan does not shut off and is
23 provided continuously. There are some exceptions
24 and that's when the door has an automatic closing
25 device, when the door window serves a space that

1 does not have a thermostat, and it is not a
2 requirement for alterations.

3 So this isn't part of the 140, in any of
4 the 140's it's actually a compliance option, but
5 I wanted to present it here, it's for thermally
6 driven chillers. Currently the simulation engine
7 for CBECC-Com is EnergyPlus and that can already
8 simulate adsorption and desiccant chillers. The
9 proposal is for there to be changes to
10 EnergyPlus, so we can add adsorption chillers,
11 and the recommendation is listed in Section 8 of
12 the CASE Report. It contains performance data.

13 Changes to the Nonres ACM would be to
14 include absorption, adsorption and desiccant
15 chillers to the chiller-type dropdown menu, as
16 well as expand the input fuel types to include
17 waste hot water, solar hot water, and condenser
18 heat, and onsite renewable energy sources or
19 recovered energy, for that not to count against
20 the energy budget in the simulations since it's a
21 free source.

22 Is there any comments on these proposals,
23 questions?

24 MR. SHIRAKH: Meg.

25 MS. WALTNER: Meg Waltner with NRDC, a

1 comment on the Nonresidential envelope proposal.
2 So overall we're pretty disappointed with the
3 nonresidential envelope proposal, we think that
4 you could be going much further than you are.
5 Specifically, the levels proposed in the draft
6 standard aren't as high as the highest levels
7 found to be cost-effective even in the CASE
8 analysis, so you've stopped short of what the
9 CASE analysis has shown to be cost-effective in
10 several cases, and we can submit more detailed
11 written comments in those specific instances.

12 But furthermore, we think given the high
13 level of benefits to costs found for, in
14 particular, metal-framed roofs in the CASE
15 analysis, likely even more efficient assemblies
16 than what's been analyzed to date would still
17 prove to be cost-effective, especially given the
18 use of TDV in California, we think you should be
19 looking at other ASHRAE assemblies beyond just
20 the -- I think, Climate Zone 3 assemblies for
21 ASHRAE is what you looked at -- you know, we have
22 other ASHRAE assemblies that have been vetted
23 through that process and, given the higher TDV
24 values in California, likely higher levels would
25 be cost-effective here and we think you should be

1 analyzing those.

2 And I think we understand that
3 residential is the focus given the short term
4 goals of 2020 Zero Net Energy, but that doesn't
5 mean we should be skipping sort of easy cost-
6 effective opportunities on the nonresidential
7 side when we can be and it's really shortsighted
8 to do that because we'll sort of curtail
9 ourselves from meeting that 2030 ZNE goal. So
10 we'll submit more detailed written comments, but
11 we think you could be going further than you are.
12 Thank you.

13 MR. SHIRAKH: Well, thank you, Meg. And
14 again, I think I acknowledged in the very
15 beginning that we're emphasizing this Code on
16 residential and not on nonresidential, and I
17 don't disagree with your comments, but it was
18 just a question of time and resources and what we
19 could achieve in a compressed timeframe. You
20 know, we've pretty much never had a Standards
21 Update in such a short amount of time except for
22 the Emergency Regulations back in the year 2000,
23 so we had to pick and choose what we could
24 accomplish. Thank you. Any other --

25 MR. KONTOYANNIS: Hi. Dimitri

1 Kontoyannis with NORESKO. I'm also leading the
2 CBECC-Com Development Team. A question about the
3 adsorption chiller option. Do you guys have a
4 sense of where in the EnergyPlus development
5 schedule, if at all, that factors in? Because in
6 order for that feature to be modeled by CBECC,
7 first it needs to exist in EnergyPlus, and then
8 we need to incorporate it into the CBECC
9 Calculation Scheme. So it seems like there could
10 be some time required to first get it to
11 EnergyPlus, and then for our development team to
12 figure out how to factor it into the compliance
13 option. So have you spoken with DOE or the
14 National Labs to see where this falls within the
15 development schedule of EnergyPlus?

16 MR. ALATORRE: I personally have not.
17 One thing, since this is a compliance option, it
18 doesn't have to be on the same schedule as the
19 effectiveness of the Standards effective date. I
20 would have to check with other staff who are more
21 involved with the software side of Title 24.

22 MR. KONTOYANNIS: Thank you.

23 MR. SHIRAKH: Any other questions in the
24 room? Peter, could you check online?

25 MR. STRAIT: Aniruddh Roy, did you have a

1 question?

2 MR. ROY: Yes, so this question is for
3 Mark Alatorre. Mark, so the clarification that
4 you added to Section 144(e) on, I guess, sub
5 bullet 1 on economizers, I just wanted to make
6 sure that it was consistent with the changes that
7 you made to the Nonresidential Compliance Manual
8 in June. Is that what I'm hearing?

9 MR. ALATORRE: Yeah. The changes I made
10 to the Compliance Manual, I included the word
11 "individual cooling fan system." For the 2016
12 proposal we're going to move away from calling it
13 a cooling fan system to recommend calling it a
14 cooling air handler. But it's with the same
15 intent.

16 MR. ROY: I see. So the only change is
17 from "cooling fan system" to "air handler," but
18 the fact that each individual phrase is in there,
19 that's still consistent with the Compliance
20 Manual?

21 MR. ALATORRE: I don't believe
22 140.4(e)(1) says "individual." I think it says
23 "each cooling air handler."

24 MR. ROY: Okay.

25 MR. SHIRAKH: If there are no more

1 questions, we'll move to the next section. There
2 doesn't appear to be any questions online or in
3 the room. So the next subsection is --

4 MR. STRAIT: Actually, Mazi, let's check
5 to see if Corrine -- Corrine, did you have
6 another question?

7 MS. WILDER: No, I'm sorry, my hand was
8 still up from the last one. I apologize.

9 MR. STRAIT: Okay, no problem.

10 MR. SHIRAKH: And this is part of the
11 same Subchapter 5, except we're talking about
12 lighting changes, 140.6 through 140.9. It
13 includes indoor, outdoor and sign lighting. And
14 Jim Benya will be presenting these.

15 MR. BENYA: Okay, before I begin, I just
16 went back and read Section 130 with regards to
17 screw-based LED technology, and what I reported
18 in the slide was there was one line in there that
19 absolutely prohibited anything with a screw-based
20 socket from being counted as an LED light source
21 for the purposes of meeting Part 6. However, the
22 prior paragraph pretty much eliminates most LEDs.
23 Now, John and I have exchanged some email
24 discussing how this is going to get resolved and
25 make sure it's consistent between nonres and res.

1 And we'll pick that up and you'll see some
2 additional improvements, I think, over the coming
3 weeks.

4 Now here's some really good news: there
5 weren't a lot of changes to Section 140.6, .7,
6 .8, and therefore this is going to go quick and
7 we can get back on schedule.

8 Let's start with the reduction of wattage
9 using controls. First of all, there weren't a
10 lot of changes in earlier parts of this section,
11 so we leap to (a)2(H). There's a paragraph that
12 was eliminating power adjustment factors for
13 partial-off controls, re-lettering of the
14 additional provisions in that section, and
15 eliminated a paragraph allowing power adjustment
16 factors for dimming controls, re-lettered
17 following things and eliminated a paragraph
18 allowing power adjustment factors for partial-on
19 controls. In other words, a lot of existing
20 power adjustment factors are gone. And they're
21 gone because the requirements are now in the
22 Standards to provide these things anyway, so you
23 can't have both, and that means we've reduced the
24 number of them considerably.

25 Under Lighting Wattage Exclusions,

1 there's a new section, Performing Arts, Dressing
2 Rooms have been added, ATM Machines in Garages
3 has been deleted, a couple other segments have
4 been re-lettered and, finally, (a)3(V) is re-
5 lettered, revised to refer to 120.6.

6 Lighting Power Adjustment Factors Table
7 140.6(a) deleted rows of partial-on occupancy
8 dimming systems and combined manual dimming with
9 partial-on occupancy. In other words, there's
10 very little left now in power adjustment factors
11 to be used to reduce your equivalent wattage.

12 The allowed lighting power densities
13 under 140.6 Table 140.6(b), this is whole
14 building power allowances, they have been reduced
15 to be consistent with ASHRAE IES 90.1, and they
16 have been reduced about five to 10 percent on the
17 average. I didn't go through and compute the
18 average, I just went through all the numbers and
19 that was sort of what it looked like to me.

20 Likewise, Table 140.6(c) reduces the area
21 category power allowances, again, five to 10
22 percent on the average. There was an added
23 Footnote 10 allowing for a special allowance for
24 ATMs in garages.

25 Table 140.6(g) reduced general lighting

1 power allowances in the tailored method, again,
2 five to 10 percent on the average. That's it for
3 Section 140.6, that's not much. I think the 2013
4 Standard, such a good job was done reworking this
5 section that these changes are primarily just
6 bringing things up to date with Standard 90.

7 140.7, Requirements for Outdoor Lighting.
8 Exceptions for ATMs have been eliminated; in
9 other words, you do get a power allowance now for
10 ATMs. A number of exceptions were renumbered.
11 Bridges and tunnels were removed from the
12 exception list and moved into the hardscape list,
13 and they're now included in your hardscape power
14 allowance.

15 Table 140.7(a), Hardscape Power
16 Allowances were reduced significantly, typically
17 between about 35 and 40 percent. The reason for
18 this, of course, is LEDs. LEDs have transformed
19 outdoor lighting and outdoor lighting energy
20 efficiency phenomenally. So the CASE Report told
21 us that this is a very reasonable number to have.

22 Lighting Zone Zero was added, so there is
23 now a column for Lighting Zone Zero, which you
24 get no lighting power for it. Lighting Zone Zero
25 is really saying you can't put lights into the

1 wilderness. There are exceptions to that, but
2 they're very limited, very low power, and only
3 where really needed. Likewise, Table 140.7(b),
4 the additional lighting power allowances, if
5 you're not familiar with outdoor lighting, you
6 get a base power allowance which is based on what
7 we call "hardscape," and you get to add
8 additional power for doors and canopies and other
9 things. Well, all of those allowances have been
10 reduced 35 to 40 percent, as well, because of the
11 improvements in efficiency due to solid state
12 lighting. Likewise, there's a lighting zone zero
13 and, once again, there's no power allowances.
14 And that's it. So I had an hour for that, I
15 think we're catching back up to schedule, Mazi.

16 MR. SHIRAKH: Okay, any questions on
17 Nonresidential Lighting?

18 MR. THOMAS: Gene Thomas, Ecology Action.
19 I'll save most of my comments for the next
20 section, but as far as the changes to the LPDs
21 for interior spaces, we oppose the reduction for
22 the all-other category from .6 as it is currently
23 to .5. We think that's just too low, given
24 you're putting it lower than what you're
25 recommending for elevators. And the current

1 level of .6, we think, is pushing it as it is.
2 This is a 17 percent reduction below that and in
3 order to hit that critical 85 percent of LPD
4 level for retrofits, that would have to take it
5 down to .425 (ph), which is pretty low. So we
6 would strongly favor keeping that particular one
7 as it is. We're not finding issue with the other
8 recommended levels. Thanks.

9 MR. SHIRAKH: Thanks.

10 MR. BENYA: Thanks, Gene. It looks like
11 we have a couple of callers. Oh, we've got a
12 couple of live questions first.

13 MR. NESBITT: George Nesbitt. Just one
14 comment on outdoor lighting calculation. I
15 suspect the large portion of them are actually
16 not done properly because it's based on
17 hardscape. A lot of times you'll have outdoor
18 lighting on a building and it may actually be
19 over a landscape, even though it's meant for more
20 general, because what it really requires is doing
21 a lot of CAD and doing the whole radius thing,
22 and you have odd shapes and whatnot, so I suspect
23 most of it is just made up and shown that it
24 complies. So if we could just take the areas and
25 just call it, whether it's landscape or

1 hardscape, even if you ratchet the number down a
2 little bit to compensate for that you're allowing
3 it over a landscape area, it would just be easier
4 and probably get better compliance.

5 MR. SHIRAKH: Thank you.

6 MR. BENYA: Thank you.

7 MR. SHIRAKH: Meg.

8 MS. WALTNER: Meg Waltner with NRDC. I
9 have a few questions on the indoor lighting power
10 density requirements.

11 MR. BENYA: Sure.

12 MS. WALTNER: So there's a few categories
13 under both 140.6(b) and (c) that they don't
14 correspond with ASHRAE categories and they
15 haven't been updated since Title 24, 2001.
16 General Commercial Building, Grocery Store,
17 Theaters, and several others. I'm curious
18 whether we've looked back at those requirements
19 and evaluated whether they're based on the latest
20 technology or if those are something we should be
21 looking at, as well, since they don't correspond
22 to the ASHRAE space categories. And this is
23 something we could follow-up off line, but --

24 MR. BENYA: Yeah, this is probably a good
25 offline discussion, I don't have the answer to

1 that and we'll have to do a little research, but
2 let's follow-up on it, for sure.

3 MS. WALTNER: Okay. And then the second
4 sort of question and comment that would probably
5 be good to follow-up on, going through some of
6 the numbers and then the ASHRAE corresponding
7 numbers, there are several places where we seem
8 to be meeting ASHRAE, there's a couple of places
9 where we don't seem to quite be meeting ASHRAE
10 with this revised proposal, so would be curious
11 to get more of the rationale behind that and
12 understand what's going on with those numbers.

13 MR. BENYA: Will do. Thank you.

14 MR. SHIRAKH: Jon.

15 MR. MCHUGH: Jon McHugh, McHugh Energy.
16 This looks very good. Each time we have the
17 power adjustment factors, kind of as Jim had
18 mentioned, they help bring the market along
19 through the carrot and then ultimately after the
20 market is transformed, greater savings are
21 essentially locked in by having these mandatory
22 requirements.

23 Currently we were also trying to exceed
24 the ASHRAE 90.1 standards and, while California
25 is working very hard on increasing energy

1 efficiency, so are the ASHRAE committees. And
2 during the 2013 Standards, there was an amount of
3 research that was done by the Pacific Northwest
4 Labs that looked at daylighting controls, and
5 they found that they could increase the energy
6 savings from dimming or switching daylighting
7 controls by about 30 percent if at the final step
8 they actually turned the lights all the way off.
9 And one of the largest landowners or owners of
10 day lit properties is the Wal-Mart Corporation,
11 and if you look at their standard design for
12 stores, those stores are continuous dimming to
13 off. So when there's sufficient daylight, they
14 turn the lights off. Similarly, Costco which
15 also has hundreds of stores, those are actually
16 switching controls, but again, they also turn the
17 lights to off.

18 For this round of Standards, I think that
19 we should provide some credit for designers that
20 want to look at controlling to off, and at this
21 point in time making it voluntary so if someone
22 feels that they're uncomfortable with turning to
23 off, the Standards don't require it, but they
24 give credit for it. So there's a case study
25 that's posted on the Energy Commission website

1 that talks just about these power adjustment
2 factors. The next power adjustment factor is
3 something that builds on the outstanding work
4 that was done on the 2013 Standards to bring
5 controllable lighting to the California
6 standards. It is an enabling technology that has
7 allowed advanced controls and also allows for
8 demand response without it necessarily being
9 perceptible by the occupants.

10 This next proposed power adjustment
11 factor is to actually give people credit for
12 those folks that actually list their initial
13 design lumens on the plans and that the lighting
14 be adjusted to that initial design luminance, and
15 during the development of the controllable
16 lighting study, the estimate was that the savings
17 were around 15 percent.

18 Other work such as by Lawrence Berkeley
19 National Lab estimates that institutional tuning
20 is perhaps twice that amount. Now, I understand
21 why the CASE authors used something that was more
22 conservative because it was broad-basing, and not
23 everyone is motivated to do institutional tuning.
24 But what this does is it gives having a modest
25 power adjustment such as 10 percent, allows the

1 creation of a market that looks at high end trim
2 tuning, that the controls are installed in place,
3 and that the folks that are doing commissioning
4 of systems are developing the skills to do this.
5 And I think that there would be, you know, this
6 then provides that opportunity to provide the
7 carrot that ultimately potentially is an
8 additional 15 percent savings for all these
9 general lighting systems. Thank you.

10 MR. BENYA: Thanks, Jon. Good comments
11 and, you know, just a thought or two. We'll be
12 talking about all of this once we adjourn and we
13 get back to work on some of this stuff, but I
14 particularly like the PAF for a lighting system
15 that goes off when daylighting is available,
16 that's an interesting one I hadn't thought about
17 before. Thank you.

18 MR. MCHUGH: Thank you.

19 MR. SHIRAKH: Thank you, Jon. Any other
20 comments in the room on nonres lighting?
21 Anything online?

22 MR. BENYA: Yeah. Aniruddh Roy, are you
23 there?

24 MR. SHIRAKH: I think that's from the
25 past.

1 MR. BENYA: Was that from the past,
2 Aniruddh?

3 MR. ROY: Yes.

4 MR. BENYA: Go ahead.

5 MR. SHIRAKH: No, I think his comment was
6 from earlier.

7 MR. BENYA: Okay, he's done. Okay.
8 Behzad, are you there?

9 BEHZAD: Yes, I'm here. Just brief
10 comments (indiscernible).

11 MR. SHIRAKH: Behzad, if I may say, we
12 have a hard time understanding you, your mic, I
13 don't know, the sound quality is such that we
14 can't understand a lot of things you are saying.
15 I wonder if you can call back using your phone.
16 But I think I understood some of your comments.
17 Jim, did you?

18 MR. BENYA: Hey, Behzad. Yeah, please
19 submit your comments in writing. I think I got
20 the gist of what you were talking about, though.
21 We'll talk about it. I think there's merit in
22 improving performance of all systems, although I
23 hasten to point out that the whole process of the
24 requirement for the certified lighting controls
25 Acceptance Testing Technician are the result of

1 us realizing that lighting controls can be
2 wonderful if they're commissioned and tuned and
3 put in operation properly, and many times the
4 biggest problem we have is in the field, not in
5 the Codes. So we'll keep this in mind as we have
6 the discussion about this in other sections.
7 Thank you.

8 BEHZAD: Thank you.

9 MR. SHIRAKH: Thank you. Any other
10 comments on the WebEx?

11 MR. STRAIT: No, no other hands are
12 raised.

13 MR. SHIRAKH: I don't see any and, Jim,
14 you're the hero, you saved the day, now we're
15 ahead of schedule.

16 MR. BENYA: It means more lunch, Mazi.

17 MR. SHIRAKH: That's exactly -- I'm
18 hungry.

19 So the next Subsection is 141.0, it's
20 Subchapter 6. These are Additions and
21 Alterations for Nonresidential Buildings. We
22 made substantial changes to this section. In
23 2013, my former colleague, Gary Flamm, worked
24 with many of you in the lighting industry to
25 craft the language here. Although the intent of

1 the language was good, but we also got a lot of
2 comments on this, the lighting alterations and
3 luminaires modification in place, and so forth
4 was very confusing. And we got that comment from
5 the practitioners, architects, from trainers, and
6 so we've gone through this section, we don't
7 think we've changed the intent of the section,
8 but we think we've made major improvements to the
9 section which hopefully will make it easier for
10 people to understand and comply with. And Peter
11 Strait will present this section.

12 MR. STRAIT: Thank you. In short form,
13 just what Mazi had said, the change that we've
14 made to Section 141.0 is that we added a preamble
15 at the start of the section, it kind of lays out
16 the overall scope and intent of that section. We
17 added new language for electric power
18 distribution systems and demand response of
19 controls. This matches other changes that we've
20 made in earlier sections. We've simplified
21 lighting system alteration language, and that was
22 probably the biggest change that we made, where
23 there were some confusing terms or there were odd
24 ways in which different acceptance interact with
25 one another and we've hopefully straightened that

1 out, and we've made a few other minor edits for
2 clarity.

3 So briefly, the preamble that we've added
4 describes an overall framework for Section 141.0
5 and may allow us to further simplify the section
6 as we move forward to drafting some express
7 terms. The main thing we've done is, because a
8 majority of these requirements are simply
9 pointing toward earlier sections in the
10 regulation, we now have a preamble that does that
11 and hopefully we can change those further
12 specific requirements to either point to the
13 preamble, or possibly remove them entirely.

14 The addition of electrical power
15 distribution system that was added to 141.0(a)
16 and (b), and that's to reflect and rec (ph) to
17 the language in Section 130.5.

18 Section 141.0(b)2(P) also specifies when
19 demand response controls specified in 130.1(e)
20 and 130.5(e) are required in Alterations.

21 In terms of the Lighting System
22 Alteration language, we've simplified and
23 streamlined the language for lighting system
24 alterations and lighting wiring alterations.
25 We've removed the need for the term "luminaire

1 modification in place" and the complex
2 interactions between exceptions. Instead, we've
3 baked those requirements directly into a much
4 more simplified set of requirements.

5 We've combined what were formerly two
6 tables of 141.0(e) and (f) into one table. These
7 tables basically had the same requirements, but
8 had slightly different triggering conditions.
9 And these changes are overall intended to be non-
10 substantive; we can't say that the language we've
11 crafted makes no substantive changes at all, but
12 it has been our intent that this has not
13 substantively changed what we asked for, it
14 simply clarified the language being used to refer
15 to these requirements.

16 Some of the smaller clarifying edits
17 we've made, we removed some parenthetical
18 language from 141.0 Part (b)(E) since this
19 parenthetical had no regulatory effect. We're
20 taking a general pass through the Regulations to
21 try to remove places where we've had examples
22 where we've used terms that say "such as" or
23 "including." Where we want examples to be
24 located if they don't have a regulatory effect is
25 we're going to start moving those into the

1 Compliance Manual and being a little more
2 consistent about it.

3 We did combine Sections 141.0(b)(K) and
4 (L), which regarded alterations to signs into a
5 single item, (l) was effectively an exception to
6 (K) and is now stated as an exception to the
7 requirement in (K). I should mention, though,
8 that those requirements then got moved down one
9 letter because we added some other language, so
10 now those are all under Item (l).

