

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

In the Matter of:)
)
Senate Bill Eligibility) Docket No.
Criteria and Conditions) 07-SB-1
for Incentives)
)
_____)

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

WEDNESDAY, AUGUST 22, 2007

10:00 A.M.

Reported by:
John Cota
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COMMISSIONERS PRESENT

John L. Geesman, Presiding Member

Jackalyne Pfannenstiel, Associate Member

ADVISORS PRESENT

Suzanne Korosec

Jan McFarland

Tim Tutt

STAFF PRESENT

Martha Brook

Diana Chong

Chris Gekas

Smita Gupta

Sandy Miller

Claudia Orlando

Bill Pennington

ALSO PRESENT

Michael E. Bachand, CalCERTS, Inc.

Raghu Belur, Enphase Energy

Robert Benedict, Soulier, Inc.

Julie Blunden, Sun Power

Peter Brehm, Infinia Corporation

Leslie Brown, City of Santa Clara

Adam Browning, the Vote Solar Initiative

ALSO PRESENT

David Bruder, Southern California Edison

Steven P. Chadima, Energy Innovations

Erin Clark, Regrid Power

Jeanne Clinton, California Public Utilities
Commission

Benjamin Collinwood, Sanyo Energy USA Corporation

Tom Conlin (via telephone)

Mark Gaines, Sempra Energy

Bobbi Glassel, Energy Efficient Mortgage

Matt Golden, Sustainable Spaces

Bob Knight, California Building Performance
Contractors Association

Michael Keyes (via telephone)

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Andrew McAllister, California Center for
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Joelene Monestier, SPG Solar

Dan Perkins, Energy Smart Homes

David E. Rubin, Pacific Gas and Electric Company

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Energy

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P R O C E E D I N G S

10:03 a.m.

PRESIDING MEMBER GEESMAN: Let's go ahead and get started.

MS. ORLANDO: Good morning everyone, welcome. Just a few housekeeping rules before we begin. If you are not familiar with the building the closest restrooms are right out the door and right over this way. There is a snack bar on the second floor under the white awning.

If there is an emergency and the sound of an alarm we will all assemble in the park diagonally to this building, Roosevelt Park. So just follow the staff and exit and we'll reconvene over at the park.

If you have cell phones please put them on silence and then if you need to take calls please exit the room all the way out through the doors and keep the conversation outside. Let's see. And I think that's it. Okay, thank you.

PRESIDING MEMBER GEESMAN: Good morning, this is a meeting of the -- a workshop by the California Energy Commission Renewables Committee on our staff report regarding SB 1 eligibility criteria and conditions for incentives for solar

1 energy systems carrying out some of the statutory
2 mandates of SB 1.

3 I am John Geesman, the Presiding Member
4 of the Commission's Renewables Committee. To my
5 left Commissioner Jackalyne Pfannenstiel, the
6 Chair of the Commission, the Associate Member of
7 the Renewables Committee. To her left, Tim Tutt,
8 her staff advisor. To my right, Suzanne Korosec
9 and Jan McFarland, my staff advisors.

10 We have a bit of a constrained schedule
11 today. Because of other commitments I am going to
12 leave at 11:45; Commissioner Pfannenstiel is going
13 to leave at one. I would suggest that the
14 Committee portion of the workshop be completed no
15 later than one o'clock. If there is a need or a
16 desire to continue after one o'clock, as I suspect
17 there may very well be, that portion will be a
18 staff workshop.

19 As always written comments are extremely
20 helpful to the Committee. Encourage you to submit
21 those. And why don't we proceed immediately then
22 to our agenda. Bill, I think you're first up.

23 MR. PENNINGTON: Okay, thank you. Thank
24 you very much. My name is Bill Pennington, I'm
25 the manager of the Buildings and Appliances Office

1 at the Energy Commission. What I plan to do here
2 is briefly go over the directives that SB 1 gave
3 to the Energy Commission related to this subject
4 and some of the policy considerations that we've
5 recommended be considered in coming up with
6 conclusions.

7 The assignments that SB 1 gave to the
8 Energy Commission are on this slide. We are to
9 consult with the PUC, publicly-owned utilities and
10 interested members of the public to develop three
11 things. And these are to apply to all PV programs
12 that are administered by the Energy Commission, by
13 the PUC and by the POUs.

14 The three things are to establish
15 eligibility criteria. The statute actually lists
16 eight or nine types of criteria, most of which are
17 specifically stated pretty explicitly in the
18 statute. But the one that is stated with more --
19 less specificity and more authority for the Energy
20 Commission to use its discretion is the first one
21 in the list, which is to develop eligibility
22 criteria related to the design, installation,
23 electrical output standards or incentives. And so
24 that's a real broad, meaty area that is multi-
25 faceted that is sort of the number one eligibility

1 criteria.

