

EFFICIENCY COMMITTEE WORKSHOP  
BEFORE THE  
CALIFORNIA ENERGY RESOURCES CONSERVATION  
AND DEVELOPMENT COMMISSION

In the Matter of: )  
 )  
Preparation of the Draft ) Docket No.  
Phase II Home Energy Rating ) 08-HERS-1  
System Program Regulations )  
\_\_\_\_\_ )

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

THURSDAY, AUGUST 14, 2008

9:00 A.M.

Reported by:  
Peter Petty  
Contract Number: 150-07-001

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COMMISSIONERS PRESENT

Jackalyne Pfannenstiel, Presiding Member

Arthur Rosenfeld, Associate Member

ADVISORS PRESENT

David Hungerford, PhD

Tim Tutt

STAFF AND CONTRACTORS PRESENT

Joe Bubbico

Charles Eley, Architectural Energy Corporation

Helen Lam

Bruce Maeda

Rashid Mir

Bill Pennington

ALSO PRESENT

Michael G. Hodgson, ConSol  
also representing California Building Industry  
Association

Jody S. London, Energy Consultant, on behalf of  
the County of Los Angeles

Michael E. Bachand, CalCERTS, Inc.

Debbie Thompson, Capitol Energy Consultants

Tenaya Asan, Build It Green

Matt Golden, Sustainable Spaces

George Nesbitt, Environmental Design/Build

ALSO PRESENT

Bruce Cenicerros, Sacramento Municipal Utility  
District

Elizabeth McCollum, Heschong Mahone Group, Inc.

Charles "Chas" Ehrlich, Energy LLC  
ICE Energy  
also representing California Association of  
Building Energy Consultants

Robert L. Knight, PhD, Bevilacqua Knight, Inc.,  
representing California Building Performance  
Contractors Association

Tom Caruthers, Federal Energy Services

Thomas P. Conlon, GeoPraxis

Liz Merry, Verve Solar Consulting (via telephone)

Elizabeth Gauric, California Association of  
Realtors (via telephone)

Janis Erickson, Sacramento Municipal Utility  
District

Charles Segerstrom, Pacific Gas and Electric  
Company

Randel Riedel, California Building Performance  
Contractors Association

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

2 9:05 a.m.

3 PRESIDING MEMBER PFANNENSTIEL: This is  
4 the Efficiency Committee Workshop on the Home  
5 Energy Rating System Program. I am Jackie  
6 Pfannenstiel, the Chair of the Energy Commission  
7 and the Presiding Commissioner on the Efficiency  
8 Committee. And with me is Commissioner Rosenfeld  
9 who is the Associate Member on the Committee and  
10 our two advisors. Mine, Tim Tutt on my left, and  
11 David Hungerford on Commissioner Rosenfeld's  
12 right.

13 We have a pretty full agenda on this  
14 important subject and I think this is going to be  
15 a good opportunity for us to look now and discuss  
16 some of the rules and regulations that we have  
17 proposed. This being the second workshop on this  
18 subject.

19 So I am going to turn it over to Helen  
20 Lam who will walk us through the day's logistics  
21 and get us started. Helen.

22 MS. LAM: Okay, thank you. Good morning  
23 everyone. Thank you for coming to the first  
24 workshop. And as Commissioner Pfannenstiel  
25 stated, that we held our first workshop in May and

1       this is your opportunity to look at the  
2       modifications that we have made to the HERS  
3       regulations draft proposals as well as our HERS  
4       technical manual since that time.

5               My name is Helen Lam. I am the project  
6       manager for the HERS contracts and I am going to  
7       be facilitating this meeting. At this point I  
8       need to go over some standard housekeeping items  
9       just for those who are not familiar with this  
10      building. The restrooms are located out the door  
11      to your left and we also have a snack bar on the  
12      second floor.

13              In the event of an emergency and the  
14      building is evacuated please follow our employees  
15      to the appropriate exits. We will reconvene at  
16      Roosevelt Park, which is diagonally from this  
17      building, across the street from this building.  
18      Proceed calmly and quickly, again following the  
19      employees with whom you are meeting to safely exit  
20      the building.

21              The workshop agenda, copies of the  
22      workshop agenda and today's presentations are on  
23      the table. And we also have display copies of the  
24      workshop notice and the draft HERS regulations as  
25      well as the draft HERS technical manual on the

1 table. But those are display copies only so  
2 please do not take them. We do have all the  
3 workshop-related documents posted on-line so you  
4 are welcome to download them as necessary.

5 At this time I just want to go over the  
6 agenda quickly. As you can see we do have three  
7 public comment periods so if you would like to  
8 speak then please come up to the podium and each  
9 time state your name and company. This is for the  
10 benefit of the court reporter. And also if you  
11 have a business card to hand it to him. Then this  
12 will ensure that the spelling of your name is  
13 spelled correctly.

14 Also today's meeting is being broadcast  
15 over the Internet. Anyone wishing to participate  
16 by telephone may call in at 1-888-566-5779. The  
17 passcode is HERS and the call leader is Helen Lam.

18 At this point I just want to introduce  
19 the individuals sitting at the staff area. We  
20 have Bill Pennington. He is the office manager  
21 for the standards, building and appliances  
22 standards. We have Rashid Mir and Bruce Maeda;  
23 they are the technical advisors to the HERS  
24 project. And we also have Charles Eley. He is  
25 today's presenter and the project contractor from

1 the Architectural Energy Corporation.

2 And with that I will turn it over to  
3 Commissioner Pfannenstiel.

4 PRESIDING MEMBER PFANNENSTIEL: Thank  
5 you, Helen. I think I am just going to hand it  
6 right to Charles who is you going to walk us  
7 through the PowerPoint that we have.

8 MR. ELEY: Okay. I am going to begin  
9 with the first slide, please. Next. One more.

10 What these regulations and technical  
11 manual are doing today is setting standards for  
12 what are called California Home Energy Ratings or  
13 California Home Energy Audits. And the purpose is  
14 to provide consistency and credibility when  
15 ratings are offered in California. Next slide,  
16 please.

17 There's a couple of principles that are  
18 being followed here. The first principle is to  
19 attempt to rate the home, not the occupants. This  
20 is sort of the mantra with home energy rating  
21 systems. We want to provide a rating not unlike  
22 the EPA mileage rating for cars. You know, there  
23 is always a caveat there that says, your mileage  
24 may vary depending on driving conditions. And the  
25 same would be true for a home energy rating. You

1 know, the energy consumption would vary depending  
2 on the hours that you operate your HVAC system,  
3 the thermostat settings, how many plasma TVs you  
4 have and other things such as that.

5 We will, however -- Another part of this  
6 program is to develop credible recommendations on  
7 how to improve the energy efficiency of a home.  
8 And in developing those recommendations lifestyle  
9 issues will be considered as an option so that  
10 homeowners can get a realistic assessment of what  
11 energy efficiency measures make sense in the  
12 context of the way they operate their homes. Next  
13 slide, please.

14 The objectives of this project are to  
15 complete the HERS program that's called for in  
16 Public Resources Code 25942. The first phase of  
17 this was implemented in 1999 and this established  
18 the general framework for home energy ratings. It  
19 focused mostly on new construction, however, and  
20 it established the role of the HERS rater as a  
21 verifier, as a field verification and diagnostic  
22 testing in existing homes.

23 What we are doing with this phase of the  
24 work is extending the HERS program to the over 13  
25 million existing homes in California. And

1 expanding its scope we are including both audits  
2 and ratings of new homes. Next slide, please.

3 The intent here is to meet these goals  
4 by providing consistent and accurate ratings. It  
5 is extremely important for the consumers in  
6 California to have confidence in the ratings that  
7 are produced through this program.

8 Ensuring that, that recommendations that  
9 are produced are reasonable and that the estimates  
10 of utility bill savings that are, that are  
11 produced as part of the recommendations are  
12 accurate and reliable.

13 We want to establish some standard  
14 labeling procedures that would meet the needs of  
15 all the people in the home industry from buyers  
16 and sellers to realtors to lenders and others so  
17 that they are all seeing a similar kind of report  
18 that hopefully will be easy to understand and  
19 useful to them.

20 We are also proposing a technique which  
21 you will see a little bit later in the  
22 presentation for doing a cross-check of energy  
23 efficiency improvements to utility bills. Next  
24 slide, please.

25 As Commissioner Pfannenstiel indicated,

1 this is, this is the second of two public, this is  
2 the second public workshop that we have had on  
3 this topic. There have been, there have been a  
4 lot of other attempts earlier to get, to get input  
5 from the homes community in California.

6 And there's a number of research reports  
7 or background documents that have been produced  
8 starting with the AB 549 Report from about four  
9 years ago, three years ago, that looked at, that  
10 looked at energy efficiency opportunities in  
11 existing buildings.

12 There's the Phase I regulations.

13 A couple of other documents that we  
14 relied on quite a bit. One is the Standards for  
15 Residential Compliance software. We are using  
16 modeling assumptions and calculation procedures  
17 that are consistent with that when we can provide  
18 that consistency.

19 The RESNET, which is the national home  
20 energy rating program guidelines we borrowed from.  
21 There's a couple of research reports that, that  
22 was done. There's HERS Topic Report dated May  
23 2008 that has background research that supports  
24 many of the recommendations we are making today.

25 We also relied quite heavily on

1 California's Residential Appliance Saturation  
2 Survey, what's called RASS. This is a very  
3 comprehensive survey of energy use in residences  
4 and this is used as the basis for many of the  
5 models and recommendations that are in the  
6 proposal today.

7 And we also relied on the Building  
8 America Research Benchmark developed by the  
9 National Renewable Energy Laboratory. These  
10 documents are all available for review and many of  
11 them are on the HERS website at the Energy  
12 Commission. Next slide, please.

13 We believe there's huge opportunities  
14 for California through this program. We build  
15 100,000 to 200,000 new homes each year but we have  
16 over 13 million existing residential buildings.  
17 And for us to have a big impact in the marketplace  
18 we have got to address the needs of those, of that  
19 existing building stock. We can't just  
20 concentrate solely on new buildings.

21 Many of the, many of these 13 million  
22 buildings were built before 1978 when the Energy  
23 Commission first adopted its standards and have  
24 limited energy efficiency features.

25 And even homes built after '78 still

1 have many opportunities for savings because new  
2 technologies are available.

3 There's opportunities to tune and  
4 improve homes. There's many, very highly cost-  
5 effective measures that are available.

6 So we hope that through this program  
7 that we will be able to provide homeowners,  
8 homebuyers, realtors, contractors and others in  
9 the home industry with information at key points  
10 in the process or milestones in the process that  
11 will help them make the right decisions for energy  
12 efficiency. Next slide, please.

13 What we are going to talk about next are  
14 the, are the, are the reports that would be, that  
15 would be produced. Next slide.

16 There would be -- So when a home is  
17 rated there would be, there would be a series of  
18 reports that would be produced. The most  
19 important report would be the rating certificate.  
20 This is a, this is a one-page, frameable document  
21 that can be mounted on your front door or used to  
22 boast with your neighbors or whatever.

23 This would also be supported by a list  
24 of recommended improvements to the home. So every  
25 rating would come with a list of recommendations.

1 Well, this is your rating but if you did these  
2 things you could improve your rating score or you  
3 could save energy.

4 The third component would be an analysis  
5 of projected and historic energy consumption. So  
6 this would be a utility bill analysis. This would  
7 always be available because some homes will be  
8 rated -- they would be new homes without any  
9 utility bill history or they might be, or they  
10 might be homes that have been sold and the  
11 previous owner doesn't want to release their  
12 utility bill data for some reason. So this will  
13 be optional, it won't always be available.

14 And then the fourth component would be,  
15 would be kind of a detailed listing of all the  
16 inputs to the rating system. And this would be,  
17 this would be similar to the CF 1-R report that is  
18 now produced as part of the code compliance  
19 process. It would be a three- or four-page  
20 document that just lists the U factor and R values  
21 and everything of all the components within the  
22 building. Next slide, please.

23 So the rating certificate would look,  
24 would look something like this. This is a sample.  
25 Next slide, please.

1           The most prominent feature of the  
2 ratings certificate, what we would like for it to  
3 be the most prominent feature is, is the HERS  
4 index. And this would be graphically represented  
5 on a horizontal bar, maybe a vertical bar. The  
6 index is the ratio of time-dependant valued energy  
7 of the rated house to the time-dependant valued  
8 energy of a reference house.

9           So on this scale zero would represent a  
10 net zero home. One hundred would represent, would  
11 indicate that your home is complying or uses the  
12 exact same energy as the reference home. And the  
13 reference home is defined as a home that is in  
14 minimum compliance with the latest energy  
15 efficiency standards, the recently adopted 2008  
16 standards are being used as the, as the, as the  
17 definition of the reference home.

18           Now this means that most, that most  
19 existing homes will actually have a rating larger  
20 than 100. So if your home has a rating of say  
21 150, that would indicate that it is using about 50  
22 percent more energy than a home in minimum  
23 compliance with the current standards. And since  
24 the current standards are state of the art  
25 standards, you know, most homes, most existing

1 homes are going to end up with higher ratings.

2 Next slide, please.

3 The HERS Index will include all of the  
4 traditional energy uses for heating, cooling and  
5 water heating. These are currently calculated by  
6 compliance software and all of the tools that we  
7 use for compliance.

8 But we also plan to include lighting and  
9 appliances energy. This is, this is now, this is  
10 not currently produced by Title 24 compliance  
11 software but this would be added to the mix. And  
12 part of the presentation later on we'll discuss  
13 the lighting and appliances model that's been  
14 developed. It's based on the Residential  
15 Appliance Saturation Survey or RASS data.

16 And we will also include exterior  
17 lighting if the exterior lighting is attached to  
18 the building.

19 The energy uses that would not be  
20 considered in the, in the rating would be energy  
21 uses that are outside the envelope of the building  
22 or not attached to the envelope of the building  
23 such as pools or spas or lighted sports courts,  
24 well pumps, shops, you know, that might be outside  
25 the boundaries of the home itself. Grinder pumps

1 and that sort of thing. Next slide.

2 We propose in these regulations that for  
3 homes that have photovoltaic systems or possibly  
4 other forms of renewable, on-site renewable  
5 generation, that the scale be marked in two  
6 places. That we show, we show what the score  
7 would be without the photovoltaics and then we  
8 also show what the score would be with  
9 consideration of the photovoltaics.

10 The reason for this is that it is the  
11 Energy Commission's policy and good common sense  
12 to invest first in energy efficiency and to make  
13 that home as low energy as possible. And then,  
14 and then to, and then to make additional  
15 investments in on-site renewable generation. So  
16 we want to be consistent with the Energy  
17 Commission's IEPR report and other CEC policies.  
18 We will be two reference points, or two HERS  
19 indexes if you will, for homes that have, that  
20 have PV systems. Next slide, please.

21 There's a little point on the, on the  
22 rating certificate that would identify the address  
23 of the home and provide some other general  
24 information like the square footage, number of  
25 bedrooms, number of stories, that kind of general

1 information. Next slide, please.

2 There would also be a section on the  
3 report that would summarize at a very high level  
4 what the energy efficiency features are in the  
5 home. This is not a detailed description but it  
6 would just indicate the insulation levels in the  
7 walls, the roof, the floors, the type of heating  
8 system, the type of air conditioning system, the  
9 type of windows, that sort of thing. Next slide.

10 There would also be a section on the  
11 report that would, that would summarize what the  
12 energy impact of the home would be. This would  
13 include greenhouse gas emissions, probably pounds  
14 of carbon dioxide per year, possibly other  
15 greenhouse gasses. It would summarize electricity  
16 use and gas consumption. And both of these would  
17 be broken down by, by end uses so that the buyer  
18 or the home owner could, could see what's causing  
19 all of the energy consumption. Is it lighting or  
20 air conditioning or appliances.

21 And there would also be a summary of the  
22 operating costs of the building and a summary of  
23 any, of renewable energy production if that exists  
24 on the site.

25 PRESIDING MEMBER PFANNENSTIEL: Charles,

1 let me ask you something about the operating  
2 costs. I assume that would be based on a point-  
3 in-time electricity tariff or natural gas rates.

4 MR. ELEY: On the rating certificate,  
5 that's correct. That would be based on the -- If  
6 there's a utility rate in effect, if the home is  
7 being operated then it would use that utility  
8 rate. If the home is not being --

9 PRESIDING MEMBER PFANNENSTIEL: It just  
10 seems that it would be really important to make  
11 sure that you highlight what date that is  
12 calculated as since those things change  
13 continually.

14 MR. ELEY: Excellent point.

15 ASSOCIATE MEMBER ROSENFELD: Actually  
16 Charles I thought you were going to say it would  
17 be TDV cost.

18 PRESIDING MEMBER PFANNENSTIEL: No, it's  
19 the cost to the customer.

20 ASSOCIATE MEMBER ROSENFELD: But the  
21 rest of the calculations -- maybe you need both.

22 MR. ELEY: Well the recommendations will  
23 have, will deal with the rates that the homeowner  
24 sees.

25 ASSOCIATE MEMBER ROSENFELD: But as

1 Jackie says, that's going to change with time,  
2 that's in flux.

3 MR. PENNINGTON: So just a comment. The  
4 index would be calculated based on TDV.

5 ASSOCIATE MEMBER ROSENFELD: Right.

6 MR. PENNINGTON: So it would be a  
7 comparison of the rated home against a reference  
8 home, both of which are rated, are evaluated in  
9 TDV. So the index is based on TDV.

10 ASSOCIATE MEMBER ROSENFELD: So you do  
11 have a curve.

12 MR. PENNINGTON: This is basically the  
13 units of energy that the homeowner will see on  
14 their energy bills that they can compare to their  
15 energy bill.

16 PRESIDING MEMBER PFANNENSTIEL: Yes, it  
17 seems to me this needs to be a cost to the  
18 homeowner, which is in essence out-of-pocket  
19 payment to the utility.

20 MR. PENNINGTON: Correct.

21 PRESIDING MEMBER PFANNENSTIEL: Yes,  
22 Mike.

23 MR. HODGSON: Excuse me, Mike Hodgson,  
24 ConSol. I don't know if you're entertaining  
25 questions or not but I think this is an important

1 point. I just wanted to make sure for Charles and  
2 Bill that the energy estimates to the consumer are  
3 on-site but the scale is in TDV. Is that what you  
4 are saying?

5 MR. ELEY: That's correct.

6 MR. HODGSON: Okay, great. Thank you.

7 MR. ELEY: Next slide, please.

8 These bullet points kind of address this  
9 question of estimated energy impact. The energy  
10 impact summary would be based on the, based on the  
11 modeling assumptions that are used, which are  
12 defined in the HERS technical manual. So it would  
13 not, it would not be based on the actual  
14 homeowner's utility bills but rather on simulated  
15 results, assuming typical or standard behavior in  
16 the home. Next slide, please.

17 There would also be a little place on  
18 the, on the rating certificate where the, where  
19 the HERS provider would be identified and would  
20 also have some rating information. This rating  
21 information would include the date of the rating,  
22 the person that did it, the serial number of the  
23 rating so that it could be traced back through the  
24 HERS provider's database. Next slide.

25 There would be a, there would be a point

1 on the rating certificate where other programs  
2 could be, could be recognized. There are a lot  
3 of, there are a lot of green building programs  
4 surfacing in California, many already exist. If  
5 this home also qualifies, for instance, for Build-  
6 It Green or LEED for Homes, or California Green  
7 Builder this would be, that would be indicated  
8 here in addition to, to the rating. Next slide.

9 And finally there would be a little  
10 block of information with some caveats. And this  
11 would be basically your mileage may vary kind of  
12 statements. And the technical manual has some  
13 specific language for that.

14 So that's essentially the content of  
15 the, of the HERS certificate. And this is, this  
16 is -- We want to keep this simple, one-page, you  
17 know. Something that -- I don't know that it will  
18 be framed with the picture of Aunt Mary or  
19 whatever but it might, it could be something that  
20 could be shared with potential homebuyers or  
21 whatever. Next slide, please.

22 The next element of the report would be  
23 an energy consumption analysis. Now this, this  
24 would actually start to get into lifestyle issues  
25 and would -- There would be -- We anticipate three

1 graphs being displayed here. One would, one would  
2 represent monthly energy costs to operate the home  
3 on a monthly basis or an annual basis, another one  
4 would represent electricity consumption, and the  
5 third one would represent gas consumption.

6 And all three reports when possible  
7 would have, would have the simulated energy use  
8 for the home, the actual energy use for the home  
9 and some normalized energy use for the home.  
10 Let's go through and you can see what I am talking  
11 about with those three things. Next slide,  
12 please.

13 This is, this is an example of some  
14 energy costs. But to show these points let's move  
15 on to the next slide.

16 This is kind of a mock-up of what the  
17 graph of electricity usage might look like. The  
18 bars would be, would be produced from the  
19 simulation program. And since they come from the  
20 simulation program we would be able to identify  
21 components of energy use on, on a monthly basis.  
22 So we anticipate a stacked bar format that would,  
23 that would break out cooling. Possibly heating if  
24 there was a heat pump. Water heating if there was  
25 a heat pump water heater. Major appliances,

1 lighting and so forth. Next slide.

2 The smooth line would represent the  
3 actual energy consumption of the home but  
4 normalized. This normalization process is defined  
5 in the HERS technical manual. But basically what  
6 it would do, it would use a technique called  
7 inverse modeling to take the, to take the utility  
8 bill data and break it out into the part that's  
9 weather dependant and the part that is not weather  
10 dependant. And then standard weather data from  
11 the same weather file used to do the simulation  
12 would be used to, to normalize this data. So you  
13 would get a --

14 PRESIDING MEMBER PFANNENSTIEL: And how  
15 useful is that going to be to the homeowner,  
16 though? You say, well not to worry, it's inverse  
17 modeling, normalized. I am not sure what that is  
18 going to mean to the homeowner who is trying to  
19 figure out where energy use --

20 MR. ELEY: Well, that's a good question.  
21 I think the answer would be that, you know,  
22 weather varies every year. So what we are trying  
23 to do through this process is look at what the  
24 home would use if the weather this year was the  
25 same as the weather that we used to do our

1 simulation.

2 PRESIDING MEMBER PFANNENSTIEL: I think  
3 you have to be really careful when you're trying  
4 to convey that to make it useful.

5 MR. ELEY: I know.

6 PRESIDING MEMBER PFANNENSTIEL: I think  
7 it could be a little dangerous.

8 MR. PENNINGTON: I think the point is  
9 that we are trying to help the homeowner be able  
10 to compare the simulation to their bills.

11 PRESIDING MEMBER PFANNENSTIEL: Right.

12 MR. PENNINGTON: And if the bills are  
13 quite different than the simulation that could cue  
14 us that maybe there's a behavioral difference  
15 that's significantly different than the simulation  
16 used. Perhaps there is a behavioral change that  
17 the homeowner could do to improve. Or perhaps  
18 this household uses more energy and so there might  
19 be more things that would be cost-effective with  
20 those bills.

21 But the changing weather can confound  
22 that comparison. So that if the simulation is  
23 using a certain kind of weather and the actual  
24 weather is way different than that for that  
25 particular year then that can confound.

1                   PRESIDING MEMBER PFANNENSTIEL: Bill, I  
2 understand that.

3                   MR. PENNINGTON: Okay.

4                   PRESIDING MEMBER PFANNENSTIEL: And I  
5 think everybody in this room understands that. I  
6 am just saying that in order to make that useful  
7 to a homeowner trying to understand the home  
8 energy usage we have to find a way of  
9 communicating that information.

10                  MR. ELEY: Right.

11                  MR. PENNINGTON: Right.

12                  PRESIDING MEMBER PFANNENSTIEL: In  
13 something more descriptive than inverse modeling.  
14 I just think that we could find something that  
15 will work.

16                  MR. ELEY: What this will -- The smooth  
17 line here would be compared to the top of the bar  
18 charts. And if it is higher it would indicate  
19 that there's behavior within the home that is  
20 resulting in greater energy use than the modeling  
21 assumptions. If it is lower than the top of the  
22 bars it would indicate that there's behavior in  
23 the home that's resulting in less energy use.  
24 Maybe they are more frugal with their operation of  
25 the air conditioner or what have you. The next

1 slide.

2 The more jagged line. And this is, this  
3 is really fabricated data. We just tried to kind  
4 of illustrate the point here. The blue line would  
5 track actual energy use. Typically you do see  
6 some variations. I happened to just out of  
7 curiosity looked at our own home and it sort of  
8 spikes during the holiday season when the kids are  
9 home and, you know, we're having probably lots of  
10 parties or something. So there's a big spike in  
11 January and December.

12 That might show up here or you might  
13 also see that, you know, if people take a vacation  
14 in August every summer that might drop then. So  
15 you'll be able to see with this one some specific  
16 seasonal effects. Next slide.

17 For gas usage there would be a, there  
18 would be a similar kind of analysis. The bar  
19 charts would be simulations. The stacked bar  
20 charts would be simulation results. We would also  
21 have normalized gas usage and actual gas usage.  
22 Next slide, please.

23 The recommendations report would be the  
24 third piece of the HERS package that would be  
25 delivered when a rating is done. And this

1 recommendations report would include a descriptive  
2 list of cost-effective recommendations.

3 It would be a cumulative list so that  
4 the second recommendation would include the  
5 savings of the first and the second. The third  
6 recommendation would show the savings of one, two  
7 and three and so forth. And in this manner we  
8 would, we would account for the interactions  
9 between measures. The order of the measures in  
10 the list would be the order of their cost-  
11 effectiveness in the process. Next slide.

12 The recommendations would be generated  
13 in two ways. There's the standard approach and  
14 the custom approach. Approved HERS systems and  
15 HERS software would be required to accommodate  
16 both approaches. However, only the standard  
17 approach would be mandatory. The custom approach  
18 is optional.

19 The standard approach is based on the  
20 cost associated with TDV energy and the statewide  
21 benefits that Dr. Rosenfeld mentioned just a  
22 moment ago. And it would -- No matter which rater  
23 does the rating or which provider does the rating,  
24 the same set of recommendations should surface for  
25 a given home if the data is collected correctly

1 and entered correctly and so forth.

2 The custom approach, by contrast, would  
3 allow for consideration of unique homeowner  
4 circumstances such as operating costs. Maybe  
5 their tax bracket, financial opportunities that  
6 they have. Possibly incentives from, from the CSI  
7 or other, other programs in California.

8 So the custom approach would account for  
9 the homeowner's actual utility bills, the tariffs  
10 that are being used in the home and other details.  
11 And we'll cover this in more detail later as we  
12 move on. Next slide, please.

13 Another thing that would be permitted as  
14 part of the custom approach is that the rater  
15 would, would actually be permitted and even  
16 encouraged to customize the modeling assumptions  
17 in the home to accommodate observed patterns of  
18 lifestyle in the home.