11 Lastly, we simplified the language in
12 141.1. Instead of listing individual processes
13 with the same requirements, we now simply state
14 that covered processes must meet Section 120.6.
15 This avoids the need to comb the Regulations
16 looking for everything that should be included in
17 that list, and gives us some flexibility whenever
18 we have newer forms of equipment when we update
19 the Regulations in the future. And that's it.

20 Are there any questions or comments on
21 these changes?

22 MR. THOMAS: Gene Thomas, Ecology Action.
23 This is a big one for us, I mean, before this was
24 scheduled we had submitted comments on October
25 10th for, you know, fine tuning, improvements to

1 the 2013 Code, and then when the proposed
2 language was published we were shocked because so
3 much of the work that stakeholders like us and
4 members of the Commission and consultants and
5 implementers were involved with for Alterations,
6 to try to protect the retrofit industry,
7 especially as it applies to small and medium
8 businesses and hard to reach customers, was
9 really gutted. And the illumination of the
10 modifications in place and other aspects, I mean,
11 I would very quickly go through my three minutes
12 here in trying to enumerate them, but we feel
13 that it's highly detrimental to the retrofit
14 industry. We're still in the process of trying
15 to integrate and wrestle our way through the
16 changes of the 2013 Code, but I'm not questioning
17 the motivation for trying to simplify this, and
18 our reading of it was, well, they're trying to
19 make it simpler, but in the process there's a
20 number of aspects that are really making it a lot
21 harder and are going to hamstring the retrofit
22 industry for implementers.

23 So we don't think the whole modification
24 in place baby needs to be thrown out with the
25 bath water. We really want to be engaged with

1 you all and other implementers and stakeholders
2 in working this out, but we feel really strongly
3 that this is not a positive move.

4 And one other area I would want to
5 comment on is the specific language about
6 replacement in kind being taken out of that whole
7 section, which right now it allows lamp only
8 replacements without triggering Code. And our
9 reading of this really gives the impression that
10 you're going to be requiring a permit for
11 changing light bulbs. And that may not be the
12 intent, but I think it's the unintended
13 consequence that, I mean, our best reading of it
14 is if you change more than 40 light bulbs or
15 lamps, you're going to have to get a permit. And
16 if you can't get a permit many times for changing
17 a \$5,000 air-conditioner, how likely are you
18 going to get a permit for changing some light
19 bulbs? So once again I will get into the detail
20 offline, but there's a number of things that we
21 have a problem with in this version of the
22 language. Thanks.

23 MR. STRAIT: Thank you. I can certainly
24 assure you that we're not intending for this
25 language to be substantively different than what

1 we had in the previous Code. We've tried to
2 include that triggering condition to allow the up
3 to 40 modifications just as a part of what
4 triggers lighting system alterations. We've
5 tried to be careful to avoid the term "lamp" and
6 use the term "luminaire" to make it so that "lamp
7 only" Changeouts in most cases won't trigger this
8 language. But to the extent that the language
9 could be further improved, please do send us your
10 observations and recommendations on those.

11 MR. THOMAS: I mean, like one of the
12 things that was in the original modification in
13 place list you removed entirely, which is simple
14 one-for-one fixture swaps where all you're doing
15 is disconnecting and reconnecting, that's really
16 a critical one for us. And now that moves it out
17 as something that counts towards that number of
18 fixtures and automatically goes into something
19 that's triggering Code. So that's one example,
20 but we can take it offline for more.

21 MR. STRAIT: Sure. Thank you.

22 MR. SHIRAKH: Gene, I wanted to echo what
23 Peter said; our intent wasn't to change the
24 intent of the Standard, it was just
25 clarification. I'm glad you had a chance to read

1 it and, you know, we do intend to circle back to
2 it.

3 MR. THOMAS: Okay, thanks.

4 MR. SHIRAKH: Any other questions?

5 MR. KEMPER: Jim Kemper, LA Department of
6 Water and Power. I just want to further agree
7 with the former speaker in that these changes, as
8 well as the 2013 changes, have severely impacted
9 our incentive programs for changing out fixtures
10 in the existing buildings.

11 MR. SHIRAKH: Okay, again, we welcome
12 your comments. We weren't intending to change
13 the Standard's requirement, we were just trying
14 to clarify, but we may have thrown the baby out
15 with the bath water, as Gene said, but that
16 wasn't our intention. So we'll be in contact.
17 Any other - Jon?

18 MR. MCHUGH: This is Jon McHugh at McHugh
19 Energy. I'm looking at Table 141.0(e) and my
20 kudos, I think it's much improved. The old
21 table, I think, was pretty confusing. And I have
22 one recommendation, though, for this table which
23 is -- and I think it's an oversight because
24 you're not trying to change the intent. The line
25 that says Section 130.1(b) Multilevel Lighting

1 Controls, after each of those requirements, my
2 expectation is, is that you would also have the
3 hyphen only for altered luminaries so that you do
4 an upgrade in a space and now you've got to hit
5 the particular LPD, but the luminaires that you
6 don't change, they're not required to be dimming
7 or having multi-level switching; that would be, I
8 think, a huge cost and I don't think that was the
9 intent.

10 Also, I noticed that Section
11 141.0(b)(2)(E), which is the Altered Space
12 Conditioning Systems, you actually have in
13 general when you look at Alterations the
14 requirements are less stringent, or they're
15 either equal or less stringent than for new
16 construction, and in this section you require JA5
17 thermostats for any space conditioning system, or
18 the replacement of the space conditioning system
19 equipment. And I guess two things, first off,
20 the parenthetical that was there actually really
21 helped clarify what was required by replacing
22 space conditioning equipment, you know, it's
23 specifically replacing the air handler, the
24 outdoor condensing unit, etc., and so I don't
25 know why the Commission is looking at actually

1 making it that you'd have to kind of scratch your
2 head and then maybe you'll have to read the
3 manual to figure out what was intended there.

4 The second thing is, if you compare this
5 section with Section 120.2(b)(4), which is the
6 requirements for the JA5 thermostats, it has a
7 series of exceptions. So you might want to think
8 about, you know, either referencing Section 120.2
9 or including those exceptions in Section 141.
10 Thank you.

11 MR. STRAIT: Just for -- and I really
12 hate to bring this up -- for members of the
13 participating audience, the tables in front here
14 should only be sat in by staff, that way we're
15 not giving an impression we're treating the
16 different stakeholders differently than others.

17 MR. NESBITT: I thought he was special.
18 George Nesbitt. I have a question on Table
19 141.0(d), which just so people can visualize what
20 they can't see, it's a table about the
21 performance path and setting your budget. And
22 just like in residential, there is sort of
23 unverified existing conditions, and then there's
24 a column that says Third Party Verified
25 Conditions, and so you would get credit for

1 actual levels versus essentially getting compared
2 to either new Code or a mandatory minimum type of
3 level. So my question is, what does third party
4 verification mean?

5 MR. STRAIT: So if your comment is that
6 we should have a better definition that's in the
7 Regulation, then we can take that as the comment;
8 if you're asking for clarification of the 2013
9 language, then I'd say -- or is this language
10 that we've added that uses this term?

11 MR. NESBITT: It apparently is 2013
12 language that's not being changed, but it's in
13 that section, it's something that caught my eye
14 in reviewing things.

15 MR. SHIRAKH: It is 2013 language and I
16 think your comment is well taken, it's not well
17 clarified, so --

18 MR. NESBITT: Yeah, because I can tell
19 you, working with a lot of professionals,
20 architects, engineers, I don't mean to insult
21 anyone in this room that is one because I know
22 they would probably know better, but I've seen
23 reports where they've described concrete tilt-up
24 buildings as wood frame stucco, you know, a lot
25 of professionals don't know what an R-value is,

1 essentially. And contractors who have been in
2 the field for 40 years never went in an attic to
3 look at insulation. So in the Residential
4 section, this is a HERS verified measure. So if
5 we're going to use the term "third party" I would
6 suggest we do use a HERS Rater and/or it has to
7 not be someone on, you know, the payroll, the
8 architect or whatnot. Self-certification is
9 often quite poor, so it does have to be third
10 party.

11 MR. SHIRAKH: Thank you. John.

12 MR. ARENT: John Arent with NORESCO.
13 Yeah, just tagging along on what George
14 mentioned, I think it's a good point because one
15 of the things we are involved with is the
16 Compliance Software and if there isn't a good
17 mechanism and process in place for third party
18 verification, you know, one possible approach is
19 to remove that because it sets a different
20 performance baseline than the Standards would
21 otherwise, and if that's not being handled
22 properly that's one possible approach to that
23 because what that third party verification does
24 is it potentially sets a more lenient baseline
25 for the performance approach for alterations

1 projects. Thanks.

2 MR. SHIRAKH: Thank you, John. Any other
3 comments from within the room? Anything online,
4 Peter?

5 MR. STRAIT: Well, we've got one more
6 comment from the room. And we have about three
7 or four commenters online that have raised their
8 hands.

9 MR. THOMAS: Gene Thomas, Ecology Action.
10 I'll make it short. I just wanted to touch on a
11 couple things from our October 10th comments
12 about looking at the current Code and making some
13 changes. One of the main things that we're
14 running into right now with our first fully
15 compliant retrofits -- and just to preface this,
16 we're only talking about lighting retrofits, so
17 no new construction, no additions, no gut rehabs,
18 just what is commonly termed as "retrofits --
19 and we're finding and we're living in the world
20 of 85 percent or less of the allowed LPD, and
21 we're finding our first jobs have more than
22 doubled in cost just from the dimming
23 requirements, and after utility incentives which
24 are critical for the SMB and hard to reach
25 markets, the out-of-pocket for the customer has

1 gone up over 300 percent to over 700 percent, and
2 it's right now killing potential jobs. And so
3 not only in many many cases are you not going to
4 see the savings, the incremental savings from
5 dimming, you're not going to see the savings from
6 the retrofit entirely. So we think it needs some
7 discussion about modifying perhaps how dimming is
8 applied to sub-85 percent level jobs. And the
9 other is treatment of screw-in lamps. We think
10 that the changes that are being proposed for
11 residential should equally apply to commercial,
12 as well, because if you look in -- we just took a
13 look at Energy Star -- what's approved in there,
14 and out of 1,885 lamps in Energy Star -- this was
15 as of October 8th -- 31 of them are GU24. And
16 it's just not a workable offering. GU24 is dying
17 in the California marketplace. And customers,
18 the feedback that we're getting, they really
19 prefer the screw-in LEDs, the quality is much
20 improved, so we think there should be discussion
21 about keeping that option open for commercial, as
22 well as residential, and then we've got some
23 other comments, but I won't get into the detail
24 on that now, but we'd like to have that be part
25 of the package that we discuss with the

1 stakeholders going forward. We also think there
2 should be another workshop explicitly towards
3 Alterations before it gets to the 45-day language
4 point.

5 MR. SHIRAKH: But rather than a workshop,
6 we do what is called a Stakeholder Meeting and,
7 yeah, I think I agree with that, you know, you
8 and I and Peter and other interested parties.
9 Jim Benya will be helping us and we can circle
10 back and try to address your comments. Thank
11 you.

12 MR. THOMAS: Great. Thanks.

13 MR. SHIRAKH: Any other questions from
14 within the room? So why don't we go online,
15 Peter, please?

16 MR. STRAIT: All right. First, I'll
17 unmute Behzad. Behzad, do you have a comment on
18 this topic?

19 MR. BEHZAD: Yes. [Indiscernible]

20 MR. STRAIT: Thank you.

21 MR. SHIRAKH: Thank you. And again, I
22 would urge you to provide your comments in
23 writing to us to docket it. Any other questions?

24 MR. STRAIT: Yes, the next person is
25 Frank Stanonik. Frank, you're online.

1 MR. STANONIK: Okay. Peter, you had
2 mentioned the deletion of the parenthetical
3 statement in 141.0(b)(2)(E) and one of the other
4 commenters expressed some concern about the
5 deletion. But the one thing I didn't hear, you
6 didn't mention it, was that deletion intended to
7 be a clarification? Or is it something else?

8 MR. STRAIT: The parenthetical language,
9 because it's parenthetical, would not have any
10 regulatory effect. In principle, it should not
11 have been in there to begin with. Clarification
12 like that, that is additional information, it
13 does not change the effect of the Regulations, is
14 what our Compliance Manuals are for. In the case
15 of a parenthetical information that seems to
16 specify a list to which something applies, that
17 leads to the ability to misinterpret or misread
18 that section. The advice we were given
19 internally was that, because that language was
20 parenthetical and did not have regulatory effect,
21 that we should remove it and that we should also
22 look at the places where we used the word
23 "include" to make sure it's either very clear
24 whether when we use that the following list is an
25 exclusive list, that is, that measure applies

1 only to the items listed, or that we've used the
2 term "includes but is not limited to." There's a
3 larger clean-up that that's a part of, if that
4 answers your question?

5 MR. STANONIK: Yeah, it definitely does.
6 So the Compliance Manual may provide some
7 guidance as to what is considered in this group,
8 Equipment?

9 MR. STRAIT: Right. So if we want to list
10 examples of equipment, that's what our Compliance
11 Manual ultimately should do.

12 MR. STANONIK: Okay. Thanks.

13 MR. STRAIT: We may have to improve it,
14 given that. If the Compliance Manual is written
15 with the assumption that that parenthetical was
16 there when we then update the Compliance Manuals
17 for 2017, we have to be careful to fold that
18 language into our Compliance Manuals, and we are
19 looking to do so.

20 MR. STANONIK: Okay, thank you.

21 MR. SHIRAKH: Okay, we have a comment in
22 the room, and then we'll go back to WebEx.

23 MR. BLUVAS: Thanks, everyone. My name
24 is Erik Bluvas. I'm with an LED lighting
25 manufacturing company called Green Creative.

1 We're based here in California. And this is kind
2 of just a general comment, not terribly specific
3 here, but overall I think it parallels what Gene
4 mentioned. But our company was able to produce
5 some of the first CEC compliant screw-in type
6 bulbs, the voluntary spec, and just paralleling
7 what Gene mentioned, I mean, we'd just like to
8 see some congruency with the residential and
9 commercial specs on the screw-ins. In addition
10 to that, just a general plug that the quality is
11 there and LEDs in general provide, as we all
12 know, quite a few benefits, so we'd like to see
13 the screw-ins incorporated more into the savings.
14 That's all.

15 MR. SHIRAKH: On the screw-in for nonres,
16 again, we'll be talking about that this
17 afternoon, but although we're going to be
18 allowing, is proposed to allow Edison-based as
19 high efficacy, but there's a big exception for
20 it, and that is downlights where we're requiring
21 dedicated fixtures. And my understanding is
22 downlights are the most prevalent nonres
23 fixtures. And if you follow the residential
24 pattern, in essence, it's really not going to
25 change, you know, you don't see A-lamp type

1 fixtures in nonres very often. So, I mean,
2 that's something to keep in mind, but we can talk
3 about that.

4 MR. STRAIT: The next online commenter is
5 Jim Gaines. Jim, you're live.

6 MR. GAINES: Someone made a statement a
7 little while ago that lamp only changes will not
8 trigger Code, but then he said "in most cases,"
9 so I'd like to know what does "in most cases"
10 mean, and I'd like to enter a plea to make this
11 explicit in the Code, and to please try to do
12 everything you can to avoid lots of exceptions
13 and complicated language.

14 MR. STRAIT: Sure. And I do think that
15 is probably the push and pull that this language
16 is in the middle of, is that we do want to make
17 sure that it is tailored to not exceed the bounds
18 of what we had before, but also that a lot of
19 problems were created with how intricate the
20 language ended up getting by trying to take into
21 account these different circumstances. So I
22 think we're on the same page in terms of the
23 effort we're in. All right, I do not see any
24 other raised hands online. Are there any other
25 comments in the room?

1 MR. SHIRAKH: So with that, I think we're
2 done with the morning topics and we're actually
3 10 minutes ahead of schedule. We'll come back at
4 1:00. As we mentioned this morning, we're going
5 to switch two topics, we're going to start with
6 Residential Lighting and then we'll go to
7 Residential Building Envelopes, and basically
8 this afternoon is where all the excitement is, so
9 come back.

10 (Recess at 11:50 a.m.)

11 (Reconvene at 1:03 p.m.)

12 MR. STRAIT: We still have some people
13 filtering in, in our physical location, so for
14 those of you waiting patiently online.

15 We had a question about if there was a
16 way to identify your call-in number if you didn't
17 have it associated with your log-in name,
18 unfortunately there's really not, but there's not
19 that many people that are separated as simply
20 "call-in user" in our interface, so that
21 shouldn't be a problem, we'll just open those up
22 at a few different points.

23 We also had a question that was unrelated
24 to the workshop today, asking about a frequently
25 asked questions document that had been prepared

1 for certain types of LEDs. There is one that is
2 on its way in the blueprint, but that's not part
3 of what we're talking about in the workshop
4 today.

5 One thing also to mention, this workshop
6 is being recorded for people that are only
7 joining us after the lunch break, we are
8 recording this workshop, there will be a
9 transcript posted, it's also possible that a
10 recording may come available sometime later, but
11 just so the people are aware that this is being
12 recorded, at least for internal use.

13 MR. SHIRAKH: Yeah, good afternoon.
14 We're going to start the afternoon session, which
15 primarily the first part of it is the residential
16 measures that we're proposing for the 2016
17 Standards. We will start with Lighting Measures
18 and then we'll move to High Performance Attics,
19 High Performance Walls. And there's also a
20 section related to Instantaneous Water Heating,
21 which we'll also present, and then after that
22 we'll get into related documents like the ACMS
23 and Reference Appendices.

24 As part of my presentation, I will be
25 presenting both the Standard language and JA8

1 together because the two are closely related and
2 it makes sense to present them both at the same
3 time. Next slide, please.

4 So this is related to Subchapter 7, Low-
5 Rise Residential Buildings and Mandatory Features
6 and devices. Section 150 is the Mandatory
7 requirements and then within that section is
8 where the lighting requirements are spelled out
9 in 150.0(k). And this is one of the major
10 upgrades to the Code, taking advantage of the
11 advances in LED technology. I know most of you
12 have seen products like this, for instance, this
13 is a CREE A-Lamp, it's the model TW series, it's
14 60 Watts, and has a 93 CRI, and it's 2700 K
15 (Kelvin), and 800 lumens output. I mean, these
16 are widely available, high color rendering, and
17 the prices are coming down on them constantly.
18 So the 2016 Standard is going to take advantage
19 of products like this and also similar ones from
20 other manufacturers to capture additional
21 savings.

22 So the changes in Section 150(k)1(G), the
23 Luminaire requirements, is basically designed to
24 capitalize on some of these improvements. So the
25 first bullet says "All luminaires installed in

1 residential dwellings must be high efficacy," so
2 basically we're extending the requirement of high
3 efficacy throughout the building. We're doing
4 away with kind of the cumbersome kitchen
5 requirement that used to say, or actually still
6 says in 2013, that 50 percent of the lumens must
7 come from high efficacy sources. To comply with
8 that, people had to fill out a bunch of forms and
9 do calculations, and basically we're doing away
10 with that and all sources has to be a high
11 efficacy, no questions. And it also helps to
12 simplify the Standards.

13 The number two bullet says "screw-based
14 luminaires or Edison-based will be considered
15 high efficacy sources if they meet the JA8
16 requirements" other than downlights, the
17 requirements for downlights are different. So
18 what this says is like, for instance, if you have
19 bath bars or other sources that are not
20 downlights, the current requirement in the 2013
21 Standards and prior states that they have to be
22 dedicated sources and Edison-based is not
23 acceptable as a high efficacy source. So now the
24 changes that, you know, with the advances in
25 these products, we're going to consider those

1 Edison-based products and sources as high
2 efficacy if they meet all the JA8 requirements
3 which I will present a little bit later.

4 Downlights, however, must still have a
5 dedicated source which could be Quick Connect, it
6 could be Zhaga, it could be Hard Wired, there's a
7 variety of ways of achieving that, but the things
8 is that the Edison-based under the current
9 proposal for downlights is not considered high
10 efficacy and has to maintain the dedication.

11 All LED sources and screw-based sources
12 must meet the JA8 requirements, so for LED
13 sources, regardless of whether it is Edison-based
14 or hardwired, they must meet the JA8
15 requirements. And anything that is used in an
16 Edison-based, a medium base, they also have to
17 meet JA8 requirements.

18 And then the other changes that all
19 phased color dimmers must comply with NEMA SSL7A,
20 basically this is an attempt to deal with the
21 flicker and other quality aspects of the
22 lighting.

23 Section 150.0(c)2(J), these are controls,
24 and basically bathrooms, garages, laundry rooms,
25 utility rooms, and they must have at least one

1 luminaire that's controlled by vacancy sensors.
2 So in each of those rooms, in addition to having
3 high efficacy, you have to have at least one
4 luminaire that's controlled by a vacancy sensor.

5 Dimmers or vacancy sensors must control
6 all luminaires required to have high sources
7 compliant with reference to Appendix A, excepting
8 hallways and closets that are less than 70 square
9 feet. Basically the only places in the house
10 where you don't have to have a control will be
11 hallways and closets that are less than 70 square
12 feet.

13 For outdoor lighting, we clarified the
14 language that says motion sensors, photo-
15 controlled, and astronomical time clocks, they
16 can be bypassed as long as within six hours they
17 basically revert back to their original settings.
18 I think that's existing language, we just made
19 some clarifications to it. Next, please.

20 So in this table, there are two columns,
21 the ones on the right that has the luminaires 1
22 through 5, these are the sources that they don't
23 have to meet the JA8 requirements. Pin-based,
24 linear, fluorescent or compact fluorescent light
25 sources using electronic ballasts, pulse-start

1 metal highlights, high pressure sodium, G024
2 sockets containing light sources other than LEDs
3 and luminaires with hardwired and frequency
4 generator and induction lamps.

5 Basically what that list is in the left-
6 hand column is all the products that currently
7 meet the high efficacy requirements of 2013
8 Standards, they will still be acceptable under
9 2016 as long as it's one of those five sources.
10 And they don't have to meet the JA8 requirements.
11 If somebody wants to have for some reason very
12 high CRI or color temperature sources, that's
13 like, you know, daylighting 6200, they can do it
14 but it has to be one of those five sources. Or
15 if you want to have blue light, or whatever that
16 doesn't meet the JA8, you've got to use one of
17 those five sources.

