

BEFORE THE  
CALIFORNIA ENERGY COMMISSION

In the Matter of: )  
 ) Docket No. 08-WHCE-1  
2008 Rulemaking on Implementation )  
of the Waste Heat and Carbon )  
Emissions Reduction Act Pursuant )  
To Assembly Bill 1613 )

Electricity and Natural Gas Committee Workshop:  
Combined Heat and Power Guidelines

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

**DOCKET**

**08-WHCE-1**

DATE OCT 12 2009

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MONDAY, OCTOBER 12, 2009

9:00 a.m.

Reported by:  
Peter Petty  
Contract Number:



**ORIGINAL**

Commissioners (and their advisors) Present

Jeffrey D. Byron  
Kristy Chew, His Advisor  
James D. Boyd, Vice Chair  
Sarah Michael, His Advisor

Staff Present:

Linda Kelly  
Arthur J. Soinski  
Galen Lemei

Presenters

Ray Williams, Pacific Gas and Electric (PG&E)

Also Present ( Via WebEx)

Public

Gordon Judd, NRG Thermal LLC  
Mark Rawson, Sacramento Municipal Utilities District (SMUD)  
Michael Colvin, CA Public Utilities Commission (PUC)  
Keith Davidson, DE Solutions  
Gerome Torribio, Southern California Edison (SCE)  
Tom Delfino, AMEC  
Carl Silsbee, Southern California Edison  
Norman Pedersen, Southern California Public Power Authority  
(SCPPA)

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P R O C E E D I N G S

OCTOBER 12, 2009 9:05 a.m.

COMMISSIONER BYRON: I would like to welcome you all to a committee workshop on Combined Heat and Power Guidelines. I will turn it over to Ms. Kelly first because it looks like she is ready to speak, and then we will do introductions here at the Dais. Ms. Kelly.

MS. KELLY: Okay, fine. Welcome, everybody. This is the AB 1613 Waste Heat and Carbon Emission Reduction Act Guidelines, Forms, Response and Comments. Before we get started, as Commissioner Byron said, I would just like to go over some logistics.

First of all, the bathrooms are out to the right over here as you come in the door on this side, and behind the guard, there are also restrooms there and water fountains. There is also -- I am supposed to read a -- this is for evacuations, in case there is a fire drill or any other kind of emergency, just to keep in mind that -- please follow our employees to the appropriate exits, here and here, and go across the street to Roosevelt Park, which is located diagonally from the Energy Commission, please proceed calmly, quickly, and again following the employees with whom you are meeting to a location that they will direct you to. When if all clear, and if it is a fire drill and they indicate that we can come back, please follow those

1 same people and you are welcome to come back into the  
2 building. There is also a snack place upstairs where you  
3 can get coffee, it is on the second floor, and you do not  
4 need to be signed in order to go up to that part of the  
5 Energy Commission.

6 For WebEx, which we are trying to get going and  
7 started here, for those who might be on the phone and have  
8 not signed in to WebEx, if you go to  
9 [www.energy.ca.gov/wasteheat](http://www.energy.ca.gov/wasteheat), you will find that is the Waste  
10 Heat Section for AB 1613. The Notices and documents  
11 section, if you click on that, you will get to the Notice  
12 for this workshop, and the notice for this workshop has  
13 complete directions about how to get onto WebEx, how to use  
14 the call-in telephone, and how to file comments for this  
15 workshop. If you have any difficulty figuring that out,  
16 please call WebEx technical support at 1-866-229-3239.

17 During the day, as we proceed, the intent is to  
18 have presentations followed by questions and answers, which  
19 are indicated on our Agenda. So what we would like to do is  
20 break the day up into a number of sections and Mr. Soinski  
21 will discuss the guidelines, then he will discuss the forms,  
22 and then some issues, but between each of those sections,  
23 you are free to ask questions or make comments.

24 Commissioner Byron and Boyd will go first, and then anybody  
25 from the audience, it is not a large group, please feel free

1 to just come up to the podium and ask your questions or make  
2 comments. We have also reserved a section at the end of the  
3 morning for public comments. If you have a presentation or  
4 if you have some specific comments that you would like to  
5 make to the committee, there is time at the end of the  
6 morning for those comments. Commissioner Byron,  
7 Commissioner Boyd?

8 COMMISSIONER BYRON: Thank you, Ms. Kelly. Again,  
9 good morning. I am Jeff Byron and I chair -- or I should  
10 say I am the Presiding Member of the Electricity and Natural  
11 Gas Committee, and with me is my Associate Member of that  
12 Committee, Vice Chair Boyd, and his new advisor, Ms. Sarah  
13 Michael, welcome. We are glad to have them.

14 MS. MICHAEL: Thank you.

15 COMMISSIONER BYRON: Just to restate again so that  
16 we are clear, Commissioner Boyd, this is not an IEPR  
17 Committee. The staff has reminded me that we have had so  
18 many of them, that this is not an IEPR --

19 VICE CHAIR BOYD: Hard to detect the difference in  
20 this.

21 COMMISSIONER BYRON: Anyhow, this is an extremely  
22 important workshop. Some very forward looking legislation  
23 was put forth by Senate Member Blakeslee in AB 1613 a year  
24 or so ago, and we are here to review some revised staff  
25 Combined Heat and Power Technical Guidelines that have been

1 developed as part of that Act. And we are required to  
2 evaluate and adopt these guidelines setting forth the  
3 technical requirements that CHP systems must meet to qualify  
4 for the incentive programs developed pursuant to the Act.  
5 And these guidelines will apply to both IOU and POU, that  
6 is, Investor Owned and Publicly Owned Utility Programs. The  
7 Act further specifies guidelines should ensure that  
8 qualifying CHP systems be designed to reduce waste energy  
9 whenever it is cost-effective, technologically feasible, and  
10 environmentally beneficial, especially with regard to  
11 reducing GHG emissions. I had an opportunity to review some  
12 of the input that we anticipate receiving today, I look  
13 forward to it, and I think we have got some good comments  
14 and input. And, Commissioner Boyd, would you like to say  
15 anything before we begin?

16 VICE CHAIR BOYD: Thank you, a couple of words.  
17 This bill was very encouraging to those of us who have been  
18 here quite a while now, and in turn, trying to encourage co-  
19 gen and CHP, which this agency has done repeatedly in its  
20 IEPR, and frankly which I was encouraging even before coming  
21 to the Commission. So this piece of legislation, as I say,  
22 was encouraging and I only hope that, after all these years  
23 and with the results of the effort that is underway here,  
24 which will be served by today's workshop, you facilitate a  
25 little greater movement than I have seen in the direction of

1 embracing CHP, CCHP, call it what you want, into our  
2 electricity system in the state before it is totally shut  
3 out. So, with that, even though this is not an IEPR  
4 Committee hearing, this information today, I am sure, will  
5 find its way into our proceedings as we complete the 2009  
6 Integrated Energy Policy Report. So with enough said, I  
7 look forward to getting your comments on the staff's work.

8 COMMISSIONER BYRON: Thank you, Commission. Ms.  
9 Kelly, let's proceed.

10 MS. KELLY: Okay. Let me just add some additional  
11 information here. When the Legislature enacted this  
12 legislation to support CHP, it directed three agencies to  
13 work together. And working on CHP over the last few months,  
14 well, actually over the last few years, this has been a  
15 collaborative effort, and this legislation, as well, is a  
16 collaborative effort. So once we adopt the Guidelines, as  
17 directed by the legislation, which we hope to do by January  
18 1<sup>st</sup>, 2010, I just wanted to let people -- remind people that  
19 the Public Utility Commission is also responsible for  
20 establishing contracts and tariffs for these contracts and  
21 for these exports. And I have spoken with Michael and they  
22 are on target and they are expecting in November or December  
23 to have a proposed decision to that Commission in November  
24 or December, and I think it looks pretty -- we are pretty  
25 confident that they will be done, as well, by January 1<sup>st</sup> of



1 2010. And then, when this is all done in the legislation,  
2 the ARB, the Air Resources Board, is directed to do a study  
3 and report to the Legislature on the success of this program  
4 to reduce emissions and greenhouse gases, and I think also,  
5 importantly even to this particularly proceeding, is to  
6 recommend policies to further these goals.

7           So the next step in our workshop today is to have  
8 Art Soinski, we have been meeting with all of you, talking  
9 about these Guidelines, we have worked really closely with  
10 anybody who was interested in telling us what they think and  
11 letting us know what information, I think, is very important  
12 for us to understand this issue. Utilities have real  
13 insights on how CHP works in their system, and the CHP  
14 manufacturers and generators are up to date on the way  
15 things are today. So we met with them extensively over the  
16 last couple of months and there was a lot of contribution by  
17 utilities, manufacturers, and the CHP community to the  
18 development of these guidelines. So, Art, would you like to  
19 come up? Art Soinski is a Major Technical Lead on these  
20 Guidelines.

21           DR. SOINSKI: Good morning, Commissioners,  
22 Advisors, and stakeholders. I am pleased to have you all  
23 here. This is actually the third in a series of workshops  
24 that we have had in one way or another to talk about these  
25 guidelines. The first workshop was on July 22<sup>nd</sup>, 2009, and

1 there were a number of stakeholder comments, active  
2 participation at the meeting, and those comments are  
3 reflected in both the Revised Guidelines that have now been  
4 posted as of October 1<sup>st</sup>, and also in the Staff Response to  
5 Comments, which was attached to the Guidelines and forms  
6 that were submitted.

7           The objective of today's workshop are for us to  
8 discuss, and I would like to emphasize "us" to discuss, the  
9 Guidelines, the Data Forms, the Response to Comments, and to  
10 really take the step toward moving to the Committee  
11 Guidelines which will be posted, and then will be adopted in  
12 the December 2009 timeframe. So the aspects that I would  
13 like to discuss are the quantitative performance  
14 requirements, which are pretty much the same as they have  
15 been for the last six months. What I call the adequacy,  
16 necessity, and sufficiency of the Guidelines, the Data  
17 Forms, and required attachments, the application process to  
18 obtain certification as a CHP system, the Annual Reporting  
19 processes, the process of CHP system certification and de-  
20 certification, and any missing elements that the  
21 stakeholders believe may exist within the guidelines -- are  
22 there special situations that are not adequately addressed  
23 or treated in either of the Guidelines or the Forms? And  
24 one of them perhaps could be some comments on bottom  
25 recycles.

1           So the outline, we are going to start with the  
2 Draft Guidelines which establish both the legal and the  
3 technical requirements in order to obtain certification and  
4 to qualify for an export tariff. The Forms, which actually  
5 do the heavy weight and really carry the requirements of the  
6 regulations, they are now in Word format, they will be  
7 converted eventually to Excel format, and hopefully they  
8 will be easy to fill out and basically you will have to fill  
9 out one or two tables and, once enabled in Excel, there will  
10 be self-calculation to determine whether or not the system  
11 qualifies. The initial qualification as a system, as a CHP  
12 system, of verifying compliance and correcting non-  
13 compliance, and Response to Comments, which I call a prelude  
14 to the Statement of Reasons Report, which is a requirement  
15 for us to have and it will reflect staff's thinking on the  
16 development process for the Guidelines. Are there any  
17 questions or comments on the objectives or on the outline?  
18 Nothing here, okay.

19           The document that you have before you is about 50  
20 pages long and I was thinking what I would really want to  
21 say about that. And I think it really comes down to this  
22 one slide and these four points. One is, if you have high  
23 fuel to useful energy conversion efficiency, then you will  
24 have fuel savings; if you will have fuel savings, you will  
25 have greenhouse gas emission reductions consistent with the

1 expectations under AB 32. There is a NO<sub>x</sub> emissions standard  
2 which is required in the legislation. Wasted utilization,  
3 which is the whole point of combined heat and power, and  
4 then CHP system monitoring and reporting to assure continued  
5 compliance with the requirements. So, in my mind, the 50  
6 pages or so really boil down to these four points.

7           Now, given these four points, I am going to go  
8 through four slides which go into the legislation and,  
9 really, the small points that have to be addressed in the  
10 requirement, so going from the essence to really meeting the  
11 requirements and intent of the legislation. And one of  
12 these, in this definition of what a CHP system is, there is  
13 a requirement that that system be Grid connected, meets on-  
14 site thermal demand, and complies with the greenhouse gas  
15 emission performance standard of 1,100 pounds per megawatt  
16 hour. Next is there is something called an eligible  
17 customer generator and that specifies that the generating  
18 capacity cannot be more than 20 megawatts, and so there is a  
19 definition for how you determine whether you are 20  
20 megawatts or not, and two-way time of use meter. And then  
21 requirements on system performance are that the Guidelines  
22 must assure that there is a reduction in waste energy, that  
23 the CHP system is sized to the thermal load, that the CHP  
24 system operates continuously, meets thermal load, and  
25 optimizes the efficient use of waste heat, and that the

1 system be cost-effective, technically feasible, and  
2 environmentally beneficial.

3           And then there are other requirements that are  
4 specifically called out for the Energy Commission to  
5 implement, and that is to assure that there not be any  
6 defect or wholesale generation, that the NO<sub>x</sub> emission  
7 standard is specified as .07 pounds per megawatt hour, that  
8 the system meets the greenhouse gas environmental  
9 performance Standard, which was mentioned in another part of  
10 the legislation, and that the operator of the CHP system  
11 maintain its system so as to meet or exceed the requirements  
12 within the Guidelines and within the legislation.

13           So, given that, since July 22<sup>nd</sup>, there have been  
14 some changes made for ultimately minor -- well, I guess they  
15 are minor in terms of the number of words, but they could be  
16 significant in terms of the actual substantive requirements  
17 -- is that there is a 60 percent efficiency standard for  
18 both topping cycles and bottoming cycles. Previously,  
19 bottoming cycles were set at meeting a lower efficiency  
20 level; staff review of the legislation caused a rethinking  
21 that, in fact, the legislation pretty much required 60  
22 percent in both topping and bottoming cycles. The earlier  
23 version established a greenhouse gas environmental  
24 performance standard below the 1,100 pounds per megawatt  
25 hour and it was basically developed in such a way as to

1 reflect the efficiency and the greenhouse gas emissions of  
2 the benchmark electricity generation; however, when you look  
3 at the practical application of this, the 60 percent  
4 efficiency standard actually requires a higher level of  
5 performance than the greenhouse gas emission performance  
6 standard that was in the earlier Guidelines, and so it is  
7 just kept at 1,100 pounds per megawatt hour for the purpose  
8 of these Guidelines because it effectively is overrun by  
9 other requirements. In order to meet the de facto, or the  
10 prohibition of de facto wholesale generation, a minimum  
11 thermal output requirement of 15 percent was set. And then  
12 values were chosen for double-benchmarking in the Fuels  
13 Saving Standard. The Fuel Savings Standard is a metric that  
14 staff introduced, it is not specifically called out in the  
15 legislation, but it is a way of really determining how a CHP  
16 system performs both in terms of fuel savings and, because  
17 of that, in terms of greenhouse gas emissions savings,  
18 compared to the benchmarks of a natural gas combined cycle  
19 plant mix of natural gas combined cycles and simple cycles.  
20 And then the Application for Certification and Annual  
21 Reporting Requirements specified previously, this was  
22 mentioned that there would be requirements, but it did not  
23 say exactly who was going to implement them, and the  
24 suggestion here is that the Energy Commission be responsible  
25 and the Executive Director review the applications and

1 determine whether or not the CHP system should be certified,  
2 and then there is a process for that being challenged if it  
3 is denied by the Applicant, or possibly by the purchasing  
4 utility of the electricity.