2 Secondly the Energy Commission is to
3 establish conditions for ratepayer incentives and
4 there are several elements related to that.

5 And thirdly the Energy Commission is to
6 set rating standards for equipment, components and
7 systems.

8 The statute does describe in one of the
9 subsections in this general area kind of
10 expectations, legislative expectations related to
11 what we're to accomplish. So this slide describes
12 those.

13 We're to accomplish high quality solar
14 energy systems with maximum system performance to
15 promote the highest energy production per
16 ratepayer dollar.

17 Optimal system performance during
18 periods of peak demand.

19 And appropriate energy efficiency
20 improvements in new and existing homes or
21 commercial structures where the solar system is
22 installed.

23 So those are kind of goal statements
24 from my vantage point related to this overall
25 activity that the Energy Commission is pursuing.

1 There's a number of other energy policy
2 directives or considerations that the report
3 recommends that the Energy Commission consider in
4 developing these eligibility criteria conditions
5 for incentives and rating standards.

6 First off the Integrated Energy Policy
7 Report in 2004 and 2005, anticipating the
8 Governor's Million Solar Roofs Initiative being
9 pursued on a statewide basis, established policy
10 guidance for what such a statewide system should
11 look like. And so these are key items that
12 related particularly to setting eligibility
13 criteria that come out of those IEPRs.

14 So key are leveraging energy efficiency
15 improvements should be a primary consideration in
16 deploying PVs. And there are some kind of
17 rationale language from the IEPRs there.

18 Rational targeting of PV deployment to
19 achieve the greatest cost benefit targeting to
20 climate zones with high peak demand.

21 Transitioning away from capacity-based
22 incentives to performance-based incentives.

23 In general the IEPRs spend quite a bit
24 of time talking about integrating energy
25 efficiency and time-of-use considerations in a

1 statewide program.

2 In addition to that there's other energy
3 policy goals that we highlight in the staff report
4 that are related. First off, the Energy Action
5 Plan, which was covered in these IEPRs as well and
6 was supported by the Governor in his review of
7 those IEPR. It sets up a loading order that would
8 have energy efficiency be the first resource to be
9 considered, renewables second and other clean
10 generation technologies third.

11 So there is a strong interest in having
12 energy efficiency pursued at the top of the
13 loading order followed by renewables. So in
14 actuality we have an opportunity through this
15 program to pursue both of the two, top items in
16 the loading order in one program.

17 Secondly of key importance here is the
18 Climate Action Initiative with the Governor's
19 policy-making related to that and also supported
20 by AB 32 that establishes California in a world
21 leadership position related to climate action and
22 sets very aggressive goals related to climate
23 change that we need to be pursuing and getting to
24 1990 levels by 2020.

25 The policy documents that are being

1 developed related to the climate action initiative
2 frequently mention energy efficiency and
3 renewables as strategies that are going to be key.
4 In general it is staff's perception that you are
5 not going to get to these levels without having
6 major accomplishments from the building sector.
7 And the building sector needs to be using both all
8 cost-effective energy efficiency and all
9 renewables, all PV systems that can achieve in
10 order to accomplish these goals. And failing that
11 you're not going to meet these goals.

12 There's a couple of pieces of
13 legislation that are important here too that
14 direct the IOUs through the PUC, and the POUs, for
15 first meeting unmet resource needs by viewing
16 energy efficiency, pursuing cost-effective energy
17 efficiency. And that's additional guidance that's
18 been in statute that says we should be paying
19 attention to energy efficiency whenever we're
20 considering a resource addition.

21 And finally another point that's
22 important that staff recommends here for
23 consideration is the Green Building Initiative,
24 which is the Governor's initiative to achieve 20
25 percent savings by 2015 for state buildings and

1 encouraged that same goal to be achieved for all
2 commercial buildings. So we view that as an
3 important backdrop related to developing these
4 criteria also.

5 The Energy Commission has pursued goals
6 very similar to these through the New Solar Homes
7 Partnership. This is the goal to create a self-
8 sustaining market for solar homes where builders
9 incorporate high levels of energy efficiency and
10 high performing solar systems. That is the goal
11 for the NSHP and the Commission has worked hard to
12 develop tools that will accomplish that goal.

