BUSINESS MEETING

BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

CALIFORNIA ENERGY COMMISSION

HEARING ROOM A

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

WEDNESDAY, JANUARY 3, 2001

10:10 A.M.

Reported by:
Debi Baker
Contract No. 150-99-002

COMMISSIONERS PRESENT

William Keese, Chairman

Robert A. Laurie

Robert Pernell

Arthur Rosenfeld

James Boyd, Ex Officio

STAFF PRESENT

Steve Larson

William Chamberlain

Dick Ratliff

Bill Pennington

Jon Leber

Tony Rygg

Don Kazama

John Eash

Nelson Pena

PUBLIC ADVISER

Roberta Mendonca

ALSO PRESENT

Bruce Wilcox, President
Berkeley Solar Group

Mark Modera
Lawrence Berkeley National Laboratory
AeroSeal

Charles Eley, President
Eley Associates

ALSO PRESENT

Mark Hydeman
Taylor Engineering

David Ware
Owens Corning
North American Insulation Manufacturers
Association

John Proctor, President
Proctor Engineering Group

Ken Nittler

Patrick Eilert
Marshall Hunt
Gary Fernstrom
Pacific Gas and Electric Company

Ray Bjerrum, President
Merzon Industries
Western Region American Architectural
Manufacturers Association

Jeff Chapman
California Living & Energy

James Mattesich, Attorney
Livingston & Mattesich
representing Blomberg Window Systems

Joseph Zammit
Fleetwood Aluminum Products, Inc.

Robert Hammon, Principal
ConSol

Mike Schell
TelAire
Edwards Systems Technology

Robert Raymer
California Building Industry Association
Michael G. Hodgson, President, ConSol
Chairman, Energy Committee, CBIA

Nehemiah Stone
Heschong Mahone Group

ALSO PRESENT

William Krauss
The Apex Group
representing Lennox International

Noah Horowitz
Natural Resources Defense Council

DeeAnne Ross

Bill Mattinson
Sol.Data
California Association of Building Energy Consultants

Michael Day
Beutler Heating & Air Conditioning

Mike Schell

Jeff Johnson
New Buildings Institute

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

2 10:12 a.m.

3 CHAIRMAN KEESE: We'll call this

4 Business Meeting of the Energy Commission to

5 order.

6 Commissioner Pernell, would you lead us

7 in the Pledge, please.

8 (Whereupon, the Pledge of Allegiance was

9 recited in unison.)

10 CHAIRMAN KEESE: Thank you.

11 Commissioner Moore is ill today. Commissioner

12 Laurie was here a moment ago, and he will be

13 joining us.

14 Item 1, AB-970 Building Energy

15 Efficiency Standards Environmental Documents.

16 Possible adoption of an initial study and negative

17 dec pursuant to the California Environmental

18 Quality Act for possible environmental impacts

19 relating to revisions to the current building

20 energy efficiency standards.

21 Mr. Rygg.

22 COMMISSIONER PERNELL: Mr. Chairman, the

23 Committee has overseen the preparation and

24 distribution of the environmental documents

25 related to the adoption of these building

1 standards. We have Mr. Rygg of the Energy
2 Efficiency Division here to give you a brief
3 presentation and answer any questions. Mr. Rygg.
4 CHAIRMAN KEESE: Mr. Rygg.
5 MR. RYGG: Good morning, Commissioners,
6 and members of the public. My name is Tony Rygg,
7 the Efficiency Division. And I've been the
8 supervisor over the environmental documentation.
9 Staff's CEQA documentation, initial
10 study and proposed negative declaration, were
11 released on the 20th of November of last year,
12 2000. And the distribution of the document
13 included filing of these documents with Resources
14 Agency for distribution to state agencies; a legal
15 notice to four newspapers with state and regional
16 coverage that were included, The San Diego
17 Tribune, The Los Angeles Times, The San Francisco
18 Chronicle, and The San Francisco Examiner, and The
19 Sacramento Bee.
20 A notice of proposed negative
21 declaration was mailed for posting to all county
22 clerks in the State of California. And notice of
23 availability was mailed to CEC's active and
24 interested parties list, which numbers over 5000
25 addresses.

And all the CEQA documents were posted on the CEQA website, which was the AB-970 page of our website.

To date, I should say just in the month of December alone, the site received over 14,700 hits. It included over 7100 downloads of documents contained in this page. And the CEQA document was number 10 of the top 20, with over 220 downloads.

To date I have, and am unaware of any substantive comments on either the contents or the conclusions of the initial study and the proposed negative declaration, and that includes the 30 days plus another 15 days or so of time.

I would like to make one change to the project description of the initial study. There has been a minor change in the proposal, and if I could have -- there it is up on the screen over there.

In the project description, appendix 1, page 1, second box in the first row, I'd like to have the last sentence: Increase U value to .65 in climate zone 10; striking -- you can almost see it from here with or without glasses -- 2, 4 and 7, leaving just climate zone 10 in that particular

1 change.

2 Can anybody else see it? That screen

3 doesn't work. Okay, it's increase strike

4 minimal --

5 CHAIRMAN KEESE: I'm sorry, focus us

6 where we are on what we're seeing.

7 MR. RYGG: This is the first box --

8 CHAIRMAN KEESE: The first box, --

9 MR. RYGG: -- first row, second box, --

10 CHAIRMAN KEESE: -- description of

11 measure?

12 MR. RYGG: Correct, thank you. Right.

13 And the red goes and the black stays. So there's

14 some deletion.

15 Strike minimal U value 2.65 in climate

16 zone 10, and striking 2, 4 and 7. There should be

17 a line right there up to 10. And the rest remains

18 the same. All other climate zones remain at

19 current levels.

20 CHAIRMAN KEESE: Okay.

21 MR. RYGG: Thank you, Bruce.

22 CHAIRMAN KEESE: I think we have that.

23 MR. RYGG: Okay. This change resulted

24 in no substantive change to any of our conclusions

25 or our recommendation. Which is, taken as a

1 whole, the proposed energy emergency regulations
2 do not result in any significant statewide or
3 regional environmental impacts.
4 And we again recommend the Commission
5 adopt the initial study, as amended, and the
6 negative declaration for the project.
7 CHAIRMAN KEESE: Thank you. We have a
8 number of parties who have indicated that they
9 wish to speak on this item 2 on our agenda today.
10 We have nobody who has indicated they intend to
11 speak on item 1. Is there anybody who had planned
12 to speak on this issue from the public?
13 Commissioner Pernell.
14 COMMISSIONER PERNELL: Mr. Chairman, I
15 move to adopt the initial study and negative
16 declaration before us on the possible
17 environmental impacts related to the changes in
18 the California building standards proposed by the
19 Efficiency Committee.
20 CHAIRMAN KEESE: We have a motion from
21 Commissioner Pernell.
22 COMMISSIONER ROSENFELD: Second.
23 CHAIRMAN KEESE: Second, Commissioner
24 Rosenfeld.
25 Do we have any comments from the

1 Commissioners?
2 Seeing none, all in favor?
3 (Ayes.)
4 CHAIRMAN KEESE: Opposed? Adopted four
5 to nothing.
6 Item 2, AB-970 Building Energy
7 Efficiency Standards. Possible adoption of
8 revisions to the current building energy
9 efficiency standards and associated revisions to
10 the alternative calculations method approval
11 manuals for residential and nonresidential
12 buildings. These revisions were developed under
13 an emergency rulemaking procedure to comply with
14 AB-970, the California Energy Security and
15 Reliability Act of 2000.
16 COMMISSIONER PERNELL: Mr. Chairman,
17 just as a way of introduction, the Efficiency
18 Committee has worked for the past four months to
19 develop the proposed changes to the standards. It
20 has been pretty intense. It has been a
21 collaborative effort by the building industry,
22 staff and its contractors, by building officials
23 and other stakeholders.
24 We estimate that the implementation of
25 these changes will save approximately 200

1 megawatts with every year's new buildings. That
2 is to say by year five we would have saved 1000
3 megawatts.
4 Mr. Bill Pennington, the Project
5 Manager, is present and will introduce the item,
6 the residential and nonresidential standards. Mr.
7 Pennington.
8 MR. PENNINGTON: Thank you, Commissioner
9 Pernell. Just in terms of background here a
10 little bit, we've held two public workshops as we
11 proceeded through the development of these
12 standards.
13 There was a Committee hearing on
14 November 28th where comments were taken on the
15 analysis that was done by the contractor team and
16 the draft of the building standards and the
17 alternative calculation methods manuals.
18 After that hearing the Committee
19 released proposed standards language and
20 alternative calculation method approval manuals
21 language. That was released on December 12th.
22 And has been available on our website since that
23 time.
24 And we have continued to look for
25 typographical changes and format changes, and have

gotten some comment from members of the public during that time period. And so there's an errata that you all have with your documents that follow the table of contents for each of the documents that we're talking about here. That information has also been made available to the public on our website.

And so that's basically what we'll be talking about today.

The plan here is to break this hearing into three parts. First, we intend to make a presentation on the residential standards and the ACM changes for the residential standards. Followed by public comment on those. And Commission question and discussion on the residential items.

Then we would turn to the nonresidential standards and go through the same process. We would present on the nonresidential standards and ACM changes, followed by public comment and Commission questions and discussion.

And then the third item that we would like to present separately is a short discussion of the energy conservation manual supplements, which we're asking for certification on today.

1 And, again have, if there is any public comment on
2 those, to get that. And have Commission
3 discussion, to the extent that that's needed, on
4 the supplements.
5 And then we would get into motions for
6 adopting the various parts that we're talking
7 about. And my understanding is that Commissioner
8 Pernell has a series of motions to get us through
9 this.
10 The bulk of the presentations on the
11 standards and the ACM manual changes will be made
12 by our contractors. One of the major reasons that
13 the Commission has been able to accomplish so much
14 in such little time on this emergency project is
15 that we have an exceedingly capable contractor
16 team to help us.
17 For both the residential and
18 nonresidential standards we've been able to engage
19 the most capable Californians to do the bulk of
20 the analytical work. These people have extensive
21 experience with California Title 24 standards
22 development and implementation. And several have
23 national land even international reputations for
24 expertise in building science and energy
25 efficiency code development.

1 So, we're going to start with the
2 residential first. And I'd like to introduce Mr.
3 Bruce Wilcox. He's going to do the bulk of the
4 presentation.
5 Also at the table is Mr. Ken Nittler,
6 who is available to respond to questions and
7 comments. And so is the rest of our contractor
8 team who is here.
9 So, with that I'd like to turn it over
10 to Bruce Wilcox.
11 COMMISSIONER LAURIE: Mr. Chairman, I
12 have a question before we --
13 CHAIRMAN KEESE: Commissioner Laurie.
14 COMMISSIONER LAURIE: -- a preliminary
15 question, if I may. Mr. Pennington, this process
16 that staff and the Efficiency Committee has been
17 going through for the last four months, it
18 historically has been a multi-year process, is
19 that right?
20 MR. PENNINGTON: That's true.
21 COMMISSIONER LAURIE: So in order to get
22 to where we are today, how did you determine what
23 particular points to focus on so that you could
24 get the job done in such a short order? How did
25 you determine what your priorities were going to

1 be?

2 MR. PENNINGTON: Each of the first two

3 workshops that were held, one in the beginning of

4 September, and one September 24th, I think was the

5 second date, were scoping workshops.

6 We proposed a series of changes that

7 looked to be high priority things to consider.

8 And we took public comment on those items.

9 We had a pretty severe screen on

10 measures to be considered. They really had to be

11 very mature in their development. The idea needed

12 to be mature. There needed to be supporting

13 analysis that essentially was already available.

14 We couldn't do research, basic research on a new

15 idea.

16 And so those are the measures that

17 persisted through this process. There were other

18 measures that were suggested by the public that I

19 think we'd like to address at the end of this

20 hearing about further consideration of some good

21 ideas that we just didn't have time to address.

22 COMMISSIONER LAURIE: Okay, that's

23 helpful. Thank you, Mr. Chairman.

24 CHAIRMAN KEESE: Thank you. Mr. Wilcox.

25 MR. WILCOX: Thank you, Chairman,

1 Commissioners. I'd like to start out by
2 introducing the rest of the members of the
3 residential team who are here today to answer
4 questions and support this analysis.
5 John Proctor, Proctor Engineering Group,
6 who helped us with HVAC efficiency issues; and Dr.
7 Mark Modera, who is our expert on duct efficiency
8 and distribution efficiency.
9 Next slide. This slide relates to
10 Commissioner Laurie's question to a large degree.
11 These are the proposed measures that we are adding
12 to the prescriptive standards for residential
13 buildings and the first three of those measures
14 are actually expansions of existing compliance
15 measures that already have been defined and used
16 in the standards for some time.
17 The first of those is a radiant barrier
18 which is a device that's installed in attics to
19 reduce the solar gain that's incident on the roof
20 to keep it from getting into the attic and into
21 the house.
22 And Ken Nittler just passed an example
23 radiant barrier product which is an aluminum foil
24 product that's applied to the underside of the
25 roof sheeting. Comes that way from the building

supply house. And we expect that is the way it would be used by most builders.

Radiant barriers have been a compliance option for about 10 years, so the rules for how they're calculated and how they're installed and so forth are already all developed and already in place in the standards. And we've simply moved them into the prescriptive standards as a requirement rather than as an option.

Second measure is changes to fenestration. Primarily this is applying low solar gain, high performance glazing in an expanded way. A U factor of .65 is now in effect in one climate zone, which previously was .75.

But primarily what the new prescriptive requirement is to have a .40 solar heat gain coefficient on all orientations in houses in the primary cooling zones.

The third measure is duct sealing. This is a measure that was added as an optional capability in the previous '98 standards. Our analysis shows it to be very cost effective, and we are moving that into the prescriptive standards requirements for all houses in all climate zones.

The fourth primary measure here is the

1 addition of a new compliance measure, and this is
2 the requirement for thermostatic expansion valves
3 on split system air conditioners in many of the
4 cooling climate zones.
5 And one of the major changes here is
6 that duct ceiling and thermostatic expansion
7 valves require field verification, or post-
8 construction inspections to verify that they were
9 installed correctly. And that's now a requirement
10 in the prescriptive standards.
11 Next slide. If you look at -- this is a
12 table that summarizes the changes by climate zone.
13 And the columns here are showing the new measures:
14 radiant barriers; changes to the fenestration U
15 factors; fenestration solar heat gain coefficient;
16 duct sealing; thermostatic expansion valves.
17 Duct sealing is now going to be required
18 in all climate zones in package D. Radiant
19 barriers -- well, fenestration U factor is changed
20 only in climate zone ten. In all other climate
21 zones the fenestration U factor remains what it
22 was in the '98 standards.
23 But in climate zones two, four and then
24 seven through 15, which are the primary cooling
25 interior climate zones in the state, we're

1 proposing that a fenestration and solar heat gain
2 coefficient of 0.4 be required for windows on all
3 orientations. That's a new requirement.
4 Radiant barriers are going to be
5 required in climate zones two, four and then eight
6 through 15. Again the primary cooling climates.
7 And TXVs, thermostatic expansion valves, are
8 required in climate zones two and eight through
9 15, which are the more severe of the cooling
10 climates.
11 Next slide.
12 COMMISSIONER PERNELL: Mr. Wilcox.
13 MR. WILCOX: Yes, sir.
14 COMMISSIONER PERNELL: Could you give
15 us, just for the benefit of the audience, an
16 example of where let's say climate zone ten is?
17 MR. WILCOX: Sure. Climate zone ten is,
18 the major weather file source for climate zone ten
19 is Riverside. So climate zone ten is the eastern
20 side of Los Angeles where the developments are
21 spreading out into the desert on the east side.
22 I can just run through the climate zones
23 we're talking about here. Climate zone two is
24 Santa Rosa, north of San Francisco, the inland
25 valleys north of San Francisco.

1 Climate zone four is the inland valley
2 south of San Francisco; San Jose and south.
3 Climate zone eight is the Orange County coastal
4 areas, so between Los Angeles and San Diego.
5 Climate zone seven is actually the coast of San
6 Diego.
7 Climate zone nine is Pasadena. Ten is
8 Riverside. Eleven is north of Sacramento and the
9 valley. Twelve is Sacramento. Thirteen is
10 Fresno. Fourteen is the high desert, Palmdale.
11 And 15 is Palm Springs and the low, very hot
12 desert to the south.
13 COMMISSIONER PERNELL: Thank you.
14 MR. WILCOX: Next slide. We've also
15 developed an alternative prescriptive approach, as
16 an alternative to the requirements of package D,
17 that avoids the requirement to have post-
18 construction field verification. This is so that
19 people who either that might not be available to
20 them, or they are doing custom building and they
21 don't want to develop a relationship, and it's
22 more expensive, or for whatever reason, don't want
23 to do the post-construction verification. And
24 they do want to comply with a prescriptive
25 package.

1 This alternative, which is included as
2 footnotes in the prescriptive tables, allows them
3 to comply without having to do the duct sealing or
4 the thermostatic expansion valves, and they do
5 this by using lower fenestration U factors and
6 lower fenestration solar heat gain coefficients,
7 higher cooling SEERs, in a couple of zones higher
8 heating efficiencies.
9 Traditionally a vast majority of the
10 compliance has been done with the performance
11 method, and of course, that offers complete
12 flexibility for doing any combination of measures
13 that the builder wants to use, and they can pick
14 and choose.
15 Other changes in the standards. Next
16 slide. The computer modeling in the performance
17 method now will not include interior shading as a
18 compliance option. Central air conditioners, we
19 have change the way the efficiency is modeled for
20 compliance calculations to better represent the
21 real performance of air conditioners, particularly
22 in peak conditions in hot California climates.
23 There are new compliance options for
24 multifamily duct systems. The previous duct
25 sealing measures only apply to single family

houses. We extended those to multifamily buildings, as well.