5 I alluded to the fact that there are multiple  
6 efficiency-related performance requirements. I already  
7 mentioned the Greenhouse Gas Emissions Performance Standard,  
8 which really is not effective in determining the efficiency  
9 of a CHP system as 1,100 pounds per megawatt hour. The  
10 requirement in the legislation of at least 60 percent energy  
11 conversion efficiency is retained and the Fuel Savings  
12 Standard was developed based on a double-benchmark, and the  
13 double-benchmarks are really related to the separate  
14 production of heat and power, and the utility generation is  
15 at 7,750 Btu's per kilowatt hour, and that is delivered at  
16 the customer site and the boiler efficiency is taken to be  
17 80 percent. Are there any comments on any of these points,  
18 thus far? Yes?

19 COMMISSIONER BYRON: Excuse me one moment. Dr.  
20 Soinski, maybe clarifications at this point. I prefer you  
21 go ahead and proceed with your presentation and then we will  
22 take comments later. And I apologize for interrupting, but  
23 I also need to ask you, when you do come forward, to please  
24 come to the podium and identify yourself so that all others  
25 on WebEx can hear us and so that it is recorded in the

1 transcript. So that is the approach we will take if that is  
2 all right with you.

3 DR. SOINSKI: It is your workshop.

4 COMMISSIONER BYRON: Good. Oh, one more thing. I  
5 am not sure about the electronics, it seemed like the  
6 microphones may be open on those listening in, so I would  
7 ask those listening in by telephone to please go ahead and  
8 mute your phones. Thank you.

9 DR. SOINSKI: Okay, now getting back to the three  
10 efficiency metrics, take the 60 percent fuel energy  
11 conversion efficiency, you can convert that to a greenhouse  
12 gas emission level of 665 pounds per megawatt hour, which is  
13 significantly less than the 1,100 pounds per megawatt hour.  
14 And that, in fact, corresponds to an efficiency of 36  
15 percent electrical efficiency. And the point that if you  
16 specify either the fuel conversion efficiency or the  
17 greenhouse gas emissions performance level, you effectively  
18 specify the other, so the reason for not retaining the 1,100  
19 pounds per megawatt hour is that that is effectively  
20 captured in terms of the fuel conversion efficiency. And at  
21 60 percent, it is captured at a lower greenhouse gas  
22 emission level. So it is unnecessary to specify both.

23 VICE CHAIR BOYD: This happens about once a month  
24 (Unmuted phone interference).

25 DR. SOINSKI: Sounds like the system took care of



1     itself.

2                     (Pause)

3                     DR. SOINSKI:   We are back.   Okay, the other fuel  
4     savings standard is based on a double benchmark, and this  
5     can be converted to a greenhouse gas emission reduction in  
6     pounds based on the fuel savings from the combined heat and  
7     power compared to the separate heat and power production.  
8     One of the difficulties with the double-benchmark is that it  
9     requires the specification of the utility power plant that  
10    the CHP system is being compared to and, if it is an  
11    existing mix or an existing power plant, then the question  
12    is what is the plant that is being displaced, what is this  
13    fuel which determines the amount of carbon dioxide that will  
14    be produced from burning it, and what is the heat rate, the  
15    efficiency?   And if it is new and presumably in California,  
16    it would be a natural gas-fired power plant, then what is  
17    the heat rate?   And it could be quite different, depending  
18    on what assumptions are made about whether it is a natural  
19    gas combined, it not clear whether it is a simple cycle.  
20    And it also requires the specification of the displaced  
21    boiler efficiency.   The latter has not been a point of  
22    significant contention, but the utility resource is in fact  
23    something that there are probably about as many opinions  
24    about as there are people in the room.

25                     COMMISSIONER BYRON:   Will we be getting into that

1 detail here?

2 DR. SOINSKI: Yes, well, to a level -- we can.

3 COMMISSIONER BYRON: Quick question. Avoided  
4 utility emission sources, are you talking about the system  
5 average for the utility, the provider, or are you talking  
6 about the marginal plant, the new plant that would be  
7 constructed as the avoided emission source?

8 DR. SOINSKI: That is the difference between if it  
9 is existing and if it is new. If it is existing, it would  
10 be the marginal plant. If it is new, then what would be the  
11 expectation on what would be the next plant installed. So  
12 these guidelines have been taking the idea that it is going  
13 to be a new plant, and it is the next plant that would be  
14 installed that would not be built if CHP is installed. And  
15 the numbers can be quite different, depending on whether you  
16 take an existing resource mix or whether you take a new  
17 plant, or a new fleet of plants as being the source of  
18 electricity and therefore of greenhouse gas emissions.

19 COMMISSIONER BYRON: All right, thank you.

20 DR. SOINSKI: Okay, now to the Forms, which are in  
21 Appendices A and B in the material that was docketed. The  
22 forms are actually where the details, the nitty gritty of  
23 the guidelines become implemented, and they took longer for  
24 staff to develop than I anticipated they would. Initially  
25 there were a large number of forms with multiple

1 calculations, and one of the attorneys suggested that they  
2 be converted to something that looked like IRS forms. And  
3 we could probably talk about that now because we are well  
4 past April 15<sup>th</sup>. And I took that to heart because of the  
5 fact that you have one form and the master form, and then  
6 things get transferred up into that, and the instructions,  
7 you know, flow pretty readily. Now, the IRS must have spent  
8 millions or billions of dollars on developing its forms, and  
9 as much as many of us may dislike filling them out, they  
10 actually do flow, and I hope that these forms will flow in  
11 the same way that those do by the time they are implemented.

12           So the major form is actually Schedule A, again,  
13 following the IRS lingo, which has energy inputs, outputs,  
14 thermal balances, and thermal utilization. It is a form  
15 with 132 or 144 cells that need to be filled in. It is done  
16 on a monthly basis, and once this one form is filled out,  
17 the determination of whether the system is in compliance or  
18 not is determined by automatic calculations once implemented  
19 in Excel. The only thing that really is not implemented in  
20 the Schedule A is what I call Schedule NO<sub>x</sub> which covers the  
21 nitrogen oxide's emission requirements of the legislation.

22           And let me see what the next slide is. Let me see  
23 if I can go to -- okay, these are the application forms and  
24 I am not going to take you line by line through all 16  
25 pages. It starts with the General Information Form and it

1 has instructions, and then the real work of applying for  
2 qualification is in filling out this one table, and this  
3 table is similar to the table that was used in the Self-  
4 Generation -- or is still used in the Self-Generation  
5 Incentive Program, and by filling this out, the requirements  
6 are the fuel used, the electricity out, the thermal energy  
7 out, and the thermal energy actually used in a productive  
8 and beneficial manner, to borrow language from FERC. That  
9 determines whether or not the system qualifies. So 90  
10 percent of compliance is really involved in filling out this  
11 one form. So once this form is filled in and submitted and  
12 reviewed, well, actually, once it is filled in, and then the  
13 macros are enabled, it will calculate the energy conversion  
14 efficiency, will look at the greenhouse gas emissions, will  
15 determine whether or not the system is in compliance with  
16 the Fuel Savings Standard, all on that one form. And then  
17 there are attachments that go with this form, which are  
18 basically the Mass and Energy Flow Diagrams, for one, and  
19 the summary of the engineering studies that were performed  
20 to determine whether it is cost-effective and feasible to  
21 install a CHP system, a summary of what alternatives were  
22 considered, both in terms of efficiency improvement and best  
23 practices, and alternative configurations of CHP systems and  
24 discussion of why the particular system that is being  
25 applied for was chosen. And, of course, these are in your

1 packet. And I guess it is the instructions for filling the  
2 form out. Oh, this is similar to Schedule A. The  
3 legislation requires that the performance be calculated at -  
4 - the 60 percent efficiency performance be calculated at  
5 full load of operation, so this is to comply with that.  
6 This does not appear again at the annual reporting, it is  
7 just an initial, so there are the instructions for the  
8 predicted operation. And then the Emissions Reduction, NO<sub>x</sub>  
9 reductions limits, basically a table to be filled out with  
10 vendor specifications to indicate whether or not the prime  
11 mover chosen will in fact be capable of meeting the NO<sub>x</sub>  
12 emission requirements. So that, I believe, is the last of  
13 the significant forms. I already talked about the  
14 attachments for Schedule A, which are on Schedule A, and the  
15 Applicant is supposed to discuss one of the requirements of  
16 the legislation, which is the technical feasibility cost-  
17 effectiveness and environment benefits of the CHP system.  
18 Now, very similar to the application form, there is an  
19 annual reporting requirement. This is for every full year.  
20 The expectation is that measurements will be made on a 15-  
21 minute interval, will be rolled up into monthly summations,  
22 will be reported on a form which actually is of almost a  
23 photocopy of the Schedule A that was part of the application  
24 process, and also when implemented in Excel, it will do the  
25 calculations to determine whether or not the system

1 complied.

2           Significant attachments are matched, and heat  
3 balance for average hourly operation, which is a conversion  
4 of the actual operation to some hourly average based on the  
5 operating load profile, which may or may not be at 100  
6 percent. An instrumentation diagram to show where the  
7 application is going to be making measurements and the type  
8 of measurements that are going to be made to assure that the  
9 data collected in terms of mass and energy flows are  
10 adequate, a plan for data collection, and then the  
11 engineering calculations to support the results.

12           Now, getting into the Application and Verification  
13 details, have this form tentatively called CEC 2843, which  
14 is like your friendly 1040, with schedules and attachments,  
15 including a signed Declaration to the Energy Commission.  
16 The Executive Director will determine whether or not the  
17 Application is adequate, similar to what is being done in  
18 siting cases, the Executive Director will issue either a  
19 Certification of Compliance, or a Statement of Denial, and  
20 if the Executive Director issues a Statement of Denial, then  
21 the Applicant has appeal rights as specified actually in the  
22 Guidelines, themselves.

23           The verifying compliance and correcting non-  
24 compliance is done on an annual basis with the Form CEC 2843  
25 Annual, I originally called it 2843A, and that got to be

1 confusing to people. Again, it is a signed declaration.  
2 One of the big differences here compared to the initial  
3 certification is that the presumption is made that, if the  
4 form, the Annual Reporting form, shows compliance based on  
5 the Table A that is submitted, and the Signed Declaration,  
6 and the calculations that are automatically done in Excel,  
7 then it is assumed that the system continues to comply.  
8 However, if the accuracy of the Declaration, of the annual  
9 form itself, and the underlying assumptions can be  
10 challenged, and if they are challenged, the Energy  
11 Commission has the right to do further review of the  
12 operation of the facility, and then the deficiency must be  
13 corrected within one reporting cycle, which means, for  
14 example, that if you were to report operation in January  
15 through December of 2009, by December of 2010, you will have  
16 to have corrected the deficiencies to bring you back into  
17 compliance.

18           So that is pretty much my presentation.  
19 Commissioners, do you have questions? We are about to go  
20 into the discussion session.

21           VICE CHAIR BOYD: I was just going to say I have  
22 questions, but I would like to hear from the commenting  
23 stakeholders who may address some of the same issues and  
24 concerns, so I will hold my questions.

25           COMMISSIONER BYRON: Okay, let's go to some public

1 comments and questions on this matter. I apologize for  
2 putting off our early commenter. If you would like to  
3 begin, we would be more than happy to have you.

4 MR. JUDD: My name is Gordon Judd. I am with NRG  
5 Energy. I had one question with regard to the utility  
6 benchmarking, and the comment would be that, in a lot of CHP  
7 systems, the benchmarking you would do would not fit into  
8 either one of the categories that are listed -- the utility  
9 generation and the boiler efficiency. An example would be  
10 like a lumber mill that might use a direct gas-fired dryer  
11 for its lumber drying, that would not fit into either one of  
12 these, and so you may want to think about including an  
13 "other" category to where the CHP is less than 20 megawatts  
14 by nature are going to be unique to the installation, and so  
15 there may need to be a category for "other." And that  
16 "other" would be a benchmark that the facility itself would  
17 have to supply because they may have a very unique process  
18 that does not fall into one of the standard benchmarks.  
19 Thank you.

20 DR. SOINSKI: If it is a furnace, is there a  
21 benchmark that you would say -- I guess if you are talking  
22 about dryers, you could have many different types of dryers,  
23 for example.

24 MR. JUDD: Yeah, you could have a direct gas  
25 dryer, air to air, heat extender, you could also have a gas-



1 fired absorption cooler, you know, that is going to be part  
2 of the CHP process. There are lots of different things and  
3 I do not think we want to try and delineate all of them, but  
4 I think we would want to have the ability to input a  
5 benchmark for that specific facility, and then it would just  
6 have to have a technical review before it is approved.

7 COMMISSIONER BYRON: Is there a way to specify an  
8 overall efficiency for these "other" category CHP's?

9 MR. JUDD: Not as a benchmark, because there the  
10 processes would be so different on a facility by facility  
11 basis. But I think you would want to be able to have the  
12 ability for the application to be able to calculate a  
13 greenhouse gas savings that is outside of the boiler  
14 efficiency and outside of the 77 Btu's per kilowatt.

15 COMMISSIONER BYRON: Dr. Soinski, have you thought  
16 about these other possibilities?

17 DR. SOINSKI: I thought about them, and I have not  
18 tried to input them because, as you say, they are unique  
19 situations, and that, I guess, would be under what we might  
20 call the "missing elements," is what do you do if you have a  
21 unique application that does not fit. Now, you would still  
22 have the utility benchmark, correct, the electricity  
23 generation benchmark, if you are going to be CHP? So that  
24 would still --

25 MR. JUDD: For the electricity generated, but what

1 I look at as a developer is that a lot of the opportunities  
2 to install CHP come from the thermal side, and maybe the  
3 thermal side is not a boiler load, it is an other type of  
4 thermal load, so that is what those two benchmarks say to  
5 me, is that it is a way to measure the electricity side, and  
6 the thermal side, and all as I am making the case is that  
7 there are other thermal loads other than traditional  
8 boilers, some of them with better than 80 percent, some will  
9 be less, but if we are trying to get to greenhouse gas  
10 savings, we may want to be able to look at those  
11 specifically.