18 The column on the right-hand side, Items
19 6, 7 and 8, these are the items that must comply
20 with JA8 requirements. So all light sources in
21 recessed luminaires, there's a note that the
22 recessed luminaires shall not have screw-based
23 regardless of the lamp type described in
24 150.0(k)1(C), so again, all sources that are
25 recessed luminaires, they still have to be

1 dedicated. And Edison-based are not allowed, but
2 they still have to meet the JA8 requirement.

3 GU-24 sockets containing LED sources. On
4 the left-hand side, number 4, it says GU-24 is
5 exempt from JA8, other than LEDs. Basically that
6 bullet on the right-hand side is the same thing,
7 except it says that if you have LEDs, even with
8 GU-24, you still must meet the JA8 requirements.

9 And then any other light source otherwise
10 not mentioned in Table. So if you're not one of
11 those items 1 through 5, then basically
12 everything else that goes into the building must
13 meet the JA8 requirements. Next, please.

14 So this is the infamous JA8 Tables.
15 Again, these are not complete language, they are
16 highly abbreviated, but I think it captures the
17 essence. So these are the, I think, 14 or 15
18 requirements here, we'll go through them quickly.
19 It covers all LED sources, as well as other
20 sources not included in Table 150.0(a), which is
21 the table we just looked at, including all screw-
22 based sources that are to be used as high
23 efficacy sources.

24 Bullet 2, the light sources including the
25 ballasts/drivers must be certified to the

1 Commission. So that's one of the requirements
2 that, you know, these lighting systems have to be
3 certified to the Commission.

4 The power factor of at least .9 or
5 greater is required under JA8. The corrected
6 color temperature of 3,000 degrees or less that's
7 within .0033DUV, except for GU-24 base and
8 outdoor lighting.

9 So for all interior spaces, the color
10 temperature that is installed in the residences
11 must be 3,000 degrees Kelvin or less, and the
12 2,700 is the incandescent. And again, you can
13 put corrected color temperature higher than that,
14 but you have to use one of those sources that was
15 in the left-hand column, one through five.

16 CRI of 90 with R9, which is red, of at
17 least 50, you know, this is an attempt to
18 basically replicate the color rendering of
19 incandescent. The idea here is that we're
20 allowing incandescent replacements as high
21 efficacy, and what we are saying is it's okay to
22 use other A-Lamps, as long as it duplicates the
23 performance of incandescent when it comes to
24 color rendering, dimming, and everything else,
25 flicker, but we want it to be a higher efficacy

1 source than incandescent. So there's a series of
2 quality metrics included in this table and this
3 CRI and R9 are two of them.

4 The source must be dimmable down to 10
5 percent and, again, people who use incandescent
6 sources, they partly like it because they can dim
7 it. So, you know, this other replacement source
8 which has got to be mostly LED, they also need to
9 be dimmable, at least two percent or greater,
10 they can go all the way to zero.

11 LED sources controlled by Phase-Cut
12 Dimmers must meet NEMA SSL7A as type 1 or type 2
13 products. Basically this is an attempt to deal
14 with flicker during dimming. Light sources in
15 combination with specified controls shall provide
16 reduced flicker operation when tested at 100
17 percent and 20 percent of full light output.
18 Again, we're trying to put the requirements in
19 there that, you know, I have some of these LED
20 sources in my own home and when I dim them, they
21 flicker, it's very annoying, and in most cases
22 when that happens you can imagine the homeowner
23 will probably replace them, probably with not LED
24 sources, but something that's less expensive.
25 So, you know, to ensure the longevity of these

1 measures, we need to make sure that they perform
2 as good as they're expected to. The lights shall
3 not make noise of more than 24 decibels at one
4 meter, at 120 percent output, start time of less
5 than 0.5 seconds, you know, you may have noticed
6 that a lot of times when you switch on LEDs,
7 there's a slight delay and, you know, we think .5
8 seconds or less is acceptable, anything longer
9 than that becomes annoying.

10 Lumen maintenance, the 86.7 percent of
11 light output at 6,000 hours. So we don't want a
12 source that is very bright in the beginning and
13 then dims rapidly. Again, that doesn't help to
14 retain that light source in the fixtures. So by
15 having a high lumen maintenance criteria, it
16 ensures that it will stay there for a long time.

17 And number 12 is minimum rated life of at
18 least 15,000 hours. You know, most of these
19 labels when you read them they say 20-22 years,
20 you know, 15 years, well, that's basically an
21 attempt to make sure that the sources will
22 fulfill that requirement. Next slide, please.

23 Recessed and enclosed fixture light
24 sources, elevated temperatures, and all that,
25 they must meet the elevated temperature high

1 output ratio and lumen maintenance. Again, they
2 should not degrade when they're operating in a
3 high temperature environment.

4 And 14 is related to that light sources
5 integral to luminaires in recessed luminaires or
6 totally enclosed luminaires shall meet all the
7 elevated requirements of high temperature.

8 And the last requirement is labeling, and
9 so there's a requirement in JA8 that says there
10 shall be a label on the light source that
11 describes the maximum rated input watt and total
12 luminous flux, corrected color temperature, and
13 CRI of the light source. I actually have -- this
14 is a Cooper downlight model LD0115D, even with my
15 glasses I can't read this, but anyway, the point
16 is it actually has a series of labels on it, it
17 describes Energy Star and IECC, it also says
18 California Title 24 High Energy Compliant. So
19 basically the label is very small here. This is
20 what we're looking for. And the wording on the
21 label will be slightly different and it shall say
22 JA8 compliant, but the idea is the same, that
23 this makes it very convenient, that people look
24 at it, the Building Departments, Field
25 Inspectors, whoever, they can look at this and

1 know readily that this meets the JA8
2 requirements, and we're done.

3 Oh, yeah, I did omit one very significant
4 criteria and that is the minimum efficacy for all
5 of these sources shall be 45 lumens per watt.

6 So this is basically the requirement that
7 will become part of the statewide Title 20
8 requirement for the state, that all light
9 sources, including many incandescent sources,
10 must meet the 45 lumens per watt criteria. And
11 so what we're doing is basically moving that
12 effective date one year ahead with the effective
13 date of the Standards, which will be January 1,
14 2017.

15 So I think that concludes my presentation
16 on Res lighting and I'll be happy to hear any
17 comments. I think there's a -- Lorne, he wants
18 to make a brief presentation or statement on
19 color quality and some other aspects of
20 residential lighting.

21 DR. WHITEHEAD: Thanks very much. I'll
22 be very brief and actually have to start, I
23 think, with kind of an unpleasant job, and that's
24 to be immodest for a second and explain why you
25 should listen to me, or why at least you might

1 argue you should listen to me. There are many
2 things I don't know much about, most things, in
3 fact, but I am heavily centered on color
4 rendering and from two perspectives: one is the
5 lighting industry. I started my career as a CEO
6 in the lighting industry for 10 years, and I
7 still remain very actively involved with the IES,
8 the Illuminating Engineering Society, the Society
9 for Information Display, and I serve on multiple
10 boards in the lighting industry, so I'm very
11 familiar with the issues within the lighting
12 industry. But my day job is now as a Professor
13 at the University of British Columbia, my PhD is
14 in Physics, I work in Illumination Optics Vision,
15 Lighting, Color, Color Rendering, and I've been
16 doing that role, as well as Senior
17 Administration, for 20 years, so it really is the
18 center of my space. I'm a member on the Board of
19 Advisors of the CIE, the International Lighting
20 Commission, and in particular I serve on CIE
21 Technical Committee 190, which is the committee
22 that is improving the Color Rendering Index. So
23 I know you've heard that there are improvements
24 coming along, and that committee is working on
25 that, as is a corresponding committee within the

1 Illuminating Engineering Society, and they're
2 really working together -- maybe I should put it
3 differently -- in coordination. We have a common
4 member and an exchange of information and we're
5 heading to exactly the same standard. And it's
6 looking very good, and I'll talk more about that
7 in just a moment.

8 I will also just point out that I've done
9 a lot of product development, so including a lot
10 of patents that are used in the lighting and
11 display industry, so I think I understand the
12 technology question that is associated with
13 making products, and actually also in that role
14 I'm an accredited professional engineer, so I
15 have a sworn duty to serve the public good by
16 appearing as I am today, and just talking very
17 honestly about my perception of the situation.
18 And very lastly, I just finished and just had
19 accepted for publication with three other co-
20 authors a tutorial, a peer reviewed tutorial on
21 the Color Rendering Index, how it works, what it
22 is, and how it can work. And part of the purpose
23 is to assist groups like this to better
24 understand this question. And part of the reason
25 I mention peer reviewed is, quite honestly,

1 there's a lot of literature on this topic that
2 has not gone through the peer review process, and
3 I would recommend sticking to stuff that has gone
4 through that process, it's the closest way we
5 know of to find things that are close to
6 scientific truth.

7 So, what do I want to discuss? Well, on
8 the topic of that tutorial, I'm showing you an
9 image on the screen which is actually an excerpt
10 from this LUCOS article which discusses the
11 question of color rendering, and I think you
12 would agree those colors look pretty good, it
13 looks like a pretty normal scene. However, this
14 is a scene photographed in a scientific light
15 booth with calibrated light conditions,
16 calibrated conditions from every sense of the
17 word, but to you it looks like good color, I
18 would think. Would most of you agree that the
19 color seems pretty reasonable? In the article,
20 there are two photos shown side-by-side. On the
21 left is the same scene, same objects, exactly the
22 same objects rearranged very slightly differently
23 with CRI 100, and you've all seen examples like
24 this, with CRI 80 on the right, and the colors
25 look really very different. And I'll just

1 mention a couple of them that are particularly
2 compelling. The tomatoes there look real and
3 there you see they really don't look real. I
4 find the purple petunia very interesting, that's
5 a purple petunia, I think most of you are
6 probably familiar with that, and under CRI 80 it
7 looks blue, it's a radically different color.
8 And some people care deeply about this, others
9 don't, but some do. And by the way, I should add
10 that this is only half the problem because most
11 of you probably know, CRI 80 lamps don't have to
12 produce the same color errors. So if you have
13 more than one CRI 80 lamp side by side or in
14 different places, you can actually in some cases
15 get double the error that you see here.

16 So all of this raises the question of why
17 would we want to produce distorted color in our
18 lives when experts like me say it isn't at all
19 necessary. So why would we want to do it? Well,
20 you know, there always are objectors to
21 everything good, there are people that perceive a
22 need to do things differently, and in fact they
23 make a number of statements that are very common,
24 that criticize high CRI, you've heard many of
25 them. But often when people make these

1 statements, they do so in a situation where there
2 is no expert who can with authority discount the
3 statement.

4 So I've got a collection, so I'm going to
5 show you my top 10 incorrect arguments against
6 the CRI very very quickly, and I'm not going to
7 discuss them, there's just not time. I will
8 discuss one. But you've seen these: "CRI 80 has
9 been commonplace for a while now, so why change
10 it?" I argue that's irrelevant. "CRI 90 would
11 waste a huge amount of energy." That's not true.
12 "The CRI Reference Source is arbitrary and
13 probably wrong." This is not true, but you'll
14 hear it. "The CRI will change soon; until then,
15 we can't use it in Regulations." False
16 conclusion. "How can you suggest that some major
17 lighting manufacturers are wrong?" Well, it's no
18 crime to be wrong, mistakes happen. Six,
19 "Regulating the CRI would be like Communism,
20 taking away essential freedom." Absurd. But you
21 hear versions of this. Here is a more serious
22 one: "Experts say the CRI alone is an incomplete
23 Standard. It is incomplete in the sense of the
24 word, so why use it?" Well, the argument is
25 irrelevant. "No other jurisdiction requires CRI

1 90, so why California?" There's an obvious
2 answer to that. Here's a good one: "Lamps with
3 CRI 70 are sometimes preferred in certain cases
4 to CRI 100, disproving the CRI." Well, no, it
5 doesn't disprove that at all. And "if there are
6 so many people against the CRI, surely they can't
7 all be wrong." Well, they can, and they are.

8 So all of these points I could argue, but
9 I'm going to argue one in particular, and I've
10 just selected kind of arbitrarily number 4, "The
11 CRI will change soon, and until then we can't use
12 it." And I'd like to explain that there's just
13 no problem in that direction and I can do so
14 because I know exactly the change that's coming.
15 So here is a graph and it's two graphs I'm going
16 to show you, they're very simple. This is a
17 graph of a selection of light sources, these
18 sources are all 3,000 Kelvin sources with a
19 variety of color rendering indices. And so every
20 dot that you see on the graph there is a source,
21 and every dot that you see in the graph is a
22 source, along the horizontal axis we have the
23 current CRI value of that source, and on the
24 vertical we have what I'm calling here the
25 "improved CRI value." This is the one that the

1 IES and the CIE we hope will be bringing out
2 soon, but I have to say we don't know how soon
3 because it has to be consensus approved by both
4 bodies, and it might take a little while. But we
5 have the calculations now.

6 And here is the point. If there was no
7 point in an improvement, then there would be no
8 change, and if there were no change, all these
9 points would lie along the dotted line, they
10 would be identical. If this were a radical
11 change, a reshuffling of the deck that had no
12 rhyme nor reason, then there would be points all
13 over the chart. What we have is exactly what you
14 would hope for, modest change. And most of the
15 sources that are, for example, here as I've shown
16 you above 80, are above 80 for both of the
17 metrics, there just isn't a big change, although
18 you'll notice one interesting thing, and that is
19 the sources I've denoted in red here are the ones
20 that are below 80 with the improved CRI, you'll
21 see that a few of those have snuck over into
22 above 80 when it comes to the current CRI. So
23 there are some small differences. But
24 interestingly, there's a way to resolve that, in
25 fact, it's already been resolved with RN 9, and

1 I'll just demonstrate that. What I'm going to do
2 now is just change the vertical axis to RN 9, so
3 now this is the same information, the same
4 sources, but plotting the current CRI against the
5 RN 9 value. And it's interesting; so here is the
6 line drawn at 80, here are the few sources that
7 have snuck over, and here is -- I've just chosen
8 kind of arbitrarily an RN 9 of 15, it doesn't
9 have to be much higher than that when you're
10 dealing with 80 to do the job of sort of getting
11 rid of these sources that really are poor, but
12 had an artificially high current CRI score, as a
13 result of the fact that they have what we call
14 "gaming of the spectrum." So basically some
15 modest improvements are being made, and those
16 improvements are actually very modest when we
17 include RN 9.

18 So a quick way of summarizing the
19 situation is this: when the improvement to the
20 CRI comes, it will enable us to drop RN 9 in the
21 CRI requirements -- if you wish, there's no need
22 to -- but it won't be necessary anymore because
23 the accuracy tweaking of the improvement takes
24 care of the RN 9-related problems. So in short,
25 getting back to point 4 here, there's just no

1 difficulty. The CRI is perfectly fine for what
2 we'd like to use it for right now.

3 So when it comes to these other points, I
4 hope I didn't seem disrespectful in listing them,
5 but they're all points that we've heard and they
6 can all be refuted. And so I guess my request
7 would be, when you hear them, ask for help
8 because there are people like me around that are
9 happy to share the real information with you and
10 to reverse those misconceptions. So thank you
11 very much for your attention today and, of
12 course, I'd be happy to answer any questions
13 right now if that's the desire, but if not I'll
14 just sit down.

15 MR. SHIRAKH: Yeah, thank you, Loren,
16 we'll take questions. But, again, to reiterate,
17 what we're trying to do is replace incandescent
18 with something that feels and looks like
19 incandescent, but performs much better when it
20 comes to efficacy. And the amount of innovation
21 that's going on into the marketplace is actually
22 really baffling. We would be remiss if we don't
23 capture it.

24 There's another product here, again, this
25 is a CREE Soft White LED 60 watt replacement that

1 is dispensed with a heat sync, it really looks
2 like an A-Lamp, actually weighs as much as an A-
3 Lamp, but has all the characteristics. So this
4 is what we're trying to capture on, so with that,
5 I'm going to open it up to any questions on
6 lighting. David?

7 MR. STRAIT: Questions and comments, we
8 should say.

9 MR. PATTON: David Wilds Patton. I'm a
10 residential lighting designer, I have been for 25
11 years, and involved in this process for over 10.
12 And I think -- I found myself alarmed at the
13 direction that this is going. And the reason I
14 did is because I feel as though -- how do I
15 explain this -- there's not much wrong with what
16 we've got. What we have is not that complicated
17 and it sets up a stalwart for kitchens,
18 bathrooms, all those rooms, to be high efficacy.
19 So the only portion of the Standards, to me, that
20 were weak had to do with the ones that dealt with
21 all the other sources. So if we were to leave
22 everything basically the way that it is, but
23 change those to allow all high efficacy sources,
24 no matter the case type, we'd be taking a step
25 forward, a pretty big step forward as you can see

1 by all the products that are out there, without
2 cutting off either the retrofit lamp market, or
3 the integral market. So I feel as though it's a
4 simpler change, not a more difficult change.
5 There's nobody out there that doesn't know how to
6 add up and make sure that kitchens are less than
7 more than 50 percent high efficacy, it's not that
8 hard to do from the contractor to the builder to
9 the designer to the homeowner, everybody gets it.
10 So I think that going down this road is really a
11 mistake. And that's where I stand.

12 MR. SHIRAKH: So I must add that this is
13 for new construction, it's not necessarily going
14 to be for the retrofit market in residential. I
15 think the requirements will be different in
16 alterations.

17 MR. PATTON: Yeah, but even so. My
18 clients want to use LED sources, but they also --
19 how do they go to the big box store and pick up
20 the piece that is supposed to retrofit into the
21 can, that piece right there, and do it
22 themselves? To change a light bulb, they've got
23 to call an electrician. It doesn't make any
24 sense. They understand the screw base, they
25 understand the Bi-Pin, they are tied into that

1 stuff. So I understand that we don't want to -
2 if you do it within the context that you have it
3 now and say that screw base in recessed lights
4 are allowed, then all of a sudden kitchens and
5 bathrooms and all the places that we've had good
6 high efficacy up to this point would then sort of
7 flit away and we'd lose it, but we have that. We
8 have the pieces in place to make sure that is
9 okay. So why not just put the small overlay on
10 this one section, and I think you recoup a lot,
11 and yet you don't have to change a lot for
12 technology that we see is moving, but we don't
13 know which direction it's going to go in?

14 The other thing that I see from a design
15 standpoint is that those fixtures are lensed
16 LEDs, nobody wants to look into the LED, but
17 that's like a bathroom fixture in every room. So
18 from a design standpoint, I've got a lot of
19 clients that aren't really going to like that as
20 a down light, so what's wrong with an A-Lamp in a
21 downlight in a room that right now can be low
22 efficacy if you require that it be high efficacy?
23 So I think it's something to look at.

24 MR. SHIRAKH: Any responses to David from
25 anyone in the audience? Jon?

1 MR. MCHUGH: David, I would like you to
2 stick around if possible because my understanding
3 is -- yeah, there we go.

4 MR. SHIRAKH: For the record, they're
5 hugging each other.

6 MR. MCHUGH: We are in California, after
7 all. So my understanding is that David's main
8 concern, and you can correct me, that's why I
9 wanted to make sure you didn't go away --

10 MR. PATTON: Sure.

11 MR. MCHUGH: -- was primarily around the
12 requirement for not allowing screw based fixtures
13 in recessed cans, that the idea was that, if JA8
14 is good for all the other fixtures in the house,
15 why isn't JA8 good enough for the recessed cans
16 and to essentially trust your clients that, you
17 know, these things last for five years, that they
18 might make a good choice after then. But to me
19 it wasn't really clear when you were saying the
20 overlay, etc., I just wanted to give you an
21 opportunity to clarify what the issue is for you.

22 MR. PATTON: You're correct, yeah.
23 Thanks.

24 MR. MCHUGH: Okay.

25 MR. SHIRAKH: Any other --

1 MR. STRAIT: We've got a couple people
2 that are -

3 MR. SHIRAKH: We'll go in order.

4 MR. MERRITT: Was that a line back there?

5 MR. SHIRAKH: No, go ahead. You're
6 already there.

7 MR. MERRITT: Okay, great. Sorry about
8 that. I'm Greg Merritt, I'm from CREE,
9 Incorporated. I have a couple of comments, as
10 well as a recommendation from our perspective.
11 We're fully supportive of the high CRI 90, the R9
12 requirement, I even could argue the efficacy
13 could be higher than 45, that seems to be quite a
14 layup with today's technology. One thing I do
15 want to make a comment about is just to get back
16 a little bit away from the technology, and what
17 we're trying to do here with these Standards is
18 save energy. And one of the biggest, if not the
19 biggest, determinant of how much energy we're
20 going to save is adoption, how much adoption are
21 we going to get? If we set the bar for high
22 quality, high light quality, high efficacy, etc.,
23 we will guarantee much higher adoption of the
24 product which is, I believe, what we are all
25 aiming for. And an energy efficiency product

1 that doesn't actually get adopted and used
2 doesn't save any energy. So let's set the bar.
3 Now, in terms of setting the bar, these are
4 Standards that go into effect in January of 2017.

5 You know, I'm an LED provider, we've
6 focused on driving the market through innovation
7 and designing things that didn't exist before.
8 So if we set the bar where we know the bar needs
9 to be, then challenge the manufacturers to go
10 build the product at the right price points
11 because we will deliver.

12 And I did want to echo Loren's point
13 about 80 CRI. 80 CRI for one source versus 80
14 CRI from another source can be very different,
15 and even though there's some arguments that say,
16 well, people have accepted 80 CRI, in some cases
17 they have, but that doesn't mean they're going to
18 accept all 80 CRI. We actually have to make sure
19 we set the standards high enough so that we don't
20 leave that option open. Thank you.

21 MR. SHIRAKH: Thank you. George.

22 MR. NESBITT: George Nesbitt, Hers Rater.
23 First I'd like to lead off that if you look at
24 the Code Section for Additions, Alterations, it
25 references the mandatory lighting requirements,

1 so any time you replace a light, or even a light
2 switch, you do actually have to comply with the
3 requirement as if it was a new house for what
4 you're placing.