And we've added an option that allows people to comply using cool roofs, or roofs that have a low solar absorbtance. Expect that to develop in future into an important compliance measure.

The field verification rules for doing the post-construction verification have been simplified so that it's easier, more efficient for builders to carry out those, and raters to carry out those verifications. And there have been a miscellaneous set of other changes to fix small problems and so forth.

Next slide. Now, you look at the bottom line here, the energy and demand savings per home, this is a table for the 16 climate zones. And I'm not going to bore you with the details, but if you look at an average home represented by the 1761 prototype that's been used for standards development, on a source energy basis these change will reduce the source energy consumption 11 percent on an average statewide basis.

We're going to save about 9 therms of heating energy, about 1000 kilowatt hours of

electricity, and about 1.7 kilowatts of demand per house.

Next slide. If we look at this from its impact on the state, one of the issues is that more houses are built in some climate zones than in other climate zones. So we've used the data from the Construction Industry Research Board that shows the number of housing starts in a typical year in each of these climate zones.

Total number of starts is about 109,000 single family houses. This is just considering single family houses. And if you use the percentage of starts to weight the energy savings that were shown in the previous graph, you get an estimate of the statewide impact which shows 154 megawatts of savings from the residential measures we're talking about, 99,000 megawatt hours, and about 460,000 therms saved for each year for each year's 100,000 housing starts. This is about 14 percent of the source kBtus on a statewide basis.

Next slide. So our estimates of what it's going to cost to achieve this are shown for the 16 climate zones. And the costs vary in the severe cooling climates where we've required the most measures, we estimate the cost at about $1100

1 for the prototype house. And the zones that only
2 duct sealing is required the cost is as low as
3 $300.
4 In this table we've taken a credit for
5 the reduction that's possible in the size of the
6 air conditioner because we've reduced the peak
7 cooling loads with these measures. And calculated
8 a net first cost.
9 If you weight that net first cost, we
10 estimate that the net cost per house on a
11 statewide average is $339.
12 Next slide, please. So, we carried out,
13 using this data, a life cycle cost analysis. The
14 fundamental approach is that the change in the
15 life cycle cost is equal to the change in the
16 initial cost minus the present value of the
17 electricity cost savings, minus the present value
18 of the gas cost savings.
19 The present value of those energy cost
20 savings is calculated as the energy saved per
21 year, times the present value of the cost of
22 energy. So there's a factor, the present value
23 factor.
24 The rules that we've used here are that
25 the life cycle cost has to be -- you have to

1 actually save life cycle costs in order to propose
2 a measure for the standards.
3 Now one of the complications in the
4 current situation is that there are lots of
5 different ideas about what future energy cost is.
6 We've used three different estimates to do our
7 analysis. One is the most recent CEC projected
8 future energy costs. We've used a version of
9 those where we've adjusted by time of use and
10 estimated the time of use effects on the
11 residential side. And then we've used a set of
12 future energy cost projections that were published
13 by the Public Utilities Commission as part of one
14 of their proceedings recently.
15 We've also analyzed these houses with
16 several different assumptions. One with overhangs
17 and with air conditioner size reductions, which we
18 think is the most realistic and conservative real
19 world kind of approach. And that's the one we've
20 emphasized.
21 We've also analyzed the houses without
22 an overhang, and we've also analyzed the houses
23 without including the air conditioning size
24 reduction.
25 We've done multiple cost estimates on

1 the measures where there's some uncertainty about
2 what the measures would really cost in a fully
3 implemented set of standards.
4 The bottomline here is that the proposed
5 standards are life cycle cost effective to
6 homeowners over a wide range of these assumptions.
7 Next slide. We looked at a range of
8 measure costs for the low solar, low E glazing,
9 the nonmetal frames, radiant barriers, sealed
10 ducts, duct designs, thermostatic expansion
11 valves, and combinations of thermostatic expansion
12 valves and sealed ducts.
13 And we've looked at a range of costs;
14 we've identified a threshold cost that we think
15 are conservative estimates of what it would really
16 end up costing the builders. And we used those in
17 setting the actual values in the standards.
18 Next slide. If you look at a summary of
19 the life cycle cost effectiveness of the staff
20 proposal, which has now been slightly modified,
21 glazing in the current express terms, but this is
22 still representative, we think, of the costs,
23 you'll see that under any of the three cost
24 estimates the PUC, or the CEC, or the block
25 version of the CEC, under any of the analysis

1 assumptions, using overhangs with sizing
2 reductions, using no sizing reductions and using
3 no overhangs, which is the traditional analysis
4 approach that's been used to develop the standards
5 over the last 20 years.
6 If you take this traditional approach,
7 every case of the energy cost assumptions is cost
8 effective in every climate zone for the package
9 proposed. If you take the more conservative
10 approaches, in climate zones four and eight, the
11 previous proposed packages were cost effective
12 under the most conservative, or were slightly not
13 cost effective under the most conservative
14 assumptions. And that's two of the four zones
15 where the current proposal has reduced the
16 proposed requirements slightly.
17 Next slide. The reports that we've
18 published have an extensive set of analysis of all
19 the measures. I'm not going to go into the
20 details of this table, but it shows the relative
21 life cycle cost of each measure taken individually
22 as an addition or reduction in the standards to
23 show that all the measures are individually cost
24 effective.
25 And compared to the package, in this

1 case shown as the duct sealing, low solar, low E
2 glass, thermostatic expansion valves and radiant
3 barriers in climate zone 13, compared to the '98
4 standards, its present value is $1879 positive.
5 So it's a very cost effective proposal.
6 Next slide. We also carried out an
7 alternative first cost analysis. And this was
8 published in the docket in November. In which we
9 did a sort of a builder approach where we looked
10 at taking a house that complies with the current
11 standards.
12 So you start with a building that
13 narrowly complies with the '98 standards, and then
14 you add or change features to make it comply with
15 the new proposed standards, and you keep track of
16 what that costs. And that's an estimate of what
17 the new standards are going to cost, as well.
18 And this is what an energy consultant
19 would do if he was asked to tell a builder what
20 it's going to cost him to comply with these
21 standards.
22 And so the rules we used in that -- next
23 slide -- is that we changed the features of these
24 houses as little as possible. We didn't change
25 the fundamental design. We always chose the

1 lowest cost features to put in. We included
2 better water heaters. We never reduced the air
3 conditioner sizes. We used features that most
4 builders will use, and we looked at a huge
5 combination of all these possible 3600
6 combinations of features.
7 Next slide. This is a table that shows
8 an example. I'm not going to go into the details
9 here of the things that worked for a particular
10 house. You can see that in different climates
11 different measures are the least cost effective,
12 or the least first cost approach to complying with
13 the standards.
14 And we carried out that analysis for --
15 next slide -- two different buildings. These are
16 houses that the building industry association gave
17 us the specifications for as examples of houses
18 that are typical of what the problem that builders
19 will have complying with the standards.
20 The first building is a 1900 square
21 foot, 20 percent glass, single family house. And
22 according to our calculations, if you use the duct
23 sealing and thermostatic expansion valves, this
24 building will comply for $396 on a statewide
25 weighted basis. If you choose to not do the duct

1 sealing and do alternative approaches, it's $632.
2 A second building, which is a larger
3 building, again 20 percent glass area, the range
4 is $592 with field verification, or $729 without.
5 Of the 3600 cases we looked at, over
6 half of them complied. So there's a wide variety
7 of options available. A lot of combinations of
8 different measures, typical measures that can be
9 used to comply with the standards. And additional
10 options exist for not just the approaches that
11 we've specified in the prescriptive standards.
12 So, we believe that these standards meet
13 the standards for life cycle cost effectiveness;
14 that they will save energy and peak demand; and we
15 present them for your adoption, hopefully.
16 Thank you.
17 COMMISSIONER LAURIE: Mr. Chairman.
18 CHAIRMAN KEESE: Commissioner Laurie.
19 COMMISSIONER LAURIE: Question. Mr.
20 Wilcox, in a little bit we're going to have
21 comments by the audience, a couple questions. Do
22 you anticipate hearing anything other than a lack
23 of consensus as to the numbers you've presented?
24 And if so, if you think there's going to be
25 comment regarding disagreement with the numbers,

1 what do you think the basis of that disagreement
2 might be that we might be hearing later today?
3 MR. WILCOX: Well, we've had dialogues
4 with various interested parties including the
5 builders about the cost estimates. And one of the
6 issues is attempting to predict which measures
7 people are likely to use to comply with.
8 And we think that the measures that
9 involve post-construction verification are very
10 cost effective, and in fact will turn out to be
11 the ones that builders will choose to use in the
12 long run. We've included those.
13 If you assume that you're not going to
14 do that, that raises the cost, and our analysis
15 shows that. But we still think that the standards
16 are life cycle cost effective.
17 And so you can always come up with
18 different estimates of what it's going to cost.
19 And then there are estimates that depend on a
20 short-term change in an immature market for houses
21 that were already designed to be built under the
22 old standards. And that's a more expensive option
23 than long-term stable situation where people are
24 complying and houses are designed from scratch to
25 comply with the new standards.

1 I think those are the major issues.
2 COMMISSIONER LAURIE: Thank you.
3 CHAIRMAN KEESE: Thank you. Do you have
4 anything to add, Mr. Pennington, --
5 MR. PENNINGTON: No, I don't.
6 CHAIRMAN KEESE: -- before we get into
7 the -- okay, let's try to break this down into
8 understandable bites.
9 First, I'm going to ask if there -- I
10 have a list of approximately 10 or 12 people here
11 who want to comment. I would ask if there's
12 anybody who cares to comment on the issue of
13 radiant barriers. Please come forward.
14 MR. WARE: My name is David Ware. I am
15 the Manager of Codes and Regulations for Owens
16 Corning, and I also represent North American
17 Insulation Manufacturers Association.
18 You would like me, Commissioner Keese,
19 to focus on radiant barriers?
20 CHAIRMAN KEESE: Yes, I think what we're
21 going to try to do is radiant barriers first,
22 fenestration second, duct sealing third, and then
23 thermostatic expansion valves, and then field
24 verification. Is that -- Mr. Pennington?
25 MR. PENNINGTON: That sounds fine. The

1 field verification will probably overlap with
2 those last two topics.
3 CHAIRMAN KEESE: That's right, it may
4 overlap more than one. So, we're not going to
5 restrict you from coming forward again, but why
6 don't we take the issue of radiant barriers.
7 MR. WARE: All right. Fair enough.
8 Commissioners, I had submitted to the Commission
9 and to staff, a letter detailing some of my
10 concerns on radiant barriers and some
11 recommendations regarding the installation
12 criteria and the language in the residential ACM
13 manual regarding radiant barriers. And that's
14 what I'd like to speak to.
15 My industry and my company has no
16 concerns with using radiant barriers as an energy
17 element in the prescriptive standards in setting
18 the baseline budget. We support that. However,
19 we do believe that the installation requirements
20 need some shoring up, primarily when radiant
21 barriers are applied to cathedral ceilings.
22 The research that has supported the use
23 of radiant barriers, and the energy improvement
24 that radiant barriers can provide to buildings was
25 based upon a ventilated attic. And what I have

1 requested, both in an algorithmic change to the
2 radiant barrier calculation within the ACM manual,
3 and the language that is applied to all compliance
4 manuals that are approved for computer programs
5 that are used with the standards to simply
6 indicate that the credit, itself, cannot be used
7 for cathedral spaces.
8 And I have not received any indication
9 from staff whether why that comment was not
10 appropriate. Although I can indicate that there's
11 not been a change recognizing my comments on this
12 particular issue.
13 So, --
14 CHAIRMAN KEESE: Thank you. Now, let me
15 make a general comment at this point. What we are
16 handling today is the emergency adoption of
17 regulations. We will move immediately into a
18 later phase which will be the permanent adoption
19 of regulations. So there will certainly be an
20 opportunity between now and the adoption of the
21 permanent to do some fine tuning.
22 That having been said, not particularly
23 with regard to your point, I'll ask Mr. Pennington
24 to respond.
25 MR. PENNINGTON: I'm wondering if maybe

1 Bruce or Ken Nittler could respond to how we
2 addressed this issue.
3 COMMISSIONER MOORE: Mr. Wilcox.
4 MR. WILCOX: Yes, thank you,
5 Commissioner. As I said earlier, we attempted to
6 be pretty rigorous about not trying to do research
7 and develop new approaches as part of this
8 proceeding wherever possible.
9 The rules for radiant barriers that Dave
10 is talking about have been in the rules, in the
11 compliance rules now for about ten years.
12 I talked to a couple of people who are
13 familiar with the subject who said they thought
14 there was no problem applying those rules to
15 cathedral ceilings. And I didn't see any reason
16 to make a change as part of this proceeding.
17 That is an issue that can be looked at
18 as part of the longer term normal proceeding; if
19 there is real evidence it could be changed.
20 CHAIRMAN KEESE: Mr. Pennington.
21 MR. PENNINGTON: Yes. We did look at
22 this issue. We didn't see anything compelling in
23 the comments to make a change in emergency
24 timeframe. We would be open to continuing to
25 consider this.

1 Unfortunately, I think the key advocate
2 for radiant barriers could not be here today
3 because of a severe illness in his family. And so
4 I would have expected him to jump up and respond,
5 you know, to these comments.
6 CHAIRMAN KEESE: Let me ask if any of
7 the Commissioners have --
8 COMMISSIONER ROSENFELD: Mr. Chairman.
9 CHAIRMAN KEESE: Commissioner Rosenfeld.
10 COMMISSIONER ROSENFELD: Bill
11 Pennington, I guess I want to see if I understand
12 the issue with both of you folks.
13 As I understand a radiant barrier, you
14 can't paint over it, that would change its
15 properties. So with a cathedral ceiling we would
16 be looking up at an aluminum colored barrier which
17 probably my wife wouldn't like.
18 (Laughter.)
19 MR. PENNINGTON: That's incorrect, sir.
20 COMMISSIONER ROSENFELD: So can you
21 explain that?
22 MR. PENNINGTON: Yes. The barrier is in
23 the cavity.
24 COMMISSIONER ROSENFELD: There's still a
25 cavity?

1 MR. PENNINGTON: Yes.
2 COMMISSIONER ROSENFELD: Okay. So
3 what's the technical -- is there a big technical
4 difference then between a ventilated attic and the
5 cavity underneath the cathedral ceiling?
6 MR. WARE: Yes, Commissioner, there
7 would. If the standards are to be complied with
8 that cavity must be insulated. And therefore, the
9 effective ventilation within the cavity is reduced
10 significantly.
11 None of the research that was provided
12 in support of radiant barriers dealt with the
13 situation of cathedral ceilings. And clearly the
14 installation criteria that's already indicated in
15 the residential ACM manual explicitly says that
16 this applies to attic situations.
17 So all I have been asking for, similar
18 to what the ACM manual already delineates for
19 ducts and all other kinds of construction elements
20 within the buildings, is that there be proper
21 accounting, so that the accuracy of radiant
22 barriers are appropriately applied.
23 I can understand the urgency of the
24 rulemaking, and possibly not wanting to make a
25 change with the algorithm, per se, that deals with

1 the U value modifier for radiant barriers. That
2 means a change to the computer program and some
3 changes to some other larger scale changes.
4 However, I do think, at a minimum, it's
5 appropriate to provide language in the residential
6 ACM manual that provides direction to ACM vendors
7 that when they develop their compliance materials,
8 at best to indicate that they shouldn't be
9 modeling cathedral ceiling spaces with radiant
10 barriers. That's inappropriate.
11 COMMISSIONER LAURIE: Can we stop there.
12 I think I understand that. First of all, is it
13 staff's intent that these regs apply to cathedral
14 ceilings, yes?
15 MR. WILCOX: Yes. Dave is asserting
16 that there's a problem with cathedral ceilings,
17 but I don't know that there's any evidence that
18 there's a problem. He hasn't presented any
19 evidence there's a problem.
20 The requirements for ventilation and so
21 forth carry across. And if you can't ventilate
22 the space in the cathedral ceiling, then you can't
23 comply with the requirements.
24 So I think that the proposed regulation
25 is fine. If it turns out that Dave has some

research available that shows that a radiant barrier applied to a cathedral ceiling doesn't work, then we could make a change.

But as far as I know, there's no evidence that that's the case.

COMMISSIONER LAURIE: Mr. Wilcox, do you have any rough guesstimate of what percentage of construction is done with cathedral ceilings, are we talking about 2 percent, 1 percent?

MR. WILCOX: We think that it's very small, 1 or 2 percent with a true cathedral ceiling where you have a single rafter and a very restricted space. So we think it's a pretty minor issue.

CHAIRMAN KEESE: I believe I did see the 2 percent number in one of our documents.

COMMISSIONER LAURIE: Okay, well, the question I have, Mr. Chairman, is it's uncertain at this point whether or not cathedral ceilings is a problem. So the question in my mind would be do we impose it on cathedral ceilings and create a reg, and then say if there's a problem, we'll change the regs to do away with it, which is very difficult to do. Rarely done in any kind of government law.