12 DR. SOINSKI: And, of course, our cement kills, or  
13 bottoming cycles, which are that type of application, where  
14 you really do not have a boiler. And do the bottoming cycle  
15 requirements in the forms or the guidelines address that  
16 adequately, to your mind? Or not?

17 MR. JUDD: I have not reviewed them thoroughly  
18 enough to make a good statement on that.

19 DR. SOINSKI: Okay.

20 MR. JUDD: And I apologize, this is my first  
21 workshop, so I am coming in with a deficit.

22 COMMISSIONER BYRON: No apology needed, Mr. Judd.  
23 Good comment. And, Dr. Soinski, we are certainly interested  
24 in making sure that we do not exclude this kind of  
25 possibility in our guidelines, so we will need to do some

1 more thinking about that in the "other" category. Mr.  
2 Williams.

3 MR. WILLIAMS: Good morning. My name is Ray  
4 Williams and I represent the Pacific Gas & Electric Company.  
5 I did provide a relatively lengthy presentation. I am not  
6 sure now is the right time to go over it, maybe at some  
7 other point in the workshop.

8 COMMISSIONER BYRON: I certainly want to hear from  
9 you and --

10 MS. KELLY: Yeah, we have got it here. We can put  
11 it up.

12 COMMISSIONER BYRON: Now is a good time.

13 DR. SOINSKI: Now is a good time? Okay.

14 COMMISSIONER BYRON: Come over to the podium.

15 MR. WILLIAMS: But I did also have one clarifying  
16 question per Art's presentation. And that is, on your  
17 utility benchmark, could you talk about how you addressed  
18 transmission and distribution losses on the utility side,  
19 because it is an important question.

20 DR. SOINSKI: You are right; it is a very  
21 important question. The benchmark that is specified really  
22 -- the utility benchmark requires really two things to be  
23 specified, and I guess I glossed over that. One is the  
24 nature of the power plant itself, and the other is the line  
25 losses that occur with respect to that, and then what the

1 generation is that is actually delivered at the CHP site  
2 that is concerned. In the Statement of Reasons, I cite the  
3 heat rates that have been presented by various people in the  
4 proceeding, and in some cases I add eight percent to them,  
5 which is the loss factor that we have been doing, and for  
6 the benefit of the audience and the other stakeholders,  
7 Pacific Gas & Electric and I have had a number of  
8 discussions on this, and it is still an open issue in part  
9 because I think PG&E would say that they need to do more  
10 studying. They would say that, well, I guess I should not  
11 speak for PG&E, but they would say that they are lower than  
12 eight percent. When you go through all the numbers that are  
13 there, I mean, realistically the heat rate is somewhere  
14 between 7,000 Btu's per kilowatt hour and 8,000 something  
15 Btu's per kilowatt hour, if you assume that you are  
16 displacing a new natural gas-fired plant by a CHP system for  
17 your benchmark. So there is a band of perhaps 1,400 Btu's  
18 per kilowatt hour, and I am pretty sure that the right  
19 number is within that band, but the exact number you come up  
20 with is subject to the assumptions you make, and that is why  
21 there are differing values that have been presented in  
22 various people's comments on this. So it is the eight  
23 percent number that is there, but I really looked at the  
24 numbers and looked at what is sort of the median value of  
25 all the values that have been presented, which is not the

1 most satisfying answer. And I think one of the things that  
2 you have to look at, though, not to be totally arbitrary  
3 about this, is, as I mentioned, there are really two  
4 effective tests for efficiency, one is the Fuel Savings  
5 Standard, and the other is the Percent Efficiency Standard.  
6 So the two of them in combination, I think, will determine  
7 whether or not you get greenhouse gas savings. So you ready  
8 to roll?

9 MR. WILLIAMS: Sure.

10 DR. SOINSKI: I think we have your presentation  
11 here, so -- oh, there it is.

12 MR. WILLIAMS: Okay, thank you, Commissioner Byron  
13 and Commissioner Boyd. Again, my name is Ray Williams and I  
14 represent Pacific Gas & Electric Company. This is a very  
15 very complicated topic and I am on the learning curve, as I  
16 think probably everyone in this room is. I appreciate the  
17 opportunity to talk here. I would like to do a few things  
18 here in my presentation, the first is to identify some clear  
19 opportunities. Really, when we talk about efficiency, we  
20 are trying to focus on topping cycles, but there are other  
21 opportunities in the context of CHP that will provide  
22 greenhouse gas reductions. Secondly, I would like to offer  
23 a perspective on how to frame the issue, the CEC  
24 recommendations and PG&E's recommended ways of looking at  
25 some possible modifications. And then, finally, I would

1 like to relate CHP efficiency to the number of megawatts  
2 needed for 1 million metric tons of greenhouse gas  
3 reduction, and this is sort of a basically an attempt to  
4 look at an efficiency standard here and see how it relates  
5 to, for example, the Air Resources Board Program Measure  
6 that they have adopted as part of their Scoping Plan.

7 I would also like to commend the CEC staff, they  
8 really have been very open to meeting with us and to hearing  
9 our comments, in fact, I think we had one really great  
10 brainstorming session last month, they have been very open  
11 and really a pleasure to work with. I would also say,  
12 generally, that their Draft Standards incorporate CCHP  
13 design considerations and statutory requirements, so  
14 definitely on the right track. And, finally, I would say  
15 that we would recommend a higher efficiency standard and  
16 this is sort of kind of a key policy issue that I think  
17 arises from some of the analysis that we have done here, and  
18 that is, do you want a standard that is effective, an  
19 approximation of a carbon neutral standard for each  
20 facility? Or do you want a standard which is higher than  
21 that? And that, I think, is kind of a key question and I  
22 will try to illustrate it as we go through.

23 Here are some clear opportunities that we see.  
24 First is an energy efficiency and this is particularly in  
25 the case where you have a facility that is looking at either

1 a repowering or is a new facility, and I think the economic  
2 opportunities would be greater if there was really a good  
3 audit done and any identified opportunities taken advantage  
4 of before you go in and size a unit to a summer load, you  
5 may find opportunities where the thermal load could be  
6 reduced, you could get the same amount, or work done at a  
7 particular facility, and you might be able to size the unit  
8 a little differently. I do not know whether that is part of  
9 the CHP program measure, part of AB 1613, but it just seems  
10 like a real opportunity. Second is lower carbon fuel  
11 inputs, switching from high carbon fuel such as a cell fuel  
12 like coal, to a lower carbon fuel such as biomass, is a real  
13 opportunity. In effect, that switches to a fuel which can  
14 be considered to be zero carbon. We have one in our service  
15 territory, Mt. Poso, that we have been negotiating a  
16 bridging agreement with to help them make that transition,  
17 and I know that there are other opportunities in our service  
18 territory, at least. Third, and Art mentioned this one,  
19 bottom cycling facilities; with no additional fuel,  
20 greenhouse gas emissions are always reduced if that heat  
21 otherwise would have been wasted. Art did mention that he  
22 feels compelled through the statute to apply a 60 percent  
23 efficiency standard at the bottom cycling; I understand that  
24 hopefully that does not preclude certain bottom cycling  
25 facilities which may operate at less than 60 percent from

1 qualifying because, clearly, even if they operate at less  
2 than 50 percent, if the heat otherwise would have been  
3 wasted, it is an opportunity foregone in terms of reducing  
4 greenhouse gas emissions.

5           And finally, for topping cycling facilities, from  
6 the work done within PG&E, there are a lot of variables that  
7 go into this, but it seems like the one that is most  
8 important is a good matching of thermal and electrical  
9 output to really -- efficient to operation and getting  
10 greenhouse gas emissions reductions.

11           Next, Art mentioned the boiler efficiency and  
12 looking at what would have happened on the utility system as  
13 the appropriate benchmark. PG&E agrees. PG&E agrees with  
14 the 80 percent boiler efficiency, that I know there are  
15 boiler efficiencies that are higher than 80 percent, but 80  
16 percent seems like a good benchmark on that side.

17           In terms of the utility portfolio, the portion of  
18 the utility portfolio that we back down, we view a number of  
19 prior adjusting for losses, and that is part of the reason I  
20 asked Art the question, as being a combined cycle. There  
21 are a lot of different ways to look at it, there are a lot  
22 of really good arguments out there. I think where we come  
23 down is, in the short run, we did do a quick run, we need to  
24 do, I think, a little better job in documenting it, and go  
25 through the analysis where we essentially added 1,000



1 megawatts of base load generation to a portfolio, in  
2 essence, that backs down a utility portfolio, or it backs  
3 down sort of what is in the market, generally, in California  
4 and as part of the whole WECC, and the number that fell out  
5 of there was equivalent to a 7,000 heat rate. Again, that  
6 is not adjusted for losses. So that is sort of a short run  
7 measure. In the long run, I would say that there is  
8 obviously a number of additions that could be added to the  
9 market, to a utility portfolio, assuming that CHP does not  
10 crowd out renewables or a low carbon generation source, that  
11 in essence it is displacing combined cycles, and that would  
12 be added. You know, roughly 7,000 heat rate seems to be  
13 appropriate for the longer run, as well. Again, that is not  
14 adjusted for losses, so on the utility side, there should be  
15 an adjustment for losses, both for transmission and for  
16 distribution, I think eight percent might be a little high,  
17 I am not sure that the number I had focused on previously  
18 when Art and I talked, around four percent, that might be  
19 too low because you have to look at both transmission and  
20 distribution. I would also point out that, on the CHP side,  
21 the efficiency benchmark -- but let me go to the next slide  
22 here -- you will see here, this is sort of an illustration  
23 of a combined heat and power facility to separate heat and  
24 power hypothetical, and I just did this essentially to make  
25 a point, but on the losses piece, what I would say is that

1 you would have to look at the losses associated with CHP, as  
2 well, and I know that -- I am not sure that Art's benchmark  
3 or the CEC's recommended benchmark does that. I do not have  
4 a recommendation, but I do have some initial thoughts. If  
5 it is self-gen, if the facility is on-site, you would expect  
6 the CHP losses to be small, you know, maybe close to zero;  
7 if it injects onto the Grid at distribution level, you would  
8 expect some losses, but you would expect them to be  
9 relatively small. If the CHP facility is interconnected to  
10 transmission, and ejects onto the Grid, you would expect  
11 that the losses would probably be higher, and I would say  
12 that is probably as much insight as I can provide right now,  
13 but that is just sort of portraying the losses issue on both  
14 the utility side, as well as on the CHP side.

15           So this particular slide here is just a -- it is  
16 one of two slides, this is kind of a static representation  
17 to try to relate CHP to SHP, and under what circumstances  
18 might you actually get greenhouse gas reductions. So, on  
19 the combined heat and power side, we have a couple of  
20 assumptions, we assume 60 percent, which is roughly where  
21 the standard comes out, and we also assume part heat ratio  
22 of 1:1. Now, what does that mean? In essence, for a given  
23 fuel input, half of the work is done in terms of production  
24 of electricity, and half is done in terms of some useful  
25 thermal application. So that is the assumptions on the

1 combined heat and power side. On the separate heat and  
2 power side, we chose a boiler efficiency of 80 percent,  
3 which seems to be the prevailing view, and our assumption of  
4 about a 7,000 heat rate, or 48-49 percent efficiency. And,  
5 again, to relate the two, we assumed a power heat ratio of  
6 1:1. Under these circumstances, the CO<sub>2</sub> savings from the  
7 combined heat and power are zero; in other words, this  
8 particular facility does not increase greenhouse gas  
9 emissions, but it does not decrease greenhouse gas  
10 emissions, either. So just under this particular construct,  
11 this is how you would come out. Again, I put losses aside,  
12 both on the CHP side, as well as on the SHP side.

13           Okay, so now, from that static representation, I  
14 am going through more of a dynamic representation. And let  
15 me explain this curve a little bit before I talk about the  
16 conclusions that you could draw from it. On the X Axis, we  
17 have power to heat ratio, on the Y Axis, we have essentially  
18 CHP operating efficiency. And we are trying to relate the  
19 two in order to construct essentially a carbon neutral curve  
20 across a range of power heat ratios, so what is a good way  
21 to look at this slide? Look at the blue line and you notice  
22 that, as the power to heat ratio moves towards zero, that  
23 the line itself, the carbon neutral line, is moving toward  
24 80 percent, which makes intuitive sense, because essentially  
25 it is a boiler. Okay? And as the power to heat ratio

1 increases, you are moving -- you see that the curve is  
2 downward sloping because essentially you are moving toward  
3 an efficiency which looks like a combined cycle, and adds a  
4 very high number, and you would be down around 48.7 percent  
5 or whatever you would assume is the operating efficiency on  
6 the utility system. So the concept here is that, at  
7 different power to heat ratios, there are different CHP  
8 efficiencies that you can relate to figure out whether a  
9 particular facility is increasing or decreasing greenhouse  
10 gas emissions. This is a carbon neutral line. And just to  
11 be clear, if you are above that blue line, you know, given a  
12 set of assumptions, you will be reducing greenhouse gas  
13 emissions if that is where CHP is operating, and if you are  
14 below that line, then the CHP facility would actually be  
15 increasing greenhouse gas emissions. Now, this is assuming  
16 again that the facility is burning natural gas and not Agway  
17 (phonetic) gas, or something else where the emissions would  
18 be quite different.

19           Okay, so now we have a couple of dotted lines, one  
20 is a green line, and that is essentially a five percent  
21 improvement on the carbon neutral line. And then we have an  
22 orange line, which is essentially a ten percent improvement  
23 on a carbon neutral line. So I think, to begin to  
24 illustrate the question before the Committee is do you want  
25 a standard which is essentially carbon neutral, or do you

1 want a standard which is somewhat above a carbon neutral  
2 line, five or 10 percent. Now, some of the tension here is,  
3 as I will point out, if it is not very high, you do not get  
4 a whole lot of greenhouse gas emissions per megawatt  
5 installed, and if it is too high, you may have very few CHP  
6 facilities which really have the ability in operation to  
7 meet the standard, and that is a tension. I wish I could  
8 provide a recommendation, but the insight on how many CHP  
9 facilities could actually meet a very high standard, I do  
10 not have that insight.