13 And the tools are listed here on the
14 slide. Each of these we think are very useful and
15 important for accomplishing the goal. And we
16 think since this goal is very similar to the SB 1
17 goal, and since, you know, we have personal
18 experience in trying to develop these tools, that
19 it is logical to consider extension of these tools
20 for SB 1 purposes. So that's kind of our point of
21 view.

22 Related to that there is also an energy
23 efficiency obligation and expectation that is
24 built into the New Solar Homes Partnership. That
25 we also kind of view as our baseline of thinking

1 that we think it's important to be pursuing energy
2 efficiency in combination with photovoltaics and
3 that the two approaches are symbiotic and support
4 each other. It's important to work on them
5 together. We think that it's important to have a
6 minimum level of energy efficiency as a condition
7 for participation in a PV incentive program. And
8 we also think that the program should encourage
9 going to broader levels than that.

10 Ultimately we think that we should be to
11 zero energy buildings and that that should be the
12 state's ultimate goal. We think that that's going
13 to be necessary to meet our climate change goals.
14 So we've tried to set up a system like that for
15 the New Solar Homes Partnership.

16 There is a Tier I level that is a
17 minimum level. I should say, one way that you
18 might approach figuring out how much energy
19 efficiency is appropriate when you're doing, in
20 conjunction with a PV project, is you might think
21 about doing all energy efficiency that would be
22 more cost-effective than a PV system. And that is
23 rational way to think about what is societally
24 best and what is in the best interest of the
25 building owner and so forth.

1 That could end up with very aggressive,
2 extraordinarily aggressive energy efficiency
3 levels and you might get into practicality issues
4 related to achieving that level of energy
5 efficiency.

6 So the Commission actually thought about
7 that some on the New Solar Homes Partnership and
8 decided that that wasn't the criteria we wanted to
9 use, but rather we wanted to try to co-brand our
10 energy efficiency efforts with other energy
11 efficiency programs that were out there and look
12 for ways to pursue levels of energy efficiency
13 that were perceived to be doable and practical and
14 achievable and that were being pursued by other
15 programs.

16 Also where there might be additional
17 incentive funds available or, you know, other
18 kinds of ways to incent participation such as
19 recognition or differentiation in the marketplace
20 or whatever. There might be other motivators that
21 would be motivating people to achieve those
22 levels. Rather than coming up with criteria that
23 would be separate from those, and independent of
24 those we thought it was appropriate to try to
25 align our criteria with those kinds of programs.

1 So that was the idea of co-branding the NSHP with
2 prominent energy efficiency programs.

3 We have two tiers in the NSHP, a minimum
4 level that is a minimum level for obtaining an
5 incentive for the PV system that is set at 15
6 percent better than the Title 24 standards, which
7 is the level at which the IOU new construction
8 program have been shooting for several years. So
9 the Tier I is intended to co-brand with that, with
10 that level of program that's out there.

11 Tier II we did quite a bit of discussion
12 with the building industry to identify a second
13 level that would be a preferred level. We kind of
14 view the Tier I level as a baby step and something
15 that we actually should do better than, given that
16 society is placing this level of investment into
17 this technology, and given that we need to have,
18 we need to be moving towards zero energy use
19 buildings. So our preferred level is really the
20 Tier II level.

21 And we engaged discussion with the
22 building industry about choosing how to pinpoint
23 that. Where we landed was associating the Tier II
24 level with what builders in California are doing
25 relative to the US Department of Energy's Building

1 America Program. So that was our branding level
2 there.

3 We also expect in addition to both of
4 these tiers for ENERGY STAR appliances to be
5 installed whenever the builder is installing
6 appliances. So this is kind of our point of
7 reference that we'd come away from in setting up
8 the NSHP program. And we're thinking about, are
9 these concepts extendable to the other sectors
10 that we would be having PV incentives for.

11 Another thing that we think is very
12 important for the Energy Commission to seriously
13 think through as it establishes these criteria is
14 that you have existing efforts that have been
15 pursued by the PUC and by the POUs that, you know,
16 were vigorous efforts to respond to the policy
17 direction of their decision-makers and were, you
18 know, were well-intentioned to pursue similar
19 goals to what the Energy Commission has pursued in
20 the NSHP.

21 And that these program are in effect at
22 the PUC and the various municipal utilities are at
23 different levels of program but, you know, there
24 have been a range of amounts of time that these
25 programs have been in effect and some of them are

1 definitely in place and some of them are being
2 worked on right now to be put in place.

3 All of these efforts, you know, there
4 has been substantial program implementation
5 expertise that's been developed and there's been a
6 buy-in from the industry relative to those
7 criteria. So we think that we should try to
8 understand those factors and we should take
9 comments related to this experience from the PUC
10 and the POUs carefully in consideration as we
11 develop the eligibility criteria.

