

<p>California Energy Commission</p> <p><b>DOCKETED</b></p> <p><b>14-BSTD-01</b></p>
<p>TN 3047</p> <p>AUG 19 2014</p>

COMMITTEE HEARING

BEFORE THE

ENERGY RESOURCES CONSERVATION AND DEVELOPMENT

COMMISSION OF THE STATE OF CALIFORNIA

In the matter of, )  
) Docket No. 14-BSTD-01  
) )  
2016 Buildings Energy )  
Efficiency Standards )

CALIFORNIA ENERGY COMMISSION

HEARING ROOM B

1516 NINTH STREET

SACRAMENTO, CALIFORNIA

WEDNESDAY, JULY 23, 2014

10:00 A.M.

Reported by:  
Kent Odell

## APPEARANCES

CEC Staff Present

Martha Brook

Mazi Shirakh

Peter Stark

Bruce Wilcox (Via WebEx)

Public Present

Bob Raymer, California Building Industry Association

Cathy Chappell, TRC

Smita Gupta, Itron

Jon McHugh, McHugh Energy

Mike Hodgson, ConSol

Ken Nettler, EnerCom

Marshall Hunt, Pacific Gas & Electric

Mark Hoeschele

Andy Wahl, AC Home Performance

George Nesbitt, HERS Rater

Roger LeBrun

Randall Higa, Southern California Edison

Craig Wheatley

David Goldstein, NRDC

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

1  
2 JULY 23, 2014

10:00 A.M.

3 MS. BROOK: For those of you online, this is  
4 Martha Brook with the California Energy Commission and  
5 we're going to begin our 2016 Standards ACM Workshop.

6 For those of you in the room, we have a signup  
7 sheet and I hope you'll staple your card to it or just  
8 fill out the information so we can contact you in the  
9 future.

10 We are going to try and do this as a WebEx  
11 meeting, so if you want to make comments we want you to  
12 do that, but you need to do it with an open mic.

13 And we have a very kind of short and brief  
14 agenda, but we also have open discussion and we hope  
15 that we spend most of our time there and talk about  
16 anything that's relevant to the compliance software for  
17 the future 2016 Building Energy Efficiency Standards.

18 So, first I'd like to introduce staff. Mazi  
19 Shirakh is our Program Manager for the 2016 Standards.  
20 Mazi, do you want to just raise your hand for the people  
21 that don't know you.

22 Todd Ferris is the Supervisor for the Compliance  
23 Software staff in our office.

24 And Sabaratnam -- Sabaratnam's not here, yet.

25 Dee Anne Ross is doing our daily care and

1 feeding of our CEBECC-Res public software tool. And  
2 Saran is the equivalent, doing the care and feeding of  
3 our nonres compliance software and helping us do the  
4 vendor testing that we do when we do the ACM approvals.

5 And I'm Martha Brook. I'm a Senior Mechanical  
6 Engineer at the Energy Commission and I've had oversight  
7 responsibilities for both the residential and  
8 nonresidential compliance software for the 2013  
9 Standards.

10 Let's see, so what we wanted to talk about today  
11 is -- can you make that little participant box go  
12 somewhere else?

13 Okay, so these are kind of just the things that  
14 we've been thinking about for things that we need to do  
15 for the 2016 Standards, some kind of fundamental changes  
16 to the ACM Approval Manual.

17 We're going to have to be talking about this at  
18 sort of a high level today. We haven't had the time to  
19 actually recommend specific document language changes.  
20 All of us on the software side of our office have been  
21 24/7 working on the 2013 Standards implementation, so we  
22 haven't had the time to make specific recommendations.

23 So, we'll talk about what we want to do. And  
24 then at the end we'll also talk about a process for next  
25 steps and how we actually get to recommending code

1 language changes to catch up with the rest of Mazi's  
2 2016 update process.

3 We think we do need to make some changes to the  
4 ACM Approval Manuals and we'll talk about that.

5 We think there's some standards cleanup that  
6 needs to be done in the main Building Standards  
7 regulation.

8 Mazi's going to introduce some residential  
9 compliance options that we're going to be implementing  
10 in the 2016 update.

11 We're going to talk about our idea for  
12 specifying performance targets in our REACH Code that  
13 goes into Title 24, Part 11.

14 And then we'll open it up for discussion about  
15 anything that anybody wants to talk about in this  
16 software domain.

17 So, ACM Approval Manuals, this is just sort of  
18 my kind of brain dump this morning about things that are  
19 on my list. I'm sure staff will have others and feel  
20 free to chime in.

21 But we need to have a quicker way to get  
22 Compliance Manager updates out to the ACM vendors. So,  
23 the Compliance Manager is what we call the CBECC-Res and  
24 the CBECC-Com compliance engine for programming  
25 interfaces or ATIs. That's that core software piece

1 that includes an analysis engine, data model and a rule  
2 set for modeling the proposed standard design buildings,  
3 the kind of core part of our performance approach.

4 We have the streamlined approval process in the  
5 ACM approval manual, but it still takes us weeks to get  
6 through that process, so it's not streamlined enough.

7 And we really need to kind of break up our  
8 manual document to today's, you know, best practice  
9 process for updating software.

10 So, we need to revisit that and really put this  
11 kind of regulatory document into sort of best practice  
12 software management process so we can actually support  
13 the vendors better.

14 So, the vision of distributing an API that the  
15 vendors can integrate in their tool only works if we  
16 give them the kind of support that they are used to  
17 providing their clients in terms of turnaround for  
18 fixes, for example.

19 So, we need to do a much better job and actually  
20 have our regulations support us in that process.

21 I'm still on that, yeah. So, that was the first  
22 bullet.

23 The other thing that we've talked about with  
24 some vendors is something that we potentially could even  
25 do with the 2013 Standards based on the current ACM

1 Approval Manual.

2 But there is interest by some vendors to take  
3 our rule set, the rule set component of our API and  
4 apply it directly into their building energy analysis  
5 framework for their software.

6 So, for example, in the CBECC, in the nonres ACM  
7 approach, for example, instead of using energy process  
8 calculation engine, a software vendor would have the  
9 option of taking our rule set that we manage and  
10 control, and applying that rule set to their building  
11 design, descriptions in their data analysis software.

12 And I think that this is very doable because we  
13 also have a requirement that the vendor software passes  
14 the ASHRAE 140 best test, which basically is a sort of  
15 comparative analysis of nonresidential building energy  
16 analysis tools.

17 So, we would, by using and keeping that  
18 requirement, we would have confidence that the vendor  
19 software would be calculating things on par with our  
20 reference method, which is Energy Plus.

21 But we don't necessarily have to require them to  
22 use Energy plus. And there's certainly benefits for  
23 both the vendors and for the Energy Commission that we  
24 need to kind of think through those and see if the pros  
25 and the cons really would kind of urge us and push in



1 the direction of facilitating this to happen. We can  
2 talk about that more this morning with some specifics,  
3 if it's helpful.

4 One of the things that we ran into just with the  
5 regular update of our residential software is that the  
6 ACM Approval Manual is not explicit about the fact that  
7 what we want to be able to do, and we think that largely  
8 we have been doing for a very long time, is having this  
9 automatic decertification of previous versions of ACM  
10 software when you updated the Compliance Manager for  
11 both the public domain software and for vendor software.

12 So, right now we potentially are acting, if you  
13 read the ACM Approval Manual, we're not following it  
14 exactly because it basically only describes this very  
15 lengthy decertification process. That's really not  
16 applicable to the regulating and updating the versions  
17 of the software.

18 So, that decertification process that's  
19 described in the manual is really talking about when  
20 some piece of software out in the market has some  
21 fundamental problems that people are finding, and are  
22 really concerned about.

23 And we have described a process for anybody to  
24 come to the Commission and say there's really something  
25 going wrong with this ACM software that you approved.

1 We need to go through the process of potentially  
2 decertifying.

3 That's not the same process we want to use every  
4 time we update the ACI and get our software and vendor  
5 software updated with fixes and new capabilities.

6 So, we just need to clarify the language to  
7 allow this other type of decertification.

8 We've been acting that way, but we're not  
9 covered in the language of that to the extent where all  
10 lawyers would want us to be, but we're working on that.

11 And then the other thing that will probably need  
12 to go into this ACM Approval Manual update is the idea  
13 that's been floated by several people, parties that  
14 participate in our standards update, and that is the  
15 approach where potentially -- so that we never have the  
16 situation where the standards implementation is delayed  
17 because of a software update not getting done in time.

18 That the Approval Manual could actually explain  
19 an alternative process where any software that's  
20 approved for the code update that's sunseting can be  
21 used for the new standard implementation by calculating  
22 some sort of a performance method that's previously  
23 approved by the Commission.

24 And that that performance metric is basically  
25 what says you pass or fail, rather than the new version

1 of the software.

2           So, for example, if it's a whole building energy  
3 use metric, at TPP per square foot per year terms, we're  
4 already producing that information in the compliance  
5 documentation, but it's not the basis of compliance.

6           So, you could say, for example, we would  
7 establish in either the Approval Manual or some other  
8 regulatory document the EUI targets you would have to  
9 meet to do this sort of next standard implementation  
10 performance calculation.

11           And the thing that's appealing to us is it's  
12 actually the same metric that we're talking about using  
13 in the REACH Code for this whole building energy use  
14 target that you would meet.

15           Instead of saying you're X percent better than  
16 base code, you actually say you're meeting this whole  
17 building EUI for either the REACH Code or for this.

18           We know short term, probably, implementation  
19 but, basically, this would only work if it has a sunset  
20 date. Basically, assume there's new software available  
21 to use and you have to use it, but this would be an  
22 interim thing that's in place at every kind of  
23 transition from code cycle to code cycle, so that you  
24 never get stuck and you don't have software to use for  
25 implementing the new standards.

1           So, that's something we want to talk about.  
2   That all kind of falls into what we would be working on  
3   for the updates of the ACM Approval Manuals.

4           So, standards cleanup, these are things that  
5   basically staff think are really important to get better  
6   in the standards because it turns out that  
7   specifications for the performance compliance approach,  
8   which gets implemented in software, are scattered  
9   throughout multiple standards documents and it's really  
10   untenable.

11           It's actually very, very difficult to actually  
12   figure out what all of the requirements are for the  
13   software when they're buried in reference appendices,  
14   they're buried in different sections of the standards.  
15   And, oh, also, by the way we have a full specification  
16   document called the ACM Reference Manual where we want  
17   all of our specifications, not just part of our  
18   specifications.

19           So, this is really just identifying areas in the  
20   regulatory language where we think we have to do  
21   cleanup. We shouldn't be specifying a performance  
22   approach in the standards document when we also specify  
23   a performance approach in the separate specifications  
24   document. It all should be in one place and that's what  
25   we'll be striving to do.

1           So, just in reality, some of the things that  
2 people are looking for in the software that aren't there  
3 yet, we're not there yet because we didn't realize they  
4 were requirements until really, really late in the  
5 process because they were buried in the reference  
6 appendices part. So, that's what we're trying to clean  
7 up.

8           So, now Mazi's going to talk about the  
9 residential compliance options that he's thought about  
10 for the 2016 standards.

11           MR. SHIRAKH: Good morning. The next slide.

12           MR. RAYMER: Are we doing questions at the end  
13 of all of this?

14           MS. BROOK: I don't really care. Do you have --

15           MR. SHIRAKH: I think we can do questions before  
16 we move to the next section.

17           MS. BROOK: Yeah, come on up, Bob. And if you  
18 could introduce yourself for the people that don't know  
19 you, that would be great.

20           MR. RAYMER: Thank you, Bob Raymer with the  
21 California Building Industry Association.

22           Regarding the issues that we just covered, we  
23 definitely like the idea of having availability to a  
24 modeling compliance tool well in advance of the  
25 effective dates.

1           And so, you know, we still have to see this in  
2 practice but that is a significant step forward and  
3 something that we'll strongly support.

4           I'm not doing energy compliance modeling myself,  
5 having others do that for us. I hope I'm not off the  
6 point here.

7           But we've run into -- let's look at the 2013  
8 Standards and the implementation of those. We've had  
9 six updates of CBECC. We're most likely heading into  
10 our seventh update, I believe, probably sometime in  
11 August.

12           And I'm assuming that every one of these had  
13 very solid technical bases for doing and fixing the bugs  
14 that we and others identify, taking care of it quickly.

15           But in the field this raises some interesting  
16 issues. And, in particular, if you're got early  
17 adopters or even those who just simply, you know, want  
18 to move forward with design now and in preparation of  
19 the July standards, they'll be using a specific program.

20           Let's say they were using 1B, or whatever, to do  
21 compliance with. And keep in mind that the building  
22 officials, of course, are obviously linked in this in  
23 the same way.

24           And so, for phased production housing, which is  
25 absolutely the vast majority of housing that goes on in

1 California today, that has significantly increased over  
2 the last ten years, you come into a serious field  
3 application issue.

4           And that is you can go ahead and develop your  
5 models off of one particular program and, in most cases,  
6 these updates don't have a significant impact on total  
7 compliance.

8           But in the particular case of moving from 1E to  
9 2.0, there was a rather significant bump. And I suspect  
10 that for a two-story single-family, as we move into the  
11 next update, assuming that all this happens on  
12 ventilation, there will be yet another significant bump.

13           Consequently, if you're not sort of putting in a  
14 fudge factor, if you're the builder and the designer,  
15 and going way over, you know, if you're right on the  
16 compliance margin with 1B it presents a host of issues  
17 for you.