11 Let me move on to our recommendation and then I am  
12 going to dial back. So for us, for PG&E, our recommendation  
13 is weighted by what we think is achievable, again, we are a  
14 little bit of guesswork on our part, and also to try to  
15 accommodate smaller CHP systems. So for PG&E, our  
16 recommendation is that the CHP greenhouse gas emissions  
17 should be about five percent less than the emissions from  
18 SHP, given whatever assumptions that you would use, or 60  
19 percent total efficiency because that is what is in AG 1613.  
20 And so our recommendation is to be a little bit more  
21 accommodating for smaller facilities, in part because of  
22 some of the workshops that were done here previously, where  
23 it seemed like smaller systems had more difficulty with  
24 their thermal matching than possibly larger facilities might  
25 be able to lower load factor. The coincidence seems to be

1 more of a challenge, and the maintenance seems to be a  
2 little bit more of a challenge. And then, from five  
3 megawatts on up to 20, we would recommend that greenhouse  
4 gas emissions be 10 percent less than a carbon neutral  
5 benchmark, the higher of that, or 60 percent total  
6 efficiency because, again, that is what is in the statute.  
7 So that is where we come out in terms of our recommendation.

8 COMMISSIONER BYRON: The 60 percent is in the  
9 statute, not the 10 percent?

10 MR. WILLIAMS: Correct. It is the 60 percent that  
11 is in the statute, that is right.

12 Okay, now, just some comments on the CEC  
13 Efficiency Standard, and I will try to relate that to a  
14 carbon neutral benchmark. We like to use double-benchmarks,  
15 it seems like that is the best metric that anyone has come  
16 up with. The GHG Emissions Standard can probably be dropped  
17 because it is covered by the other decision rules that Art  
18 has. The Fuel Savings Standard could be dropped, as well,  
19 because it seems like it is not more efficient than a double  
20 -- than the appropriate double-benchmark. And even the  
21 Thermal Standard could be dropped, except in the cases where  
22 an electric generator is so high as to be +60 percent  
23 because it seems like you could keep it, but it seems that  
24 very few generators, if any, or CHP systems, if any, could  
25 operate in that range.

1           So here is our account and this is done by a  
2 really smart engineer within PG&E, not me, and so what we  
3 have here is our carbon neutral line, which is the blue  
4 line, that downward sloping blue line, and we have our two  
5 dotted lines there, the green and the five percent above in  
6 the orange is ten percent above, and we have essentially,  
7 since Art's recommendation, or CEC's recommendation, is  
8 essentially the higher of his various Decision Rules, we  
9 plotted that, his draft guideline, against a power and heat  
10 ratio, and essentially come up with a graphical  
11 representation of his -- of that particular curve against  
12 what we see as a carbon neutral curve, and as you can see,  
13 you know, it was pretty close. I think we would have an  
14 issue where the power and heat ratio is between zero and 1,  
15 that we think it probably could be a little more rigorous in  
16 that particular range, and then, at some point between 1.0  
17 and 1.5, the 60 percent rule that is in AB 1613 essentially  
18 covers the field. Okay?

19           COMMISSIONER BYRON: What happens out at the end  
20 there when we get up to power and heat ratios greater than  
21 3? Why does the significant effect of CHP efficiency  
22 standard rise up?

23           MR. WILLIAMS: I believe that is Art's Thermal  
24 Energy Utilization Standard. I could probably let Art  
25 answer that question. Okay --

1 COMMISSIONER BYRON: That is it?

2 MR. WILLIAMS: One more slide.

3 COMMISSIONER BYRON: Go ahead.

4 MR. WILLIAMS: Thank you for your patience. Okay,

5 and this is the one that is probably the most challenging,

6 so bear with me. So I spent, you know, a fair amount of

7 time at the CEC, at the PUC, and at the ARB on these issues,

8 and this is sort of an attempt to bring the standard

9 together, or to relate this to the ARB's Program Measure

10 Target. So here is a graph that attempts to do that, and

11 the question I am trying to answer here is, given a certain

12 efficiency threshold above a carbon neutral line, how many

13 megawatts of CHP do you need to achieve a 1 million metric

14 ton emissions reduction? So that is the question that this

15 slide is trying to answer. Let me walk you through it. On

16 the X Axis, you see again the power to heat ratio, that

17 concept that you are probably all familiar with, but I

18 introduced just a little bit earlier, on the Y Axis on the

19 left, you will see CHP operating efficiency, ranging all the

20 way up to 100 percent, from zero to 100 percent. And those

21 curves, the carbon neutral curve and the five percent above

22 line, the green dotted line, downward sloping dotted line,

23 and the orange downward sloping dotted line are the same

24 curves that I had presented in previous slides. Again, you

25 know, these are using our assumptions, an eight percent



1 boiler, a 7,000 heat rate, no adjustment for losses on  
2 either the CHP side, or the SHP side, which probably does  
3 need to be done. And we also assumed probably a somewhat  
4 optimistically an aggregate CHP capacity factor of 80  
5 percent, so that is another important assumption because,  
6 obviously, it is energy production that can reduce  
7 greenhouse gases from CHP, and not the number of Megawatts  
8 installed. So going through some calculations, if you look  
9 at the -- oops, it looks like actually the colors here are  
10 reversed -- if you take the --

11 COMMISSIONER BYRON: Which colors are reversed,  
12 Mr. Williams?

13 MR. WILLIAMS: Oh, if you look at the upper  
14 sloping dotted lines, if I just had not done it so late at  
15 night, I think I would have tried to relate the dark green,  
16 larger dotted line, to the light green downward sloping  
17 line, but it is sort of taking your eye into the wrong  
18 place, but I will walk you through the slide.

19 COMMISSIONER BYRON: But the legend is correct?

20 MR. WILLIAMS: The legend is correct, yes. Okay,  
21 so let's take just for the sake of convenience here, take a  
22 power heat ratio of 1.5, okay, so if you assume a boiler  
23 efficiency of 80 percent electric portfolio, marginal  
24 efficiency of 48.7 percent, 7,000 heat rate, a capacity  
25 factor of 80 percent, and a power to heat ratio of 1.5, if

1 an aggregate CHP efficiency operates five percent above that  
2 carbon neutral line, okay, so you can essentially --

3 COMMISSIONER BYRON: Which would be the red dotted  
4 line?

5 MR. WILLIAMS: Right, go from here up to about  
6 there. With this particular set of assumptions, you are up  
7 around 5,000 or so megawatts installed to get a 1 million  
8 metric ton reduction. Now, if you are instead 10 percent  
9 above the line, which is that downward sloping orange line,  
10 again, you would need maybe a slightly less than maybe 2,700  
11 or 2,800 megawatts installed to reach that same 1 million  
12 metric ton emissions reduction. So this is really -- what I  
13 am trying to do here is to relate all these parameters into  
14 the overall state goal and, as you know, the current ARB  
15 state goal is 6.7 million metric ton reduction. I know that  
16 ICF has done a study which is about to be finalized, which  
17 has a number of different scenarios, you know, generally  
18 they end up in a place below 6.7 million metric tons. I  
19 would also say that, if you instead assume, you know, 7,700  
20 or so, like CEC staff did, or something higher, that these  
21 results are sensitive to that particular assumption,  
22 particularly as you move from a power to heat ratio as the  
23 power to heat ratio increases. And I do not have -- I wish  
24 I had those numbers with me today, but I would be happy to  
25 re-run this at different electric -- different marginal

1 efficiencies, and provide that to you.

2           COMMISSIONER BYRON: This is very helpful. This  
3 is a significant contribution. I appreciate it very much  
4 and I hope that we will get some additional comments and  
5 questions on this. But let me just see if I could state  
6 your conclusion in another way, and that is -- I will be  
7 more direct -- this figure would seem to demonstrate that,  
8 if you are going to try and get 6.7 million metric tons of  
9 CO<sub>2</sub> reduction, and of course, this figure is just based on a  
10 million metric tons --

11           MR. WILLIAMS: That is correct.

12           COMMISSIONER BYRON: -- so it is multiply  
13 everything here by about 6.7, that in order to get that kind  
14 of CO<sub>2</sub> reduction, you are going to have to install one heck  
15 of a lot of CHP.

16           MR. WILLIAMS: Right. And this is offered in the  
17 spirit of a program where hopefully the expectations are set  
18 that are achievable. You know, clearly there are  
19 opportunities, bottom cycling, low carbon fuel, and also  
20 topping cycling facilities to get greenhouse gas emissions  
21 reductions, and we certainly have some facilities where the  
22 data in our service territory shows that and, of course, we  
23 have facilities where the data shows that they are not at a  
24 carbon neutral standard. So it is just offered in the  
25 spirit of trying to pull all these various pieces together

1 because it is, I think, a pretty complex undertaking to look  
2 at all these things.

3 COMMISSIONER BYRON: So let me ask my question.  
4 It is difficult on the power and heat ratio, but if we look  
5 all the way to the right and assume just a power heat ratio  
6 of 4, and we look at the installed megawatts around 3,200  
7 megawatts to 6,500 for the 5-10 percent GHG reduction, and I  
8 am just trying to get a comparison here, wouldn't this  
9 demonstrate that the amount of transmission losses that are  
10 assumed is extremely important because 5-10 percent has a  
11 doubling effect here at that high power heat ratio, and if  
12 you were to assume just 5 percent transmission losses, that  
13 would have significant impact on the installed capacity  
14 needed to get this GHG reduction, wouldn't it?

15 MR. WILLIAMS: Yes, I would agree with that,  
16 certainly on the separate heat and power side, when you are  
17 looking at combined cycles for a utility, or if you are  
18 looking at all of the combined cycles in the WECC, the  
19 losses associated with that production, would definitely  
20 have an effect on the conclusion here. I would also note  
21 that the larger CHP facilities are also interconnected at  
22 transmission, and you would have to look very carefully at  
23 the losses associated with those facilities, as well. And,  
24 again, CHP interconnected at distribution, my guess is that  
25 the losses would be less for those kinds of smaller

1 facilities because you would expect that they would be  
2 located -- even if they injected on to the distribution  
3 radio system that the losses -- that the generation would be  
4 closer to load and the losses would be less.

5 COMMISSIONER BYRON: And we can all agree that it  
6 is very difficult to determine any kind of average  
7 transmission loss associated with a system because of time  
8 variant and there are a lot of factors involved.

9 MR. WILLIAMS: Yeah, it is a necessary assumption  
10 and a very difficult nut to crack, I would agree.

11 COMMISSIONER BYRON: However, I remember hearing  
12 this weekend a commercial on television by General Electric  
13 on the Smart Grid, and they state that more than half of the  
14 energy is lost before it gets to the customer in their Smart  
15 Grid commercial, so the perception out there is certainly  
16 that we are not doing something right.

17 MR. WILLIAMS: Well, I suppose if you start with  
18 the 48.7 percent efficiency, we are already at more than  
19 half, just from the combined cycle generation itself.

20 COMMISSIONER BYRON: Exactly. These are very  
21 helpful comments and very thoughtful input. I would like to  
22 give you -- well, I will reserve a response and hope that we  
23 could get some additional comments here. But, Mr. Williams,  
24 I would like to really thank you and PG&E for the very  
25 thoughtful comments. I think this contributes in a very

1 significant way to developing these Guidelines.

2 Commissioner Boyd, did you have any questions?

3 VICE CHAIR BOYD: No.

4 COMMISSIONER BYRON: I think it would be good if  
5 we got some additional comments, and Mr. Williams, maybe we  
6 will have some comments on your comments, but I hope you  
7 will be here for a little while.

8 MR. WILLIAMS: Yes, I will be. Thank you.

9 COMMISSIONER BYRON: Any other commenters wish to  
10 come forward?

11 MR. RAWSON: Good morning, Commissioners. My name  
12 is Mark Rawson and I am representing SMUD today.

13 COMMISSIONER BYRON: Good, glad to have you here  
14 today, Mr. Rawson.

15 MR. RAWSON: Thank you, Commissioner. Just a few  
16 comments and then a question for Art Soinski. On the  
17 discussion about TMD losses, yes, very important issue. The  
18 eight percent is a little bit higher than what we have  
19 assumed at SMUD based on some of our analysis and what we  
20 use in some of our studies. We are close to about 7.5  
21 percent, and as you have seen in the previous discussion, it  
22 can be a pretty significant impact.

23 COMMISSIONER BYRON: Do you consider that to be an  
24 average? Or is that a peak?

25 MR. RAWSON: That is an average for us. If we

1 were looking at our peak, or super-peak, and you know, it is  
2 CHP that is targeted perhaps for combined cooling and  
3 heating power applications, we are upwards of 10.5 percent,  
4 so the incremental losses are pretty significant on our peak  
5 and super peak. As far as the heat rates go, based on our  
6 portfolio, this number that is being used here by staff is  
7 pretty representative of our best in class combined cycle  
8 power plant, and we would agree in the near term that that  
9 is probably the right number to use. But as we go forward,  
10 you are probably aware that SMUD has adopted a sustainable  
11 energy goal last December, which is trying to move our  
12 utility to 10 percent of our 1990 emissions levels for  
13 greenhouse gases by 2050, that is a pretty aggressive  
14 greenhouse gas goal. As part of our initial strategy to  
15 attain that, we last December adopted a 33 percent RPS  
16 target by 2020 for our utility. And I think an important  
17 aspect that needs to be considered here is that this  
18 benchmark, as we go forward, is going to need to change.  
19 And so one of the comments that we have is how is that going  
20 to be captured. Ray mentioned an important point, that when  
21 you start to consider combined heat and power projects out  
22 into the future, there exists the possibility that they  
23 could be displacing qualifying renewable energy projects.  
24 And when you are talking about a 33 percent RPS in SMUD's  
25 case, we need to be cognizant that that baseline is going to

1 change as we go out into the future. So the comment there  
2 is for staff to consider how they may adjust that baseline  
3 as utilities move forward with more aggressive renewable  
4 standards. Thank you.

5 COMMISSIONER BYRON: Very good comments. Did you  
6 have a question you wanted to ask, as well?

7 MR. RAWSON: Actually, I guess the question for  
8 Art was that this is assumed to be a static baseline and is  
9 there any mechanism in these guidelines that is going to  
10 allow for that to change over time?

11 DR. SOINSKI: Interesting point, Mark. Some  
12 people -- other people have suggested that there be  
13 something very explicit in the guidelines talking about when  
14 they would be revisited. When I first made comments, the  
15 first workshop on these guidelines, I expressed the opinion  
16 that, just as the Self-Generation Incentive Program has  
17 evolved over time, my expectation is that these guidelines  
18 would evolve over time either through legislative action or  
19 through action by the Public Utilities Commission. So,  
20 yeah, it is certainly true that the resource base is going  
21 to be evolving over time and these need to evolve over time  
22 also. I think the other aspect is you have to look at how  
23 successful this is going to be. I mean, it may not --  
24 hopefully there -- well, I guess it is a matter of where you  
25 come from -- but if there is a lot of CHP, then it becomes a



1 much more important issue than if there is relatively little  
2 CHP brought on as a result of AB 1613, so it is a wait and  
3 see. What I have tried to do is get something, put some  
4 life in the sand that I think are reasonable for today to  
5 move forward with, with the expectation that things will  
6 change and get better over time.