19 For instance if they are interviewing  
20 the homeowner they understand that the home, maybe  
21 it is used by an elderly couple and they like the  
22 temperature at 75 degrees instead of the 68 degree  
23 set point. Or perhaps there's other lifestyle  
24 circumstances that can be, that can determine,  
25 that can be determined during the auditing

1 process. Those can be used and the model can be  
2 run with those modeling assumptions to get, to get  
3 more accurate and meaningful results. Next slide,  
4 please.

5 In the event that an energy audit is  
6 done instead of a rating an energy audit  
7 certificate would be issued. This is virtually  
8 identical to the energy rating but it doesn't have  
9 the HERS index produced. There may be -- Some  
10 homeowners may choose that they don't want to know  
11 or they don't want to disclose the HERS index but  
12 they'd like to have the recommendations generated.  
13 So that's the intent of this, of this audit  
14 certificate.

15 I think that's the end of this part of  
16 the presentation so we can move on to public  
17 comments with, with regard to the scope and  
18 application in the HERS reports.

19 PRESIDING MEMBER PFANNENSTIEL: Great.  
20 I have two blue cards, people who have asked to  
21 speak. Which is useful for me but not absolutely  
22 necessary, anybody can go to a microphone. But  
23 let me start with the two cards I have. Brian  
24 Sipp of First Source. Not here?

25 UNIDENTIFIED SPEAKER: He's not on.

1                   PRESIDING MEMBER PFANNENSTIEL: On the  
2 phone?

3                   UNIDENTIFIED SPEAKER: Disconnected.

4                   PRESIDING MEMBER PFANNENSTIEL: All  
5 right, thank you. And Elizabeth Gauric of the  
6 California Association of Realtors.

7                   MS. GAURIC: I don't have any comments  
8 at this time, thank you.

9                   PRESIDING MEMBER PFANNENSTIEL: Thank  
10 you.

11                   Anybody here then who would like to  
12 speak? Please just come up to the microphone and  
13 identify yourself for the record.

14                   MS. LONDON: Good morning, I am Jody  
15 London.

16                   ASSOCIATE MEMBER ROSENFELD: There's  
17 something wrong.

18                   PRESIDING MEMBER PFANNENSTIEL: Yes,  
19 there's something. I think it's somebody on the  
20 phone.

21                   ASSOCIATE MEMBER ROSENFELD: No, we are  
22 hearing you, Jackie.

23                   MR. PENNINGTON: It seems like the  
24 interference started when the phone line was  
25 opened.

1                   PRESIDING MEMBER PFANNENSTIEL: Yes. Go  
2 ahead, Jody.

3                   MS. LONDON: Is this better?

4                   PRESIDING MEMBER PFANNENSTIEL: No.

5                   MS. LONDON: I can talk without the mic.

6                   PRESIDING MEMBER PFANNENSTIEL: No, I  
7 think --

8                   ASSOCIATE MEMBER ROSENFELD: No.

9                   MS. LONDON: But then you don't get it  
10 on tape.

11                   PRESIDING MEMBER PFANNENSTIEL: We need  
12 to pick you up. Is there anybody on the phone  
13 now? Could you ask the people on the phone to  
14 perhaps mute their phones. Okay, Jody, go ahead.

15                   MS. LONDON: I think it's still buzzing  
16 but -- I am here today on behalf of the County of  
17 Los Angeles, which is very interested in this  
18 topic. The County recently asked its staff to  
19 develop a recommendation for --

20                   PRESIDING MEMBER PFANNENSTIEL: Jody, I  
21 think you are going to have to speak without the  
22 mic for the purpose of this. We can't --

23                   UNIDENTIFIED SPEAKER: I think if you  
24 turn down the volume of the speakers here from the  
25 phones.

1                   PRESIDING MEMBER PFANNENSTIEL: Will  
2 somebody figure out how to do that, please.

3                   ADVISOR TUTT: If you just speak loudly  
4 without the mic the court reporter can still hear  
5 you with the other mic.

6                   PRESIDING MEMBER PFANNENSTIEL: Maybe if  
7 you turn the --

8                   MS. LONDON: Okay. I have a loud voice  
9 so I think I --

10                  PRESIDING MEMBER PFANNENSTIEL: So turn  
11 the mic off.

12                  ASSOCIATE MEMBER ROSENFELD: Turn the  
13 mic off, Jody.

14                  MS. LONDON: Okay.

15                  MR. PENNINGTON: It has a green light so  
16 it should go dark.

17                  PRESIDING MEMBER PFANNENSTIEL: Jody,  
18 could you go over to the other mic over there.  
19 Let's try that one. Maybe it's this mic.

20                  MS. LONDON: Okay. No, it's still bad.

21                  ASSOCIATE MEMBER ROSENFELD: Here's Joe  
22 Bubbico.

23                  PRESIDING MEMBER PFANNENSTIEL: Let's  
24 see if we can get --

25                  MS. LONDON: Hello.

1                   MR. PENNINGTON: Okay, we have some  
2 technical support so why don't we wait just a  
3 second, Jackie.

4                   ADVISOR TUTT: Jody, that mic that you  
5 have in your hand is for the court reporter. It's  
6 not a --

7                   PRESIDING MEMBER PFANNENSTIEL: It  
8 doesn't amplify.

9                   ADVISOR TUTT: It doesn't amplify.

10                  MS. LONDON: Okay. Great, okay. So I  
11 think I can work this.

12                  The County of Los Angeles, the Board of  
13 Supervisors about, I'm not sure how long ago but  
14 they asked the staff to come back with a  
15 recommendation for an energy performance  
16 benchmarking program. And the staff, you know,  
17 heard about what was happening here at the CEC in  
18 relation to the HERS program and is moving ahead  
19 with some recommendations. And we are going to be  
20 doing a pilot. And we are looking forward to  
21 working with your staff on how we can integrate  
22 the pilot into some of the research that you may  
23 need as you move forward with implementing the  
24 program.

25                  We put in some comments earlier and I

1 just want to raise them again because I continue  
2 to be concerned that the rating bar is going to be  
3 counter-intuitive to the average consumer. So as  
4 I listen to this presentation I'm thinking about,  
5 how do I explain this to my neighbor across the  
6 street? How is that person going to understand  
7 this? They don't think about energy day in and  
8 day out. So I understand that we are trying to  
9 move to zero net energy homes, hence we want to  
10 move all the ratings to zero. But I still think  
11 that's going to be counter-intuitive for people.  
12 They are used to thinking that more is better.

13 I am now going to borrow an idea that I  
14 think the City of Berkeley put in their written  
15 comments. But they suggested that there be some  
16 kind of a bar where, you know, if you are using  
17 more there's a bar graph so that you're going to  
18 show up somewhere on that bar graph.

19 But there needs to be more. And I am  
20 also concerned that what if the rating certificate  
21 gets reproduced in black and white. You are not  
22 going to pick up the difference between green and  
23 red. So that is one thing I wanted to raise.

24 I also am curious about what would  
25 trigger a custom as opposed to a standard

1 analysis. Is that something that is going to  
2 happen in the marketing and is that going to cost  
3 more. And then I am also thinking about how will  
4 low -- I don't know how much one of these audits  
5 or ratings is going to cost the average consumer  
6 but are we going to link into some of the work  
7 that is happening at the CPUC around low-income  
8 energy efficiency and other programs to help our  
9 rental population as well as our low-income  
10 population, of which there may be significant  
11 overlap in participation in these programs. So  
12 those are my comments.

13 PRESIDING MEMBER PFANNENSTIEL: Jody,  
14 let me just ask while you are there. I'm  
15 gratified that the City of LA --

16 MS. LONDON: It's the County, actually.

17 PRESIDING MEMBER PFANNENSTIEL: Oh, even  
18 better, the County is looking into this. Is the  
19 County considering doing the time-of-sale energy  
20 audit requirement?

21 MS. LONDON: I think they are looking  
22 into it, I don't know. They were actually -- For  
23 the County of LA it applies only to their  
24 unincorporated areas. But there are significant,  
25 it's a huge county and there are significant

1 unincorporated areas. I think there was an  
2 initial push to do that and then a lot of push  
3 back from the stakeholder community. So my  
4 understanding is they are revisiting it and that's  
5 why we are going to do a pilot.

6 PRESIDING MEMBER PFANNENSTIEL: So the  
7 pilot may lead to an actual mandate?

8 MS. LONDON: Right. And that's why we  
9 are really interested in collaborating more with  
10 the CEC because we think that there can be some  
11 state level pressure that is going to help pull  
12 everyone along. Once it is a state mandate it is  
13 much harder, as you know, to say, I am not going  
14 to do that.

15 PRESIDING MEMBER PFANNENSTIEL: Right.  
16 But if we can't get a state mandate then perhaps  
17 local mandates are the way to go.

18 MS. LONDON: Right. And actually within  
19 the County of Los Angeles there are 88 cities. So  
20 it's a big task because you have to bring all  
21 those different entities on board with the agenda.  
22 But definite interest in going that direction.  
23 And the County has a more comprehensive energy  
24 policy that they are implementing now that we can  
25 come talk about with you at another time. But it

1 includes energy and water, efficiency, buildings,  
2 the climate issues, outreach and education. So,  
3 you know, this is one piece of a big policy.

4 PRESIDING MEMBER PFANNENSTIEL: Thank  
5 you very much.

6 ADVISOR TUTT: Jody. I actually wasn't  
7 going to turn it on because of the -- The County  
8 has 88 cities. So if you did a pilot or a mandate  
9 for time-of-sale the cities would or would not be  
10 affected by that?

11 MS. LONDON: It would just happen in the  
12 unincorporated areas. But there are significant,  
13 you know, residential developments going in in  
14 unincorporated parts of the county.

15 ASSOCIATE MEMBER ROSENFELD: Jody, are  
16 we talking ten percent of the population of the  
17 basin or one percent or 30 percent?

18 MS. LONDON: I would have to get back to  
19 you on that, Commissioner Rosenfeld, I don't know  
20 for certain. I just know that when they talk  
21 about there is this one development in particular  
22 that comes up that is before the -- it keeps  
23 coming up before the Planning Commission and it's,  
24 I believe in the high hundreds if not thousands of  
25 homes. So it's, you know, a pretty big

1 development. But I can get back to you on that  
2 piece.

3 PRESIDING MEMBER PFANNENSTIEL: Thank  
4 you. Are there --

5 ASSOCIATE MEMBER ROSENFELD: David, I  
6 think, has a comment.

7 PRESIDING MEMBER PFANNENSTIEL: I'm  
8 sorry. David.

9 ADVISOR HUNGERFORD: Yes. I wanted to  
10 know if this label design and the graphics that  
11 are being used have been subjected to any kind of  
12 formal consumer research for comprehension,  
13 readability, understandability, usefulness? Have  
14 you guys had an opportunity to do that kind of  
15 work to develop this design?

16 MR. PENNINGTON: The short answer is no.  
17 That would be a multi-year project probably. This  
18 index is used by RESNET. That was where it  
19 originated. It was developed within that  
20 community. That has several states that have  
21 experience doing ratings going back several years  
22 and so it was substantially debated in that  
23 community. There was a clear intent to move to a  
24 rating scale that had zero meaning zero and so you  
25 are trying to communicate that.

1           ASSOCIATE MEMBER ROSENFELD: Bill, could  
2 we -- while you are talking could Charles or  
3 somebody flip back to the slide that had the scale  
4 on it. Admittedly in color.

5           MR. PENNINGTON: This particular scale  
6 is actually not RESNET's version of the scale,  
7 it's DOE's Builders Challenge version of the  
8 scale. DOE has launched an innovative builders  
9 program to encourage builders to exceed code  
10 substantially and be recognized for that. And  
11 this version of the scale, which is also having  
12 zero meaning zero, is DOE's version of the scale.  
13 So there's quite a following for using this kind  
14 of a scale within the US and growing.

15           PRESIDING MEMBER PFANNENSTIEL: Excuse  
16 me, Bill. That's geared to the builders, not  
17 homeowners, is that correct?

18           MR. PENNINGTON: Yes. This rating  
19 system will be comparing all of the buildings that  
20 are in the marketplace against each other so that  
21 you can rate new homes against existing homes. So  
22 it's there.

23           Another aspect of this scale that Jody  
24 was critical of is that the color is intended to  
25 help communicate that green is better and red is

1 worse and so it is trying to use colors to  
2 encourage. In Europe there's kind of two scales  
3 that are merging. One scale is similar to this  
4 and is a number-based scale with lower energy is  
5 better. And there is also a A through G rating  
6 system that is used in Europe that has been used  
7 for appliances for the past 10 or 15 years.

8 Perhaps a overlay of some sort might be  
9 a reasonable way to better communicate to  
10 consumers. That is particularly liked in Europe  
11 because there is so much experience using that one  
12 overlay and people are quite familiar with looking  
13 for ratings for their refrigerators or dishwashers  
14 or whatever based on a A to G. And A to G makes  
15 sense to them whereas I am not sure what G would  
16 mean to us. We use --

17 ASSOCIATE MEMBER ROSENFELD: We tend to  
18 stop at F.

19 MR. PENNINGTON: Yes, exactly. The  
20 other thing that is going on is what are our  
21 labels related to appliances looking like? If you  
22 were going to try to help the consumer learn from  
23 the UL yellow labels about their homes you would  
24 find that the UL yellow labels are not  
25 consistently formatted. They tend to be formatted

1 in the units of the rating for the particular  
2 appliance. Sometimes a higher rating, a higher  
3 energy factor is better. Sometimes a lower  
4 rating, a lower kilowatt hours per year  
5 refrigerator use is better. We don't have kind of  
6 a consistent rating scale similar to the A to G  
7 that is kind of a logical thing to put on top of  
8 this.

9           There's also been in the past the use of  
10 stars as a overlay to a number scale. And those  
11 stars have not been terribly effective in being a  
12 communication device. It's kind of turned out to  
13 be better to be shooting for a particular score.  
14 Perhaps there would be a program criteria. If you  
15 get a 86 on a scale using the old version of the  
16 scale then that was awarded with incentives.

17           I think we would be open to looking at  
18 some kind of a overlay. But there is nothing that  
19 we see that is out there that jumps out that is,  
20 that the consumer is already familiar with. That  
21 there is, you know, solid consistency across a  
22 range of different kinds of products. We really  
23 don't have that. Scales that have been effective  
24 almost always have a number-based scale as kind of  
25 the basic feature. So that's where we are.

1           ADVISOR HUNGERFORD: I guess there are  
2 two elements that I am concerned with. The first,  
3 you mentioned the type of scale used as something  
4 that you might -- you were starting from square  
5 one. You might do some development consumer  
6 research to figure out what makes more sense to  
7 people. But the second -- And that was the kind  
8 of thing that Jody was criticizing. And I can  
9 understand that but I can also understand why you  
10 would go with the consistent rating that's already  
11 been developed or a scale that's already been  
12 developed.

13           I guess I am more concerned, and  
14 precisely because of the failure of the FTC to  
15 develop appliance labels that consumers  
16 understand. And the research on that is actually  
17 quite strongly critical of the way those labels  
18 are designed. People misunderstand them, they  
19 read them backwards, they ignore them.

20           My concern would be to work on  
21 developing the representation of the indices that  
22 you do need to use in such a way that people do  
23 understand what they are looking at. And that  
24 would involve primary consumer research to see how  
25 people read these things and how to represent them

1 so that the people reading them understand them in  
2 the same way that people that are developing them  
3 intend them to be understood. And that's the  
4 element that I would be concerned about.

5 ASSOCIATE MEMBER ROSENFELD: Bill, I  
6 guess I am going to ride along with Jody a little  
7 bit. I basically like the idea of zero being a  
8 goal at the right and 100 being pretty bad. When  
9 I looked at that at first I had to stop and psych  
10 it out. It needs a big -- In boldface type it  
11 needs good at the right and bad or very bad at the  
12 left or something.

13 ADVISOR HUNGERFORD: Yes. Zero is  
14 better or 100 is better.

15 PRESIDING MEMBER PFANNENSTIEL: Okay,  
16 can we have other, I think, questions, comments?  
17 Sir. It sounds like the mics are back working  
18 again so I think you can stand over there.

19 MR. BACHAND: So it paid off to stand in  
20 line there?

21 PRESIDING MEMBER PFANNENSTIEL: Yes,  
22 right.

23 MR. BACHAND: I'm Mike Bachand from  
24 CalCERTS. I'll give you my card in a moment.

25 I just wanted to ask Charles. Maybe

1       this should be on the technical agenda. But on  
2       the photovoltaics where you were going to add the  
3       benefit, presume the benefits of photovoltaics.  
4       Is that going to also include an initial shading  
5       analysis at the home at the time or is it all  
6       going to be basically assumption driven?

7                 MR. ELEY: No, it will -- the  
8       photovoltaic production would be calculated using  
9       the CEC PV calculator and that accounts for  
10      shading. It's basically the same procedure used  
11      in the New Solar Homes Partnership Program.

12                MR. BACHAND: Okay, thanks. And I liked  
13      the good, better, best idea somebody came up with.  
14      Thank you.

15                MS. THOMPSON: Hi, my name is Debbie  
16      Thompson, I'm with Capitol Energy Consultants.  
17      And I am also a founding board member of CalHERS,  
18      which is the California Association of HERS  
19      Raters.

20                The last workshop I stated that I  
21      thought water needed to be included in this  
22      program and we should start it out right. When  
23      you are going to do appliances like high-  
24      efficiency washers and dryers, they use 50 percent  
25      water, less water. Water is so tied to the house

1 and we are going to do a whole-house HERS rating.  
2 We really need to include that.

3 I believe there is another state  
4 starting a HERS verification program and I would  
5 highly suggest, include water. In 2020 we are  
6 going to have all water meters. People are not  
7 going to know how to conserve. This is a good  
8 program to show them how. Thank you.

9 PRESIDING MEMBER PFANNENSTIEL: Thank  
10 you.

11 MS. ASAN: Thank you, everybody, thank  
12 you, Commissioners. I am Tenaya Asan from Build  
13 It Green. And just to give you a little  
14 background before I give my comments, we developed  
15 GreenPoint Rated, which is a comprehensive green  
16 rating program used throughout California for new  
17 homes in 2006.

18 We just launched GreenPoint Rated for  
19 existing homes last month. It is the first one in  
20 the nation. And we modeled our software after,  
21 after the development of this program and we  
22 thought to build quite extensively about what you  
23 folks are doing. I really commend you for this  
24 work. This is fantastic work.

25 I want to make a couple of comments.

1 One about the water is that I also thank you for  
2 thinking about putting the green, the  
3 comprehensive green rating programs on this, on  
4 your information. Because it does give those  
5 folks knowledge that there's more information  
6 about this home. So those water -- We are  
7 developing a calculator that will give water  
8 savings so we will be tieing all of that together.

9 A couple of comments on the -- everybody  
10 is talking about the rating system. One concern  
11 that I have. When we developed our system, and in  
12 all of the programs that we have it is about  
13 incentivizing people to get in at the very early  
14 stage, do whatever you can and then grow from  
15 there.

16 So our GreenPoint Rated Existing Home is  
17 incentivizing people to just do those easy upgrades.  
18 When we put in the program and started developing  
19 we were looking at homes that are pre-1980. So  
20 they probably don't have any wall insulation.  
21 Just to bring that up to a 40 percent improvement  
22 is probably in the range of \$8,000 to \$10,000. So  
23 if I am looking at a scale where 100 is a 2008  
24 Title 24 home, I don't think homeowners are going  
25 to want to use the scale because their home is

1 going to come up like 150 points.

2           Whereas they might have done a lot of  
3 work to increase the efficiency. And that's great  
4 if they get a 40 percent efficiency upgrade over  
5 what they had, it's going to help all of us. So I  
6 am a little concerned about really incentivizing  
7 people to do upgrades and not make them look like,  
8 well why bother, I'm still in the red. So that's  
9 one comment.

10           Let's see. The other. I just wanted to  
11 mention that as Jody mentioned, many of the local  
12 jurisdictions are interested in this program.  
13 They are already starting to tie to GreenPoint  
14 Rated Existing Home. So I think that it's great  
15 that this is homeowner friendly. But the  
16 information that local jurisdictions want is also  
17 there and I really commend you for doing that.  
18 And I think that's all my comments, thank you.

19           PRESIDING MEMBER PFANNENSTIEL: Thank  
20 you very much. Yes, Mike. And clearly the sound  
21 hasn't been fixed.

22           MR. HODGSON: Okay. I have actually two  
23 comments. First I'll take Commissioner Rosenfeld  
24 to task being a left-hander. Left is not bad.

25           (Laughter)

1                   ASSOCIATE MEMBER ROSENFELD: We'll  
2 negotiate.

3                   MR. HODGSON: I don't want to be  
4 personal but I take that.

5                   I have actually some questions with  
6 regards to the reference home. Recognizing the  
7 scale looks very similar to the Builders Challenge  
8 and being very familiar with its scale and also  
9 being familiar with the discussions we've had on  
10 federal tax credits and modeling assumptions and  
11 how California differs from some national  
12 assumptions, and also from RESNET assumptions. I  
13 presume this index will be defaulting to what we  
14 would consider ACM assumptions that California has  
15 developed over our history.

16                  MR. ELEY: With a few exceptions that's  
17 true.

18                  MR. HODGSON: Okay. But is the intent  
19 eventually to blend this scale with the national  
20 scale of Builders Challenge, which is fairly large  
21 to other states. I don't know of anyone really  
22 adopting it but there are other states that are  
23 trying to use this scale.

24                  MR. ELEY: The reference buildings would  
25 be different so I think there would be a, it would

1       be a, it would be a table of comparisons of how  
2       the California HERS index would translate to  
3       another number on the --

4               MR. HODGSON:  And my concern goes back  
5       to the Mortgage Bankers Association, which is  
6       reviewing the Builders Challenge tables and the  
7       numbers and how they represent present value  
8       savings.  So if California comes up with a series  
9       of numbers it means one thing and it says, 98, for  
10      example, and Arkansas comes up with something that  
11      says, 98.

12              From a mortgage underwriting standpoint  
13      we are working that the mortgage underwriters will  
14      make similar assumptions under present value,  
15      which is basically the added value to the mortgage  
16      for those energy efficiency features, potentially.  
17      So I think that's not something really to discuss  
18      but to be aware of.

19              And we probably need to bring those  
20      people into the discussion that are making those  
21      determinations.  I would think the mortgage  
22      underwriters trade association would be a good  
23      group to start with.  I know they have some people  
24      working on this issue nationally but I don't think  
25      they are paying attention to what we are doing

1 here. So that's just a heads-up and we would be  
2 happy to connect you to that.

3 The other issue, since we have been  
4 trying to do rating scales for over 20 years with  
5 numbers. One of the issues always comes up with,  
6 well, I'm an Energy Star home and I was an 83.  
7 Now I'm an Energy Star home and I'm an 86. And  
8 I'm actually more efficient than the 83 but a  
9 lower number is better than a higher number and we  
10 are confusing everybody. What is the intent of  
11 the Commission? Are we trying to peg this in 2008  
12 and move forward or is 100 always code? Do we  
13 have kind of a call on that yet or are we looking  
14 at that? What is the intent of the Commission?

15 MR. PENNINGTON: So my perception is  
16 that this is a decision that the standing  
17 Commission needs to make.

18 MR. HODGSON: Okay.

19 MR. PENNINGTON: There would be  
20 advantages and disadvantages of keeping 100 fixed  
21 indefinitely or moving it. Certainly over time  
22 the modeling of all kinds of energy uses in the  
23 home will improve and if we want to take advantage  
24 of that improvement and knowledge related to the  
25 modeling of energy the scale would need to change.

1           I don't expect this to be changing  
2           willy-nilly, you know. If you look at what's  
3           happened in the past at the national level there  
4           have been changes when the view is that the  
5           reference is obsolete and is not meaningful to  
6           anybody anymore. And so the reference was changed  
7           like on a ten-year time cycle.

8           MR. HODGSON: Right, it went from 93 MEC  
9           to 2006 IECC. And the current DOE position, not  
10          that I represent DOE --

11          ASSOCIATE MEMBER ROSENFELD: Mike, a  
12          little louder.

13          MR. HODGSON: Yes. The current DOE  
14          position is to fix it at 2006 IECC for a long  
15          period of time for the Builders Challenge scale.

16          One other comment and maybe information  
17          for the Commission is there are some consumer  
18          studies on scales. Most of them rely or have been  
19          asking the question in the area of green building.  
20          There are three national studies that were  
21          published in the last -- the first two quarters of  
22          this year that are available, they are public  
23          information. And one of the studies clearly says,  
24          consumers don't understand scales but the number  
25          one thing that they understand is money.

1                   And if the scale can be related to  
2                   dollars then you can translate that to consumer  
3                   comprehension. So maybe 98 is not the right  
4                   number or 100. I am not criticizing the scale, I  
5                   am just trying to add content. But if there is  
6                   also in the description of what annual energy use  
7                   would be on a dollar amount based on utility bills  
8                   and what potential savings would be, then the  
9                   consumer can make up their mind, am I going to  
10                  save \$240 a year. If so I am willing to spend  
11                  \$5,000 for that. Average payback of the consumers  
12                  making up their mind currently is under four  
13                  years.

14                  PRESIDING MEMBER PFANNENSTIEL: Thank  
15                  you. Others? Yes.

16                  MR. GOLDEN: Thank you, Commissioners.  
17                  My name is Matt Golden and I am president of  
18                  Sustainable Spaces. We are a San Francisco-based  
19                  home performance retrofitting company so we are  
20                  kind of on the front lines of actually fixing  
21                  homes. We are also home energy raters and we do a  
22                  lot of energy modeling and simulations as part of  
23                  our work. But really our core focus is less about  
24                  the rating and more about the actual repair and  
25                  remediation of existing buildings for energy

1 efficiency as well as comfort and health.

2 So in terms of this home energy rating I  
3 want to kind of separate two issues. One is, you  
4 know, applying a rating, that mile per gallon  
5 sticker to every house that allows people to  
6 compare buildings to buildings. There's obviously  
7 some fine-tuning but I think that is a fantastic  
8 and necessary step and I think we are on the right  
9 track. You know, I think we have made a lot of  
10 progress.

11 The other side of this issue that I  
12 think is really important to differentiate is when  
13 we move from rating a house against a reference  
14 house to thinking that we can use the simulation  
15 models and algorithms to generate recommendations.  
16 And there's a really big difference here because I  
17 see that as really a non-starter when it comes to  
18 moving from generating a rating, which is one  
19 goal, to actually giving something to somebody  
20 that's actionable that is going to result in  
21 fixing homes.

22 And I think that the results from our  
23 experience, when we have home energy raters who  
24 generally have somewhere between three, five, six  
25 days worth of training, generating recommendations

1 with ROI analysis and numbers in terms of how much  
2 things should cost. And they get delivered to us.  
3 They're 100 percent wrong and non-actionable and  
4 they are giving homeowners information that they  
5 can't work with.