1 Or, do you attempt to add it later. If
2 it's only 2 percent, then does it make any
3 difference one way or the other.
4 So that would be my question.
5 MR. PENNINGTON: Maybe we should talk a
6 little bit about the process we're going through
7 here. These regulations are being adopted by
8 emergency. And as a result of that, the
9 Administrative Procedure Act's requirements for
10 rulemaking are essentially waived.
11 The Committee has gone through an
12 extensive process here to get sort of equivalent
13 commentary and notice and so forth. But the
14 obligation is for the Commission to go back
15 through a rulemaking that follows every procedural
16 requirement of the Administrative Procedure Act,
17 and do that within 120 days of the publication of
18 the emergency regulations.
19 COMMISSIONER LAURIE: Can you add regs
20 when you come back to the regular rulemaking?
21 MR. PENNINGTON: We have made a change
22 related to this topic in the emergency standards
23 here. And the notice of the rulemaking proceeding
24 that we're going to conduct to adopt these are
25 permanent gives us the flexibility to address kind

1 of fine tuning with the requirements that are
2 being adopted as emergency.
3 COMMISSIONER LAURIE: So on this
4 particular question, as an example, you can either
5 add cathedral ceilings or you can take away
6 cathedral ceilings. When we get to the --
7 MR. PENNINGTON: I would be very
8 hesitant to delete the requirement for cathedral
9 ceilings until there is clear evidence that that's
10 a problem. At this point we don't believe there's
11 a problem. We're certainly willing to look at
12 this more and hear additional information --
13 CHAIRMAN KEESE: But procedurally what
14 I've heard is that if we should adopt these are
15 emergency regulations, Mr. Ware can come in
16 immediately and give you some evidence as to why,
17 in the permanent process, there should be some
18 changes.
19 MR. PENNINGTON: We're expecting to have
20 the first Committee hearing on the permanent
21 adoption on February the 5th, so --
22 COMMISSIONER BOYD: We're still not
23 getting an answer to the purely legal procedural
24 question here, which is, as I've heard it
25 repeated, that should the Commission choose to

1 leave in the requirement, but having hearing some
2 testimony that there may be a question, if staff
3 is presented evidence during the 120-day period
4 that compels staff to want to recommend to the
5 Commission a substantial change, i.e., delete the
6 requirement, that legally you could do so. I
7 think a simple yes or no is --
8 MR. PENNINGTON: Yes.
9 MR. RATLIFF: Yes, you may make changes.
10 COMMISSIONER LAURIE: And is the
11 opposite true, if in the adoption of the emergency
12 regs cathedral ceilings are not included, we're
13 not deleting anything because nothing's been
14 adopted yet, in the adoption of the emergency regs
15 if cathedral ceilings are not included, are we
16 free to add it at the end of the 120 days?
17 MR. RATLIFF: Yes, you are. You can
18 make any changes, keeping in mind that if you make
19 changes that would potentially have a significant
20 environmental effect, you may have to address that
21 through additional environmental documentation.
22 COMMISSIONER LAURIE: Okay, but the
23 environmental analysis you have before you today
24 includes cathedral ceilings. So there wouldn't be
25 any necessity to go back and re-examine it?

1 MR. RATLIFF: I believe that's correct.
2 COMMISSIONER LAURIE: Okay, thank you.
3 MR. WILCOX: Commissioner, I think the
4 other point is that I don't really believe that
5 Mr. Ware would like it if you exempted cathedral
6 ceilings from this requirement. That's not the
7 change he would like. So it's not a simple change
8 that he's proposing.
9 CHAIRMAN KEESE: Mr. Ware.
10 MR. WARE: Thank you. I really think
11 we're making a mountain out of a molehill here.
12 If you --
13 CHAIRMAN KEESE: You're asking for
14 notice, is that what I heard you saying?
15 MR. WARE: Well, I'm --
16 COMMISSIONER PERNELL: Perhaps Mr. Ware
17 should restate his intent.
18 MR. WARE: -- notice is an interesting
19 statement. I believe that -- let me back up where
20 I started from here.
21 If the Commission had in front of them
22 section 4.2 of the residential ACM manual, or in
23 the design manual that special features and
24 devices that included the installation criteria
25 for radiant barriers, you would clearly see, I

1 believe, four graphic illustrations of the
2 installations of radiant barriers that are
3 allowed.
4 In each of those four graphical
5 illustrations it clearly is of an attic situation.
6 Okay? And that is because all of the supporting
7 evidence that was provided to the Commission for
8 approval of a radiant barrier compliance option
9 was assumed that it was for an attic.
10 The onus of proof, I'm sorry, should not
11 be on me. All I'm asking for, and what I had
12 provided in my December 1st letter, was exactly
13 the same installation language that is used
14 throughout the ACM manual on numerous kinds of
15 building measures.
16 And let me quote that. I won't even --
17 no, I will quote this, and it comes from various
18 sections that are used throughout the ACM manual.
19 I didn't make this up. For some reason, it's
20 implied here that it's okay for other features,
21 but it's not okay for radiant barriers. And I
22 don't understand why that is.
23 And I quote in my December 1st letter,
24 this was to be added as part of the installation
25 language that all ACM vendors should provide in

1 their compliance manuals, and I quote: Cathedral
2 ceiling areas cannot be counted toward this
3 credit. The use of radiant barrier must be listed
4 in a special features and modeling assumptions,
5 listed of the CF1R and C2R, in separate non-
6 cathedral and cathedral areas described. This
7 modeling procedure must be described in detail in
8 the ACM compliance supplement.
9 That same quote is used throughout the
10 ACM manual for other kinds of measures. There's
11 already an accounting for adding U values versus
12 cathedral U values to account for the air space of
13 the attic.
14 We do that and we assume that that is
15 the proper way to account for the thermal aspects
16 of a roof. And what's being applied here is that
17 for some reason we should not be accounting for
18 the differences of a radiant barrier within a
19 cathedral space, et cetera.
20 CHAIRMAN KEESE: Mr. Pennington, do we
21 hear logic in the presentation?
22 MR. PENNINGTON: I'm not sure exactly
23 what the subtleties here are of this language
24 which is causing me some difficulty in agreeing to
25 something, you know, instantaneously --

1 CHAIRMAN KEESE: Yes, I'm --
2 MR. WARE: If I may, Commissioner. This
3 doesn't change -- and I apologize if I'm
4 interrupting, but it doesn't change the aspect of
5 the emergency regulation as far as radiant
6 barriers.
7 And you've already established under
8 this proceeding language that will go in the
9 residential ACM manual as part of the emergency
10 rulemaking.
11 I'm not suggesting that any of that be
12 changed. I'm simply saying that to improve the
13 accuracy of the radiant barrier compliance credit
14 that at a minimum establish the quote that I just
15 used in the ACM manual.
16 COMMISSIONER BOYD: Mr. Chairman, I hear
17 the gentleman making what seems to be a very valid
18 statement of concern of wanting to advance the
19 science that should be considered in the 120-day
20 period by the staff as to whether or not, for this
21 2 percent or 3 percent or whatever it is, that
22 calculations refinement be included in the future.
23 And if that's feasible, it sounds practical to me.
24 I don't hear him asking that we change the
25 standards at all. So, it sounds like a reasonable

1 request, if backed up with some more material.
2 CHAIRMAN KEESE: Yes, I think on this
3 issue we'll ask staff to respond to this in the
4 120-day process.
5 MR. PENNINGTON: During the 120-day
6 proceeding to address this, all right.
7 CHAIRMAN KEESE: Thank you, Mr. Ware.
8 MR. WARE: Thank you, Commissioner.
9 CHAIRMAN KEESE: Commissioner Pernell.
10 COMMISSIONER PERNELL: Yes, I would echo
11 that, but also say that there has to be some type
12 of analysis that tells us that this is either
13 going to save or not save kilowatts or megawatts.
14 So just to come up and say, you know,
15 this is a great idea, you left this out, I'm
16 certainly amenable to revisiting the issue in the
17 time allotted. But all of the stuff that we do
18 here is backed up by some analytical
19 documentation. So I would hope when you're
20 discussing this with staff that you present some
21 of that.
22 MR. WARE: Well noted.
23 CHAIRMAN KEESE: Thank you. Okay, any
24 other comments on radiant barriers?
25 Fenestration. I think, Mr. Mattesich,

are you interested in fenestration?

MR. MATTESICH: Thank you, Mr. Chairman. Jim Mattesich for the record, Livingston and Mattesich, representing Blomberg Window Systems.

I will be brief. I simply wanted to say that Blomberg is a small Sacramento-based window manufacturer of high performance aluminum frame windows. We've been pleased and wish to express our thanks to the Chair of the Committee and staff to work in the last 30 days since the Committee hearing on an issue that was going to affect Blomberg directly, and impact them and their employees very severely.

Staff and we have been able to look at the issues that were involved in the original proposal, and the change that you saw mentioned earlier this morning proposed to the full Commission that the .65 U values in package D in climate zones four, seven, eight and nine be maintained at .75 resolves our immediate concerns about the package and will allow Blomberg to continue to exist and sell its high performance aluminum windows.

We recognize over the long term that we have more work to do with the Committee, the

1 Commission and staff, and we will do that. But
2 for the moment, we are thankful that you've been
3 able to accommodate our immediate concerns.
4 CHAIRMAN KEESE: Thank you. We'll see
5 you in 2005.
6 MR. MATTESICH: Yes, sir.
7 (Laughter.)
8 COMMISSIONER ROSENFELD: We'd better not
9 see you in 2005.
10 CHAIRMAN KEESE: I believe it's Mr. Ray
11 Bjerrum.
12 MR. BJERRUM: My name is Ray Bjerrum.
13 I'm President of Merzon Industries, but I'm here
14 today representing the Western Region American
15 Architectural Manufacturers Association. And
16 would like to make some brief comments about the
17 codes.
18 I don't share Blomberg's total support.
19 We've always been concerned about duct sealing. I
20 think that we can, as a fenestration industry, are
21 happy with the way the codes are written. But if,
22 in fact, duct sealing doesn't take place, we have
23 a problem.
24 In testimony we've heard that the
25 initial cost is only $100 for parts and labor, but

1 verification certification is the problem. I
2 think the Commission must realize that 40 percent
3 of Title 24 compliance documentation is provided
4 by the mechanical contractors.
5 If ducts are deemed difficult to
6 certify, and the tradeoff is controlled by the
7 HVAC system designer, fenestration is a loser and
8 our industry will lose jobs.
9 I'd like to make another point about we
10 have a delay that's built in for mass house
11 builders, but you have to understand that custom
12 homes are 20 percent of the market, currently
13 using larger percentage glazing, 25 percent or
14 more. And that if through this delay if you don't
15 have tight ducts, the custom homes have no
16 recourse on June 1st.
17 If uncertified ducts are not used, I'd
18 say 20 percent of high-end homes built in
19 California will reduce total glazing fenestration
20 products sold in California by 2 percent, just in
21 this year.
22 So, I think tight ducts are the
23 important issue from our industry. We're willing
24 to comply to all of the requirements within our
25 industry for the fenestration products, but

without tight ducts it really puts us in a loss of market share.

Thank you.

CHAIRMAN KEESE: Thank you.

COMMISSIONER PERNELL: Mr. Bjerrum, so you're in favor of tight ducts and third-party verification?

MR. BJERRUM: Yes, I am.

COMMISSIONER PERNELL: Thank you.

MR. BJERRUM: I'd like to make one comment here. The draft assumes tight ducts is 6 percent. And the fenestration industry, and might hear more today, we've heard nothing that would say that 6 percent is anything more than an assumption. So, --

CHAIRMAN KEESE: Well, hang on because we hope you will hear something more.

I'm guessing here, Mr. Zammit, do you wish to speak to fenestration?

MR. ZAMMIT: Commissioners, I'm not a public speaker, but I do appreciate the opportunity to speak before you. My name is Joseph Zammit, and I'm here on behalf of Fleetwood Aluminum Products.

We are a manufacturer of high-end

1 quality aluminum framed doors and windows. We
2 build the high quality and high performance
3 products. We're not in favor of lowering the
4 required U factor in SHGC ratings. We're not in
5 favor because our products, because 10 out of 28
6 of our product lines are not going to be able to
7 achieve the .65 or the .40 SHGC U value ratings.
8 Our manufacturing facility is in zone
9 ten. It's minutes away from zone eight. Zone ten
10 is the only zone that's being proposed to
11 implement the U factor change. So, obviously if
12 that's where we're manufacturing the products,
13 we're the only ones being hit, as far as the
14 manufacturers, in that zone. We're not in favor
15 of it.
16 Because so many of our products are not
17 going to achieve the U value and SHGC minimum
18 values, it's going to have significant impact on
19 our business. With that, changing U values and
20 SHGC is going to have a financial recourse with
21 our company. Obviously that's going to result in
22 loss of jobs.
23 Most of our products, 80 percent of our
24 products are distributed and sold within
25 California. Outside of California is a different

1 issue. There's different products, there's
2 thermally broken frames that's been discussed
3 before. But within California, alone, the
4 majority of the industry doesn't buy non-thermally
5 rated products. They buy continuous metal frame
6 if they're going to go with aluminum framed
7 products.
8 I understand that vinyl windows aren't
9 as much of an issue because they don't have the
10 higher ratings that aluminum does.
11 Points being with the current Title 24
12 that's in place, the 1998 Title 24, there are
13 specifications that standards shall be cost
14 effective. What I can tell you now is that if 30
15 percent of our products cannot meet those lower
16 requirements, it is going to increase the cost of
17 products. In short, it's going to become more
18 costly.
19 An argument that's used, that's been
20 used quite a bit is the argument of the
21 prescriptive packaging versus the calculation
22 methods, or the point system.
23 If you recall in Title 24 there's two
24 sections, sections 1.3 and 1.4, that they define
25 the point system is based on features prescribed

in the alternative component package, and will assume all the prescriptive package conservative features as the budget model.

Our hope was that the point system would allow for our high end and high performing products so that the construction industry wouldn't have as much of an issue. The point system versus the component packaging system.

But I feel that it is. If the component packaging systems U values and SHGCs are lowered, it is going to affect the point system that's used for our high end products.

Our manufacturing intent is to provide high quality, high performing products. And I can only say that they simply don't -- they're not conducive to the lower U values, lower SHGC.

Thank you.

COMMISSIONER LAURIE: Question.

CHAIRMAN KEESE: Commissioner Laurie.

COMMISSIONER LAURIE: Sir, are your objections similar to the objections made by Blomberg?

MR. ZAMMIT: Yes.

COMMISSIONER LAURIE: What percentage of your sales are in zone ten?

1 MR. ZAMMIT: I would guesstimate 40
2 percent, rough estimate.
3 COMMISSIONER LAURIE: And that's
4 different than Blomberg?
5 MR. ZAMMIT: Blomberg is northern
6 California. We're the Riverside area. One thing
7 I'm not sure if Blomberg Company has put forth,
8 specifically was address the U factors. The U
9 factors will be not changed in certain areas, two,
10 four, seven and eight, I believe, is going to be
11 left unchanged.
12 However, the SHGC values are still being
13 proposed to be lowered. U values and SHGC, when
14 one lowers you're going to lower the other one.
15 So even though you're not saying that the U values
16 are not going to be required to be lowered, by
17 lowering that SHGC value, I think it's going to
18 have an adverse effect on what the belief is that
19 they can achieve with higher U values.
20 So, again, we're just not in favor of
21 high performance products specifically, what I'm
22 referring to, and it's an issue with us.
23 COMMISSIONER LAURIE: Okay, thank you,
24 sir.
25 CHAIRMAN KEESE: Thank you. Mr. Wilcox.

1 MR. WILCOX: Yes, we don't believe that,
2 in fact, there is a problem with Fleetwood
3 Products, because we think that they can meet the
4 .4 solar heat gain coefficient and the .75 U
5 factors without a problem. So there may be some
6 confusion about what's really being required here.
7 And I don't think there's a serious problem.
8 CHAIRMAN KEESE: Well, then let's put
9 that in the same category. Why don't you have a
10 discussion after this is over, and if it belongs
11 in the 120-day process, fine.
12 Do we have anyone else who wishes to
13 speak to fenestration?
14 COMMISSIONER LAURIE: Mr. Chairman, I
15 have a procedural question, and I hate to do this,
16 but I'm not understanding something.
17 My concern, because of my lack of
18 understanding, about including something in the
19 120 days, or including something in the emergency
20 regs that we might change later is that in the
21 manufacture of new products, the tighter standard
22 is being imposed.
23 And you can't say for the next four
24 months we're going to impose a higher standard and
25 make everybody gear up for that. And then say,

1 well, never mind. You can do it the other way
2 around.
3 And so my concern is in the area where
4 there are legitimate questions, and I won't make
5 any reference to any particular issue, but where
6 there are legitimate questions I don't think you
7 can impose it today, and then change your mind and
8 not impose it tomorrow.
9 You cannot impose it today and then
10 change your mind and impose it tomorrow. But once
11 the regs go in, they're the law. And you cannot
12 manufacture to the lesser standard. You have to
13 manufacture to the higher standard.
14 So, I have a degree of confusion about
15 proceeding forth on a principle that we're going
16 to impose a higher standard on an interim basis.
17 And how do you manufacture under those
18 circumstances?
19 So either I'm not understanding or I'm
20 the only one with that concern.
21 COMMISSIONER PERNELL: Mr. Chairman, --
22 CHAIRMAN KEESE: Commissioner Pernell.
23 COMMISSIONER PERNELL: -- I think
24 Commissioner Laurie makes a good point, however
25 the last two items were more of a clarification.