7           COMMISSIONER BYRON: And if I could, I would like  
8 to also address one of Mr. Rawson's suggestions. I think it  
9 is a very good one, I think we want to make sure that we  
10 have a provision to revise the guidelines if necessary, but  
11 I wondered when this issue would come up about the benchmark  
12 changing as utility portfolios change, as well. And, of  
13 course, notwithstanding SMUD is going to have all these  
14 dispatchable renewables going forward, not everybody has  
15 that advantage, so there is going to be some -- there is  
16 some distinction here between the dispatchable generating  
17 unit and a renewable, unless, of course, storage comes into  
18 play in some significant way. So we may discuss that a  
19 little bit more later about, you know, why isn't the  
20 benchmark a renewable generator for CHP, but I am not sure  
21 that is the correct comparison. You may respond if you  
22 wish, otherwise, thank you.

23           MR. RAWSON: Excellent points about the capacity  
24 factor on the comparison. I guess, just in general, as we  
25 move forward and our portfolio on the whole changes, of

1 course, our carbon footprint of that portfolio is changing,  
2 so my comments were really geared towards addressing the  
3 issue about the ability to adjust this benchmark given how  
4 our portfolio is going to change.

5 COMMISSIONER BYRON: Yes, and I would like to also  
6 comment your utility on the aggressive approach you have  
7 taken in the setting -- forgive me, I am not going to call  
8 it by its correct name -- but creating a tariff for CHP for  
9 your customers so quickly, it makes sense, it is simple.  
10 Congratulations to you on doing that. I think you set a  
11 fine example for the other utilities in the state.

12 MR. RAWSON: Thank you.

13 DR. SOINSKI: Commissioner Byron, Linda Kelly  
14 brought up a good point with respect to this comment about  
15 revisiting the Guidelines. It is a point in the legislation  
16 that the ARB has to submit a report to the Legislature at  
17 the end of 2011 as to how successful AB 1613 has been, so  
18 there is at least that mechanism -- I guess I should not say  
19 "at least," but there is that mechanism in place for  
20 reviewing of progress both by the ARB and by the  
21 Legislature.

22 COMMISSIONER BYRON: Okay, thank you. Please.

23 MR. COLVIN: Good morning, Commissioners. My name  
24 is Michael Colvin and I work at the Public Utilities  
25 Commission. One, I guess, question for Art, but maybe more

1 philosophical question for all of us to think about on the  
2 subject of the double-benchmark on these heat rates, and the  
3 question, first, is, if I understand correctly, you made the  
4 assumption of, well, let's use a heat rate of the marginal  
5 ad of what a new gas-fired power plant would be over time,  
6 and I understand that, except for when you get to the  
7 philosophical question of, if we are trying to figure out  
8 how much fuel is being saved by using the CHP, then I am  
9 wondering why we are using a new system and not the system  
10 average over time where there is --

11 COMMISSIONER BYRON: Mr. Colvin, I am so glad you  
12 are asking this question.

13 MR. COLVIN: Okay --

14 VICE CHAIR BOYD: I think both Commissioners have  
15 that question.

16 MR. COLVIN: And I think, to push it a step  
17 further, it seems to me, and please eliminate me on where I  
18 am missing the logic up here, but it seems to me that this  
19 is more of an accounting exercise than anything else, that  
20 we want to know, well, how successful were these units in  
21 saving greenhouse gases, and I am wondering why it is a  
22 certification issue and not an accounting issue for the Air  
23 Board to try to figure out, with help from the PUC and from  
24 the Energy Commission. So I am wondering, 1) why aren't we  
25 using an average, that something would make more sense, 2)

1 if we were going to be using an average, I would echo Mark  
2 Rawson's point of the average should be going down over time  
3 as we get more renewables, it should be not a static number,  
4 most likely, and 3) is there a way -- why isn't this just an  
5 accounting exercise? Maybe I will stay here.

6 COMMISSIONER BYRON: Good questions, thank you.  
7 Go ahead.

8 DR. SOINSKI: Yeah, it is sort of the way this  
9 process has evolved. I started by looking at the Itron  
10 analyses on the Self-Generation Incentive Program and I  
11 think maybe E3 did some analyses also, and there what they  
12 used was the marginal resource that was being dispatched,  
13 and I am trying to think of -- Chris Marmay of LBNL also did  
14 some analyses of what was being dispatched and what the  
15 emissions were that would be displaced by CHP. For some  
16 reason, I sort of wandered off on this other path of looking  
17 at what the new generation would be, thinking because that  
18 is what most of the stakeholders were proposing. To my  
19 mind, well, it really is an accounting issue and it is a  
20 policy issue of what you assume the existing resource is.  
21 If you assume the existing resource is the current system,  
22 then I would guess that, initially you would have a higher  
23 benchmark effectively, a higher heat rate benchmark, and  
24 that perhaps 10 years from now, or so, it would be lower,  
25 perhaps significantly lower because of how it would be --

1 and I hope we do not displace any renewables -- but, right,  
2 if you start doing that, you start putting that on the  
3 margin, then you in fact have a very low effective system  
4 heat rate. So have you actually looked at the numbers?

5 MR. RAWSON: I have.

6 DR. SOINSKI: You have. I have, too, and I have  
7 forgotten. Do you know what the average heat rate on the  
8 California Grid is for natural gas?

9 MR. RAWSON: Well, see, let's not get too far off  
10 on a tangent here, but I do not know if you want to limit it  
11 to just natural gas, I think you want to look at what it is  
12 in total, thinking about hydro, thinking about coal,  
13 thinking about nuclear, thinking about the entire system.

14 DR. SOINSKI: The whole system mix, right.

15 MR. RAWSON: And I think there are a lot of  
16 different ways of calculating this, but I guess my more  
17 fundamental question is, you make the choice of going down  
18 this path of a new marginal unit and not the system average,  
19 and I would encourage you to -- if you are going to be  
20 making that choice, to really justify it in a stronger way  
21 than just on here. I think the math is there of how you got  
22 to the 775 -- or, excuse me -- 7,750.

23 DR. SOINSKI: Right, but what I tried to assume  
24 was that what was being displaced was a dispatchable unit,  
25 and since nuclear and renewables and coal are must run, they

1     were looking at natural gas units. So their analysis was  
2     based exclusively on natural gas as being on the margin.

3             MR. RAWSON: Even though, in your own kind of  
4     slide deck, you are saying that these units are going to be  
5     operating continuously. So, again, I would like us to think  
6     about this a little bit more carefully.

7             COMMISSIONER BYRON: Good questions. And this  
8     "must run," I think that applies to the nuclears, and of  
9     course it applies to other base load units, it is a "must  
10    take" on the renewables, and so it is not an apples and  
11    applies comparison.

12            MR. RAWSON: Right.

13            COMMISSIONER BYRON: I think your comments are  
14    very good. We appreciate them.

15            MR. RAWSON: Of course. Thank you, Commissioner.

16            COMMISSIONER BYRON: Mr. Davidson, you have been  
17    patient. Good to have you.

18            MR. DAVIDSON: Thank you, it is good to be here.  
19    Keith Davidson with DE Solutions. A question for Art. You  
20    know, when I looked through your certification document and  
21    listened to your presentation, I mean, there is a lot of  
22    threshold metrics that are in your certification document,  
23    the 60 percent of overall efficiency, 1,100 pounds per  
24    megawatt hour, CO<sub>2</sub> equivalent, 15 percent minimum on the  
25    thermal, and then the 7,750 Btu's a kilowatt hour on the

1 marginal, or the displaced plant. And my question is, I do  
2 not remember all these in the Bill. Were all of these in  
3 the Bill? And if not, can you tell me which ones were added  
4 over and above what was in the Bill?

5 COMMISSIONER BYRON: It seems like you know the  
6 answer to your first question.

7 MR. DAVIDSON: No, I do not know it. I do not --  
8 I do not remember seeing the 7,750.

9 COMMISSIONER BYRON: This is a good clarification  
10 to have.

11 DR. SOINSKI: Right. The 60 percent, of course,  
12 is in the Bill, the 15 percent was added to prevent de facto  
13 wholesale generation, but as Ray Williams has pointed out,  
14 it really becomes operable only at power to heat ratios that  
15 you are unlikely to see, so it effectively is there, but it  
16 never really kicks in and affects operations. The double-  
17 benchmarking is something new and I did it because I found  
18 it to be intellectually pleasing in the fact that it gives  
19 you a fuel savings, although, I mean, I call it a Fuel  
20 Savings Standard, but it has in it a double-benchmark. If  
21 you have a fuel savings, you immediately know you have  
22 greenhouse gas savings. So that was the reason for doing  
23 it, is it makes it a very transparent way. As Ray's  
24 graphics so beautifully show, they really to a large extent  
25 achieve the same thing. And one of the things I would ask

1 Ray is, if he has thought about this enough, is what if we  
2 were to put in a higher efficiency standard, could that  
3 carry the Guidelines alone, like 62, 63, 65 percent for  
4 everybody. You know, because then you wind up -- there is a  
5 small region -- well, there is a region at low power to heat  
6 ratios where the double-benchmark really comes in, and then  
7 after that it is the 60 percent efficiency that takes over.  
8 So if you just had like a higher efficiency standard, you  
9 would effectively get the double-benchmark plus 5 or 10  
10 percent, or something in between, plus you now start  
11 approaching that area to the far left of the curve, where  
12 the double-benchmark, in fact, is the determining factor in  
13 whether you are saving greenhouse gases or not.

14 COMMISSIONER BYRON: Mr. Davidson, this is where  
15 your comments are really helpful and important because, you  
16 know, policy makers are setting guidelines here, but yet it  
17 is you that has a closer connection to the customers that  
18 are installing these kinds of systems. Can you give us a  
19 sense of these -- I will not call them "Guidelines" -- these  
20 standards? Do they impact installations in a negative way?

21 MR. DAVIDSON: Well, I am just concerned that  
22 there are so many different metrics and numbers that are  
23 being tossed out, and I would agree that to hone in on a  
24 single metric or two is all you need to do, I mean, we do  
25 not need to have a half a dozen metrics to have to worry



1 about, "If we were to meet this, do we satisfy this?" And  
2 it is just going to confuse the end users and developers, I  
3 am afraid. And, I mean, I am not opposed to going to a  
4 double-benchmarking thing, my preferred approach would be,  
5 though, to not compare it against electricity plus thermal.  
6 My preferred approach would be to look at CHP's fuel  
7 chargeable power, or greenhouse gas emissions chargeable  
8 power. I think, there, you get things on a per megawatt  
9 basis and it is a lot easier to draw the graph. I mean,  
10 what you have got, you know, if I could just kind of say  
11 engines and simple cycle turbines, they do not even  
12 recuperate turbines, like the slow turbine mercury, they all  
13 pretty much are in the power to heat ratio of .5 to 1. I  
14 mean, they are all in that little narrow range. And the  
15 combined cycle plants are way off to the right, they are  
16 real big power plants that would be going in, big combined  
17 cycles, they are often in the 3 to 4 category, and the  
18 really old traditional CHP, where you put in like a steam  
19 turbine with a back pressure steam turbine, so you are  
20 basically at a steam plant at an industrial facility that  
21 maybe has a 150 PSI steam requirement, and you make your  
22 boiler 600 pounds, and you take that 650 pounds and generate  
23 a little bit of electricity, there your power to heat ratio  
24 is probably like .1, or .1 to .5. So there you are getting  
25 down closer to the boiler, and you can see the way that Ray

1 and PG&E did it. You have got -- it is showing that you  
2 really need high overall efficiencies to kind of compete.  
3 But if you did it the other way on a power to heat ratio,  
4 you would see that the incremental fuel required into these  
5 like old steam turbine systems, the incremental fuel would  
6 be something on the order of 4,000 Btu's per kilowatt hour,  
7 which is much lower than any of the benchmarks that Mark or  
8 Ray or anybody has talked about. So, on a megawatt basis,  
9 they are, in fact, very efficient way to generate  
10 electricity. And I worry about the way it is being shown  
11 here; it skews it because of the large amount of fuel is  
12 really just being used as a boiler fuel. And I do not know  
13 that telling them they need to do 10 percent better is the  
14 same as telling somebody that has got power to heat ratio of  
15 2 or 3, to do 10 percent better. I think you are asking  
16 them a lot more. So that would be my one thought on Ray's  
17 analogy. But I also think that, I mean, this is like one  
18 dimension of combined heat and power, it is just selling  
19 back some electricity from when you have got excess thermal,  
20 and, Art, I know you guys have looked at this, but I do not  
21 think there is a lot of facilities in the State of  
22 California that are real good candidates for this. And I  
23 wonder why we are debating so much about this. To me, you  
24 want to make it simple and you want to let the intent of  
25 what Blakeslee put down in his Bill to move forward, and if

1 you have got thermal, and you want to make more electricity,  
2 that is okay to do it and there is an outlet for it. So --

3 DR. SOINSKI: Keith, do you have a specific  
4 recommendation?

5 MR. DAVIDSON: I like the 60 percent number for  
6 now. And then revisit it later and you can go to a -- but I  
7 would suggest that you go to a fuel charge volt power  
8 approach and that is a straightforward calculation, a very  
9 simple calculation.

10 COMMISSIONER BYRON: Mr. Davidson, I hope you will  
11 give us some written comments. Those are very helpful and I  
12 think you are absolutely right. I am concerned, as well,  
13 that we may be complicating our standards for this  
14 unnecessarily. Please.