18           And, in particular, you can in good faith, using  
19 the compliance modeling tools available at the time,  
20 develop products that meet the requirements of the  
21 energy regs.

22           Now, consequently, let's go to 1C, 1D, 1E, and  
23 then 2.0 and then 2 point whatever, and we're now into  
24 August or September, and you're now starting to move  
25 into phase 2 or phase 3 of the project. You've got the

1 same models. You're not making any change in this  
2 stuff.

3           And a building official, I understand it's a  
4 long-standing policy that you can continue building off  
5 of the initial program that you initially submitted  
6 under, unless you start changing your models or  
7 whatever.

8           And so that's understood. However, it would be  
9 very helpful, number one, to clarify that in writing and  
10 make it available on a very regular basis to the  
11 building departments.

12           MS. BROOK: Okay.

13           MR. RAYMER: Because what is happening is those  
14 who, in good faith, complied with 1B will now be dealing  
15 with building departments who have access only to 2.B,  
16 or whatever we're going to call it, and that raises a  
17 big issue.

18           Most building departments are one- and two-man  
19 staffs and you're lucky if they have the latest version,  
20 let alone 1A or 1B.

21           And so that's a problem. So, to the extent that  
22 we can somehow solve that in the coming two and a half,  
23 three years to make sure that it's all clear -- I kind  
24 of get the feeling that what you've done with the public  
25 domain program, this type of update is going to become



1 far fewer and, you know, longer in between because, you  
2 know, we're fixing the bugs now --

3 MS. BROOK: Right.

4 MR. RAYMER: -- as opposed to reinventing the  
5 wheel in 2016, which ain't going to be happening.

6 MS. BROOK: Right, right.

7 MR. RAYMER: So, you know, I'm just envisioning  
8 we're in a very difficult situation right now. I can  
9 tell you tomorrow -- I'm on the CALBO Energy Advisory  
10 Committee and tomorrow, at 8:30, we've got our regular  
11 monthly conference call. And I just know for a fact  
12 that every building official on there is going to be  
13 raising issues about this particular issue.

14 And that, well, they're making changes which are  
15 changing the standards after the adoption. Well,  
16 they're fixing bugs in the system is what they're doing.

17 The problem here is it impacts design. They  
18 need to have a clear understanding and industry needs to  
19 have a clear understanding that if you comply with 1B  
20 and you haven't changed your models, you're good to go.

21 But right now, you know, saying that's verbally  
22 okay at the CEC and it's in a blueprint, it would be  
23 better to make this a regular release.

24 You know, as you come up with the decertified  
25 one and go to the next one to make it very clear in that

1 press release, or whatever that, and by the way, if  
2 you've complied with the previous one you're good to go.  
3 You don't have to go back and redo plan check and all  
4 that, so that would be very helpful.

5 MS. BROOK: Okay.

6 MR. RAYMER: But we definitely like the idea of  
7 having a compliance tool ready well in advance to the  
8 effective date. So, we love that, okay.

9 MS. BROOK: Thank you. Are there any other  
10 comments before Mazi talks about residential compliance  
11 options?

12 So, John, we did mention before -- I don't  
13 remember when you came in. Right, but we have an open  
14 discussion at the end and we can talk about it any time.  
15 Okay.

16 MR. STARK: Just as a note for those that are  
17 attending remotely, if you have a comment or wish to ask  
18 a question at any time, you can click the raise-your-  
19 hand button. That lets us know that you'd like to speak  
20 and then we'll pick it up and put you on the air in  
21 here.

22 MR. SHIRAKH: There are no online comments at  
23 this point.

24 So, we'll move to the compliance option portions  
25 of this. There's really a couple of ideas that have

1 been floating around related to new compliance options  
2 for this round of standards. I mean everybody's pretty  
3 much aware of them. It shouldn't come as a surprise.

4 The first one is probably the more significant  
5 one, is the Federal take compliance option.

6 We introduced some form of photovoltaic  
7 compliance option in the 2013 Standards, and including  
8 climate zones for HVAC equipment and sizing.

9 So, that was the first time we actually had  
10 photovoltaics recognized as a compliance option.

11 MS. BROOK: Can you just clarify that you're  
12 talking about residential?

13 MR. SHIRAKH: This is residential. I'm sorry,  
14 yeah. Both of these compliance options are for  
15 residential homes.

16 So, under the 2016 Standards the idea is to  
17 basically expand that option.

18 If you guys were here two days ago, we went  
19 through the list of proposed residential measures, which  
20 included instantaneous hot water heaters, and we also  
21 had two envelope measures, the high-performance attics  
22 and high-performance walls.

23 In an earlier workshop we talked about  
24 residential lighting, high-efficacy lighting throughout  
25 the house.

1           So, those are the four main prescriptive  
2 measures or mandatory -- lighting is mandatory -- that  
3 we're introducing.

4           Two of those measures, which is the high-  
5 performance attics and high-performance walls, would be  
6 available for this tradeoff against the photovoltaics.

7           So, you know, if a builder chooses for various  
8 reasons not to do that high-performance wall or the  
9 high-performance attic, or both, they can trade those  
10 away by putting some amount of PV on site.

11           And later on I'll show about approximately how  
12 much PV it will take to do that.

13           But if a builder chooses to take the PV credit,  
14 they are required to do a QII. And the reason for that  
15 is, you know, we think that the building integrity must  
16 be protected before we add the PVs on the roof.

17           QII protocol is fairly commonplace, right, and  
18 the costs are fairly reasonable. And, you know, we  
19 think it makes sense to protect the building envelope  
20 before we require PVs up on the roof.

21           So, the baseline for PV tradeoff that cannot be  
22 traded would be the 2013 Standards requirements, all of  
23 it, including the building shell requirements. Plus,  
24 tankless water heater and QII, so that would be the --  
25 basically, you cannot trade those away.

1           You cannot trade away the QII, or the tankless,  
2 or any feature that's part of the 2013 Standards.

3           And in a way we still have a very nice, very  
4 efficient building. And so that would be the minimum  
5 requirement.

6           The next slide, please. We're also working with  
7 CPUC and IOUs to secure incentives for high-performance  
8 walls, high-performance attics, and ducts and  
9 conditioned space. I forgot to put that one up there.

10          Additionally, we are also allowing the PV  
11 tradeoff against the total glazing.

12          Under the current standards and previous  
13 standards for residential building the total building  
14 fenestration requirement was limited to 20 percent of  
15 the conditioned floor area, and 5 percent for west  
16 facing.

17          But in reality, the way models or buildings,  
18 plans work is you have usually one façade, which is the  
19 back and it has about half of the building.

20          And so, you know, as they do the floor  
21 orientation compliance, you know, that's going to be  
22 facing west.

23          So this tradeoff allows for the floor  
24 orientation compliance. You know, they can basically  
25 have one design and they can rotate it throughout the

1 subdivision as they may.

2           And there will probably be a minimum requirement  
3 for the PV size, similar to the current requirement  
4 about 2 kW.

5           And from an economic point of view, you know, 2  
6 kW makes sense because below that there's some fixed  
7 costs associated with installing PV, which is the same  
8 regardless of the size.

9           So, the cost per watt really goes up below 2 kW.  
10          And there's also, you know -- sorry.

11          MS. CHAPPELL: Can I ask a clarifying question?

12          MR. SHIRAKH: Sure.

13          MS. CHAPPELL: Okay, Cathy Chappell, TRC. So,  
14 this additional PV tradeoff for glazing area is that --  
15 is it an either, you can either do that or you can  
16 tradeoff against the HPA, HPW or is another way to think  
17 of it is the tradeoff is against high-performance  
18 attics, high-performance walls and glazing.

19          MR. SHIRAKH: The last one.

20          MS. CHAPPELL: Okay, so it's just all three  
21 combined.

22          MR. SHIRAKH: Right.

23          MS. CHAPPELL: Okay, thank you.

24          MS. GUPTA: So the 2 kW PV can tradeoff all of  
25 those three things?

1           So, this is Smita Gupta. So, the 2 kW PV can  
2 tradeoff all of those three things? It's not a  
3 performance-based PV credit.

4           MR. SHIRAKH: It is. I'll let Martha answer  
5 that one.

6           MS. BROOK: So, this is going to be a little  
7 awkward because I'm not sure Mazi and I have talked  
8 enough about this to say the same thing.

9           But so the credit will be the TVV equivalent to  
10 the difference between excessive glazing, high-  
11 performance walls, high-performance attics.

12           So, I haven't done the analysis and maybe Mazi  
13 already knows this because of the table he's going to  
14 show us next. But if you did all those three are you  
15 always under 2 kW? I don't know the answer to that.

16           MS. GUPTA: And every kind of building.

17           MS. BROOK: Right, right. But you see what I  
18 mean, we're not saying -- as long as you put in a system  
19 we're going to give you every single piece -- every  
20 single thing we think you're going to generate in terms  
21 of TVD we're not giving you. We're giving you exactly  
22 what the tradeoff is in energy for the efficiency  
23 measures.

24           MS. GUPTA: But just to clarify, so it's still  
25 not a PV performance-based credit, it's still a static

1 credit just on the static size. So, it's not the system  
2 specifics and high-performance credit or --

3 MS. BROOK: We might do one better little pinch  
4 at performance credit, but it will be all done sort of  
5 baked into a look-up table.

6 So, we might say if you -- and this, we're not  
7 sure about, but if there are significant performance  
8 differences between PV modules that we can quantify in  
9 some, you know -- by doing lots of runs with our PV  
10 calculator and identifying where we might be able to  
11 segment the performance, we might be able to do that.

12 But our ultimate goal is not to have an hourly  
13 PV calculator in this version for 2016. We're trying to  
14 not go there until we actually have PV requirements, not  
15 just tradeoffs that are pretty easily met with the  
16 worst-performing PV system and the worst orientation is  
17 sort of where we're thinking about.

18 So that's -- I don't know if you're going to  
19 speak to the issues with that, but we know there are  
20 issues with people wanting to get credit for better PV  
21 performance.

22 So, we don't have the resources to do all of  
23 that for 2016 and we're also not sure we need to based  
24 on the limited credit that we're going to be giving.  
25 But there's pros and cons and we need to think all of



1 that through.

2 MR. MC HUGH: So, just a clarifying question,  
3 Martha.

4 MS. BROOK: Name?

5 MR. MC HUGH: Oh, I'm sorry, thank you. Jon  
6 McHugh, McHugh Energy.

7 So, Martha, you're looking at -- in generating  
8 these tables you're looking at facing your panel at 110  
9 degrees from north, having a system that has a poor  
10 temperature coefficient or, basically, degradation  
11 associated with temperature.

12 And you're nodding your head yes, but maybe you  
13 want to say something?

14 MS. BROOK: No, I like to nod my head knowing  
15 nobody knows what I'm --

16 MR. MC HUGH: I always assumed that meant yes,  
17 but okay.

18 (Laughter)

19 MS. BROOK: So we have staff that have a lot of  
20 experience with using the PV calculator, so we'll be  
21 depending on them to tell us are there clear  
22 differentiations in performance that we can verify in  
23 the field without a full blown PV verification. Again,  
24 because this is a design and construction standard,  
25 right, and we're giving -- we don't want to require the

1 NSHP level of field verification for performance of PV.

2           So we need to figure out where the right place  
3 to land is in that continuum between differentiated  
4 products and having the verification in the field be too  
5 onerous and too uncertain in terms of whether we're  
6 getting what we're asking for.

7           MR. SHIRAKH: Mike?

8           MR. HODGSON: Mike Hodgson, ConSol. I really  
9 don't like the static approach at all. I think you're  
10 missing a huge market opportunity.

11           What we're trying to do, I thought, was go to  
12 zero.

13           MR. SHIRAKH: Uh-hum.

14           MR. HODGSON: And we have -- the market, we have  
15 very efficient envelopes and we can agree and disagree  
16 on how efficient they are, but we have a very efficient  
17 envelope already.

18           The industry has agreed not to go below 2013  
19 Standards, which we need some clarification on exactly  
20 what that means. But I mean that's not a big deal, I  
21 think we just clarify that.

22           And I think we have some issues with the non-  
23 stucco market that we haven't brought up, that we need  
24 to talk about.

25           But assuming, you know, I don't know the

1 workload, Martha, so I can't address that. But we're  
2 already doing New Solar Homes Partnership verification  
3 in the field now and we're doing thousands of them. And  
4 the industry's accustomed to it, so I don't see that's a  
5 burden. We're already doing it.

6 We want to encourage solar panels to get more  
7 efficient so we want to give those who give more power  
8 per square foot, for whatever, to get more credit.

9 Now, does that mean the envelope's going to  
10 slide down and we're going to trade more things off?

11 The answer is no. You have basically a deal in  
12 place where there's a minimum envelope standard with a  
13 good water heater, and whatever else we're going to  
14 decide on. But I mean I think the basis is there.

15 What we want to do is encourage people who are  
16 getting a 75 to meet code, on a HERS scale, which we  
17 don't use in California effectively at all, to get a 62,  
18 or to get a 54.

19 So, I am one production builder, and Randall's  
20 another, and we're across the street from each other.  
21 He's selling a 45, I want to go sell a 42, right.