12 To the extent the Energy Commission
13 develops eligibility criteria that would cause
14 these programs to change we think that there is a
15 really need for there to be a transition period
16 for that change to occur and that there needs to
17 be adequate time for that. So a recommendation in
18 the staff report is that the effective date for
19 eligibility criteria that the Commission would
20 adopt by the end of this calendar year should not
21 be obligatory to the PUC or the POUs until January
22 1 of 2009.

23 Just finally, kind of what we had
24 planned for the rest of the day here on the
25 schedule. We break out the recommendations of the

1 staff report in three areas. Energy efficiency,
2 and we would like to focus a little bit of
3 attention on the benchmarking and commissioning
4 recommendations we have related to existing
5 commercial buildings, the installation and
6 component standards, and then talk about the
7 proposed effective date and guideline development
8 schedule. So that's kind of how the agenda for
9 the day is laid out.

10 For each of those topics we were
11 expecting to have a staff presentation that would
12 quickly go through the recommendations in the
13 staff report and then open it up for comment.
14 That's all.

15 PRESIDING MEMBER GEESMAN: Excellent.
16 Claudia, are you first up?

17 MS. ORLANDO: Yes I am.

18 PRESIDING MEMBER GEESMAN: Great.

19 MS. ORLANDO: When the staff was
20 developing the recommendations for the residential
21 new construction recommendation our recommendation
22 is to extend the New Solar Homes Partnership
23 Program energy efficiency requirements statewide.
24 Again, staff was trying to look at prominent
25 energy efficiency programs that already exist and

1 try to co-brand with those programs when
2 developing these recommendations.

3 Our Tier I is, again, the minimum level
4 is 15 percent better than Title 24 and that is
5 consistent with the current IOU new construction
6 programs. And then the Tier II, the second tier,
7 which is the Energy Commission's preferred level,
8 is to exceed Title 24 by 35 percent. And that is
9 in total energy and then 40 percent in the cooling
10 energy. And that is consistent with the Building
11 America Department of Energy program levels. And
12 this is also consistent with the Public Utilities
13 Commission's Big Bold Strategies.

14 This program also requires the builder
15 to install ENERGY STAR rated appliances for any
16 appliances that do have that ENERGY STAR rating.
17 And then utilities should provide energy
18 efficiency incentives for each of those tiers.

19 For the new commercial construction
20 recommendation. Our recommendation actually is
21 modeled after the New Solar Homes Partnership
22 Program tier style. And again we wanted to co-
23 brand with prominent existing energy efficiency
24 programs and try to align our requirements with
25 those requirements.

1 So our recommendation is for Tier I, and
2 that's the minimum level to participate to get the
3 PV incentive, that would require projects to
4 exceed Title 24 by 15 percent. And that
5 recommendation is consistent with the United
6 States Green Building Council's LEED new
7 construction program energy efficiency
8 requirements.

9 Recently the USGBC members voted to
10 require a minimum of two points in the energy and
11 atmospheric category. That actually equates to
12 exceeding Title 24 by 15 percent. This Tier I
13 recommendation is also consistent with Savings by
14 Design's minimum incentive level for a design team
15 in that it requires the design team to submit
16 projects that are at least 15 percent better than
17 Title 24.

18 The Tier II recommendation, which is the
19 Energy Commission's preferred level, requires
20 projects to exceed Title 24 by 30 percent. And
21 this recommendation is consistent with the federal
22 energy tax credits, which requires projects to
23 exceed ASHRAE Standard 90.1 2001 by 50 percent.
24 And that actually equates to exceeding Title 24 by
25 a minimum of 30 percent.

1 This recommendation is also consistent
2 with the new ASHRAE Green Buildings Standard 189.
3 And that standard actually supports the
4 Architecture 2030 Challenge plan. Architecture
5 2030 Challenge plan is a global initiative that is
6 seeking to have new construction and major
7 innovations, or have buildings perform to net zero
8 energy by 2030. And in order to get that started
9 they are requiring an immediate reduction of 50
10 percent of greenhouse gas emitting energy. In
11 order to meet that challenge you would need to
12 begin to start designing buildings that are 30
13 percent better than Title 24.

14 Again, utilities should provide energy
15 efficiency incentives for each tier. And also
16 that two tier, the second tier recommendation is
17 consistent with the CPUC's Big Bold Challenge
18 strategies.