6 So you guys are at the very top of the  
7 pyramid and all of these kind of general  
8 recommendations and averages work really well at  
9 the top of the pyramid. When you average  
10 thousands and thousands of houses we're right a  
11 lot of the time.

12 On an individualized basis we find that  
13 these numbers are so far off that we are giving  
14 very inaccurate information to the homeowners.  
15 And if that homeowner brings us that report they  
16 have such misconceived notions about costs and  
17 return on investment and what they should be doing  
18 for their specific home that it is a complete  
19 reeducation process and we look at it as almost a  
20 non-starter for us to be able to actually take  
21 that person from someone who thinks they are  
22 getting an audit and a recommendation to someone  
23 who is actually going to do retrofitting work on  
24 their home.

25 One recent example where we did actually

1       have simultaneous -- We did an audit on a house.  
2       We had some real performance numbers and model  
3       numbers as well as bill data and we also had  
4       another group come in and do a simulation on the  
5       building. You know, the energy bill numbers were  
6       basically a little over double what her actual  
7       consumption was. The cost for the remediation  
8       that was coming out of the database was somewhere  
9       in the order of two to ten times lower than what  
10      the actual cost of the remediation steps would be.

11               And the savings numbers were really tied  
12      to the fact that we were overestimating our bills  
13      by two-fold. We were maybe double or more than we  
14      should really actually see. So we were seeing  
15      ROIs in the two year range. And the set of  
16      recommendations, some of which we couldn't even  
17      do. We were recommending attic insulation, we  
18      really couldn't insulate an attic.

19               And it comes down to the realities of  
20      the retrofitting side of the business. Which is,  
21      in order to create a cost number that is  
22      realistic, that a homeowner can actually do  
23      something with, you have to know how to estimate.  
24      You have to know what it takes to insulate a  
25      vaulted ceiling. You have to know what size gas

1 line you need for a new water heater. There's all  
2 these kinds of details. And when we provide  
3 inaccurate information to homeowners we are really  
4 killing that opportunity to really do retrofitting  
5 work.

6 And so while I'm 100 percent in favor of  
7 home energy ratings and the necessity of that  
8 component of it. And I think it brings a  
9 tremendous amount of value to our entire system.  
10 And the accuracy starts to not be that important  
11 because if we are overestimating everybody by 50  
12 percent it is still referenceable.

13 When we decide that we can take these  
14 algorithms and make real recommendations with  
15 people who really don't have the training or the  
16 skills from a construction standpoint to do that  
17 we are actually taking that person that might be  
18 interested in lowering their score and ruining  
19 them from a retrofitting standpoint.

20 So we are creating a really robust  
21 rating network that is a huge bureaucracy and  
22 infrastructure to rate homes. But it is not going  
23 to translate into retrofit work and actually  
24 fixing the buildings, from our experience. So  
25 thank you.

1                   PRESIDING MEMBER PFANNENSTIEL: Thank  
2 you.

3                   ADVISOR TUTT: One question, if I may.  
4 The inaccurate information that you are suggesting  
5 consumers are getting today, I would guess largely  
6 comes from on-line audits.

7                   MR. GOLDEN: Well actually, in this  
8 particular case I am not going to get into whos  
9 and whats and what-not but it was from an actual  
10 audit. But it wasn't, it was based on, you know,  
11 using a go-to model and using simulations where we  
12 are using a lot of averages and standards. We are  
13 not actually testing. And then we are not truing  
14 that model up against the real build-out. There's  
15 a lot of evidence that home energy ratings and  
16 build models, go-to models and all these things,  
17 unless they are trued up are -- generally  
18 overestimate tremendously energy use and have all  
19 these inaccuracies.

20                   And again they are based on averages.  
21 Which look good when we look at the big numbers  
22 but we are talking about the granular level here.  
23 We are talking about individual houses that have  
24 very, you know -- This one doesn't have a code-  
25 compliant attic access. That one has, you know,

1 water lines that have to be replaced before you  
2 can place a water heater. There's all these  
3 realities.

4           And when we feed people real numbers and  
5 they say, well, it should cost, you know, \$500 to  
6 air seal my house or \$800 to insulate my attic.  
7 First of all, these numbers tend to be really low.  
8 And second of all, when you multiply the fact we  
9 are over-estimating energy and over-estimating  
10 savings and underestimating costs -- and even if  
11 we are not doing that every time but just the  
12 inaccuracy means that we just end up with not  
13 really an actionable plan coming out the back end.  
14 So that's been our experience.

15           So I'd just like to think maybe that we  
16 should look at disaggregating these two things and  
17 saying there's a difference -- There's a different  
18 skill set necessary to make actionable  
19 recommendations than what a rater can do in the  
20 field in terms of looking at a common set of data  
21 and creating this kind of, you know, referenceable  
22 benchmark. And if our goal is actually  
23 retrofitting homes there might be something  
24 different that we might need to look at on the  
25 back end. So thanks very much.

1           MR. ELEY:  If I may just respond a  
2           little bit to Matt's comments.  One of the, one of  
3           the reasons that we have developed a custom  
4           approach in developing recommendations is so that  
5           we can attempt to true the simulation results to  
6           the utility bills.  And we can also constrain  
7           through that process measures that are not  
8           feasible, are not desirable.  We can also require  
9           other measures as part of the recommendation  
10          package.  So we will get to that a little bit  
11          later.  But this optional custom approach to  
12          developing the recommendations.  The issues you  
13          raised, Matt, are the reasons we are trying to do  
14          that.  It may not be perfect but that is our  
15          attempt and our intent.

16                 PRESIDING MEMBER PFANNENSTIEL:  Thanks,  
17          Charles.

18                 MR. NESBITT:  George Nesbitt,  
19          Environmental Design/Build.  I have been a  
20          building performance contractor since 2001.  I  
21          went through PG&E's residential contractor  
22          program.  Also became a CHEERS/HERS rater for both  
23          new construction as well as existing homes in  
24          2001.  You know, since then have become a  
25          GreenPoint rater, certified energy plan examiner.

1 Also GreenPoint rating for existing homes as well  
2 as been going through BPI testing recently. I am  
3 also one of the founders of CalHERS. We represent  
4 the independent third-party raters in California.

5 And, you know, these proposed  
6 regulations are long overdue and luckily do a lot  
7 of good things. Going to bring a lot of things  
8 that we have been missing. There's also a lot of  
9 things that are confusing, unclear. And from the  
10 comments on all sides of the tables, because  
11 there's not just two sides, obviously there's  
12 things that are unclear to people and questions.  
13 Are the consumers going to understand this and the  
14 big question is, are they going to move to action?

15 And I was just reading in Home Energy,  
16 you know European studies. Every other study I  
17 have seen is people implement so few of the  
18 recommendations and yet we have got the big goals  
19 of AB 32, we've got the Strategic Plan going on.  
20 And we have set really high goals and existing  
21 homes are absolutely critical to that. So we need  
22 to move people to action.

23 To echo Matt's comments. When I became  
24 an existing home rater in 2001 I immediately found  
25 that the simulated results were two to three times

1        what actual results were. It was pointless to  
2        answer the question that the customers had, you  
3        know. What can I do to my house to make it more  
4        comfortable or use less energy or whatever. I  
5        have only had one house that I have done that  
6        comparison where the computer under-predicted. So  
7        it goes both ways.

8                    And I am looking at the current  
9        software. Heating and air conditioning energy  
10       predictions are off by factors of two to three.  
11       You know, the difference between that theoretical  
12       rating and the reality is big and it has been  
13       consistent.

14                   When CBPCA started we had TREAT software  
15       that allowed us to put in utility bills and tune  
16       the model so that those predictions were then  
17       based off of reality. It was not easy to do, but  
18       when you start with a known answer it's a lot  
19       easier. It makes it look less cost-effective when  
20       you are looking at reality as opposed to, you  
21       know, these big numbers.

22                   And of course with new construction the  
23       utilities, you know, all our programs are based of  
24       all these modeled numbers. And we're saving all  
25       this energy that never actually ever was going to

1 be used. So there's a big difference between the  
2 audit, a real audit which is real use, and a  
3 rating.

4 And it is also kind of funny that if we  
5 are going to, if we are going to put in real bills  
6 and compare it to the rating the rating doesn't  
7 cover the pool and the outdoor lighting and a  
8 whole bunch of other stuff. Yet the bills include  
9 that because PG&E doesn't tell us, well gee, how  
10 much of your energy use was just that house and  
11 not, you know, everything that's not the house.

12 So there's a lot of issues to be worked  
13 out and there's a lot of competing programs and  
14 overlap. I mean, essentially I am almost forced  
15 to belong to all three HERS providers. Belong to  
16 multiple providers, go through multiple redundant  
17 training, programs that have different standards.  
18 You know, GreenPoint rating reference certain  
19 standards that are more national, whereas in  
20 Energy Code we've got California standards so  
21 they're slightly different. You know, it's a lot  
22 to juggle so we need to make things more  
23 consistent and work together.

24 You know, I've got two choices of Title  
25 24 software and I can work with either provider.

1 Yet with the existing home it looks like all the  
2 software, everyone is going to develop their own  
3 software with their own program and it is going to  
4 be proprietary. You know, let the software  
5 compete and let the providers compete for who  
6 works with them but don't lock us out, you know,  
7 where we have to join everything.

8 So we look forward to working with you  
9 more and making comments. And, you know, working  
10 towards our goals and actually achieving  
11 something, you know. Because it's hard. My  
12 experience too has been you give people  
13 recommendations, it's hard to get them to do it.

14 PRESIDING MEMBER PFANNENSTIEL: Thank  
15 you very much.

16 MR. CENICEROS: Bruce Cenicerros from  
17 SMUD. My questions and comments concern the  
18 rating scale and mainly the graphical portion of  
19 that. There's been a lot of comments and concerns  
20 about the intuitiveness of the inverse scale where  
21 less is better and I share those concerns.

22 In the beginning I was really thinking  
23 that this wasn't workable given the reference  
24 points people have with other scaling systems.  
25 But when I started realizing all the advantages of

1 such a scale, it's really head and shoulders above  
2 (indiscernible)-better scale in a lot of ways.  
3 First of all, being able to get to the zero  
4 reference point is really not possible with the  
5 other scale.

6 Second, I don't know how many people saw  
7 or heard the NPR story several weeks ago about  
8 problems with the miles per gallon rating scale.  
9 The problem is the more is better scale, such as  
10 the miles per gallon scale, is just not  
11 proportional to the benefit when you increase from  
12 something to something else.

13 And I remember the example that they  
14 used there but I think it's perfectly stating for  
15 people so they can appreciate the significance of  
16 this. An example, a family who has a Dodge  
17 Durango and a Toyota Corolla and is trying to  
18 decide which car to replace in the era of \$4-plus  
19 per gallon gasoline would probably look more hard  
20 at the Dodge Durango at 15 miles per gallon. I  
21 think it's actually worse than that. They might  
22 be tempted to replace it with something like a  
23 crossover vehicle like a Subaru Outback that gets  
24 25 miles per gallon. Gain ten miles per gallon.  
25 The alternative is maybe to replace the 35 mile

1 per gallon Corolla with a Prius that gets about  
2 ten miles per gallon more on average.

3 When you do the math, though, and you  
4 looked at how many gallons per 100 miles you get  
5 for each of those cars and the incremental benefit  
6 you would find that you gained or saved 2.7  
7 gallons per 100 miles with the Durango and only .7  
8 gallons per 100 miles going from the Corolla to  
9 the Prius with the same ten mile per gallon  
10 improvement. That's almost four times the actual  
11 gasoline savings and dollar savings for the family  
12 budget if both cars are going to be driven about  
13 the same amount.

14 Now you would never guess that by  
15 looking at the ten mile per gallon incremental  
16 improvement and this is going to be the same  
17 situation when someone is looking at comparing  
18 different houses and they've got, Choice A, this  
19 house versus that house, or Choice B, and the  
20 scores, you know, have the same gap. If it's a  
21 more-is-better scale it is going to really hide a  
22 lot of the true benefit of going from one to  
23 another. Or you have a house, you're looking at  
24 the amount of improvements. How much improvement  
25 are you actually getting for your dollars.

1           ASSOCIATE MEMBER ROSENFELD: I wanted to  
2 comment. Everything you say is right and goes  
3 back to the -- The Europeans have got it right,  
4 they do liters per 100 kilometers.

5           MR. CENICEROS: That's right.

6           ASSOCIATE MEMBER ROSENFELD: But the  
7 scale that Charles and Bill are discussing is the  
8 right scale and is linear in kilowatt hours or  
9 dollars.

10          MR. CENICEROS: Yes, yes.

11          ASSOCIATE MEMBER ROSENFELD: I happen to  
12 think -- I resonate with dollars too. But the  
13 miles per gallon problem is an American problem,  
14 it's not the problem of this scale.

15          MR. CENICEROS: Well it will be the  
16 problem we will encounter if the people in this  
17 room are successful in convincing you to go to a  
18 more-is-better scale instead of sticking to the  
19 scale you've got.

20          ASSOCIATE MEMBER ROSENFELD: Okay, I  
21 understand.

22          MR. CENICEROS: I am just making this  
23 point so everyone understands the implications of  
24 doing that. Yes, it is a big concern that, you  
25 know, are homeowners and everyone else that we are

1       trying to target with this scale system, going to  
2       get it. Are they going to understand? And I  
3       really support Mr. Hungerford's suggestion that we  
4       look at some market research, either primary or  
5       secondary, to see what reactions they'll have with  
6       a scale such as this.

7                   And when we get to the point of  
8       designing individual scales, whether it's a  
9       specification that the Energy Commission provides  
10      the ratings providers, or whether the ratings  
11      providers would need to do this, I strongly urge  
12      somebody to test these scales and the visual  
13      presentation of the scales with actual consumers  
14      to make sure that they have an opportunity to fine  
15      tune it in focus groups or whatever. Get it right  
16      so they know people are going to understand what  
17      the scale is telling them.

18                   Another thing we can do is add, as  
19      someone suggested, the dollar amounts of the bill  
20      in with the scale itself. Right now it's down in  
21      a column here hidden with a bunch of other figures  
22      and it doesn't jump out at you. If you did put  
23      that up in the scale there and had that number  
24      just like the Energy Guide labels do for  
25      appliances then that may solve the problem.

1       Because people do -- dollars resonate with people  
2       more than some ratio like miles per gallon even,  
3       even though they are very familiar with that now.  
4       So that may be another solution to help improve  
5       that concern, that risk of people not getting it.

6               ASSOCIATE MEMBER ROSENFELD:  I  
7       absolutely agree.  I'm saying it the third time  
8       that dollars are well understood.

9               MR. CENICEROS:  So my next point then is  
10       regarding the reference points.  I heard  
11       Mr. Pennington say that you are planning to update  
12       it about every ten years.  During that time of  
13       update it is going to basically render all the  
14       scores that were done, even within the last year  
15       preceding that update, pretty much obsolete and  
16       there will be a lot of confusion.

17               You may want to consider a longer time  
18       frame than that.  Or at least leave it flexible so  
19       you can see how things are going up to that point  
20       in time.  The standards will eventually start to  
21       plateau a little bit at some point in the future  
22       and it may become less and less of a problem.

23               But the whole -- I'm wondering whether  
24       the reference point itself is the right reference  
25       point, as other people have commented here.  It

1 does make even substantially improved older homes  
2 still look bad. So how we resolve that is going  
3 to take a lot of creativity and thought and design  
4 to come up with a system that accomplishes  
5 everything we are trying to get this to do for us.  
6 But it is something to consider.

7 PRESIDING MEMBER PFANNENSTIEL: That's  
8 why we have invited everybody in this to give us  
9 comments on this.

10 MR. CENICEROS: One thing I was  
11 wondering is, this example scale, and I know you  
12 borrowed it, does end at 150. Were you intending  
13 to specify where this scale stopped at the high  
14 end or let the providers decide that?

15 MR. PENNINGTON: We were responding to  
16 your recommendation at the May workshop that this  
17 scale not be beyond 150. And that if you get a  
18 poorer score than that you are shown as off-scale  
19 and you have a reported score.

20 MR. CENICEROS: Okay, well thank you for  
21 that. But I don't know whether 150 happens to be  
22 the right number. And I was wondering, has anyone  
23 done a survey of existing buildings using these  
24 tools or making some rough estimate of what  
25 percentage of existing home stock would fall off

1 the scale versus on the scale below 150?

2 MR. ELEY: As part of our topic report  
3 we looked at, we applied the energy efficiency  
4 measures of different vintages of homes going all  
5 the way back to pre-1978 and most of them were  
6 between 100 and 200 and not to many above 150.  
7 Some of them around 160, 170 or something like  
8 that.

9 MR. CENICEROS: So the minority were  
10 above 150. So I think a good point to aim for  
11 where the scale ends would be maybe having the  
12 bottom quartile falling off the scale because  
13 that's kind of what we assumed is the worst of the  
14 stock out there.

15 MR. ELEY: I don't know if it's the  
16 quartile but it's probably somewhere in that  
17 ballpark, though.

18 MR. CENICEROS: So, you know, doing a  
19 survey like that and finding out, you know, what  
20 that percentage would be, design the end point of  
21 the scale initially to be there. You can always,  
22 you know, change the scale itself in terms of  
23 maybe in the future maybe it starts at 170 being  
24 the end. Maybe five years from now you can cut it  
25 off at 150 and, you know, later on it will be 130.

1 And that way it's sending a message to people that  
2 you have got to keep doing better but it is still,  
3 at least, only sending the message that, you're  
4 off the scale, to the ones who really are in the  
5 most need with today's technology and processes  
6 and methods to get back on the scale.

7 I guess that was my last comment there  
8 so thank you for your time.

9 PRESIDING MEMBER PFANNENSTIEL: Thank  
10 you.

11 MS. THOMPSON: Hi, Debbie Thompson with  
12 Capitol Energy Consultants. The CAHERS board  
13 wanted me to bring up that we strongly disagree  
14 with the Commission's choice to use building  
15 performance contractors. The HERS providers have  
16 the training available or are developing the  
17 training to have the HERS raters do this whole-  
18 house energy rating.

19 If you are going to use building  
20 performance contractors there is going to be a  
21 conflict of interest because they are going to do  
22 the installations and they are going to collect  
23 the monies from those installations. They should  
24 not be the people that are doing the rating.

25 Trust your HERS providers to give us the proper

1 training we need.

2 I am a former energy specialist with a  
3 public utility who did residential energy audits.  
4 I caught things at the meter, I could break down  
5 the bills. Half the people would install the  
6 equipment that I recommended. I think if the HERS  
7 rater went out there, did the rating report, if  
8 they found a problem we could call in the building  
9 performance people at that time after the house is  
10 sold. You don't want to hold up the sale of the  
11 house.

12 The other issue is I think you should,  
13 as an energy specialist I went -- every season I'd  
14 go to the same homes, different renters.  
15 Landlords do not change out equipment and people  
16 just move in and out, move in and out. If these  
17 landlords are getting any kind of city or state or  
18 federal monies I think we should, before they are  
19 allowed to rent that house again they have to have  
20 a whole-house rating. And with all the IOUs and  
21 the public utilities going in on this program it's  
22 a perfect time to get these -- to help our low  
23 income people. Thank you.

24 PRESIDING MEMBER PFANNENSTIEL: Thank  
25 you.

1 MS. McCOLLUM: I'm Elizabeth McCollum  
2 with Heschong Mahone Group. And I'm wondering, is  
3 there a reason why we couldn't just use the KP --  
4 I'm sorry, KBTUs per square foot as the scale that  
5 is not changing and just leave a reference maybe  
6 for the current standard, new construction home.  
7 So you still, you have something to compare  
8 against but the scale doesn't change over time.

9 PRESIDING MEMBER PFANNENSTIEL: Did you  
10 consider that, Charles or Bill?

11 MR. ELEY: Sure, I think we can look at  
12 that.

13 MR. PENNINGTON: We are not recommending  
14 that the scale be changed over time. You are  
15 going to find reasons that the Commission should  
16 consider for whether or not it should be changed.

17 MR. ELEY: There's also some -- I mean,  
18 if we achieve our goal and the standards require  
19 zero energy buildings in 2020 and one end of the  
20 scale is zero and the other end of the scale is  
21 zero we have a bit of a problem.

22 MR. PENNINGTON: However the standard --

23 MR. ELEY: So there is, there is kind of  
24 a --

25 MR. PENNINGTON: The standards only

1 affect maybe 40 or 50 percent of the energy on the  
2 scale. So you are not going to be there, Charles.

3 PRESIDING MEMBER PFANNENSTIEL: Okay.  
4 Yes sir.

5 MR. NESBITT: George Nesbitt. Just a  
6 couple of quick more comments.

7 My own house, 1923. I've modeled it  
8 out. I'm probably going to retrofit it to close  
9 to 75 percent above 2005 code. Slap a little PV  
10 on the roof, I am going to be below zero. How are  
11 we going to accommodate that? Because is zero  
12 enough or do we want to be positive energy  
13 producing?

14 And also I think, you know, most of the  
15 strategic plan, everything is really kind of  
16 looking back to 2005 code as the reference. It is  
17 going to be X percent above 2005. And I think, I  
18 think I had made the comment in May, not fixing  
19 the scale zero to hundred but having it a floating  
20 scale where as the code changes, just the point on  
21 the scale that says, this is code, changes. And  
22 then the scale be in energy or it's in dollars,  
23 you know, whatever. That way it's flexible and  
24 not fixed. That way a number house this year is  
25 not a different number next year.

1           I mean, I talked to Sam Raskin the other  
2           day and he said, you know, the number is not the  
3           point. So your number between zero and 100 is  
4           really not the point, you know.

5           Oh, and I have been doing some  
6           comparisons lately and running with the beta  
7           software and a lot of homes are over 200. A lot  
8           of existing homes, even with certain upgrades.  
9           So, you know, there's a wide variation in reality  
10          out there.

11          PRESIDING MEMBER PFANNENSTIEL: Thank  
12          you.

13          MR. EHRLICH: I'm Charles Ehrlich  
14          representing my company, Energy LLC, which is a  
15          small energy consulting firm based in Davis. I  
16          also happen to work for ICE Energy and I am a  
17          member of CABEC and a number of other  
18          organizations.

19          I just wanted to say that I think this  
20          KBTU per square foot measure might be something to  
21          think about. That a negative KBTU would make  
22          sense, that you are generating more than you are  
23          using. And that you could easily plot that on a  
24          histogram of other buildings, other building  
25          stock, where you fit. What percentage of homes

1 are worse than you, what percentage of homes are  
2 better. As an example of that you can look at  
3 CalArch, it's a website at Lawrence Berkeley  
4 Laboratory. Mostly for commercial buildings but  
5 that same idea. It's a pretty powerful  
6 representation of how you're doing relative to the  
7 building stock.

8 I'd also like to say that I strongly  
9 support the use of building performance  
10 contractors in the whole process. I know that is  
11 going to be a topic later on today but it was  
12 brought up earlier.

13 However, I think that the differential  
14 requirements for HERS raters who are not building  
15 performance contractors seems a little imbalanced  
16 there. You've got all these requirements of not  
17 selling things and not recommending products.  
18 When an energy consultant makes a recommendation  
19 on a product he's basically bought that product.  
20 If something goes wrong with it, you know, he's on  
21 the line. So when that HERS rater energy  
22 consultant can't profit from that recommendation  
23 in any way at all that puts him at a disadvantage  
24 to the building performance contractors.

25 If that's what you are going for then

1 the energy consultant/HERS rater that is not a  
2 building performance contractor needs to be given  
3 special status or special other compensations.  
4 Just, you know, considerations. And again, that's  
5 just from my point of view there, moving ahead in  
6 our schedule.

7           Lastly, representing what I know now  
8 about demand, energy demand impacts as an  
9 employee, a sales person for ICE Energy. The  
10 scale says nothing about the peak kW impact of the  
11 home. And I was wondering if maybe there would be  
12 a way to alter the scale in some way to encourage  
13 people to say peak demand energy as opposed to  
14 energy from the average -- equally throughout the  
15 day or throughout the year. That's it for now.

16           ADVISOR HUNGERFORD: Just a minute,  
17 Chas.

18           MR. EHRLICH: Yes.

19           ADVISOR HUNGERFORD: I think with the  
20 use of TDV evaluation there is an attempt at least  
21 to recognize the kW impacts. And so there was an  
22 attempt to incorporate that into the idea,  
23 although right now TDV may slightly under-  
24 represent peak impact. It is an attempt to move  
25 that direction.

1           MR. EHRLICH: Yes, thank you for that  
2 clarification, that's true. Which reminded me of  
3 another aspect, another comment I wanted to make.  
4 Which was, since this -- Whatever scale we come up  
5 with, unless it's a pure BTU scale, is going to  
6 change over time.

7           If you don't go with a BTU scale then  
8 you might consider from the very get-go stating  
9 what your baseline is. So this is a HERS rater  
10 score 2008, right, and so you know it's going to  
11 change every ten years or whatever. And then when  
12 you come up with a new number for that building or  
13 whatever you can compare it. My comment was more  
14 based upon if the baseline was a BTU scale. Of  
15 course you'd have to somehow accommodate peak  
16 energy impacts. So yes, thank you.

17           PRESIDING MEMBER PFANNENSTIEL: Thank  
18 you. I am not going to cut off comments if people  
19 want to continue to come up but there is a lot  
20 more information to cover today and we have  
21 several other opportunities for comments. So I am  
22 assuming that the comments now are based on what  
23 we have been talking about so far this morning.

24           DR. KNIGHT: Thank you. I'm Bob Knight.  
25 I am representing the California Building

1 Performance Contractors Association. I am also on  
2 the Board of Affordable Comfort, a national  
3 organization, and Home Energy Magazine. With  
4 Charles here I'm about as close to a  
5 representative of those organizations as you are  
6 going to get.

7 Just a few random comments. I'm sure  
8 we'll have more to say later in the day. But the  
9 main thing that brought me up here was that I have  
10 to oppose a previous comment about conflict of  
11 interest in building performance contractors. We  
12 implement the Federal Home Performance with Energy  
13 Star Program, which requires very careful  
14 safeguards against conflict of interest among home  
15 performance contractors who do both the  
16 assessments and the remediation of homes.

17 We look at every analysis that is done  
18 by a contractor and we look at, we actually retest  
19 five percent, pulled randomly, of all jobs done to  
20 make sure that, A, the homeowner is happy, number  
21 two, that the work was done well, and number  
22 three, that the scope was appropriate.