1 My understanding is that there's a dispute on
2 whether or not it affects the manufacturers'
3 ability to stay in business. That's not saying
4 that we're going to impose something today and
5 change it tomorrow, or the other way around.
6 I think what's happening here, we need
7 to be mindful that these are emergency regs, so if
8 we go back and do a substantive change, that's
9 going to affect the whole emergency regs. And I'm
10 not in favor of doing that.
11 I am in favor of revisiting certain
12 items and getting clarification on them. And
13 we've had a workshop on this. And, you know,
14 we've had testimony; we've had a number of things.
15 But to, for example, and I won't call any names,
16 either, but to come up at this type of a hearing
17 and say, oh, no, you forgot something, or this is
18 going to hurt me; and this is the first time we've
19 heard of it, is a little bit, I think, misses the
20 point in some instances.
21 But I don't want to get into a debate
22 where everything is going to go back to the 120
23 days, because it's going to affect the emergency
24 regs which we are trying to do. And we've put a
25 lot of work into this, and we know that anytime

1 you affect building standards or any other
2 standard or regulation, you're going to have some
3 people who are in favor of it, and some people who
4 are not. But we have to think about the larger
5 picture here.
6 So, I agree with Commissioner Laurie
7 that we can't put everything into the 120-day
8 window and move forward with these emergency regs.
9 I think a lot of thought has gone into this, and
10 you know, we need to hear from the various
11 stakeholders and certainly be mindful of their
12 concerns. And if we need to revisit, we need to
13 revisit. But that doesn't mean that we're going
14 to change anything, or it doesn't mean that we're
15 not.
16 But I certainly don't want to get into a
17 situation where it affects the emergency regs that
18 we are now -- that are now before you for
19 adoption.
20 CHAIRMAN KEESE: Thank you. Point well
21 taken. I would agree with both Commissioner
22 Laurie and Commissioner Pernell.
23 We will --
24 MR. MATTINSON: I have one more comment.
25 CHAIRMAN KEESE: Okay, take the --

1 MR. MATTINSON: This is Bill Mattinson,
2 I'm an energy consultant in Santa Rosa, and I
3 intend to speak to the general broad aspect of the
4 standards a bit later when it's appropriate.
5 But I wanted to specifically make a
6 short comment on the Fleetwood situation. As an
7 energy consultant I work for clients, builders,
8 architects, developers who are trying to achieve
9 compliance with the energy code.
10 And recently, just this year, I was
11 faced with an interesting problem that bears
12 directly on Fleetwood's situation. And that was
13 we had a house, a San Francisco client who wanted
14 to build a house in Sonoma County. It was going
15 to be a showcase home.
16 He was an architecture buff and looked
17 for the best architect he could find. And found
18 one from Sydney, Australia who had never come up
19 against an energy code before in his life. So he
20 was somewhat taken aback by the impositions that
21 Title 24 was going to impose upon his project.
22 The house was basically walls of glass
23 overlooking vineyards. We tried to guide him to a
24 more energy conserving solution. That basically
25 meant pulling out all the stops. But one of the

1 prerequisites for his design was he wanted to use
2 metal windows. He did not want wood windows or
3 vinyl windows.
4 So we searched the industry, every
5 product in the United States that had a metal
6 frame that NFRC rating so that we could properly
7 account for their energy use in the calculations.
8 And lo and behold, the products we found were all
9 from Fleetwood.
10 The Fleetwood products had a thermal
11 break frame which many others didn't; and they
12 also incorporated cardinal's low E squared glass,
13 which reduced solar heat gain. And we found that
14 this house, which had, in our climate zone,
15 climate zone two, which currently has a .65 U
16 factor, which is one that's under consideration to
17 be adopted for climate zone ten, that this product
18 worked very effectively. In fact, the house that
19 was proposed had greater than 50 percent glass,
20 although the code expects to see only 16 percent.
21 And primarily due to the use of
22 Fleetwood window products, with low U values due
23 to their thermal break, and low solar heat gain
24 due to the proper use of low solar, low E glass,
25 we were able to achieve compliance for that

1 project.
2 So I want you to know that we just put
3 Fleetwood into a $50,000 to $70,000 project
4 because of title 24 requirements. It did not rule
5 them out.
6 CHAIRMAN KEESE: Thank you for that
7 commercial.
8 (Laughter.)
9 MR. MATTINSON: You're welcome.
10 CHAIRMAN KEESE: We will now move to the
11 issue of duct sealing. And since I do not --
12 we've now reached the point where I can't guess
13 who would like to come first, is there anybody who
14 would like to speak on duct sealing?
15 All right. How about --
16 COMMISSIONER ROSENFELD: No, there's
17 one.
18 CHAIRMAN KEESE: Almost too slow.
19 MR. HUNT: Yes, good morning,
20 Commissioners. My name's Marshall Hunt, I'm with
21 Pacific Gas and Electric Company. We've been in
22 the news in a lot of ways recently, but
23 unfortunately not in my area as much as I'd like.
24 Because over the last 20 years, and some
25 people here have been in our department doing this

for 20 years, we have been doing these kinds of things, and specifically ducts. We've had sealed duct programs for ten years. We have regularly been seeing 3 percent, a question earlier from Commissioner Boyd, I think, was -- or maybe it was Commission Laurie, what was the 6 percent from, or someone had said what was the 6 percent from.

Well, we actually, in our home projects see regularly 3 percent duct sealing. And so the sealing systems are out there. People know about them. We have educated hundreds of contractors about them through our residential contractor program, which is a statewide retrofit program.

And what we want to see now is that we don't have to do retrofit, that new houses are built with sealed ducts.

We've made a great deal of progress over the past ten years, and now is the time, the market is mature. It is a chicken-and-egg thing. You can't have field verifiers ready to verify if there's nothing -- if there's no business. And there will be the business. And what our commitment is through our training center, Stockton Training Center, Charles Segerstrom runs that. He's also on the Board of the California

1 Home Energy Efficiency Rating System, CHEERS,
2 which is certified third-party field verifier,
3 that we are committed to getting these people
4 trained; we are committed to following up. We
5 even have a lending library of tools if someone
6 wants to borrow the necessary equipment and they
7 don't want to invest in it quite yet.
8 And I think that's important for you to
9 know that we stand behind that. And we also stand
10 behind educating the building officials and
11 inspectors. We recently had a meeting at our
12 training center laying out a program of hitting
13 ten different sites in our service territory
14 alone, four different days each, in order to get
15 to each one of the localized CBO chapters,
16 coordinating with CALBO.
17 So I think that the duct sealing issue
18 that the window people are worried about, we are
19 also concerned about. Because we want everyone to
20 have tight ducts and good windows, by the way, and
21 keep their utility bills down.
22 So, we stand in support of the tight
23 ducts. They're very achievable and we'll be there
24 to make sure it happens.
25 Thank you.

1 CHAIRMAN KEESE: Thank you very much.
2 Thermostatic expansion valves. Anybody wish to
3 speak to that specific issue?
4 MR. PENNINGTON: We have a comment. Go
5 ahead, Bob.
6 CHAIRMAN KEESE: Are we working on
7 something on this?
8 MR. PENNINGTON: Yes. Do you want to
9 talk about this right now?
10 CHAIRMAN KEESE: Are we ready to deal
11 with it?
12 MR. PENNINGTON: I think so.
13 MR. LEBER: We're partially ready to
14 deal with it.
15 CHAIRMAN KEESE: Okay.
16 MR. LEBER: I thought I was going to get
17 some copies of a marked-up page here, but --
18 CHAIRMAN KEESE: Do you want to wait?
19 MR. LEBER: I could read what we agreed
20 to as a reasonable change into the record now, and
21 provide you the copies later. Or we could wait.
22 Your pleasure.
23 MR. PENNINGTON: It's a fairly simple
24 change.
25 CHAIRMAN KEESE: All right, why don't we

1 read it in the record right now.
2 MR. LEBER: Right. This is a change to
3 section 151(f)(7), which is about space heating
4 and cooling.
5 And the first line in that starts out
6 reading: When thermostatic expansion valves are
7 shown as required by tables 1Z1 through 1Z16, what
8 we want to do is insert the words following the
9 expansion valves, right after valves insert the
10 words, "or an equivalent alternative approved by
11 the Commission."
12 CHAIRMAN KEESE: The recommendation of
13 staff?
14 MR. PENNINGTON: Yes.
15 COMMISSIONER BOYD: Can you read that
16 again, then, as modified, please?
17 CHAIRMAN KEESE: And let me set this up.
18 Commissioner Pernell, we're hearing a
19 recommendation from consultants and staff on a
20 minor change. And he's going to read it one more
21 time.
22 MR. LEBER: It's: When thermostatic
23 expansion valves or an equivalent alternative
24 approved by the Commission are shown as required
25 by tables 1-Z1 through 1-Z16. That would be the

way it would read.

CHAIRMAN KEESE: Okay, so just there will be an alternative to this, if somebody comes up with one and the Commission agrees?

MR. LEBER: Correct.

CHAIRMAN KEESE: Acceptable?

COMMISSIONER PERNELL: Yes. We have had some conversation about this, and I think the Committee, I can't speak for Commissioner Rosenfeld, but the Committee has --

CHAIRMAN KEESE: Commissioner Rosenfeld, that's fine?

COMMISSIONER ROSENFELD: Yes.

COMMISSIONER PERNELL: Okay.

CHAIRMAN KEESE: So the Committee's okay. All right, we will accept that amendment.

Now, rather than since field verification goes across more than one line, it looks like we have seven or eight or more speakers, but, Mr. Raymer, since you were on your way to the microphone why don't you just lead off, and we'll consider this the general comments. And discuss the issue of field verifications, if you wish.

MR. RAYMER: Thank you, Mr. Chairman,

1 Commissioners. I'm Bob Raymer, Technical Director
2 with the California Building Industry Association.
3 And with me today is Mike Hodgson, the CBIA Energy
4 Committee Chair. Mike will make the bulk of our
5 comments, and then I'll follow up with some
6 closing remarks. Thank you.
7 MR. HODGSON: Commissioners, ladies and
8 gentlemen, good morning and happy new year. I'm
9 Mike Hodgson, Chair of the California Building
10 Industry Association's Energy Committee.
11 CBIA has been working diligently with
12 the Energy Commission Staff to develop a
13 reasonable response to the requirements of AB-970.
14 CBIA commends the diligent effort by the
15 Commissioner, staff and their consultant. We
16 single out Bill Pennington for our compliments for
17 his fair mindedness and openness to suggestions
18 during this intense and, at time, tense 120-day
19 rulemaking.
20 The consultant team, under Bill's
21 directions, chose energy features wisely and was
22 responsive to building industry and others' input.
23 The building industry has been
24 cooperating with the CEC to introduce cost
25 effective building verification, tight HVAC ducts,

1 and spectrally selective glass into the
2 marketplace. These are positive construction
3 concepts, but cannot be adopted overnight.
4 For this reason CBIA strongly supports
5 the proposed implementation date of June 1, 2001,
6 and an exemption from master plan through December
7 31st of 2001.
8 There is still strong disagreement
9 between the industry and the CEC over costs to
10 implement the proposed changes. The reasons for
11 the difference in cost projection is twofold.
12 First, the CEC does not use glazing
13 percentages characteristic of the climate zones,
14 and for example, typical glazing in the central
15 valley is not 16 percent.
16 Secondly, the CEC is very optimistic on
17 their cost savings accrued from down sizing of air
18 condition units. The projection that we saw
19 earlier today that it would only cost $43 in the
20 high desert to adopt these standards with a 23
21 percent increase in stringency I would say is
22 overly optimistic.
23 Builders simply will not downsize the
24 size of their air conditioners by two tons in the
25 central valley or in the desert.

1 During the next triennial update to the
2 energy code we strongly urge the Commission to
3 alter glazing percentage of houses to reflect
4 typical housing in the state.
5 CBIA members are willing to shoulder a
6 fair burden to respond to this energy crisis.
7 CBIA has asked what impact 100,000 new single
8 family starts have on peak load in relation to the
9 over 12 million existing homes in the state. CBIA
10 has yet to receive an adequate explanation.
11 CBIA has offered to work alongside the
12 Commission to introduce legislation to allow the
13 Energy Commission to impact existing construction.
14 We look forward to your response and encourage
15 other advocates who are interested in energy
16 efficiency to join with us in promoting energy
17 efficiency in existing buildings.
18 The keys for successful implementation
19 include notification of the building industry,
20 adequate training of builders and inspectors, and
21 clear construction protocols for installation of
22 energy features.
23 HVAC layout and design and tight ducts
24 will become an industry standard. CBIA would like
25 the Energy Commission to notify builders,

installers and inspectors that HVAC layout and design can only be completed by the installing HVAC subcontractor who is a C20 or a licensed mechanical engineer. This assures clear recourse when designs are not adequate.

CBIA is interested in developing enforceable energy efficiency standards that encourage quality construction. The Energy Commission and CBIA have a strong partnership encouraging training and construction protocols. CBIA believes that the Energy Commission can obtain significant conservation through proper understanding, training and enforcement of their existing regulations.

At this time I'd like to introduce Bob Raymer for a few comment.

MR. RAYMER: Just in general, Commissioners, and Mr. Chairman, it's not lost on CBIA at all that today the Governor is calling for a special session on the global issue of energy.

I see on the nightly news now, the national news, that California is mentioned every night prominently for its energy problems. And CBIA is not going to be an obstacle to solving those problems. And we're going to work as we

have in the past with staff to productively resolve concerns that we have.

Having said that, there were two comments made earlier by Commissioner Laurie that I'd like to speak to. The first one, you're correct, Commissioner, in 120 days we've done what the last time we did something like this took us two and a half years. And I think I share staff's concerns that we'd prefer not to do this again anytime soon.

(Laughter.)

MR. RAYMER: It was no fun. These standards are very complex. They're probably the most complex that I've dealt with in the nation. But they do a very complex -- they address a very complex situation. And they don't render themselves very well to quick modification.

And I also work with the Legislature and if I see any future attempts to try and quickly change the energy regs, I will probably try and oppose that as I can, to make sure that they understand that you have 200 to 300 pages of code, a couple hundred pages of ACM manual requirements, and then 400 to 500 pages of residential manual that just simply can't be changed and implemented

1 overnight.

2 And so with that, that's one of the

3 reasons why we so strongly support delaying the

4 effective date to June. And the grandfathering of

5 the master plan projects throughout the remainder

6 of the year.

7 On to your second comment, the question

8 of is there still dueling analysis and dueling

9 costs. And on a positive note we've gotten a lot

10 closer and a lot better, certainly a lot quicker

11 at discussing with staff in informal settings, and

12 we've had probably six or seven of these, where we

13 sit down and go over each other's analysis, and

14 try and figure out why one side is saying one

15 thing and why the other side is saying something

16 else.

17 This is the very same issue that we were

18 coming up against when you were Chair of this

19 Efficiency Committee. In particular there's two

20 specific issues that we've encountered this time

21 around. Mike mentioned the first. When staff is

22 indicating that in the most stringent tightening

23 of the zones I think there's like six or seven

24 zones, where Energy Commission Staff was

25 projecting an initial increase in cost of $1100.

1 But that would be significantly reduced by
2 downsizing the air conditioning unit.
3 In the short term that's absolutely not
4 going to happen. A builder is not going to go
5 ahead and downsize one to two tons of air
6 conditioning size, at least over the short term.
7 They're going to want to ease into this situation
8 simply because of potential of construction defect
9 liability. So, at a minimum, using the base
10 assumptions that takes the cost back up to $1100.
11 In addition, as Mike also mentioned, we
12 have the very same problem where for the last 18
13 to 19 years the Commission has been utilizing a
14 basecase house that assumes a level of quantity of
15 glass, particularly in northern and central
16 California, that is not at all what you see used
17 out in the field.
18 In particular in Sacramento and Modesto
19 and Fresno, we're not using 16 percent glass. We
20 never have used 16 percent glass. Certainly you
21 can find some instances where somebody's using
22 less than 16 percent glass, or around there, but
23 by far the overwhelming majority, the huge average
24 that's going on right now in central and northern
25 California is 20 percent and above. Which means

at the very start of any type of regulatory update we're already dealing with a deficit.

And it's our hope that over the next two to three years, as we start into the next update of the standards, that at the onset we address this situation so that we're all speaking the same language in terms of cost and energy impact.

And so with that, I'd like to indicate CBIA's goal. We're not thrilled about the costs here, but there is the ability for us, if we work very diligently between now and June 1st, to number one, make sure that there's an adequate number of these third-party inspectors available; and number two, make sure that industry is aware of their availability and becomes comfortable with their use.

And that will probably entail early implementation of tight ducts on a voluntary basis just to become familiar with the technology change, the implementation change, installation change, and the use of the third-party installers.