5 I actually have no dedicated high
6 efficacy fixtures in my house at the moment. The
7 one advantage to an A-Lamp base is you can change
8 technology, you can change light temperature, you
9 can change CRI, you have a lot of flexibility.
10 So having that allowed, I think, is a great
11 thing. I think one of the dilemmas we have in
12 the HERS Rating system, we account for lighting,
13 it's an energy budget, yet in Code, in what we're
14 doing is we're making lighting such a
15 prescriptive -- it's all mandatory, there's no
16 room for any credit. So we go to Zero Net
17 Energy, that has to be part of it, and we have no
18 room.

19 I think in the 2013, one of the bad
20 changes I think we made was -- and it's being
21 pushed into 2016 -- is the bathroom has to have
22 one high efficacy fixture. I can tell you that
23 will be the 13 watt or the 16 watt Fart Fan
24 light. And yet there will be 250 watt halogen
25 lamps on each side of the bath mirror.

1 MR. SHIRAKH: We've changed that now,
2 right?

3 MR. NESBITT: No.

4 MR. SHIRAKH: Yes, we have.

5 MR. NESBITT: No, I don't think so.

6 MR. SHIRAKH: We've changed it. It all
7 has to be high efficacy. One source has to be
8 controlled with a vacancy sensor, but all of it
9 has to be high efficacy. You can't have 200 watt
10 incandescent sources in the --

11 MR. NESBITT: The bathroom has to be all
12 high efficacy? Okay. All right. Other than
13 that, I think, yeah, I still think ultimately we
14 have to think about lighting as a budget, too. I
15 have seen kitchens with 1,000 watts of high
16 efficacy in the old days where it was 50 percent
17 wattage in the kitchen, where it took 1,000 watts
18 to justify their low efficacy. So you can throw
19 in a lot of high efficacy lighting and still be
20 wasting a lot of energy.

21 MR. SHIRAKH: But we haven't put a
22 wattage limit on the kitchen, but I think our
23 requirement makes it very hard for someone to put
24 1,000 watts of lighting, I mean, it will be
25 brighter than the sun because it has to be LEDs.

1 MR. NESBITT: I don't think you can get
2 brighter than the sun.

3 MR. SHIRAKH: Alan.

4 MR. SULEIMAN: Good afternoon, my name is
5 Alan Suleiman. I'm with the Sacramento Municipal
6 Utility District (SMUD). I would like to kind of
7 express our support for the high CRI
8 requirements, the proposed requirement for high
9 CRI and Luminaires, and ceiling for residential,
10 as well as other screw-based sockets. We also
11 want to extend our support for requirements for
12 even outdoor lighting, for high CRI.

13 The main reason is it's a win-win for
14 our customers because it provides sustainability
15 and persistence of keeping, as we saw some of Dr.
16 Whitehead's presentation, we saw the side-by-side
17 pictures that tells a story where people want to
18 stick with what's better and what looks better.
19 So that's one of the drivers behind our support,
20 as well. And it's a win for our customers
21 because they're getting longer life, better
22 quality, high quality, high efficiency lamps. So
23 we're behind these requirements.

24 MR. SHIRAKH: Thank you, Alan. There's
25 that lady first and then --

1 MR. STRAIT: Yeah, there is kind of a
2 cue, so --

3 MR. SHIRAKH: We'll get to everyone.

4 MR. STRAIT: Yeah.

5 MR. SHIRAKH: No worries.

6 MS. RAINER: Rebecca Rainer with Eatons/
7 Cooper Lighting. First, I'd like to commend the
8 Commission on the great job they're doing with
9 promoting energy efficiency. We think you're
10 doing a really good job. There are just a couple
11 of things I'd like to comment on. We do support
12 the prohibiting the screw-based socket in
13 incandescent downlights or in downlights. We
14 have actually done quite a bit of testing, we
15 have also had some product from the field that,
16 when used with other sources, screw-in sources
17 with LED, that we have seen overheating, we've
18 seen melting plastic, we've seen a lot of
19 concerns. We feel like that's a safety concern
20 and we do not support the use of screw-base in
21 the downlights.

22 MR. SHIRAKH: May I ask you a question?
23 You know, you make these trim kits, both
24 dedicated, this one --

25 MS. RAINER: That's a dedicated source.

1 MR. SHIRAKH: You also make them with a
2 screw-base connector.

3 MS. RAINER: Yes, we do.

4 MR. SHIRAKH: Then why go the hardwired
5 dedicated route, rather than using the kit that's
6 an Edison base?

7 MS. RAINER: Because we feel like it's
8 more reliable in the dedicated base than it is in
9 the screw base. The screw base is a quick way to
10 get your savings, but we feel like it is a better
11 solution to do the hardwire.

12 MR. SHIRAKH: Okay, thank you.

13 MS. RAINER: Another comment I would like
14 to make on the CRI 90, and I know we've had this
15 conversation in the past quite a bit, but most of
16 the conversations have been based on the
17 comparison between LED Lamps and Incandescent. I
18 would like you to consider the requirement of CR
19 90 in linear-type LED products. I feel like if
20 that requirement is placed on the linear LED, you
21 will not see the market shift to the linear
22 product, you'll still see it stay on the T5s or
23 T8s. I think your supply of linear LED in the
24 CRI 90 range is very very limited, if any, so I
25 would like the Commission to consider that as an

1 exception.

2 And also, I guess I was confused, I
3 didn't think the CRI 90 would apply to outdoor,
4 so I'd like a clarification if it will apply to
5 outdoor because, at that point, if you're
6 comparing the CRI 90 for outdoor, you're
7 comparing mostly to not incandescent, but
8 sometimes HP has (indiscernible), which has a
9 much lower CRI than 90, so I would argue that a
10 CRI of 80 or 85 would be sufficient for outdoor.

11 MR. SHIRAKH: Okay.

12 MS. RAINER: Thank you.

13 MR. SHIRAKH: Thank you. Mike McGaraghan
14 then Mike Hodgson.

15 MR. MCGARAGHAN: Hi. Mike McGaraghan
16 from Energy Solutions on behalf of the California
17 Investor-Owned Utilities, which is PG&E and
18 Southern California Edison and San Diego Gas &
19 Electric and the Southern California Gas Company.
20 And we just wanted to express our support for the
21 Commission's proposal here for Res lighting. I
22 think you've done a great job, it's definitely
23 pushing it in the right direction. A couple of
24 things I wanted to clarify right off the bat in
25 your presentation, Mazi, you mentioned downlights

1 having to be dedicated and used this as an
2 example. I think the way the language is in
3 there right now, it just bans screw bases, which
4 would allow anything that is not a screw base.
5 So by my read, GU 24 or MR16 bases like the GU5.3
6 or the GU10, I think, are still valid in the
7 recessed can.

8 Another clarification, you mentioned that
9 sources would have to be 3,000 Kelvin or less and
10 there's another important word in there, and
11 that's that they have to be *capable* of providing
12 3,000 Kelvin or less, so the intent there is that
13 if a source is color changing, then that's
14 allowed as long as it can go below 3,000. So
15 that's another way to deal with a lot of people's
16 preferences for different color temperature.

17 One other thing I wanted to highlight was
18 on the lumen maintenance in the elevated
19 temperature tests and the life testing, there is
20 a component in there, "early failure
21 requirement," that nine out of 10 lamps or
22 sources have to pass that. So it's not just that
23 you have to meet the lumen maintenance, but nine
24 out of 10 have to still be operational. So
25 hopefully those are all still considered as part

1 of the proposal.

2 One other thing on the outdoor sources, I
3 think there is an exemption in the current
4 language saying outdoor does not have to meet
5 JA8, or at least does not have to meet certain
6 parts of it.

7 MR. SHIRAKH: No, I think it says it
8 doesn't have to meet the CCT.

9 MR. MCGARAGHAN: Okay.

10 MR. STRAIT: If needed, I can pull it up
11 on the screen.

12 MR. MCGARAGHAN: Well, I know it's in
13 there with exempting some portion of JA8, and I
14 wanted to throw a caution around that, and the
15 reason is that, when the manufacturer produces a
16 lamp, they don't know if it's going to be
17 installed indoors or outdoors, necessarily. And
18 right now, we've just proposed to have one JA8
19 label. So if a Building Inspector is checking
20 labels, and we have different requirements for
21 lamps outdoors as we do for lamps indoors, there
22 will be some confusion, it won't quite work
23 right. So if we wanted to have separate
24 requirements for outdoor lamps, we would need a
25 different label that says "Outdoor JA8," which is

1 not impossible, but something to keep in mind.

2 So just big picture now, just things that
3 I wanted to highlight that we really support in
4 the Commission's proposal, first of all, the
5 going to 90 CRI, we think color quality is hugely
6 important in the residential market, and Loren
7 did a great job of covering a lot of the reasons
8 for that, so I'm glad you could be here today,
9 thank you.

10 A couple of things that Loren didn't get
11 to, maybe we could add some items to his list of
12 10, but another one is, you know, "90 CRI is hard
13 to achieve" or "there's not enough products, not
14 enough availability." So one argument against
15 that I wanted to point out was that Title 24
16 already has a requirement for 90 CRI for LED
17 sources installed in new residential
18 construction, claiming to be high efficacy.
19 That's been there since July 1, it was adopted in
20 May 2012. And at the time that was adopted,
21 there really weren't a lot of 90 CRI residential
22 LED products, and now you can actually go on the
23 CEC site, you can go right to their database and
24 you can see all of the products that have been
25 submitted to comply with JA8. There's actually

1 5,000 rows on that spreadsheet right now,
2 products that are claiming to be 90 CRI LED
3 residential products. Now, some of those are
4 probably slight variations of the same model, but
5 even if you discount that, there are many
6 hundreds of products that are distinct and there
7 are all types, there are downlights, there are
8 pendant lights, there are track lighting, all
9 kinds of 90 CRI products and those weren't there
10 a few years ago, they've sprung up in response to
11 the Commission's proposals. So we expect the
12 same to happen here. None of the proposals that
13 the Commission have put forward are unreasonable
14 or impossible to achieve, there's examples of
15 them on the market, and the market will provide
16 more products as we go.

17 So along those lines, we also support the
18 .9 power factor, which has huge benefits, not
19 just for the Grid, but for the consumers of
20 California's energy; if the Grid is operating
21 more efficiently, California consumers will have
22 better energy prices in the long run.

23 We support the requirement for
24 dimmability. There's actually a little confusion
25 in the current JA8, it makes it sound like some

1 of your dimming requirements are only for
2 dimmable lamps, but we wanted to make it clear
3 that all lamps in JA8 are supposed to be dimming,
4 dimmable.

5 MR. SHIRAKH: Right.

6 MR. MCGARAGHAN: Okay. And I may have
7 covered everything that I wanted to mention
8 today, so I will stop there. Thank you very much.

9 MR. SHIRAKH: Okay, I think Mike made an
10 important clarification in my presentation
11 related to color temperature, he is correct. One
12 of the advantages of LED is that you can actually
13 tune in your color temperature, and so you could
14 range it from 2,700 to 6,200 if you wish, which
15 is acceptable under our current proposal, as long
16 as one of those points hits 3,000 degrees Kelvin
17 or less. Thank you for that clarification.

18 MR. STRAIT: It's actually worth pointing
19 out also that the same is true for the Color
20 Rendering Index, there are LEDs obviously that
21 you can shift it through a rainbow of different
22 colors, as long as it has a point that is white
23 light, then it can be installed, we're not trying
24 to prohibit something that you can, you know, if
25 you want a living room that you can turn into a

1 disco party any time you want, hey, we're with
2 you.

3 MS. WALTNER: Meg Waltner with NRDC. So
4 just wanted to get up and say that overall we're
5 strongly supportive of the changes to the
6 residential lighting requirements, they'll
7 guarantee a high efficacy source in every
8 fixture, high quality source, and I think really
9 simplify the requirements from where they are
10 today. We'll submit more detailed comments on
11 JA8 in writing, but in general I think that we
12 should align JA8 with where Title 20 is going.
13 On the CRI issue, we still have some concerns
14 around the energy penalty and the cost penalty
15 with moving to CRI 90. But we'll submit some
16 further comments on that in writing. And
17 overall, very supportive of the changes to the
18 residential lighting requirements; in particular,
19 we're glad to see that recessed fixtures cannot
20 be a screw-based, as others have mentioned, that
21 heat management issues with recessed fixtures,
22 and then also the fact that we don't have the
23 federal backstop for bulbs that might go into
24 those recessed fixtures, and so there is greater
25 potential of backsliding in terms of energy use

1 in those fixtures. So that's all. Thank you.

2 MR. SHIRAKH: Thank you. And Mike
3 Hodgson.

4 MR. HODGSON: Mike Hodgson with ConSol,
5 supporting the Building Industry. Just kind of a
6 clarification. I really think CBIA supports the
7 new lighting standards in the proposed changes,
8 the LED technology seems to be something that
9 definitely needs to be in new structures. But
10 the issue still comes down to we can use a screw
11 based LED in certain places and can't in others,
12 and it seems to be an inconsistent standard, and
13 we're looking for clarity and we just had
14 testimony today that says there was installation
15 issues, heat management issues, I'm going to call
16 it "melting of trim," those things worry the
17 building industry, are concerning to the building
18 industry, and so being better and not having
19 explanation of why you're better, or, you know,
20 promoting things that potentially have
21 installation issues seems to be a problem. So we
22 have a concern now of whether or not we should
23 have any type of screw based LEDs, or whether
24 they should be not allowed at all. So is that
25 the issue that, I mean, think the Commission is

1 coming from we can have screw based or Edison
2 based fixtures, but not just in recessed cans,
3 and so --

4 MR. SHIRAKH: That's the current
5 proposal.

6 MR. HODGSON: Right, and so the question
7 is, what's the difference? And we still haven't,
8 I think, had a good explanation either from the
9 CASE study, or from our meeting at CLTC, or
10 meeting with staff as to those explanations. We
11 understand it's better, but what does that mean
12 to the industry?

13 MR. SHIRAKH: The heat management is more
14 of an issue in downlights than say open fixtures,
15 and like in bath bars and so forth, but I think,
16 Michael, did you want to make some comments?

17 MR. SIMINOVITCH: I mean, on a real basic
18 level --

19 MR. SHIRAKH: Michael, you need to --

20 MR. STRAIT: Please be sure to speak into
21 the microphone.

22 MR. SIMINOVITCH: Michael Siminovitch,
23 U.C. Davis. So just on a real basic question, if
24 you have an A-Lamp replacement like this in an
25 Edison base, and you put this into a table lamp,

1 or a wall sconce, or some type of exterior
2 fixture, there's going to be more air flow around
3 this. Something like this, a little bit more
4 constricted environment inside a downlight, but
5 you can see that these two elements are built
6 very differently, this fixture has been well
7 thought out in terms of heat sync, it knows its
8 constricted environment, somebody at the factory
9 actually thought about the design and the
10 development for this.

11 Now, this is evolving quickly, but this
12 is a much more constricted environment, it's
13 designed to look like an A-Lamp, this is not
14 constrained by that same kind of thinking, so the
15 electronics in here is in a much much more
16 constricted environment. So on average, sort of
17 looking at this across the field, that this type
18 of lamp, or the R Lamp, or the PAR lamp kinds of
19 configurations, may be in a more thermally
20 constricted environment inside a canon, and may
21 not do as well as this. Now, that's changing and
22 there are manufacturers that are addressing -
23 making these things just as durable for that type
24 of thermally constricted environment, but the
25 present thinking right now is that, our thinking

1 at the University, is you're probably better off
2 with a dedicated platform that's been thermally
3 managed, optically developed to go inside a
4 constricted environment where, not necessarily
5 these particular companies, but an A-Lamp that is
6 a very constricted kind of package may suffer
7 more inside a downlight. So that's kind of the
8 simple -- now, things are evolving, I mean, but
9 right now that's our general thinking.

10 MR. SHIRAKH: That gentleman first, and
11 then Jon.

12 MR. HARING: Hi. My name is Rick Haring
13 from Philips Lighting. We applaud the
14 Commission's efforts on energy savings, however,
15 we do have a concern about the choice of high
16 power factor as a quality metric for JA8.
17 Utilities have not been able to demonstrate any
18 need for a high performance factor.

19 In regards to CFLs, studies have not
20 shown any effect on the Grid for low power factor
21 products.

22 We're wondering about the rationale when
23 other industries have no such requirement for
24 high power factor and the Energy Star requirement
25 is .7 as opposed to the proposed .9 by the CEC.

1 MR. SHIRAKH: Okay, thank you. Jon.

2 MR. MCHUGH: Can I sit here temporarily?

3 MR. STRAIT: Yes, that would be fine.

4 MR. SHIRAKH: We need to probably speed
5 this up a little.

6 MR. MCHUGH: So a couple things real
7 quickly. First off was, in your presentation,
8 Mazi, it appeared that you were indicating all
9 JA8 fixtures are dimmable? Because I wasn't
10 clear in the -- it appeared in the draft that it
11 almost seemed to be saying that not everything
12 was required to be dimmable, but then when it was
13 dimmable you had these certain tests.

14 MR. SHIRAKH: No, when you want to be JA
15 certified, it has to be dimmable.

16 MR. MCHUGH: Everything has to be
17 dimmable, okay, that clears up a concern. The
18 other thing is that, and by the way, this is Jon
19 McHugh from McHugh Energy. I was one of the
20 authors on the Residential CASE Study. At the
21 beginning of JA8, we had proposed that there
22 should be some language that would allow products
23 approved by the Executive Director, and the
24 reason for that is that sometimes mistakes happen
25 and, just as an example, as I remember for the

1 California Quality Specification for LEDs, there
2 was some problem with, I think it was,
3 omnidirectional zonal lumens and that sort of
4 thing. And rather than reopening the rulemaking
5 that you actually have some flexibility if
6 there's something that's brought up later on that
7 is not, you know, violating the intent of this
8 Standard, but potentially there's some language
9 that prohibits a certain technology that you
10 didn't intend to restrict.

11 The second thing is that there's been
12 some discussion about light fixtures that are
13 within recessed cans and, you know, proposed for
14 this JA8 Standard is that for light sources that
15 are greater than 10 watts, they need to, unless
16 they're going to be specifically labeled as not
17 being allowed in recessed cans or enclosed
18 fixtures, these light sources have to be tested
19 for 6,000 hours in those fixtures, and nine out
20 of 10 of those have to not fail and also have
21 lumen maintenance that is above the 86 percent,
22 or whatever the number is. So the issues about
23 temperature, I think is overblown.

24 Then going back to power factor, the
25 issue really, and an argument had been made

1 earlier that, well, you know, the issue of power
2 factor is really not that big of a deal because
3 there's motors that are in the house and they
4 have lagging power factor and these LEDs have
5 slightly leading power factor. Well, the issue
6 is that primarily the issue that makes for poor
7 power factor of LEDs is not that the current is
8 leading in terms of displacement, but rather
9 because of total harmonic distortion. And THD is
10 not something that gets evened out by a motor
11 having lagging power factor, so we still have
12 those issues. I'll submit to the record a
13 document that indicates that the impact on the
14 utility grid is multiples of the effect that you
15 see within the house wiring, and so this
16 ultimately ends up costing the consumers with
17 larger transformers and, of course, heating
18 losses in those transformers.

19 And overall, I'd just like to say that
20 I'm supportive of this proposal moving forward.
21 Thank you very much.

22 MR. SHIRAKH: Thank you. We're going to
23 take a couple of quick comments, we need to move
24 on.

25 MR. STRAIT: Yeah, I hate to say that we

1 need to bring out the shot clock, but we might
2 need to, so if the next commenters could keep
3 their comments brief, is there anyone else in the
4 room that would like to make a comment on this
5 topic?

6 MR. SHIRAKH: And if you could keep your
7 comment to one minute or less, I would appreciate
8 it.

9 MR. MCGARAGHAN: Mike McGaraghan. Jon
10 just said it very well, so I won't reiterate his
11 comments on power factor, but one thing to add is
12 there are other industries that have power factor
13 requirements, power factor is a huge deal for the
14 utility grid and we've started to work on power
15 factor requirements for other electronics, in
16 particular things like computers. So it's not
17 lighting, not the first place this has happened.
18 And we've also done some research into the price
19 and the manufacturer impacts, and improving power
20 factor in an LED, 8 watt or 10 watt LED lamp, is
21 a miniscule cost increment and if you look at the
22 end user prices, there's no relationship to end
23 user price as a result of increased power factor.
24 So it seems like a no brainer. Thank you.

25 MR. SHIRAKH: Thank you. Please, one

1 quick comment.

2 MS. RAINER: It's Rebecca Rainer,
3 Eatons/Cooper Lighting. Again, just one quick
4 comment on the use of the screw base and
5 downlights. I would be glad to share with anyone
6 our test data and our field failure data on what
7 we have seen when using LED lamps in the recessed
8 downlights, if you'd just see me after the
9 meeting I'll be glad to take your card and get
10 you some information and share that test data
11 with you.

12 MR. SHIRAKH: Thank you for that offer.
13 Now we're -- Mike, did you have any other
14 comments? We're going to go to WebEx, we'll take
15 two comments, please keep them very short.

16 MR. STRAIT: And one quick note for
17 people that are submitting comments that may have
18 attachments. Just go ahead and docket the
19 attachment with a comment to our Docket File.

20 All right, the first one I'm going to go
21 to Mr. Gaines. Jim Gaines, you are now live.

22 MR. GAINES: Thanks. I'm with Philips.
23 Quickly, I just want to point out that I'm afraid
24 that the points of Lorne Whitehead kind of
25 oversimplified the point. We people who are not

1 in favor of CR 90, we believe there's a place for
2 CR 90 in certain applications, and certainly
3 there's no technical difficulties to make CR 90
4 products, we've done it many times and so have
5 others. We do not believe that it makes any
6 sense as a minimum spec for Standards. There are
7 plenty of applications that don't require CR 90.
8 There's not a huge efficacy step as he indicated,
9 but there is an efficacy, or you can trade that
10 all for reliability. There's not a huge cost
11 hit, but there is a cost hit, and the higher cost
12 is one of the effects that influences adoption
13 rates. And finally, DOE has recently shown that
14 that is getting adopted radically faster than CFL
15 ever was, so comparison to CFL and its parameters
16 is not really the right thing to do.