19 Now making recommendations for existing
20 commercial buildings is a little bit different, a
21 little bit more complex. And again staff wanted
22 to co-brand with existing efficiency programs and
23 the most logical step was to co-brand with the
24 Governor's Green Building Initiative. Executive
25 Order S-20-04 requires state buildings to reduce

1 energy use by 20 percent by 2015 and encourages
2 the commercial buildings to also follow suit.

3 This requirement includes having
4 buildings, all buildings benchmark using ENERGY
5 STAR's Portfolio Manager. One of the requirements
6 to receive an ENERGY STAR plaque for a building is
7 for the building to have an ENERGY STAR Portfolio
8 Manager rating of 75.

9 And the Green Building Initiative also
10 requires buildings to do retro-commissioning if
11 the building is greater than 50,000 square feet.
12 And then also our recommendation is that buildings
13 with a benchmarking score of less than 75 also
14 need to do the retro-commissioning.

15 And then the buildings or the projects
16 need to implement cost-effective energy efficiency
17 recommendations up to, to move that building up to
18 that score of 75.

19 And again the utilities need to provide
20 incentives to complete this retro-commissioning.
21 And then also for installing the cost-effective
22 energy efficiency improvements.

23 For existing residential
24 recommendations, that's even a little bit more
25 complex. So to begin with staff is recommending

1 to continue with the CSI-required online audit.
2 And continue that until future updates of the SB 1
3 guidelines that we will be developing.

4 and then also staff is recommending the
5 CPUC to do an investigation of the results of the
6 online energy audit to see what kind of measures
7 have been installed, then we can use that
8 information into further developing what we kind
9 of have put together as a conceptual approach to
10 benchmarking existing residential home energy use.

11 And this conceptual approach would
12 require the utilities to develop a system to
13 compare a home's energy use to a population of
14 homes energy use in their service area. And we
15 would look at the energy use by quartile and we
16 would try to encourage homes to move and reach
17 that top quartile.

18 And then for the homes that aren't in
19 that top quartile we'd require a further
20 investigation. These homes are of various ages,
21 the occupant habits are varying. The homes are in
22 different climate zones. The existing condition
23 of the home, the type of energy efficiency
24 measures that already have been installed in the
25 home are varying.

1 So this would require some kind of an
2 investigation. And we would recommend using an
3 on-site energy audit to further that
4 investigation, or it may require using a Home
5 Energy System Rater, or a Building Performance
6 Contractor, to determine the cost-effective energy
7 efficiency measures that would be appropriate for
8 that home.

9 And then the utilities would provide
10 incentives to do these investigations. And each
11 of those, the on-site audit and the HERS rater and
12 the Building Performance Contractor, they have
13 more diagnostics as you progress through that list
14 there.

15 And then the utilities would provide
16 incentives also to install energy efficiency
17 improvements that were found in these
18 investigations.

19 The Energy Commission also -- the
20 recommendation is for the Commission to form a
21 task group to further develop this conceptual
22 approach. And then we would include that
23 recommendation in further updates of the SB 1
24 guidelines.

25 And then next Martha Brook is going to

1 talk about the building commissioning, retro-
2 commissioning and some more information on the
3 benchmarking program.

4 MS. BROOK: Thank you. Okay, so just
5 some information for those of you in the audience
6 that aren't as familiar with benchmarking or
7 retro-commissioning as staff has come to be.

8 Energy use benchmarking is a process to
9 estimate the energy use per square foot of a
10 building space and to compare that energy use with
11 buildings of the same type of location and to
12 track energy use over time.

13 And the reasons to benchmark your
14 building include being able to determine how your
15 building's energy use compares with others, to set
16 targets for improved energy performance, to
17 facilitate the assessment of property value, and
18 to gain recognition for exemplary achievement.
19 And also to begin to identify opportunities to
20 save energy.

21 What we are recommending in our staff
22 report is that we focus on the first and the last
23 reason. To compare your building with others
24 similar to yours and to begin to identify areas
25 where we can improve energy performance.

1 The US EPA's ENERGY STAR Portfolio
2 Manager, which is what staff is recommending, is a
3 whole building annual energy use benchmarking
4 tool. It compares your building to a national
5 population of similar buildings by building type,
6 kind and region.

7 The data requirements are basically a
8 physical address, a geographic location; 12
9 monthly utility bills, so a year's worth of
10 utility bills; and then the square footage of the
11 building. There are additional features of the
12 building that you can collect and input into the
13 model and it improves the score, the ability for
14 your building to be compared with others, but
15 they're optional.