But more importantly, it's very clear, staff is correct, that in using this approach you can significantly reduce the cost of compliance. And so the other side of that coin is if we can

1 accomplish this over the next four to five months,
2 compliance costs are going to be significantly
3 higher than what staff was projecting.
4 So, we're going to work with staff;
5 we're going to work with the Legislature; we're
6 going to work with the Commission to try and take
7 care of this problem. And right now we're
8 optimistic that we can do that.
9 Thank you.
10 CHAIRMAN KEESE: Thank you, Mr. Raymer.
11 I'm sure staff is aware of your request that you'd
12 like them to do the notification to builders,
13 installers and inspectors -- can only be
14 accomplished as a request in the last written
15 statement.
16 MR. PENNINGTON: I think we should
17 discuss this further with them, actually.
18 CHAIRMAN KEESE: Thank you.
19 COMMISSIONER PERNELL: Mr. Chairman.
20 CHAIRMAN KEESE: Commissioner Pernell.
21 COMMISSIONER PERNELL: Just a quick
22 comment. I want to commend CBIA and their staff,
23 particularly Bob and Mike, for working with us
24 here. And I think you stated it correctly, that
25 if we all work together on this we can make it

1 happen.
2 And my understanding is we're 119 days
3 today, so -- and that's just an example of what we
4 can do when we all sit down at the table and work
5 together. So I just want to commend CBIA for
6 their efforts in assisting us with this
7 rulemaking.
8 MR. RAYMER: Thank you, Commissioner, we
9 appreciate that.
10 CHAIRMAN KEESE: Thank you. Mr.
11 Horowitz.
12 MR. HOROWITZ: Good morning,
13 Commissioners, staff and other interested
14 stakeholders. My name's Noah Horowitz and I'm a
15 Senior Scientist for the Natural Resources Defense
16 Council, NRDC.
17 NRDC is an environmental organization
18 with over 80,000 California members. And we have,
19 for many years, been an active participant in
20 prior Title 24 proceedings.
21 I'll keep my points short, as we've
22 submitted testimony previously. The most
23 important thing I can say is we strongly support
24 adoption of the proposed changes to Title 24 for
25 both the residential and nonresidential buildings.

1 The changes proposed clearly meet the
2 enabling legislation's requirements of maximum
3 feasible reductions that are cost effective.
4 While we're disappointed that the CEC
5 left untouched numerous additional energy savings
6 opportunities, such as tightening the water
7 heating budget, fixing the residential lighting
8 sections, disallowing the use of poor performing
9 glass for multifamily buildings with low glazing
10 areas, we, too, recognize that the proposed
11 standards were done on a very tight timeframe, and
12 involve numerous compromises.
13 Given the strong and clear mandate of
14 the legislation and the concessions that have
15 already been made to date, we do, however, firmly
16 oppose any further weakening of the proposed
17 standards.
18 Lastly, I'd like to address the concerns
19 of CBIA and many of its members, about the
20 implementation costs of these standards.
21 CEC and their consultants performed very
22 rigorous energy and cost analyses that were
23 presented at prior workshops and projected a
24 first-time cost of between $300 and $1000.
25 Meanwhile, CBIA claims compliance costs of up to

1 $3000, but has not, however, provided any detailed
2 documentations to the docket to back up these
3 assertions.
4 Even if the reality is somewhere between
5 these numbers, this cost is relatively
6 insignificant. It's payback will be rapid. The
7 homeowner will save thousands of dollars during
8 their occupancy in reduced electricity and gas
9 bills due to the proposed changes.
10 For example, adding $1000 to a mortgage
11 results in increased monthly payments of around $8
12 a month. This may well turn out to be a bargain
13 the way electricity and gas rates are going in
14 California.
15 Consumers in most climate zones could
16 easily save $10 to $20 a month or more on utility
17 bills once the changes are implemented. In
18 addition, they'll receive other benefits such as
19 increased comfort due to the tight ducts and
20 better windows that are being considered for these
21 standards.
22 In closing then we commend the work done
23 by CEC and their consultants. And I know many of
24 them worked well past 5:00, and past 11:00
25 sometimes, since I got the emails. And we urge

prompt adoption of the proposed standards.

Thank you very much.

CHAIRMAN KEESE: Thank you. Mr. Michael Day.

MR. DAY: Good morning, Commissioners and fellow stakeholders. My name is Michael Day. I represent Beutler Heating and Air.

We had a couple of questions and a couple of quick points that we just wanted to bring up. First off we wanted to sort of sound as part of the chorus in commending the staff and all the other people that have worked pretty hard on this. We understand that the timelines have been tight, and that some recommendations didn't have the time to get back to them that they would in a normal rulemaking procedure.

And that was why we were hoping that there might be some opportunities, and I'll be speaking at greater length after the proceedings, to implement an alternate form of field verification along the lines of what was suggested by Commissioners Rosenfeld and Pernell at a previous workshop, to be implemented during the 120-day period.

Essentially concentrating on contractor

1 verification by third-party inspectors starting
2 off with significantly higher inspection rates and
3 ratcheting down if they can prove their
4 performance.
5 But other than that, looking forward to
6 the future. Thank you.
7 CHAIRMAN KEESE: Thank you very much.
8 Mr. Nehemiah Stone.
9 MR. STONE: Nehemiah Stone, Heschong
10 Mahone Group.
11 I would also like to take the
12 opportunity to commend staff for the hard work in
13 doing in the manner of 120 days what it took us
14 three years to do for the '92 standards.
15 I think it's incredible the amount of
16 work that got done, and the quality of the work
17 that got done.
18 I have only objection to the standards,
19 and I'd like to put it on the record again. I did
20 at the hearing before, at least the residential
21 portion, and that is the deletion of package A.
22 And the reason I think it's important is package A
23 gives an example of good design. It starts where
24 it ought to start with taking a look at the site,
25 taking look at solar access, and simple passive

solar measures.

And I think that ought to continue to be a part of the standards. I recognize, as I'm sure everybody else does, that it's used almost never. But it is used sometimes, and simply as an example of what ought to be done for good design. The place to start. It ought to remain part of the standards.

If it's too late to keep it at this point, I would like to see it brought up again in the 120-day period to put it back into the standards again.

Thanks.

CHAIRMAN KEESE: Thank you. I am assuming we're going to take up commercial after this?

MR. PENNINGTON: Yes, we need to revisit the issue that Jon had brought up before. So before we leave residential, we need to come back and --

CHAIRMAN KEESE: Okay, I'm just -- let me just say I'm assuming that Mr. Schell would speak to the commercial, is that correct?

MR. SCHELL: That's correct, yes.

CHAIRMAN KEESE: Then I have two other,

1 I have Mr. Rob Hammon. Are you speaking to
2 commercial or are you speaking here?
3 DR. HAMMON: Residential.
4 CHAIRMAN KEESE: Thank you. You're up.
5 DR. HAMMON: Thank you, Mr. Chairman,
6 Commissioners. My name is Rob Hammon, I'm a
7 principal of ConSol.
8 And I'd just like to mention that the
9 changes that are included in the standards are
10 procedures for builders and building departments
11 that are very complex. And the standards before
12 we did this change were complex, they got
13 substantially more complex, especially in terms of
14 how they're going to be implemented in the field.
15 I appreciate the efforts of Bill
16 Pennington and his staff working with us to make
17 the changes workable. We made a lot of changes in
18 the field verification aspect of the standards
19 that I think will help make the standards
20 workable.
21 I'd like to note for the record, based
22 upon a previous comment, that it is very possible
23 to make ducts leak less than 6 percent in the
24 field. We do it every day, albeit with a very
25 small percentage of homes at this point in time,

1 but it can be done. And third-party verification
2 can work.
3 I just want to note to staff that we
4 need to continue to work together on this issue.
5 I'd like to recommend that staff continue to work
6 with the industry and monitor the progress that
7 we're making in the field doing improved
8 installations and verification of those
9 installations in the field.
10 This is a new issue with the industry.
11 It's a new issue for the Commission. And we're
12 going to have to work together to make sure that
13 things, as implemented, will work.
14 I suggest that the staff take a new role
15 in the monitoring and enforcement of the energy
16 standards. Historically they've written standards
17 and then left it completely to building
18 departments to see that they're properly
19 implemented. And there's a weak link there
20 between the Commission and the implementation of
21 the standards.
22 And I think it's in everyone's best
23 interests for the standards to be uniformly
24 implemented and enforced. And that the CEC is an
25 appropriate entity to help see that this happens.

1 And I'm sure that the industry is more than happy
2 to work with the Commission and staff to see that
3 this does happen.
4 Thank you.
5 CHAIRMAN KEESE: Thank you.
6 COMMISSIONER LAURIE: Mr. Chairman, very
7 quickly on that point. I'd like to discuss at
8 some subsequent time Mr. Hammon's comments
9 regarding implementation. You can regulate all
10 you want and if it's not implemented sufficiently
11 then you've wasted your time.
12 So, I'm going to want to ask us to look
13 at more contract money, or more PY to insure
14 adequate implementation. Nothing further to be
15 discussed today about that, however.
16 CHAIRMAN KEESE: Thank you.
17 Commissioner Pernell, did you want to say
18 anything?
19 COMMISSIONER PERNELL: Well, I would
20 agree with that. The point's well taken. It
21 doesn't -- to me it doesn't make sense to have a
22 great idea and it just sits on the shelf. So, at
23 some point, as has been said, staff is working
24 with the industry as well as the building
25 departments. And I would want to see that

1 continue.
2 And there has to be a comprehensive
3 discussion centered around compliance.
4 CHAIRMAN KEESE: Thank you. Mr.
5 Mattinson, are you --
6 MR. MATTINSON: Again, I'm Bill
7 Mattinson. Although at the moment I'm
8 representing CABEC, the California Association of
9 Building Energy Consultants.
10 CABEC's been following and participating
11 in the standards process for many many years.
12 Long ago we set a few criteria that we apply to
13 every set of standards that we looked at.
14 Number one, we wanted to make sure they
15 were technically correct. And we believe these
16 standards are correct in focusing their attention
17 in the residential arena on windows and ducts, the
18 two biggest holes in the building envelope.
19 And in looking at tightening the
20 lighting standards on the nonresidential side, to
21 recognize the new lighting technology is here and
22 well received.
23 Our second criteria is that they're
24 fair. And we think these standards are extremely
25 fair in that they will provide relief for

1 homeowners without imposing major building
2 industry burden as far as costs go. I know
3 there's some difference on the costs, but we need
4 to recognize that the last set of standards, the
5 '98 residential standards, actually imposed no
6 additional costs for builders, and could be
7 interpreted as a softening. So it's appropriate
8 to tighten them now in light of the fuel costs
9 increases.
10 The third criteria we've imposed is, or
11 would like to see is that the standards be
12 enforceable. And I think the two things on the
13 residential side that are going to assure that,
14 number one is we've had a great benefit by the
15 labeling of window products, fenestration
16 products. Now, on the drive up here I saw window
17 trucks with the labels prominently displayed. I
18 could read them from the lane as I passed them.
19 We didn't have that five or six years ago, and now
20 consumers can identify those products.
21 The other thing is the field
22 verification. I think with the cooperation of the
23 utilities, the Commission, the builders, the
24 consultants, the raters, that the building
25 officials can be assured that we will have field

1 verification of properly installed HVAC
2 components.
3 Our final criterion in evaluating any
4 set of standards is do they actually save energy.
5 And we're convinced that the staff analysis shows
6 that they save significant energy which will be a
7 benefit for all of us.
8 We, like several others, I think the
9 building industry suggested that we should look at
10 existing homes. And if NRDC wanted to look at
11 further things, we would like to explore further
12 items, too. Particularly imposing some
13 requirements on replacement windows which make up
14 a larger percentage of the window market than new
15 homes. And yet every time a replacement window is
16 installed, if it is not up to this level, we've
17 lost that opportunity for many years.
18 And finally we want to congratulate the
19 Commissioners, the staff and their contractors for
20 making this both an expedited and extremely
21 believable and useful procedure.
22 So, thank you, all.
23 CHAIRMAN KEESE: Thank you, Mr.
24 Mattinson. And I will comment at this time, this
25 has been an extremely expeditious procedure to do

this in 120 days. Some other parts of the government processes don't work that fast.

(Laughter.)

CHAIRMAN KEESE: Our ability to introduce legislation to do what you talked about on the market that's out there, the homes that are already built, would suggest that if we started today, it can be discussed in the year 2002.

However, the template that's going to be applied to 75 percent of the legislation that goes through this session of the Legislature is going to be what impact does it have on energy.

So I would suggest that those of you who are interested in this, who recognize the time deadlines for introducing bills, and for hearing bills, should consider getting on it. I think you would find a very welcome ear at the Energy Commission in support of that. My sense is that you would find a welcome ear at Agency in support of that. And we're hearing the Governor say that he's going to do a lot of things.

So this is one where the ball is not in our court.

Mr. Ware, did you care to comment on this issue before we move to nonres?

1 COMMISSIONER LAURIE: Mr. Chairman,
2 while Mr. Ware is approaching the microphone, is
3 it the Commission's intent to go straight through?
4 CHAIRMAN KEESE: We only have -- the
5 staff must have done a wonderful job on nonres, or
6 else they were very easy on nonres. We only have
7 one witness who cares to speak. How long is the
8 presentation on nonres?
9 MR. PENNINGTON: About 20 minutes.
10 CHAIRMAN KEESE: I think we can finish
11 this up. Mr. Ware is, I believe, our last
12 speaker. Is there anybody else in the audience
13 who wants to speak to this? We have one other
14 speaker, okay.
15 Mr. Ware.
16 MR. WARE: My name is David Ware; I'm
17 the Manager of Codes and Regulation for Owens
18 Corning. And I'm also representing the North
19 American Insulation Manufacturers Association.
20 I, too, want to echo the me-too in
21 regards to the bang-up job that staff and the
22 Committee did in regards to the standards. And we
23 wholly support what has been presented here.
24 But I would be remiss if I did not
25 report out to the full Commission some of my

1 concerns. And primarily I feel that many of the
2 measures that have been proposed for these
3 revisions, albeit in an emergency situation, are
4 somewhat short-sighted. It's a lost opportunity.
5 There are many things that could have
6 been addressed, primarily around the building
7 envelope, to improve building thermal comfort that
8 were not addressed. And I would hope that the
9 Commission would provide explicit direction to
10 staff and future consultants, as well as
11 stakeholders in this process, that that is an area
12 that needs to be addressed in the future, if
13 indeed we're going to look at a larger scope
14 attack at statewide energy savings.
15 One that not only deals with electrical
16 cooling energy savings, but one that deals with
17 the here and now heating energy savings, as well.
18 In particular, I want to indicate that
19 there are still a number of tradeoffs that will be
20 allowed under these standards, and that will
21 diminish the full impact of these regulations.
22 I have suggested on numerous occasions
23 that by increasing the minimum ceiling insulation
24 R value from a minimum mandatory level of R-19 to
25 R-30 will help immensely. We already know that

1 the tradeoff approach, from R-38 even to R-30
2 within building compliance process goes down.
3 Builders and compliance engineers will trade off
4 that ceiling insulation to a minimum mandatory
5 level of R-19.
6 That does not help out the overall
7 thermal performance of the building. It makes
8 your higher space conditioning equipment work
9 more. And overall it does not improve the comfort
10 of the building.
11 And if you don't do it in this
12 proceeding, certainly provide some direction in
13 the next proceeding to minimize that kind of
14 tradeoff.
15 Duct improvements, as well, are
16 extremely warranted and need to be looked at. And
17 I would hope that you provide direction to all of
18 us that those areas need to go after in future
19 proceedings.
20 So, those are the two main items I
21 wanted to focus your attention on. There are
22 tradeoffs within the existing procedures that will
23 continue, and they will -- I would hope that even
24 in the implementation aspects and the training
25 aspects that Commission Laurie mentioned, that we

can provide some direction to all parties involved to help improve that process.

Thank you.

CHAIRMAN KEESE: Thank you. Mr. Jeff Johnson.

MR. JOHNSON: I'll be speaking to the nonresidential.

CHAIRMAN KEESE: Nonres, okay. Thank you. Sorry, change the name there.

MR. CHAPMAN: My name is Jeff Chapman. I am the Director of Duct Design, Tight Duct Testing and Title 24 Inspections for California Living and Energy.

And just to give you a glimpse into the future of what can happen, I am a third-party verifier for inspections and also testing.

In a subdivision in Pleasanton, California, I've tested over 50 air conditioning systems, four of which have not passed 6 percent. Of those four, in working with the leadmen from the air conditioning company, we solved the problem in less than 30 minutes.

The next problem he's still working on, but we'll get back to it tomorrow and make sure it's fixed.

1 Working with the air conditioning
2 contractor, not being his enemy or her enemy, not
3 acting as if we are the ruling party, but yet
4 helping to implement the standards this Commission
5 sets, with the training we've received and the
6 background most of us have in the industry, only
7 supplements what you desire to happen. And helps
8 the HVAC contractor comply with your standards.
9 And thank you for your time.
10 CHAIRMAN KEESE: Thank you very much.
11 COMMISSIONER PERNELL: Thank you.
12 CHAIRMAN KEESE: Mr. Pennington, we'll
13 move to nonres.
14 MR. PENNINGTON: Okay. We need to
15 revisit the point that --
16 CHAIRMAN KEESE: All right.
17 MR. PENNINGTON: -- Mr. Leber brought up
18 before the negotiations continued, and we have a
19 slightly different version to propose.
20 CHAIRMAN KEESE: All right, we're going
21 to pass out --
22 MR. LEBER: I must apologize. At least
23 this time we have it written down to put it in
24 front of you. The previous wording that we read
25 noted that there was an ambiguity in it. And so

1 we're suggesting that we drop that wording and go
2 with the wording that has just been handed to you,
3 which is to add a sentence near the end of the
4 paragraph of 151(f)(7). Just before the last
5 sentence in that paragraph, that would state:
6 "The requirement for a TXV may be met by
7 an equivalent alternative approved by the
8 Commission." We think that's much clearer. Make
9 sure there's not an ambiguity between the tables
10 and the text here.
11 So we would recommend that this is what
12 you approve.
13 CHAIRMAN KEESE: That's acceptable to
14 the Committee. We will consider that an amendment
15 to what you see in front of you.
16 All right. Thank you.
17 Nonres. Mr. Ware, do you want to --
18 MR. WARE: David Ware, Owens Corning.
19 I'm confused on that particular item.
20 CHAIRMAN KEESE: Okay, why don't we do
21 nonres. You can look at it and talk with staff.
22 MR. WARE: Okay.
23 CHAIRMAN KEESE: And there's more than
24 one party involved here. Let's try to keep that
25 off the -- nonres, please.