15 MR. JUDD: Hello again. Gordon Judd with NRG.  
16 One of the things I would like to point out is that a lot of  
17 CHP or candidate CHP installations are not necessarily 7 X  
18 24 operations, they may run 8 hours to 16 hours a day,  
19 coincident with whatever production schedule is going on at  
20 the facility. And when we look at that and when we are  
21 looking at greenhouse gas reductions, one of the things we  
22 have to keep in mind, that I was really concerned about, you  
23 know, looking at the marginal combined cycle plant that  
24 would be displaced, and when we look at a CHP that would be  
25 displacing 8-16 hours a day of electricity, you know, some

1 of the electricity in this displacement is not combined  
2 cycle generated electricity, it is peaker generated  
3 electricity, so when we look at a 7,700 heat rate, there are  
4 some CHP facilities that are displacing 12,000 Btu per  
5 kilowatt hour electricity, and the way we are structured  
6 right now in capturing it with these benchmarks, we are not  
7 going to really capture that, and we are not going to really  
8 capture what is the real greenhouse gas savings, by picking  
9 the combined cycle marginal unit that we would add to that.  
10 So that is one thing I would just throw to staff to maybe  
11 look at, is to make sure whatever system we come up with,  
12 that we really do capture what is the true greenhouse gas  
13 savings. And then I did have one comment on Ray's  
14 presentation from PG&E with regard to the PG&E proposal. He  
15 has got it broken down into 0-5 megawatts and 5-20  
16 megawatts; kind of echoing another statement that was made  
17 earlier, let's keep it simple. Why do we want a threshold  
18 of 5 percent increment or 10 percent increment? If we have  
19 a CHP facility opportunity that saves 1 percent in  
20 greenhouse gas, why would we not do it? Because, obviously,  
21 CHP has other incentives, too, there is grid reliability,  
22 with economic incentive for the customers and all those  
23 things, and all we really want to say is that, "Okay, we'll  
24 give you the CHP advantage, as long as it saves greenhouse  
25 gas." And there should not be any reason to put an

1 increment out there. The other thing that this breakdown  
2 does that I would say is detrimental to making the system  
3 work is that, if you match it to the thermal load and you  
4 end up with a CHP system that is 4.8 megawatts, then that  
5 has to make 5 percent, but now if it goes to the next level  
6 up of 5.3, now you have introduced another hurdle for it to  
7 get over. And what was the real benefit? So I would say,  
8 just make it simple, it is already threshold at 20  
9 megawatts, and leave the standard the same for everything  
10 under 20 megawatts.

11           COMMISSIONER BYRON: I cannot write fast enough.  
12 Those were really good comments and, you know, you can see  
13 where assumptions that we get ourselves into are really  
14 crucial here, because someone else might argue maybe five  
15 years from now your peaking CHP is displacing all the solar  
16 renewable we are going to be purchasing and putting on the  
17 system, so you can see the difficulty in that displacing  
18 assumption. I also agree with you about the 5 or 10  
19 percent, I have not bought into that, that is an artifact  
20 that has been introduced into the comments just to  
21 demonstrate the kinds of CHP necessary to get GHG reduction,  
22 but I would put it slightly different, Mr. Judd, we are not  
23 taking into consideration at all here the customers'  
24 interest in investing in this kind of facility. We do it  
25 for other reasons. And that is not factored into this at

1 all. If it is breakeven on GHG, and a customer wants to do  
2 it for many other reasons, that should be sufficient.

3 MR. JUDD: Right.

4 COMMISSIONER BYRON: So I agree with you on that.  
5 Also, that arbitrariness of the 5 megawatts, I agree, that  
6 is a difficult issue and I think the comments that we got  
7 from PG&E were intended to provide, you know, maybe a little  
8 bit lower bar for smaller CHP, but I hear what you are  
9 saying, that that does represent an arbitrary step change,  
10 and I have watched so many other end use customers try and  
11 modify their designs and their systems, I mean, when they  
12 are somewhat arbitrary regulatory hurdles.

13 MR. JUDD: Yes, sir, and even the 20 megawatts one  
14 is a little bit on the arbitrary side because, in this state  
15 we do have CHP opportunities that are larger than 20  
16 megawatts, and I know that it was not this Board that  
17 drafted that, but that is already, I guess, in place. But  
18 the 20 megawatts is already an arbitrary threshold, so I do  
19 not think we should anymore to that. And one other comment  
20 I would have on the -- if you want to call it the heat rate  
21 number is we also need to look at the heat rate of any  
22 imported electricity during those times. So, if we are  
23 going to evaluate not just the electricity that is generated  
24 in California, we should also be evaluating electricity that  
25 is imported to California well during those peak times. And

1 that will get a more accurate heat rate number.

2 COMMISSIONER BYRON: Yeah, those are very  
3 difficult things for us to calculate, but you are right,  
4 during peak time, the system average changes substantially.  
5 Good comments. Thank you. Now, Mr. Rawson, we do want to  
6 hear from you, but I also want to make sure that if there is  
7 anyone else that wishes to comment that they have an  
8 opportunity, as well. Mark, if you would not mind, let's  
9 hear from some more folks, but I hope you will not go away.

10 MR. TORRIBIO: Good morning, Commissioners. I am  
11 Gerry Torribio with Southern California Edison. Just one  
12 comment and then a question for Dr. Soinski. The comment is  
13 that several of the other speakers here talked about the  
14 loss factors that will be built in to the benchmarks, and  
15 uncertainty -- are they too high, are they too low -- and I  
16 would submit that this feeds back into it being desirable to  
17 in some way revisit the standards and look at the actual  
18 history of the types of projects, the voltage levels that  
19 are being actually interconnected under the program. That  
20 should provide some guidance. Another factor that will  
21 impact these loss factors, or what should be the loss  
22 factors, would be the amount of excess energy sales. It  
23 could be one factor if they are almost totally displacing  
24 utility generation and serving their own load. To the  
25 extent that they sell or export power, that will skew it.

1 So, again, just the idea of making use of the knowledge that  
2 is gained through the certification and the annual  
3 reporting. The question I have is, the Application for  
4 Certification process is based on the full power ISO rating  
5 of the generators, and I just wondered what the thought was,  
6 the process of deciding on that, because it occurs to me  
7 that many of our customers will be in parts of the state  
8 that are warmer, and in one way or another they are not  
9 really going to see those ISO conditions.

10 DR. SOINSKI: The ISO conditions occur, I believe,  
11 unless I made an error and let them creep in somewhere else,  
12 in the full load calculation where Blakeslee's legislation  
13 has to be satisfied, that has to be at least 60 percent at  
14 full load, and it is based on, you know, expected -- or the  
15 equipment manufacturer's or vendor's specifications, it is  
16 not something that is actually measured. Everything else is  
17 operational. So that is unique. It is something that is in  
18 the legislation, I did not talk very much about it because  
19 it is a one time thing and I did make the point that it does  
20 not come back and be revisited once you start operating,  
21 that is just the actual operation, which is ambient  
22 conditions, not ISO.

23 MR. TORRIBIO: Okay, thank you.

24 COMMISSIONER BYRON: Thank you, Mr. Torribio. Are  
25 we going to hear additional comments from SCE at some point,



1 as well?

2 MR. TORRIBIO: Yes, sir. We will provide written  
3 comments.

4 COMMISSIONER BYRON: Okay, good. Thank you.

5 MR. DELFINO: Good morning. I am Tom Delfino with  
6 AMEC Geomatrix.

7 COMMISSIONER BYRON: I am sorry, what was the  
8 company?

9 MR. DELFINO: AMEC Geomatrix, G-e-o-m-a-t-r-i-x.

10 COMMISSIONER BYRON: And, Tom, what is your last  
11 name, please?

12 MR. DELFINO: Delfino, D-e-l-f-i-n-o. I have a  
13 couple of questions about bottoming cycle and specifically  
14 how the law applies to bottoming cycle. It seems like it is  
15 written for topping cycle, or with topping cycle in mind. I  
16 am curious how it went from the 60 percent efficiency  
17 requirement and how it applies to bottoming cycle. And the  
18 second question I have is, in an earlier draft, there was an  
19 efficiency of 40.8 percent proposed, and I am curious how  
20 that 40.8 percent was calculated. Thank you.

21 DR. SOINSKI: Yeah, the bottoming cycle standard  
22 in -- well, I guess it was a couple questions -- first of  
23 all, are bottoming cycles included or not? Everything --  
24 people typically think about topping cycles. The people who  
25 represent the interests of high temperature thermal

1 utilization equipment, such as cement manufacturers, would  
2 like to have the option of selling into the grid also, so  
3 from a practical standpoint, say, to promote bottoming  
4 cycles, and I think utilities -- there is pretty universal  
5 agreement that if you are not doing supplementary firing,  
6 and that is what the Guidelines reflect, then you do not  
7 have any requirements in terms of meeting most of the  
8 emissions standards. Once you get into supplementary  
9 firing, there is a question of how efficient do you have to  
10 be in generating the electricity, and the original  
11 assumption I had was that you had to be as efficient as what  
12 I consider to be in July the efficiency of the central  
13 station plant, which was roughly 40 percent efficient, so  
14 that is the way that number came down. Now, it would be a  
15 higher efficiency. But if 60 percent is required of topping  
16 cycles and it is in the legislation, then I really do not,  
17 in my mind, have a way to get around that requirement. And  
18 the committee certainly is free to exercise its judgment on  
19 that. I have been thinking about it this past week because  
20 of questions about it. The assumption I had is that when  
21 you have a bottoming cycle, you are getting a fair amount of  
22 hot air going into the system, part of which -- or most of  
23 it -- which you are going to be converting to electricity  
24 and you are supplementary firing that. So, in a way, you  
25 have a thermal boost already in your system, so even though,

1 you know, there are not prime movers that, fired by  
2 themselves, will give you 60 percent, with that waste heat,  
3 you might be doing that. There is a practical problem, I  
4 think, there in that if you are really using your thermal  
5 energy well in your bottoming cycle plant, in your  
6 industrial process, then the amount and temperature of the  
7 heat that you are taking off is probably not that high,  
8 which means that you are really not getting this thermal  
9 boost that I, in my construct, had giving you a high 60  
10 percent efficiency. So if someone has specific suggestions  
11 on that, I would certainly be interested because I have  
12 bounced from lower efficiency to higher efficiency, now  
13 perhaps back to lower efficiency. And I see it as a  
14 practical problem because that is certainly something that  
15 we would want to encourage, that is bottoming cycle co-  
16 generation.

17 MS. KELLY: Are there any other questions from the  
18 audience? When we are finished here, we will go to the  
19 WebEx, there are some questions there, as well.

20 COMMISSIONER BYRON: We have not forgotten you,  
21 Mr. Rawson. Maybe this would be a good time. Would you  
22 like to add any additional comments?

23 MR. RAWSON: This is Mark Rawson with SMUD. I  
24 wanted to echo Keith Davidson's comments about the customer.  
25 Let's not forget about the customer in this discussion and

1 metrics they have to report, the more complicated it is, we  
2 spend a lot of time talking to customers about doing CHP at  
3 their sites, this is not their core expertise and the more  
4 requirements we put on them for reporting and whatnot, it is  
5 just one more layer of uncertainty that is basically going  
6 to make them cautious about doing projects.

7 COMMISSIONER BYRON: Very good, thank you.

8 VICE CHAIR BOYD: Thank you, Mark. Ever since Art  
9 referenced this to IRS forms, I have been scared.

10 COMMISSIONER BYRON: Yeah, in fact, you know, how  
11 come it has such a long name to it? CEC Form 2483, or  
12 something like that.

13 VICE CHAIR BOYD: It does look like taxpayer --

14 MR. WILLIAMS: Hi, this is Ray Williams again from  
15 PG&E. I tried to wait until the end because there were no  
16 more comments on my remarks and my presentation, the first  
17 is on the customer side, I believe in the PUC proceeding, we  
18 had supported a simplified contract for smaller customers,  
19 and then one that has a little more depth to it for larger  
20 customers in the context of, you know, the overall 20  
21 megawatts, so we are -- for PG&E, I suppose, we are somewhat  
22 sensitive to the issue that smaller customers should have an  
23 easy time working its way through the requirements on the  
24 PUC side. And if I am wrong about that, if Michael knows  
25 differently, he could certainly correct me, but I believe

1 that is the direction in the PUC proceeding on the contract.  
2 Secondly, sort of getting back to the policy issue, do you  
3 want a curve that guarantees -- you know, there is a policy  
4 issue here -- do you want a standard here that is  
5 essentially carbon neutral, or one that ensures some  
6 greenhouse gas reductions from each facility that would  
7 qualify in this program? You know, we feel obviously the  
8 need to make progress toward the ARB's target, so if the  
9 Committee comes down at essentially a carbon neutral kind of  
10 standard, you know, that is sort of the policy decision that  
11 you come to, I think it would be good to confer with the  
12 ARB, you know, that that is where you are headed. I do not  
13 see anyone from the Air Resources Board here today, so in  
14 terms of this program and sort of their expectations for a  
15 combined heat and power program measure under AB 32.

16 COMMISSIONER BYRON: So let me turn that around,  
17 since ARB is not here, and ask, do you have a basis for  
18 recommending 5 or 10 percent? Or is this going to be round  
19 numbers or -- why not zero percent?

20 MR. WILLIAMS: Zero percent may get you very  
21 little greenhouse gas reductions. It will get you some  
22 because obviously some CHP will come in above that, but per  
23 megawatt installed, it may get you less in terms of  
24 greenhouse gas reductions overall.

25 COMMISSIONER BYRON: Certainly --

1           MR. WILLIAMS: I have -- I wish I had a study here  
2   that I could pull out and say, you know, this is the  
3   foundation for 5 percent versus 10 percent. It is just  
4   based on discussions, essentially. I thought it would be  
5   more accommodating for smaller customers because, you know,  
6   it is difficult and you just make it more difficult to  
7   achieve for smaller customers for a lot of the reasons that  
8   have been mentioned in this and prior workshops. On the  
9   marginal heat rate, when we did that analysis, we looked at  
10  all the hours there and we came out around 7,000, so  
11  essentially it encompasses some on the peak and it also  
12  encompasses a few hours where natural gas is not on the  
13  margin, so it was intended not to be selective for the -- it  
14  was intended, really, to look at what would happen on the  
15  system when you essentially added a fairly significant  
16  amount of base load power, and what would be back down. And  
17  then, on Art's comment about, would 62 or 65 percent  
18  independent of a power heat ratio work, and that is why I  
19  put this graph up, if you look at the 65 percent, my view is  
20  that you really should accommodate directly or indirectly  
21  the effect of the power and heat ratio. When the power and  
22  heat ratio is low, you may end up having facilities that  
23  actually increase greenhouse gas emissions because the  
24  boiler weighted more heavily in that separate heat and power  
25  calculation. And you also may reject some facilities, or

1 some facilities may not quality who actually might reduce  
2 greenhouse gas emissions, as the power and heat ratio  
3 increases. So any efficiency standard, without taking into  
4 account one way or the other a power and heat ratio is  
5 likely to be imperfect. And then, finally, I would support  
6 the prior comments on bottom cycling. I understand you  
7 might be constrained by the statute, but that is certainly  
8 an opportunity that, in one way or another, should be taken  
9 advantage of. So those are my comments. Thank you.