22 MS. BROOK: Uh-hum.

23 MR. HODGSON: So, you're missing a huge market  
24 driver if you do not give them a performance -- it's not  
25 a credit because we're not downgrading the standards and

1 we're not changing --

2 MS. BROOK: So, I think what you're saying is  
3 you want to -- if we generated a design rating in the  
4 compliance documentation that is equivalent to a  
5 national HERS rating --

6 MR. HODGSON: Correct.

7 MS. BROOK: -- that it would fully value the PV  
8 component. I think that's a completely different  
9 discussion than the tradeoff PV credit that Mazi's  
10 talking about.

11 MR. HODGSON: I think it is. And I think that's  
12 a discussion the building industry wants to have.

13 MS. BROOK: Okay, good. No, I'm just clarifying  
14 it in my own mind because I'm thinking about how I would  
15 implement it in the software. And the tradeoff approach  
16 is completely different than integrating a PV  
17 calculation that differentiates performance in order to  
18 give a whole building rating that you use for other  
19 purposes besides code compliance.

20 MR. MC HUGH: So, Jon McHugh, McHugh Energy.  
21 So, just following up on that, currently in the software  
22 we have both the compliance calculation and the design  
23 rating.

24 And what Mike's talking about is something  
25 that -- because right now, as I remember, you have a PV

1 line in the compliance level, but I don't think you have  
2 another PV line in the design rating. So, this is so  
3 much PV that is allowed for the compliance calculation.

4 MS. BROOK: Right.

5 MR. MC HUGH: And then this other line below is  
6 also down there with lighting, and plug loads, and all  
7 those kinds of things that then affect the design rating  
8 and, ideally, would be the same identical format as in  
9 the HERS format.

10 MS. BROOK: Okay.

11 MR. MC HUGH: Am I catching what you're kind of  
12 looking for, Mike?

13 MR. HODGSON: Yeah, I'm looking for the latter,  
14 Jon.

15 MR. MC HUGH: Yeah.

16 MS. BROOK: Okay, good. No, that's really good  
17 information.

18 MR. HODGSON: And because I think the other, if  
19 it's just strictly a tradeoff and it's kind of static  
20 and it's transparent. I mean if you meet code, you meet  
21 code, right?

22 MR. SHIRAKH: Right.

23 MR. HODGSON: And I don't care if it's 2 kW or  
24 10 kW. But if I have a 10 kW system, I'd like to have a  
25 lower score to market it.

1 MR. SHIRAKH: Right.

2 MR. HODGSON: Because I'm going to try to drive  
3 people to buy my houses --

4 MS. BROOK: Sure, sure, sure.

5 MR. HODGSON: -- as opposed to Randall's, who  
6 are no good.

7 MR. SHIRAKH: It makes sense.

8 MS. BROOK: Yeah, come on, step up.

9 (Laughter)

10 MS. BROOK: So, we'll need to talk about that  
11 internally. We have some kind of under-the-hood issues  
12 relating to the fact that the PV calculator isn't in an  
13 open source environment. We have some real problems  
14 with updating and maintaining that.

15 So, we don't necessarily want to bring in  
16 something that kind of violates our own decisions that  
17 keep everything open source. So, we'll have to figure  
18 out how we can actually implement something like that.

19 But I think that your comments are very welcome.

20 MR. HODGSON: And I think it also coordinates  
21 with -- excuse me, this is Mike Hodgson, again. It's  
22 coordinating with our efforts to attempt to get the  
23 national rating scale and the California closer. Not  
24 necessarily similar, but closer.

25 MS. BROOK: Right.

1 MR. HODGSON: Because that also will have an  
2 impact on potentially incentives that come out from tax  
3 credits or other legislation that's national, that we do  
4 not want to be left out on.

5 MS. BROOK: Right. And I actually think that  
6 it's important that -- that this group could actually be  
7 a driver for the Commission making some decisions  
8 earlier, rather than later in that regard.

9 So, for example, the Commission -- if we bring  
10 this information to our decision makers, we could  
11 basically say for these 2016 standards we need -- we're  
12 recommending using the national baseline to calculate  
13 this design rating, for example, and just to make sure  
14 it doesn't violate any of the other proceedings that are  
15 happening around the State.

16 MR. HODGSON: Sure.

17 MS. BROOK: Okay.

18 MR. SHIRAKH: Ken.

19 MR. NETTLER: Ken Nettler with EnerCom. Can you  
20 clarify for me these last couple slides?

21 This is only going to be a performance tradeoff  
22 or it's also available under prescriptive somehow?

23 MR. SHIRAKH: Performance.

24 MR. NETTLER: So it's all performance. So, what  
25 it would do is change the standard design if you checked

1 the box that said I'm using PV?

2 MS. BROOK: No, I don't know, I think it changes  
3 the standard design. I think that it's just calculated  
4 credits on the proposed design like we do now.

5 MR. SHIRAKH: The standard design would remain  
6 the same, just propose --

7 MS. BROOK: Standard design would not have PV.

8 MR. NETTLER: Well, but how do you decide how  
9 much of HPA or HPW, or how much glass you're allowed to  
10 trade off?

11 MS. BROOK: Well, the same way we do it now,  
12 right. What we do now is --

13 MR. NETTLER: So, you're going to hardwire that  
14 based on some calculations done --

15 MR. SHIRAKH: Exactly.

16 MS. BROOK: No, no, no, right now in the  
17 software what you get for PV credit is a minimum of  
18 either the generation amount or the cooling tradeoff.  
19 And we calculate the cooling tradeoff in -- in that  
20 early rule set calculations we calculated what the  
21 credit would be for every building and every climate  
22 zone.

23 And that is, I would say, a hundred percent of  
24 the time the minimum of the two, and so that's what the  
25 credit ends up being.



1           So now we would have to for -- it's going to be  
2 much more complicated, right, so we have to figure out  
3 what the --

4           MR. NETTLER: Yeah, so before --

5           MS. BROOK: -- all those interactive things.

6           MR. NETTLER: In the 2013, yeah, it was just one  
7 thing. It was that change in cooling equipment  
8 efficiency.

9           MS. BROOK: Appliance efficiency, yeah.

10          MR. NETTLER: And not it's, I mean window area,  
11 and orientation and --

12          MS. BROOK: Yeah.

13          MR. NETTLER: Okay, thank you.

14          MR. MC HUGH: Are what you're looking at that  
15 you're -- if someone's using PV you're going to have  
16 three runs? One, which is a run that's basically the  
17 2013 baseline and making sure that all of your  
18 efficiency measures are more stringent than the 2013  
19 baseline, plus QII; and then you do a second run which  
20 is the 2016 baseline as compared to the proposed plus  
21 the PV. Is that essentially what you'd be looking at  
22 so --

23          MS. BROOK: Well, this is where I end up like  
24 wanting to kill Mazi right now.

25          (Laughter)

1 MS. BROOK: Because it --

2 MR. SHIRAKH: That's why we don't sit next to  
3 each other.

4 (Laughter)

5 MR. MC HUGH: Completely not personal.

6 MS. BROOK: I'm always like, "holy crap", now I  
7 have to implement it.

8 So, we have to think it through and we need to  
9 figure out what's a reasonable amount of resources we  
10 can apply to it and what specifications we have to make.

11 MS. CHAPPELL: This is Cathy.

12 MS. BROOK: Oh, go ahead.

13 MS. CHAPPELL: Cathy Chappell. I think this is  
14 basically the same question as Jon's or a question on  
15 the same issue.

16 But if it is just a performance approach and  
17 it's compared to the 2016, how can you guarantee that  
18 these are the only three things that it's traded off  
19 against? And I think that's what Jon was trying to get  
20 at is you do one run and you do the next run.

21 MS. BROOK: So, you know, we might be  
22 recommending we withdraw this proposal when we figure  
23 out we can't figure out how to actually implement it  
24 but --

25 MR. HODGSON: I mean -- Mike Hodgson, again.

1 Maybe it shouldn't be just performance. Maybe it should  
2 be performance and prescriptive.

3 MR. SHIRAKH: Uh-hum.

4 MR. HODGSON: I mean this is going to be -- if  
5 you can figure this out with some leeway, margins of  
6 error, you know, to the benefit of efficiency, or  
7 renewable, or both, check the box. There's 12 things  
8 you do, you walk away and you're done.

9 MR. SHIRAKH: We might be able to do that. We  
10 need to think through it.

11 MR. HODGSON: I think that may have some  
12 attraction, but I'm hanging on to the HERS score because  
13 I think that's a competitive market mover that we are  
14 going to need to move us.

15 MS. BROOK: You're right. And I'm guessing,  
16 without thinking too deeply about it, that it would be  
17 easy, pretty easy to do the prescriptive option for  
18 high-performance walls and attics because those are  
19 prescriptive requirements.

20 But anything above 20 percent, that's a lot  
21 harder, right, because it's open ended and it's pretty  
22 impossible to do a prescriptive alternative for an open  
23 ended.

24 MS. GUPTA: Right because it would be dependent  
25 on the size of the home that you're running.

1 MS. BROOK: Right.

2 MS. GUPTA: So, the 20 percent could scale to  
3 any amount there.

4 MS. BROOK: Yeah.

5 MS. GUPTA: And to add another, you know, layer  
6 while you're considering everything else, would be the  
7 PV financing model. Also, if you want to give  
8 consideration to the fact that these PV systems,  
9 typically in the new construction market, even, are now  
10 going to be leased systems.

11 And the potential persistence or the non-  
12 persistence of a measure in terms of energy efficiency,  
13 you're allowing something to trade off.

14 But with a leased system what is the guarantee  
15 that that PV system is going to stay on that building.

16 MS. BROOK: Right, right, right.

17 MS. GUPTA: Especially with changing hands of  
18 buildings and the lease liabilities that still are not  
19 completely resolved in the market.

20 MS. BROOK: Uh-hum, okay, well, that's a really  
21 good point. And the problem that we have right now is  
22 that we've heard -- we don't have good enough  
23 information about that.

24 Well, we've heard people say what you said,  
25 Smita, but then other people say they never take them

1 down, even if they -- it's too much -- too many  
2 resources to take them off the roof, right, so we're not  
3 sure what the right information is.

4           Because we haven't gone through the lifecycle of  
5 the PV or the leasing options, right. We're just at the  
6 beginning of that.

7           MS. GUPTA: Exactly the point, something to be  
8 aware of given the standards and that these buildings,  
9 especially given the ZNE goals, that if you're driving  
10 towards those this would send -- you know, this would  
11 sort of create a different market or sort of change the  
12 market, potentially, for the next steps.

13           MS. BROOK: Yeah, okay.

14           MS. GUPTA: So, you don't want to inadvertently  
15 do something that sets up a path that's not conducive to  
16 the future.

17           MS. BROOK: Right. So, you think that we could  
18 or should, actually, differentiate between owned systems  
19 and leased systems in terms of performance credits?

20           MS. GUPTA: I don't know if there's a yes or no  
21 answer to that, but basically have that factored into  
22 some sort of, you know, way of defining. If you're  
23 going for the static PV system, just as like a bottom  
24 line system or the most conservative system, setting  
25 some rules around it, potentially.

1           Or, conversely, allowing for a more performance-  
2 based system, then add more layers of criteria to what  
3 qualifies a system.

4           MS. BROOK: I see, okay.

5           MR. HODGSON: A quick comment on PPAs. The  
6 majority of new construction -- the majority of solar  
7 systems going into new construction are going under the  
8 PPA model.

9           And I don't think we understand that well  
10 enough, yet. But if you look at their business model  
11 and talk to people who are actually selling these, it's  
12 interesting, you may -- that may be the preference of  
13 the Energy Commission is to have PPAs, instead of other  
14 models.

15           And the reason is what's the incentive to take  
16 it off? There is none. The incentive is to sell them a  
17 bigger, better system. And this is a business decision.

18           So, those who are in the PPA model have an  
19 opportunity and a link to a client to say, gosh,  
20 wouldn't you like to save more energy? I've got a cell  
21 that instead of going 200 watts per square foot it's 400  
22 watts per square foot, and it's only another \$14 a  
23 month.

24           Now, it doesn't matter to you, the building has  
25 been built, it may have been there 7 to 12 years. But

1 the incentive is not to take them off. The incentive is  
2 this is a connection to the consumer, who is going to  
3 buy more stuff from me.

4 And I think we don't understand that model, yet,  
5 but I don't think we have the right perception of the  
6 model, either, because we're thinking, oh, it's a lease,  
7 they could walk away any time.

8 MS. BROOK: Right, right, right, okay.

9 MR. HODGSON: Show me the data that either way  
10 is occurring. But I think we need to talk to the  
11 industry as they're moving towards that model, which is  
12 now the dominant model in the industry, both residential  
13 retrofit and residential new.

14 MS. BROOK: Okay.

15 MS. GUPTA: Just again to add to that, that the  
16 idea to bring up these things is just as a State agency,  
17 when you're putting out codes you want to make sure of  
18 the bigger picture of where it's going. You don't want  
19 to, again, not inadvertently incentivize a larger system  
20 because you want to look at, well, why do you do ZNEs.  
21 For meeting the GHG goals, you know, looking at the  
22 higher goals of -- you don't want to send it into a  
23 direction, even like in a short term that it would be  
24 hard to sort of recant back from.

25 So, making sure that whatever thing is being put

1 into place has that long-term vision inside, and is  
2 going towards that direction.