23 So I don't think we have very much worry  
24 about conflict of interest in the programs that we  
25 run now with both Southern California Edison and

1 PG&E. Those programs will be expanding in 2009 to  
2 include the gas company and the other IOUs are  
3 also beginning home performance programs. All  
4 under home performance with Energy Star. So I am  
5 hoping that we can put the idea of conflict of  
6 interest among home performance contractors to  
7 rest.

8 I would like to echo a previous comment  
9 also about exterior energy uses. I think George  
10 made a good point that you get an electricity and  
11 gas bill that includes all your uses, not just the  
12 ones attached to the building. And when people  
13 buy a home they don't just buy the house, they buy  
14 the whole property and everything that is on it.

15 And I am not sure that I can quite  
16 understand or agree with the idea of restricting  
17 the rating only to the building and things that  
18 are attached to it. We find very often in the  
19 homes that our contractors assess and improve that  
20 there are huge savings that are possible,  
21 especially in pool and spa applications. Exterior  
22 lighting. Sometimes exterior lighting is  
23 unbelievably expensive. And we think that those  
24 kinds of things really should be included, just  
25 because that's the way you buy and sell homes.

1           I see somebody moving toward a  
2 microphone. Okay.

3           Another small point is the issue of  
4 standard behavior. I guess we'll get into that a  
5 little bit more later in the day. But I just want  
6 to say that I am going to be very curious to see  
7 how you define what standard behavior is.

8           Another point, I want to echo what Matt  
9 said and also George regarding simulation models.  
10 We used a lot of simulation models. We find them  
11 all to be terrible, especially in dealing with  
12 existing homes that have not be remediated.  
13 Because there are lots of things wrong in a home  
14 that have to do with the quality of the work done,  
15 not whether it's been done. And no model does a  
16 good job of assessing that unless you merge it  
17 with actual inspections.

18           For example, in insulation quality. You  
19 know, you may have insulation in the walls but an  
20 infrared camera scan will show you that there are  
21 so many voids that much of the insulating value  
22 has been lost. And that needs to be reflected in  
23 the model. And most analysts don't understand  
24 that. They just say, well you have this  
25 insulation in the walls. There are lots of other

1 things like that that need to be considered.

2 And that brings me to a final point  
3 which is that we have found that analysts, raters,  
4 other people who are not familiar with the actual  
5 doing of the work on a home, tend to produce  
6 recommendations that are impractical. And either  
7 the costs are wrong, the priorities are wrong.  
8 They don't understand how things work together.

9 And I am not trying to just criticize  
10 people who aren't contractors but there really is  
11 a problem here in having a contractor come in and  
12 take responsibility for something that somebody  
13 else has specified because the California state  
14 law requires that the contractor take  
15 responsibility for it. And we find that what  
16 happens when we have that kind of situation is the  
17 contractor ends up doing his own analysis all over  
18 again to make sure that he can put his name on the  
19 job. Anyway, I won't take more time. We will  
20 have some more comments later. Thank you very  
21 much.

22 PRESIDING MEMBER PFANNENSTIEL: Thank  
23 you.

24 ASSOCIATE MEMBER ROSENFELD: I am going  
25 to make a comment to Bill and Charles. I

1 sympathize with Bob Knight's comment that there is  
2 a big hole in the pool or the outdoor lighting. I  
3 don't want to sit here and try to make up an  
4 answer but maybe you just have to warn people, a  
5 default or something. You know, if you have a car  
6 it's another 50 percent on your energy bill but at  
7 least you know miles per gallon or something.  
8 Here it seems like there's just a big trap door  
9 out there which is not being taken care of.

10 ADVISOR TUTT: I was going to comment on  
11 that too. I presume that the reason that pools  
12 and spas were not included was that it was  
13 difficult to include them in the reference home  
14 and therefore difficult to include them in the  
15 rating system. Now maybe there's a way in the  
16 actual home being rated to reflect that there's a  
17 pool and a spa associated. But I don't see how it  
18 can easily be included in the rating scale because  
19 it can't be in the reference home.

20 MR. PENNINGTON: We intend to be  
21 discussing that in the next upcoming  
22 presentations.

23 ASSOCIATE MEMBER ROSENFELD: Good,  
24 you're going to solve that for us.

25 PRESIDING MEMBER PFANNENSTIEL: But we

1 do have a lot more material to get through. Yes  
2 sir.

3 MR. CARUTHERS: Good morning. I'll be  
4 brief. My name is Tom Caruthers, I'm with Federal  
5 Energy Services. I am a facilitator for the  
6 energy efficient mortgage business. I have been  
7 doing this since 1982, before we called it the  
8 energy efficient mortgage.

9 And the question that I had as it  
10 applies to my business: My customer is always in  
11 the process of purchasing a home. I say always,  
12 there's not a refi market going on right now. But  
13 even when there was, refinance was a very small  
14 segment of the market. But the FHA Energy  
15 Efficient Mortgage Program is predominately used,  
16 and right now exclusively, by people purchasing  
17 homes and so we don't have sample utility bills on  
18 which we can run an analysis. So I am kind of  
19 relying on that model home scenario to help my  
20 customers make decisions.

21 And at the same time I am hoping that  
22 the cumulative effect of energy improvements will  
23 be shown on these reports because we know that if  
24 you are going to change the mechanical systems,  
25 the heating and air conditioning in the home, we

1 need an infiltration test as well. Because there  
2 is no sense upgrading to a more efficient furnace  
3 if you don't plug the leaks. It basically boils  
4 down to that.

5 That's the only, that's my major concern  
6 because I am not -- not to be redundant but my  
7 buyer doesn't have utility bills on which we can  
8 do a before and after.

9 And my only other two cents on the  
10 building performance is I know we could draw a  
11 parallel with fee-based financial planners and  
12 non-fee-based and that war wages on and probably  
13 will forever. Anyway, thank you very much for  
14 your time.

15 PRESIDING MEMBER PFANNENSTIEL: Thank  
16 you.

17 MR. CONLON: My name is Tom Conlon. I'm  
18 with GeoPraxis and EnergyCheckup, a service of  
19 GeoPraxis. We have been working for the last ten  
20 or so years with home inspectors. We have trained  
21 about 500 of those and this year about 500 real  
22 estate agents. And I want to commend the  
23 technical team and the Commission in general for  
24 bringing us to this point here because this is a  
25 very important new development in California

1 energy policy.

2 My comments quickly on the scale and the  
3 index we have here is that it's a good start. But  
4 I think the critique you have heard today  
5 hopefully will bring us through another iteration  
6 of improvement on the index.

7 I want to underscore the importance of  
8 getting dollars into the main graphic item that  
9 people see. Eliminating color for replicability  
10 in fax machines and so forth. And I feel most  
11 importantly that the zero, we are actually seeing  
12 realtors understand what zero means for the  
13 concept of the carbon footprint. I believe that  
14 we are starting to see a cultural shift as people  
15 begin to realize how important it is to move  
16 towards zero. And so I think we can move the  
17 entire culture forward with an index that is done  
18 properly.

19 My critique, though, on the other end of  
20 the scale is that we don't have with a moving  
21 benchmark -- If we make the Commission's new  
22 construction standards the fixed point on the  
23 other end of the scale, that I think is a  
24 communications challenge. And I would submit that  
25 we help the realtors out a little bit here by

1 giving everyone a point along the scale that is  
2 more relevant to the houses we actually live in  
3 today. All of us live in houses in California  
4 that score somewhere on this scale.

5 And so I submitted last time comments  
6 suggesting that perhaps the 1990 AB 32 goal of  
7 what is the carbon goals that we have be used as a  
8 benchmark in lieu of the ACM 2008 new construction  
9 standard goal. The concept here would be to model  
10 a RASS-conforming or go back and look at the  
11 building characteristics of a typical house built  
12 in 1990. I'm sorry. The typical California home  
13 and look at its energy consumption relative to the  
14 amount of carbon produced in 1990. And use that  
15 as a benchmark for moving us down towards zero.  
16 And I am curious to know if there was any work  
17 done on the technical team to address that issue?

18 MR. PENNINGTON: I am not aware of any  
19 data that exists on what the range of building  
20 stock looked like in 1990. I think that would be  
21 a major project to try to figure that out.

22 ASSOCIATE MEMBER ROSENFELD: In terms of  
23 what David's average customer would think, I think  
24 1990 carbon use is a pretty remote idea. I can  
25 believe that somebody in a focus group understands

1 the concept of the 2005 building standards.

2 MR. CONLON: My point I guess is more  
3 broad than that in that the number of homes that  
4 the building standards apply to --

5 ASSOCIATE MEMBER ROSENFELD: Is small.

6 MR. CONLON: Is very, very small. And  
7 almost insignificant from a communications  
8 challenge of explaining to people where they fit.  
9 We are not trying to sell a new home here, per se.  
10 I think we are trying to sell primarily upgrades  
11 to existing homes. And so giving people someplace  
12 that is meaningful to start. You have heard some  
13 comments from the room about that challenge. So I  
14 would just make that comment again and perhaps  
15 take this off-line.

16 In addition perhaps we'll get into the  
17 inverse modeling a little bit later. My question  
18 here would have to do with some of the feedback I  
19 think Commissioner Pfannenstiel had about the  
20 challenge of communicating the relationship  
21 between the energy bills and modeled results. And  
22 as a work-around for the inverse modeling issue I  
23 ask, how hard would it be to develop a system for  
24 actually using actual weather data for the last 12  
25 month period or whatever matched up period there

1       might be.

2                   I know that about ten years ago I was  
3       part of the team that did develop a system that  
4       did that.  Harvested solar and weather data and  
5       produced weather files that could be input for  
6       simulation, energy simulation software.  
7       Technically it is not that great a challenge.  And  
8       I think it is probably proportional to the  
9       challenge of asking the HERS rater community to  
10      implement inverse modeling in all of their  
11      software tools.  So I would ask that that topic be  
12      kind of set off to the side as another thing to  
13      consider.

14                   ASSOCIATE MEMBER ROSENFELD:  That's an  
15      interesting idea but you are actually suggesting  
16      last year's weather for 16 climate zones.  I mean,  
17      that's quite an order.

18                   MR. CONLON:  Why not, it's very easy to  
19      actually harvest the weather data --

20                   ASSOCIATE MEMBER ROSENFELD:  It can be  
21      done, yes.

22                   MR. CONLON:  -- and reprocess it for  
23      input into the simulation engines.  So it's not an  
24      insurmountable problem.  I think it would actually  
25      make, push us much further along the challenge of

1 communicating, what are the real -- what would  
2 this house, how did this house really perform last  
3 year. It would allow us to really calibrate to  
4 energy bills.

5 The third quick comment has just to do  
6 with the certificate. I love the idea of a  
7 certificate. When I buy a car I look at that MPG  
8 sticker on the car window. I expect it to be  
9 there, I believe it is required to be there. I  
10 believe we should do the same thing in this and  
11 put a sticker someplace on the house.

12 I know there's been proposals to put the  
13 sticker inside the electric panel. Most houses in  
14 California do have electricity. That's a pretty  
15 logical place to put it, I think. It shouldn't be  
16 probably as large, I think, as the version that we  
17 have here because it would obliterate some other  
18 information that's in the panel that's important  
19 but perhaps a synopsis and a number so that the  
20 consumer could look up the actual full-blown  
21 report someplace might be helpful. Thanks for  
22 your consideration of my comments.

23 PRESIDING MEMBER PFANNENSTIEL: Thank  
24 you. We have one person, I believe, on the phone  
25 who has asked to comment at this time. Liz Merry

1 of Verve Solar Consulting.

2 MS. MERRY: Hi, yes. I just wanted to  
3 ask if (indiscernible, phone line interference)  
4 renewable field to make an assessment.

5 (Indiscernible) good, poor, medium assessment  
6 (indiscernible) already lined up.

7 PRESIDING MEMBER PFANNENSTIEL: We will  
8 try to respond. We are having a very hard time  
9 hearing your comment. The phone line is not  
10 coming through very clearly. Bill or Charles, did  
11 you hear that sufficiently well to respond?

12 ASSOCIATE MEMBER ROSENFELD: No.

13 PRESIDING MEMBER PFANNENSTIEL: No, I'm  
14 afraid we didn't.

15 MR. PENNINGTON: It would be helpful if  
16 you could e-mail Helen Lam your contact  
17 information.

18 MS. MERRY: Okay.

19 PRESIDING MEMBER PFANNENSTIEL: We're  
20 sorry. We don't seem to be able to get the  
21 communications to work on the phones.

22 With that I think we are going to move  
23 then from public comment on to the next section of  
24 Charles' presentation. And then we will take up  
25 some more public comment following the next two

1 parts.

2 MR. ELEY: Thank you, Chairwoman.

3 This next part of the presentation is  
4 going to talk about the different entities that  
5 would be recognized through this program. Some of  
6 the comments have already begun to address this.  
7 Next slide, please.

8 There's two principal activities. One  
9 is field verification ratings for Title 24  
10 compliance. This was established through Phase I  
11 of the HERS program and HERS raters have been  
12 performing this function since that time. Their  
13 role with each generation of the standards has  
14 expanded somewhat to include more energy  
15 efficiency measures.

16 The second role which we are expanding  
17 in Phase II of this project is to produce these  
18 ratings. These entities, the field verification  
19 and diagnostic testing rater and the whole-house  
20 home energy rater and the whole-house home energy  
21 auditor, would all be certified separately through  
22 this program. Next slide, please.

23 This is a list of the, of the steps in  
24 the process for rating the home. There's an  
25 inspection or analysis of existing conditions.

1 There's an analysis of those results. There's an  
2 identification of energy efficiency features and a  
3 cost effectiveness evaluation of those features.  
4 And then recommendations are produced for the  
5 homeowner. The role of the auditor stops there.

6 Then the rater, the home energy, the  
7 whole-house home energy rater, would continue and  
8 would produce a rating for the home and a rating  
9 certificate for the home. So the last two steps  
10 would be, would be steps that would be provided by  
11 the rater. The steps prior to that would be  
12 provided by the auditor or the rater. Next slide,  
13 please.

14 The HERS providers play a key role in  
15 this process and the regulations address their  
16 responsibility. The HERS providers have  
17 responsibilities for training, testing and  
18 certifying their raters and providing quality  
19 assurance programs.

20 HERS providers are expected to maintain  
21 somewhat of an arms-length relationship with their  
22 raters and auditors and other entities that they  
23 certify to avoid conflicts of interest.

24 Each provider has to have a quality  
25 assurance program and a designated quality

1 assurance manager to administer this program.

2 And presently there are three, there are  
3 three HERS providers in California, that's CHEERS,  
4 CalCERTS and the California Building Performance  
5 Contractors Association. Next slide, please.

6 In addition to the whole-house home  
7 energy rater and auditor there's a couple of  
8 specialized functions that are recognized in the  
9 regulations. One is the role of a home energy  
10 inspector. The home energy inspector would be  
11 trained and certified to visit the home and  
12 collect data that would then be used by a rater or  
13 an auditor to produce the recommendations and the  
14 rating certificate. For instance, home inspectors  
15 might receive additional training and perform this  
16 function. The knowledge requirements and the  
17 training requirements are of course less for an  
18 inspector than they would be for a rater or an  
19 auditor.

20 The second specialized role is the home  
21 energy analyst. And this is, this is the person  
22 that would, that would take the data, perhaps  
23 collected by an inspector or maybe a rater, and  
24 would enter it into an energy model and would  
25 perform the analysis.

1           And both of these roles, the inspectors  
2           and the home energy analysts, would operate under  
3           the supervision of a rater or an auditor. So  
4           these are, these are specialized functions that  
5           are identified and the intent is to provide a  
6           little bit more flexibility in the industry so  
7           that these services can be provided in a  
8           competitive and cost-effective manner. Next  
9           slide, please.

10           The raters are required to be  
11           financially independent. They can have no  
12           financial interest with contractors that perform  
13           energy efficiency improvements.

14           The regulations specify that at least  
15           one percent of the ratings provided by a -- on an  
16           annual basis or at least one rating be verified by  
17           a third party provided by the, by the, by the HERS  
18           provider. So if a rater does 100 homes at least  
19           one of those homes would be, would be reviewed by  
20           a third party as part of this quality, quality  
21           assurance program. Next slide, please.

22           Building performance contractors are  
23           treated a bit differently. There's an exception  
24           for building performance contractors and they are  
25           allowed to do both the rating and to produce the

1 -- and to develop recommendations and to actually  
2 implement those recommendations. However, there's  
3 added responsibilities and added quality assurance  
4 that comes attached with this exception to the  
5 independent entity requirement. Next slide,  
6 please.

7           So one of the requirements is that after  
8 a building performance contractor does the work,  
9 12 months after the work has been implemented the  
10 building performance contractor is required to do  
11 a post-retrofit utility bill analysis following  
12 the procedures identified in the HERS technical  
13 manual. This post-retrofit energy analysis is  
14 similar to -- it's this inverse modeling procedure  
15 that we have talked about. It's s procedure that  
16 has been implemented to verify the effectiveness  
17 of utility programs and other energy efficiency  
18 programs for years.

19           And in addition the one percent check is  
20 increased to five percent for building performance  
21 contractors. So basically one out of 20 homes  
22 would be third party verified for building  
23 performance contractors.

24           So those are the additional requirements  
25 for building performance contractors and this is,

1 this is, this is in consideration of the exception  
2 given to them for, for not having to be  
3 financially independent from doing the work. Next  
4 slide, please.

5 The next part of this program or  
6 presentation gets into some of the details for  
7 doing the energy calculations. And after this we  
8 will have another opportunity for public comment.  
9 Next slide.

10 So the HERS index is defined as the  
11 ratio of the TDV energy of the rated home to the  
12 TDV energy of the reference home times 100. And  
13 the TDV production, that's TDVPV in this equation,  
14 is subtracted from the TDV energy of the rated  
15 home. So if the numerator here can be zeroed out,  
16 if the TDV energy from PV production is equal to  
17 or greater than the TDV used by the rated home,  
18 than the home would have a score of zero. It  
19 would be possible to have a score less than zero.  
20 This rating scale that we showed could show a  
21 point out to the right of zero for a home that's  
22 producing more electricity than it is using.

23 The components of energy use that are  
24 included in the TDV calculation are heating,  
25 cooling and water heating, but also lighting and

1 appliances energy and exterior lighting energy  
2 that's attached to the building.

3 The things that are not included in the  
4 rating are pools, spas, lighted courts, well pumps  
5 and so forth. I want to emphasize though that the  
6 recommendations that would be generated for a  
7 rated home would include measures for pools and  
8 spas and well pumps and so forth. It is just that  
9 those components are not considered in calculating  
10 the HERS index for finding your point on that  
11 scale. We do intend to -- These energy uses, as  
12 has been noted, can be quite significant and we  
13 don't want to overlook them in the recommendations  
14 portion. But they would not be a part of this  
15 HERS index. Next slide, please.

16 The calculation of photovoltaic or  
17 renewable energy production would be, would follow  
18 the procedures that have been established for  
19 California's New Solar Homes Partnership Program.  
20 The CEC PV calculator would be used. This  
21 calculator and the algorithms that it uses are  
22 available on the CEC's website now and they are  
23 documented in the Energy Commission's Residential  
24 ACM Approval Manual Appendix B.

25 And this procedure does account for a

1 lot of features of the PV system including the  
2 matching of the collectors with the inverter. It  
3 accounts for possible shading of some of the  
4 collectors. It accounts for orientation and tilt.  
5 And even the wiring of the collectors, how many of  
6 them are in series or how many strings there are  
7 in the PV system. Those features and more are  
8 accounted for in the CEC PV calculator. Next  
9 slide, please.

10 The reference home has a maximum size of  
11 2500 square feet. So what this means is that for  
12 homes larger than 2500 square feet they are going  
13 to have to work harder to get a low HERS index.  
14 The 2500 square feet is roughly the state average,  
15 the average home size in California plus one  
16 standard deviation. And this is based on, based  
17 on the RASS data. That puts it right at about  
18 2500 square feet.

19 There are some programs in California.  
20 For instance, Marin County has a program that  
21 requires that new homes use no more energy than a  
22 3500 square foot home. So this precedent of  
23 capping the reference home size already exists in  
24 California in Marin. And I think -- I am not sure  
25 if any other communities. Mill Valley, Marin

1 County. It is also, it is also used in other  
2 programs. For instance the LEED for Homes program  
3 caps house size based on the number of bedrooms.  
4 The home size cap in LEED is 2600 square feet for  
5 a four-bedroom home.

6 So this is, this is -- For homes that  
7 are larger (sic) than 2500 square feet this will  
8 make no difference but for homes that are larger  
9 than 2500 square feet additional energy efficiency  
10 measures would have to be implemented or  
11 additional PV production would have to be  
12 incorporated in order to, in order to get an equal  
13 rating. Next slide, please.

14 ADVISOR HUNGERFORD: Can I ask one quick  
15 question?

16 MR. ELEY: Sure.

17 ADVISOR HUNGERFORD: It seems like  
18 there's sort of an obvious way to get by something  
19 like this with say a 2500 square foot pool house.  
20 Is that something that people have paid attention  
21 to in setting these kinds of ratings? That if you  
22 have a separate building that you only have to  
23 rate the main home or do they have to rate  
24 buildings that are separated by a breezeway or  
25 some other sort of thing. It comes to mind

1       because I was just at a place where homes were  
2       limited in size and there were a number of homes  
3       where the pool house had suddenly become a second  
4       house connected by a breezeway.

5               MR. ELEY: Determining square footage is  
6       one of the issues among many that have to be  
7       addressed. In the HERS regulations there's an  
8       appendix. Is it A or B Appendix that has the  
9       rules for determining inputs?

10              MR. MAEDA: A.

11              MR. ELEY: It's Appendix A. The  
12       National Association of Home Builders have a, have  
13       a guideline that they publish for calculating  
14       square footage of homes and it deals with all the  
15       issues, including I believe pool houses, but also  
16       bay windows and projections over the garage and  
17       all of those things. So the HERS regulations and  
18       technical manual make reference to this NAHB  
19       standard document for determining square footage.  
20       I don't know how it would deal with a pool house.  
21       I think that's a very interesting question though.  
22       We should take a look at that.

23              MR. MAEDA: Generally if it is connected  
24       by, at least physically connected by a breezeway  
25       or something like that it's part of the same

1 building, according to the UBC. The old-style  
2 UBC. I don't know if it still is.

3 MR. PENNINGTON: So is this pool house a  
4 building that has conditioned space for the  
5 occupants?

6 ADVISOR HUNGERFORD: Yes.

7 MR. PENNINGTON: So that would get a  
8 separate rating if it is a separate building.

9 ADVISOR HUNGERFORD: You theoretically  
10 could have two houses on the property. Or you  
11 connect it with a breezeway and it is one house.  
12 I don't want to beat up this point, I just wanted  
13 to raise it.

14 MR. ELEY: Well, I haven't thought about  
15 this one, the separate pool house, before. I  
16 guess we should --

17 MR. PENNINGTON: I mean, if you have an  
18 entirely separate building on the property that is  
19 conditioned then it would be one thing to rate it,  
20 right? We are not mandating that people have  
21 ratings, this is a voluntary choice at this point  
22 to have ratings. So you would want to know  
23 information about the rating for that separate  
24 building also.

25 ADVISOR HUNGERFORD: Good point.

1           MR. ELEY: All right. Very interesting  
2 comment, question.

3           When we, when we discussed the HERS  
4 rating certificate earlier, one of the pieces of  
5 information that would be reported is an estimate  
6 of greenhouse gas emissions associated with energy  
7 consumption. The way that we intend to do that is  
8 to use the hourly emission rates that were  
9 calculated as part of the TDV research project.

10           The TDV multipliers identify the TDV  
11 energy associated with a kilowatt hour on an  
12 hourly basis. There's also data there that  
13 indicates the CO2 production per kilowatt hour,  
14 also on an hourly basis. Those data vary a little  
15 bit between Southern California and Northern  
16 California and they, and they include the  
17 estimated mix of electric generation sources at  
18 each hour during the year.

19           So it's a very accurate way of making  
20 this assessment and it also begins to deal with  
21 the question of reduced power or PV production for  
22 that matter during peak periods when -- in  
23 Southern California, for instance, during peak  
24 periods there is more electricity imported and  
25 some of that electricity comes from coal plants in

1 New Mexico and the Four Corners area and places  
2 like that. So PV production during those peak  
3 periods might have a larger benefit in terms of  
4 CO2 reductions than other kinds of measures. So  
5 the HERS technical manual specifies this process  
6 and makes reference to the, to the TDV data on  
7 that. Next slide, please.

8 For the most part the ACM modeling  
9 assumptions would be used to do the calculations  
10 but there are a few exceptions to that. One of  
11 the, one of the things, one of the exceptions is  
12 uninsulated wall cavities or ceiling cavities.  
13 These would, these would always be modeled with at  
14 least R-4 insulation. And there's some data that  
15 shows that that's one of the reasons that older  
16 homes with no energy efficiency measures, the  
17 utility bills will look a lot different than the  
18 simulation results.

19 So we have tweaked the modeling  
20 assumptions in several ways to try and get better  
21 agreement between, between the utility bills and  
22 the simulation results. But for the most part  
23 where there was no reason to make a difference the  
24 modeling rules remain fundamentally the same as  
25 those used for code compliance purposes. Next

1 slide, please.

2 The reference home is defined to be in  
3 minimum compliance with the 2008 Energy Efficiency  
4 Standards and other specifications that are  
5 identified in the HERS technical manual.

6 And the process, just as is the case  
7 with the compliance calculations. The process of  
8 generating the reference home has to be done  
9 automatically by the software. So the HERS rater  
10 will never, never identify themselves the  
11 characteristics of the reference home. They will  
12 just put information in about the rated home and  
13 the rest of this would be done automatically and  
14 behind closed doors. Not behind closed doors but  
15 it would be done automatically.

16 (Laughter)

17 MR. ELEY: It is not behind closed doors  
18 because all of these assumptions are very  
19 explicitly laid out in great detail, as those of  
20 you who have been through the ACM manual can  
21 testify.

22 The modeling assumptions apply to both  
23 the reference home and the, and the rated home.  
24 So there is no credit or penalty for raising or  
25 lowering your thermostat settings or operating

1 your house for more hours or fewer hours. We are  
2 trying to get at the energy efficiency of the home  
3 and separate out the occupant behavior. Next  
4 slide, please.

5 One of the things we spent a fair amount  
6 of time with on this project was coming up with a  
7 model for estimating lighting and appliances  
8 energy. If you look at homes, average homes. And  
9 of course there is no such thing as an average  
10 home. But if you look at consumption data for  
11 residences in California, appliances and lighting,  
12 all of the things that are not directly reported  
13 at present in the compliance calculations  
14 constitute a big share of the total electricity  
15 use.

16 So we have developed as part of this  
17 project a model for estimating what the lighting  
18 and appliance energy should be or is in the  
19 calculations. And I am going to go through some  
20 of the features of this now. There's much more  
21 detail that won't be covered today that's  
22 contained in both the HERS technical manual and  
23 the topic report that supports that manual. Next  
24 slide, please.