17 MR. STRAIT: Thank you very much.

18 MR. SHIRAKH: Thank you.

19 MR. STRAIT: All right, the next
20 commenter is Michael Jouaneh. Michael, you're on
21 the air.

22 MR. JOUANEH: Hi, it's Michael Jouaneh,
23 Lutron Electronics. A couple comments, one on
24 the controls, there's an exception now for
25 hallways. Lighting controls have always been

1 required, even today in Title 24, even before in
2 the previous Standards, so why exempt hallways
3 from being controlled?

4 MR. SHIRAKH: I don't believe we have a
5 current requirement for hallway lighting, I could
6 be wrong, but my understanding is we don't have
7 currently a requirement for hallways simply
8 because --

9 MR. JOUANEH: Hallways are considered,
10 you know, all other spaces outside of bathrooms,
11 garages, laundry rooms, all other spaces have to
12 be controlled with a dimmer or vacancy sensor
13 today.

14 MR. SHIRAKH: Yeah, I'll check on that,
15 but if you think about it, hallways you don't
16 need dimmers, nobody is going to dim the light in
17 the hallways and you don't want vacancy sensors
18 in the hallways either, lights going off if
19 there's a stairway or something. We can check on
20 that.

21 MR. JOUANEH: Okay. I disagree that no
22 one is going to dim the lights in the hallway,
23 but -- also, the other requirement for these
24 nonliving spaces to only have one controlled
25 luminaire, it seems like it should be all

1 luminaires in these spaces should be controlled.
2 If anything, if there's multiple luminaires in
3 those spaces, only one should be allowed to be
4 uncontrolled. And lastly, on the downlights, if
5 they're complying with JA8, screw base should be
6 allowed because there are requirements in JA8
7 that address key issues, I don't understand why
8 you would allow GU-24 base luminaires to comply,
9 but not a screw base in a downlight. There's
10 many screw base lamps that have specifically been
11 designed to operate in downlights. So I think if
12 we're going to allow JA8 compliant screw base, it
13 should be allowed even in the downlights. Thank
14 you.

15 MR. SHIRAKH: That's a fair comment and
16 it's one that is made quite frequently, so it's
17 something we need to grapple with.

18 MR. STRAIT: Yeah. Just to check on one
19 other -- Michael Kachala had his hand up for a
20 while but then lowered it. Michael Kachala, do
21 you still have a comment?

22 MR. KACHALA: Yes, sir. I do. Thank
23 you, Peter. Mike Kachala, Hinkley Lighting.
24 We're a manufacturer of decorative residential
25 lighting, 2,800 different fixtures that are all

1 surface mount, i.e. not track lights or recessed
2 cans. Currently we offer 600 of those fixtures
3 in GU-24 for residential, 600 of 2,800 means that
4 many decorative fixtures are not suitable for GU-
5 24, and we also have more than 200 dedicated 90
6 CRI 2,700 K interior and outdoor fixtures listed
7 on the CEC website.

8 My comment specifically for this verbal
9 section will be about LED lamps and their
10 suitability. What's most important for folks to
11 understand is the consumer is buying a fixture
12 separate from an A-Lamp. And the testing
13 required as specified puts an undue task on
14 luminaire manufacturers specifically because we
15 don't know which light is going to go into our
16 fixture. The thermal effects need to be
17 discussed more in detail before the consumers
18 really understand what they can or can't use for
19 an A-Lamp versus other. Going back to CFLs, we
20 know as fixture manufacturers that when a CFL is
21 put in the socket up position, the heat from the
22 twists go into the ballast and shorten the life
23 of the lamp to less than 3,000 hours.

24 Similar if not worse situations happen
25 with LED A-Lamps. So I will be writing much more

1 comments to the folks via the submittal process,
2 but just want folks to understand that the way we
3 currently have things set up here, which we are
4 unsupportive (ph) of most of this stuff, does not
5 at all properly comprehend (ph) the use of LED A-
6 Lamps in residential light fixtures. Thank you.

7 MR. SHIRAKH: Thank you for that comment.
8 Again, you know, when you have a base up position
9 in an enclosed fixture, then heat does become an
10 issue and that's part of the reason why we went
11 with this dedicated. Mike, do you have a quick
12 one, really quick? You promise?

13 MR. MCGARAGHAN: Mike McGaraghan, two
14 very quick comments. There was a comment brought
15 up a minute ago on price and also on adoption
16 rates, so price I just wanted to emphasize that
17 we're collecting a lot of online price data,
18 hundreds and hundreds of data points from about
19 10 different retailers, and we found the high CRI
20 prices are coming down more quickly,
21 significantly more quickly, than the low CRI
22 prices. In the past year, 90 plus CRI product
23 prices came down about 25 percent in our data
24 collection and 80 CRI product prices came down
25 about 15 percent, so the gap is shrinking very

1 quickly. On CFL adoption rates, the comment was
2 made that LEDs are already doing better than CFLs
3 ever did, and I just have a different
4 perspective. CFLs took off from about one or two
5 or three percent to about 25 percent in a span of
6 six or seven years in the mid-2000's. CFLs took
7 off, everybody was very excited, and then they
8 stalled out and they've stayed there somewhere
9 between 30 and 40 ever since. So we have not
10 seen anything from LED that's significantly
11 better than that so far and we have no reason to
12 believe that LEDs are inherently already doing
13 better than CFLs were doing when their prices
14 also dropped below \$10.00. Thank you.

15 MR. SHIRAKH: Thank you. Staff fully
16 supports the high CRI, I mean, this is a new
17 construction requirement, you know, when people
18 spend half a million dollars or \$300,000 on a
19 home, they need to get light sources that perform
20 indefinitely. You know, you don't want to make
21 people look bad. I certainly don't need to look
22 any worse than I already do, I don't need any
23 help in that department. So, I mean, I think
24 that goes for the longevity of the measure. We
25 need to have high quality CRI. Dave, can you

1 come up to the --

2 MR. PATTON: That said, Mazi --

3 MR. STRAIT: Please be sure to speak into
4 the microphone.

5 MR. PATTON: David Patton, well, it's
6 Patton Lighting and Design. Is 10 percent really
7 low enough for dimming? Ten percent measured is
8 pretty high perceived, so what I find is, as it
9 dims down, and he said 10 percent threshold, the
10 owner or the end user looks at it and goes, I'm
11 not dimming like an incandescent lamp.

12 MR. SHIRAKH: I actually have that issue
13 in my own home, so that's a fair question.

14 MR. PATTON: A lot of people do, so I
15 would think we maybe look at five to one percent.
16 In my specifications, I don't allow more than one
17 percent.

18 MR. SHIRAKH: That's a good comment.
19 Anyway, we need to move on, don't want to
20 discourage anymore additional comments, but
21 please do it in writing, docket it, and now we
22 need to move on to two additional exciting topics
23 which will be presented by Bruce Wilcox and --

24 MR. STRAIT: Danny Tam.

25 MR. SHIRAKH: Danny is going to go first,

1 he's going to talk about the Instantaneous Water
2 Heating, and then we'll go to High Performance
3 Attics and Walls. And it looks like we're going
4 to be running late today.

5 MR. STRAIT: So we'll hold comments until
6 after both of these two presentations. Thank
7 you.

8 MR. TAM: Hi, good afternoon, this is
9 Danny. So real quickly, if we missed it
10 previously in Section 110.3, we are proposing to
11 add a new Mandatory Requirement for Isolation
12 Valves when you have an instantaneous water
13 heater installed; it's already a best practice
14 recommended by plumbers and manufacturers, so
15 this will allow to perform the flushing procedure
16 very easily.

17 And 150.1, we're proposing to have the
18 instantaneous water heater as a primary
19 prescriptive path option that meets the federal
20 minimum standard. This will also set the basis
21 for the Standard designed under the performance
22 approach.

23 I just want to emphasize that this is not
24 a mandatory measure, it is a prescriptive
25 standard, so if you don't want to install an

1 instantaneous water heater, you're free to do the
2 performance path and under that you can use
3 condensing water heater, you can use combined
4 hydronic, whatever you want. Basically, when you
5 model the house in compliance program, it
6 calculates the standard design budget and the
7 proposed design budget. As long as your proposed
8 design budget is less than or equal to the
9 Standard design, your building complies.

10 So let's say you don't want to use an
11 instantaneous water heater and you also don't
12 want to go the performance route, we also have a
13 prescriptive option, alternative. This looks a
14 little different from what we proposed previously
15 based on the comments we received, we basically
16 went back to the drawing board and we wanted to
17 look at something that's cheaper and more
18 realistic, so we ran a whole bunch of iterations,
19 and this is what we come up with. So basically
20 you can meet the prescriptive requirement if you
21 have a minimum efficiency storage water heater
22 and if you perform QII, Quality Insulation
23 Installation, and one of the following: if your
24 building has a compact hot water distribution
25 system, or if you insulate all the hot water

1 pipes. It's already a mandatory requirement to
2 insulate all three-quarter inch or larger hot
3 water pipes, so this will involve insulating
4 half-inch. Okay, and all these changes only
5 apply to single dwelling units; for multi-family,
6 essential systems this does not apply.

7 Also, this applies to new construction
8 and additions only when you add a new water
9 heater as part of an addition. And for
10 alteration retrofits, this does not have any
11 changes. Since we're short, we're open to
12 discussion.

13 MR. STRAIT: We're going to hold the
14 comments on this until after Wilcox's
15 presentation, so they all go together.

16 MR. TAM: Okay. So, Bruce, you're next.

17 MR. SHIRAKH: I must just say related to
18 the tankless water heater, there are ongoing
19 negotiations with various stakeholders, so this
20 proposal is subject to some debate and we'll be
21 probably having further discussions with some of
22 the stakeholders in the coming weeks. The issues
23 being raised mostly have to do with the
24 maintenance cost of the tankless water heaters
25 versus storage water heaters. That seems to be a

1 driving factor, you know, the lifecycle costing
2 is very sensitive to small changes. And also the
3 life of storage water heaters versus the tankless
4 water heaters, our assumptions that we're using
5 20-year life for tankless, which is based on what
6 the manufacturers currently provide for their
7 products versus storage that were using 13 years.
8 So, I mean, changing those numbers does impact
9 the benefit cost ratio. And there are a few
10 questions related to preemption issues, which I
11 think we're working on, our attorneys, I should
12 introduce Pippin sitting to my right, you know,
13 he is our lead attorney on Building Standards;
14 they are looking to the preemption issues. So
15 those are all still ongoing discussions and
16 hopefully we'll have them resolved before we
17 issue the 45-day language.

18 So with that, we're going to switch to
19 Bruce's and he's going to be talking about two of
20 my favorite measures, the High Performance Attics
21 and High Performance Walls, which are very
22 critical to achieving the ZNE goal by 2020.

23 MR. WILCOX: Thank you, Mazi. I'm Bruce
24 Wilcox. I'm a contractor to the Energy
25 Commission, working on Residential Standards.

1 So I'm going to talk about, as Mazi said,
2 primarily the attics, ducts, and walls proposed
3 measures. I also ended up with Section 150 where
4 there's this one interesting thing, a proposal
5 for air-conditioner filter driers, which I'm sure
6 we'll all want to discuss at great length, and
7 then there's a couple of additions in
8 Alterations, exceptions that apply to the attics
9 and walls proposal, so I want to make sure we
10 highlight those.

11 I'd like to say right up front that what
12 I'm talking about today is an Energy Commission
13 staff proposal, but it's based heavily on the
14 work that's been done by the California Statewide
15 Codes and Standards Enhancement Program crew, the
16 CASE crew. And the work that was done here, the
17 technical work, was largely done by the CASE
18 Program, and so I like to give them credit. And
19 the details are posted on the CEC's website for
20 these particular proposals.

21 Also I'd like to note that the staff
22 doesn't always agree with the CASE Team's
23 proposal in detail, so it's not all their fault.

24 So in Section 150, the big changes that
25 there is a proposal to require liquid line filter

1 driers if the manufacturer requires them. So I'm
2 not sure we can get consensus on such a radical
3 proposal, but hopefully we can do that and go
4 ahead. So I think I'm not going to go any
5 further on that, just to point that that's an
6 issue here.

7 So I want to go on now and, to start
8 with, talk about attics and ducts. And rather
9 than trying to present this in the form of the
10 detailed language that's in the Standards
11 proposal, I'm going to try and explain what I
12 think it means and talk about what the intention
13 is here. So maybe we could make it clear what
14 the requirement is proposed to be. I think
15 there's maybe some editorial issues with some of
16 the language that's there right now, and I don't
17 intend to focus on that at that at this point,
18 but I think that will all get cleaned up. But
19 this is what I think the Commission's staff
20 proposal is intending to require.

21 So in terms of adding some ducts, there
22 are two prescriptive package options that apply
23 to Climate Zones 1, 2, 4, and 8 through 16, so I
24 think that's 12 of the 16, anyway, it's most of
25 the Climate Zones. And so essentially if you're

1 going to have prescriptive compliance, you have
2 the choice of either number 1 here, or number 2.
3 And so for number 1, your option is to have ducts
4 in a High Performance Ventilated Attic, HPA is
5 the acronym that's been bandied about here for
6 High Performance Attics. And as part of that
7 High Performance Ventilated Attic, there are roof
8 deck insulation options which I'll talk about in
9 a minute, but that you need to insulate the roof
10 deck.

11 In addition, there's prescriptively R38
12 ceiling insulation and there are R8 ducts with
13 five percent tested leakage. And all of those
14 are changes from the current 2013 prescriptive
15 requirements where R38 is only required in some
16 climate zones, R8 duct insulation is only
17 required in some climate zones, and duct leakage
18 is six percent rather than five and so forth. So
19 this the big change essentially moving forward
20 here, is to require a high performance ventilated
21 attic. Or your other choice if you don't want to
22 do a High Performance Ventilated Attic in the
23 prescriptive compliance, is you can choose to not
24 put any ducts or air handlers in any attics, and
25 so if you do that, if you keep the ducts out of

1 the attics, then the current requirements are
2 basically okay, there's really proposing no
3 change. So either, if you're going to put ducts
4 in your attic, or the air-conditioning system and
5 the ducts in the attic, then you've got to do the
6 High Performance Attic. If you don't want a High
7 Performance Attic, keep the ducts out of the
8 attic and you're okay. So the no ducts or air
9 handlers in any attic, Option 2 here, you can get
10 there by having ducts in conditioned space, which
11 is in some ways the ultimate high efficiency
12 measure because you significantly reduce the
13 losses from the air-conditioning system and the
14 ducts and so forth by putting them all inside the
15 conditioned space, whereas the whole set of
16 measure set up to support this, and HERS
17 verification that you've actually achieved this
18 measure when you can measure that there's no duct
19 leakage to outdoors.

20 You can also implement this number 2
21 option if you put your ducts and HVAC system in
22 other unconditioned spaces that are not attics,
23 like basement or crawl space, and so forth. So
24 that's another option, not very common in
25 California, but definitely not unknown.

1 And then the third way to make this Path
2 2 choice is by using a ductless HVAC system,
3 something like a radiant floor heating system, or
4 a potentially a mini-split ductless heat pump, or
5 systems like this that don't utilize ducts that
6 would end up being in the attic.

7 So to summarize here, the big change here
8 is this first option. If you want to put your
9 ducts in an attic, and it's in Climate Zone 1, 2,
10 4, or 8 through 16, then you need to have this
11 new prescriptive thing, High Performance
12 Ventilated Attic. Now, note for additions of 700
13 square feet or less, this set of rules doesn't
14 apply, so you don't have to worry about doing a
15 high performance attic in a small addition.

16 So if you are doing a high performance
17 insulated attic, what are your insulation
18 options? And there are two cases for the roof
19 deck, one is, well, there are two cases, each of
20 which have two sub-cases, either you can do
21 continuous insulation above the roof rafters.
22 We've talked in the past about this being above
23 the roof deck, but in refining things we've moved
24 to calling out above the roof rafters so that you
25 can have an insulation system that's integrated

1 with the roof deck, might be a sandwich that's
2 part of the roof deck, it doesn't necessarily
3 have to be above the roof deck as long as it's
4 above the framing system that holds up the roof
5 deck. And it's kind of like continuous insulated
6 sheathing on a wall, it bridges across all the
7 framing and it insulates the framing from the
8 outside, and so it improves the efficiency of not
9 only the cavity, but the framing part of the roof
10 deck. And the requirement for that is, if you
11 have roofing with an air space, which for example
12 would be a conventional tile roof, a very common
13 situation in California, then that continuous
14 insulation needs to be R6. If you have roofing
15 with no air space, the commonest way of doing
16 that is asphalt shingles, and since the asphalt
17 shingles don't provide an air space that gives
18 you an R value, then in order to make all these
19 two options equivalent, they need to have a
20 slightly higher insulation layer as part of that
21 continuous insulation, so it's R8 for roofing
22 with no air space, or 6 for the roofing with air
23 space.

24 If you don't want to do continuous
25 insulation above the roof rafters, then you can

1 also insulate below the roof deck, and so the
2 idea here is that you're insulating inside the
3 attic, underneath the roof deck, typically
4 between the roof rafters or roof trusses and,
5 again, there are two options, one with the tile-
6 type roof with an air space, in which case you
7 need R13, and if you have roofing with no air
8 space, you need R18. And for High Performance
9 Ventilated Attic and below deck insulation, then
10 there's no requirement for a radiant barrier that
11 has been in the prescriptive standards currently.

12 But just to make it clear here, we're
13 talking about in this High Performance Ventilated
14 Attic, we have this roof deck insulation, but we
15 in addition have the conventional ceiling
16 insulation that has to be R38, so we're talking
17 about a significant increase in the insulation in
18 this attic. We're going from a very high level
19 of ceiling insulation to having the roof deck
20 insulated, as well.

21 As part of this, there are changes to the
22 ducts for a High Performance Ventilated Attic,
23 where you will need to put in -- all the ducts
24 need to be R8 insulation, all the typically flex
25 ducts part of the duct system, and there has to

1 be tested to five percent leakage which is
2 slightly better performance than the other
3 requirements for ducts, which are six percent
4 leakage.

5 Those other duct systems not in the High
6 Performance Ventilated Attic basically don't have
7 any change from the 2013 requirements, so in some
8 Climate Zones they're R6, in some Climate Zones
9 they're R8, and they typically are R6 leakage.

10 So to put this in context, the current
11 requirements for ducts and attics, there's a
12 mandatory minimum duct leakage of a rate of six
13 percent verified for all houses with ducts
14 outside the conditioned space, and R30 insulation
15 is a mandatory minimum. The prescriptive
16 requirements are ceiling insulation is R30 in
17 Climate Zones 2 through 10, basically the milder
18 coastal climates in Southern California climates,
19 and R38 in the colder climates, Climate Zone 1 up
20 on the North Coast, and Climate Zones 11 through
21 16, which is the hot Central Valley Desert and
22 mountains. Duct insulation is R6 or R8 in the
23 current Standards.

24 Now, there's a whole performance approach
25 that is in the 2013 Standard, which is typically

1 used rather than the prescriptive approach, and
2 the proposal here is the performance approach
3 will go forward in a substantially similar way,
4 there's a set of specifications and defaults for
5 the location of ducts that are default if you
6 have ducts located in an attic and you have a
7 single-story house, and we assume that 27 percent
8 of the conditioned floor area is the surface area
9 of the supply ducts, and it's all in the attic;
10 in a two-story house it's 65 percent in the
11 attic, and etc. We assume the attic ventilation
12 area is 1 to 300 unless you have a whole house
13 fan, in which case more is required.

14 And there are a wide range of performance
15 compliance options in the 2013 Standards which
16 are basically carried forward into this new set
17 of rules. Ducts can be located outside of the
18 attic, roof deck insulation above and below deck,
19 low solar absorptivity cool roof products can be
20 used. We have verified low leakage air handlers
21 and reduced duct leakage as an option. We have
22 increased duct insulation, buried ducts which can
23 give you very high R-Value duct systems. We have
24 verified duct designs which can be very effective
25 at reducing losses by providing minimum duct

1 surface areas that are exposed in the attic. And
2 we can increase attic insulation and use rasiel
3 trusses and so forth. All of these approaches
4 are still viable in this world, we're just
5 changing the prescriptive requirement that
6 establishes the standards level of performance
7 with this 2016 HPA proposal.

8 To compare this to other Codes, the 2012
9 IECC, for example, the International Energy
10 Conservation Code, which matches the national
11 model code, it requires, if it applied in
12 California, it would require R38 insulation in
13 the ceiling for most of California. Supply ducts
14 would be R8 if they were in the attic. It has
15 mandatory duct ceiling and the levels are not the
16 same formulation, but the levels are similar to
17 what's being required in California Standards.
18 And IECC has a requirement for Air Handlers to be
19 low leakage, less than two percent of the design
20 flow rate.

21 So, you know, this proposal is
22 aggressive, but it's not out of line with what
23 the National Model Codes are requiring for the
24 same kinds of situations.

25 The current typical practice now in new

1 construction in California housing is ducts and
2 the air handler are in a vented attic, all the
3 insulation is at the ceiling, measured duct
4 leakage rate is mostly less than six percent, you
5 know, meaning people are mostly complying with
6 the mandatory duct leakage testing requirements.
7 And duct insulation is a mix of R4.2, R6, an R8.
8 Almost nobody that I know of is making use of
9 duct design and reduced duct surface areas, which
10 is kind of a shame, actually.

11 So the reason for going to this high
12 performance vented attic is that it reduces the
13 attic temperatures in the summertime. Attics are
14 it turns out a really good solar oven, and we
15 didn't set out to make them a solar oven, but
16 that's how they turned out, and we went ahead and
17 put the ducts there anyway. So the real point
18 here of the high performance ventilated attic is
19 to reduce the summertime attic temperatures, and
20 thereby reduce the losses from the duct system
21 and the air-conditioning system components
22 located in the attic and reduce the cooling loads
23 that are transmitted down from the attic into the
24 house.