3 MS. BROOK: Okay.

4 MR. SHIRAKH: Okay, any others? Next, please.

5 So, this is a table that, you know, I generated  
6 using CBECC and the PV Calculator. It's for the 2,100  
7 square foot prototype, single story, 90 degrees  
8 orientation, which is due east.

9 And, basically, the numbers in those columns are  
10 the kW PV, DCPV that you need to trade off.

11 One option would be to look at this and, let's  
12 say for a high-performance wall we say you need about  
13 half a kilowatt prescriptively, so .41 is the highest  
14 number there.

15 And there's .83 is the highest number. Again,  
16 climate zone 15 level requirements, that could become  
17 the prescriptive requirement, something like that.

18 But, essentially, what you have here is,  
19 depending on the climate zone, as low as 340 kW system  
20 to a high of 1.2 kW for climate zone 15.

21 And what's also interesting here in the milder  
22 climate zones, you get more savings from the walls.

23 In the harsher cooling climate zones, you get  
24 more savings from high-performance attics.

25 So, again, you know, this is based on east,



1 which is the worst orientation and it seems like the  
2 amount of PV you need for a tradeoff is fairly modest in  
3 most climate zones.

4           So, a minimum 2 kW system would probably be  
5 sufficient.

6           (Off-mic comment)

7           MR. SHIRAKH: And, yeah, this --

8           MS. GUPTA: Well, I think a clarification on  
9 that. So, when you say 2 kW that calculation is for  
10 this 2,100 square foot prototype, only.

11           MR. SHIRAKH: It will change.

12           MS. GUPTA: And will that scale with the --

13           MR. SHIRAKH: It has to scale with the size of  
14 the home, yes.

15           We have to probably come up with some kind of a  
16 regression equation and then run some more runs, and  
17 then come up with, you know, maybe BINS or, you know,  
18 some other method to capture it.

19           Because the size definitely varies with the size  
20 of the home, but it's not linear. I mean, the energy  
21 usage is not totally linear compared to -- so we have to  
22 capture that.

23           MS. BROOK: So, what you're saying is that there  
24 might be a higher minimum for larger houses than --

25           MR. SHIRAKH: Right.

1 MS. BROOK: If we did this math and came up with  
2 any number bigger than 2, then we'd have to increase the  
3 minimum requirement.

4 MR. SHIRAKH: Right.

5 MS. BROOK: Okay.

6 MR. SHIRAKH: Like, you know, if somebody's  
7 building a 3,000 square foot home, then obviously the PV  
8 requirement goes up. But it's not linear, you know, it  
9 tapers off.

10 MS. BROOK: Okay.

11 MR. SHIRAKH: Because the plug loads are  
12 different and everything else.

13 Jon?

14 MR. MC HUGH: So, what you're showing right now  
15 is something that looks fairly prescriptive. But if  
16 you're implementing this in the performance approach,  
17 and maybe you're just trying to show what the general  
18 sizes are but --

19 MS. BROOK: That's right.

20 MR. MC HUGH: -- just to clarify I'm assuming  
21 that you'd say, you know, there's so many kilowatt  
22 hours, or TDV KBtu per kW of PL and we're going to run  
23 the simulation based on, you know, it having all the HPW  
24 and HPA, and then you took them out, or are you still at  
25 a lower TDV than you would be?

1           This is just to kind of help people see that 2  
2 kW more than takes care of the --

3           MR. SHIRAKH: That's exactly the point.

4           MR. MC HUGH: Okay, thanks.

5           MR. SHIRAKH: So, any questions on this table?

6           MR. HUNT: Yeah, this is Marshall Hunt, PG&E.  
7 But windows aren't in here?

8           MR. SHIRAKH: No, this is just for HPA and HPW.  
9 I did not consider the --

10          MR. HUNT: It gets much more complicated.

11          MR. SHIRAKH: Yeah, it gets more complicated.

12          MS. GUPTA: So, again, Mazi, just to --

13          MR. SHIRAKH: So, I mean another way of doing  
14 this is maybe limiting the windows area to 30 percent  
15 and then running this, and then adding another column  
16 based on the --

17          MR. RAYMER: Well, it would make for an easy  
18 prescriptive measure.

19          MR. SHIRAKH: Yeah, I can do that.

20          MR. RAYMER: Yeah.

21          MS. GUPTA: Mazi, just one additional thing.  
22 So, is the key factor in not going to a performance-  
23 based PV approach the fact that there is not a  
24 calculation engine that's open source? Because what I'm  
25 seeing here is that there's a lot more complication and

1 layers that are being added to try to come up with the  
2 tradeoff more so than if it were a clean, performance-  
3 based tradeoff.

4           So, is the key factor just not having an open  
5 source?

6           MR. SHIRAKH: It's an open source and also it's,  
7 I think, a resource issue for us. Maybe Farhad can talk  
8 to that.

9           The PV Calculator would basically need to be  
10 updated constantly as new products come in, so it's a  
11 maintenance issue.

12           MS. BROOK: Well, the other thing, though, I  
13 think that we're kind of confusing things a little bit.  
14 I think this is really just illustrative.

15           Because we're not really -- we're not doing any  
16 sidebar calculations except -- the only thing that we're  
17 suggesting is that we somehow summarize all of the --  
18 all of the results that come out of the PV Calculator  
19 and kind of put it into a matrix approach to look up by  
20 climate zone and PV system pipe, what's the generation  
21 of kWh or kW, whatever the metric is, right.

22           MS. GUPTA: Then I don't want to beleaguer this,  
23 but the fact that, you know, a PV system's going in a  
24 single home, on different roofs, there's so many  
25 different variations to configurations there.

1 MS. BROOK: Right.

2 MS. GUPTA: To can them into a simplistic  
3 straight disincentives the industry from, you know --

4 MS. BROOK: But what I'm saying, what I'm trying  
5 to communicate is because of this -- those numbers are  
6 so low, and we already have a 2 kW minimum, why are we  
7 going to gnat's ass detail in calculating performance  
8 credits?

9 I can see it for the whole building score, but  
10 not for this credit tradeoff. It seems like overkill.

11 MR. SHIRAKH: I'm using 90 degrees orientation  
12 which is worse than the worse. I mean 110 should be --  
13 they suggest that the solar ray zone is between 110 and  
14 270. So, I'm not even using 110. I'm using 90.

15 MR. RAYMER: This is conservative.

16 MR. SHIRAKH: This is very conservative. So, if  
17 we make this the basis of the prescriptive standards, we  
18 don't have to worry about other orientations. I mean  
19 this is the worst.

20 So, I think it is possible to come up with a  
21 clean prescriptive alternative.

22 MS. BROOK: And I guess my strong opinion is  
23 that our credit -- our limitations of what we're trying  
24 to accomplish as far as the tradeoff that's going to be  
25 the constraint. It's not going to be the performance of

1 the PV system.

2 Do you see what I mean, we're saying --

3 MS. GUPTA: No, the --

4 MS. BROOK: Because if you do a 2 kW minimum,  
5 the worst performing PV panel and the worst orientation,  
6 you're still going to have enough generation to take  
7 care of the tradeoff that we're trying to limit on the  
8 efficiency side.

9 MS. GUPTA: No, no, totally agree with the  
10 safeguarding, the efficiency is definitely the high  
11 priority.

12 But just, again, looking forward and what you're  
13 setting into motion for the future in terms of the  
14 integration of, you know, distributed generation is  
15 what -- to set into motion a process and, you know, a  
16 thing in the market that can -- that you can have a  
17 continuum on rather than --

18 MS. BROOK: I think you've got a really good  
19 point and I think it's extremely applicable to Mike's  
20 request for this whole building metric that's as close  
21 to best practice calculations as possible, and that  
22 matches the national rating schemes as close as  
23 possible.

24 That's where I would agree with you. But the  
25 biggest constraint there is that we don't have an easily

1 supported ability to have an open source tool that does  
2 the hourly PV calculations.

3 MR. SHIRAKH: Any other questions on this table?  
4 Online?

5 Okay, so we can go to the next option which is  
6 the advanced whole house fans.

7 This idea is even less baked than our PV  
8 proposal, but it is an idea, so we're floating it.

9 In the 2013 Standards we required a whole house  
10 fan in climate zones 8 through 14 so that's the first  
11 time that we had some recognition for night ventilation  
12 and whole house fans.

13 We had to degrade the performance of the whole  
14 house fan by about 75 percent because of certain  
15 perceived shortcomings of these devices, which is they  
16 tend to be very noisy. And I can attest to that in my  
17 own home.

18 You know, they tend to be one large central fan,  
19 and it's hard to have like local zonal controls, like  
20 you can just do one or two rooms.

21 And they pose some security issues because a lot  
22 of doors and windows have to be open.

23 And again, for those reasons the performance was  
24 downgraded by 75 percent.

25 And then we allowed central fan integrated

1 ventilation systems as alternatives in climate zones 8  
2 through 14. And, actually, even if you installed these  
3 devices you can get a credit on top of meeting the basic  
4 prescriptive requirements.

5           So, the next slide, please. So, the idea is to  
6 go to this quieter, decentralized whole house fan that  
7 can also have some automation associated with them, and  
8 provide a credit that would be above and beyond just the  
9 prescriptive requirement. Perhaps analogous to the  
10 central fan systems that I previously described.

11           And, you know, you can do different zones. You  
12 know, if only one occupant wants to do one room and not  
13 the rest of the house, you have that option with them so  
14 you get more benefit from that. And there's probably  
15 less security concern.

16           So, we haven't really calculated the level of  
17 credit, but that's basically the idea.

18           Bruce Wilcox is online. I don't know if you  
19 have any additional comments on this, Bruce?

20           We're going to unmute you. So, you're unmuted,  
21 Bruce.

22           MR. WILCOX: Yeah, I think you covered the  
23 issues. I'll be glad to answer any questions about the  
24 issues involved, if required.

25           MR. SHIRAKH: So, any questions on this whole



1 house fan credit? So, Mike and Bob are competing. Bob,  
2 you go first.

3 MR. RAYMER: Bob Raymer with CBI. So, you're  
4 just looking at taking the current prescriptive  
5 requirement for whole house fans in those zones and sort  
6 of updating it to --

7 MS. BROOK: Well, we're not changing the  
8 prescriptive requirements.

9 MR. SHIRAKH: The prescriptive requirement is  
10 not going to change. This would be an additional  
11 compliance option.

12 MR. RAYMER: Oh, okay.

13 MS. BROOK: Yeah, so the whole house fan is the  
14 prescriptive requirement.

15 MR. RAYMER: So that stays the same. This is  
16 now if you do it this way, you're going to get more  
17 credit.

18 MR. SHIRAKH: You get more credit.

19 MS. BROOK: Yeah.

20 MR. RAYMER: Fine, yeah.

21 MR. SHIRAKH: Okay, so Marshall.

22 MR. HUNT: Marshall Hunt, Pacific Gas &  
23 Electric.

24 So, always the problem with any kind of forced  
25 ventilation is what's the natural ventilation case? And

1 so I understand there is some work being done on that,  
2 thinking about how to correct that better. So, do we  
3 have any status on that or will that be incorporated?

4 MS. BROOK: Version 3 CBECC Res.

5 MR. HUNT: I don't know versions but --

6 MS. BROOK: So, we're currently at Version 2B  
7 and we're going to have a Version 2C bug fix coming out  
8 today. And Version 3 is scheduled for early August.

9 You guys are going to love Version 3, it's a lot  
10 of times faster, it's got everything you ever wanted.

11 (Laughter)

12 MR. WILCOX: I think I'd like to clarify that.

13 (Laughter)

14 MR. WILCOX: No, go ahead.

15 MR. HUNT: Well, back on that issue, one of the  
16 struggles we have with products and with the utilities  
17 is everybody know whole house fans can really save  
18 energy and increase comfort. And yet, our minders at  
19 the CPUC say that it uses more energy than it saves so,  
20 yeah --

21 MR. RAYMER: (Off-mic comment)

22 MR. HUNT: It's going to be buried in their  
23 assumptions about natural ventilation. And the  
24 particular group who's running their special model, we  
25 need to somehow get them to listen to the Energy

1 Commission and the research done. So, we'll be looking  
2 forward to your help.

3 The other issue is the dampers. How do we  
4 account for the leakage in the winter? Because when we  
5 think about dampers and economizers, we think about an  
6 amp at standard.

7 So, is there any talk about how you keep the  
8 back flow of cold air in the winter, and things like  
9 that in that arena?

10 MS. BROOK: Yeah, so Bruce, could you speak to  
11 that because we did look at that and decided it was  
12 relatively insignificant.

13 MR. SHIRAKH: Right.

14 MS. BROOK: But if you could clarify that that  
15 would be great.

16 MR. WILCOX: Well, so the simple, traditional  
17 whole house fan where the damper is a gravity operated  
18 machine that's sitting right there in your hallway, and  
19 you can see it. I think we've decided -- well, we  
20 account for the added leakage that you get in a typical  
21 system like that, and that's built into the model.

22 So, the heating -- when you put a whole house  
23 fan in, your heating energy use goes up in the current  
24 model.

25 I think the situation is somewhat different when

1 you go to this advanced whole house fan where we're  
2 talking about an automated damper that provides inlet  
3 air. And that's a much more significant issue, I think,  
4 in terms of reliability.

5 And I don't know of any applicable test methods,  
6 Marshall, but if you would like to suggest one I think  
7 that would be a very relevant thing to do as part of  
8 this measure.