10 COMMISSIONER BYRON: Very good, thank you.

11 MR. LEMEI: Commissioners, can I ask a clarifying  
12 question here? This is Galen Lemei from the CEC, former  
13 staff counsel on this program. One question that I have  
14 regarding the extremely helpful chart that you just put up,  
15 and to reiterate your previous comment, it is unclear to me  
16 which of the driving factors on that chart, as the disparity  
17 increases between the drivers in the proposed guidelines  
18 versus your carbon neutral line, and the other lines, it  
19 would be helpful to know which factors are being driven by  
20 statute for that disparity compared to which factors are  
21 being driven by things that may be more flexible in our  
22 program. Is that something that you are able to speak to?

23 MR. WILLIAMS: Yes, and I am sure Art could, as  
24 well. The 60 percent efficiency, I believe, is what is in  
25 the statute.

1           MR. LEMEI: Right. So along there, that is the 60  
2 percent right there.

3           MR. WILLIAMS: That is correct.

4           MR. LEMEI: Yeah, and that is what I was  
5 suspecting, but I just wanted to make sure that my suspicion  
6 was correct. All right, thank you very much, appreciate it.

7           MS. KELLY: Any other questions from the audience?  
8 Keith, do we need this up here anymore?

9           MR. DAVIDSON: No, that is okay. Keith Davidson  
10 with DE Solutions again. I am not sure who this question is  
11 directed towards, but it has to do with monitoring  
12 performance over the course of the AB 1613 Sellback  
13 (phonetic) and particularly the thermal monitoring. And I  
14 want to appreciate very much the exemption that you put in  
15 there for the smaller systems, I think that was a big  
16 relief, even for the larger systems, the question becomes --  
17 and I am not an expert in this, maybe Gordon, maybe you have  
18 got some comments on this, but I am concerned that if we  
19 take this thing to the limit that require, for example,  
20 utility building grade steam meters, or heat meters, on  
21 these systems to track the amount of heat that is being  
22 used, just to see if it meets a certain threshold or not, if  
23 that is overkill and something that is going to be way too  
24 costly for what we are trying to accomplish with this  
25 program. And I know that -- I do not know if it was you,



1 Art, or somebody in the comments talked about the NYSERDA  
2 protocols and they can be, you know, they can be subject to  
3 a great deal of interpretation, number one, but at the one  
4 end of the spectrum, they can be very expensive. And do you  
5 have any comments on that? Or maybe Gordon has some that  
6 you can share with us?

7 COMMISSIONER BYRON: Mr. Davidson, don't you also  
8 find that customers are interested in accurately knowing  
9 what their savings are, often times, when they enter into  
10 contracts or agreements with third-party providers?

11 MR. DAVIDSON: Yeah, in most cases, I think, for  
12 sure they would want billing grade thermal meters on their  
13 system, but a lot of customers that are doing it themselves,  
14 I mean, they keep track of the amount of gas that they use  
15 each month and sometimes they will be a little bit more  
16 specific than that, but when meters get out of whack, we  
17 have got to shut the production down to fix the meters, and  
18 they just get to it when they get to it.

19 DR. SOINSKI: I think your question relates to  
20 what hat I am wearing at the particular time, having spent  
21 several years dealing with the NYSERDA protocols and the  
22 development thereof, and looking at the NYSERDA and their  
23 CHP program where they have over a hundred systems that they  
24 are monitoring on a routine basis, and as I remember, the  
25 cost is something like \$15,000 to \$25,000 a year for the

1 instrumentation and for the reporting over a three-year  
2 period of time, which is a period over which they require  
3 that their demonstration projects be monitored. So there is  
4 a cost, it is minimally not zero, it is sort of the catch,  
5 then, I talk about which hat am I wearing, if the customer  
6 is not required to do it, then how can there be assurance  
7 that, you know, the monitoring is actually going to be done?  
8 Because I do not know of anybody else who has the money to  
9 do it. And if it not monitored, then how are the ratepayers  
10 protected as being assured that, you know, they are in fact  
11 getting something that they are effectively paying for, or  
12 could perhaps being paid for? So it is sort of that thing  
13 and, also, it is customer protection. When we take the  
14 Self-Generation Incentive Program, which admittedly is very  
15 different from this, because the Self-Generation Incentive  
16 Program was upfront money, so that there is no real  
17 punishment, except economic suffering on the part of the  
18 customer if it does not perform, whereas, in this case, if  
19 you do not deliver electrons, then you do not get any money.  
20 If your systems works as a CHP system, provides your  
21 thermal, provides your on-site electricity, and it is  
22 performing well, then you win. But if you are going to  
23 export, and that is one point, and the maximum installed  
24 capacity is 20 megawatts, that does not mean you are going  
25 to be getting 20 megawatts, perhaps, from any one of these

1 systems at any time. So I am not sure how much is going to  
2 be delivered. But it is that sort of -- I have gone through  
3 so many of these arguments with ISO over the last year on  
4 how do we assure compliance without getting onerous, and I  
5 wish there was some magic fund that we could just fund the  
6 monitoring from, but I do not know of any fund that exists.  
7 This is almost getting into the area of philosophy or public  
8 policy, is what do you do here?

9 COMMISSIONER BYRON: Go ahead, since we are in the  
10 area of philosophy now.

11 MR. DAVIDSON: Well, you know, I do think that  
12 some level of instrumentation is probably going to want to  
13 be done by the customer, but, again, it is a question of how  
14 expensive and how much redundancy do you have in there to  
15 ensure that you are getting it all the time. I mean, there  
16 are a lot of systems that, for example, are installed with  
17 no way to reject heat. In other words, the systems, like a  
18 lot of industrial plants, the co-gen systems are designed to  
19 follow the steam load, and when you are doing that, you are  
20 going to be getting pretty much rated overall efficiency out  
21 of the system. And to me, it is not really necessary to put  
22 in expensive, redundant, Btu metering equipment in certain  
23 situations like that. And there are a lot of engine systems  
24 where there is no radiator, there is no dumpee, they just  
25 thermally load file, when there is a thermal demand, they

1 are on, when there is no thermal load, they are off. And a  
2 lot of those would be under your threshold and would not  
3 necessarily be subject to this anyway, but I do think that  
4 there ought to be some kind of flexibility in there to allow  
5 the customer to argue for less costly ways to provide  
6 assurance that they are meeting whatever thermal threshold  
7 they have to meet. The electric side of it, I think that is  
8 more straightforward. But it is the thermal that I think is  
9 the issue. And there ought to be some flexibility to allow  
10 customers to be able to prove that, yeah, we are meeting the  
11 efficiency thresholds, and this is how we are going to do  
12 it.

13 DR. SOINSKI: Would you require some -- would it  
14 be strictly engineering analysis, then, that would get you  
15 there? I mean, I understand your point, if your thermal  
16 load following it have no capability of dumping thermal,  
17 then you effectively are constrained by being thermally  
18 optimized. Correct?

19 MR. DAVIDSON: Yes, correct. And I do not want to  
20 pretend to have a solution for you, other than maybe just  
21 build in a little flexibility in there to allow the customer  
22 to come up with other creative, but more cost-effective ways  
23 of demonstrating compliance.

24 COMMISSIONER BYRON: Yeah, that is the challenge.  
25 Any other comments?

1 MS. KELLY: Yes, we have comments. I think they  
2 are still on the WebEx.

3 COMMISSIONER BYRON: Okay, I think we will solicit  
4 input from anyone on WebEx, and if you will identify  
5 yourself -- or are you going to call them out, as to who has  
6 comments?

7 MS. KELLY: Does anyone have comments?

8 COMMISSIONER BYRON: Anyone on our WebEx have  
9 comments, please speak up.

10 MR. SILSBEE: Thank you, Commissioners. Let me  
11 just check that you can hear me?

12 MS. KELLY: Yes.

13 COMMISSIONER BYRON: Correct. Go ahead.

14 MR. SILSBEE: Thank you. This is Carl Silsbee  
15 from Southern California Edison. We will be providing  
16 comments next Monday, but I wanted to touch on one issue  
17 that came up in the discussions today in my comment, and  
18 that is the choice of an existing marginal plant benchmark  
19 versus a new plant benchmark. Either a new CCGT or a new  
20 CHP unit can push existing older fossil plants off the  
21 margin, and thus reduce GHG. Our system has a limited  
22 capacity to absorb new fossil generation because this needs  
23 aggressive renewable and energy efficiency goals, and for  
24 that reason, it is sometimes an either/or choice, and for  
25 that reason, we support what staff has proposed in the draft

1 guidelines, to use a new plant standard for designing the  
2 Btu per kilowatt hour benchmark that goes into the Fuels  
3 Saving Standard.

4 COMMISSIONER BYRON: Why not, Mr. Silsbee, why not  
5 then support a renewable plant being displaced since you  
6 have to --

7 MR. SILSBEE: Well, the state has already  
8 established very aggressive goals for renewable generation  
9 that we are trying to achieve. As you are well aware, there  
10 are a lot of impediments to doing that. There are also some  
11 very complicated issues with regard to operability of the  
12 grid in the face of higher levels of intermittency. And  
13 these things, of course, cannot be really considered in  
14 isolation, but need to be part of the central planning  
15 process.

16 COMMISSIONER BYRON: All right, thank you. We  
17 look forward to your comments. I think we do have some  
18 draft comments already from SEC, correct, Dr. Soinski? As I  
19 recall, your staff response to SEC comments --

20 DR. SOINSKI: Oh, correct, that was as a result of  
21 our July workshop.

22 COMMISSIONER BYRON: Okay, from the earlier  
23 workshop.

24 DR. SOINSKI: Yes.

25 COMMISSIONER BYRON: All right, good. We look

1 forward to your additional comments.

2 MR. SILSBEE: Thank you.

3 COMMISSIONER BYRON: Anyone else on WebEx?

4 MS. KELLY: No?

5 COMMISSIONER BYRON: Mr. Colvin.

6 MR. COLVIN: One thought that I had in listening  
7 to some of the conversations, that I just wanted to make  
8 certain was not being lost, the goal of AB 1613 obviously is  
9 to produce greenhouse gases from the capture and utilization  
10 of waste heat, and we have talked a lot about, well, what  
11 about the customer and their ability to install, what about  
12 the utility --

13 COMMISSIONER BYRON: No, we have not talked enough  
14 about the customer --

15 MR. COLVIN: We have had some questions reminding  
16 us to talk about the customer, and we have had some of the  
17 utility folks saying, "Well, what about the grid? What  
18 about our portfolio?" And I think the third thing that is  
19 being forgotten is what about the overall societal system.  
20 And thinking about the three products that are being  
21 generated when you install combined heat and power unit, you  
22 have the heat which, you know, a boiler or some sort of heat  
23 source is a good comparison, but then you have electricity  
24 and there is some electricity that is being delivered onto  
25 the grid, and that is what we are designing this tariff for,

1 and that is what we are talking about in our PUC proceeding,  
2 but the electricity that is being consumed on-site is where  
3 most of the power to heat ratio is really being maximized,  
4 and that is where you are getting a lot of your bang for  
5 your buck in terms of the greenhouse gas savings, and then,  
6 in order to make certain you have a thermal match, you  
7 probably are going to be generating extra electricity that  
8 is then being delivered to the grid via the tariff  
9 mechanism. In thinking about, well, what would the  
10 electricity have done that was being used on the facility  
11 site if not being generated on site, well, that would be  
12 electricity that would be delivered from the grid and would  
13 be a grid mix comparison, it would not be a marginal unit  
14 comparison. And for the electricity that is being delivered  
15 to the grid, then I understand some of the concerns that are  
16 being voiced, "Is this displacing renewables? Is this  
17 displacing something else? What are we comparing this  
18 electricity versus all the other sources of grid  
19 electricity?" And I understand that there is a concern  
20 about, well, is this actually reducing greenhouse gases in  
21 emissions intensity unit, except I go back to my earlier  
22 point that it is by the very nature of the fact that we have  
23 combined heat and electricity generation being used on-site,  
24 and then the excess electricity is what is optimizing that  
25 relationship. And I know that is kind of a cyclical thing



1 to talk about, but stepping away from it a second, I think  
2 the important thing for us to remember is, there might be  
3 very likely a situation where we are reducing greenhouse  
4 gases as a society, but perhaps increasing it on the margin  
5 for the electricity that is being delivered to the grid, and  
6 that is still probably a good net result, and so that is  
7 just another thing for us to think about as we are crafting  
8 these guidelines, of what is happening in the entire system.  
9 And I think we have been trying at the PUC to draft a  
10 contract that reflects that relationship, as well. So  
11 hopefully we can make certain that this all works out.

12 COMMISSIONER BYRON: I am so impressed with your  
13 understanding of this and I like the way you think and the  
14 way you are looking at it, so it does not make it any easier  
15 --

16 MR. COLVIN: No, sorry. I wish I had the magical  
17 answer, but --

18 COMMISSIONER BYRON: Thank you. Please.

19 MR. PEDERSEN: Commissioner Byron, Norman Pedersen  
20 for Southern California Public Power Authority. With me  
21 today is Leilani Johnson Kowal from Los Angeles Department  
22 of Water and Power. And I would just like to follow-up on  
23 your very provocative response to Carl Silsbee, your  
24 question to Carl Silsbee, about why shouldn't the new  
25 resource that we are going to be looking to for a benchmark

1 be a renewable, and also follow-up on Michael Colvin's  
2 comments that he made on the same topic to you just now. As  
3 I know you know, the Southern California Municipal Utilities  
4 are providing a carbon intensive product to their consumers  
5 at the current time. We recognize that the carbon intensity  
6 of the electricity that we deliver to our consumers is  
7 higher than the product that is delivered to consumers that  
8 are served by other utilities, elsewhere in the state. We  
9 are all consumed with reducing the carbon intensity of the  
10 product that we deliver to our customers, the carbon  
11 intensity of the electricity. And so we have a deep concern  
12 about adding resources that would not contribute directly on  
13 a 1:1 basis towards reducing the carbon intensity of our  
14 product. We recognize what Michael was just telling you,  
15 but on the other hand, we greatly appreciate the thought  
16 that underlay your comment, your question to Carl Silsbee.  
17 We do not have an answer for you, we are now working our way  
18 through this, for us, a very difficult issue -- how are we  
19 going to accommodate, on the one hand, this goal that we  
20 have for ourselves of dramatically reducing the carbon  
21 intensity of our product, while at the same time meeting the  
22 SB 1613 goals? Thank you very much, Commissioner.

23 COMMISSIONER BYRON: Okay, thank you, Mr.  
24 Pedersen. And I think I understood what you said. Okay,  
25 thank you, I got it. Any additional comments?