25 One of the, one of the things that's

1 different from the, from the ACM manual are the  
2 internal load schedules. And we found, we found  
3 some data from an HMG '99 report that gives us a  
4 lighting schedule. Refrigerators are assumed to  
5 have a constant schedule because you don't really  
6 turn them off. We are using a Building America  
7 schedule for equipment load. We have an occupant  
8 schedule load and so forth. Next slide, please.

9 This is a graphic representation of the  
10 schedules for lights, appliances, people and  
11 equipment. There's kind of a peak in the morning  
12 when people are getting up and getting out of the  
13 house. There's a bit of a lull in the middle of  
14 the day and a spike in the evening. These  
15 schedules are supported by the best data that we  
16 could find and are documented in the HERS  
17 technical manual. And these schedules are  
18 different from the schedules that are specified in  
19 the ACM manual for compliance calculations. Next  
20 slide, please.

21 Equipment energy use typically moves  
22 with the occupants. When the occupants leave they  
23 take their TVs and home theater equipment and  
24 other things with them and take them to the new  
25 home. So we are accounting for those energy uses

1 in the HERS index and in the estimates but we are  
2 using the same number for both the reference home  
3 and the rated home so they tend to be, it tends to  
4 be a neutral factor.

5 The estimates that we are including are  
6 based on the CEC's RASS survey. We spent a lot of  
7 time going through there and understanding what's  
8 in there. The reference home refrigerator,  
9 dishwasher and other major appliances are all  
10 based on the current appliance standards. Other  
11 components are based on the RASS data. Next  
12 slide, please.

13 So as far as the things that would  
14 affect the HERS index and your point on the scale.  
15 Energy efficient refrigerators and dishwashers  
16 could result in a higher or a lower HERS index.  
17 And these are things that the rater can observe.  
18 Other miscellaneous energy uses, TVs, plasma TVs,  
19 stereo equipment, all of those things would be  
20 neutral. They would be, they would be counted the  
21 same in both the reference home and the rated  
22 home. If the rater observes a second refrigerator  
23 in the rated home or a stand-alone freezer in the  
24 garage in the rated home then those appliances  
25 would be identified as a part of the rating

1 process and this would result in a higher HERS  
2 index.

3 The same is true if the rater observes  
4 that the range or the oven or both have a  
5 continuous burning pilot light. This data has  
6 shown that this is, this is quite a large, quite  
7 an important feature. So this too would result in  
8 a higher HERS index or a higher estimate of energy  
9 use. Next slide, please.

10 Most plug-in lamps move with the  
11 occupants, just like TVs and other appliances. So  
12 lighting energy that we concentrate on in the  
13 rating process is hardwired lighting. These are  
14 ceiling-mounted, wall-mounted fixtures that will  
15 stay when the occupants move or when new people  
16 move into the home.

17 We have developed in the HERS technical  
18 manual, estimates of operating hours for different  
19 lighting types in different rooms. And these are,  
20 these are a part of the, of the estimate.

21 And the overall lighting energy use is  
22 actually based on RASS estimates and it is a  
23 function of the size of the home. And then  
24 adjustments to this RASS estimate are made for the  
25 presence of energy efficiency, energy efficient

1 lighting fixtures or controls. Next slide,  
2 please.

3 So the assumptions that are built into  
4 the analysis are that if there's hardwired, high  
5 efficacy fixtures that meet the criteria of the  
6 California Title 24 standards, those fixtures,  
7 which would typically be compact fluorescent  
8 fixtures with an integral ballast, are assumed to  
9 use 33 percent of the energy use of a hardwired  
10 incandescent fixture.

11 Credit is also offered for screw-in  
12 compact fluorescent lamps but the credit is only  
13 half of what is offered for hardwired fluorescent  
14 lamps. They are assumed to use 67 percent, not  
15 one-third of the energy of an incandescent lamp.

16 Credit is offered for dimming controls  
17 that use -- Lighting circuits, hardwired lighting  
18 circuits that are on dimming controls are assumed  
19 to use 90 percent of the energy of a normal  
20 incandescent lamp.

21 And then there is also a credit for  
22 occupant sensors. And the credit here is such  
23 fixtures are assumed to use 80 percent of the  
24 electricity of an incandescent fixture.

25 So as part of the rating process the

1 rater would, would make a list of the hardwired  
2 lighting fixtures in the home. And for each one  
3 of those they would identify the type of fixture.  
4 Is it incandescent, is it hardwired/high efficacy  
5 fixture or is it a screw-in compact fluorescent.  
6 They would also identify for each fixture what  
7 type of control is there.

8 And that's the data that goes into the  
9 model. We don't think it's going to be too  
10 burdensome to collect this information because we  
11 are not, they don't need to look at any of the  
12 plug-in lamps. You know, table lamps or any of  
13 the portable lighting. They just need to look at  
14 the permanently installed lighting in the  
15 building.

16 ASSOCIATE MEMBER ROSENFELD: Charles.

17 MR. ELEY: Yes sir.

18 ASSOCIATE MEMBER ROSENFELD: I am  
19 puzzled. Did you say that you have a compact  
20 fluorescent using two-thirds of the energy of an  
21 incandescent?

22 MR. ELEY: I realize that that's not  
23 what they use, they use a lot less than that. But  
24 the consideration of persistence for screw-in  
25 compact fluorescents and other considerations.

1                   ASSOCIATE MEMBER ROSENFELD: I see, the  
2 key word is screw-in.

3                   MR. ELEY: Yes.

4                   ASSOCIATE MEMBER ROSENFELD: Okay.

5                   MR. ELEY: Right. The consideration of  
6 persistence and other factors has caused us to  
7 offer less credit for the, for the screw-in  
8 compacts as opposed to the hardwire.

9                   The reference home would be in minimum  
10 compliance with the 2008 Title 24 standards and  
11 those standards require that half of the lighting  
12 power in the kitchen be high efficacy. It  
13 requires that there be either high efficacy or  
14 controls on many other circuits, including the  
15 laundry room, the utility room, bathrooms and so  
16 forth. So the -- That's the reference home  
17 definition. It's minimum compliance with the  
18 lighting requirements of the 2008 standards. Next  
19 slide, please.

20                   We used the term Ancillary Energy Uses  
21 to include these things that are not part of the  
22 rating but important energy uses such as pools,  
23 spas, lighted courts, pumps, well pumps and so  
24 forth. These are, these are not a part of the  
25 HERS index, however, they are considered in the

1 utility bill analysis and the cost effectiveness  
2 analysis. And in addition the recommendations  
3 reports would identify measures to reduce these  
4 components of energy use.

5 So what I have gone through is a very  
6 brief presentation of the modeling and technical  
7 requirements of the, of the, of the HERS program.  
8 There's much more detail provided in the HERS  
9 technical manual and in the topic report that  
10 supports the HERS technical manual. Next slide.

11 PRESIDING MEMBER PFANNENSTIEL: Thank  
12 you very much, Charles. I think we will now see  
13 if there are public comments on these sections  
14 that we have just heard discussion of.

15 MR. EHRLICH: Charles Ehrlich  
16 representing CABEC in this instance. The role of  
17 the energy analyst as it is defined in the new  
18 standards is a little bit of a concern for us.  
19 That looks a heck of a lot like the California  
20 Energy Plan's examiner role that has been in  
21 existence for quite a while.

22 And CABEC doesn't see a lot of  
23 recognition of that longstanding relationship that  
24 we have had with the Energy Commission and would  
25 like to be involved in that process of discovering

1 and describing that role. It is a significant  
2 source of income for a CABEC and that is the EPE  
3 process, and it is very important to us that we be  
4 involved. So that's an official CABEC note there.

5 Earlier comments that were made about  
6 the weather data. And yes, very recent weather  
7 data is very helpful in calibrating utility bills.  
8 So I also in reading that -- you know, you were  
9 going to use kind of average weather data. That  
10 is not going to be so helpful in calibrating  
11 utility bills. I have used very recent cooling  
12 and heating degree days, for example, to be able  
13 to more accurately adjust utility bills to a  
14 simulation.

15 MR. PENNINGTON: Charles.

16 MR. EHRLICH: Yes Bill.

17 MR. PENNINGTON: Just a comment. We are  
18 going to be getting into the bill analysis portion  
19 of this in our next section. The introductory  
20 part kind of covered the whole gamut and it was  
21 kind of appropriate to comment on the whole gamut  
22 of issues.

23 MR. EHRLICH: Got it.

24 MR. PENNINGTON: But here we are getting  
25 into more detail.

1 MR. EHRLICH: Got it.

2 MR. PENNINGTON: And we haven't arrived  
3 at the more detail on the energy bill analysis.  
4 We could have broken these anywhere, and it's kind  
5 of hard to figure out exactly where to break it.  
6 But you are going to get into, you know, the  
7 detail we are going to present next if you go much  
8 farther than your comment right now.

9 PRESIDING MEMBER PFANNENSTIEL: We'll  
10 have an opportunity to comment during that.

11 MR. EHRLICH: Thank you. And I have a  
12 scheduling conflict, I have to be somewhere else  
13 in the afternoon.

14 PRESIDING MEMBER PFANNENSTIEL: Well I  
15 would make a point though.

16 MR. EHRLICH: Yes.

17 PRESIDING MEMBER PFANNENSTIEL: That we  
18 are asking, in fact we are very much soliciting  
19 written comments.

20 MR. EHRLICH: Yes.

21 PRESIDING MEMBER PFANNENSTIEL: This  
22 isn't the only opportunity. And written comments  
23 a week from today.

24 MR. EHRLICH: Okay.

25 PRESIDING MEMBER PFANNENSTIEL: So we'd

1 appreciate your comments there too.

2 MR. EHRLICH: Very good, thank you.

3 I also wanted to bring up an earlier  
4 issue about apartments and renters. The current  
5 scale doesn't seem to acknowledge, you know,  
6 apartment dwellings. They're smaller. There's  
7 different responsibilities and oversight of who  
8 purchases them and the whole split incentive gap  
9 is something important.

10 And also the big bugaboo is the  
11 simulation software inability to really account  
12 for intentional ventilation of homes and night and  
13 air leakage. These are huge impacts on energy  
14 use, especially in the delta breeze areas. And so  
15 far it is really disappointing that the software  
16 cannot account for that.

17 You know, you want to put in a whole-  
18 house fan, for example. It just doesn't work.  
19 You don't get any kind of reliable results.

20 Oh, and my last comment is regarding the  
21 formatting of the report. I would recommend that  
22 there be a remediation section of that report  
23 which specifically looks at the code violations,  
24 safety problems and other sorts of measures that  
25 are directly related to just making the place a

1 safe place to live in relative to the energy  
2 impacts of the home. Thank you very much.

3 PRESIDING MEMBER PFANNENSTIEL: Thank  
4 you.

5 MS. ASAN: Tenaya Asan again from Build  
6 It Green. I wanted to speak a little bit more  
7 about the point scale and the reference house.  
8 And I want to do that in light of the culture that  
9 we see at Build It Green, which is local  
10 ordinances developing requirements for energy  
11 efficiency upgrades, green building upgrades, et  
12 cetera.

13 The climate that we are seeing is people  
14 are starting to develop mandatory requirements.  
15 And many times in their enthusiasm they do that,  
16 they set those requirements at a level that may be  
17 difficult for builders or homeowners to comply  
18 with. And we are constantly talking with cities  
19 trying to educate them about reasonable  
20 thresholds. So for instance, GreenPoint Rated,  
21 the threshold is 50 points and we have cities that  
22 want to set the bar at 120, at 150, et cetera.

23 So I am a little concerned about the  
24 reference home in light of that. Whether or not  
25 it is intended, that reference home starts to

1       become the target. So even in the scale that you  
2       have, that reference home is very large. And it  
3       is almost like that's what we are shooting for.  
4       That's what every homeowner we want to at least be  
5       a code compliant home.

6                 Seventy percent of the homes in  
7       California were built before Title 24. So they  
8       are going to be way off the scale. And I am very  
9       concerned that we are not going to be able to get  
10      those. Well too is that local jurisdictions will  
11      start setting requirements that are way too high  
12      for the possibility. And second, that homeowners  
13      are not going to be encouraged to do it.

14                The gentleman that was here started  
15      thinking about maybe setting a threshold of the  
16      1990 code. And maybe that's something to look at  
17      so that we can -- because we need to upgrade these  
18      homes. This is really important work. And we  
19      need to be able to encourage folks to do it and  
20      make it reasonable and workable.

21                One other comment on the cost benefit  
22      analysis and recommendations for upgrade is one  
23      possibility might be that there is a list of  
24      recommendations on a hierarchal scale without the  
25      cost to do that work. And that way when a home

1 performance contractor comes in they can provide  
2 the cost for doing that work. But there is a  
3 hierarchal scale.

4 There may also be a caveat that says,  
5 you know, this is from a modeling software but  
6 your contractor may come in and find some other  
7 issues that need to be addressed ahead of time.  
8 So that would be one way to provide both that  
9 information that's really important but have it  
10 again workable. Thank you very much.

11 MR. BACHAND: Mike Bachand from  
12 CalcERTS. I think I talked about this at the  
13 workshop, the first workshop maybe.

14 But I still have a problem  
15 understanding, following I guess what you call the  
16 resident model. Where one person takes the input  
17 data from the home and then hands it to another  
18 person who hasn't seen that home and then a rating  
19 is generated by that person.

20 I am confused or I am concerned more or  
21 less for the consumer. What is going to happen  
22 when there's discrepancies found between these two  
23 operations? So I get bad data and I generate a  
24 bad rating from it. Or I get good data and I  
25 somehow generate a bad rating from that. Who

1 takes, where is the responsibility for that and  
2 how does the consumer get satisfaction and relief  
3 from whatever damages that might or might not  
4 occur?

5 So I think that's a model that should be  
6 examined. Not exactly from the business model  
7 standpoint but from the consumer protection  
8 standpoint. I think that's a serious issue and so  
9 I'm going to keep that ball up in the air if I  
10 can.

11 The other thing is I am not sure what a  
12 home inspector is. And I am also not sure what a  
13 building performance contractor is. I think if we  
14 are going to use those as defined people or  
15 defined terms or defined skill sets I think the  
16 Energy Commission ought to define what that is so  
17 that we can all access those same things. Rather  
18 than saying, for instance, I own a caulking gun  
19 and therefore I'm a weatherization contractor.

20 I don't know that there's a standard  
21 that that sets by and I think that that is going  
22 to cause some serious issues. And I also think  
23 that since CEC is saying that you have to be a  
24 building performance contractor they should say  
25 what you are when you are one. Those are my

1 comments, thanks.

2 MR. NESBITT: George Nesbitt,  
3 Environmental Design/Build. A variety of things.  
4 What we currently call a HERS rater in California  
5 is really not a HERS rater, they are really a HERS  
6 verifier. Because all they do is verify  
7 compliance with the Title 24 standards. And of  
8 course now we will create a HERS rater who will  
9 provide a rate team.

10 The term California Whole-House Home  
11 Energy Rater. I mean, house and home, it's kind  
12 of redundant to say it twice, it's a mouthful.  
13 You know, it should just be a California Home  
14 Energy Rater.

15 I still don't even know the auditor and  
16 the inspector is subordinate to the rater. Has to  
17 be under the direct supervision. What does that  
18 mean? If they are not my employee can they be a  
19 subcontractor? You know, how am I then going to  
20 supervise them? Are they going to give me data  
21 and then I have to produce the rating? Do I trust  
22 that data? Because I am kind of wondering, you  
23 know. And because providers and raters are by  
24 definition independent entities, a inspector has  
25 to be approved by a provider. So the provider

1 can't produce the rating, I would assume. It has  
2 to be done by a rater but that's not clear.

3 And then there's the building  
4 performance contractor quandary. And as one who  
5 is on all sides of the table -- And in GreenPoint  
6 Rating Existing Homes we debated, you know, can a  
7 building performance contractor also produce the  
8 rating. And even building performance contractors  
9 felt no, it's good to keep it separate.

10 And I as a building performance  
11 contractor, I have done work where I have had to  
12 have a HERS rater come check my work. No big  
13 deal. And I think there is value to be provided  
14 to the building performance contractor industry in  
15 helping provide credibility that a independent  
16 rater is providing some level of independent  
17 oversight and not just the quality control from  
18 the provider.

19 Kind of what I, what I think would be  
20 that there's got to be a way for us to work  
21 together, just as the analyst and the inspector  
22 would be subordinate as well as the verifier would  
23 be subordinate to the rater. Because being able  
24 to provide data the building performance  
25 contractor should be subordinate to the rater. We

1 can use their data to produce the final rating.

2 And I also think we should be used to  
3 sample, you know, sample their work. Not  
4 necessarily we're testing and verifying 100  
5 percent of the work but to be sampling as an  
6 independent entity. The building performance  
7 contractor has to test 100 percent. I am glad.

8 And as far as I understand the  
9 regulations, in order to be a building performance  
10 contractor you have to be BPI certified. But what  
11 certification? I just took four tests in four  
12 different certifications. So which one do you  
13 need? Does only one person in the organization  
14 need to be certified or everyone or what  
15 percentage?

16 I am glad to see that the building  
17 performance contractor will have to perform their  
18 work to the highest standards in the Energy Code.  
19 So that's a real good thing. And that they have  
20 to verify that they have met that standard. So  
21 that's a big one. And I mean, as a rater in the  
22 industry we are facing big conflict of interest  
23 issues at the moment so it's a touchy, a real  
24 touchy thing for us. And I think it's important  
25 to keep, keep independence and quality control on

1 multiple levels. Keep everyone honest.

2 Back on the index. I kind of want to  
3 echo something, a comment from ConSol. One of the  
4 things that worries me about California is we keep  
5 making our own rules. There's the rest of the  
6 country and you get to the California border and  
7 the laws of physics change. You know, it's funny.  
8 So, you know, we have our own Energy Code and we  
9 are creating our own index.

10 And I'm wondering if we aren't missing  
11 an opportunity to have the index, the national  
12 index, so we can compare how we are to the rest of  
13 the country. Just as well as I think we should  
14 compare what's Title 24 compliance versus a  
15 national compliance score. I don't see other  
16 states adopting California's Energy Code. And I  
17 think it would be a way of kind of providing that  
18 we are better in having that comparison. And I  
19 will leave it at that.

20 PRESIDING MEMBER PFANNENSTIEL: Thank  
21 you. Others in the room?

22 DR. KNIGHT: Bob Knight again  
23 representing CBPCA. Very brief. I want to go on  
24 record as agreeing and generally supporting the  
25 quality assurance procedures for home performance

1 contractors, since we do all those things anyway.  
2 The one exception to that is that I have some  
3 concerns about the 12 month post-retrofit analysis  
4 of energy use. For a couple of reasons.

5 One is that those analyses, unless you  
6 spend a good bit of time on them, quite a bit of  
7 time, are likely to be worthless because we have  
8 an awful lot of take-back in comprehensive  
9 retrofit jobs. People find that they have saved  
10 enough money that they will turn around and spend  
11 some of that money on making the house cooler.

12 So after 12 months you wind up with a  
13 different number than you think you were going to.  
14 And it is a concern. And to figure that out and  
15 to get, you know, a really useful analysis is  
16 going to take some effort. If you just look at  
17 the utility bills you are going to say, the  
18 contractor is going to say gee, you know, it  
19 didn't save very much energy. But in fact the  
20 retrofit did but behavioral changes overcame it.  
21 So that's kind of an issue.

22 The second concern I have with the 12  
23 month issue is what about a home in which the  
24 analysis is done by a rater and handed to the  
25 homeowner and the homeowner goes out and finds

1       some handyman to do the work. And that handyman  
2       isn't required, there are no requirements on the  
3       quality of work done by that handyman. There are  
4       no post-test requirements. The handyman is not  
5       going to do any testing at all. There is no 12  
6       month analysis.

7                   And believe me, the trained home  
8       performance contractor is going to do a heck of a  
9       lot better job than 95 percent of the other  
10      contractors who are out there. And not because  
11      they are necessarily malfeasant or bad, it's that  
12      they have never been trained in these kinds of  
13      concerns. So I really have a concern and  
14      hopefully we can talk about that more later in the  
15      day.

16                   And an incidental comment about  
17      thermostat settings. It's been well established  
18      by some of our colleagues in the model development  
19      field that the thermostat setting in a pre-  
20      retrofit home is often a very poor measure of the  
21      actual temperature in that home because there is  
22      so much temperature variation due to various  
23      drafts, leakages, all kinds of problems. And in  
24      fact one software provider that we work with has  
25      made it now a standard practice to apply a five

1 degree thermostat setting adjustment to the pre-  
2 retrofit simulation. Then the temperature evens  
3 out an awful lot after you do a good retrofit to  
4 the home. I won't even go into quality of  
5 retrofit but I do have real concerns about an  
6 untrained contractor trying to do a good,  
7 comprehensive retrofit to achieve the objective.

8 Finally I want to support Charles  
9 Ehrlich's comments about health and safety  
10 measures. One of the primary requirements in home  
11 performance with Energy Star is that we do a  
12 serious combustion appliance safety testing  
13 process. It is very easy, we find in an awful lot  
14 of houses, to generate water heater backdrafts.  
15 And if that water heater has carbon monoxide  
16 problems then you have a serious problem in the  
17 home. And so part of our standard process is that  
18 we require, the Whole-Home Performance Energy Star  
19 Program requires combustion appliance safety  
20 testing. And that includes all the combustion  
21 appliances, not just the water heater.

22 So I am concerned that I don't see  
23 anything in these regulations that requires any  
24 kind of health and safety testing. It's not hard  
25 when you start really changing the way a home

1 operates, as you will in some cases when you are  
2 doing a comprehensive retrofit. You can generate  
3 a dangerous condition in that home. You can  
4 tighten it up so much that when coupled with a  
5 badly performing combustion appliance, it can  
6 result in gradual accumulation of carbon monoxide  
7 and other pollutants in the home.

8 So, you know, what's happening here is  
9 you are sort of starting to step into the home  
10 performance business at a very large scale. And I  
11 don't think yet there's enough acknowledgement of  
12 the sophistication and the detail that is inherent  
13 in good home performance contracting. Thank you.

14 PRESIDING MEMBER PFANNENSTIEL: Thank  
15 you. Yes.

16 MS. ERICKSON: Good morning. I am Janis  
17 Erickson with the Sacramento Municipal Utility  
18 District. I work in the strategic demand side  
19 planning programs. I have one question. One  
20 observation and a question that actually may not  
21 be related to this but I hope you will bear with  
22 me. I think that the effort that we are working  
23 on here is really useful and needed and just the  
24 right thing.

25 But I would like to make the observation

1       that with all of these different titles and  
2       actions and needs to be done in a single  
3       customer's home, we might keep in mind that the  
4       task we have is to engage the customer in learning  
5       about, you know, knowing, acknowledging,  
6       preferring and then choosing to do the right  
7       things here. And with all these different titles  
8       and people, that we might be confounding them.  
9       They don't want to be there more than once to do  
10      whatever it is to be done here. They may let it  
11      drag on for a little bit if they are getting a  
12      major retrofit but we don't want to confuse them.

13                The second thing is, when we are talking  
14      about the energy audit as a solution for the  
15      rating process. And this is where it is probably  
16      not a related question. I know that there is  
17      legislation being considered about requiring  
18      energy audits as a requirement on resale. And I  
19      know there's lots of discussion to come along with  
20      that and I don't know that the Commission is  
21      leading that or where the Commission is.

22                But I would wonder if either in this  
23      venue or in that one if an online energy audit  
24      that provides that same information, without the  
25      personal observation of an expert but rather the

1 self-observation of the homeowner, would qualify?

2 PRESIDING MEMBER PFANNENSTIEL: Two  
3 points. This Commission has been involved in the  
4 discussions on the legislation, which I last heard  
5 is now going nowhere this session, which I think  
6 is a real shame.

7 In terms of whether an online audit  
8 would qualify. Our preference has always been  
9 that it would not qualify. And that's based on  
10 our understanding that the online audits don't  
11 begin to give very good information to the  
12 homeowner. It's good in that the homeowner has  
13 expressed some interest and is trying to determine  
14 what the real usage is. But most homeowners don't  
15 know things like the age of their furnace or the  
16 other real fundamental information that is  
17 required. The legislation that was going forward  
18 required an onsite audit.

19 MS. ERICKSON: And was that continuing  
20 to be thought of as only delivered by the  
21 utilities or would other entities --

22 PRESIDING MEMBER PFANNENSTIEL: That was  
23 still being played with.

24 MS. ERICKSON: Okay. We'll be watching.

25 PRESIDING MEMBER PFANNENSTIEL: We hope.

1 Bruce.

2 MR. MAEDA: I would like to point out  
3 that the customer, or at least the homeowner,  
4 would only deal with the rater, period. The other  
5 entities are either under the supervision of the  
6 rater. But all the business end of the deal would  
7 be with the rater. And although the rater may be  
8 a building performance contractor also, under our  
9 scheme, or they may call themselves an auditor but  
10 they are still a rater.

11 PRESIDING MEMBER PFANNENSTIEL: Mike.

12 MS. ERICKSON: Still, so many visits.

13 PRESIDING MEMBER PFANNENSTIEL: Right.

14 MR. MAEDA: There's only one visit. Not  
15 necessarily, there may be two.

16 MR. HODGSON: I vote for one visit. I  
17 think that's really --

18 MR. PENNINGTON: There's not multiple  
19 visits with all these different people that can  
20 have a role. There's an inspection visit. There  
21 may be a recommendations visit, right? And that's  
22 it. If you're dealing with a building performance  
23 contractor you may have more visits as the work  
24 proceeds.

25 MR. HODGSON: And just to follow up on

1 that, Bill. Mike Hodgson, ConSol.

2 So the HERS rater makes recommendations  
3 and then someone else installs it.

4 ASSOCIATE MEMBER ROSENFELD: Mike, can  
5 you yell a little bit.

6 MR. HODGSON: Sure. The HERS rater  
7 makes a recommendation. I'm just trying to  
8 follow-up on Bill's comment because I see multiple  
9 visits also and I think it is important to have a  
10 single point of sale to conclude the deal. So the  
11 HERS rater makes the recommendations. The  
12 homeowner does it with someone else. You know, a  
13 third party. Not a third party, a contractor.  
14 There is no requirement for coming back and  
15 auditing to make sure that work has been done?

16 MR. ELEY: There is no requirement. We  
17 want to encourage that.

18 MR. MAEDA: But your rating hasn't  
19 changed either.

20 MR. HODGSON: Okay. I love to come to  
21 these workshops to learn.

22 MR. PENNINGTON: So Mike, I think it's  
23 intuitive. The rating is based on what exists.  
24 So you can get a rating on what is there.