9 MR. HUNT: This is Marshall Hunt. Yes, we'll get  
10 that to you.

11 MR. WILCOX: Good.

12 MR. SHIRAKH: Okay, any other questions on --

13 MR. MC HUGH: Yeah, I've got a couple of  
14 questions.

15 MR. STARK: Let's go to the person online,  
16 they've had their hands raised. This is someone named  
17 George. George, you're unmuted.

18 MR. NESBITT: Can you hear me?

19 MR. STARK: Yeah, we can hear you.

20 MR. NESBITT: Yes, George Nesbitt, HERS rater.  
21 So, on the (inaudible) --

22 MR. SHIRAKH: George, you're not coming through.  
23 We cannot hear you or understand you. You sound like  
24 you're at the bottom of a well.

25 MR. NESBITT: I could call on (inaudible) --

1 MR. SHIRAKH: Okay, why don't you try that  
2 because I know you're -- it's really not understandable.

3 MR. NESBITT: Yeah, okay, I'll call in.

4 MR. STARK: Okay. There is Mark Hoeschele is  
5 raising his hand but he is -- he is not associated with  
6 a specific -- he's not linked his phone to his login, so  
7 I'm going to have to unmute the call-in users to find  
8 out which one is him.

9 MS. BROOK: Okay.

10 MR. STARK: Mark, can you speak up?

11 MR. HOESCHELE: Yes, this is Mark. Can you hear  
12 me?

13 MR. STARK: Yes, you are call-in user six.

14 MR. HOESCHELE: Hi, this is Mark Hoeschele. I  
15 just want to raise the issue of as we move forward with  
16 the standards and improving the overall efficiency of  
17 homes, and budgets are coming down, that we pay  
18 increasing attention to -- in order not to discourage  
19 the implementation of new technologies that we pay  
20 attention to and document the performance of the natural  
21 ventilation base case. And verify that the way we are  
22 modeling it is consistent with reality.

23 So, I strongly, you know, support additional  
24 field research to show that how we're modeling things is  
25 accurate.

1 MR. SHIRAKH: Thank you, Mark.

2 Jon, did you have a question?

3 MR. MC HUGH: Yeah, I've got a couple of  
4 questions. So, the first one is I look at this picture,  
5 it looks like it's an exhaust fan. Do you have a -- is  
6 this proposal to have a balanced system where you have a  
7 supply fan and an exhaust fan?

8 MR. SHIRAKH: This is not an exhaust fan.

9 MR. MC HUGH: That's a supply fan and you're  
10 pulling air out of the attic?

11 MR. SHIRAKH: So, if you look at the right  
12 picture, the fan is near the top is, yeah -- yeah,  
13 you've got to. Yeah, so it's just pulling air, just  
14 like a whole house fan it's just the fan, itself is  
15 removed and that's what makes it so quiet. And it's  
16 blowing the air into the attic just like a whole house  
17 fan.

18 MR. MC HUGH: Okay, so it's an exhaust fan. So,  
19 it's not a balanced system.

20 MR. SHIRAKH: Right. You still have to open a  
21 window.

22 MR. MC HUGH: Yeah, so you have to open a window  
23 so --

24 MR. SHIRAKH: Or you can have automatic dampers.

25 MR. STARK: And to be clear, under HVI's

1 classification, this would be classified as a  
2 residential exhaust fan, not a whole house fan, but it  
3 is serving the same function as a whole house fan.

4 MR. MC HUGH: Right. Okay, so why is the  
5 security issue less, just because --

6 MS. BROOK: Well, it's not in this case, unless  
7 they have the inland dampers.

8 MR. SHIRAKH: If they have the inland dampers it  
9 could be -- it's possible, you know, just to open the  
10 windows in one zone and not the entire house.

11 MR. MC HUGH: The whole house. Well, you can do  
12 that with the whole house fan though, too.

13 MR. SHIRAKH: No, you can't. You have to  
14 have -- I know, because when you have 5,000, 6,000 cfm  
15 going you need a lot more. But, you know, you can have  
16 these in 2,000 cfm increments and you can just open the  
17 door just upstairs or the master bedroom.

18 MR. MC HUGH: Right. So, are you looking at  
19 different credits depending on whether you have some  
20 kind of automated damper versus a window?

21 MR. SHIRAKH: I think an automated damper would  
22 definitely get a bigger credit.

23 MR. MC HUGH: Okay, thank you.

24 MR. SHIRAKH: But even without it I think you  
25 can assume that, you know, these will be more utilized.

1 The noise, by itself, I think it's a very big issue.

2 MR. MC HUGH: Right. Okay, thank you.

3 MR. STARK: George has switched from his handset  
4 to a phone, so I'll go ahead and put George back on the  
5 line. Then we have someone else in the audience that  
6 wants to --

7 MR. SHIRAKH: If there's somebody in the  
8 audience, then we'll go to George.

9 MR. STARK: Oh, you want to do the audience  
10 first, okay.

11 MR. SHIRAKH: Yeah.

12 MR. WAHL: Yeah, Andy Wahl, AC Home Performance.

13 MR. STARK: Raise the mic closer to you.

14 MR. WAHL: I'm okay with whole house fans with  
15 the exception of we need to deal with air ceiling, the  
16 crawl spaces because we're pulling the air out of the  
17 crawl spaces. The house does go more negative.

18 And we also have to deal with any kind of open  
19 combustion appliances that could flame roll out when  
20 these are running. Because the people don't open the  
21 windows and they turn enough of these on, and if  
22 something like a water heater were to kick on, we could  
23 be burning houses down.

24 I don't know if there's any studies to that or  
25 not. But I'm not concerned so much about the combustion



1 products if we're dragging enough air through the house  
2 that it's going to ventilate it, anyway. It's the flame  
3 rollout that is a bigger concern. Thank you.

4 MR. SHIRAKH: Thank you.

5 MR. STARK: All right, George, you are unmuted.

6 MR. NESBITT: Yes, can you hear me?

7 MR. STARK: Yes, we can hear you. You sound  
8 clearer now.

9 MR. NESBITT: George Nesbitt, HERS rater.

10 So, if I understand this, so currently under  
11 2013 you get credit for a traditional whole house fan.  
12 You get more credit for a central integrated fan, whole  
13 house fan.

14 MR. SHIRAKH: Right.

15 MR. NESBITT: Correct. So, is this proposal  
16 then that a sort of distributed central house fan would  
17 get more credit than a central?

18 MR. SHIRAKH: So, I think the slide says there  
19 has to be at least two of these fans. And, practically,  
20 the way that the cfm of these units are generated lower  
21 than the central, so in most homes to meet the  
22 requirements you'd probably need at least two of them.

23 So, that would be one requirement is to have  
24 multiple units.

25 MR. NESBITT: So, would the credit be equal to a

1 central fan integrated, would it be more, would it be  
2 less?

3 MR. SHIRAKH: That's what we're -- you know, we  
4 have to model it. But, you know, it's going to be  
5 similar to that. It's going to provide additional  
6 credit. You know, where it's exactly going to land I  
7 don't know at this point.

8 MR. NESBITT: Okay. It does seem that I think  
9 whether it's a distributed whole house fan or even a  
10 traditional whole house fan we may want to consider  
11 requiring makeup air. And, you know, I believe that's  
12 been done at times with even things like swamp coolers,  
13 rather than, you know, pressurizing the house completely  
14 and actually having some sort of, you know, automatic  
15 relief just because of the --

16 MR. SHIRAKH: Well, with these fans you just  
17 open a window or two and you don't need a supply air.  
18 And you still could create an imbalance if you use a  
19 swamp because the cfms will have to match and who's  
20 going to make sure that that's taking place?

21 MR. NESBITT: Oh, I think some of these systems  
22 that are distributed, I do think come with automatic --  
23 you know, have a makeup air.

24 MR. SHIRAKH: There is homes in Stockton that  
25 Bruce Wilcox retrofitted that come with automatic

1 louvers. It is a choice but, you know, some people  
2 think they're ugly, too.

3           So, we're not imposing that as a requirement.  
4 But, you know, if somebody wants to do it then I didn't  
5 think it looked that bad, actually, but it's a personal  
6 preference. But we're not making that a requirement for  
7 this compliance option.

8           MR. NESBITT: Okay, in that sense I think that  
9 it would make sense to give it less credit than a  
10 central fan integrated.

11           Maybe if you have the option of having  
12 integrated makeup air then it would get as much credit.

13           Although, you know, there again I think, you  
14 know, how much research or data do we have comparing the  
15 three different types of whole house fan systems and  
16 their relative savings benefits and costs.

17           MR. SHIRAKH: Yeah, and we'll be looking at the  
18 amount of credit. When Bruce Wilcox is not buried with  
19 2013 stuff that's what he'll be doing.

20           Any other questions?

21           MR. STARK: Mark Hoeschele still has his hand  
22 up. I don't know if that's a -- if he has an additional  
23 comment. I'm going to unmute his line.

24           Mark, do you have an additional comment?

25           MR. SHIRAKH: I think this was from before,

1 okay.

2 MR. STARK: We do have a comment, then, from  
3 Roger LeBrun. LeBrun, you should be unmuted.

4 MR. LE BRUN: Yes, if you can hear me?

5 MR. STARK: Yes.

6 MR. LE BRUN: I am calling because we have done  
7 some studies -- a recent study about the relative value  
8 of whole house fans versus vented skylights. And it  
9 seems like some of the negative features that were  
10 raised about the whole house fan and the negative  
11 pressurization would not be an issue for the vented  
12 skylight that would be self-regulating.

13 But I referenced a study and that study proved  
14 that in a two-story house, with a proper location of a  
15 skylight, it can actually do the same job as a whole  
16 house fan with less energy consumption over the course  
17 of a year.

18 MR. SHIRAKH: If you have that data can you --

19 MR. LE BRUN: We wondered if you had considered  
20 that as an alternative.

21 MR. SHIRAKH: No, I have not. But can you send  
22 us that information?

23 MR. LE BRUN: Yes, I'd be happy to. To your  
24 attention?

25 MR. SHIRAKH: Yes.

1 MR. LE BRUN: Thank you, Mazi.

2 MR. SHIRAKH: Sure. Other comments on the whole  
3 house fan?

4 MR. STARK: I'm not seeing anyone else with  
5 their hand raised.

6 MR. SHIRAKH: All right, we'll move to the next  
7 topic.

8 MR. STARK: All right.

9 MS. BROOK: So, we don't have any proposed  
10 compliance options for nonres, but if anybody wants to  
11 suggest what we should be prioritizing for the 2016  
12 update.

13 Let's see, what can I say? I know that the  
14 variable refrigerant flow manufacturers are working with  
15 our CBECC-Com development team to get a compliance  
16 option in place for their equipment.

17 I know that IES also may be working on a  
18 compliance option for several technologies. I don't  
19 know if you want to talk about that, Craig, or not.

20 And also, EnergyPro, at least until December has  
21 a compliance option for VRF, but they can't use it until  
22 they submit it for approval by the Commission.

23 But I don't know, we haven't, to be honest with  
24 you, thought about 2016 for nonres in terms of what  
25 additional functionality should be at the top of our

1 list, but we're very open to suggestions.

2 MR. SHIRAKH: You know, there was another one  
3 you may want to put on your list that CASE teams are  
4 working on the thermal cooling compliance option, so  
5 that should be there.

6 MS. BROOK: Okay.

7 MR. SHIRAKH: Actually, it is an active CASE  
8 report that they're working on.

9 MS. BROOK: Okay. And, hopefully, they're using  
10 CBECC-Com to do that analysis and then we could  
11 integrate it more seamlessly.

12 MR. HIGA: Randall Higa, Southern California  
13 Edison.

14 My recollection is the CASE team's not doing the  
15 software side of the thermally-driven cooling.

16 MS. BROOK: Okay.

17 MR. HIGA: Okay. Marshall said -- that's  
18 correct.

19 So, the question is will there be software that  
20 will be able to model that compliance option?

21 MR. SHIRAKH: Well, you know, our hope was that  
22 whatever comes of the CASE report can be integrated into  
23 the CBECC-Com.

24 MS. BROOK: Okay, well, it can't be done without  
25 resources, right? So, that's really the issue, should

1 that be at the top of our list for 2016 or are there  
2 other technologies that would trump thermal-driven  
3 cooling?

4 Because, basically, to get it into the public  
5 domain, API, it has to go through a process where we  
6 write the rules for how that system ought to be treated  
7 in the compliance analysis, and also we have to write  
8 the translation piece between our data model and the  
9 open studio, Energy Plus, in order to actually get it to  
10 go all the way through the system.

11 I don't know, Craig, if you already -- your  
12 commercial environment tool already models thermally-  
13 driven chillers and we'd want to consider that as a  
14 compliance option.

15 MR. WHEATLEY: Well, we think we might have an  
16 issue in the language. Can you describe to me exactly  
17 what you mean by thermally-driven cooling?

18 MR. SHIRAKH: So, thermally-driven cooling is a  
19 compliance option designed to take advantage of any  
20 waste heat that's available within the building, or any  
21 solar resources, solar thermal resources that might be  
22 available that can drive an absorption or an adsorption  
23 chiller.

24 And so, the goal of the compliance option is to  
25 come up with the algorithms to capture the benefits of

1 using the solar fraction and the waste heat that are  
2 augmented by natural gas when you drive a thermally -- a  
3 chiller. Like it could be a desiccant, it could be  
4 absorption or adsorption chiller.