25 So that's the point and that's what is

1 achieved by insulating the roof deck and reducing
2 the solar gain that's conducted, that's absorbed
3 on the outside of the roof and conducted into the
4 attic. That's the physics of what we're trying
5 to do here.

6 Additional advantages are that this
7 approach doesn't really change very much the
8 current standard practice. A builder can still
9 build his house, put the ducts in the attic, put
10 the HVAC system in the attic, use the same kind
11 of roofing system that he uses now, and he has to
12 make a few incremental changes, but he doesn't
13 have to redesign his whole product and change the
14 whole way it's being done. He doesn't have to
15 change, in particular, the duct and air handler
16 location. And the HP8 prescriptive package here
17 has really been designed to give similar savings
18 compared to putting all of the ducts and the HVAC
19 system in the conditioned space. So this option
20 1, option 2, that I mentioned early, that if
21 you're going to have ducts in the attic, then you
22 do it this way; the other option is to not have
23 any ducts in the attic. The idea is that those
24 two give you relatively similar levels of
25 performance in California climates. And that's

1 why it makes sense to have them as two parallel
2 prescriptive packages.

3 The CASE Team has gone through a whole
4 set of energy savings and lifecycle cost
5 analysis. This is a table that shows the
6 analysis for the proposed package using R13
7 insulation below deck, R38 at the ceiling, R8
8 ducts, and five percent leakage. This is one
9 branch of that multi-branch package I described
10 earlier, and this was run using the standard
11 Energy Commission performance analysis in all 16
12 of the Climate Zones, and the columns here are
13 the time dependent valuation energy savings cost,
14 or energy cost savings, plus other cost savings,
15 compared to the 2013 Standards, Prescriptive
16 Requirements, and so this package of measures
17 saves dollars over the lifecycle of the houses in
18 every climate zone.

19 Then when we look at what it costs, what
20 the incremental first cost is, which ranges from
21 \$589 in Climate Zone 11 and up to \$1,000 in
22 Climate Zone 1, depending on what the
23 prescriptive requirements were in the 2013
24 Standards, the Climate Zones that have the
25 highest prescriptive 2013 Standards have the

1 lowest incremental costs in moving to this HPA.

2 If you combine those two together, that
3 gives you the lifecycle savings, and the savings
4 are positive except for Climate Zones 3, 5, 6,
5 and 7, which are all mild coastal climates where
6 there's little to no cooling load, and in those
7 cases the first cost is higher than the lifecycle
8 savings from the measures, so they're not cost-
9 effective by the California rules. And the last
10 column over here shows the benefit to cost ratio
11 which is the ratio of how much you save to how
12 much it costs, and that's less than one for the
13 climate zones in red, and those are the zones
14 where we're not proposing that the HPA
15 prescriptive package apply. But all the other
16 climate zones, the life cycle costing is
17 positive, so that's supporting the rules.

18 So if you look --

19 MR. SHIRAKH: May I suggest, you know,
20 kind of go through these slides pretty fast
21 because we are --

22 MR. WILCOX: Okay.

23 MR. SHIRAKH: Thank you.

24 MR. WILCOX: I'll go faster. Examples:
25 so here's an example drawing of what an above

1 deck system with foam insulation above the
2 rafters would look like in Section, we have the
3 insulation, the ceiling insulation, and then we
4 have the roof deck insulation in addition.
5 Here's a similar system with an asphalt shingle
6 roof, this has got a tile roof with an air space.
7 Here's an example of a system that uses a
8 polystyrene insulation foam board above the roof
9 deck, underneath the tile roof, this is the kind
10 of above deck insulation system we're talking
11 about. Here is another potential option which is
12 an innovative insulated title system that
13 provides its own level of above deck insulation.
14 And then here's a below deck insulation system
15 that uses a fiber system to hold up, in this
16 case, fiberglass insulation up against the roof
17 deck, and can provide the below deck version.

18 Spray foam is also another insulation
19 system that can be used below deck to provide the
20 HPA roof deck insulation. So that's the High
21 Performance Attic and Duct Proposal. I'm going
22 to leap right in here and go to the Proposed
23 Change for Walls.

24 And what we're proposing here is changing
25 the current prescriptive requirements for

1 exterior walls to a lower U-factor and to require
2 a U-Factor of .050 for exterior walls. An
3 example of what would get you to that is a 2 X 6
4 framing at 16 inches on center with R19 cavity
5 insulation and R6 exterior sheathing. This
6 proposal is for all the Climate Zones except
7 Climate Zone 7, which is San Diego, coastal San
8 Diego, so it applies to almost the entire state.

9 And it applies to all low-rise
10 residential buildings except for additions, if
11 you're adding on to a current building and you
12 want to extend the current walls, what you're
13 allowed to do is not change the current wall
14 system, so that you don't have to have a wall
15 coming along, and then you automatically go to a
16 thicker wall from there on. You're allowed to
17 extend the current framing system as long as you
18 put in the higher value cavity insulation in
19 that.

20 So the current prescriptive standards is
21 .065 U-Factor, which is an R15 plus R4, that
22 would all change to being this new .050 U-Factor,
23 so a substantially lower U-Factor.

24 Again, there was a whole series of
25 simulations done using the standard prototype

1 buildings and comparing wall systems to look for
2 the lowest lifecycle cost, and look at the whole
3 range of options available. This is a list of
4 the promising candidate walls with their
5 description, the U-factors, the incremental costs
6 for the combined prototype building, the cost per
7 square foot, and the description. The 2013
8 Standards was a .065, that's R-15, R-4, and a 2 X
9 4 wall. The one that turns out to be in this
10 list the lowest first cost is the basis for this
11 proposal, it actually has a .048 U-Factor, so it
12 meets the .050 rounded up prescriptive proposal.
13 But all of these cases were analyzed and the one
14 that is proposed here is this one. Here's the
15 net present value of the lifecycle cost savings
16 for this compared to the 2013 wall, and again
17 it's a positive present value of savings for all
18 the climate zones except Climate Zone 7, and so
19 the proposal here is that it be required in all
20 those climate zones, and that's the fundamental
21 analytical step here.

22 So the proposal, to reiterate here, is a
23 U-Factor of .050 in all the Climate Zones except
24 Coastal San Diego, that's cost-effective using
25 this 2 X 6, 16 inches on center, R19, R6, U-

1 Factor of .048 wall.

2 There are other ways to achieve this same
3 U-Factor level. Advanced wall framing is defined
4 in the Standards documents and it uses a reduced
5 more efficient framing system, and to achieve a
6 better U-Factor with less insulation, and that's
7 an option that allows you to meet the standard
8 without having to go to the thicker exterior
9 insulation. So that's my presentation. We can
10 open it up now for questions.

11 MR. SHIRAKH: Thank you, Bruce. So that
12 basically covers the three main topics. I'd like
13 to open this to questions and comments on the
14 Water Heating issue first, and then we'll move to
15 the High Performance Attics and Walls. George.

16 MR. NESBITT: George Nesbitt, HERS Rater.
17 On the water heater, I think the Energy
18 Commission needs to look at its Appliance
19 Database and you'll see that some of the
20 commercial water heaters have energy factors
21 equal to or greater than a tankless water heater.
22 So to give an option of having potentially a
23 commercial water heater above 75,000 KBTU up to
24 105 with QII and with either HERS verified
25 plumbing layout or pipe insulation, seems like a

1 lot in comparison to a tankless. I'm not a
2 horrendous fan of tankless, I have installed them
3 but I've never jumped fully on that bandwagon,
4 and I think you did point out some of the issues,
5 so I think you need a better option for a tank
6 water heater than what you're proposing, as much
7 as I like QII, and I am a HERS Rater, I'm not
8 arguing against it. You know, whether it's a
9 minimum efficiency water heater with solar, or a
10 commercial water heater with at least a maximum
11 standby loss, or what I don't know exactly, and
12 there of course if the whole preemption issue --

13 MR. SHIRAKH: Can I respond to that? The
14 Prescriptive Standard is not going to say
15 tankless water heater, it's just going to say
16 energy factor of .82. Now, we're providing a
17 prescriptive alternative for storage water
18 heaters, and there's several, there's plenty, one
19 is to put like a standard storage with .62 with
20 QII and compact design. Now, that's just the
21 prescriptive. If you don't like it, you can put
22 a storage of .67 and QII and be done with it, you
23 don't have to do the compact design.

24 MR. STRAIT: Under the performance
25 approach.

1 MR. SHIRAKH: You can go to performance
2 and do solar fraction, you can basically do all
3 sorts of stuff.

4 MR. NESBITT: Yeah.

5 MR. SHIRAKH: But all we are doing, we
6 are setting the performance level at .82 and
7 providing a cost-effective prescriptive
8 alternative for storage, and then the performance
9 is wide open for what they want to do.

10 MR. NESBITT: Yeah, I understand that.
11 I'm not sure that your non-.82 option is very
12 appealing or very equivalent.

13 MR. SHIRAKH: Well, the equivalence was
14 basically set up, you know, Danny here, you can
15 explain how you did the equivalence.

16 MR. TAM: Yeah, we basically did a
17 weighted average statewide, and we found that
18 those packages are equal or better to
19 instantaneous, and we're aware that there's
20 higher performing storage water heaters, but we
21 cannot specify because of preemption issue, we
22 cannot specify higher than the federal minimum
23 storage. That's part of the reason. We
24 understand there's much higher performing storage
25 out there.

1 MR. SHIRAKH: And there's nothing to
2 prevent them from putting in a storage condensing
3 water heater by itself.

4 MR. NESBITT: Sorry. You were talking
5 about --

6 MR. SHIRAKH: So you can read the
7 transcripts later and find the answers to your
8 question.

9 MR. NESBITT: Yeah, presuming I can read.
10 On the subject of commercial water heater, I'm
11 going to bring it up now, the algorithms for when
12 you run in performance a commercial water heater,
13 high efficiency, condensing, you know, 95 percent
14 recovery efficiency, you can be anything from
15 marginally better than a .58 energy factor water
16 heater, to worse. It's incredibly sensitive to
17 the standby loss, and I think if you look at the
18 Energy Commission database, you will see there is
19 documented evidence that these water heaters have
20 energy factors in the 80 percent range. So I
21 think we need a second option other than the .82
22 that, you know, meets preemption and I think is a
23 little more viable.

24 MR. SHIRAKH: I mean, we can look at
25 that, but you know that 95 percent of compliance

1 is performance anyway, so -- any other questions
2 on -

3 MR. STRAIT: We're running a little bit
4 behind, so I'm going to ask people to please keep
5 their comments brief.

6 MR. NESBITT: Forgive me, I will respond.
7 Until we get into Alterations, 95 percent of the
8 compliance is prescriptive, which is to say it's
9 not compliance.

10 MR. SHIRAKH: This is not applicable to
11 our alterations, this requirement is for new
12 construction only. We're not going to make
13 people go from standard storage to tankless
14 because it's just not practical. Meg.

15 MS. WALTNER: Meg Waltner with NRDC.
16 Just briefly, we support the addition of the
17 tankless water heaters, the baseline, and also
18 the option of either pipe insulation or compact
19 hot water distribution systems. In our comments
20 during the pre-rulemaking over the summer, we
21 submitted comments about also adding a heat pump
22 water heater option to the list of prescriptive
23 options, we still strongly support those comments
24 and we'll reiterate them in writing and would be
25 open to further discussion on them, I'm not going

1 to go through them all now, but we strongly think
2 there should be a clear path for heat pump water
3 heaters, as well, in the Standards, both
4 prescriptive and performance options.

5 MR. SHIRAKH: I mean, that is definitely
6 available through the performance right now, it's
7 not a prescriptive option, but we can think about
8 that.

9 MS. WALTNER: Right. So under the
10 performance option now, it's difficult to move to
11 a heat pump water heater if you have gas water
12 heater as a baseline, and we have some concerns
13 with that that we've submitted previously.

14 MR. SHIRAKH: Yeah. Thank you. Any
15 other questions on water heating in the room?
16 Anything online?

17 MR. STRAIT: I believe so. I'm looking
18 at three hands, I'm just going to take them in
19 alphabetical order starting with Frank Stanonik.
20 Frank, is this comment related to water heating?

21 MR. STANONIK: Yes.

22 MR. STRAIT: Please proceed.

23 MR. STANONIK: Okay. First of all, I
24 think there still are some, I think somebody
25 mentioned, I think there are still some questions

1 as to the cost-effectiveness of making the
2 instantaneous as the baseline. But I've got two
3 questions and I realize this is actually I guess
4 the current requirement where it talks about
5 installing a single water heater, whether it's a
6 tankless or a storage, and I just wonder, it's
7 more of a question, but I assume in California
8 that you do have some new homes that are
9 relatively large and let's say 3,500, 4,000
10 square feet or so, and larger, and I wonder what
11 happens because I don't believe that in those
12 homes it would be a good installation to just
13 stick in one water heater. So that's just kind
14 of a general question as to how that gets
15 addressed. And then the other question is, it's
16 not clear to me why does the quality insulation
17 installation - why is it appropriate if I put in
18 a storage water heater, but not an issue if I put
19 in the tankless? Isn't that just making a better
20 envelope?

21 MR. SHIRAKH: Yes, it is an envelope
22 measure, and we're looking at a prescriptive
23 equivalence so we can put storage instead of
24 tankless. We originally thought about having a
25 solar fraction, but solar systems are really

1 expensive, you know, they're several thousand
2 dollars, so that was not a cost-effective option.
3 We looked at the compact design and insulating
4 hot water pipes by themselves, they saved energy
5 but not enough to come up to equivalency with the
6 .82. So then we started looking at basically
7 non-water heating measures, there's a series of
8 them, low leakage air handlers, there's several
9 others, and QII turned out to be probably the
10 most attractive, least costly, more practical
11 option that was provided.

12 MR. STANONIK: Okay, one quick follow-up
13 and I realize that time is valuable here, but one
14 quick follow-up. So in that analysis, did you
15 factor in whatever percentage of water heaters
16 that are being installed in California in
17 garages? And does it matter?

18 MR. SHIRAKH: Why would that matter?

19 MR. STANONIK: Well, I guess, let me flip
20 it around, I'm not very up to speed on the QII,
21 so does the QII improve the envelope of the
22 garage?

23 MR. SHIRAKH: Not really, we're not
24 regulating garage spaces and unconditioned space.
25 We do regulate the wall between the garage and

1 the living areas that will be subject to QII.
2 And obviously all the other walls in the attic,
3 the knee walls and everything else. But it
4 wouldn't, for instance, regulate the wall between
5 the garage and the side yard that's open to the
6 elements.

7 MR. STANONIK: Okay.

8 MR. STRAIT: All right, our next speaker
9 is Garrett Doss. Garrett, you're live.

10 MR. DOSS: Thank you. I have a question.
11 You were stating that it's just going to say
12 energy factor, but the verbiage I have in front
13 of me specifically says instantaneous water
14 heater, which kind of flies in the face of what
15 was said in this meeting way back around 9:00
16 when we said that you were going to allow
17 alternate paths, all that mattered was
18 performance, you were never trying to dictate to
19 anybody what they had to do, but it does seem to
20 fly in the face of it. But is there different
21 verbiage than what's here that's now proposed for
22 this?

23 MR. TAM: No, you were correct. I think
24 Mazi just misspoke. So the proposal is for
25 instantaneous water heater, we're not going to

1 specify a specific energy factor.

2 MR. SHIRAKH: I stand corrected.

3 MR. STRAIT: And note that these are
4 options under the performance approach. Anything
5 is allowable, so we are not saying that
6 instantaneous must be installed. We have a
7 prescriptive option by which an instantaneous
8 water storage can be installed, or you can model
9 the building.

10 MR. SHIRAKH: We need to look at this
11 carefully. Give us some time to look into this,
12 it doesn't make sense for us to specify tankless.
13 And I don't know what we have in our package A
14 for water heater, but let us look into it and
15 we'll get back to you guys.

16 MR. DOSS: -- comment afterwards?

17 MR. STRAIT: Oh, sorry, did you have an
18 additional comment, sir?

19 MR. DOSS: Yeah, I was asking, so this
20 looks like they're going to look at it and get
21 back to us. Will we have a chance to comment
22 after you've gotten back to us?

23 MR. SHIRAKH: Yes, you will. I mean,
24 there's still going to be plenty of opportunity,
25 and the 45-day language will be released in

1 January.

2 MR. DOSS: Okay. One other point is you
3 keep -- if you refer to a .82 EF on tankless,
4 it's going to be the new -- the script is going
5 to be UEF with the new test method that in the
6 new test method it was going to try and take --
7 has a different approach to more realistic use.
8 I think you're going to see the numbers move
9 closer with storage and tankless when they have
10 the same demands on them, and you might find out
11 that 22 doesn't -- that even what you're trying
12 to target won't hit it, it will only be the
13 condensing. So you may need to wait or look
14 closely at the UEF before you make a decision.

15 MR. TAM: Yeah, we understand that energy
16 factor test is changing. When we do our
17 analysis, we don't just look at the energy factor
18 based on face value. In California we make
19 adjustments based on what type of technology, the
20 proposed anticipated usage, for example,
21 instantaneous, we take an 8 percent degradation
22 in the calculation. So we have to make some
23 adjustment to our calculation when the new UEF
24 comes into effect. But that shouldn't change our
25 analysis too much. For instance, right now it's

1 an 8 percent degradation; when the UEF comes
2 online, we might have to change that to like 2
3 percent or something.

4 MR. SHIRAKH: So I think I misspoke just
5 a couple minutes ago. The proposal for
6 prescriptive will be a tankless with a .82 energy
7 factor, with off ramps for storage water heater
8 of .62 with QII, with either compact design, or
9 the insulated twigs, the half-inch pipes. So
10 that is the requirement, it does say tankless of
11 .82, and the reason for that is preemption
12 issues. And again, that's a prescriptive
13 requirement. Then you can go to performance and
14 the field is wide open. You can use a variety of
15 other water heaters, anything from condensing
16 with a higher energy factor than tankless, to .67
17 storage water heater, or .62 with other
18 compliance options that are available. I just
19 wanted to make that clarification.

20 MR. STRAIT: Simply to offer, should I
21 bring up that language on the screen so we can
22 look at it directly?

23 MR. SHIRAKH: I don't this so because,
24 you know, we don't have the time, but I think
25 Bill Pennington just told me what the

1 requirements are.

2 MR. DOSS: Can you at least direct --

3 MR. STRAIT: Garrett, I'm sorry I cut you
4 off there. What else did you have to say?

5 MR. DOSS: Can you at least direct me to
6 where to look for where that is, the performance?
7 Because you don't want to put it on the screen,
8 can you tell me where I can find it?

9 MR. SHIRAKH: The performance language is
10 not in the Standards language, it will be done
11 through the ACM Manuals when they will be
12 updated, but you can look at the current
13 prescriptive requirements which will be in
14 Section 150 --

15 MR. TAM: It's in ACM Reference Manual,
16 Appendix E. Appendix E outlines all the water
17 heating calculations.

18 MR. SHIRAKH: And the prescriptive
19 requirements are in Section 150.1.

20 MR. DOSS: Yeah, I have that in front of
21 me.

22 MR. SHIRAKH: And it will also be in
23 Table 150(a), which is the Package A
24 requirements.

25 MR. STRAIT: All right, I'm going to move

1 on. Next commenter is Tom Enslow. Tom, you are
2 live.

3 MR. ENSLOW: Thanks. Tom Enslow,
4 speaking on behalf of the California State Pipe
5 Trades Council. I'm basically just going to
6 reiterate some of the other comments that were
7 made in that, for moving forward with this
8 proposal, I think it does make sense for this
9 prescriptive standard that the storage type water
10 heater options include more than just the compact
11 hot water or the insulated options, but also,
12 because we also want to encourage solar water
13 heating, even though it might be more expensive,
14 is that, you know, if someone puts in a solar
15 water heater, they shouldn't have to use the
16 performance approach. I think they should be
17 able to use the prescriptive approach, too, if
18 that's how they want to go. So it seemed to make
19 sense to add in a few more options as far as the
20 prescriptive approach goes for using storage
21 water, if you also use solar water heating, or
22 maybe a heat pump, or some of the other
23 suggestions that have been made. So that's our
24 comments. Thank you.

25 MR. SHIRAKH: Thank you, and that's fair

1 enough.

2 MR. STRAIT: Thank you. I don't see any
3 additional comments on the water heating topic.
4 We want to move to the High Performance Attics
5 and Walls?

6 MR. SHIRAKH: Yes, let's take comments on
7 High Performance Attics and Walls, either one.
8 Anybody in the room? Amazing. Meg.

9 MS. WALTNER: So both on Attics and
10 Walls.

11 MR. SHIRAKH: Either one, either/or.

12 MS. WALTNER: Meg Waltner with NRDC. For
13 the attics and ducts in conditioned space, in
14 general we're strongly supportive. These are
15 measures that we know are likely needed to meet
16 ZNE by 2020, and so I think it's great to both
17 have them, but in a way that gives builders
18 flexibility in the short term.

19 We have some concerns with allowing ducts
20 in other unconditioned spaces; obviously that's
21 better than ducts in the attic, but concerned
22 that that's not quite equivalent to either ducts
23 in conditioned space or the attic measures, and
24 so it was a bit of a loophole out.

25 We do strongly support allowing ductless

1 systems to qualify under the tradeoffs there.
2 For walls, we're strongly supportive of updating
3 the requirements for walls, however, .05 U-factor
4 is not the highest cost-effective level that was
5 identified in the CASE study, the CASE study
6 recommended a .046, and actually found that .044
7 was cost-effective, so we're concerned that
8 you're not proposing the highest levels that were
9 found cost-effective by the CASE Study, and we
10 support the CASE recommendations.

11 MR. SHIRAKH: Okay, thank you, Meg.
12 Mike.

13 MR. HODGSON: Mike Hodgson, ConSol.
14 Bruce, in the slides that you showed for high
15 performance attics, you basically showed vented
16 attics and then you had pictures of a couple
17 unvented attics. Is there also an off road for
18 unvented attics? You didn't specify any of that.