25 MR. HODGSON: Okay.

1           MR. PENNINGTON: If you want to have an  
2 improved rating after the retrofits then you can  
3 have the house rated at that point.

4           MR. HODGSON: Okay, got it. I have a  
5 question on the rating system, on the first slide  
6 that Charles showed on energy modeling. This is  
7 again showing my ignorance.

8           ASSOCIATE MEMBER ROSENFELD: Which page  
9 is this Mike?

10          MR. HODGSON: It's page 14 for me but  
11 it's the first slide after energy modeling.

12          MR. ELEY: The equation?

13          MR. HODGSON: The equation. Because I  
14 love equations. I just want to make sure I  
15 understand what you are saying on the reference  
16 house versus the actual home. So I build a new  
17 home and it meets 2008 Title 24. And I have  
18 exterior lighting on the building that meets code  
19 and I've put in a gazillion PVs so that I -- It  
20 doesn't matter whether the number is 0 or 100.  
21 Let's say I don't put any. But I should have a  
22 rating, I believe, of 100.

23          MR. ELEY: That's correct.

24          MR. HODGSON: Okay. Now in that home I  
25 happen to have two refrigerators, I have a wine

1 cooler, and I live in the country so I have a well  
2 pump and I may have a pool with a pool pump. Do I  
3 still receive the 100 score because it is  
4 compliant with Title 24? I'm just trying to kind  
5 of get a picture of what's the message we are  
6 giving to the consumer.

7 MR. ELEY: You would get dinged by the  
8 extra refrigerator.

9 MR. HODGSON: Okay.

10 MR. ELEY: But the well pump and the  
11 pool and the spa would not affect your rating,  
12 your HERS index at all.

13 MR. HODGSON: Okay. And so in a --  
14 Okay, so I'm clear on that, thanks.

15 A question which is really an  
16 information question again, which is new to me  
17 because I am not familiar with the requirements of  
18 building performance contractors in today's code.  
19 Well actually I am but I just think this is  
20 something new. And that is this follow-up 12  
21 month analysis. I presume this is a new  
22 requirement with this rulemaking as opposed to  
23 current code. Is that correct?

24 MR. ELEY: That's correct.

25 MR. HODGSON: Okay. And the rationale

1 for requiring building performance contractors to  
2 do it but not HERS raters is?

3 MR. ELEY: An exception is being made to  
4 the conflict of interest requirements for building  
5 performance contractors.

6 MR. HODGSON: Right.

7 MR. ELEY: In consideration of that  
8 exception there's several quality control things  
9 that have been added. One of them is this post-  
10 retrofit utility bill analysis. Another one is  
11 that the building performance contractor does all  
12 of the diagnostic testing and verification that's  
13 applicable to the home.

14 MR. HODGSON: Um-hmm.

15 MR. ELEY: For instance, if there's  
16 ducts they have to test the leakage.

17 MR. HODGSON: Okay.

18 MR. ELEY: They can't accept the  
19 defaults. And then in addition, a larger  
20 percentage of their homes are third party checked.

21 MR. HODGSON: Right, I understand the --

22 MR. ELEY: Five percent instead of one.

23 MR. HODGSON: Right, I understand the  
24 larger percentage. The concern I have is with the  
25 follow-up bill analysis on reliability of what the

1 energy use is 12 months later and how useful that  
2 is and whether that's a positive or a negative  
3 message.

4 Also the potential liability of that  
5 group coming up with a bill analysis that comes up  
6 with, I'm going to save you \$20 a month and the  
7 person changed their behavior and they now are  
8 spending \$5 more a month.

9 I would really like the Commission to  
10 carefully consider setting that up because I think  
11 if it is useful and we find it useful it should be  
12 useful for the entire system. I am questioning  
13 whether it is useful and whether there is  
14 documentation to say that that follow-up 12 month  
15 analysis -- and the utilities may be able to help  
16 us with this since I presume they may have some of  
17 that data. Personal opinion is going from a one  
18 to a five percent rating, follow-up rating is a  
19 significant increase in oversight. And I am  
20 questioning the value of a 12 month bill analysis  
21 with all the variables that occur between actual  
22 retrofit and data 12 months later.

23 PRESIDING MEMBER PFANNENSTIEL: Thank  
24 you, Mike.

25 MR. HODGSON: I want to point out that

1       there's no post-retrofit analysis for the rater  
2       because there may not even be a retrofit that is  
3       done just because they get a rating.

4               MR. GOLDEN:  Matt Golden with  
5       Sustainable Spaces.

6               So I just wanted to interject.  I think  
7       that overall when we look at our goals for this,  
8       which is actually fixing buildings, we just need  
9       to be cognizant of the fact that the big hole that  
10      we have is that it is incredibly hard to be  
11      profitable and be a home performance contractor  
12      and do this work.  At some other point we could go  
13      through it.  But there's just such a --

14              You just need to be careful adding  
15      additional requirements because we carry a  
16      massive, massive amount of overhead.  We count  
17      very, very carefully and it costs us an absolute  
18      fortune by the time we deal with all of these  
19      programs and, you know, getting everybody  
20      certified.  We carry, I can't tell you how many  
21      certifications.  Packages of software we have to  
22      run, requirements that we have to deal with,  
23      reporting that we have to do.  And it just does  
24      add to costs.  And we don't, it is not very easy  
25      to recoup those costs.

1           And when you look at what is happening  
2           out in the real world right now, the problem that  
3           we have is that there are virtually no contractors  
4           doing this work. And we know this in the field  
5           because we have almost no competition, basically.  
6           And it is very, very hard to run this business  
7           profitably. And so if we are looking at what it  
8           is really going to take to fix a lot of houses we  
9           need to be careful we don't construct a construct  
10          within these regulations and make it even harder  
11          to be a profitable home performance contractor.

12                 And then I wanted to just talk real  
13          quick about kind of the number of touch points and  
14          steps this is going to create. No one really  
15          wants to talk about close rates because it is not  
16          very policy oriented but it is what drives this  
17          business and makes you profitable or not. What we  
18          found is that -- this is just straight from our  
19          data after doing this for four years. We've fixed  
20          about almost 500 houses now.

21                 Our close rate from compressing the time  
22          from first contact where we visit that house -- a  
23          couple of years ago we averaged about two weeks  
24          returning a report with the load calculations and  
25          the recommendations and an estimate. Two weeks on

1 the inside. And that's probably still good for  
2 this industry in turns of that span.

3 As we compressed that down to -- for the  
4 last I would say year we have had it down to about  
5 three days turnaround time. We have seen our  
6 close rates go from 25 percent adoption rates up  
7 to 40 percent average adoption rates.

8 We are now with software. This is also  
9 where we can't have new software because we have  
10 very specific software we have written. But  
11 software that lets us test a house, generate a  
12 report with a prescription and an estimate built  
13 into that so we can do it rapidly in the same day,  
14 same visit. We are now pushing up above 50  
15 percent adoption rates.

16 And that's really what matters, that's  
17 what makes this whole thing work. And so the  
18 reality is this is where the third party -- I  
19 think there's two conflicts of interest here.  
20 There's this potential conflict of interest  
21 between someone doing, saying, here's what you  
22 need to do to fix your house and doing the work.  
23 And we can handle through oversight and through  
24 ethics rules.

25 There is also a conflict of interest

1 that we are spending all this public money to  
2 reduce energy and we need to make sure the  
3 construct that we develop encourages people not  
4 just to test their house and get a rating and  
5 spend that money but also do the retrofit work.

6 So this is the way I see it going with  
7 the third parties. It becomes a lot of contact.  
8 They go out, they test the house. They come back  
9 a few days later with the report and a set of  
10 recommendations.

11 Eventually that finds its way to me.  
12 Now we are talking a week or two out, minimum. I  
13 come back out, I have to retest the house. I am  
14 not getting compensated for that retesting of the  
15 house. Because I really can't estimate based on  
16 any of the information I'm getting from the rater.

17 Likely I am in a competitive environment  
18 in that case because they are going to go and get  
19 multiple bids because that is considered less, you  
20 know, more third party. So I am going to have a  
21 much lower close rate so I don't get to recoup  
22 those costs.

23 Most of these contractors are then going  
24 to take that information -- We are able to go  
25 onsite but we are the exception. They are going

1 to go back, they are going to write their own  
2 report. They are going to change the  
3 recommendations that were initially made. And  
4 that's going to happen almost every time.

5 When we try to work with other home  
6 performance contractors where we see eye to eye we  
7 are still changing each other's recommendations  
8 because we all see -- it's gray. Everybody does  
9 things a little differently. Some people like one  
10 technology, other people like another technology,  
11 and we find that. It's rare that one group will  
12 just adopt another group's recommendations. So  
13 now we are at another week out past that.

14 If we're lucky that home performance  
15 contractor will get a report back with an estimate  
16 in two, I don't know, another week to two after  
17 that. And now we're talking like they have been  
18 to this house, they have had three inspections,  
19 potentially, and we are maybe four weeks out by  
20 the time they get an estimate.

21 And people do not act. I mean, they  
22 just get completely confused. They're pissed at  
23 their HERS rater because they're wondering why  
24 they're even talking to their HERS rater because  
25 they can't remember why they brought them in in

1 the first place. And then they have all these new  
2 people bringing them -- It becomes a sales  
3 disaster and the adoption rates are going to  
4 plummet. And what we have experienced in the  
5 field is exactly this.

6 So just again I would encourage you  
7 guys. This is always kind of hard to do. But  
8 just remember that if we don't build a  
9 retrofitting business that can function, which is  
10 the achilles's heel of all of this, we are not  
11 going to actually fix any houses. So thank you.

12 PRESIDING MEMBER PFANNENSTIEL: Thank  
13 you. And we look forward to your written comments  
14 also. I think that to the extent that you can  
15 give us some ideas on what we should be doing in  
16 these areas we would appreciate them.

17 MR. GOLDEN: We'll definitely do that.  
18 I can't say we have magic bullets, this is hard  
19 stuff. But any way we can be of help.

20 PRESIDING MEMBER PFANNENSTIEL: Thank  
21 you.

22 ASSOCIATE MEMBER ROSENFELD: I guess I  
23 have another question.

24 MR. GOLDEN: Certainly.

25 ASSOCIATE MEMBER ROSENFELD: These are

1 remarkable numbers that you give of the dependance  
2 on closing rate on time. What was time zero?  
3 There was first a rating.

4 MR. GOLDEN: So we come in and we do, we  
5 don't have anything to really rate. We actually  
6 have like -- we intend to actually do a rating.  
7 We have something we call a home performance  
8 index, which we will never tell anybody is  
9 anything but our own construct right now, until we  
10 do our own little fanciful rating. But it will  
11 become a HERS rating once this is all approved.

12 So we are doing that in one stop,  
13 basically. We're doing it with like tablet PCs  
14 onsite. It's not that everybody has to do it in  
15 one stop but we have just really seen a very clear  
16 correlation. I mean, when we first started being  
17 a home performance contractor our conversion rate  
18 of someone who calls in and wants to get an audit  
19 to actually getting work done started at like in  
20 the low 20s, basically.

21 And everything that -- Our whole  
22 business and whether or not we are successful and  
23 can keep our doors open has been 100 percent  
24 contingent on that, getting that close rate up.  
25 Because every time we test a house we lose money.

1           And if we do a fully loaded analysis of  
2           what it costs to go to a house, do the testing,  
3           generate a report, do an estimate that you can  
4           live with, get that back to talk to the homeowner,  
5           the average number of times you have to -- because  
6           even when we do it the same day we are not closing  
7           the same day on a very regular basis. The number  
8           of contacts, when you really job cost it, we lose  
9           money every time we test a house, without a doubt.

10           And we are charging upwards of \$600 per  
11           house. And that's just the reality. And that's  
12           if you are a real business and provide health  
13           coverage and you have workers compensation  
14           insurance and general liability insurance and E&O  
15           insurance and you have trucks. All these things  
16           that you have to be to be a real business, that's  
17           the loaded cost. And so we've got to look at  
18           costs that aren't people operating out of their  
19           bedroom with or without insurance, you know, small  
20           operations, and look at what it means to be like a  
21           real full-scale operation. And we are happy to  
22           expose these numbers if it is helpful.

23           PRESIDING MEMBER PFANNENSTIEL: It is  
24           helpful. We appreciate it, thank you. We have  
25           somebody on the phone. Sue Anderbois from the

1 Energy Foundation. Is she still there?

2 COMM LINK OPERATOR: She disconnected.

3 PRESIDING MEMBER PFANNENSTIEL: All  
4 right, maybe she'll be back this afternoon.

5 Anybody else commenting on the earlier  
6 stuff and then we'll break for lunch?

7 MR. NESBITT: George Nesbitt. I just  
8 wanted to touch on one last thing.

9 ASSOCIATE MEMBER ROSENFELD: A little  
10 louder, George.

11 MR. NESBITT: Sorry, sorry.

12 ADVISOR TUTT: Use the other mic,  
13 George.

14 MR. NESBITT: Okay. We are not getting  
15 as much feedback at this point.

16 On the building performance contractor  
17 the requirement being BPI certified. This goes  
18 back to my earlier comment of kind of conflicting  
19 programs, requirements. Having gone through tests  
20 on, you know, four different certifications. They  
21 have, you know, different standards and some  
22 different testing stuff than we typically do and  
23 use and it kind of adds a whole other layer.

24 And as an industry, building performance  
25 contractors, we are not a humongous industry yet.

1 And the added cost of testing and all this stuff,  
2 you know, it seems like a little early to be  
3 requiring it. Still struggling to get going. You  
4 know, we have got so many certifications and  
5 providers and things we have got to do, it's  
6 actually a real killer as a small organization  
7 having to pay all these fees and stuff. So that's  
8 all I want to add.

9 PRESIDING MEMBER PFANNENSTIEL: Thank  
10 you. Other comments? It's about 12:15 now. I am  
11 going to suggest we come back from lunch at 1:30.  
12 See you back here then.

13 (Whereupon, the lunch recess  
14 was taken.)

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## 1 AFTERNOON SESSION

2 PRESIDING MEMBER PFANNENSTIEL: I think  
3 we are ready to reconvene. We still have a bunch  
4 of stuff to go through this afternoon. So if  
5 people in the back will either take your  
6 conversations outside or take a seat now we can  
7 get going. Charles, I hand it to you to walk us  
8 through these slides.

9 MR. ELEY: All right. I wasn't quite  
10 ready. Let me just get my notes.

11 PRESIDING MEMBER PFANNENSTIEL: And we  
12 understand that over lunchtime they fixed all of  
13 the communications hardware so we'll see.

14 MR. ELEY: Okay. So we have -- The next  
15 part of the presentation is to share some  
16 information about this utility bill analysis that  
17 is required as part of the HERS program.

18 We all know that behavior and lifestyle  
19 issues play a huge role in energy consumption.  
20 California HERS tools are required to have the  
21 capability of taking utility bill data and  
22 normalizing this utility bill data against the  
23 standard weather files or weather data that is  
24 represented in the 16 CEC climate zones.

25 And as mentioned earlier, the HERS

1 reports will include some type of graphic  
2 representation of this data, which is shown in  
3 this little diagram down at the bottom here. This  
4 is the gas data that we showed earlier. Next  
5 slide.

6 To illustrate some of this variation.  
7 This is a graph actually produced by Loren  
8 Lutzenhiser and presented at the ACEEE conference  
9 two years ago. And this shows, this shows  
10 electricity consumption in California homes. So  
11 on average a California homeowner uses about 6,000  
12 kilowatt hours a year. But there's some homes  
13 that use four times that amount and some that use  
14 very little. And most of this variation Loren  
15 Lutzenhiser identified with lifestyle issues.  
16 Next slide.

17 If you look at gas consumption you see  
18 a, you see a similar, a similar pattern. On  
19 average the California home uses about 400 therms  
20 a year. But there's some homes that use almost  
21 2,000 therms a year and others that use, that use  
22 50 therms per year. So there's huge variation.  
23 And again, much of this variation is related to  
24 lifestyle issues. Next slide, please.

25 So what we are recommending is something

1 called inverse modeling. And inverse modeling is  
2 a technique that has been used for years.  
3 Utilities have -- There's a program called Prism  
4 that uses inverse modeling, there's E-Tracker,  
5 there's a number of -- NEXUS. There's a number of  
6 utility programs that have been doing this for  
7 years.

8 ASSOCIATE MEMBER ROSENFELD: For  
9 decades.

10 MR. ELEY: Excuse me?

11 ASSOCIATE MEMBER ROSENFELD: For  
12 decades.

13 MR. ELEY: For decades, that's right.  
14 You basically take, you take the utility bill data  
15 and it's pretty much a straight multiple  
16 regression analysis. And for each, for each  
17 utility bill period you calculate the heating  
18 degree days or the cooling degree days and you do  
19 a regression analysis and you find this change  
20 point in the model.

21 And it's a powerful tool because it  
22 enables you to pull out the weather-dependant  
23 components of energy use and relate those to  
24 heating degree days or cooling degree days and  
25 then you can see the non-weather-related

1 components. And some of the, some of the inverse  
2 modeling actually breaks those out too. If you've  
3 got, if you've got additional data for instance on  
4 appliance saturation within the home. Although we  
5 are not requiring that that be done.

6 So in our analysis the independent  
7 variable would be, would be outside temperature.  
8 Outside temperature is available on a daily basis  
9 in something like approximately 400 locations in  
10 California. It's current through just a few days  
11 ago. So the idea is this regression analysis  
12 would be done for utility bill data and for the  
13 temperature data that lines up with those utility  
14 bills. So if the utility bill covered the period  
15 say between February 15, 2007 and March 18, 2007,  
16 the software would actually collect the average  
17 daily temperatures for that period of time and  
18 calculate the heating degree days and the cooling  
19 degree days for that period of time and do the  
20 regression on that, on that data.

21 The technical manual makes reference to  
22 an ASHRAE Research Paper 1050 which describes the  
23 algorithms that are to be used in the inverse  
24 modeling process. Next slide.

25 Now utilities, the investor-owned

1 utilities and other utilities in California  
2 already have, many of them have programs underway  
3 that do this kind of analysis already. And HERS  
4 providers have the option of using these programs  
5 in lieu of implementing their own inverse modeling  
6 procedure. Next slide.

7 One of the, one of the powerful uses of  
8 a utility bill analysis is to be able to verify  
9 post-retrofit utility bill savings. And this  
10 actually is the historic use of the inverse  
11 modeling procedure.

12 For instance, if a utility has a program  
13 to distribute compact fluorescent lamps in their  
14 service district, they can do an inverse model of  
15 all of the homes before the giveaway and after the  
16 giveaway and you can actually see what the impact  
17 is for the whole population of homes. You can  
18 apply this same process to an individual home,  
19 which is what we are proposing to do in the case  
20 of the HERS analysis.

21 There's software available, Prism, E-  
22 Track or all of these others. If you develop the  
23 model for a pre-retrofit period then you can use  
24 that model to project what the home would have  
25 used in the post-retrofit period. And then you

1 can compare that to the actual energy use and over  
2 time you can see the difference between the lines.  
3 And the difference would represent the savings.

4 And this post-retrofit utility bill  
5 analysis would be required when building  
6 performance contractors do retrofit improvements  
7 and carry out ratings. Next slide.

8 So the next part of the presentation has  
9 to do with the recommendations that come from the  
10 ratings and how those are --

11 ASSOCIATE MEMBER ROSENFELD: Charles.

12 MR. ELEY: Yes.

13 ASSOCIATE MEMBER ROSENFELD: I think I  
14 want to ask you one question since you are  
15 switching topics.

16 MR. ELEY: Yes.

17 ASSOCIATE MEMBER ROSENFELD: The actual  
18 inverse analysis is something I can see that many  
19 customers or recipients of the analysis won't  
20 follow very well. But I have two questions.  
21 Supposing the theory is that you use 50 units  
22 worth of energy and your bill shows 100 or  
23 something. I am not quite clear from what you  
24 have done whether the inverse analysis tells the  
25 customer, adjusts the theory upwards or adjusts

1 the bill downwards. And it probably doesn't  
2 matter but which did you have in mind?

3 MR. ELEY: Well the inverse model --

4 ASSOCIATE MEMBER ROSENFELD: Doesn't  
5 care.

6 MR. ELEY: -- would be independent of  
7 simulation results. This would be, this would  
8 come entirely from the utility bills. But it  
9 would be, but it would be normalized for the same  
10 climate data that's used in the simulation.

11 ASSOCIATE MEMBER ROSENFELD: Okay.

12 MR. ELEY: So that at least climate  
13 comes out and we are comparing apples to apples  
14 between the utility bills and the simulation  
15 results.

16 ASSOCIATE MEMBER ROSENFELD: Good. And  
17 I have one comment, it's not a question. But  
18 these Lutzenhiser probability distribution plots.  
19 It seems like that's a very valuable thing for a  
20 homeowner to know. I mean, if I found out that  
21 for my climate zone I was in the worst ten  
22 percentile of all the homes in the state or  
23 something I might be inclined to think I should do  
24 something. Now whether that's a behavioral change  
25 or get my attic insulated, that's going to involve

1 some discussion with the rater.

2 Is there any thought of making -- I  
3 guess it would have to be per climate zone. But  
4 is there any thought of making these probability  
5 distributions available with a big, old, heavy  
6 arrow which says, you are here.

7 MR. ELEY: We haven't -- That's  
8 certainly not a part of the regulations of the  
9 technical manual at the moment. What you are  
10 suggesting would be kind of parallel to the Energy  
11 Star rating where you are put into a percentile.

12 ASSOCIATE MEMBER ROSENFELD: Yes, right.

13 MR. ELEY: And you can see, well I am in  
14 the upper 80 percent of energy users in my climate  
15 zone.

16 ASSOCIATE MEMBER ROSENFELD: Yes, the  
17 bad 80 percent, right.

18 MR. ELEY: Right, the bad 80 percent or  
19 I am in the lower 20 or whatever.

20 MR. PENNINGTON: So another comment I  
21 would make is that separately from this work we  
22 have recommended that the utilities' websites have  
23 that ability. That the utilities provide a  
24 benchmarking capability. I'm pretty sure SMUD  
25 does that, at least for some of their programs,

1 right now. And it is powerful to find out how you  
2 are doing compared to your neighbors. Oftentimes  
3 it is most useful if you can compare the results  
4 at a zip code level. Because then you get into  
5 very similar --

6 ASSOCIATE MEMBER ROSENFELD: You are  
7 saying climate zone is too coarse.

8 MR. PENNINGTON: Yes. You get very  
9 similar types of houses and vintage of houses and  
10 microclimates. You take a lot of the variation  
11 out and then it's more meaningful.

12 ASSOCIATE MEMBER ROSENFELD: But of  
13 course the utilities have so much data that you  
14 could do it per zip code, I would think.

15 MR. PENNINGTON: It is being done it as  
16 we speak, yes.

17 ASSOCIATE MEMBER ROSENFELD: SMUD did  
18 it.

19 MR. PENNINGTON: It was recommended in  
20 the AB 549 Report that the utilities have that  
21 kind of information on their websites.

22 ASSOCIATE MEMBER ROSENFELD: Good, thank  
23 you. Sorry to interrupt.

24 MR. ELEY: No problem. We were about to  
25 change gears and move on to rating

1 recommendations. Next slide, please.

2           The Public Resources Code actually says  
3 that the Home Energy Rating Program has to produce  
4 recommendations. It is not that we chose to do  
5 this, it's a requirement from the Public Resources  
6 Code. It says that rating programs shall include  
7 reasonable estimates of potential utility bill  
8 savings and reliable recommendations on cost-  
9 effective measures to improve energy efficiency.  
10 Next slide.

11           So to do this we have chosen a dual  
12 approach, the standard approach and the custom  
13 approach, which we discussed briefly this morning.  
14 We are going to go into what some of the  
15 differences are between those.

16           All software has to be capable of doing  
17 both approaches, however, only the standard  
18 approach is mandatory. So every rating and every  
19 audit must include the standard approach to  
20 developing recommendations. There is no, there is  
21 no option there. That has to be done.

22           The custom approach can be done at the  
23 option of the, of the customer or the rater.

24           And as noted earlier the standard  
25 approach is intended to produce the same set of

1 recommendations, no matter who the rater is or who  
2 the provider is. Next slide.

3 With the -- We are proposing to use a  
4 technique which I refer to as a rolling basecase  
5 method of developing recommendations. So the way  
6 this method works is you start with the home in  
7 its existing condition and you identify all the  
8 things that could be done to improve that home.  
9 Maybe there's 30 things. And you calculate the  
10 benefit-to-cost ratio of each one of those and the  
11 one with the highest benefit-to-cost ratio becomes  
12 your first measure. You add that to the house.

13 And the home with that first measure  
14 becomes the new basecase and you repeat that  
15 process again. Then you look at all the remaining  
16 measures and you find the one with the highest  
17 benefit-to-cost ratio. You add that one in  
18 combination with the previous one that was already  
19 there. And you repeat this process until the life  
20 cycle costs or the net present value of the home  
21 becomes larger than your starting point.

22 So this process, this process is  
23 important because it inherently takes account of  
24 the interactions between measures. One of the  
25 commentators noted this morning, well if you

1 insulate the attic before you replace the furnace  
2 or replace the furnace before you insulate the  
3 attic that will affect the cost-effectiveness of  
4 the other measure. And that is absolutely true.  
5 That why we are using this rolling basecase method  
6 for developing the measures.

7           So each measure in the list, its  
8 position in the list represents the hierarchy.  
9 The one at the top of the list would be the one  
10 that is most cost-effective. The one at the  
11 bottom of the list would be the last one to make  
12 it into the mix.

13           So hopefully the homeowners, the  
14 investors, the decision-makers would be able to  
15 see that, you know, if they have less budget and  
16 they need to cut something out they should cut out  
17 the ones at the bottom of the list, not at the top  
18 of the list. Next slide, please.

19           With the standard approach the  
20 recommendations will include everything that's  
21 cost-effective, no matter what it costs or what  
22 the budget of the homeowner is. So if it is cost-  
23 effective, if it reduces the next present value of  
24 the home, then it will be listed among all the  
25 recommendations.

1                   However, with the custom approach the  
2                   rater and the homeowner can do different things.  
3                   For instance, the homeowner may say to the rater,  
4                   I have \$20,000 to spend so identify for me the  
5                   package of measures that will have the greatest  
6                   benefit for \$20,000. That would be the fixed  
7                   budget approach.

8                   Or perhaps the homeowner really wants to  
9                   get his home down to a 70 on the HERS index. So  
10                  the direction to the rater may be, find the most  
11                  effective package of measures that will get me to  
12                  a 70 on the HERS index.