16 So for example, if you have an office
17 building you would be asked to submit how many
18 computers in your building and the hours of
19 operation of your building. And if you're in a
20 hospital it would be number of beds. And if it
21 was a school it would be number of students. So
22 those types of things would improve your ability
23 to compare your building to others but they are
24 not mandatory.

25 And then the scale of the ENERGY STAR

1 rating is 1 to 100. So a high rating is
2 equivalent to low energy use. And that is
3 illustrated in the next slide.

4 There's actually two bars and it's sort
5 of hard to see on the TV. I think it's a little
6 easier there. There's two bars for every
7 building. These are actually state buildings that
8 have been benchmarked with the ENERGY STAR tool.
9 And this just illustrates that high energy use,
10 which is in purple, is equivalent to a low ENERGY
11 STAR score, which is in blue.

12 ASSOCIATE MEMBER PFANNENSTIEL: Martha,
13 may I just make sure I understand. You said these
14 are state buildings. Meaning state of California
15 owned or operated buildings, not buildings within
16 the state.

17 MS. BROOK: That's right. These are,
18 this is part of the Green Building Initiatives and
19 I'll talk a little bit about that later. So these
20 are state of California buildings. Just a sample
21 of those that have been scored with the
22 benchmarking tool. It just illustrates what I've
23 explained, that high energy use is a low score and
24 vice versa, low energy use you'd get a high score.

25 The ENERGY STAR Portfolio Manager tool

1 works for a number of specific building types. So
2 they have a separate benchmarking model for
3 offices, banks and courthouses, K through 12
4 schools, hospitals, medical offices, warehouses,
5 hotels and motels, dormitories, and supermarkets
6 and grocery stores.

7 And they are in the process of
8 developing a retail store model. That should be
9 released before the end of the calendar year. And
10 then they are also looking at separating the K
11 through 12 school model into separate elementary
12 school and secondary school models.

13 So the remaining building types not
14 covered by the Portfolio Manager are restaurants,
15 colleges, public assembly buildings, convenience
16 food stores, health care facilities that are not
17 hospitals, service buildings like gas stations,
18 and then everything else. All the miscellaneous
19 building types that don't fall into any of these
20 other categories.

21 When staff was considering making this
22 recommendation to use Portfolio Manager for these
23 criteria we were very interested to know how
24 California buildings would be scored with the
25 Portfolio Manager tool. In California there is a

1 recent, commercial end-use survey, which is a
2 collection of about 2700 commercial buildings that
3 have been field surveyed. Their energy use and
4 many, many characteristics of the buildings have
5 been collected.

6 We used this data set and ran it through
7 the portfolio manager tool to, basically to see
8 how many in each of the building types, the
9 portfolio manager models, the scores would look
10 for California buildings.

11 If California building energy use was
12 exactly the same as national building energy use
13 we would expect 25 percent in each of these rows,
14 in this column. Basically because a 75 is
15 equivalent to the top quartile, the top 25 percent
16 of buildings.

17 So as you can see we are close in some
18 categories. I would say that the only really
19 outliers as we go through this is Office is
20 significantly close, 33 percent.

21 Now K through 12 schools as a whole
22 looks pretty good. But the problem with the
23 ENERGY STAR model is that it's trying to cover
24 elementary schools and high schools in the same
25 model.

1 And they are actually, they have already
2 identified this as problem and they're working on
3 an improvement to that. As you can see there is a
4 big difference between how high school scores
5 look, with only nine (sic) percent getting a score
6 of 75, versus an elementary school, which 42
7 percent get a 75. That's just sort of an argument
8 for why EPA is already addressing the K through 12
9 school model.

10 The other real outlier that we'll be
11 addressing with the EPA is the supermarket model.
12 Sixty-three percent of California supermarkets
13 would get a score of 75 and that means that there
14 is an area of concern for us and a reason for us
15 to keep working with EPA to see if we can improve
16 the ability of their model, their national model
17 to work for California buildings.

18 There's approximately 40 percent of the
19 floor space in California commercial buildings
20 that would not be able to get an ENERGY STAR score
21 because of the building type. For these building
22 types Commission staff proposes to develop an
23 energy use index, an energy per square foot index
24 look up table from this same large sample of
25 California buildings, the Commercial End Use

1 Survey.

2 Basically it would be an alternative to
3 the Portfolio Manager when there is not a way to
4 score within the ENERGY STAR tool. So then again
5 we would be recommending the top quartile would be
6 equivalent to a 75.

7 Just to give you a status update on the
8 California state building benchmarking program.
9 This again is part of the Green Building
10 Initiative, the Executive Order from the Governor
11 S-20-04. The executive order has mandated that
12 state buildings get benchmarked by 2007 and the
13 California Energy Commission recommendation
14 through the Green Building Initiative was to use
15 the Portfolio Manager to do that.