19 Mr. WILCOX: Unvented attics are not
20 proposed as a prescriptive alternative here, so
21 they are not part of this proposal.

22 MR. HODGSON: So they're not setting the
23 prescriptive standard, however, you're allowed to
24 use them as a performance approach?

25 MR. SHIRAKH: Yes.

1 MR. WILCOX: Yeah. As you know, Mike,
2 the performance approach for unvented attics is
3 still not quite established, but the intention is
4 going forward that that will be the case.

5 MR. HODGSON: I just wanted to be clear
6 since you were showing pictures of unvented
7 attics, also. Thank you.

8 MR. WILCOX: The picture there was of the
9 roof deck insulation measures which could be used
10 in either vented or unvented attics. That was
11 why I used them.

12 MR. HODGSON: Okay. I was just looking
13 at the box netting and the spray foam, I didn't
14 see roof deck on that.

15 MR. WILCOX: That those are both below
16 deck insulation systems, they can be used for
17 exactly the prescriptive system that's being
18 proposed here.

19 MR. HODGSON: Okay, so you're saying --

20 MR. SHIRAKH: But the difference would be
21 the insulation amounts, right?

22 MR. HODGSON: Well, it depends on whether
23 the attic is sealed or not.

24 MR. SHIRAKH: If it's sealed, then you're
25 using probably R-30, if it's not sealed, you'll

1 probably be R-13 for tiled roofs, so the
2 technique is fairly similar.

3 MR. HODGSON: Okay.

4 MR. WILCOX: The technique is identical,
5 so I didn't happen to have any pictures of the
6 other systems, so...

7 MR. HODGSON: Actually, you did, and you
8 used them.

9 MR. SHIRAKH: Thank you, Mike. George.

10 MR. NESBITT: George Nesbitt, HERS Rater.
11 A clarification on language you used, Bruce. The
12 high performance ducts in the attic, or ducts in
13 conditioned space apply in the air-conditioning
14 zones whether or not you install an air-
15 conditioner, it's whether you have ducts or not,
16 right?

17 MR. WILCOX: That's correct. It's
18 whether you're in that zone and whether you have
19 ducts in the attic, yes.

20 MR. NESBITT: Okay. Have you considered
21 banning the refrigerant lines from going through
22 the attic and ducts for conditioned space?

23 MR. WILCOX: No.

24 MR. NESBITT: No. Why do we put hot and
25 cold things in a hot attic, then? I mean, they

1 should probably be at least buried in insulation,
2 especially the suction line. Well, actually
3 probably both, but...

4 MR. WILCOX: George, if you want to make
5 technical proposals that can show that it's cost-
6 effective, do that, I think the Commission would
7 be happy to look at it.

8 MR. NESBITT: Eh, cost-effectiveness,
9 it's okay. So I would like to see QII before we
10 lower U-Values. We have horrendous problems with
11 installing installation wrong. We can throw more
12 insulation of the wall, even though we lower U-
13 Values, it doesn't mean people are necessarily
14 going to go to continuous insulation. What
15 worries me is thicker and thicker walls without
16 continuous insulation, and/or without a range
17 screen from a durability standpoint. And it's
18 not just - I mean, getting attic insulation
19 installed right, especially blown in, it just
20 doesn't happen. So I think we need to think
21 about quality more before we think about quantity
22 because we already bumped up quantity last round.
23 Then, it looks like, so we only have one
24 package which is good, with options to keep it
25 simple. There is -- I'm a little worried,

1 especially in the package table and I think in
2 the definitions of minimum insulation levels and
3 whatnot, there's a little more clarity that says
4 it's R-something if you do a wood framed wall, or
5 it's an equivalent U-Value, but in the tables I
6 don't know if that will be as clear to people.
7 But I think we also need to -- we've defined a
8 minimum for 2 X 4 walls and a minimum for 2 X 6,
9 and I think what we need to do is define the
10 minimum and just say if a wall is thicker, the
11 wall cavity must be filled at least with air
12 permeable insulation because somebody could build
13 a 2 X 8 wall, and what do they do? Have to put a
14 minimum R-19, which we know doesn't work? So I
15 think there's some work there that we can do.

16 And similarly, when we get to an existing
17 alteration, it specifically is requiring that if
18 you extend your walls with 2 X 4s, you actually
19 have to go to R-15, yet if you have 2 X 6 walls
20 and you're continuing to use 2 X 6, you only have
21 to do R-19, when we could say R-21. But just a
22 couple little thoughts there.

23 I think that's my main things for the
24 moment, thanks.

25 MR. SHIRAKH: Thank you. John.

1 MR. ARENT: Hi. John Arent, NORESKO,
2 again. This question is just a quick clarifying
3 question for staff and Bruce. For the roof and
4 the high performance attic, were there changes
5 considered for the other four Climate Zones that
6 were part of this larger package?

7 MR. SHIRAKH: If it's not cost-effective,
8 then --

9 MR. ARENT: Not even individually? Okay.
10 All right, thanks.

11 MR. SHIRAKH: Money talks. Other
12 questions? Bob.

13 MR. RAYMER: Bob Raymer, CBIA. In terms
14 of the off ramp with Solar, at what point in time
15 are we going to see that? I know you've got some
16 ACM stuff we'll be discussing later on, but it's
17 not part of that. Where do you envision this
18 falling in the Regulations?

19 MR. SHIRAKH: It is part of the ACM.
20 Bruce, do you have any thoughts on that? I can
21 tell you what our intent is, it's to provide
22 credits that would be available against high
23 performance walls, attics, and would also enable
24 builders to exceed their 20 percent fenestration
25 total and also the 5 percent west facing glass.

1 So that is the intent.

2 MR. RAYMER: I guess my concern is we
3 just want to make sure you don't forget to do
4 this.

5 MR. SHIRAKH: When do you want to see
6 that?

7 MR. RAYMER: Not that we would ever think
8 that you would --

9 MR. SHIRAKH: We would have to do it
10 through CBECC and I guess, Bruce, do you --

11 MR. WILCOX: I won't forget.

12 MR. RAYMER: Thank you, Mazi.

13 MR. SHIRAKH: No, you have my word,
14 whatever that is worth.

15 MR. STRAIT: And that word is officially
16 on the record, so...

17 MR. SHIRAKH: Any other questions? Sir.

18 MR. LAUREL: Andy Laurel with QC
19 Manufacturing, makers of whole house fans. I did
20 want to direct a question to Mazi for the High
21 Performance Attic, if you have considered as a
22 staff team a power vented attic with an exhaust
23 attic fan in conjunction with a whole house fan
24 as an option for High Performance Attic? You
25 will have diminishing returns with tightening up

1 that attic envelope if you are going to blast
2 that air out at a high velocity rate, so please
3 consider that. If that's something that you need
4 some information on, I'd be happy to meet with
5 you about that.

6 MR. SHIRAKH: And you also had some
7 comments about the vented area. Do you want to
8 go on record?

9 MR. LAUREL: Yes. Section 150.1(c),
10 Section 12(B), is requesting one square foot of
11 attic ventilation for each 375 CFM of whole house
12 fan, and we feel that that figure is somewhat
13 excessive. I've made several requests to get
14 that figure substantiated from the industry
15 experts and, as makers of nine of the 10 most
16 efficient fans in the CEC rating database, we
17 were never consulted as to what amount of attic
18 ventilation we require, and a figure of one in
19 750 is more in line with what we feel is required
20 for a lot of our products. So if we could meet
21 on that topic that would be great.

22 MR. SHIRAKH: Okay, thank you.

23 MS. KARPINA: Hi, good afternoon, I'm
24 Elena Karpina with Owens Corning, a
25 Manufacturer's Rep. And I just want to express

1 our support to all of the CEC and staff and for
2 all of you here on behalf of Owens Corning and
3 the Insulation industry, that as we look to
4 performance or prescriptive methods for unvented
5 attics, specifically as pertains to High
6 Performance Attics, we appreciate any and all
7 support for that. So thank you.

8 MR. SHIRAKH: Thank you for all your work
9 in this area. Any other questions in the room
10 related to attics and walls? Anybody online?

11 MR. STRAIT: Yes, Frank Stanonik has a
12 comment. Frank, you're live.

13 MR. STANONIK: Okay. I'm looking at
14 150.1, I think it's (c)9, which is Space
15 Conditioning Distribution Systems, and this was
16 nothing that Bruce specifically mentioned, but in
17 9(B), there's a little statement there that says
18 "Air Handler containing a combustion component
19 shall be direct vent and shall not use air from
20 conditioned space as combustion air." My only
21 comment here is that, as an example, a gas-fired
22 furnace does not need to be direct vent in order
23 for it to be installed such that it does not take
24 combustion air from the conditioned space. So I
25 think that requirement is a little overly

1 restrictive to say it would have to be direct
2 vent. There are ways to install it where you're
3 going to get air from unconditioned space and the
4 model itself is not a direct vent furnace.

5 MR. WILCOX: Yeah, I think that needs
6 some looking at, that language there. There's a
7 couple of other places where I think the language
8 is a little unclear, as well. But that's one of
9 them, for sure.

10 MR. SHIRAKH: Thank you for that comment.
11 Any other online?

12 MR. STRAIT: I'm not seeing any other
13 hands that are raised online. Just because this
14 is covering a couple of topics at once, I want to
15 unmute the call-in users just to make sure no one
16 there has anything.

17 MR. SHIRAKH: I think we're actually on
18 time because we've already covered the last
19 topic, which was Voluntary Reach Standards this
20 morning. So miraculously we're still on time.

21 MR. STRAIT: If you're one of these, I
22 think there's five call-in users, and you aren't
23 able to raise your hand, please speak now to let
24 me know that you have a comment. Okay, I'm going
25 to re-mute the lines.

1 MR. SHIRAKH: Okay, so we're going to
2 move to the next topic, which is Alternative
3 Calculation Method Adopted Manuals and Dee Anne
4 is going to make the presentation.

5 MS. ROSS: So I am Dee Anne Ross and this
6 topic is Residential Alternative Calculation
7 Method Approval Manual. This is the only
8 software document that is part of the rulemaking.
9 It defines the process that software vendors
10 follow for getting new software approved and
11 updates through the approval process, although we
12 are looking specifically at residential and
13 that's what my knowledge is on, the same overall
14 changes are proposed for Nonresidential, as well.
15 We're not proposing any major changes to the
16 process, we merely looked at the 2013 approach
17 which was a new process to see what could be
18 better explained. And when the 45-day language
19 comes out, we may follow the legal office's
20 recommendation and merely delete all the existing
21 language and propose the new language as all new
22 so that it's more readable.

23 So to be clear, this is not the document
24 that defines how specific measures are modeled.
25 There are three terms that are interchangeable,

1 "Compliance Manager" which is the simulation and
2 compliance rule implementation software named
3 CBECC, which stands for California Building
4 Energy Code Compliance. So that means
5 "Compliance Managers," "CBECC-Res," or "CBECC-
6 Com," and "Public Domain" are all basically the
7 same terms.

8 We're establishing the appropriate level
9 of oversight for the Energy Commission to
10 maintain the process and the timelines. It
11 documents the process for the various approvals
12 such as, "Is a Business Meeting required?" "Can
13 we follow a streamlined approval process?" "Can
14 we use delegated authority," which is basically a
15 faster process where the Executive Director
16 approves the software rather than going to a
17 Business Meeting. "What is the process for the
18 software that expires?" "Is that different than
19 decertification?" And then the public review and
20 notification process. Now you can switch.

21 So we moved the test data set details
22 into this document, it's now Appendix A. While
23 it's new to this document, they're merely moved
24 from the Reference Manual and the Excel
25 Spreadsheet that software vendors received, and

1 now they're moved into this document.

2 We also specified that the software must
3 be capable of creating the HERS transfer file so
4 we can verify that as part of our approval
5 process. And lastly, because unexpected results
6 can happen, we clarified that rather than
7 requiring only the applicable tests when
8 certification tests are required, they're all
9 required.

10 The types of changes that occur, our
11 initial approval, more commonly we will see
12 updates to the Compliance Manager, these can be
13 major or minor changes, and we didn't pin down
14 what that means with any specificity because it's
15 really relative and it's kind of a joint decision
16 between staff and management, including the
17 Commissioners, whether it's major or minor, it
18 just effects time, really. And changes are also
19 made to accommodate new compliance options such
20 as PV tradeoffs, or to add modeling capabilities
21 such as evaporative coolers or mini-splits.

22 When the Compliance Manager is updated,
23 the process and timeline the software vendors
24 follow is included in this manual, so when there
25 is a new version they will have a date by which

1 they must incorporate the new Compliance Manager,
2 and a minor change will have 45 days to make that
3 happen, and a major change will have 90 days.
4 And the date the previous version expires is also
5 specified in this Approval Manual. We also added
6 the ability to get bug fixes through in a day or
7 two, not weeks. And we know that changes get
8 made by the software vendors directly, such as
9 EnergyPro, so they might change the language of
10 an error message or what the screen looks like,
11 so we just want it in writing that they will
12 notify us when those changes happen so we can
13 check for any unexpected consequences, and the
14 notification can be as simple as just an email to
15 the Energy Commission to notify us.

16 And then this is my last slide. So we
17 distinguished between software that has expired
18 and needs to be updated, which is rescinded, and
19 how that is different from decertification.
20 Decertification is a very long formal process
21 that's rarely used, but it still is needed,
22 whereas rescinded approval, maybe by the time we
23 get to 2016 Standards there won't be as many
24 updates, but we need this category for when
25 software expires, so I just use the term

1 "Rescinded Approval," and that's where their old
2 software just becomes outdated and they have to
3 update by a certain date. So it was very
4 exciting, I'm sure, for you. Oh, my gosh, we
5 have a question. I'm done, so step up and ask.

6 MR. BASHAND: This is Mike Bashand from
7 CalcERTS. It's kind of a question/comment. You
8 said that when a vendor -- I'm not a software
9 vendor, but this is a process that mimics many
10 other processes that happen at the Commission
11 where changes get done, interpretations are made,
12 clarifications are made, and your slide said that
13 the vendor, if he makes his own change, he sends
14 an email to you, "Oh, I've changed the error
15 message." That language needs to be more
16 specific. It needs to say who it goes to, who
17 gets notified after the Commission gets notified.
18 That process is needed in several areas, this is
19 one of them, another one is clarifications,
20 interpretations of language, and so forth. So I
21 wanted to throw that out here now for the 2016
22 Standards, that that gets included. And sending
23 an email is not specific enough information about
24 how to post your changes, and it's also not
25 specific enough about what happens after that

1 email has been received by the Commission as to
2 what happens.

3 MS. ROSS: Okay.

4 MR. BASHAND: Thank you.

5 MS. ROSS: We do have a little more
6 detail about that process that I didn't really
7 get into, but I will make sure it's more specific
8 in the Code.

9 MR. STRAIT: Any other comments in the
10 room?

11 MR. SHIRAKH: Jon.

12 MR. MCHUGH: Could you talk briefly about
13 what happens when an efficiency of an appliance
14 changes kind of midstream? Is that part of the
15 whole rescinded process, or is that a separate?

16 MS. ROSS: That would be one of the
17 updates that gets handled through a Compliance
18 Manager Update, yes.

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

21 MR. STRAIT: We do have one raised hand
22 online. Timothy Moore, you're live.

23 MR. MOORE: Yes, hello, it's Timothy
24 Moore with Integrated Environmental Solutions. I
25 have actually two questions, both related to

1 these slides. The first one, and this is in the
2 context of CBECC-Com, the commercial, non-
3 residential compliance. And the experience with,
4 for example, the Version 3 of CBECC-Com, which we
5 are currently catching up with, is that catching
6 up with this major change within 90 days would
7 have been a stretch, at best. And it would have
8 been pretty amazing if that was even possible.
9 And, I mean, we're maybe close to that, but
10 overall time from, you know, the entire process,
11 we'll probably actually make it within the three
12 months, but it's been crazy gymnastics and that's
13 not how this process should go. So I'm wondering
14 where the 90 days came from, it seems like a
15 fairly arbitrary number.

16 And then there's a related question which
17 is that presently in the ACM Approval Manual
18 there is very specific language that says it's X
19 number of days unless otherwise stated in the
20 Compliance Manager Release Notice. And thus far
21 there have been no Compliance Manager Release
22 Notices. And so I'm wondering if there's a
23 specific plan, firstly, to have those notices on
24 a regular basis, and secondly to make clear for
25 each particular update, major, minor, or what

1 have you, what the appropriate number of days is
2 to incorporate those updates because a reasonable
3 number of days might be anywhere from 45 to, you
4 know, six months, it's going to depend on how
5 much new content there really is to catch up
6 with. So I guess that's two questions already,
7 and I have a third one, but I'll stick with the
8 first two for the moment.

9 MS. ROSS: I actually only heard one, but
10 so let me just say that I can pass that on to the
11 CBECC-Com, the Nonresidential, and I'll also make
12 sure it happens in the Residential ACM Approval
13 Manual, too, that it says "unless otherwise
14 stated," because you're right, it was just an
15 arbitrary number, but I thought it was enough
16 time. But the Compliance Manager Notices are
17 basically the resolutions or the approval
18 document that gets posted --

19 MR. MOORE: All right, but actually
20 according to conversations we've had thus far
21 with the Energy Commission, the resolution is not
22 a notice, it is a public document, but it's not a
23 notice. And so, you know, we're just trying to
24 understand what is actually -- that a notice is
25 normally something you send out or publish in

1 some way, as opposed to, you know, it's a
2 notification that usually goes out to an
3 interested party as opposed to somewhere that is
4 particular to that, as opposed to the resolution
5 which is just a formal document --

6 MS. ROSS: Okay.

7 MR. MOORE: -- and the other thing about
8 that is that the resolution that comes out of the
9 Business Meeting, the CEC Business Meeting, that
10 happens at the time that the approval is
11 executed, but that is not necessarily coincident
12 with the release, again, in the case of CBECC-Com
13 Version 3, the approval was on August 27th, and
14 that was the date of the Resolution, but it was
15 not until September 10th the thing was released,
16 and there was a notice for the public interface,
17 CBECC-Com user interface, but that is actually
18 different than the Compliance Manager, which has
19 a third party API and things like that on it. So
20 there are a number of details there that are
21 really not very well handled by the ACM Manual
22 language as it is today and that --

23 MS. ROSS: Could we ask you to put your
24 comments in writing because they're very
25 thoughtful comments and that way we can make sure

1 we cover it.

2 MR. MOORE: Yeah, I'd be happy to do
3 that, yeah.

4 MR. STRAIT: Did you have one remaining
5 question you'd mentioned?

6 MR. MOORE: I did, but I can't actually
7 remember it anymore, so I'll have to leave it for
8 now.

9 MR. STRAIT: No problem.

10 MS. ROSS: Pippin has a comment.

11 MR. BREHLER: Hi folks, this is Pippin
12 Brehler from the Chief Counsel's Office, and Tim,
13 it's nice to speak to you again. One, I want to
14 say that we did make a note of all those concerns
15 in our recent conversations and we're working on
16 edits to address those; 2) just for the record, I
17 think we'll have to agree to disagree on whether
18 the approvals by the Commission at the Business
19 Meeting constituted Release Notices, but I can
20 also say that we're going to endeavor to be more
21 clear about what those releases are and provide
22 the necessary information for the software
23 developers to get working on updates. So we
24 heard your message and the issues that you face
25 loud and clear and are addressing those.

1 MR. MOORE: I appreciate that very much
2 and I think the note that, I guess in agreeing to
3 disagree, I'd like you to think about that if on
4 August 27th there's an approval and that there's
5 a resolution on August 27th, but there's no
6 actual release until 10 days later, then how is
7 it possible that the document produced on August
8 27th can be a Release Notice?

9 MR. BREHLER: Tim, that's an excellent
10 point and it's one of the issues that we're going
11 to be more clear about and will resolve with
12 future actions on that.

13 MR. MOORE: All righty.

14 MR. SHIRAKH: Thank you for those
15 comments. Any other questions online or in the
16 room on the Software ACMS?

17 MR. STRAIT: I'm not seeing any hands
18 raised online.

19 MR. SHIRAKH: Okay, so we're going to
20 move to the next section, which is Reference
21 Joint Appendix 4, 5 and 10, and Payam and Simon
22 Lee will be presenting those changes.

23 MR. BOZORGCHAMI: So I'll start with
24 Reference Joint Appendix JA4. This is the
25 thermal values, U-Factors and C-Factors for

1 Opaque Envelope Assembly for both Residential and
2 Nonresidential Buildings when doing compliance
3 using the Prescriptive Method.

4 We have been updating some of the tables,
5 capturing new assemblies -- as we're getting more
6 insulation products coming into the market, we're
7 updating the tables to be used for prescriptive
8 packages.

9 I just want to let you know that we're
10 updating it as a constant update, we're not doing
11 it every three, every cycle. We do this through
12 an Executive Order. The reason we're doing this
13 is because, as we're talking right now, there's a
14 new product out in the market, an R-25 for a 2 X
15 6 wall cavity, so this is a constant going part
16 of the Reference Appendices.

17 MR. LEE: This is Simon Lee. I will be
18 talking about JA5, Occupancy Control Smart
19 Thermostats. We are considering a number of
20 revisions, most of them are clarifications and
21 with a few additions.

22 JA5.1 clarifies on the physical
23 communication interface and the logical
24 communication interface. The next one,
25 JA5.2.4, clarifies that the smart thermostat

1 responds regardless of whether the communications
2 are enabled or not. And then we have an addition
3 of two things: default restart settings and
4 automatic rejoin. Next slide.

5 JA5.3.1: We also want to clarify that
6 WiFi and Zigbee as the physical communication
7 interfaces. And OpenADR and SEP are the
8 standards for the logical communication
9 interface.

10 And about the logical communication, it
11 is required to be two way or bidirectional.

12 And on 5.3.2, we would like to add "An
13 expansion/communication port is a type of
14 physical communication interface."

15 And lastly, we are adding a definition
16 for actually "price event", not "price signal."
17 And this is all for JA5.

18 And moving on to JA10, this is a new
19 Appendix, it is added to be working side by side
20 with the revised JA requirements. This is a Test
21 Method for measuring flicker of lighting systems.
22 Next slide, please.