1 MR. PENNINGTON: Okay. Thank you much.
2 We have a similar process here that we propose to
3 go through on nonres. The nonresidential
4 standards team was led by Mr. Charles Eley of Eley
5 Associates. And includes Mr. Mark Hydeman of
6 Taylor Engineering and Mr. Mark Modera of LBNL and
7 AeroSeal. And Charles is going to be making the
8 presentation. Others on his team would be
9 available for questions or comments.
10 CHAIRMAN KEESE: Thank you.
11 MR. ELEY: Thank you, Bill. I also want
12 to acknowledge Nehemiah Stone of HMG who helped us
13 with fenestration costs. And I also wanted to
14 acknowledge the background research that was
15 sponsored by Pacific Gas and Electric Company
16 through their case initiatives project. This
17 research helped us jump-start and get a heads up
18 on many of the changes.
19 There are five changes that are being
20 proposed for the nonresidential standards. The
21 most significant change is to update the criteria,
22 the fenestration criteria for both U factor and
23 SHGC.
24 A second change related to fenestration
25 is to require NFRC label certificates for site-

1 assembled fenestration products in large
2 buildings. The fenestration changes that account
3 for most of the energy savings and demand
4 reduction savings.
5 There's also a proposed change to offer
6 a credit for cool roofs. This is an equal energy
7 credit. It doesn't change the overall stringency
8 of the standard but provides another way to comply
9 with the standard.
10 For lighting there's a number of
11 miscellaneous small changes to the lighting power
12 allowances, and some changes to the control
13 requirements.
14 For HVAC the big change is to update the
15 equipment efficiency criteria to be consistent
16 with ASHRAE standard 90.1-99, which is the
17 national consensus standard with support from HVAC
18 manufacturers across the country.
19 And finally, there's an equal energy
20 credit for sealing HVAC ducts. This is limited to
21 small, single zone packaged equipment serving less
22 than 5000 square feet.
23 Next slide, please. The savings from
24 these changes are really quite significant, so we
25 have done some good here. We estimate that almost

1 80 gigawatt hours per year of electricity will be
2 saved; 700 therms of gas will be saved; and peak
3 demand will be reduced -- well, our estimate for
4 noncoincident demand is around 47 megawatts. And
5 for coincident demand at a rather arbitrary date
6 of July 18th is about 36 megawatts of savings.
7 These estimates of energy and demand
8 savings are based on a quite sophisticated method
9 using the database of 990 nonresidential buildings
10 that were surveyed during the periods of about '95
11 through '98.
12 Unlike residential, we don't have just a
13 single prototype building because these standards
14 cover everything from airport terminals to Home
15 Depot to large office towers. So, we don't have a
16 single prototype. We have, in fact, 990
17 prototypes.
18 Next slide, please. I want to make a
19 few comments about economics. All of the
20 requirements have been shown to be cost effective.
21 The method used for nonresidential -- our method
22 for life cycle cost analysis is the same as was
23 used with low rise residential.
24 We showed that the net present value of
25 energy savings is greater than or equal to the

1 incremental cost for implementing the measure.
2 Now, the net present value for a kilowatt hour
3 saved over the life of the nonresidential building
4 is $1.02 if you consider a 15-year time horizon,
5 or it's $1.68 if you consider a 30-year time
6 horizon.
7 We considered a 30-year time horizon for
8 the fenestration measures because those windows
9 are going to be in the building for that period of
10 time, we believe. And $1.02 is used for lighting
11 and other HVAC measures because those systems are
12 likely to be replaced on a shorter time horizon.
13 For gas, the net present value of a
14 therm saved over the life of the building is $7.04
15 over a 15-year period; and $11.43 over a 30-year
16 period.
17 These numbers are for the 15-year period
18 are very similar to those used to justify the '92
19 standards. And the value we're placing on energy
20 savings is considerably higher than the value that
21 ASHRAE placed on energy savings when those
22 standards were shown to be cost effective.
23 This point is made because some of the
24 requirements, especially the HVAC equipment
25 efficiency requirements are drawn from ASHRAE, no

1 additional life cycle cost analysis is done.
2 But since we're valuing electricity
3 savings at $1.02 and ASHRAE valued them at 64
4 cents, then if ASHRAE showed they were cost
5 effective, they should be more than cost effective
6 in the California arena.
7 Next slide, please. I'm going to review
8 fenestration in a little more detail. This is --
9 solar gain through fenestration is a major
10 contributor to cooling loads and peak demand in
11 California. And the criteria have not been
12 updated since 1992.
13 Since that time special coatings,
14 advanced glazing technologies like low E coatings,
15 thermal break frames have become much more
16 available and their cost has dropped.
17 We are considering a 30-year time
18 horizon for fenestration because we believe that
19 it lasts that long in buildings.
20 And the last bullet is an important one.
21 In cost justifying the fenestration criteria we
22 did not consider the benefit of HVAC downsizing,
23 which makes our analysis even more conservative.
24 There are cases -- this is a very real benefit.
25 Because we didn't consider it doesn't mean it

1 shouldn't be considered. It's just that we didn't
2 need to. The savings were so profound as they
3 were, that it was not necessary to dig a little
4 bit deeper.
5 I would like to make one other comment
6 about the HVAC equipment sizing. With most
7 nonresidential buildings the common HVAC system is
8 what's called a variable air volume, and usually
9 that variable air volume has a reheat system at
10 the terminal units.
11 This reheat system is usually a hydronic
12 system, which means that water pipes have to be
13 installed in the plenum space and delivered to the
14 units. And for most of the coastal climates I
15 believe that with the high performance glazing
16 that's required by these standards and the
17 insulation levels required by the standards, that
18 that reheat system can probably be eliminated in
19 many cases. And now we're talking about more than
20 just downsizing the HVAC equipment, we're talking
21 about making a quantum leap in first cost
22 reductions.
23 Next slide, please. The fenestration
24 criteria has been implemented as modifications to
25 two tables in the standards, tables 1H and 1I.

1 These deal with nonresidential and residential
2 occupancies respectively.
3 Now, table 1I is not low rise
4 residential, but high rise residential, which
5 includes hotel/motel guest rooms; it includes
6 patient rooms in hospitals; it includes high rise
7 residential four stories or more.
8 One of the key changes to these tables
9 is that the SHGC criteria is now based on
10 fenestration area, with larger fenestration areas
11 that criteria becomes more stringent.
12 Another change that we made in the
13 structure of these tables is that we moved climate
14 zones two and ten, which are Santa Rosa and
15 Riverside, respectively, in with the central
16 valley grouping for the purposes of expressing the
17 criteria. Previously climate zones two and ten
18 were grouped with the north and south coast. And
19 when we looked at the life cycle cost results for
20 fenestration it was more clear that the criteria
21 that applied to the central valley climates was
22 more appropriate for two and ten. So they were
23 moved.
24 In our analysis we have a database of
25 about 150 different glazing constructions,

1 fenestration constructions, with all -- there's
2 four different types of low E coatings; there's
3 several types of tinted glass; there's three types
4 of frames. And a process was to look at the life
5 cycle cost of each and every one of those in each
6 situation and find the one with the low life cycle
7 cost.
8 However, we did apply a little
9 professional judgment. One of which was to reject
10 solutions that were based on vinyl frames, because
11 we don't believe that they're universally
12 applicable to the broad class of buildings covered
13 by the nonresidential standards.
14 We also eliminated medium reflective
15 coatings from the residential criteria, but not
16 the nonresidential criteria.
17 Next slide, please. This table shows
18 the structure of the standards. The U factor
19 criteria for vertical fenestration is .49 for the
20 central valley, the desert and the mountains.
21 It's .81 for the north and south coast. That's
22 for nonresidential classes.
23 For residential classes the criteria is
24 .49 for the entire state. The .49 represents
25 double glass with the standard sputter applied low

1 E coating and a thermal break frame.
2 The .81 represents double glass with no
3 coatings and a standard metal frame.
4 Now, these numbers you have to, if you
5 compare them to the ones discussed earlier for low
6 rise residential, you have to use some caution,
7 because for commercial buildings or nonresidential
8 buildings the standard window size for calculating
9 U factors is four feet by six feet. For
10 residential buildings it's three feet by five
11 feet.
12 What this means is that the frame is a
13 much bigger impact for residential sized buildings
14 than nonresidential sized buildings. So windows
15 with the same glazing technologies would have a
16 lower U factor rated with the commercial size than
17 they would with the residential size.
18 Next slide, please. For skylights the
19 criteria was also updated. We have three classes
20 of skylights. Glass skylights that are mounted on
21 a curve; glass skylights that are not mounted on a
22 curve; and plastic skylights which are always
23 assumed to be mounted on a curve.
24 So the U factor criteria again is
25 presented here for the five different climate

1 regions. And the SHGC criteria is provided for
2 two ranges of skylight to roof ratio.
3 Next slide, please. Another change to
4 fenestration is to require NFRC label certificates
5 for site-assembled vertical glazing in large
6 buildings. And a large building is defined as one
7 which is 100,000 square feet or larger, and has a
8 glazing area of 10,000 square feet or larger.
9 The second criteria was added after the
10 workshop to respond to some comments. This is
11 intended to exclude large buildings with small
12 windows, like for instance Big Box Retail, Home
13 Depot, things like that.
14 Previously site-assembled windows or
15 curtain walls were excluded from NFRC label
16 certificates. This would add them for large
17 buildings. NFRC now has a program for labeling
18 site-assembled vertical glazing. And this will
19 affect something on the order of 10 percent to 15
20 percent of permit applications and probably 40 to
21 50 percent of square footage because those few
22 large buildings represent a large fraction of our
23 new construction in California.
24 Next slide, please. There's a few
25 changes to section 116 of the standards that

respond to this. There's a default table that's added there that can be used for site-assembled vertical fenestration in buildings that are exempted from the NFRC labeling.

Next slide, please. So moving on to cool roofs, what's been done for nonresidential buildings is to provide an equal energy tradeoff credit. We have not increased the stringency of the standard. What we're doing here is providing another way to comply with the standard. And hopefully something that will begin to jumpstart a new set of measures.

Credits for cool roofs can be taken advantage of in two ways. The simplest way is through the envelope tradeoff options, section 143 of the standard. Credits can also be taken when the whole building tradeoff method is used. This provides design flexibility and an incentive for installing cool roofs while giving the industry a chance to develop its products. The tradeoff procedures are based on DOE2.1E simulations and modeling procedures.

Next slide, please. The approach in section 143 is to add another term to the equations that are already there that account for

1 solar gain through the roof. These credits cannot
2 be charged against insulation levels, but rather
3 against measures that affect solar gain. So, a
4 cool roof would allow roughly a 10 percent
5 increase in SHGC or it would be equivalent to an
6 approximate 5 percent increase in window area.
7 In terms of modeling, the standard
8 design for the base building would be modeled with
9 a roof reflectivity of .3, while the cool roof
10 would be modeled with a roof reflectivity of .55.
11 However, in order to qualify for the credit, the
12 initial solar reflectance of the roof would have
13 to be .7.
14 Next slide, please. Section 110-113 of
15 the standard gives some authority and
16 responsibility to the Cool Roof Rating Council to
17 develop certification and labeling methods. After
18 January 1, 2003, roughly two years from now, CRRC
19 will have to label and certify eligible cool roof
20 products. Until that time manufacturers
21 performance data can be used to show compliance.
22 Next slide. So, in terms of
23 eligibility, eligible concrete tile or clay tile
24 roofs must be tested with an initial solar
25 reflectance of .4. Other roofs have to be tested

with an initial reflectance of .7. And both classes of roof have to have an emittance of greater than .75. And the ASTM test procedures for these measures of performance are listed here, as well as in the standard and manuals.

Next slide, please. For lighting the standards have been updated to provide more consistency with ASHRAE IES standard 90.1-99, and there have also been a few changes to close some loopholes to clarify the existing standards.

Next slide, please. One of the additions has been to require that exterior lighting lamps that are larger than 100 watts have a minimum efficacy of 60 lumens per watt. Or that they have motion sensor controls so that they're not on all night long, and only when people are near their vicinity.

This requirement will essentially prohibit mercury vapor and tungsten based lamps for exterior applications. And it will promote metal halide and high pressure sodium sources. Fluorescent can also be used in some cases, as well.

Another change to section 130(d) is to address the way that luminaire wattage is

1 calculated, especially with regard to tract
2 lighting and other -- and luminaires that have a
3 standard lamp that could have either a 60 watt or
4 a 250 watt lamp. It's now clarified that the
5 wattage used for compliance purposes is the
6 maximum rated wattage of the luminaire. So it's
7 more clear now to building officials and to
8 compliance authors.
9 Next slide, please. There have been a
10 couple of changes to the control requirements.
11 Bilevel illumination is now more widely required.
12 There was previously an exception for small spaces
13 that has been removed. And also the requirement
14 for automatic shutoff controls has been -- will be
15 more widely applied because the exception for
16 small buildings larger than 5000 square feet has
17 been removed.
18 The bilevel illumination extension, I
19 think, is especially important as we look for ways
20 to control demand in California because with
21 bilevel illumination half the lights can be turned
22 off and yet the space can remain productive
23 without it. This is not an option, so this is an
24 important change and I think it speaks to the
25 spirit of Assembly Bill 970.

1 Next slide, please. In terms of
2 portable lighting, portable lighting was always
3 intended to be included in the allowances in
4 office spaces. This is mainly a clarification.
5 It provides a default of .2 watts per square foot
6 if data is not known at the time of permitting.
7 So this would essentially require this as the
8 minimum default.
9 The changes also authorized the building
10 official to require resubmittal of documentation,
11 if necessary.
12 Next slide, please. In section 146(b)
13 this has the credits for automatic lighting
14 controls. The credits have been removed for lumen
15 maintenance. There's a couple reasons for this.
16 Probably the biggest reason is the technology is
17 almost never used anymore. And secondly, with
18 improved performance for fluorescent lamps, lumen
19 depreciation is less significant than it used to
20 be with the larger T12 lamps. So these things, in
21 combination, have caused us just to eliminate
22 lumen maintenance as an option.
23 Next slide, please. In tables 1M and 1N
24 in section 146 have the lighting power density
25 requirements. There was about three or four

1 numbers there that have been minorly changed to be
2 consistent with the IES recommendations for
3 lighting power. The IES recommendations are based
4 on current lighting data and input. They've been
5 reviewed by lighting professionals all across the
6 world. And they are, I think, supported by the
7 industry here in California.
8 Next slide, please. There's a number of
9 changes for HVAC requirements. The first and most
10 significant is to update the HVAC equipment
11 efficiencies to be consistent with the national
12 standard 90.1-99. Of the HVAC measures, these
13 accounted for many of the, probably the most
14 significant of the savings.
15 The second change is to adopt some 90.1
16 measures that mitigate furnace standby losses.
17 These were actually recommended to us by the Gas
18 Appliance Manufacturers Association, GAMA.
19 There's also a tradeoff method for centrifugal
20 chillers that are rated for nonstandard
21 conditions. These would be chillers that are used
22 for thermal storage that have to produce water at
23 temperatures much lower than 44 degrees. And this
24 is a cleanup.
25 There's also a prescriptive tradeoff

1 procedure for air side economizers. You can now
2 install higher efficiency equipment in lieu of
3 putting in an air side economizer. This is equal
4 energy tradeoff, and one that provides some
5 flexibility to architects and engineers. There's
6 some added restrictions on the type of controls
7 that may be used for air side economizers.
8 Language from 90.1 was adopted to
9 protect pipe and duct insulation that's located in
10 exterior locations. And 90.1 language has also
11 been adopted or recommended for demand control
12 ventilation in high occupancy spaces. These would
13 be spaces like auditoriums or perhaps this hearing
14 room, where the occupancy of the space is highly
15 variable. And outside air can be controlled in
16 accordance with occupancy levels.
17 And finally there's some new
18 requirements for fan speed control for heat
19 rejection equipment. Now, I'm just going to treat
20 these measures very lightly.
21 Next slide, please. This is a
22 comparison of the new equipment efficiency
23 standards compared to the old. For instance, an
24 EER of 8.5 will now become 9.7. An EER of 8.2
25 will become 9.5 and so forth.

1 I should note that these levels of
2 efficiency have been adopted by consensus by
3 Trane, Carrier, Lennox and all the equipment
4 manufacturers. And those manufacturers are all
5 re-engineering their product lines now so that
6 they will have equipment on the market at the end
7 of October 2001, and that is the recommended
8 implementation date for these equipment efficiency
9 numbers. And this is to be in line with ASHRAE
10 90.1.
11 Next slide, please. The equipment
12 efficiency numbers apply to four different types
13 of equipment that previously were not covered.
14 These include centrifugal -- heat rejection
15 equipment, ground source heat pumps and absorption
16 chillers. There's also a tradeoff procedure for
17 centrifugal chillers.
18 Next slide, please. This table
19 illustrates the air side economizer tradeoff
20 options. Now, you'll see that in some climates
21 it's not an option. These are some of the
22 climates where cooling loads are sort of small.
23 And economizers are so effective that increasing
24 the efficiency of the refrigeration equipment
25 could not to some reasonable level was not enough

to make up for the economizer.