1 DR. SOINSKI: One comment that I would like to  
2 make, and I think it relates to the 5 or 10 percent adder  
3 that Ray suggested, if you have the 60 percent, or whatever  
4 standard, and you design to 60 percent, you are probably not  
5 going to maintain 60 percent, and you are going to wind up  
6 being decertified, and you are going to lose your ability to  
7 sell excess electricity, which is something that you have  
8 presumably used in your design process to optimize the  
9 operation of your system. And I think one of the great  
10 things about -- perhaps the greatest thing about AB 1613 --  
11 is that it allows users of industrial processes or  
12 commercial institutions to have design flexibility where  
13 they are no longer limited by the self-generation  
14 requirement or needs on-site, but they now can match their  
15 thermal load, have a more efficient system, and have an  
16 opportunity to export. And I lost my train of thought, I am  
17 sorry. Oh, the other point is that, if you design and  
18 intend to operate at only 60 percent, you are probably not  
19 going to make it, you lose the certification, so you are  
20 probably going to design and intend to operate at 5 or 10  
21 percent above the 60 percent threshold anyway, and if you  
22 use smart economics in an era of fossil fuel uncertainty,  
23 and perhaps price risk, you are already going to do that  
24 anyway. So I do not think we are going to see the PURPA  
25 machines -- and this is my personal opinion -- that we saw

1 in the past, just because there is a 42.5 percent  
2 requirement, and everybody is going to design at 42.5  
3 percent. I think that people are a lot smarter, sellers of  
4 equipment and vendors are a lot smarter than they used to  
5 be, and that we actually are going to get that -- at  
6 whatever level we specify, we are going to get better than  
7 that. And if we do not, then they no longer have the  
8 benefit of the program. So that is just perspective,  
9 perhaps saying, you know, maybe you do not want an adder, I  
10 do not know.

11 COMMISSIONER BYRON: Mr. Williams, do you want to  
12 comment again?

13 DR. SOINSKI: You are welcome to disagree with me.

14 MR. WILLIAMS: I think -- this is Ray Williams  
15 from PG&E -- I think on the subject of the adder, probably  
16 talked enough, we will probably provide some additional  
17 comments after reviewing this discussion. Actually, I was  
18 just discussing an issue with Michael Colvin of PUC. My  
19 understanding is that a CHP that qualifies, at least for  
20 IOUs under the standard, can essentially export their power  
21 through a contract with the IOUs. So that presumably would  
22 be attractive. My understanding also is, if they decertify,  
23 or they do not qualify CHP, does not qualify, that they are  
24 still able to schedule their power into an electric market  
25 through the ISO or some other approach. So they are not

1 precluded from exporting the power, it is probably not under  
2 the types and terms of conditions that would be as  
3 attractive as under the contract that is being developed at  
4 the PUC for the IOUs. I think that that is the case.

5 MR. COLVIN: I think that is the case.

6 COMMISSIONER BYRON: Mr. Colvin, you need to come  
7 to a microphone, please.

8 MR. COLVIN: I think that is the case, I have to  
9 double-check the contract just to make certain, but I was  
10 also channeling the ISO for a second, I do not know how much  
11 the ISO really wants to be dealing with individuals trying  
12 to self-schedule, you know, 500 kws worth of power at any  
13 given point. I mean, there is a reason why we want to try  
14 to do it through a more standardized --

15 MR. WILLIAMS: In any event, I think it is  
16 important to keep clear what the alternatives are for a  
17 customer, whether they qualify or not. When Art raised the  
18 question, I was a little bit confused myself about what the  
19 relative opportunities would be.

20 COMMISSIONER BYRON: Thank you very much. Mr.  
21 Pedersen, I am glad you are back. I was a little bit  
22 perplexed by one of your comments and I just want to make  
23 sure I have understood it correctly, and that was the reason  
24 for my comment. With a utility such as Los Angeles  
25 Department of Water and Power that has a very highly carbon

1 intensive mix right now, am I understanding that CHP would  
2 not be seen as an opportunity to help reduce that carbon  
3 output if, indeed, we were to structure these guidelines  
4 correctly?

5 MR. PEDERSEN: If the guidelines were structured  
6 correctly, yes. You could have a situation -- I think this  
7 is perhaps what Michael was going to -- where you could have  
8 a situation where perhaps the additional CHP would advance  
9 the ARB's policy of reducing the statewide greenhouse gas  
10 footprint, the economy-wide footprint of GHG in the State of  
11 California. But if we were required to add resources that  
12 required the consumption of fossil fuels and thus contribute  
13 -- we are in a position of adding fossil fuel to fired  
14 resources that did not contribute to direct reduction of the  
15 intensity of our product that we deliver to our consumers,  
16 that could be problematic for us. It becomes increasingly  
17 problematic as you look beyond 2020 towards attaining 2050  
18 goals, and I think this was exactly the same point that SMUD  
19 was raising for you. Right now, you know, we have blown by  
20 33 percent by 2020. Members of SCPA are adopting a 40  
21 percent RPS for themselves. The reason they are adopting  
22 that is not to necessarily promote renewables, it is they  
23 have a single-minded focus on reducing the carbon intensity  
24 of the electricity they deliver to their consumers. They  
25 are focused on the zero GHG emission attributes of those

1 added facilities. Right now, we are over-resourced. We  
2 have plenty of resources to provide electricity to our  
3 consumers. Whenever we add these additional resources that  
4 we are adding as rapidly as we can, the zero emission  
5 resources, whenever we add those resources, we have to think  
6 about what fossil-fired resources do we back down. And so  
7 if we are in a position of having to simultaneously add  
8 fossil-fired resources, that creates a concern for us. And  
9 so we certainly want to make sure that if we are going to be  
10 adding any resources that are fossil-fired, and have as an  
11 attribute additional GHG emissions, we want to be sure that  
12 we are not working against ourselves. And that is a real  
13 concern that we have about, frankly, the CHP measure that  
14 the ARB has adopted. We are concerned about the impact it  
15 might have on us, as we move as rapidly as we can towards a  
16 much lower carbon intensity electricity we deliver to our  
17 consumers.

18 COMMISSIONER BYRON: Okay. It is an extraordinary  
19 transformation that has taken place in Southern California  
20 Municipal Utilities. We do not want to do anything that  
21 would detract from this transformation, to go to the higher  
22 percentage of renewables.

23 MR. PEDERSEN: And that is why we were very  
24 interested in the response you gave to Carl Silsbee. Thank  
25 you, Commissioner.

1           COMMISSIONER BYRON: Okay. Yes, and we would like  
2 to make sure that all those at Southern California Municipal  
3 Utilities who have that approach and attitude continue to  
4 hang on to their jobs down there, too. Any additional  
5 comments? Where are we on the agenda, Ms. Kelly?

6           MS. KELLY: I think we have taken care of public  
7 comments. Does anybody have any specific standalone public  
8 comments they would like to make?

9           COMMISSIONER BYRON: All right, so we really are  
10 completing the agenda at this point?

11          MS. KELLY: Yes.

12          COMMISSIONER BYRON: Okay, good. I want to make  
13 sure everybody understands that. This has all been very  
14 good input. This will be the last call for any additional  
15 comments before we close. All right, Commissioner Boyd?

16          VICE CHAIR BOYD: A few comments. I am sitting  
17 here worrying about the age-old PURPA getting in the way of  
18 the good.

19          COMMISSIONER BYRON: Commissioner, I just wonder,  
20 Ms. Kelly, did you want to go through next steps before I  
21 ask Commissioner Boyd for his final comments? Or is that --

22          MS. KELLY: No, just go ahead and then I will take  
23 some last --

24          VICE CHAIR BOYD: You are next, Linda, so you --

25          MS. KELLY: Pardon?



1           VICE CHAIR BOYD:  You are on the agenda next, so  
2  you might as well --

3           MS. KELLY:  Okay, fine.

4           COMMISSIONER BYRON:  And I would like to have  
5  Commissioner Boyd have the last say instead --

6           MS. KELLY:  All right, that sounds fine.  Just  
7  last little details here.  Again, to echo what the  
8  Commissioners said, thank you very much for your input.  We  
9  have really appreciated all the input we have gotten from  
10 everybody.  Now we are down to the next steps.  On this  
11 slide, you will see that we are on the workshop on October  
12 12<sup>th</sup>, and the next step for us is October 19<sup>th</sup>, comments are  
13 due.  Please file them in Docket 08WHCE-1.  We have received  
14 a lot of comments in the IEPR docket.  And then it is very  
15 difficult for me because I have had to ask people to re-  
16 docket them, they will not let me just move them from one  
17 docket to another.  So it is very important, that as  
18 important as the IEPR is, that these final comments go to  
19 this particular Docket, which is the waste heat docket.  
20 Those comments are due, again, on October 19<sup>th</sup>.  We will then  
21 review those comments, we will meet with Commissioners and  
22 discuss your comments, and then on November 2<sup>nd</sup>, I will put  
23 out a Notice of Proposed Action which will include the  
24 Committee Guidelines and staff's Statement of Reasons, and  
25 that will indicate the official 30-day period which is

1 required for these Guidelines on November 2<sup>nd</sup>, and then once  
2 that period has passed, if there has not been significant  
3 comments or suggested changes, we will go to a Business  
4 Meeting in December to adopt for possible adoption of the  
5 Guidelines. Is there any questions about the rest of this  
6 process? None?

7 COMMISSIONER BYRON: Ms. Kelly, I do not think  
8 there will be -- I just somehow have a feeling there is not  
9 going to be a December 30<sup>th</sup> Business Meeting.

10 MS. KELLY: Well, we agreed we would go for  
11 December 17<sup>th</sup>, yes. Okay, then, thank you very much.  
12 Commissioner Byron.

13 COMMISSIONER BYRON: Commissioner Boyd, sorry for  
14 the earlier interruption.

15 VICE CHAIR BOYD: No problem, I wanted Linda to  
16 get her schedule out. Well, as I was saying, I think we  
17 have to be careful about not getting overly complicated and  
18 I appreciate that there were several people out here with  
19 the same concern. The last exchange including Norm Pedersen  
20 and others, I want kudos to the Southern Californians  
21 worrying about carbon intensity, I think that is a very  
22 positive thing that is happening, has happened. The concern  
23 for me, I am sure, Commissioner Byron, the Commission as a  
24 whole, and maybe some Southern Californians, is the dilemma  
25 with regard to being able to site anything, gas-fired

1 plants, and particularly big ones. We have got a large cue  
2 of gas-fired peakers waiting in the wings that appear to be  
3 going nowhere because of Emission Reduction Credit  
4 unavailability and the recent legislation passed by the  
5 Governor, signed by the Governor yesterday, does not do much  
6 for that. And therefore we have got this reliability versus  
7 carbon intensity concern, which means finding Emission  
8 Reduction Credit offsets for maybe smaller units that have  
9 some positive attributes that do not exacerbate, but maybe  
10 do not reduce carbon intensity the way some folks would like  
11 to see it done. So we are all wrestling with those kind of  
12 problems right now, so we do not want to over-complicate or  
13 exacerbate problems and issues. The thermal needs and  
14 efficiency needs, efficiency being job one for the PUC, for  
15 us, for the ISO, as well, is something we have to worry  
16 about. And, of course, I have always wondered about the 20  
17 megawatt ceiling into political non-technical ceiling, but  
18 that is what we need to do right now. So, as a result of  
19 today and everything that has gone on before, I think the  
20 staff and we have a lot of digging to do and a lot of  
21 consideration to be given to the situation. And I, frankly,  
22 look forward to some of the written comments to augment what  
23 we have heard today, to help us through this. But I do  
24 sincerely worry about the PURPA getting in the way of the  
25 good, and us not over-complicating this, so that will be a

1 major thrust of what I am going to worry about. Thanks.

2 COMMISSIONER BYRON: Very good. Commissioner  
3 Boyd, I think you have encapsulated my principal concern, as  
4 well. You know, today was an interesting day, it follows  
5 the day that the Governor addresses all the pending  
6 legislation that was before him, and I understand he may  
7 have signed upwards of 400 new Bills yesterday, I am sure  
8 many of them will affect us with regard to energy related  
9 issues. There is much more work ahead. But this particular  
10 item, the AB 1613, which is Chaptered as 713 in the Statutes  
11 of 2007, has been underway this year, we are going to close  
12 it out by the end of the year with some guidelines for full  
13 Commission consideration, based upon the three workshops  
14 that we have had. I certainly appreciate the thoughtful  
15 comments and input of all the parties represented here  
16 today, and we do not want to certainly preclude all of your  
17 written comments and written comments from those that may  
18 not have been able to speak here today. It is always a  
19 challenge to separate out what I consider to be the self-  
20 serving interest of corporations from the public good here,  
21 but I am struck by the examples, or the differentiation that  
22 we have seen today, as well as in recent months, between the  
23 investor-owned utilities and the publicly-owned utilities  
24 approaches to this issue. I certainly applaud SMUD and I  
25 appreciate your being here today, Mr. Rawson. We have seen

1 examples of the publicly owned utilities where they have  
2 figured out solutions and working with their customers. I  
3 am also reminded of a Bay Area Municipal Utility that has  
4 developed a tariff to allow a customer to do what it thinks  
5 is in the best interest of society. In that case, their  
6 effort is to reduce refrigerants on their site or their  
7 campus, and in doing so, they need to do CHP and generate  
8 thermal loads so that they can run absorption chillers for  
9 their cooling. That contrast continues to remain, despite  
10 the fact that I think we have got some very helpful input  
11 here today from the investor-owned utilities, and I  
12 certainly want to thank PG&E, in particular, for your  
13 comments. But I am still concerned that we continue to look  
14 at this issue through the lens of the investor-owned  
15 utility. We are not confined to that here at this  
16 Commission. I really prefer to look at this issue through  
17 the customer lens, AB 1613 is certainly geared to reducing  
18 greenhouse gases, but there are other factors that come into  
19 play that drive the customers' interest, as I mentioned some  
20 of those earlier. So, Commissioner Boyd, I share your  
21 concern that maybe an attempt to be fully responsive and  
22 accurate technically to the issues around combined heat and  
23 power, we may be over-engineering this a bit, so we  
24 certainly are interested in comments that would simplify  
25 this approach that we are recommending. I applaud staff's

1 efforts here to be rigorous. I think they have done an  
2 excellent job and have got some really good people now  
3 working on these issues here at the Commission. But I think  
4 we will need to spend a little bit of time on this and  
5 carefully consider how we might be able to simplify these  
6 rigorous guidelines that you have developed. Again, I  
7 welcome comments. I thank you all for being here so early  
8 on a Monday morning. I hope you have a good trip back. And  
9 we will be adjourned.

10 (Whereupon, at 11:46 a.m., the workshop was adjourned.)

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

IN WITNESS WHEREOF, I have hereunto set my hand this 19 day of October, 2009.

  
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