23 There are a number of Equipment
24 combinations that we are considering that need to
25 be tested. It's different combinations of light

1 sources with dimmers or dimming systems. It
2 could be one of the default types listed on these
3 slides. It could be a phase cut dimmer (PCD)
4 controlling, an incandescent line voltage lamp,
5 or a phase cut dimmer (PCD) controlling a
6 transformer for incandescent low voltage lamps.
7 Or it could be a dimmer controlling a non-
8 incandescent light source. And lastly, it's
9 light source controlled by other dimming control
10 technologies.

11 And then we also spell out the JA10.3
12 Test Equipment Requirements. The Test enclosure
13 should not have any stray light and the Photo
14 detector shall match CIE spectral curve. And if
15 a signal amplifier is needed, it shall have a
16 bandwidth of 20 kHz. And the device for data
17 collection shall have sample rate
18 greater than or equal to 100 kHz for 2 seconds.

19 The Flicker Test Conditions. The product
20 wiring shall be set up in accordance with
21 Federal guideline 10 CFR 430. And the
22 fluorescent lamps shall be seasoned. Other light
23 source types do not have this requirement.

24 And then setting up the input power at
25 the primary voltage of the product. And at all

1 times in the test, shall maintain the
2 temperature at 25 degrees C plus and minus 5
3 degrees C. And the dimming levels shall be
4 measured at 100%, 80%, 50% and 20%.

5 And here on JA10.5 we spell out the test
6 procedures. The lamp shall be stabilized
7 according to the light source types. And it
8 shall also be stabilized before the dimming
9 Measurements proceed.

10 And for the recording interval, it shall
11 be no greater than 50 micro seconds and the
12 equipment shall be able to measure for a period
13 of 2 seconds. And the last one is obvious, the
14 measurements should be taken at 100%, 80%, 50%
15 and 20%.

16 And for the calculations, we have a
17 percent flicker formula. It has been widely used
18 by the lighting industry, so this should be a
19 recognized formula. Next slide.

20 And we want to, for the test report and
21 the data formats, the test report shall be
22 submitted to the Energy Commission and submitted
23 in a format as spelled under Table JA10.7. And
24 that is all of my presentation.

25 MR. SHIRAKH: Okay, thank you. Any

1 questions on the Joint Appendices? Anything
2 online?

3 MR. STRAIT: No.

4 MR. SHIRAKH: Okay, so we're going to
5 move to the --

6 MR. STRAIT: There's a question in the
7 room.

8 MR. SHIRAKH: Okay, sorry.

9 MR. WOESTMAN: I am John Woestman, XPSA.
10 Is it appropriate to comment on something that's
11 not suggested to be changed in the Joint
12 Appendices?

13 MR. SHIRAKH: Sure.

14 MR. WOESTMAN: One thing I noticed and
15 just happened to notice today, there's a couple
16 of locations in the Joint Appendices in JA4 and
17 also in the Residential Appendices that we'll
18 talk about next, and that is there's a specific
19 reference to using ICCES Evaluation Services
20 Reports. They do good work, they absolutely do
21 good work, but they're not the only people that
22 produce product evaluations, and I wonder if it
23 would be better to follow the lead of the State
24 Fire Marshal's Office and that is using an
25 approved agency for the Product Evaluation

1 Reports so that it would be kind of like
2 specifying a certain product in the Code which
3 probably is not a good idea, probably a good idea
4 to specify like an approved Product Evaluation
5 Agency. So I think it would be a good idea to
6 consider that.

7 MR. BOZORGCHAMI: John, we could do that
8 and let's have an offsite discussion about them,
9 which ones you want to talk about.

10 MR. WOESTMAN: Sure, you bet. Okay,
11 thank you.

12 MR. SHIRAKH: Thank you. Bob, then
13 Heidi.

14 MR. RAYMER: Bob Raymer with CBIA.
15 Following up on that comment, approved agency or
16 whatever, including but not limited to, and then
17 there's a number of groups such as ICC Evaluation
18 Service, or whatever. But I think that's a good
19 change.

20 MR. SHIRAKH: Thank you. Heidi.

21 MS. HALLENSTEIN: Heidi Hallenstein with
22 Energy Solutions on behalf of the California
23 Utilities. Notice that JA5 does not have marked
24 up Code language in this version of the Standards
25 that are posted for this workshop. The Utilities

1 hosted a public workshop on October 7th where we
2 discussed the proposed changes that we're making
3 for JA5. I wanted to point out that the
4 presentations and notes from that meeting are
5 available on Title24Stakeholders.com, and we've
6 also submitted the Utility Team's recommended
7 Code language and that is available both on
8 Title24Stakeholders.com and on the Energy
9 Commission's website under the June 12th Pre-
10 Rulemaking meeting under the Final Case Reports.
11 So if you want to review the Utility Team's
12 language early, you can look there and we'll
13 submit written comments of the language, as well.

14 MR. SHIRAKH: Thank you, Heidi, for that
15 additional information. Meg, did you have a
16 comment or -- I don't know that gentleman, but it
17 might be Dave Weir, I don't know.

18 MR. WARE: David Ware with Knauf
19 Insulation. I wanted to make a comment related
20 to the language in the Joint Appendices for ICC
21 Evaluation Reports. The difference between an
22 Evaluation Report and the suggestion that was
23 made is that there are specific exceptions
24 criteria that go along with those reports that
25 are vetted by the outside community and

1 stakeholders. So notwithstanding that the
2 suggestion may have had some merits, just opening
3 it up and adding in other approved agencies
4 doesn't necessarily ensure that there's some
5 quality control around that criteria.

6 MR. BOZORGCHAMI: Dave, you're walking
7 away too fast. But, yeah, we understand that,
8 but we have to evaluate everything, though. So
9 we'll evaluate and get back with John and
10 yourself.

11 MR. SHIRAKH: Okay, John, do you have
12 another comment?

13 MR. WOESTMAN: Yeah, John Woestman, just
14 a real quick comment and I missed it on my
15 earlier comments. BHFT already requires
16 significant amount of product verification before
17 it can even be sold here in California. I don't
18 know if there's any way to connect the Code and
19 what BHFT -- and I can't even remember all the
20 names with that means, but another California
21 agency, as far as approval of insulation products
22 for --

23 MR. BOZORGCHAMI: Excuse me, who is BHFT?
24 Is it Bureau of Home Furnishing you're talking
25 about?

1 MR. WOESTMAN: Yeah.

2 MR. BOZORGCHAMI: Well, under our
3 Regulations under Section 110.8, the
4 certification of insulation products has to go
5 through the Bureau of Home Furnishings for
6 California, and it has certain -- depending on
7 the type of product and the way of doing its
8 rating, it has certain evaluation reports per
9 ASTM and IECC criteria built in.

10 MR. WOESTMAN: Yeah, and perhaps instead
11 of any kind of product approval evaluation, it
12 might be using or connecting with the BRFTEE
13 Bureau of Home Furnishings approvals.

14 MR. BOZORGCHAMI: Okay, BHFT.

15 MR. SHIRAKH: Thank you, John. Any other
16 questions on Joint Appendices?

17 MR. STRAIT: There's two online, Mazi.

18 MR. SHIRAKH: All right.

19 MR. ALATORRE: Michael Jouaneh, are you
20 online?

21 MR. JOUANEH: Hello, yes. Thank you,
22 Michael Jouaneh, Lutron Electronics. On JA5 for
23 Occupant Smart Control Thermostats, I think it
24 would be nice to get clarification or to allow
25 for these occupant smart controlled thermostats

1 to be a part of a system because there are multi-
2 part thermostat systems where the measurement and
3 the controls and the processor are different
4 parts. And as long as they can still be demand
5 responsive and meet the other requirements, they
6 should be allowed.

7 And also, specifically requiring only
8 WiFi and Zigbee is a little strange for a
9 standard to dictate, you know, a technology.
10 You're leaving out Ethernet which is the most
11 common one, for example. So I would like to
12 allow the other technologies to be allowed, not
13 just dictate which two.

14 MR. SHIRAKH: We're not dictating
15 anything. We're saying that thermostat should
16 have either Zigbee or WiFi, but in addition to
17 that, they could have anything else that they
18 want. But the minimum requirement is to have
19 Zigbee or WiFi. We're not restricting any other
20 protocols.

21 MR. JOUANEH: Yeah, well, that's one of
22 the things that I think is problematic and,
23 lastly, on JA10, I have to go through the
24 details, but that does sound like there's going
25 to be a lot of combinations to test, and that may

1 be problematic for control and lamp
2 manufacturers. Thank you.

3 MR. SHIRAKH: Okay, thank you.

4 MR. ALATORRE: Okay, Roy Harvey has a
5 question, but I have to unmute all the call-in
6 users.

7 MR. HARVEY: Just a couple of questions
8 for clarification. On JA10, I didn't see any
9 limits, so it looks like we're collecting a lot
10 of data and I'm not sure what the purpose is. I
11 wonder if you could explain that, or how the data
12 will be used.

13 MR. LEE: Actually, a lot of these
14 testing procedures are requirements, are the same
15 as the Energy Star lamp test requirements, so we
16 are expecting that manufacturers who have been
17 testing their products under the Energy Star
18 lamps probably can have a lot of the same
19 requirements and actually a lot of these tests we
20 found to be used on both Energy Star and also
21 meeting the Title 24 requirements.

22 MR. HARVEY: Yes, I see that the
23 parameters are the same, but I'm just curious how
24 you expect to be using the data. Will this be in
25 a future version of the Standard, or what?

1 MR. LEE: One of the purposes is to have
2 these test data to be used for future standards
3 development. That's one of the purposes. And
4 the other purpose is for product verification,
5 just to make sure that, I mean, when
6 manufacturers deem that the products miss their
7 requirements, then we have some kind of reported
8 data that we can go back and look at it.

9 MR. HARVEY: I see. Thanks so much for
10 explaining. And then one last thing, I wonder if
11 you can explain the relationship between JA8 and
12 JA10 since the data being measured or specified
13 is different?

14 MR. SHIRAKH: Well, JA8 is the
15 performance requirement for high efficacy LEDs
16 and some other sources, we talked about that
17 earlier in the day. And one of the requirements
18 in JA8 is a flicker test, and then the testing
19 requirement for flicker tests are spelled out in
20 JA10.

21 MR. HARVEY: All right. Thanks very
22 much. I appreciate that.

23 MR. SHIRAKH: Jon McHugh, did you have a
24 question? Any other questions on Joint
25 Appendices in the room or online? If not, we'll

1 go to the next topic which is Residential
2 Appendices, and that is going to be presented by
3 Mark Alatorre and Payam.

4 MR. ALATORRE: Okay, we have some changes
5 to RA1 and what we did is we changed the title of
6 this section from Special Case to Alternative
7 Residential Field Verification and Diagnostic
8 Test Protocol.

9 Also, we added a reference to Section 10-
10 109 to formalize the application process for an
11 applicant wishing to get an alternative protocol
12 approved under the 2013 Regulations. RA1 had
13 created an avenue for an applicant to submit an
14 alternative protocol or a special case protocol,
15 and for us to review and approved it and create
16 an addendum to RA1; however, in the 2013
17 Standards, it gave little direction as to how
18 that process needed to be done, so to formalize
19 it we reference 10-109.

20 Also, there was changes to RA2.4.4 and it
21 didn't really change the requirement, but it
22 gives specific direction for when somebody is
23 using the weigh-in method to notify the homeowner
24 that their refrigerant charge still needed to be
25 verified by a HERS Rater. This is an attempt to

1 hopefully gain access back into the home at a
2 later date when the outside temperatures are more
3 favorable for testing.

4 Also in RA3.2 we had it reference back to
5 RA1 so that in the event there is an approved
6 alternative protocol, both the installer and the
7 Rater must use that same protocol. There were
8 some more changes to RA3.2. We added a
9 verification of the liquid line filter driers.
10 Now we're proposing it be a mandatory measure
11 when the manufacturer specifies. That change was
12 made to both the Standard Verification Charge
13 Protocol and the Weigh-In.

14 Also, we moved the airflow protocol
15 associated to refrigerant charge, we moved it
16 from RA3.2.2.7 to RA3.4, and that's a minimum of
17 300 CFM/Ton and now it explicitly applies to both
18 the Standard and Weigh-In Methods. Payam.

19 MR. BOZORGCHAMI: Under 3A3.5, the
20 Quality Insulation Installation Procedure,
21 there's a special situation for Windows and Door
22 Headers. We're clarifying the language there,
23 existing language talks about R2 as a continuous
24 insulation, we're modifying that and we're adding
25 language regarding single member window and door

1 headers where it has space behind the member to
2 have insulation applied. We just want to make
3 sure that's captured appropriately.

4 Also, this RA3.5 is still a work in
5 progress as the roof deck insulation is coming
6 through, I think Owens Corning has a system
7 that's coming out, Johns Manville, and we just
8 want to make sure there's a proper method of
9 doing QII for those.

10 MR. ALATORRE: Okay, we're opening it up
11 for comments or questions.

12 MR. SHIRAKH: Mike.

13 MR. BASHAND: Mike Bashand, CalcERTS.
14 You said, I think on your second or third slide,
15 that both the Installer and the Rater must use
16 the same improved protocol, so can you sort of
17 elaborate that, if the installer used a
18 particular method of calculating that, then the
19 Rater has to do that, so -- when we go out on QA
20 that Rater then --

21 MR. ALATORRE: Whatever would be approved
22 under this alternative protocol is going to be
23 added to the RA as an addenda, so it's going to
24 be published as part of the RA itself. So if,
25 you know, it's going to be RA3.2.5 or something

1 like that where it's going to be an added
2 protocol, and both the Rater and the installer
3 are going to be using that same method.

4 MR. BASHAND: Okay. They can use it or
5 they do use it on a particular job if the --

6 MR. ALATORRE: When the installer uses
7 that approved method, then the Rater would be
8 expected to also use that method.

9 MR. BASHAND: When possible. Okay,
10 thanks. I anticipate some activity around that
11 paragraph later.

12 MR. ALATORRE: Thanks, Mike.

13 MR. NESBITT: George Nesbitt, HERS Rater.
14 Kind of following up on Mike's question, you
15 mentioned the installer doing a weigh-in and
16 notifying the client that a HERS Rater must come
17 back later and test, the Rater must test using
18 the same procedure, the Rater cannot do a weigh-
19 in.

20 MR. ALATORRE: That's not what the
21 proposal is, the proposal is just under the rules
22 and responsibilities saying that it's actually
23 for the enforcement agency to not final and to
24 notify the homeowner that there's going to be a
25 verification after when there are favorable

1 conditions, and that Rater is going to do the
2 standard test, he's not doing the weigh-in.

3 MR. NESBITT: Right, but this is
4 something that has come up in everything that led
5 up to here and I think if an installer does a
6 weigh-in and I come in later and do a standard
7 test, there's a lot more likelihood they're going
8 to fail because refrigerant charge is not based
9 on how much refrigerant was in that condenser
10 alone, and how long your pipes are and the size
11 of the pipe, it also depends on the indoor coil
12 and it depends on air flow. So I propose we
13 eliminate weigh-in, other than for a temporary
14 placeholder, especially with a heat pump so they
15 can have heat. But honestly, I think the
16 installer needs to charge the system properly
17 other than weigh-in.

18 Then you mentioned air flow, a section on
19 air flow and the minimum requirement of 300
20 CFM/ton. If I'm correct, mandatory HERS
21 verification of prescriptive return duct design
22 or air flow measurement requires 300 CFM/ton, so
23 isn't there --

24 MR. ALATORRE: Are you talking about the
25 350 CFM/ton?

1 MR. NESBITT: 350 CFM/ton for adequate
2 air flow.

3 MR. ALATORRE: Yeah, that is different
4 than the air flow measured during the refrigerant
5 charge protocol.

6 MR. NESBITT: Right, but that's the
7 mandatory measure.

8 MR. ALATORRE: It still has to perform,
9 the duct system still has to achieve 350 and .58
10 watts per CFM; but when conducting the
11 refrigerant charge test, there's a different air
12 flow there.

13 MR. NESBITT: So I can fail adequate air
14 flow which is mandatory, but I can pass
15 refrigerant charge at a lower air flow.

16 MR. ALATORRE: And the Building Inspector
17 will not give you occupancy because you didn't
18 pass the 350.

19 MR. NESBITT: Well, yes, that's assuming
20 enforcement. It seems a little contradictory to
21 have a 300 CFM/ton minimum for refrigerant charge
22 when we have a mandatory 350.

23 MR. ALATORRE: Thank you, George.

24 Mr. SHIRAKH: Any other questions on
25 Reference Appendices? How about online?

1 MR. ALATORRE: Nope.

2 MR. SHIRAKH: Okay, so we're going to
3 move to the last topic of the day, which is
4 Nonresidential Appendices, again presented by
5 Mark and Simon.

6 MR. ALATORRE: Okay, there was some
7 changes to NA7.5, specifically 7.5.4 for Air
8 Economizer and that was under the Construction
9 Inspection, it's an alignment to match the
10 changes that were made in the Standard 140.4(e),
11 specifically the dampers for the supply and
12 return, and in the Standard we changed that they
13 need to modulate fully open and closed, and we
14 mirrored that language here. So the
15 certification of the damper leakage, we added
16 language to reflect that change.

17 For NA7.5.11, that's the Fault Detection
18 and Diagnostics Acceptance Test, we removed
19 references to refrigerant pressure sensors since
20 that was removed in the Standards, and we also
21 removed the Functional Test to test that pressure
22 sensor.

23 We added a new Acceptance Test, NA7.14
24 and that is for the elevator, now that we're
25 going to be regulating the lighting and the

1 ventilation fan. The construction inspection is
2 going to consist of verifying that the Occupant
3 Sensor is located in a space that is going to
4 minimize false signals and that the sensor does
5 not omit an audible sound.

6 And as far as functional testing, again,
7 to verify that the sensor correctly shuts off
8 both the lighting and the fan when the elevator
9 is not occupied for more than 15 minutes, and
10 also that if the elevator fails and it is
11 occupied, that the lighting and the fan actually
12 stay on.

13 Another Acceptance Test is NA7.15 and
14 that's for the Escalators and Moving Walkway
15 Speed Control. The Construction Inspection is
16 going to consist of the verification of a
17 variable speed drive and that the occupant
18 sensor, again, is located in a place that's going
19 to minimize false and also that it does not emit
20 a sound.

21 The Functional Test is going to verify
22 that the Escalator or Walkway slows down to a
23 minimum speed when it's unoccupied for more
24 than three intervals of the measured one-way ride
25 time. And it's going to verify the speed limits

1 and also that it is capable of accelerating to
2 full speed prior to a new pedestrian boarding.
3 And there is going to be an alarm that gets
4 verified for pedestrians approaching in the wrong
5 direction. Simon.

6 MR. LEE: For the Outdoor Lighting, we
7 are proposing changes on NA7.8, Outdoor Lighting
8 Control. Subsection titles were edited to be in
9 line with other NA section titles. And then
10 we'll be adding NA7.8.4, this is for the
11 Automatic Time Switch Lighting Control, it was
12 missed in the 2013 Standards, so this is now
13 added to be aligned with the outdoor lighting
14 control requirements of Section 130.2.

15 MR. SHIRAKH: Okay, any questions on
16 Nonresidential Appendices? Any comments from the
17 Web?

18 MR. ALATORRE: Not from the Web.

19 MR. SHIRAKH: Okay, so that -

20 MR. ALATORRE: Oh, we've got George.

21 MR. NESBITT: George Nesbitt. My only
22 comment, well, comments on the Nonres is Nonres
23 has a whole section on HERS, which I think
24 regurgitates a lot of the same stuff about
25 registries and everything that's in the

1 Residential Appendices. So it seems like that
2 should be pulled out and perhaps maybe HERS
3 should be its own Appendices, everything to do
4 with HERS, and maybe even data registries in
5 general because they are related, whether it's a
6 HERS Registry or not. And I know I think at one
7 time the Commission would publish basically all
8 the HERS stuff as a separate section, even though
9 I think it was in other manuals.

10 And then the other sort of related HERS
11 comment to Nonres is, why don't we have QII? Do
12 they install insulation well in Nonres projects?
13 Not in any of the ones I've been in. Air
14 tightness? Makes no difference in the computer
15 calculation. Why don't we have air tightness?
16 So I really think that a lot of HERS measures
17 need to be put into Nonres because they're
18 equally applicable.

19 MR. SHIRAKH: Yeah, thank you. Again,
20 the reason for not considering some of these
21 measure were that we were just concentrating
22 mostly on ZNE for Res. And we will probably be
23 talking about those measures in future cycles of
24 the Standards.

25 Any other questions in the room or --

1 MR. STRAIT: There is nothing online.

2 MR. SHIRAKH: Okay, so now we're in the
3 public comment and as you know you can talk about
4 everything and anything.

5 Written comments are due the 24th,
6 preferably earlier, and send them to the docket
7 and it will automatically get a copy of it.

8 So if there are no public comments other
9 than that, look for the announcements for the
10 rulemaking workshops which will probably be in
11 January and the notice will go out earlier. The
12 format for the rulemaking, the 45-day language is
13 very similar to this, it will be similar
14 Powerpoint presentations, except we'll have a
15 Commissioner presiding and they're going to
16 listen to the comments.

17 In the next few weeks, we're going to be
18 contacting many of you to basically get further
19 clarifications and work with some of the details
20 on the issues that were raised today. And, you
21 know, we're kind of getting into the holiday mode
22 here, too, so it's going to be a challenge a
23 little bit, but we'll get through it. Anyway, so
24 if there are no additional comments --

25 MR. STRAIT: Let me unmute the call-in

1 user lines since they might not be able to raise
2 their hand. If you're a call-in user that's not
3 attending using your PC and you have a comment,
4 please speak up.

5 MR. SHIRAKH: Okay, I don't see any
6 comments, so this is it. Thank you for
7 participating and we'll be in touch.

8 (Whereupon, at 4:11 p.m., the workshop was
9 adjourned.)

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