5 MR. WHEATLEY: I think in the short answer it's  
6 yes, then.

7 MS. BROOK: So, your tool already inherently  
8 models that capability and you can talk to anybody here,  
9 or any other stakeholders to decide what kind of  
10 priority you should put on submitting that as a  
11 compliance option to the Energy Commission.

12 MR. WHEATLEY: Well, and data -- in this space  
13 where it's actually seeking from the customers of what  
14 they want us to do, first. So, yeah, that sounds like a  
15 great idea to me, but I'll let them decide.

16 MS. BROOK: Okay.

17 MR. SHIRAKH: This could also be an element of  
18 combined heat and power in it, too.

19 MR. WHEATLEY: And that's something else we  
20 could do, as well.

21 MR. STARK: I do see a couple of people with  
22 their hand raised. George, do you have a comment on  
23 this topic? I'm not hearing --

24 MR. NESBITT: Sorry. I had myself on mute.

25 MR. STARK: All right.



1           MR. NESBITT: Yeah, George Nesbitt, HERS rater.  
2 An issue I brought up in the 2013 process multiple times  
3 is HERS verification for nonres.

4           It's been my experience working on multiple high  
5 rise, multi-family projects that insulation is installed  
6 as poorly as it has been in low-rise residential all  
7 along.

8           Also, things like building air leakage.  
9 Apparently it doesn't matter in large buildings, but we  
10 do account for it in low-rise residential.

11           Duct testing, you know, and anything else that's  
12 appropriate, those should be there. Especially for  
13 high-rise multi-family because there's just really --  
14 it's a lot harder to get credit in high-rise multi-  
15 family.

16           And the precedence is we've been doing high-rise  
17 multi-family verifications in the utility rebate  
18 program. Actually, I've been doing it going back to  
19 2005.

20           MS. BROOK: So, this is -- George, this is  
21 Martha. And my comment's going to make it painfully  
22 obvious that I don't know the standards as well as the  
23 rest of you.

24           But are you saying that we ought to be putting  
25 this as requirements in our prescriptive standards that

1 then translate into the baseline for our performance  
2 approach or are you just saying that we don't give  
3 credits the way we need to give credits in our  
4 performance approach for things that are already  
5 prescriptive requirements for a high-rise multi-family?

6 MR. NESBITT: Well, okay, there is virtually  
7 no -- there is no credit, HERS credit in nonres,  
8 including high-rise multi-family for QII, air leakage,  
9 most everything else. So, that's what I'm saying.

10 It should at least be a compliance option.

11 MS. BROOK: Okay.

12 MR. NESBITT: And honestly I think the other  
13 issue with nonres is, honestly, high-rise, multi-family  
14 does not belong in the nonresidential.

15 When you model the same building with the exact  
16 same assemblies as a low-rise residential and as a high-  
17 rise, you go from -- and I'm talking about a heating-  
18 dominated climate is what I've typically run it in.

19 In low-rise residential it's a heating-dominated  
20 and central water-heating dominated building.

21 You know tell the computer it's a high-rise  
22 residential project. It now goes to a cooling-dominated  
23 building and the energy use intensity doubles.

24 That's not reality. I think high-rise multi-  
25 family probably is a lot more similar to the rest of the

1 residential than it is to commercial.

2 MS. BROOK: Okay, thank you.

3 MR. SHIRAKH: Is it lunchtime already?

4 MS. BROOK: I'm getting hungry.

5 MR. STARK: We've got two more hands up but I  
6 don't know if they have -- if they're hands that didn't  
7 go down earlier, so I don't know if they're --

8 MS. BROOK: Okay.

9 MR. STARK: All right, so Roger, you still have  
10 your hand up. Do you have a comment on this topic?  
11 Roger?

12 MR. LE BRUN: Oh, I'm sorry. If my hand's still  
13 up, I meant to pull it down.

14 MR. STARK: Okay, no problem.

15 We have, let's see -- yeah, Mark, what was it,  
16 Hoeschele. Your hand is still up. Did you have a  
17 comment on this topic?

18 MR. SHIRAKH: I think it's from before.

19 MR. STARK: I'm just guessing he doesn't.

20 We do have a hand up for a David Goldstein.  
21 David, you're unmuted.

22 MR. GOLDSTEIN: Hi, David Goldstein with NRDC.  
23 I wanted to echo the comments of the HERS rater just a  
24 moment ago that the Commission ought to be looking how  
25 to make -- that high-rise model and because it's more

1 similar to low-rise.

2 This is something, actually, that RESNET is also  
3 looking into from the direction of on a national level.  
4 They're starting to issue some guidance on how to change  
5 the scope of RESNET Standard 3.1 to include higher value  
6 from mixed-use residential.

7 So, again, there's no reason why a four-story  
8 building is found much differently than a three-story  
9 building.

10 MR. SHIRAKH: David, you know, we fundamentally  
11 agree with what you're proposing.

12 We actually -- there was a suggestion to look at  
13 this very same issue a few months ago when we were, you  
14 know, coming up with the list of our 2016 Standard  
15 measures.

16 This was a resource issue for us because it's  
17 easier said than done. You know, there's a lot that has  
18 to happen to separate all the high-rise nonresidential  
19 and come up with a different set of standards.

20 And although we agree, it probably will be a  
21 2019 standard rather than a 2016.

22 MR. GOLDSTEIN: Thanks.

23 MR. STARK: All right, I am not seeing any  
24 additional comments. Let me check the chat log.

25 We have Greg Towsley, who had a comment on fans,

1 saying, "health concerns should be also considered".

2 Terry McGowan is saying he didn't see anything  
3 specifically about the Title 24 residential lighting  
4 proposals on the agenda slides. Will that subject be  
5 included at some point?

6 I don't believe the residential lighting  
7 proposals are a topic in this meeting. That was the  
8 workshop on the 21st.

9 MS. BROOK: This is Martha. I guess just to  
10 clarify, historically residential lighting has not been  
11 part of the performance compliance budget calculation,  
12 so they are, you know, basically mandatory requirements  
13 that aren't included in the performance tradeoff  
14 approach that's implemented through compliance software.

15 MR. SHIRAKH: Yeah, and for us to make it part  
16 of the performance software it has to become a  
17 prescriptive measure similar to nonres, with watts per  
18 square foot, and so forth.

19 And, you know, it's just not a practical thing  
20 for residential homes. You know, mandatory measures are  
21 more straight forward, it's easier to enforce and  
22 understand, so we're not going to go there.

23 MR. STARK: Okay, George is -- he said he raised  
24 his hand again, but his hand isn't raised right now.  
25 I'm just going to unmute him to check.

1           George, did you have an additional comment you  
2 wanted to make?

3           MR. NESBITT: Yes, George Nesbitt, again. I  
4 actually raised both the HERS verification, as well as  
5 the issue of high-rise multi-family calculating really  
6 wrong in the 2013 update.

7           And, just a reminder, the high-rise multi-family  
8 follows the residential lighting for interior unit, as  
9 well as the domestic hot water.

10           So, high-rise multi-family and motel occupancies  
11 are already sort of half in, you know, the low-rise  
12 residential portion. It's really the building enclosure  
13 that is primarily.

14           And, you know, primarily they're residential  
15 with a little bit of commercial type central system, you  
16 know, maybe on corridors or on some common space. So,  
17 they're really a lot more like low-rise residential than  
18 a commercial building.

19           MS. BROOK: Okay, thanks George.

20           MR. NETTLER: Can I have a comment on the multi-  
21 family?

22           MS. BROOK: Uh-hum.

23           MR. NETTLER: It may be the case, or I view the  
24 distinction probably more closely related to the  
25 mechanical systems. And so, maybe -- so we have this,

1 the building code has the three-story-or-less thing.

2           Maybe there could be cases of mid-rise, or high-  
3 rise, or four-story, or six-story where the distinction  
4 is based on the equipment type. So that it could be  
5 handled probably with a minimal of fuss in the current  
6 res software.

7           So, if you had, you know, package sorts of  
8 equipment serving individual dwelling units that's the  
9 case where the larger buildings probably could be  
10 treated under the regular residential.

11           MS. BROOK: That's a very good point, thank you.

12           And that was Ken Nettler, by the way, if you  
13 were curious.

14           Anything else before we move on?

15           MR. STARK: George is now raising his hand. I  
16 don't know if that's a new comment.

17           MS. BROOK: I can't tell if George is talking to  
18 himself or if he's talking to us. Just because it says  
19 privately and I understand how that's working by itself.

20           MR. STARK: As someone explained what that is,  
21 that means a message sent by a chat person to us, that  
22 is to the podium, as opposed to one that is visible to  
23 all of the other people that are in the chat log.

24           So, this is something that is a message sent to  
25 us to let him -- well, here, he put his hand back down

1 so I'm guessing that was --

2 MS. BROOK: Okay.

3 MR. STARK: But I should note, "privately" does  
4 not mean non-public. This isn't confidential. It just  
5 means one that is only visible to the podium, which is  
6 usually he's saying something like we can't hear the  
7 speaker or something of that nature.

8 MS. BROOK: So, I think if I remember this slide  
9 deck correctly, we're ready to move to open discussion.  
10 But could you just confirm that? Oh, shoot, sorry, not  
11 quite yet.

12 (Laughter)

13 MS. BROOK: So, the 2016 Reach Code. If you  
14 aren't familiar with this, this is Title 24, Part 11.  
15 This is voluntary standards -- well, there are some  
16 mandatory requirements in Part 11, but the energy  
17 chapter of Part 11 is voluntary.

18 But what we have been doing for several years is  
19 establishing Tier 1 and Tier 2 levels of energy  
20 performance that then local governments can adopt as  
21 mandatory for their jurisdictions.

22 And, historically, we've always done this based  
23 on the performance calculation with our software, where  
24 we'd say you're 15 percent or 30 percent better than the  
25 base level.



1           And what we want to do is move to a whole  
2 building energy-use-per-square-foot-per-year kind of a  
3 metric that's consistent with new and existing building  
4 rating schemes. And get everybody started thinking  
5 about getting to zero in terms of where you are on this  
6 performance scale, rather than a percent better  
7 calculation.

8           So, we will be actually producing this whole  
9 building energy use calculation for the 2013 Standards  
10 implementation.

11           But what we'd like to do in 2016 is actually  
12 establish what those performance targets ought to be and  
13 publish them in the Reach Code, of Tier 1 and Tier 2  
14 categories of the energy chapter of Part 11.

15           But we haven't done the work to actually say  
16 what those targets ought to be, but that's work that we  
17 will have to do in this code cycle pretty quickly  
18 because it has to stay on track with the Part 11 updates  
19 for the 2016 Standards.

20           MR. STARK: Bob Raymer with CBI. Will this be  
21 discussed in more detail at the August 8th, where you're  
22 talking about CalGreen update? You've got a workshop  
23 planned for --

24           MR. SHIRAKH: Yeah, it's August 6th.

25           MR. RAYMER: August 6th.

1 MS. BROOK: Well, I mean I would say that  
2 ideally, yes.

3 MR. RAYMER: Okay.

4 MS. BROOK: But, practically, we won't have the  
5 work done.

6 MR. RAYMER: Understood. Maybe we --

7 MS. BROOK: So, we can talk about whether it's  
8 more appropriate to have that meeting after we have the  
9 targets established or whether we should just mark on  
10 and talk in generalities at that meeting.

11 MR. RAYMER: There's no rush. In the coming  
12 months we'll be raising, not necessarily the issue,  
13 you're already very well aware of this, but when a local  
14 jurisdiction grabs onto one of the tiers right now, or  
15 however you're going to portray this for 2016, they have  
16 a statutory requirement, in addition to filing it with  
17 the Building Standards Commission and, of course, have  
18 to bring it to you with a study, you know, showing cost  
19 effectiveness.

20 Now, as you well know, the CEC doesn't have the  
21 authority to look into the cost-effectiveness study.

22 But if there's a sort of huge change in the way  
23 that this information is presented, you know, moving  
24 away from 15 percent to something else, to the extent  
25 that the CEC over the next couple of years can help sort

1 of provide local governments and industry with some  
2 guidance on what all this means, and how they might want  
3 to consider going about doing that cost-effectiveness  
4 study.

5 Because, quite frankly, a lot of these cities  
6 and counties, currently, when they go to these tiers, if  
7 and when they do, they just simply do it relatively  
8 blindly.

9 And then assume that the CEC's kind of worked  
10 this out and then they do very hastily put together a  
11 cost impact study.

12 This could add a little bit more confusion to  
13 that. But, once again, I've got to see how it is  
14 portrayed. So, yeah, we'll deal with this over the  
15 coming months.

16 MS. BROOK: Okay. I'd say that historically,  
17 even though we haven't published the information, we  
18 have set the Tier 1 Reach Code in a place where we could  
19 defend that it was cost effective. But we haven't done  
20 the same thing for Tier 2.

21 MR. RAYMER: Okay.

22 MS. BROOK: Because that really is where we  
23 would consider it a Reach level of performance.

24 But we haven't, for better or for worse,  
25 published any of that information that anybody could

1 use.

2 MR. RAYMER: All right.

3 MR. HODGSON: Mike Hodgson, ConSol. Are we  
4 talking res or nonres, or both here?

5 MS. BROOK: Both.

6 MR. HODGSON: Both okay. So, the concern I have  
7 on the nonres side is we're benchmarking buildings now  
8 with EUIs, using Energy Star Portfolio, and it's not in  
9 kTDV per square foot per year.