13                  And then the customer can also screen  
14                  out measures or put in measures depending on their  
15                  preferences. For instance, it may be a historic  
16                  home and they simply can't replace the windows.  
17                  They need the wavy glass or, you know. I live in  
18                  San Francisco so I know about these things. So  
19                  the homeowner could say, well, I'm sorry but I  
20                  don't care how cost-effective the windows are,  
21                  we've got to stick with the ones we've got.

22                  And you can look at other measures. It  
23                  may be that the homeowner really wants  
24                  photovoltaics on their roof. They want to get  
25                  involved with that technology.

1           So the homeowner and the rater can put  
2           constraints on the process and they can, they can,  
3           they can define measures that must always be in  
4           the mix, no matter what their cost-effectiveness.  
5           Or they can define measure that have to be  
6           excluded for reasons other than energy efficiency.  
7           So there's much more flexibility on the custom  
8           approach side of things as far as developing the  
9           recommendations. Next slide.

10           As far as calculating the net present  
11           value or the benefits. With the standard approach  
12           the procedure that is used to determine the cost-  
13           effectiveness of the standards would be used. And  
14           this is, this method is documented as part of the  
15           rulemaking proceeding for Title 24.

16           Basically there is a net present value  
17           associated with a unit of TDV energy reduction.  
18           And that, and that net present value figure  
19           accounts for the Energy Commission's forecast of  
20           energy cost for the next 30 years. It accounts  
21           for a three percent discount rate. You know,  
22           there's all sorts of things that are built into  
23           that, into that number. And so the net present  
24           value of future energy savings would be the  
25           estimated kilowatt hours and therms on an annual

1 basis, multiplied times this net present  
2 multiplier, which is a fixed number based on  
3 statewide forecasts.

4 But with the custom approach, by  
5 contrast, the rater can consider the special  
6 circumstances of the homeowner or the investor.  
7 For instance, it could be that the, that the  
8 homeowner is refinancing the home or maybe they  
9 are buying the home, and the cost of the  
10 improvements are just going to be added to the  
11 mortgage.

12 So if they are added to the mortgage  
13 perhaps the criteria would be, okay, well I want  
14 to have a net zero -- I want my energy savings to  
15 be at least as great as the additional mortgage  
16 payment in my first year. That could be the  
17 criteria. And if that is the case the rater could  
18 take account of their tax bracket. Because in the  
19 early years most of that mortgage payment is  
20 interest, which is deductible and so forth.

21 So with the custom approach the  
22 circumstances, the financing mechanisms, can all  
23 be accounted for in the analysis so it becomes  
24 more meaningful to the homeowner or the buyer or  
25 the investor.

1           In addition, non-energy benefits such as  
2 thermal comfort, air quality, acoustics and so  
3 forth can be, can be factored into the analysis.  
4 Probably the way these could be factored in is by,  
5 is just by specifying them as part of the cost-  
6 effectiveness method we discussed previously.  
7 Next slide.

8           ASSOCIATE MEMBER ROSENFELD: Charles,  
9 let me make one other obvious comment.

10          MR. ELEY: Yes sir.

11          ASSOCIATE MEMBER ROSENFELD: You are  
12 showing the advantages of the custom method  
13 compared to the standard approach. But I hope  
14 that the standard approach will have routinely on  
15 the printout some sort of everyday information.  
16 That is, net present value is a little bit scary.

17          The way I would draw the line, I have a  
18 list of 12 items. What I really want to know is,  
19 what is the after-tax payback time. The first  
20 item might be six months payback time and the next  
21 item might be a two year payback time and that's  
22 all pretty attractive. And then when it gets down  
23 to like ten years maybe I'm going to draw the  
24 line. I'm just hoping that the form will have  
25 something as simple as after-tax, after average

1 tax return on investment or a payback time.  
2 Present value is fine for you and me but I am not  
3 sure how some might think about present value.

4 MR. ELEY: We are not planning on  
5 actually -- I am sharing with you the methodology  
6 used to develop the recommendations but the list  
7 of recommendations and the data associated with  
8 them we're thinking would be fairly simple.

9 What it would show is show the list of  
10 recommendations. And as you move down the list  
11 you would see the reduction in your HERS index and  
12 you would also see the reduction in electricity  
13 and gas consumption. And then the rest of it you  
14 could, you could use that data then to apply  
15 simple payback or whatever type of economic  
16 analysis you would like to apply.

17 ASSOCIATE MEMBER ROSENFELD: I'll give  
18 you a sales pitch on simple payback later. Okay.

19 MR. PENNINGTON: Choosing a simple  
20 criteria. Cash flow --

21 ASSOCIATE MEMBER ROSENFELD: Cash flow  
22 is fine.

23 MR. PENNINGTON: -- is a very useful  
24 criteria that is intuitive also.

25 ASSOCIATE MEMBER ROSENFELD: That's

1 another obvious one. Good, I like that.

2 MR. ELEY: So on the subject of utility  
3 rates. The utility rates are obviously an  
4 important input to any kind of cost-effectiveness  
5 calculation because the more we pay for  
6 electricity and gas the quicker energy efficiency  
7 measures pay back.

8 With the standard approach all of this  
9 is built in to the net present value associated  
10 with time dependant valued energy reductions.

11 With the custom approach the utility  
12 rate which the customer is using would actually be  
13 used in the analysis. Or if it's a new home and  
14 there's not someone there to do the utility rate  
15 that's most common for that area. Next slide.

16 ADVISOR HUNGERFORD: I have a simple  
17 question.

18 MR. ELEY: Yes, sure.

19 ADVISOR HUNGERFORD: Well maybe it's not  
20 a simple question, about the utility rates. Do  
21 you use an effective average utility rate for the  
22 investor-owned utilities that have tiered rates or  
23 do you weight it so that a higher consuming home  
24 gets more of a benefit because they are avoiding a  
25 high marginal cost rate?

1           MR. ELEY: The HERS software has to be  
2           able to directly model the details of the utility  
3           rate. So for instance if the utility rate has a  
4           lifeline structure where you pay one rate for the  
5           first 500 kilowatt hours a month and then a higher  
6           rate for consumption after that. That rate  
7           actually has to be implemented into the software.  
8           So that what would be, what would be, what would  
9           come out would be the real cost or the real  
10          savings to the homeowner at the margin.

11                 So if they, if they are using 900  
12          kilowatt hours a month and they reduce that to 800  
13          then whatever that rate is between 800 and 900  
14          would be the basis of their savings. No, it  
15          wouldn't be an average.

16                 PRESIDING MEMBER PFANNENSTIEL: I  
17          understand that for the custom approach. Explain  
18          to me then how the standard approach works.

19                 MR. ELEY: Well the standard approach,  
20          it doesn't work that way.

21                 PRESIDING MEMBER PFANNENSTIEL: Okay.

22                 MR. ELEY: The standard approach, we  
23          have a, we have a fixed net present value  
24          associated with the reduction in TDV energy. And  
25          that's all based on Energy Commission forecasts

1 and three percent discount rates and so forth.  
2 It's just, it's just the custom approach where  
3 these utility rates would be modeled.

4 And some residential customers actually  
5 have time-of-use rates. Some utilities offer  
6 this. Especially if you have PV systems it's  
7 sometimes beneficial to get a time-of-use rate.  
8 In which case that time-of-use rate would be  
9 modeled.

10 In terms of modeling assumptions. Most  
11 of the modeling assumptions that are used for code  
12 compliance would also be used for the HERS  
13 analysis. But there is -- With the  
14 recommendations there's one major exception. For  
15 code compliance purposes if you build a home  
16 without air conditioners, air conditioners are  
17 modeled anyway. And it sort of becomes a wash in  
18 the process.

19 It's a way to kind of close a loophole.  
20 Because if you build a home in a climate, in a  
21 cool climate, and you say well, I don't have air  
22 conditioners, but you have a huge air conditioner  
23 load right after the home is built. People could  
24 run out to Home Depot and buy some window shakers  
25 and, you know, circumvent the whole standard. So

1       it's in the, it's in the code compliance modeling  
2       rules that you always assume air conditioning,  
3       whether there or not.

4               But for HERS ratings we are making a  
5       change to that modeling assumption. Not for the  
6       HERS index but for the recommendations module. If  
7       there is no air conditioning in the home then  
8       there is no credit taken for cooling savings. So  
9       the homeowner is not going to see that.

10              With the custom approach the rater is  
11       encouraged in fact to modify some of the modeling  
12       assumptions if they do the utility bill analysis  
13       and they find out for instance that, say the  
14       utility bills are much lower than the simulated  
15       than the simulated results, or much higher than  
16       the simulated results.

17              The rater is encouraged to talk with the  
18       homeowner and understand why that's the case and  
19       then try to make adjustments to the thermostat  
20       settings or the occupancy patterns on an annual  
21       basis. Or maybe model special equipment that  
22       happened to be there to try and get the utility  
23       bills and the simulation results more into  
24       agreement with each other. And by doing that the  
25       goal is to try and address some of the disparities

1 that George Nesbitt and others have noted that  
2 sometimes occur with existing homes.

3 For both the standard and the custom  
4 approach one of the modeling assumptions that we  
5 have changed is if you have an uninsulated wall  
6 cavity or ceiling cavity it is modeled with R-4  
7 insulation. And there's a rationale for this.

8 If you look at the differences between  
9 simulation results and utility bills, most of the  
10 studies show that there's pretty good agreement  
11 for modern homes that are well insulated and in  
12 compliance with today's codes. The big deviations  
13 tend to happen in uninsulated homes. Homes that  
14 were built a long time ago that are very leaky and  
15 don't have much insulation. And the models over-  
16 predict what the energy use is in those homes.  
17 And this R-4 assumption is intended to close that  
18 gap. And there's some parametric studies in the  
19 topic report that show how that happens. Next  
20 slide, please.

21 Another critical input to developing the  
22 recommendation is to identify the measures to be  
23 considered and to estimate their costs. Now with  
24 the standard approach there would be a common  
25 database of energy efficiency measures and costs

1 that would be used in all cases.

2 But with the custom approach raters or  
3 building performance contractors can enter their  
4 own measure costs. These measure costs may be  
5 based on construction bids, they may be based on a  
6 particular window replacement that the homeowner  
7 has chosen or that the homeowner's association has  
8 narrowed them down to.

9 And these alternate costs and measures,  
10 the rater has to report these to the HERS provider  
11 however. And then at the end of each year or at  
12 periodic times these alternate costs would be used  
13 as a basis for updating the standard database. So  
14 for instance if the raters are all reporting  
15 window costs that are 50 percent higher than the  
16 standard database then this would be an indication  
17 that maybe we should take a look at the window  
18 cost in the standard database and bring it into  
19 more agreement. And that would be done on a  
20 periodic basis at least once a year. Next slide.

21 The recommendations, it would be  
22 required that the recommendations address a  
23 comprehensive list of measures. Building envelope  
24 measures such as insulation and window  
25 replacements, lighting measures, HVAC measures,

1 water heating, appliances, and even PV systems.

2 Next slide.

3 The database of measures, we are going  
4 to start with the DEER database, the Database for  
5 Energy Efficient Resources. The DEER database has  
6 two pieces of information. It has measure costs  
7 but it also has estimated savings. We would not  
8 be using the estimated savings part of the  
9 database, just the, just the measure costs.

10 This is a starting point. We expect  
11 that the HERS providers, and in fact it is the  
12 responsibility of the HERS providers, to  
13 periodically update this database on at least an  
14 annual basis. And they would do this by taking  
15 into account custom approach costs that are  
16 reported through their raters and other types of  
17 information.

18 The goal though, or the requirement, is  
19 that all of the providers and all of the raters  
20 use the same, common database for the standard  
21 approach recommendations.

22 So these would be updated periodically.  
23 The technical manual says at least once a year.

24 And the Commission staff may become  
25 involved in the process if necessary to help reach

1 agreement on what the, what the costs should be.

2 Next slide.

3           So for the ancillary energy uses,  
4 including pools and spas and pumps and grinder  
5 pumps and so forth. There would be a -- With the  
6 standard approach the recommendations would  
7 include sort of a -- if you have this then here  
8 are the recommendations kind of thing. If there's  
9 a pool and there is no pool cover then you would  
10 recommend a pool cover, for instance. If there's  
11 a pool pump and there's no time clock control then  
12 you would recommend a time clock control.

13           So it would be just a simple set of  
14 recommendations. There would be no cost  
15 effectiveness analysis. The auditor or the rater  
16 would not be collecting any kind of detailed  
17 information about the pool or the spa or these  
18 ancillary energy uses.

19           However, with the custom approach the  
20 rater would use or could use methods approved by  
21 the provider to actually evaluate energy  
22 efficiency opportunities related to pools and spas  
23 and other ancillary energy uses.

24           Now neither, none of these ancillary  
25 energy uses affect the HERS index but they can be,

1 they can be very important components of energy  
2 use in a building and large opportunities for  
3 energy savings. Next slide.

4 The rater is expected to collect utility  
5 bills if they are available and to do this inverse  
6 modeling of those utility bills and to normalize  
7 those utility bills against -- with the standard  
8 CEC weather files. If the normalized, if the  
9 normalized results are different or significantly  
10 different then providers may use this information  
11 from the utility bills, or you can use the utility  
12 bill data -- I'm sorry. You can use utility  
13 website data in lieu of this inverse modeling.

14 With the custom approach the same  
15 requirements apply but the rater would be  
16 encouraged in this case to tweak the models. To  
17 tweak the model inputs to try and get better  
18 agreement between the, between the utility bills  
19 and the simulation results. Next slide.

20 Then there would be a list of caveats  
21 associated with the recommendations. And they  
22 would say something like these, these  
23 recommendations are based on the following  
24 assumptions: These utility rates, the Energy  
25 Commission's forecasts of electricity and gas

1 consumption's three percent discount rate, so  
2 forth and so on.

3 The actual text for these qualifications  
4 and more detailed bullet points is provided in  
5 the, in the HERS technical manual. But this is  
6 kind of the, your mileage will vary, type of  
7 statement that would be, that would be presented  
8 with the recommendations.

9 We don't, you know, we don't expect that  
10 the recommendations or the projected savings from  
11 the recommendations are going to be interpreted as  
12 a warranty. So the Energy Commission is basically  
13 going to be saying, the projected savings that are  
14 shown on this report are calculated with the best  
15 engineering analysis and assumptions that we have  
16 available to us. But we don't guarantee that you  
17 will actually achieve these savings because of  
18 lifestyle issues, of climate changes and all of  
19 the other caveats that would be attached.

20 And that's it for this part of the  
21 presentation. The next slide says public comment.

22 ASSOCIATE MEMBER ROSENFELD:  
23 Commissioner Pfannenstiel had to go answer a phone  
24 call so I will invite people who have comments to  
25 come up to the now-working microphone, I hope.

1 (Laughter)

2 DR. KNIGHT: Bob Knight again. As you  
3 might expect I have a few comments. Kind of in  
4 random order in response to some of the points  
5 made.

6 You know, I am troubled by too much of a  
7 focus on cost-effectiveness. I'm sure that a lot  
8 of people in this room have heard me preach before  
9 about how homeowners actually make decisions to do  
10 things to their house. And we hardly, and I think  
11 Matt who is in the room can confirm this as a  
12 representative of a contractor.

13 You hardly ever find a homeowner who is  
14 only interested in saving energy. They want  
15 comfort, they want to solve an air quality  
16 problem, they want to solve a noise problem. They  
17 want to be considered and feel environmentally  
18 responsible. There's all kinds of reasons. And  
19 in fact surveys that we did several years ago with  
20 Loren Lutzenhiser indicated that on average about  
21 80 percent of the motivation to spend money on a  
22 home retrofit has nothing to do with saving energy  
23 and reducing their bills. It has to do with all  
24 these other factors. So I feel a little concerned  
25 about the standard method and its total focus on

1 cost-effectiveness.

2           And sometimes it seems to me, and I am  
3 starting to see in the economic literature,  
4 economists talking about this. That our  
5 conception in the energy field of what cost-  
6 effectiveness ought to mean, is way off the mark.  
7 Basically you are saying, let's take all the costs  
8 of an improvement and balance that against only  
9 one of the many benefits that people get from  
10 spending that money. It doesn't make sense and it  
11 doesn't accord with the way people actually make  
12 decisions.

13           But that's enough speech making on that.  
14 It's just an important issue and it makes a heck  
15 of a difference in what is considered cost-  
16 effective. I would like to see some explicit  
17 acknowledgement of that in the methodology so that  
18 you parse the homeowner's costs according to why  
19 they spent the money. And there are a number of  
20 ways to do that and I will be glad to provide some  
21 testimony, written testimony on that.

22           And that would dramatically increase --  
23 Here is the real key to this. It would  
24 dramatically increase the scope of the  
25 improvements that the homeowner is willing to make

1 if you don't focus so tightly on just what is  
2 technically cost-effective in our standard,  
3 limited way. Because they will see, if you help  
4 them see, all the benefits that they are going to  
5 get from this, rather than just the energy  
6 savings. And we find that that is what sells home  
7 performance retrofits.

8 ASSOCIATE MEMBER ROSENFELD: Bob, you  
9 said you would discuss this in written testimony.  
10 I certainly understand that the reason that people  
11 get work done on their home has little to do with  
12 energy. Maybe they read an article yesterday that  
13 the earthquake is coming or something like that.

14 DR. KNIGHT: Right, sure.

15 ASSOCIATE MEMBER ROSENFELD: But on the  
16 other hand, many of the energy investments, like a  
17 better furnace, are pretty much focused on saving  
18 energy. It is not obvious that I get any  
19 different air quality or comfort.

20 DR. KNIGHT: Absolutely, absolutely.

21 ASSOCIATE MEMBER ROSENFELD: So it still  
22 seems to me that the question is going to arise  
23 fairly prominently. Yes, what got you into that  
24 business is probably something other than energy.  
25 But while you're at it, what's the cost-

1 effectiveness of a better furnace or better water  
2 heater or something. It does seem to be pretty  
3 relevant to me.

4 DR. KNIGHT: It's a good, it's a good  
5 point. But what actually happens is that a  
6 homeowner is willing to spend a certain amount of  
7 money and they would like to know how best to  
8 spend it. And when you are talking about home  
9 performance contracting you are not talking about  
10 replacing the furnace.

11 ASSOCIATE MEMBER ROSENFELD: Right.

12 DR. KNIGHT: You are talking about a  
13 whole integrated suite of improvements to the home  
14 that interact with each other. Replacing the  
15 furnace, if you just replace the furnace one of  
16 the things that you will probably do is put in a  
17 furnace that is really too big. If you were to do  
18 a complete integrated, home performance retrofit  
19 you would reduce the thermal load on the house and  
20 put in a furnace that's half the size.

21 In contrast to when you do just one  
22 improvement, when you do a whole suite of  
23 integrated improvements you get a change in the  
24 whole operation of the house. It is not just a  
25 more efficient furnace anymore. The air quality

1 is better, the home is quieter, it is more  
2 comfortable. I don't worry so much about the air  
3 conditioner breaking down because it is cycling on  
4 and off all the time.

5 I believe that I can -- Especially when  
6 some of our contractors actually file the home  
7 performance retrofit scope with the county  
8 recorder's office as part of the property records.  
9 That becomes a factor when that home is valued for  
10 resale and it actually can work to increase the  
11 value of the home. So there's all those other  
12 kinds of benefits that you don't get when you just  
13 replace the furnace. So I don't think you can  
14 talk about these things one at a time.

15 ASSOCIATE MEMBER ROSENFELD: But on the  
16 other hand Charles Eley made a big point about  
17 ranking the measures. The most cost-effective  
18 first and then starting again and doing the next  
19 cost-effective. I think that's done even on the  
20 standard method, correct? It seems to me he is  
21 pretty much aware of the issues you are --

22 DR. KNIGHT: That's the problem that I  
23 have with this.

24 ASSOCIATE MEMBER ROSENFELD: The resale  
25 value one is trickier, of course. I understand

1       that.

2                   DR. KNIGHT:  But that's why I have  
3       trouble with the standard approach.  It seems to  
4       me that -- I can understand why you use the  
5       standard approach.  Because it's a simple way to  
6       do it, it's easy to understand.  The homeowner can  
7       understand what you're doing.

8                   And yet it is inherently missing the  
9       point of doing a real home performance retrofit.  
10      We don't do things based on the incremental cost-  
11      effectiveness of each measure.  We do them on how  
12      well they work together to create what it is the  
13      homeowner wants to get out of this.  And it is  
14      usually maximum energy savings as well -- well,  
15      moderated by their desire for other improvements.  
16      And while the standard method does give you one at  
17      a time cost-effectiveness, what I am saying is  
18      that's a very, very incomplete picture of what the  
19      kind of benefits that are actually going to be  
20      gained from doing six or eight of those things  
21      instead of just one or two.

22                   And I think it makes a huge difference  
23      and I would like to see if we could come up with a  
24      way to acknowledge that.  And I think maybe the  
25      easiest way would be for the raters to be

1 explicitly trained to make this point to their  
2 clients. That, okay, here is the standard method,  
3 it gives you this kind of information.

4 But what we do with our contractors is  
5 we teach them to ask a lot of questions before  
6 they start coming up with a solution. So that you  
7 find out, you know, what kind of problems does the  
8 homeowner have in this house anyway. Very often a  
9 homeowner, unless you ask them questions, they  
10 won't even realize that a problem that they have  
11 got in the home can be solved. They think it's  
12 just part of the house. I don't sit close to that  
13 window because it's cold. Or I don't use that  
14 room much because it's always hot.

15 But all these things are correctable in  
16 a home performance retrofit and the homeowners  
17 will value that if they know that it can be done.  
18 So it makes a big difference. And I would like to  
19 see some of that flavor get into the instructions  
20 of the custom approach so that the homeowner can  
21 be educated in the full range of benefits that  
22 they can get out of this, rather than just  
23 focusing so much on this very limited definition  
24 of cost-effectiveness.

25 A couple of other points with regard to

1 modeling. We have a lot of trouble, as I  
2 mentioned this morning, with modeling because we  
3 find so many inaccuracies that seem to be  
4 inescapable.

5           And the models that don't look  
6 inaccurate usually have the bill disaggregation,  
7 I'm sorry, the bill reconciliation built into the  
8 black box. Obviously it is going to come out to  
9 be accurate because you have made the model force  
10 it. That means that you can't have any confidence  
11 in the disaggregation because the model is just  
12 being used as a blunt instrument to force the  
13 numbers to look right. Often we find no  
14 relationship to reality.

15           And for that reason we actually teach  
16 and recommend our contractors to use manual bill  
17 disaggregation, not simulation modeling, to guide  
18 them in their recommendations. And it's pretty  
19 easy to do a good manual bill disaggregation if  
20 you have data on the house. If you have gone  
21 through the house you know what the duct leakage  
22 is, you know what the insulation situation is.  
23 You know what the error envelope situation is.  
24 You know what the baseload problems are, about the  
25 extra refrigerator and all that kind of thing.

1 The pool pump that uses 2.2 kW or draws that much  
2 and is running eight hours a day. That kind of  
3 thing.

4 You can explicitly put those things in  
5 and then in the course of very few minutes you can  
6 do a pretty decent bill disaggregation that will  
7 guide you in where you can get the most savings  
8 and how to do it. And that's really the best way  
9 for home performance analyses to be done.

10 The other thing is that contractors hate  
11 simulation models. They are not in the business  
12 to run computer models. They don't like doing it.  
13 And they consider it to be useless to them and  
14 only a requirement because some program is  
15 requiring them to do it.

16 The other thing is, as I think Charles  
17 mentioned, giving people an estimate, which is  
18 unfortunately required in your current  
19 regulations, giving people an estimate of how much  
20 energy savings they are going to get is bound to  
21 get you in trouble. There will be take-back and  
22 then they will blame you for that.

23 And there will be inherent inaccuracies  
24 in the simulation model that you use to generate  
25 those assumed savings. And you are very often

1 going to over-estimate the savings because the  
2 models seem to tend to have that bias. Mainly  
3 because the inputs don't tell you very much about  
4 quality of installation of various measures.

5           And so you think that, and the model  
6 thinks that since you have, you know, R-whatever  
7 in the walls that it's all been perfectly  
8 installed and everything is fine. When in fact in  
9 most cases probably a third or a half of the  
10 insulating value of that insulation has been  
11 wasted. It is not happening just because of poor  
12 installation. And there are many things like  
13 that.

14           So we are very leery of using simulation  
15 models in the field for dealing with the  
16 homeowner. We just don't think it works. And we  
17 find that our contractors do very, very well with  
18 manual bill disaggregation, talking in terms that  
19 the homeowner -- You know, it's a funny thing  
20 about a bill disaggregation. People tend to  
21 believe them because they make sense.

22           Say well, I looked at your swimming pool  
23 pump and it's running eight hours a day 365 days a  
24 year and it's pulling 2.2 amps. I'm sorry, 2.2  
25 kW. It's easy for me to figure out how much

1 energy is being used by that and how much you  
2 could save. Very straightforward.

3 And homeowners end to be really unhappy  
4 with you as a contractor if you have told them  
5 they are going to save 30 percent on their energy  
6 bill and they can't see it in the next month or  
7 two. And that's death for the contractor because  
8 then you don't get ten nice recommendations to  
9 that person's friends. You get 10 or 20 or 100  
10 complaints to their friends that you shouldn't use  
11 that contractor because he doesn't tell you the  
12 truth. I don't know, I'm just trying to add some  
13 realism to this and keeping with some of Matt's  
14 comments this morning.

15 I am very much in favor of what is being  
16 attempted here. It's just that I am really  
17 worried about the details. And I would like for  
18 some of the experience of the home performance  
19 profession to be taken into account a little bit  
20 more. Because the devil really is in the details  
21 in this kind of effort. Thanks.

22 PRESIDING MEMBER PFANNENSTIEL: Thank  
23 you. Other comments? Matt.

24 MR. GOLDEN: I wanted to -- Matt Golden,  
25 Sustainable Spaces. And I wanted to just kind of

1 reiterate a couple of comments that were just  
2 made. I would have given you guys a little bit  
3 more space but actually I have to, unfortunately,  
4 head out here.

5 But essentially I think there's two  
6 components to this. The one is the home energy  
7 rating, which I think is an elegant, really  
8 important piece of information that doesn't have a  
9 lot of the issues. That I think inherently  
10 doesn't have too many issues. Because if the  
11 simulation model is 50 percent high let's say,  
12 across the board, actually that's okay because it  
13 is all in reference to each other.

14 And I understand I am not 100 percent  
15 clear on exactly what is in the legislation that  
16 created all of this but then there's a side about  
17 creating recommendations based on a simulation  
18 information. And I think that's where we get into  
19 really significant problems.

20 I just wanted to reiterate that  
21 regardless of the intent, if I -- especially if I  
22 tell a customer or especially if I give a customer  
23 a sheet of paper that has ROI information on it,  
24 estimated energy savings. Even if it's just  
25 totally estimated. No matter how many times I

1       disclaim it I am going to be held to hitting those  
2       numbers.