The areas labeled in white here are areas where the tradeoff would apply. And the necessary EER is shown in these tables.

Next slide, please. The pipe and duct insulation requirements are, I think, fairly obvious and straightforward. They require weather covers and ultraviolet protection, vapor retardants for pipes and duct insulations located in exterior installations.

Next slide, please. In terms of demand controlled ventilation, this has been shown in our reports to be cost effective, very cost effective, in fact. And it would require some technology like a carbon dioxide sensor that gives you a proxy of the number of occupants in the space so that outside air ventilation can be monitored and increased or reduced in accordance with that measure.

Next slide, please. In terms of heat rejection equipment, these requirements are also taken from ASHRAE 90.1. You can comply with these requirements with either a variable speed drive, a pony motor or two-speed motor. And again, these have been shown to be very cost effective, and

1 we've received no objections from designers or
2 industry on these requirements.
3 Next slide, please. In terms of HVAC
4 ducts, and this is the last point I will cover, we
5 have a very limited application to nonresidential
6 buildings. We're only offering a tradeoff
7 basically, an equal energy tradeoff, for single
8 zone unitary equipment serving less than 5000
9 square feet when the duct work is located between
10 the insulated ceiling and the roof.
11 Of all the nonresidential buildings that
12 are covered by the standard this is a fairly
13 narrow and focused application. We're trying to
14 do something to kind of, I guess, again to
15 acknowledge the importance of HVAC ducts in
16 nonresidential buildings, and hopefully the
17 Commission will be able to return to this in a
18 couple of years and to do a more comprehensive
19 job.
20 Next slide, please. This shows some of
21 the savings. And the savings that are expected to
22 result are much greater than the credits that are
23 actually offered. So, we're being conservative
24 for both -- this one shows heating. Next slide.
25 And cooling savings, the same thing.

1 I'll stop there and entertain questions
2 or turn it back to --
3 CHAIRMAN KEESE: Thank you. Do we have
4 any questions before we have our audience? Seeing
5 none, Mr. Schell.
6 MR. SCHELL: My name is Mike Schell, and
7 I'm with a company called TelAire based down in
8 Santa Barbara that manufactures miniature infra
9 red spectrometers that are actually used to
10 measure CO2. I have a hand-held unit that I have
11 here, and we also make wall-mount units that
12 measure CO2 and temperature that can be used
13 normally for building control.
14 We've really been a pioneer in
15 developing the DCV market, demand control
16 ventilation, over the past ten years. And I guess
17 it was about three years ago in reading Title 24 I
18 noticed the demand control ventilation
19 requirements and realized that some of the things
20 in that really didn't allow for full effective
21 utilization of demand control ventilation. And in
22 some cases might actually result in excessive
23 energy use than if they just designed the building
24 normally.
25 So I went to the California Energy

1 Commission about three years ago and they said
2 we're not making any changes right now. It was
3 pointed out to me I guess just a few weeks ago
4 that there were some changes being made. And so I
5 saw this as an opportunity to make some
6 suggestions regarding some minor changes that
7 could be made in the DCV provisions to make them
8 more effective.
9 Our company is a manufacturer of these
10 types of devices for Carrier, Lennox Industries
11 and York International. I, myself, am author of
12 an interpretation for ASHRAE standard 62.89,
13 ventilation for acceptable indoor air quality,
14 which clarified the use of CO2 as an occupancy
15 based ventilation control parameter.
16 I've also written numerous papers and
17 peer review articles on demand control
18 ventilation, and actually just next month will
19 have one article in the ASHRAE Journal and one
20 article in Heating and Piping and Air
21 Conditioning.
22 Today I'm appearing on behalf of my
23 company and appearing on behalf of Carrier
24 Corporation, as well, who's our customer.
25 The state of the art of CO2 has evolved

1 considerably I think since it was first considered
2 in Title 24, and virtually all equipment and
3 control manufacturers now have a CO2 product that
4 they're offering to control ventilation.
5 Actually, we even have made considerable
6 inroads in California where the State of
7 California currently requires CO2 control in all
8 emergency portable classrooms that they put out in
9 the field.
10 Basically CO2 based demand control
11 ventilation today is recognized in ASHRAE standard
12 62.89 and the International Mechanical Code as a
13 method of controlling ventilation based on
14 occupancy in comparison to a fixed ventilation
15 approach where you assume a maximum occupancy and
16 then multiply it by say 15 cfm per person.
17 CO2 demand control ventilation is a
18 dynamic measure of ventilation in the space in
19 that it measures the CO2 breathed out by people in
20 a very consistent manner, and balances that with
21 the amount of low concentration outside air coming
22 in and diluting that air.
23 Basically what you end up with is an
24 equilibrium level of CO2 that can give you an idea
25 of what the ventilation rate per person is that's

occurring in the space.

It allows control of ventilation to insure a target ventilation rate, a target cfm per person ventilation rate is maintained at all times. Regardless of occupancy. It's not a set point or a threshold control, but properly controlled demand control ventilation, it actually uses typical algorithms that we see in temperature or other HVAC control to modulate ventilation almost continuously from a point when people enter the space.

In the handout that I provided to the Commission an illustration of the potential of energy savings is provided on page 2 of the handout which shows really a profile of a building which, for those of you who aren't familiar, occupancy patterns typically would be in a camel-back kind of pattern where there'd be a peak in the morning, a peak in the afternoon, and people would dwindle out over the day.

Traditional fixed ventilation approaches would stir ventilation at the beginning of the day, say 6:00 a.m., and run it till 10:00 p.m. at night. Demand control ventilation allows us to actually follow that camel-back pattern and

1 provide ventilation based on the actual number of
2 people in the space throughout the day. Even in
3 an occupancy, low density occupancy like office
4 spaces, there's possibilities of reducing
5 ventilation-related energy consumption by 20 to 30
6 percent.
7 So with demand control ventilation the
8 real benefit of using this, and I think it's been
9 recognized by the California Energy Commission, is
10 that it can provide target cfm per person
11 ventilation rates at all times. It actually
12 measures CO2 in the space to make sure that
13 ventilation is provided to all spaces within the
14 building to the proper level.
15 Currently with the fixed ventilation
16 approach all we can assure is that ventilated air,
17 or that the fixed setting on the air intake damper
18 is set properly. It cannot assure that the
19 distribution of that air is properly provided to
20 the spaces within the building. Zone based Co2
21 control will allow this.
22 We've also seen in many cases after --
23 CHAIRMAN KEESE: Mr. Schell, let me ask
24 you, --
25 MR. SCHELL: Sure.

1 CHAIRMAN KEESE: I'm going to have to
2 focus you on a point here.
3 MR. SCHELL: Okay.
4 CHAIRMAN KEESE: If I buy your
5 technology completely, the language that I see
6 that you're amending indicates a system approved
7 by the Energy Commission with certain conditions?
8 MR. SCHELL: Yes.
9 CHAIRMAN KEESE: Would yours fit in that
10 category, if approved by the Commission?
11 MR. SCHELL: Yes.
12 CHAIRMAN KEESE: And you're suggesting
13 that rather than that language under which you
14 could be approved, you're suggesting a language
15 change specifically that incorporates your system?
16 MR. SCHELL: No, not at all. What I'm
17 proposing is number one, the Title 24 calls for
18 demand control ventilation, but does not really
19 distinguish between CO2 based demand control
20 ventilation and other ventilation control methods.
21 CO2 demand control ventilation is the
22 only demand control ventilation approach that
23 allows this control to cfm per person ventilation
24 levels.
25 So one of my suggestions is that we

1 create a place in the standard --
2 CHAIRMAN KEESE: You've seen what we're
3 doing here today.
4 MR. SCHELL: Right.
5 CHAIRMAN KEESE: In a 120-day timeframe
6 we're trying to meet some legislative
7 requirements. You have a reasonably complex
8 proposal here. Have you discussed this with
9 staff?
10 MR. SCHELL: I've provided copies to
11 staff probably last week.
12 CHAIRMAN KEESE: We have resistance to
13 it, or --
14 MR. LEBER: Would you like to have a
15 response from staff at this point?
16 CHAIRMAN KEESE: Can we have -- we have
17 to focus on what you're asking us for here.
18 MR. SCHELL: Okay.
19 CHAIRMAN KEESE: Staff.
20 MR. LEBER: Perhaps it would be
21 appropriate for staff to respond --
22 CHAIRMAN KEESE: Yes, why don't you give
23 us a --
24 MR. LEBER: -- at this point. We've
25 taken a look at the proposal that TelAire has

1 given to us here, and conceptually there's some
2 nice ideas, things that we should consider.
3 One of the big issues is that if we get
4 into this arena of looking at ventilation and
5 ventilation control types, though, and changing
6 what it is that we have in our standards, from
7 staff's view that pretty much puts us into
8 probably having to do an EIR, a full EIR.
9 That immediately meant it was something
10 that we could not consider in an emergency rule.
11 Because we simply couldn't make it in the time
12 constraints that we're trying to work under.
13 So, we think these are good things to
14 have on the table. They are certainly things we
15 should consider for the 2005 or whatever the next
16 major rulemaking is, in which we will have an
17 opportunity to have a full EIR.
18 But that we simply cannot deal with
19 these issues in the short timeframe that we have.
20 CHAIRMAN KEESE: Thank you. Now, I
21 tried to ask the question, and that is with the
22 flexibility that is in the standards that you're
23 suggesting for us, could the Commission approve
24 this system?
25 MR. LEBER: It's a little difficult to

1 tell if a specific product actually already will
2 work within the standards. It may.
3 CHAIRMAN KEESE: All right, that's --
4 MR. LEBER: We'll have to see the
5 specific product, and whether or not --
6 CHAIRMAN KEESE: I don't know what --
7 MR. LEBER: -- you know, we have very
8 simple requirements at this point.
9 CHAIRMAN KEESE: I don't know what the
10 other Commissioners or the Committee are going to
11 feel, but you have a very specific proposal here,
12 and I don't know how in the world we're going to
13 deal with this as a Commission.
14 It seems to me this is something to be
15 worked out with staff, or to be presented to the
16 Committee. I just don't see how we're going to
17 deal with this here.
18 MR. SCHELL: Okay. And I guess my
19 objective here was really to try and bring
20 California to reflect the state of the art in
21 application of this, this particular -- and it's
22 not related to a particular product, but it's
23 related to a technology that's in widespread use.
24 CHAIRMAN KEESE: And I know on my left
25 here we have great -- you have some very open ears

1 to this proposal. So I think we're sympathetic to
2 your pitch, I don't think this is the moment that
3 we can deal with your issue.
4 MR. SCHELL: If you only thought about
5 one thing in my proposal, one thing I would
6 suggest is that you look at the requirement that
7 when demand control ventilation is used, that
8 ventilation levels not exceed 800 parts per
9 million.
10 Using conventional approaches with
11 demand control ventilation controlling to 800 ppm
12 is the equivalent of maintaining 26 cfm per person
13 in a space.
14 The net result is if somebody applies
15 demand control ventilation in a space they will
16 actually over-ventilate it by over 70 percent as
17 required by the California Energy Commission.
18 I've made a suggestion that that level
19 be changed to more accurately reflect 15 cfm per
20 person. And if nothing else is done, I would urge
21 that the Commission seriously consider making that
22 change.
23 CHAIRMAN KEESE: Okay, we've heard that
24 request. Does staff have a comment on that?
25 MR. LEBER: I think Commissioner

1 Rosenfeld is going to hit me over the head one of
2 these days as I repeat the same mantra. That the
3 problem is that if we change that level, from our
4 view we're into an EIR. And so we -- if you want
5 to delay the proceeding, and --
6 CHAIRMAN KEESE: Counsel.
7 MR. LEBER: -- have time for that, then
8 I think you could do that.
9 MR. RATLIFF: Just to elaborate on what
10 Jon is saying there is some history regarding the
11 building standards and ventilation levels. And
12 it's somewhat of a touchy subject. The Department
13 of Health Services has been interested, and the
14 Air Resources Board has been interested concerning
15 indoor air quality.
16 So when you get into that issue if
17 you're going to do anything that reduces
18 ventilation levels typically we would want to look
19 at it to see if we needed to do an environmental
20 document.
21 CHAIRMAN KEESE: Okay, I think --
22 MR. RATLIFF: And we haven't done that
23 for --
24 CHAIRMAN KEESE: What I've heard is a
25 sympathetic ear from staff to your pitch. I see

1 acceptance here. This is not the forum. I think
2 that's -- we're just going to have to say this, in
3 the timeframe we're given to do what we have to
4 do, this is not something that we can put on our
5 plate.
6 MR. SCHELL: It was my anticipation that
7 you could make improvements to the standard to
8 make it better reflect what state of the art and
9 technology is today, but I guess I was mistaken.
10 CHAIRMAN KEESE: Well, you've -- thank
11 you. And we appreciate your bringing this issue
12 to us.
13 Mr. Jeff Johnson.
14 MR. JOHNSON: Mr. Chairman,
15 Commissioners, staff and interested parties, my
16 name is Jeff Johnson. I'm the Senior Program
17 Director with the New Buildings Institute.
18 The Institute is a not-for-profit public
19 benefits corporation registered in California with
20 offices in the northwest and northeast.
21 We're here today under contract with
22 Pacific Gas and Electric Company in support of the
23 proposed amendments before you. Our participation
24 also could not have been possible without the
25 support of our California members, including

1 Southern California Edison, San Diego Gas and
2 Electric and the Commission, as well as support of
3 our, we have about 15 member states around the
4 nation that we work with on code and new
5 construction matters.
6 There's a couple things I would like to
7 point out briefly I think that are important in
8 this particular rulemaking, Mr. Chairman.
9 I guess first of all, I think this is
10 the first time that we've seen the successful
11 integration of Public Utilities Commission policy,
12 a legislative policy and California Energy
13 Commission policy occur in one place. And that's
14 in this rulemaking.
15 There have been investments made through
16 public benefit funds administered through the
17 Pacific Gas and Electric Company in supporting
18 much of the analysis that you've seen today, along
19 with the California Energy Commission support for
20 that analysis. And to my knowledge that really
21 has not occurred anywhere else in the country.
22 And I commend you for that.
23 Secondly, I think the work that you're
24 doing does have national implications. You have
25 taken a new standard, ASHRAE 90.1 that was under

1 development for about ten years, and used many of
2 the elements of that. You're not the first to
3 implement that, but you're very close.
4 Massachusetts used many elements of 90.1 and that
5 took effect yesterday. The State of Maine also
6 got it automatically but they really don't enforce
7 it, so I commend you for that. But unfortunately
8 you can't claim first.
9 I think the other thing you can claim,
10 though, is you probably have the most stringent
11 nonresidential standard on the books in the
12 country. And I think the rest of the U.S. needs
13 that kind of a yardstick based on what currently
14 is being promoted now for national models. They
15 can do a lot better. And I commend you for that.
16 Finally, I'd like to suggest that the
17 performance of the subcontract team, many of who
18 are under contract to me, as well as the
19 Commission, and the staff, was commendable. I was
20 the project lead for the 1992 standards update and
21 had a chance to work with staff, as a staff member
22 on a three-year project that did a lot. This is a
23 lot to do in 120 days, and I commend the staff and
24 the contractors for doing that and thank them for
25 their help.

I just want to congratulate you on a good job in putting this package together. And urge your support for approving item 2 on the agenda.

Thank you.

CHAIRMAN KEESE: Okay. Mr. Horowitz, we're going to give you the last chance here. Okay, because we all love cool roofs.

MR. HOROWITZ: Good. And I'm standing between you and lunch, so I'll be very quick.

(Laughter.)

MR. HOROWITZ: I'm Noah Horowitz, and I'm currently speaking on behalf of the Cool Roof Rating Council, CRRC, where I'm the Board Chair.

We're pleased by the inclusion of cool roofs in the code, and commend CEC's leadership on this position.

I want to assure you that the CRRC is working diligently to develop a fair and accurate rating system, very analogous to that that exists now for windows via the NFRC.

And we look forward to working very closely with the CEC. And want to add our appreciation for the addition of Scott Matthews, who is currently on the Board, as well. And,

1 Scott, keep up the good work on the CRRC and --
2 (Laughter.)
3 MR. HOROWITZ: Thank you.
4 CHAIRMAN KEESE: Thank you. Seeing no
5 additional witnesses -- well, you have --
6 MR. STONE: I was listed to speak about
7 this.
8 CHAIRMAN KEESE: All right, Nehemiah, I
9 trust it's positive.
10 MR. STONE: Nehemiah Stone, Heschong
11 Mahone Group. Mostly, yes.
12 (Laughter.)
13 MR. STONE: Almost entirely, but not
14 entirely.
15 First off I'd like to reiterate what
16 Charles said earlier in the presentation in a
17 couple ways and a couple different points, and
18 that is that the step you're taking on
19 nonresidential is actually very conservative. And
20 I would like you to consider doing a full analysis
21 for the next set of standards where you do take a
22 look at what is cost effective and move to that
23 level.
24 A lot of extremely conservative
25 assumptions were being made, and partly because

1 the information was not available to do anything
2 else.
3 I'd like to make a couple comments on
4 the manual first. And that is that there are some
5 changes still needed. I understand that there was
6 not any more time to do any more than what was
7 done. And I appreciate that time constraint.
8 One of the things that's needed is a
9 guide to help people figure out what portions of
10 the existing manual, land what portions of the
11 supplement are controlling in each area. And we
12 would like to work with staff and with other
13 contractors to help accomplish that.
14 The second thing on the manual is I'd
15 like to recommend that when you publish the
16 supplement that you publish a complete set of the
17 forms, rather than just the forms that have
18 changed. And that you correct the numbering on
19 all the forms. That will go a long way towards
20 eliminating any confusion that might result
21 otherwise.
22 My comments on the standards are two
23 areas. One, changes that need to happen now, and
24 secondly, changes that can happen in the next 20
25 days.