10 And so, we're going to be mixing metrics with  
11 the same acronym and that seems to me to be quite  
12 confusing to the building owner.

13 So, I'm not sure how we do that or whether you  
14 use a different acronym than Energy Star does or --

15 MS. BROOK: Yeah, yeah, yeah, yeah, so we'll  
16 have to make it clear that it's a design rating, or it's  
17 an asset rating, or it's something that's not an energy  
18 use target, or whatever the Energy Star benchmark term  
19 is.

20 MR. HODGSON: Correct, okay.

21 MR. HUNT: Hi, Marshall Hunt, PG&E. So, what's  
22 your target for 2013, the EIU Reach Code concept?

23 MS. BROOK: So, we have it on our list to get  
24 it -- it's already generated in the compliance software,  
25 it's just not published in the compliance documentation.

1           So, the numbers there we just have to get into  
2 the report, so we think we can do it in the next update  
3 of the CBECC-Res and CEBECC-Com software tool.

4           MR. HUNT: Three.

5           MS. BROOK: So, definitely three for res. I  
6 need to check back and see if it's on the version 3 list  
7 for nonres.

8           MR. HUNT: Thank you.

9           MR. STARK: All right, we have a comment from  
10 George, online. All right, George has a hand up and  
11 David has a hand up. I'll unmute George, first.  
12 George, you are live.

13          MR. NESBITT: Can you hear me?

14          MR. STARK: Yes.

15          MR. NESBITT: Yeah, George Nesbitt, HERS rater.  
16 Back in 2008 we spent a lot of time developing the HERS  
17 rating system which, according to the Energy  
18 Commission's Real Estate Disclosure booklet applies to  
19 all single-family, multi-family, existing as well as new  
20 homes.

21           So, I have -- since our goal of zero net energy  
22 by 2020 for all homes is our goal, and the way we are  
23 defining it and have defined it since 2008 is net zero  
24 time dependent value, I propose that our Reach standard  
25 or CalGreen should reference the HERS rating system

1 starting in 2016, or actually 2017, if we're going to  
2 get there by 2020.

3 And nationally, the HERS rating system is really  
4 exploding in its use. It's being used to market. More  
5 and more builders are committing to using it, they're  
6 doing it.

7 As Mike Hodgson mentioned, I think we really  
8 need to -- we really need to get it out on the street.

9 I proposed, in 2008, that we also be able to  
10 calculate a national HERS score for comparison. I don't  
11 think we could ever get them the same just because we  
12 are using different metrics.

13 And the other point I'd like to make is I think  
14 as long as we've had a performance -- or since 2001 the  
15 energy use intensity metric in the Energy Code has  
16 always been kBtu per square foot. That is an energy use  
17 intensity number.

18 What we don't have is static parts. They change  
19 based on the standard design, which changes based on  
20 proposed design. Thanks.

21 MR. STARK: Okay, I also have David with his  
22 hand up. David, you are live.

23 MR. GOLDSTEIN: Thanks. I wanted to follow up a  
24 little bit on Mike Hodgson's comments about the  
25 comparability of operational ratings through the EPA

1 benchmarking system and the asset ratings generated  
2 through Title 24.

3           And I've written this up in detail about asset  
4 ratings should not and do not predict operational  
5 ratings for any particular building.

6           Frankly, you want them to be predictive on  
7 average. And in order to know if that's right, we need  
8 to establish some kind of a feedback group between  
9 predictive energy use and metered energy use.

10           So, I would suggest that the Commission or its  
11 staff try to figure what is a crosswalk between a  
12 typical building use pattern, what the kTDV is compared  
13 to what kBtu sourced energy is.

14           There shouldn't be that much difference. And  
15 since for any individual building you're going to have  
16 to explain why my building with my tenants operated the  
17 way I did it doesn't exactly agree with the asset  
18 rating, it may be more or it may be less. Showing them  
19 the difference between TDV and source level (inaudible)  
20 is one more reason. It doesn't seem to me to be that  
21 troublesome.

22           MS. BROOK: David, this is Martha. I'm just to  
23 ask a question to make sure -- well, because I don't  
24 think I understood you completely.

25           Are you suggesting that we would work out some

1 scheme where we would adjust a metered energy use number  
2 to be equivalent to a TDV calculation in terms of, you  
3 know, somehow moving from the rate that they experienced  
4 in that meter to what we're assuming is the average  
5 consumer time dependent valuation cost of energy?

6 MR. GOLDSTEIN: Yeah, Martha, something like  
7 that. I mean you could do it either way. You could  
8 either say based on the modeling if you have a kTDV of a  
9 million, on the average you should have a kBtu of  
10 250,000.

11 Or you could do it the other way, you could say  
12 if I have a metered reading that's less than 10 kBtu  
13 over all, how much TDV is that likely to be on average.

14 MS. BROOK: Okay, okay, interesting. Thank you.

15 MR. GOLDSTEIN: Thank you.

16 MR. STARK: All right, George, you put your hand  
17 back up. Did you have an additional comment to make?

18 MR. NESBITT: No, sorry, I didn't raise it -- or  
19 I didn't lower it, sorry.

20 MR. STARK: Okay. I believe that's it for the  
21 comments that we have online.

22 I also do not see anything new through chat.

23 MS. BROOK: Okay. So, I think the next slide is  
24 open discussion, which that's Mazi. That's not you  
25 guys. That's Mazi's picture.



1 (Laughter)

2 MR. SHIRAKH: This is when I was a teenager,  
3 when I was cute.

4 (Laughter)

5 MS. BROOK: So, I guess just to start this off,  
6 maybe we can talk a little bit about if we did this sort  
7 of whole building energy use target in 2016 Reach Code,  
8 and had it as an available option for the implementation  
9 of the standards in case, for some reason that we don't  
10 ever expect, the software's not ready in time for the  
11 next update.

12 There's also been discussion about this national  
13 ASHRAE. Is it a standard, now, or is it just a  
14 recommendation?

15 MR. MC HUGH: It's out for public review.

16 MS. BROOK: Yeah, it's a -- do you want to talk  
17 a little bit about that and how it might relate or be  
18 equivalent to what we're thinking about?

19 MR. MC HUGH: Sure. This is Jon McHugh, over at  
20 McHugh Energy. And this is actually something that I'd  
21 submitted to the California Energy Commission for both  
22 the residential and nonresidential software.

23 I think, Martha, in their opening comments had  
24 talked about this for the residential software and I  
25 think it is just as applicable for the nonresidential

1 software, which is as part of the process of adoption  
2 the Energy Commission does what they call their "Impacts  
3 Report".

4 And they compare the savings from the proposed  
5 new code cycles compared to the last code cycle.

6 And different from the EUI, this actually is in  
7 terms of percent better than the prior standard.

8 And the idea is that, essentially, during a  
9 transition period you can make use of, essentially,  
10 those adjustment factors from the prior code cycle to  
11 the next code cycle.

12 And since you're only looking at one code cycle,  
13 you know, the numbers are relatively small as compared  
14 to the ASHRAE Addenda BM, which is out for public  
15 review.

16 For whatever reason they chose, they're actually  
17 looking at using the 2004 baseline, you know, so it's a  
18 code that's ten years old as compared to something, you  
19 know, potentially for 2016.

20 So, you know, there's been 12 years and actually  
21 a substantial number of different areas that are now  
22 regulated, such as computer rooms, and process loads.

23 And so, that actually, I think, is a larger lift  
24 than what I've suggested as an interim process between  
25 software, which would essentially do two things.

1           One, it would adopt or implement in the  
2 software, early on, all of the mandatory measures. So,  
3 those are things that aren't necessarily directly  
4 modeled, but have to be captured in terms of forms, and  
5 that sort of thing that, yes, I did do all those  
6 mandatory measures that are, you know, generated by the  
7 software.

8           And then, until all of the new rules are  
9 developed to actually allow that, let's say, you know,  
10 the new code is 10 percent more stringent.

11           So, as a result you would take the old software,  
12 and in this case when you're talking about the 2013  
13 software, say that if you exceed or if your energy  
14 consumption -- or TDV energy consumption is less than 90  
15 percent of the 2013 value, then you're good.

16           And that this would be the case until you  
17 actually have the new software that actually implements  
18 all of those rule sets.

19           And so, it allows for two things. One is  
20 potentially a less chaotic adjustment between code  
21 cycles.

22           And the other thing is early compliance so that  
23 builders and other folks could, you know, potentially  
24 have incentive programs that say, you know, yeah, we're  
25 still in a 2013 code cycle. But if I adopt early 2017,

1 would you offer me some money to do that?

2 And it sounds like Bob wants to say something.

3 MR. RAYMER: Well, I assume that's -- this is  
4 Bob Raymer, CBI.

5 I assume that's what Martha was sort of  
6 referring to at the beginning of today's meeting.

7 That, you know, as we're developing updated  
8 software you've got this sort of nice -- I don't want to  
9 say off ramp, but you've got a nice parallel track where  
10 using existing one, do a percentage, and boom there you  
11 go.

12 MS. BROOK: Yeah, and I guess the thing we need  
13 to keep thinking about and deciding is if it's better to  
14 do it on a percent better basis or the equivalent full  
15 building EUI basis.

16 I think they have the same problems, right? The  
17 fact is that when we do that determination of how much  
18 better a current -- the next code update's going to be  
19 than the existing one, it's an average value, right.

20 And we've prided ourselves that our performance  
21 approach is building-specific and that you're doing  
22 everything on a per-building basis.

23 And so that -- if it's percent better or if it's  
24 a fixed EUI that represents a percent better, you're  
25 still going to have the problem that sometimes it's

1 going to work out for the building to be pretty close  
2 what we would expect that building to be for the next  
3 code update. Sometimes it's not.

4 And I guess what we're saying is that because  
5 it's an interim process and it's this transition, we're  
6 okay with that lack of purity in our performance  
7 approach.

8 We know we're going to get it wrong sometimes  
9 and sometimes it's going to be easier to comply with and  
10 sometimes it's going to be harder to comply with that  
11 fixed number than it will be when we get the new  
12 software in place.

13 MR. MC HUGH: So, just to reply about percent  
14 better and EUI being -- I know that there's been a lot  
15 of interest. You know, Charles Eley had written this  
16 whole thing about the zEPI standard, et cetera.

17 But the issue is that the percent better really  
18 talks about what is the change to the rule set that --  
19 so, when I look at percent better, I'm saying that I  
20 have modeled in my software the geometry, the kinds of  
21 occupancies, et cetera and I actually have a fairly  
22 detailed rule set about the base consumption.

23 And the EUI actually kind of throw that out  
24 because, you know, unless you have this huge table  
25 that's a million cells large --

1 MS. BROOK: Right, right, agreed.

2 MR. MC HUGH: So, to me, I actually don't think  
3 that they're comparable. That a percent better actually  
4 is --

5 MS. BROOK: It does the building-specific thing  
6 better.

7 MR. MC HUGH: Right. Now, that being said, the  
8 percent better, I'm presuming we'd still do something  
9 that's similar to what ASHRAE's done for BM, which is to  
10 look at by building type and by climate zone.

11 So, it's still a matrix, but still, you know,  
12 it's 11 by 16. Not, you know, all of the various  
13 permutations that you'd have with the EUI.

14 MS. BROOK: Right. Go ahead, Ken.

15 MR. NETTLER: So, on this issue of -- Ken  
16 Nettler with EnerCom -- of a transition method or a way  
17 that we all agree that you could move forward on  
18 software, I'd just like to point out what's probably  
19 obvious. It's that nowadays things are so  
20 interconnected. It's not just software. It's HERS  
21 verification. It's the forms.

22 How one of Bob's members would deal with  
23 something after the standard goes on, would they still  
24 be allowed to go back and do 15, or whatever the number  
25 was, of some older version of software?

1           Well, my point is especially this particular  
2 code cycle. There were major changes to all of these  
3 legs of the stool. And so just be careful about saying  
4 it's only one thing, like software.

5           MS. BROOK: Okay.

6           MR. NETTLER: Somebody has to think through how  
7 the verification works.

8           MS. BROOK: Right.

9           MR. NETTLER: And the final thing on the  
10 software is the last couple of cycles we've introduced  
11 technology that wasn't in the software before. You  
12 know, like whole house fans. Let's say this time maybe  
13 it's advanced things, and so there will be some  
14 awkwardness occasionally when you're looking for  
15 capabilities that might not be in the current software.

16          MS. BROOK: Right, right.

17          MR. MC HUGH: Yeah, new measures you can't  
18 avoid, right. I mean that's --

19          MR. NETTLER: You understand we need a process  
20 that accommodates it. That's all I wanted to say.

21          MS. BROOK: You're right. And I think from CEC  
22 staff's perspective, we have to find that delicate  
23 balance between spending very limited resources on  
24 working out this thing we hope we never have to use,  
25 right.

1           Because if we want this thing to be legitimate,  
2 we have to spend some time thinking through all the  
3 issues and doing it right.

4           But it's really a fallback position for when the  
5 software's not ready, right, which we don't ever want to  
6 have happen again, right.

7           So, anyway, it's going to be a delicate balance  
8 to figure out where we land there, to be honest with  
9 you. That's just my opinion.

10           MR. MC HUGH: So, I'd just like to point out  
11 that there's still a lot of things that are still the  
12 same. Because all of the mandatory measures, you still  
13 have to address those sorts of things. All of the form  
14 generation you still have to address.