16 Seventy-three percent of all state
17 facility floor areas, so basically the geographic
18 location and the floor area information, has been
19 input into the portfolio manager tool. It's about
20 350 buildings.

21 PG&E, Southern California Edison, Sempra
22 and SMUD are working with US EPA to automate the
23 monthly billing upload into the Portfolio Manager.
24 So the idea here is that a customer wouldn't have
25 to collect his 12 months of utility bill

1 information. That once a data release form is
2 signed by the customer the utility could
3 automatically send the utility bill information
4 and it would be uploaded into the Portfolio
5 Manager tool.

6 And then finally the energy use
7 benchmarks. So the utilities are collaborating
8 with EPA and working diligently to work out this
9 process and they are probably going to complete
10 that by September and the energy use benchmarks
11 for these buildings will be reported by December
12 of this year.

13 So I think the most important thing here
14 is this ability to automatically upload data. It
15 makes actually benchmarking California's
16 commercial sector a realistic option now because
17 it really streamlines the process and allows the
18 utilities to really make a great step in helping
19 them customers get a benchmark for their building.
20 So we're really happy about that.

21 Now I'm going to turn to retro-
22 commissioning. Again, just sort of what it is and
23 why do it and some of the costs and benefits of
24 the process. Retro-commissioning is a systematic
25 process for improving building performance by

1 identifying low-cost operational and maintenance
2 improvements without the need for complex and
3 expensive retrofits.

4 So the process focuses on looking at the
5 operation of mechanical equipment, lighting and
6 related controls and trying to optimize the
7 equipment to operate as a whole system. So really
8 look -- going into a building, looking at what's
9 there and trying to optimize the performance of
10 that building and making recommendations to do
11 that.

12 It doesn't include retrofit items such
13 as installing high efficiency lamps, chiller
14 replacements or air conditioning system
15 replacements. It is really meant on low-cost, no-
16 cost measures and optimizing system performance.

17 The core elements of a retro-
18 commissioning process is to ensure that the
19 building is performing as efficiently as the owner
20 expects.

21 To recommend and implement measures that
22 improve equipment performance.

23 To verify that the owner and staff
24 receive documentation and assistance to implement
25 the improvements. And training on the monitoring

1 and maintaining of the improvements so that they
2 can persist over time.

3 And finally to provide the documentation
4 and tools to enhance day-to-day operations and
5 maintenance practices.

6 The retro-commissioning costs range from
7 ten cents to one dollar per square foot and it
8 depends on the number of scope of the retro-
9 commissioning process. So the number of systems
10 that need to be investigated and optimized, the
11 complexity of those systems, the number of zones
12 in a building, the scope of the improvements that
13 are recommended and also the owner's involvement
14 all contribute to the range of those costs. And
15 the owner involvement is really key because the
16 idea is that you're improving the building
17 performance and leaving the owner with that
18 building and you want him to have every tool he
19 has available to him to maintain the well-
20 functioning building.

21 In California a typical range of energy
22 savings is 5 to 20 percent and paybacks of two
23 years or less are common.

24 The California State Building Retro-
25 Commissioning Program, again part of the Green

1 Building Initiative. The goal was to achieve 20
2 percent savings in existing state buildings.
3 Eight percent of that is targeted to be achieved
4 from retro-commissioning and 12 percent from
5 energy efficient retrofits. So the retro-
6 commissioning process is separate from the energy
7 efficiency retrofits and they're really targeting
8 eight percent energy savings from just the retro-
9 commissioning low-cost/no-cost measure
10 improvements.

11 Twenty-five retro-commissioning projects
12 are underway within state buildings. One building
13 is complete to date and almost eight percent
14 energy savings has been achieved there.

15 The manager of the retro-commissioning
16 program for the state has got projected energy
17 savings for 11 of those 25 buildings and there is
18 an average savings projected of almost 12 percent
19 and two to three year payback is anticipated.

20 Next I just wanted to mention that three
21 of the large IOUs in the state have active retro-
22 commissioning programs. Southern California
23 Edison and San Diego Gas & Electric have targeted
24 retro-commissioning programs. You probably can't
25 see the link there but I can share that with you

1 if you're interested in it.

2 And then Pacific Gas & Electric has
3 integrated retro-commissioning into their market
4 sector initiatives for large commercial, medical
5 facilities, high-tech facilities and hospitality.