1 As far as changes that have to happen
2 now, I need to take responsibility for the first
3 one that's required, because it's in language that
4 I gave to the Commission, and I gave the language
5 to the Commission incorrectly.
6 It's something that occurs as an
7 exception to sections 10111(a), 10111(b), and
8 116(a) that has to do with the label certificate
9 from NFRC for fenestration products.
10 Currently in the text the language says
11 in the exception it says: Site-assembled vertical
12 glazing in buildings covered by nonresidential
13 standards with less than 100,000 square feet of
14 conditioned floor area, and less than 10,000
15 square feet of vertical glazing. It should say or
16 less than 10,000 square feet of vertical glazing.
17 Because the way it reads right now you
18 have to both be smaller than 100,000 square feet
19 and have less than 10,000 square feet of glazing
20 for the exemption to apply. And that's not what
21 was intended. It should be either one of those
22 gets you out.
23 The second is a change to section
24 1013(a) on cool roofs. One of the late additions
25 to that was a requirement for liquid applied cool

1 roofing materials. And the way that the wording
2 is currently, the application of ASTMD 6083 test
3 requirement applies to all cool roofs, cool
4 roofing, and it shouldn't.
5 So the change that I'm recommending is
6 after the words, packaging for. That the words,
7 liquid applied, be inserted. So it would read:
8 Packaging for liquid applied cool roofings, yada,
9 yada, yada.
10 And I have a number of typos and
11 formatting issues which I'll take up with staff
12 rather than going through here.
13 CHAIRMAN KEESE: Thank you. Staff.
14 MR. PENNINGTON: Those changes are good
15 proposals, so we'll take those.
16 CHAIRMAN KEESE: Then we'll consider
17 those editorial changes.
18 MR. PENNINGTON: Yes, we'll have to know
19 the editorial changes immediately.
20 CHAIRMAN KEESE: Okay. All right.
21 MR. STONE: One last thing, for the next
22 120 days, you got a suggestion from John Hogan at
23 the last hearing that visible light transmittance
24 be included in the labeling language for NFRC,
25 both in 10111 and in 116.

1 For those cases where visible light
2 transmittance is at issue for daylighting issues,
3 there wasn't time to deal with that at that point.
4 And I suggest that you include that in the changes
5 to the language that are going to happen in the
6 next 120 days.
7 John Hogan and I are both at your
8 disposal to help you create the language
9 necessary.
10 CHAIRMAN KEESE: You're at the disposal
11 of staff and the Committee. Thank you.
12 MR. STONE: I'd like to reiterate, good
13 job.
14 CHAIRMAN KEESE: Thank you. Anybody
15 else in the audience.
16 MR. PENNINGTON: I have something to
17 bring up here.
18 CHAIRMAN KEESE: All right, Mr.
19 Pennington.
20 MR. PENNINGTON: Joe Mattingly of GAMA
21 made a phone call to us this morning and pointed
22 out that there's an error in table 1C-11 on page
23 44 of the standards, which is basically adopting
24 the ASHRAE 90.1-1999 requirements for water
25 heaters. And the range of sizes that the standard

applies to is incorrect at the top of the page. And we want to correct that.

CHAIRMAN KEESE: Thank you.

MR. PENNINGTON: One other one. One part of the agreement that we reached this morning is that the energy conservation manual supplements should reflect the change related to TXVs, so that there's opportunity for an alternative to be approved.

CHAIRMAN KEESE: I think that's --

MR. PENNINGTON: That's not a problem. I was going to talk briefly about the energy conservation manual supplements. I wanted to bring those to your attention.

They have been developed by staff in-house. Mr. John Eash developed the residential supplement. Mr. Nelson Pena developed the nonresidential supplement.

The Warren Alquist Act requires the Commission to maintain the energy conservation manuals and update them whenever there are changes with the standards. And so that's what we've done here.

We didn't produce a whole new energy conservation manual for this. We tried to, you

1 know, have a rifle shot at what these requirements
2 were and say them briefly, and have that as a
3 supplement that we will use for training purposes
4 and providing information generally to the public
5 that summarized the changes to the standards.
6 So, we're going to ask you in a few
7 minutes to certify those supplements. And if
8 there were any comments on those, we wanted to
9 hear them.
10 Nehemiah jumped the gun and had a couple
11 of comments on them, so that's fine. I don't know
12 if there's other comments, but we wanted to hear
13 them.
14 CHAIRMAN KEESE: And I heard a comment
15 that at some time we should have, there should be
16 a complete document, which the Committee --
17 MR. PENNINGTON: We will be producing a
18 full energy conservation manual for the
19 residential standards, and for the nonresidential
20 standards, once the emergency standards have been
21 adopted as permanent. And our due date for
22 bringing that back to the full Commission is July
23 1st of 2001.
24 CHAIRMAN KEESE: Commissioner Pernell,
25 take care of it.

1 COMMISSIONER PERNELL: Okay. Mr.
2 Chairman, I'll try and bring us home with this.
3 As Mr. Pennington has said, there's a
4 series of motions that need to take place for us
5 to adopt these standards, and so we'll go through
6 that.
7 The first one is the finding of
8 emergency, which is located on page 2 of your
9 proposed adoption order, Commissioners. And
10 basically what this is is a set of statements that
11 finds that there is an emergency for us to do the
12 emergency rulemaking.
13 CHAIRMAN KEESE: Okay, so we have a
14 motion to find that the adoption of these
15 amendments is necessary for the immediate
16 preservation of the public peace, health and
17 safety or general welfare of the citizens and a
18 list of reasons. Motion by Commissioner Pernell.
19 COMMISSIONER ROSENFELD: Second.
20 CHAIRMAN KEESE: Second by Commissioner
21 Rosenfeld.
22 All in favor?
23 (Ayes.)
24 CHAIRMAN KEESE: Adopted four to
25 nothing.

1 Commissioner Pernell.
2 COMMISSIONER PERNELL: Mr. Chairman, my
3 next motion is a little bit more complicated, so I
4 wrote it down and I'll just state it as written.
5 Mr. Chairman, I move that the Commission
6 adopt the proposed amendments, also known as the
7 Express Terms of the revisions to the current
8 building energy efficiency standards, including
9 the amendments to the alternative calculation
10 method, approve manuals both of the residential
11 and nonresidential standards, and including the
12 certification of conforming revisions to the
13 energy conservation manuals for both residential
14 and nonresidential standards.
15 And I might also add, including the
16 amendments for the TXVs that were agreed to by
17 staff in this body here.
18 CHAIRMAN KEESE: And the other technical
19 amendments.
20 COMMISSIONER PERNELL: And the other
21 nonsubstantive and technical amendments.
22 CHAIRMAN KEESE: Motion by Commissioner
23 Pernell.
24 COMMISSIONER ROSENFELD: Second.
25 CHAIRMAN KEESE: Second by Commissioner

1 Rosenfeld.
2 All in favor?
3 (Ayes.)
4 CHAIRMAN KEESE: Four to nothing.
5 COMMISSIONER PERNELL: Okay, Mr.
6 Chairman, we have one other business item, and
7 that is if I may draw your attention to the order
8 for implementation for future work, and ask Mr.
9 Pennington to briefly go over what this order
10 entails.
11 MR. PENNINGTON: Okay, thank you. This
12 is an order that describes actions to implement
13 the standards and direction on future work. The
14 order is organized into introduction; has a
15 background section; a section two, which is
16 related to implementation of the AB-970 building
17 standards that would occur in the calendar year
18 2001; and then a third section that relates to
19 future work.
20 So I wanted to go over that briefly with
21 you. In the introduction it points out that there
22 were a number of ideas that were presented during
23 this proceeding that we were unable to address
24 fully in the emergency proceeding. And, you know,
25 the Commission would be acknowledging those, and

1 would be trying to give some direction as to how
2 those ideas should be dispense with in the future.
3 Also, there is a point of recognition
4 and commendation to be made to the public goods
5 funded utility programs that have proactively
6 contributed to standards enhancement proposals and
7 studies under the timeframe that was allotted by
8 the Legislature. And particularly appreciation of
9 the efforts of the Statewide Codes and Standards
10 Program Coordination Committee that represents
11 each of the investor-owned utilities for
12 supporting the development and justification of
13 the standards provisions.
14 And pointing out also, Mr. Johnson said
15 this earlier, but this really establishes a new
16 precedent for pursuing mutually beneficial goals
17 and close coordination between the energy
18 efficiency standards program and California's
19 public goods funded utility energy efficiency
20 programs.
21 COMMISSIONER LAURIE: Mr. Chairman, I
22 read the document and I'm comfortable with it. I
23 assume the Committee is comfortable with it. I'm
24 prepared to respond to a motion if you'd care to
25 do that at this time, unless for some other reason

1 you want to go through it in more detail,
2 Commissioner Pernell.
3 CHAIRMAN KEESE: Commissioner Pernell.
4 COMMISSIONER PERNELL: Mr. Chairman, I
5 so move.
6 CHAIRMAN KEESE: Motion, Commissioner
7 Pernell.
8 COMMISSIONER ROSENFELD: Second.
9 CHAIRMAN KEESE: Second, Commissioner
10 Rosenfeld.
11 All in favor?
12 (Ayes.)
13 CHAIRMAN KEESE: Approved, four to
14 nothing.
15 Are we done with the motions?
16 COMMISSIONER PERNELL: Yes, unless
17 there's something --
18 CHAIRMAN KEESE: Are we done with the
19 motions, Mr. Ratliff?
20 MR. RATLIFF: Yes.
21 CHAIRMAN KEESE: Okay, we adopted -- Mr.
22 Larson, wherever you'd like to sit, Mr. Larson.
23 MR. LARSON: Mr. Chairman, in listening
24 to the discussion this morning and listening to
25 the detail that came forth, you can just sort of

1 begin to sense the amount of work that this group
2 of very dedicated public servants has done during
3 the last few months.
4 When we began this process 119 days ago,
5 not 120, but 119, when this legislation was
6 approved by the Governor, actually considerable
7 work had been done before in trying to organize
8 this kind of work. How it would go forward; how
9 it would be put forth in terms of legislation.
10 And then the effort that was put in by
11 so many people, particularly during a time of the
12 year when especially in the latter part when we
13 like to spend more time with our families and
14 certainly have every right to do that, I think
15 that the work accomplished by folks here was
16 nothing less than heroic. And that they should be
17 really congratulated for it.
18 Certainly the efficiency side, I mean
19 the entire -- all the work that the Commission has
20 done so far on behalf of trying to implement as
21 rapidly as possible AB-970, deserves credit. The
22 people over in the siting division, the work on
23 the grants program, the renewables, all of these
24 efforts which have combined, I think, to produce
25 in different areas remarkable work in terms of

1 trying to address the state's crisis in terms of
2 energy.
3 In this particular exercise I want to
4 mention particularly Scott Matthews, who, working
5 at the very front end of this process in the
6 Legislature, was there every day during the really
7 intense period when the Legislature and the
8 Governor decided they wanted to do something.
9 Didn't know quite what to do. And in crafting
10 what to do, Scott was one of the architects.
11 Today we're not going to give him blame
12 for that, because we've been a success. But there
13 was a lot of risk in where he was going at the
14 time and I give him a great deal of credit for
15 that.
16 It's interesting to note that here the
17 documents on this particular part of the process
18 show that about 200 megawatts will come out of
19 this particular part of what we've been doing.
20 And it's sort of like in four months, you know,
21 designing and constructing a power plant, at least
22 40 percent of a power plant. It's not actually
23 ready to go yet, but there it is. And that is a
24 remarkable accomplishment.
25 Also, Bill Pennington, of course, who

1 managed this process and did such a great job in
2 presenting the effort today. Jon Leber, Dick
3 Ratliff, Don Kazama and all the other people in
4 terms of the energy efficiency division who did so
5 much, deserve really a tremendous amount of
6 credit. We shouldn't also neglect the
7 Commissioners, the Committee who sat on this
8 matter and made sure that it happened. Got their
9 whips out, beat the staff and me from time to
10 time. But, by god, so far it's worked.
11 And I think everyone is to be really
12 congratulated. Thank you.
13 CHAIRMAN KEESE: Thank you. And I
14 believe you've expressed what all the
15 Commissioners here would like to say. Some may
16 wish to say another word.
17 COMMISSIONER ROSENFELD: I only want to
18 say it's 200 megawatts every year. In five years
19 it's 1000.
20 CHAIRMAN KEESE: Commissioner Laurie.
21 COMMISSIONER LAURIE: Mr. Chairman, if I
22 could just add a little bit onto Mr. Larson's
23 comment. Since this is the second time in about a
24 year that the efficiency division has put out in a
25 timely successful manner, when they're under time

1 deadlines and faced with a very complex set of
2 issues. Clearly this has been two examples of
3 success on their part.
4 But as Mr. Larson indicated, the
5 efficiency division is not alone. Renewables
6 continues to excel, R&D and the PIER program is
7 excelling. The siting division is doing it, as
8 well.
9 So the last couple years there's been
10 some suggestions that staff has been working at
11 100 percent and we're about to see some signs of
12 work rage. I think staff is terribly happy, and
13 if anything, additional 10 percent would add to
14 that degree of joy and excitement.
15 (Laughter.)
16 COMMISSIONER LAURIE: And perhaps if the
17 Legislature asks us to fix the market, we could do
18 that, as well.
19 (Laughter.)
20 COMMISSIONER LAURIE: It's just an
21 indication, Mr. Chairman, of -- and I say this as
22 a nongovernmental outsider -- of the outstanding
23 work performed by the employees of this agency
24 since I have been here.
25 CHAIRMAN KEESE: Thank you.

1 COMMISSIONER BOYD: Mr. Chairman.
2 CHAIRMAN KEESE: Mr. Boyd.
3 COMMISSIONER BOYD: Certainly would want
4 to just concur with what Commissioner Laurie and
5 others have said about the work of the staff. But
6 as one who sits here worrying not just about
7 energy, and you've highlighted the staff has many
8 times the megawatts saved, we kind of glossed over
9 when we did the environmental review, the other
10 environmental consequences of the action. That is
11 the emissions reductions expected from these
12 actions. And in dealing with the electricity
13 issue we've talked a lot about NOx credits and
14 what-have-you.
15 I was pleased to note that in the first
16 year of this action there will be a reduction of
17 468,000 pounds of NOx, 276,000 pounds of CO2, and
18 for those of us beginning to worry more and more
19 about global warming, that's a very significant
20 contribution. And 3750 pounds of PM10. All
21 reduced by this action. So your friends in the
22 air pollution business will be equally pleased.
23 And for those looking for NOx credits, this may
24 open up a new field.
25 But in any event, that just adds to the

1 positive aspects of this action. And, of course,
2 at the moment everyone's concerned about the
3 megawatts and keeping the lights on. And this is
4 certainly a good contribution to that.
5 So, I commend this action, and the work
6 you've all done on this.
7 CHAIRMAN KEESE: Commissioner Pernell.
8 COMMISSIONER PERNELL: Well, thank you,
9 Mr. Chairman. And like Mr. Boyd, I don't want to
10 be redundant. I think Steve Larson did an
11 excellent job in commenting on the work that has
12 been done and the effort that was put forth.
13 So I'd like to take a kind of a
14 different track and thank all of our stakeholders
15 who sat through these long committee hearings,
16 particularly with the building industry, with
17 CBIA, Mr. Stone, Mr. Horowitz -- I'm killing your
18 name over there -- and all of the others. I mean
19 those who were in support, who had issues, and
20 brought them forth.
21 And let me just say that we didn't do
22 this in a vacuum. The Energy Commission, and I
23 agree certainly with Commissioner Laurie, that we
24 have stepped up, and we will continue to step up
25 as a Commission. But we can't do it in a vacuum.

1 It takes people outside, it takes the utilities,
2 PG&E and Edison and others who came to the table.
3 So, it takes all of us, takes our
4 contractors and our consultants. But if we stay
5 on this track, if all of us stay on this track and
6 work together, there nothing we can't achieve or
7 problem we can't solve.
8 One of the things that it takes is
9 people sitting down talking, and you know, we can
10 agree to disagree. But, in the end, in the final
11 analysis, that we come together to do something of
12 benefit to California.
13 I think that's what has happened here.
14 It is not over, from some of the testimony we've
15 heard, but I think we got a good start. We are
16 ahead of the curve, and right now I am very proud
17 to be a member, a Commissioner on the California
18 Energy Commission.
19 CHAIRMAN KEESE: Thank you. I'm sure we
20 have no Executive Director's report; we have no
21 General Counsel's report; we have no minutes to
22 approve. Meeting's adjourned.
23 (Whereupon, at 1:20 p.m., the business
24 meeting was concluded.)
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CERTIFICATE OF REPORTER

I, DEBI BAKER, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Business Meeting; that it was thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said business meeting, nor in any way interested in outcome of said business meeting.

IN WITNESS WHEREOF, I have hereunto set my hand this 11th day of January, 2001.

DEBI BAKER