15           MS. BROOK: Right, right.

16           MR. MC HUGH: And so, what we're really talking  
17 about is the stuff that's under the hood for the  
18 prescriptive measures and those tradeoffs.

19           MS. BROOK: Okay.

20           MR. MC HUGH: But it's not going to be easy,  
21 right.

22           MS. BROOK: The other thing that came to mind  
23 for me is that we are trying our best to also open the  
24 software up so it's more easily used by the utility  
25 incentive programs, for their incentive calculations.



1 And I think we've succeeded in that, to a large degree,  
2 with the California Advanced Home Program, where Version  
3 3 is going to have the CAP calculations in it, and the  
4 special data tab we go to, to do your math to see what  
5 your incentive calculation is.

6 That will be available to all vendors' software,  
7 also.

8 Well, doesn't it sort of make sense that if  
9 we're doing this sort of transition thing and a Reach  
10 Code, that we would use the same metric? So, maybe we  
11 talk about a CAP score metric instead of -- anyway, it's  
12 sort of ironic because they wanted to do the CAP  
13 calculations based on the HERS score, but then we told  
14 them that we can't use the HERS score because a lot of  
15 the other regulatory issues with using that.

16 And so, I think they would want to work with us  
17 on doing something that sort of is seamless between  
18 incentive programs and code requirements in this sort of  
19 calculation space.

20 MS. BROOK: Sorry, I've been warned that I am  
21 not following the --

22 (Laughter)

23 MS. BROOK: Somebody else can repeat it. It's a  
24 test.

25 MR. RAYMER: Bob Raymer with CBI. Since I'm

1 going to be asked tomorrow, when do you foresee the next  
2 version of CBECC being certified, August or when?

3 MS. BROOK: So, we actually have a meeting this  
4 afternoon to nail down that schedule, but we're trying  
5 to hit an early August date.

6 MR. RAYMER: Cool, thank you.

7 MR. STARK: George, I see that your hand's up  
8 again. I'm going to unmute you.

9 George, you are unmuted.

10 MR. NESBITT: Can you hear me?

11 MR. STARK: Yes.

12 MR. NESBITT: Yes, George Nesbitt. Sort of to  
13 follow up on what Jon was talking about in change of  
14 code cycle, what CTAC, the California Tax Credit  
15 Allocation Committee, which doles out Federal tax  
16 credits for affordable housing did is for the  
17 submissions for funding through the first half of 2014,  
18 what they did is they based their energy points on 2008  
19 energy code, but increased the percentage better.

20 I haven't seen any proposal on what they're  
21 going to do now that 2013 code is in effect. And, of  
22 course, they're funding projects that aren't pulling  
23 permits until they hit 2013 code which, you know, means  
24 rerunning things.

25 So, I think we have -- you know, we could have

1 done that rather than delaying the 2013 code, but chose  
2 not to. I think that is a possibility.

3 I think there's nothing wrong with percentage  
4 above code, per se. I think the issue is that the code  
5 basis changes so much based on your building, now. In  
6 2013 we've buttoned that down a little bit.

7 The HERS rating score is really, and CAP score,  
8 I mean all of these are really all percentage above some  
9 baseline.

10 Nationally, it's now the 2006 IECC. And for  
11 California it's the 2008 Energy Code.

12 But I mean, I think, you know, the question is  
13 when we hit 2020, if everything's supposed to be zero,  
14 that is actually 100 percent above 2008 code, you know,  
15 maybe it's percentage above is not relevant.

16 And as we up each cycle, tiers need to have  
17 lower percentage thresholds because it does become  
18 harder and harder to hit a certain percentage above.

19 And then, I'd actually like to go back to the PV  
20 because Mazi -- Mazi changed slides, but he changed  
21 topics, so I didn't get to raise my hand in time.

22 I just wanted to say that I think we have to  
23 remember that PV is not an efficiency measure. It's a  
24 power generation alternative. And there's a lot of --  
25 that people actually increase their electrical use

1 because of net metering and time-of-use rates, and the  
2 way that's structured currently.

3 And I think in the context of net zero energy by  
4 2020 obviously PV has to become part of the Energy Code  
5 calculation. That's the only way you'll get to net zero  
6 TDV.

7 Currently, the NSHP calculator is how we do it.  
8 It's how we do it for HERS ratings. It's how we do it  
9 in the NSHP program. It's written into the standards.  
10 It could be implemented into CBECC and it's going to  
11 have to be, as well as the HERS rating system.

12 And, you know, as Mike Hodgson said, there's a  
13 lot of projects out there that are in an NSHP. We're  
14 doing the verifications. We're doing those  
15 calculations. We can account for differences in  
16 performance, and shading, and module efficiency.

17 Verifying a PV system is relatively simple and  
18 quick.

19 And yes we, as HERS raters, do find systems that  
20 have wiring problems and aren't working right. So, it  
21 is quite valuable.

22 And so, we really need to start implementing the  
23 HERS rating system now and make whatever changes we do  
24 need to make to it. But, you know, it is -- the  
25 California Energy Commission adopted it in 2008, so it

1 is regulation and we should be using it.

2 MS. BROOK: Okay, George, yeah, thank you. And  
3 we largely agree with you. We are just having trouble  
4 with timing, right, because these standards updates keep  
5 marching along and we're having trouble finding the  
6 resources to get a HERS rulemaking underway that would  
7 allow us to make modifications for us to actually  
8 integrate a HERS design rating into our compliance  
9 process.

10 MR. NESBITT: I can write a blank check.

11 MS. BROOK: Okay, no, I'd like that. That  
12 sounds really good.

13 MR. NESBITT: It will bounce but --

14 MS. BROOK: No, no, no, no. I thought you were  
15 going to write a check to me. And I didn't know it was  
16 going to bounce, though. I don't want it anymore.

17 (Laughter)

18 MR. NESBITT: Well, I think we do have  
19 resources. I think one of them that I notice is that we  
20 have needs to support and develop the Energy Code, and  
21 the HERS rating system. And then we have research  
22 money, PIER and EPIC, and there's still not always  
23 alignment.

24 And there is money and there's stuff going on  
25 and perhaps, you know, even within the Commission it

1 could be better coordinated.

2 MS. BROOK: Okay, yeah, agreed.

3 MR. SHIRAKH: Well, thank you, George. You're  
4 breaking up again.

5 MS. BROOK: Do we want to -- does anybody else  
6 have a topic for open discussion that they want to bring  
7 forward?

8 I do have another topic I want to introduce, but  
9 I don't want to hog the discussion period. So, if  
10 anybody wants to bring something forward, now would be a  
11 good time.

12 Nobody, nobody, okay.

13 So, now I'm going to ask Randall to step up.

14 I wanted to just kind of revisit our original  
15 vision for this open source software for code compliance  
16 really was that we would get to a place where there's  
17 more of a collaboration for the support and development  
18 of the software.

19 And, I mean I think we have, you know, some  
20 examples like the CAP program participation. Basically,  
21 we had the CAP consultants learn our rule set, and make  
22 modifications for our rule set, and they developed a  
23 screen for the CBECC-Res interface that, basically, it's  
24 a really good example of that collaborative process.

25 I mean, ideally, we get to a place where, you

1 know, vendors are learning our rule set and making  
2 contributions to our rule set, and all interested  
3 parties have that same option. And people are seeing  
4 the value of making modifications for a body of rule  
5 sets for additional policy applications.

6 And I just wanted to introduce Randall and let  
7 him speak to this topic a little bit because I think  
8 he's beginning to poke at this. And from his  
9 perspective, maybe he can tell us what he's doing.

10 MR. HIGA: Thanks Martha. This is Randall Higa,  
11 Southern California Edison.

12 I just want to preface this by saying, you know,  
13 this is something that is in a very sort of high level  
14 sort of area where we're still sort of thinking about  
15 what the scope of this endeavor would be.

16 So, what I'm trying to do is have a study done  
17 that will sort of map out what Martha was talking about.  
18 You know, what are we going to do with compliance  
19 software, and not just compliance software, but energy  
20 building modeling in general, you know, going forward.

21 So, my plan is to get under contract that study  
22 by the end of the year, so there will be an RFP being  
23 issued. So, if anybody's interested, first of all  
24 please contact me.

25 And like I say, we're still developing the

1 scope. But the idea is look long term, as well as short  
2 term. I think we still want to take a look at what we  
3 can do, should do for 2016, but maybe 2019 for sure  
4 because that's when the residential ZNE requirements are  
5 in place. So, it's going to be residential and  
6 nonresidential.

7 But also, look towards nonresidential ZNE in  
8 2030.

9 You know, one of the options that is being  
10 looked at is to open up the software development  
11 maintenance, ongoing operation in an environment that's  
12 fully open and public. And it may not be something that  
13 is housed directly under the California Energy  
14 Commission.

15 Certainly, as far as compliance software goes,  
16 it will be under the direction of the CEC.

17 But the actual IT processes, the contracting,  
18 and whatnot could be in some sort of third party, maybe  
19 NGO, a nonprofit organization, or whatever. You know, I  
20 mean that certainly has to be looked at, where is the  
21 best place to house that.

22 And the idea would be to allow for funding from  
23 a number of different sources. But, you know, again  
24 with the key thing is to keep it public and open.

25 But also, encourage and solicit a lot of new



1 input to the development, maintenance, improvements of  
2 the software so that, you know, we can develop some sort  
3 of environment that would attract the best and the  
4 brightest to come and support software development.

5           Again, this is sort of a long term thing. And  
6 again, looking at how it may deal with such things as,  
7 you know, operational versus asset rating type analysis,  
8 to what extent should it be predictive? How does it  
9 sort of come together with benchmarking, building  
10 labeling, and all these other things that are sort of on  
11 the horizon, HERS ratings, of course.

12           And, of course, you know, how it would work with  
13 the utility incentive programs.

14           So, there's a lot of moving parts and pieces to  
15 this. There always has been.

16           And one thought is how do we sort of, you know,  
17 maybe house this in a better environment to make it work  
18 better for everybody.

19           MS. BROOK: Great.

20           MR. HIGA: So, anyway, I'll just leave it at  
21 that for now, if there are any questions or input. Like  
22 I say, you know, if you have any thoughts or input, you  
23 could contact me offline, too.

24           MS. BROOK: Yeah, and this is important to the  
25 Energy Commission because we really need to see a long-

1 term plan where we can understand that our resources are  
2 sufficient to do all the things that we want to do.

3           And, you know, just hearing about what some of  
4 the things are that you guys want us to do in the 2016  
5 update, I know already we have resource constraints that  
6 are going to make that difficult.

7           And so, it just seems to me that we're in a  
8 position where we have more, and more, and more  
9 requirements and derivative policy things that happen  
10 with this core kind of compliance software piece. We  
11 have to acknowledge that in sort of a holistic way in  
12 order to best fund it and best understand how we kind of  
13 move from where we are now to where we want to be in the  
14 future.

15           And then the other thing that's always bugging  
16 me is that, with maybe a couple of exceptions, we're all  
17 sort of at the last half of our professional careers.  
18 And how do we get the people that are just entering the  
19 building industry, you know, the smart people that we're  
20 hiring and that we want to hire to get into this field  
21 and to take it forward into the next generations.

22           I just think we have an obligation to kind of  
23 work on that. And this sort of a collaborative option,  
24 where we bring in, you know, universities and colleges  
25 to participate with us could be very, very productive.

1           But we need -- we don't even have the time to  
2 think about it right now, and that's the thing that's  
3 frustrating is that we would like to have some help, you  
4 know, with this strategic planning, and I think it could  
5 benefit all of us.

6           MR. SHIRAKH: I'm not adding to it.

7           (Laughter)

8           MS. BROOK: Well, so we're pretty much at the  
9 end of our agenda. And if we don't have additional  
10 input, then this would be a great time to stop. And we  
11 could actually have lunch, which, at least for the last  
12 couple of days, is sort of a novelty here at the  
13 Commission.

14           So, if there are no other comments, we really  
15 appreciate your participation.

16           And Jon wants to say something.

17           MR. MC HUGH: Yeah, and I'd just like to just  
18 provide some kudos for the team here. I mean they've  
19 done an incredible lift this code cycle.

20           I think about, you know, the basis of the Title  
21 24 simulation tool was using, you know, DOE 2.1e, which  
22 I think was released about the time I was in graduate  
23 school, about 25 years ago.

24           And so, we have been using, you know, all these  
25 years what I call is sort of a fly that was kind of

1 captured in amber. And we had all these colluges that  
2 were around that basic core.

3 So, I just want to, you know, really recognize  
4 Martha and the rest of the team that's been working on  
5 this.

6 I know it's the CEC and folks that have been  
7 doing this. So, anyway, I just wanted to say that and  
8 thank you.

9 MS. BROOK: Okay, so we do rely and depend on  
10 your participation going forward. And as you can tell,  
11 we aren't as far along in providing specific  
12 recommendations as we would like to.

13 So, any contributions you can make would be  
14 appreciated.

15 And have a great day and I'm sure I'll be  
16 talking to you all soon. Thanks.

17 (Thereupon, the Workshop was adjourned at  
18 12:05 p.m.)

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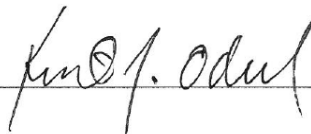
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Kent Odell  
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