3               And we have also found that while the  
4       easiest thing to get one's head around is the  
5       energy savings component of what drives this sort  
6       of adoption, what we find across the board is that  
7       if you save \$150 a month on their energy bill they  
8       are really happy. But the people that have health  
9       and comfort issues that are resolved, they are  
10      actually the ones that go out and tell all their  
11      neighbors and are actually the big promoters of  
12      this at the end of the day.

13              And it's really a combination of these  
14      factors that leads to adoption. And it is much  
15      less energy than you would expect in terms of why  
16      people adopt. Why do people seal ducts? It is  
17      very easy to put it off until next month. But  
18      when you realize that it is also impacting your  
19      kids' asthma or allergies in the house and these  
20      sorts of things that's a really driving, emotional  
21      reason to go ahead and get the work done.

22              So I just wanted to throw my final two  
23      cents there and thank you guys very much for all  
24      of the work that you have done on this. If you  
25      can work these details out it's going to be really

1 important in this whole making energy efficiency a  
2 real thing. So thanks.

3 PRESIDING MEMBER PFANNENSTIEL: That's  
4 what we are here for, thank you. Other public  
5 comment?

6 MR. NESBITT: George Nesbitt. Utility  
7 bill analysis is such a critical thing when you  
8 have access to that data. Because rather than  
9 telling a customer, yeah, these windows are going  
10 to save 50 percent or whatever the lie is they're  
11 telling this week. You know, you can break down  
12 sometimes in 15 minutes. In 15 minutes to half an  
13 hour you know roughly what some of the big pieces  
14 of the pie are. You know, is it a heating problem  
15 or is it, you know, electrical use. You know, is  
16 it the pool, whatever.

17 Because you can tend to just come in,  
18 you come in with your solution. And even as  
19 building performance I'd say we often, you know,  
20 there's a tendency to be HVAC kind of centric and  
21 so it's easy to assume that sealing the ducts or  
22 new equipment is going to solve, you know, their  
23 energy problem, when it's the pool and the lights  
24 and a whole bunch of other stuff.

25 And also by collecting this bill data

1 when it is available we have the opportunity to go  
2 back and look at the models and tune the model. I  
3 think that's one of the most important things that  
4 needs to come out of this. Because, you know,  
5 seven years ago I found that the models in actual  
6 use were so far off. And here we are seven years  
7 later, I am looking at the software and they are  
8 still two, three times off. And not all of it is,  
9 it's not just behavior.

10 And then we do a rating and we're saying  
11 the house uses more energy than it ever will. I  
12 can show you a sample from a colleague. Barely a  
13 1,000 square foot house and the predicted heating  
14 gas use is almost as much as the 4,500 square foot  
15 house I went to last week with over 100 percent  
16 duct leakage on both systems and 100 percent  
17 return air coming from the outside on one of the  
18 systems. So, you know, there's a big mismatch  
19 between predicted and reality. And I agree the  
20 ratings have a place because you can compare  
21 roughly this house to that house. But ratings  
22 don't really tell you about that house.

23 And also just, you know, cost-  
24 effectiveness. What's the cost-effectiveness of  
25 sea rise if some of the worst-case scenarios, you

1 know. And also I think it is tough giving people  
2 savings estimates. At least when you are using  
3 real data you are going to be closer. But when  
4 you are starting with fantasy, you know, you are  
5 way off. That's it for now.

6 PRESIDING MEMBER PFANNENSTIEL: Thank  
7 you.

8 MR. SEGERSTROM: Good afternoon, Charles  
9 Segerstrom, Pacific Gas and Electric Company. I  
10 haven't spoke up yet because I'm shy.

11 (Laughter)

12 MR. SEGERSTROM: I have been listening  
13 carefully. And I actually have been listening  
14 carefully to this sort of a process since 1991  
15 serving in the creation of energy ratings in this  
16 state as well as on a national level later with  
17 the HERS Council and other groups.

18 I would like to start by absolutely  
19 commending Commission staff and consultants for  
20 doing the best job I have seen yet with the  
21 existing home rating program logic and  
22 perspective. I think even though there are  
23 details to be worked and there are important  
24 constituencies to make sure are included and heard  
25 out, this is the best I have seen so far.

1           There have been major problems with  
2 existing home ratings passing laugh tests because  
3 of the issues that we have brought up today. And  
4 I think this is the best effort to come up with  
5 what is really necessary. We need to rate the  
6 home on one hand and we need to audit the  
7 occupants. But if we mix those together we may  
8 lose sight of what we need to accomplish in this  
9 process. And that is to keep in mind who the  
10 customer is of this information. It is actually  
11 true that the customer is not just the customer.

12           You know, we have done some  
13 brainstorming recently. There are as many as 16  
14 different programs who may use the output of this  
15 process. And those 16 different programs may  
16 require consistency and rational, national  
17 conformity of some sort.

18           A concern that I have is that there are  
19 these national programs and national rating scales  
20 that have been discussed, RESNET and the  
21 Department of Energy. If those are used for tax  
22 credits or energy efficient mortgages I think we  
23 need to be careful to be reinventing the wheel  
24 that may take us off of the course of those  
25 particular programs.

1           Instead maybe we need to polish it up  
2           with some additional information, good and bad and  
3           dollar amounts, that all makes sense. But we have  
4           seen before if California is wildly different from  
5           home performance or new construction Energy Star  
6           programs we've got to build in these crosswalks.  
7           It's not 30 percent in California, it's 15  
8           percent. We can do some of that crosswalk  
9           building but the further away we get from the 16  
10          programs that this needs to support we do come up  
11          with some problems.

12                 In terms of accuracy. Back in 1993  
13          someone said on the HERS Council, this isn't  
14          rocket science. We should be able to figure this  
15          out in a few weeks. The problem is that it is not  
16          rocket science and that human beings are involved.  
17          And that this is a test not just about rhythms and  
18          assumptions but it is also, as brought up by Loren  
19          Lutzenhiser, it's a test of sociology, it's a test  
20          of people.

21                 And we need to keep all that in mind to  
22          continue to refine the process so that we get it  
23          as right as we can with our modeling but  
24          understand that if we can at least get to the  
25          middle of the road, and the least we can deal with

1 some of these issues that I think your staff and  
2 consultant have done an admirable job of getting a  
3 good new start on this. We sorely need to have  
4 this tool available to these programs that I have  
5 brought up.

6 You know, the fact that on a national  
7 basis the scale used to go from zero to 100 and  
8 matched what people expected in grade school, not  
9 on the fact that the national ratings were based  
10 on new construction programs and you could only  
11 really go from 80 to 100. And gee, that's only 20  
12 points. Part of the motivation of going towards  
13 zero was that you would get 100 points from going  
14 from 100 to zero so you got five times the point  
15 differential per unit of energy saved.

16 Now there's perceptions and realities  
17 and problems and lots of debate with scales that  
18 we could have. I just hope we don't necessarily  
19 go into completely reinventing it.

20 With regard to home performance. I echo  
21 what has been stated that we need as a state to  
22 move toward a systems approach, not a component  
23 approach. We need to understand what Bob was  
24 talking about with regard to home performance. I  
25 think this process has appropriately accommodated

1 the home performance industry. I think in terms  
2 of creating the flexibility that home performance  
3 may need in the customized portion of this is  
4 where that should reside. Because we do need to  
5 have these standardized rating results for some of  
6 the programs I've mentioned. Thank you for the  
7 opportunity. Good day.

8 PRESIDING MEMBER PFANNENSTIEL: Thank  
9 you very much. Other? Yes, Mike Hodgson.

10 MR. HODGSON: More questions. Mike  
11 Hodgson, ConSol. I understand that we are going  
12 to be gathering costs but I am trying to  
13 understand the process. And the process is a home  
14 energy rater rates the home. And it has been  
15 explained to me that they don't follow-up. They  
16 rate the home and they make recommendations based  
17 on this tool.

18 If they don't rate the home -- Excuse  
19 me. If they rate the home but they are not  
20 involved with actually the improvements how do  
21 they know what those costs are? Is there a  
22 mechanism or a requirement for the home energy  
23 rater to gather those costs? And if there is then  
24 is there a mechanism or a requirement which I have  
25 not read in the rulemaking or the language yet

1       that then they must report them to their HERS  
2       provider?

3               MR. ELEY:  There is a requirement that  
4       when a rater uses non-standard costs through the  
5       custom approach they are required to report those  
6       to the HERS provider so that the HERS provider can  
7       take those into account when the cost database is  
8       updated periodically.

9               MR. HODGSON:  Okay.

10              MR. ELEY:  The assumption is that when a  
11       rater uses alternate costs through the custom  
12       approach that those would be based on bids or  
13       data, you know, for that area and that it would be  
14       reliable information.  We don't require that they,  
15       that they go back to the homeowner after the  
16       improvements have been made and find out what the  
17       costs really were.

18              MR. HODGSON:  Okay.

19              MR. ELEY:  So I guess we are part of the  
20       way there but we don't completely close the loop.

21              MR. HODGSON:  So if I'm rating a house  
22       and I say ceiling insulation is something that is  
23       the number one thing that should be done in this  
24       1960s, whatever it is.  And the software comes out  
25       and says, that should cost \$600.

1 MR. ELEY: Right.

2 MR. HODGSON: I'm done. Because I don't  
3 know that when I go to Matt, wherever Matt went.  
4 He actually has a job so he had to go to work.  
5 And it comes back at \$2200, I am not required to  
6 find out that number, is that correct?

7 MR. ELEY: No you're not required.

8 MR. HODGSON: Nor are you capturing that  
9 data?

10 MR. ELEY: No, we're not.

11 MR. HODGSON: Okay. If I may change  
12 hats. I'm Mike Hodgson representing the  
13 California Building Industry Association.

14 PRESIDING MEMBER PFANNENSTIEL: Welcome.

15 MR. HODGSON: Thank you. I'm sorry I'm  
16 late to the party.

17 I want to express full support from the  
18 California Building Industry Association for the  
19 HERS II Rulemaking. It is something that we have  
20 been asking for for a long time and encouraging  
21 the Commission to do. I fully support Charles'  
22 comments on commending staff and their  
23 consultants. I do think this is the most thorough  
24 analysis of what can be done in a rulemaking for  
25 home energy ratings in the existing market.

1           I think we are very favorable on the  
2 rating scale. New construction should do  
3 reasonably well with the guidance of the Energy  
4 Commission's 2008 standards et al. We would like  
5 to show that new homes are efficient compared to  
6 existing homes and that's a motivation on our  
7 part.

8           We are, however, concerned that the  
9 recommendations of the process not be too complex  
10 or burdensome so that we don't spend money on  
11 ratings. Not that we are against spending money  
12 on ratings but they should be low cost, single  
13 stop and a motivation for change.

14           Where we want to spend money, the  
15 consumer's money, is in improvements in the home.  
16 So with that philosophy we are fully supportive  
17 and we will give any data that we have that's  
18 available that we're familiar with and we  
19 encourage the Commission to move forward.

20           PRESIDING MEMBER PFANNENSTIEL: Thank  
21 you, Mike.

22           MR. BACHAND: Mike Bachand again from  
23 CalCERTS. I want to reiterate something that Mike  
24 just said with a personal contact story about  
25 that. I had to replace my water heater a few

1 months ago so I called a very good, reputable  
2 contractor who said, your price is \$990, period.  
3 Oh, you want a permit. Sorry, it's \$1100. But  
4 it's \$1100 for this water heater. It doesn't  
5 matter if it takes us all day to do the job, it's  
6 one price.

7 He got out there, code problems. It  
8 didn't have a pop-off drain. It didn't have the  
9 visible drain.

10 ASSOCIATE MEMBER ROSENFELD: Sorry, I  
11 didn't hear you. He got out there and what  
12 happened?

13 MR. BACHAND: He found code violations,  
14 code problems. So the bottom line is this is a  
15 reputable guy, I know him, I've seen him a long  
16 time. \$2700 for my \$900 water heater. All I'm  
17 saying is, the bids are not enough. The proposals  
18 are not enough. That's where the business meets  
19 the road. But where the business gets done is at  
20 the end of the day when the homeowner pulls out  
21 his wallet or his checkbook and signs off on the  
22 check. So if you are going to collect data that  
23 way, collect final actual data, not proposed or  
24 bid data. That's my recommendation. Thank you.

25 I also echo the comments of the efforts

1 that have been put in on this. This is a tough  
2 nut. A lot of really talented people all across  
3 the nation have worked on this a long time. So  
4 kudos to the team. Let's make the improvements I  
5 suggested and it will be a lot better.

6 (Laughter)

7 MS. McCOLLUM: Elizabeth McCollum,  
8 Heschong Mahone Group. My concern is that  
9 multifamily buildings have been somewhat  
10 overlooked through this. The cost-effectiveness  
11 is certainly an issue with multifamily buildings.  
12 Whether it's a condo or a rental property there  
13 are a number of different issues that need to be  
14 considered in this analysis.

15 I don't think it is fair to assume that  
16 every multifamily project will need to go through  
17 the custom side of the equation. Sometimes the  
18 tenant is paying all of the utility bills and the  
19 owner who would make the improvements would not  
20 benefit from that. Vacancy can be an issue if you  
21 have to remove the tenant to do the improvements.  
22 That's another thing to consider in the cost of  
23 the upgrade. I think that we definitely need some  
24 clear cut protocols for multifamily buildings both  
25 for modeling and for the cost analysis through

1 this Phase II.

2 PRESIDING MEMBER PFANNENSTIEL: Thanks.  
3 You know, we would appreciate in your written  
4 comments if you could specify for us those areas  
5 that you think that multifamily would be different  
6 and needs some special consideration. Give us  
7 some ideas on that.

8 MR. RIEDEL: Good afternoon. I'm Randel  
9 Riedel, the managing director of the California  
10 Building Performance Contractors Association. I  
11 just had to take the opportunity also to put my  
12 thanks in to the staff. As my earlier life and  
13 career here at the Commission some twenty-plus  
14 years ago, I recall I was trying to move down this  
15 pathway. It's really -- It's taken a bit of time  
16 but it's good to see it coming to fruition.

17 I see on the presentation here, Charles,  
18 that there's a What's Next. But no comments after  
19 it so I thought I better get my comments in now.

20 (Laughter)

21 MR. RIEDEL: My What's Next is, what are  
22 the trigger events that are going to occur to  
23 actually require or to have these type of  
24 standards or regulations implemented? Are you  
25 going to be addressing that in your What's Next?

1           MR. PENNINGTON: No, there aren't any  
2 trigger events at the moment.

3           MR. RIEDEL: Okay.

4           MR. PENNINGTON: For causing this to  
5 happen. A point of sale requirement or something  
6 like that. They don't exist. We are trying to  
7 build a framework. We are trying to build an  
8 infrastructure that can be responsive to however  
9 this kind of program will get used in the future.

10          MR. RIEDEL: Do you perceive that  
11 municipalities and other people that might want to  
12 support this may seek to focus on these as  
13 requirements for some of the programs that they  
14 would like to support?

15          MR. PENNINGTON: Quite possibly.

16          MR. RIEDEL: Okay. Do you have any  
17 other ideas on how this might be approached or  
18 implemented within the industry or within this  
19 field?

20          MR. PENNINGTON: I could see a variety  
21 of incentive programs wanting to use this as a  
22 criteria for qualifying for the incentives.

23          MR. RIEDEL: Like through the utilities  
24 and as a partner in that?

25          MR. PENNINGTON: Perhaps.

1                   MR. RIEDEL: Okay. Thank you. That's  
2 what I was looking for. And thanks again for the  
3 good job.

4                   PRESIDING MEMBER PFANNENSTIEL: Thank  
5 you.

6                   ASSOCIATE MEMBER ROSENFELD: Go ahead.

7                   MR. CONLON: Tom Conlon with GeoPraxis  
8 here. On the topic of What's Next I was hoping we  
9 might have a little bit of discussion about AB  
10 2678, which I understand is parked right now.

11                  PRESIDING MEMBER PFANNENSTIEL: In  
12 suspense.

13                  MR. CONLON: In suspense. But I do  
14 believe it bears on this proceeding in the sense  
15 that it would create if it were to pass, even in  
16 its current form it would create some budget to  
17 administer regulations in this area. I believe  
18 the requirement would be on the Commission to  
19 provide staff who could develop regulations for  
20 the existing building sector. And also on the  
21 Public Utilities Commission to develop incentive  
22 programs also targeting this sector. That's my  
23 read of the legislation in its current form.

24                  PRESIDING MEMBER PFANNENSTIEL: I don't  
25 remember that it gave us any funding to do that.

1           MR. CONLON: I believe it's not been,  
2           that is proposed at this point, I believe.  
3           Perhaps that needs to be looked at again because I  
4           do think there is some money there. And that is  
5           fairly recent, a fairly recent development in that  
6           legislation.

7           My other comment was just going back,  
8           technically going back to the scenario where I  
9           have two houses on the same block facing the same  
10          direction. One has a pool and one doesn't have a  
11          pool. They would both presumably have the same  
12          HERS rating. What about if one had an air  
13          conditioner and the other one did not have an air  
14          conditioner? Again they would both have the same  
15          standard HERS rating?

16          ASSOCIATE MEMBER ROSENFELD: No.

17          MR. ELEY: They would have the same --  
18          No, if one had an air conditioner and one did not  
19          the one with the air conditioner, the efficiency  
20          of that air conditioner would be accounted for.  
21          The one without the air conditioner, the air  
22          conditioner would still be accounted for but it  
23          would be a standard air conditioner on both sides.

24          MR. CONLON: So there would -- So in  
25          other words a house with no air conditioner is

1 modeled as if it is a standard efficiency air  
2 conditioner for the HERS index purposes.

3 MR. ELEY: Right.

4 MR. CONLON: So I am just pointing those  
5 out as two important issues. The house next door  
6 to me has no air conditioner and I would be  
7 arguing that my house has a lower carbon footprint  
8 when I try to sell it. But in fact my HERS score  
9 would not be giving me credit for that. I just  
10 think that's another communications challenge if  
11 we don't address that important technical issue.

12 I underscore all the previous comments  
13 about what a great team this is. Thank you.

14 PRESIDING MEMBER PFANNENSTIEL: Thanks.  
15 Bruce, did you have comments?

16 MR. CENICEROS: Bruce Cenicerros from  
17 SMUD. And I would like to add my commendations to  
18 the staff and to the contractor team in coming up  
19 with a very good solution, probably one of the  
20 best to date, on this difficult problem of  
21 assessing the energy situation in existing homes.  
22 It is a tough nut to crack.

23 And I think the rating tool is in great  
24 shape and most of the focus at this stage probably  
25 does need to be spent on the recommendations side,

1 cost-effectiveness calculations, et cetera.

2 And I just wanted to offer one possible  
3 solution to a problem that Bob Knight brought up  
4 there with the custom approach in terms of  
5 recommending robotically in order of most cost-  
6 effective to least cost-effective, the measures  
7 that should be considered.

8 There are three approaches here, the  
9 third one of which is the customer-identified  
10 measure. Basically what you are doing is you are  
11 constraining an initial base package of measures  
12 that the customer has said they are interested in,  
13 like a PV system or a Night Breeze system or  
14 something like that. And then you are going and  
15 looking at what is cost-effective beyond that.

16 The same could be done either within  
17 this same category if you broadened it or a fourth  
18 category for what the building performance  
19 contractors typically do. They will go in,  
20 interview the client, they will find out what  
21 comfort problems they are having, moisture  
22 problems, noise problems, things like that. And  
23 they will zero in on the solutions that may or may  
24 not save a lot of energy that will solve those  
25 problems.

1           Okay, once you have that package, and  
2           that may be the ceiling, the duct ceiling, the  
3           duct reconfiguration, redesign, right-sizing of  
4           equipment, those kinds of things. You constrain  
5           that as part of the solution there. You have a  
6           cost associated with that. There will be energy  
7           savings associated with that.

8           Then once you have that fixed package  
9           you layer on top of that any additional  
10          incremental increases in efficiency of the  
11          equipment or other measures that won't be  
12          contributing to those non-energy benefit  
13          objectives that the client wants solved, those  
14          problems. And then I think you may have a  
15          workable solution here.

16          I am not suggesting that this tool  
17          should take the place of what the whole house  
18          performance contractors do. That just may allow  
19          an option for them to use this tool in a way that  
20          will either help their work -- maybe a tool they  
21          can use to develop some of these recommendations.  
22          Or at a minimum it won't conflict with the  
23          recommendations they are going to be presenting  
24          the homeowner. And they are going to see them  
25          side-by-side and go, why are you recommending all

1       this stuff. Adding \$8,000 to the cost when I can  
2       get -- you know, it's just going to raise a lot of  
3       questions if they look too different so that might  
4       be one way around that problem. That's all I  
5       have.

6                   MR. PENNINGTON: Could you elaborate on  
7       that in your comments in writing to us.

8                   MR. CENICEROS: You're assuming I have  
9       time to submit comments in the next week, right?

10                   (Laughter)

11                   MR. PENNINGTON: Or ask Janis to do it.

12                   MR. CENICEROS: She doesn't work for me.  
13       I will try and put something together for you.  
14       But this specifically concerned Section 6.2.2 and  
15       it would be augmenting the third bullet on  
16       customer-identified measures by expanding the  
17       scope of that, not just be limited to measures the  
18       customer identifies. Or adding a fourth one that  
19       might be called non-energy benefit constrain  
20       package or measures.

21                   MR. PENNINGTON: I think that idea is a  
22       very interesting idea and I would like you to, you  
23       know, explain your full thoughts on that. And you  
24       can forget any other comments that you want to  
25       submit.

1 (Laughter)

2 PRESIDING MEMBER PFANNENSTIEL: Are  
3 there -- Commissioner Rosenfeld.

4 ASSOCIATE MEMBER ROSENFELD: I'd like to  
5 make one optimistic comment. It's an obvious  
6 comment. But since people have been rightfully  
7 complaining that there's bad agreement between  
8 modeling results and utility results. That during  
9 the period in which these HERS regulations are  
10 going to take place we are going to be pretty  
11 rapidly advancing into the era where everybody is  
12 going to have integral meters. And the utility is  
13 going to know your energy use not to the nearest  
14 month but to the nearest hour.

15 That is going to mean that one can do a  
16 much better job of modeling and it also means that  
17 there will be considerably more interests. The  
18 utilities will be required and certainly plan to  
19 offer on a website if you want it your hourly  
20 energy use for the last day or the last week or  
21 the last month.

22 Electricity is going to get more  
23 interesting and it is going to get a lot easier to  
24 understand. That should make life a lot easier  
25 for all of us. There are 12 million meters in the

1 state and I guess the IOUs are all authorized to  
2 put those meters in in the next four or five  
3 years. It's a short time compared to the effort  
4 that you are launching. Obvious comment but I  
5 wanted to make it.

6 PRESIDING MEMBER PFANNENSTIEL: Well let  
7 me offer that while there is going to be a lot  
8 more information I am not sure it is necessarily  
9 going to be less complex or easier to use. There  
10 will be more of it. Especially rates might get  
11 more complicated if we have our way.

12 ASSOCIATE MEMBER ROSENFELD: Yes.

13 PRESIDING MEMBER PFANNENSTIEL: So  
14 anyway, it will be different.

15 ASSOCIATE MEMBER ROSENFELD: The very  
16 fact, Chairman Pfannenstiel, that everybody will  
17 be on time-of-use pricing. Which means everybody  
18 will have to consider whether he or she wants to  
19 pre-cool their house in the morning and coast  
20 through the afternoon. And it is just going to  
21 make electricity a lot more notable.

22 PRESIDING MEMBER PFANNENSTIEL: I think  
23 that's right and I think people will pay more  
24 attention than they have in the past.

25 Now we have a slide that talks about

1       What's Next and the schedule, the proposed  
2       schedule. Helen, do you want to lead us through  
3       that?

4               MS. LAM: Yes, sure. And I'm sorry if  
5       that slide caused some confusion but basically  
6       it's sort of our way of saying, the meeting is  
7       wrapping up.

8               (Laughter)

9               MS. LAM: Okay, so what we want to do is  
10       kind of like go over the milestones from here on.  
11       And I want to thank everybody, those speakers who  
12       have come up and gave their input to this  
13       important topic. We encourage everyone if they  
14       have additional comments to submit those comments  
15       in writing to us by August 25.

16               PRESIDING MEMBER PFANNENSTIEL: May I  
17       point out for a second that in the Notice it says  
18       August 22. So I am assuming August 25 is now the  
19       date for comments.

20               MS. LAM: August 22. Yes, this will be  
21       the date for the comments after the workshop.

22               PRESIDING MEMBER PFANNENSTIEL: Okay.

23               MS. LAM: And after that we want to be  
24       able to release -- Develop, implement and release  
25       the proposed regulations around early October.

1                   And to take that to the Efficiency  
2                   Committee meeting about late October.

3                   And we hope to have the Commission adopt  
4                   the final proposed regulations mid-December.

5                   And the anticipated regulations  
6                   effective date would be July 1, 2009.

7                   PRESIDING MEMBER PFANNENSTIEL: Great.  
8                   Any questions?

9                   Okay, this has been productive. I want  
10                  to thank Helen for organizing this and the staff  
11                  and Charles and the team for doing such a really  
12                  good, in-depth job of bringing Commissioner  
13                  Rosenfeld and me up to speed on where we are and  
14                  what the best thinking is.

15                  And I also want to thank everybody here.  
16                  I think you have raised very good, very thoughtful  
17                  points. Ones that I am assuming the team will  
18                  incorporate and that we will think about as we  
19                  look into the next steps.

20                  We are now at a point where these  
21                  regulations are about ready to be released as  
22                  proposed regulations. And then I think we'll get  
23                  one more public hearing, as I see it, for more  
24                  input. And hopefully by then we will be right  
25                  down to the last details in terms of trying to

1       finalize this.

2                   This is an incredible effort as many  
3       people have pointed out. In my four and a half  
4       years at the Energy Commission I have been looking  
5       forward to getting this done. I think that we  
6       made an incredible amount of progress from where  
7       we were just in the AB 549 Report, looking at what  
8       we didn't know. I think we are getting there.

9                   And I am hoping that will all of your  
10       good thoughts and insight and presumably written  
11       comments we will progress even further.

12                   Commissioner Rosenfeld, any final  
13       comments?

14                   ASSOCIATE MEMBER ROSENFELD: No, I think  
15       you said it well. Good job, everybody.

16                   PRESIDING MEMBER PFANNENSTIEL: Thank  
17       you all, we will be adjourned.

18                   (Whereupon, at 3:03 p.m., the Committee  
19       Workshop was adjourned.)

20                   --oOo--

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CERTIFICATE OF REPORTER

I, PETER PETTY, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Committee Workshop; 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 workshop, nor in any way interested in outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 10th day of September, 2008.

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