6 And then finally I wanted to mention
7 that the California Commissioning Collaborative is
8 a California nonprofit organization that focuses
9 on providing information to building owners and
10 commissioning providers to facilitate
11 commissioning and retro-commissioning in the
12 state.

13 One of the things that the Commission
14 was charged to do in the Green Building Initiative
15 was develop commissioning guidelines. We asked
16 the California Commissioning Collaborative to
17 complete this work for us. They've developed the
18 California Commissioning Guide for new buildings
19 and existing buildings and the existing buildings
20 is the one that I prepared on the slide. Copies
21 of these will be made available out on the front
22 table after today's workshop.

23 Basically the intent of the guide is to
24 get information to building owners to answer the
25 following questions: What is retro-commissioning

1 and why should I use it? What are the benefits
2 and costs of retro-commissioning? What happens
3 during the retro-commissioning process? Who
4 should be part of the retro-commissioning team?
5 Can the benefits of retro-commissioning persist
6 over time? And how is the best way to get started
7 with a retro-commissioning project?

8 So the California Commissioning link is
9 also on the slide and you can get lots of
10 information for building owners about case
11 studies, sample specifications for various scopes
12 of commissioning, lists of commissioning providers
13 in the state and lots of other information is
14 available there. I think that's all I have.

15 PRESIDING MEMBER GEESMAN: I've got blue
16 cards. Is it your desire that I proceed now or?
17 Okay, why don't I just start with the stack that
18 I've got. David Rubin, PG&E.

19 MR. RUBIN: Commissioners, good morning.
20 I'm assuming I have three minutes, correct?

21 PRESIDING MEMBER GEESMAN: You have as
22 much time as you need but three minutes would be
23 greatly appreciated.

24 MR. RUBIN: I can do three minutes,
25 thank you. On behalf of Pacific Gas and Electric

1 Company we appreciate the opportunity to provide
2 comment this morning and this afternoon.

3 I would first like to start by
4 commending staff on a thorough and well-thought
5 through report that is the basis for our comments
6 this morning. I am going to provide high-level
7 comments now and will provide written comments in
8 a week.

9 As a general matter PG&E is a very
10 enthusiastic supporter of the California Solar
11 Initiative as well as being a program
12 administrator. And in that regard we appreciate
13 the balance to be maintained between implementing
14 the various objectives of SB 1 as well as ensuring
15 that we have a program that is implementable and
16 achieves a high level of customer satisfaction.

17 So in that regard the various tenets of
18 SB 1, which is implementing 3,000 megawatts of
19 solar, providing a strong linkage with energy
20 efficiency, and then ensuring that the ratepayers
21 that support the program through the rates they
22 pay are getting real renewable value out of the
23 projects. Again, really achieves a very careful
24 balance.

25 And as we have learned at implementing

1 essentially phase one of the CSI, the additional
2 requirements that have been put into place have
3 also introduced additional complexity in the
4 program implementation. And so we have worked
5 hard over the course of the last several months to
6 identify areas where there are opportunities for
7 limiting the amount of paperwork associated with
8 the program and we've proposed some changes to the
9 PUC, which we now have a draft resolution
10 approving.

11 We just want to make sure that as we
12 step into the next phase of the CSI that we be
13 mindful of additional complexities associated with
14 the implementation. So while we support, again,
15 the staff report for essentially moving the ball
16 forward with respect to ensuring that tighter
17 linkage with energy efficiency in particular, we
18 would want to make sure that what is put into
19 place really is essentially thought through,
20 involves the necessary training for the market
21 participants so that they could actually implement
22 them, and do not represent an additional burden
23 that might end up in some sense perhaps
24 jeopardizing the broader goal of 3,000 megawatts
25 statewide of solar.

1 And so just to provide a little more
2 detail. We believe that the new construction
3 elements of the program, again, make sense. The
4 additional levels of efficiency that would be
5 required for residential and nonresidential
6 buildings.

7 And with respect to retrofit, we think
8 that the nonresidential objectives are workable in
9 the sense that our account reps in working with
10 nonres customers typically pursue an integrated
11 approach and the additional requirements that are
12 represented here are things that we think we can
13 work with.

14 We're a bit concerned based on what we
15 have been able to understand so far with respect
16 to the residential retrofit in particular. And
17 while we again support the objectives of a tighter
18 linkage with energy efficiency measures we're
19 concerned even with the one year timeline that's
20 described in the report that it may be difficult
21 to put the type of system into place.

22 Obviously the devil is in the details
23 with respect to how you define cost-effective.
24 But we do want to take the opportunity to think
25 through if there are different ways of getting,

1 again, a tighter linkage in a manner that might,
2 for example, focus on larger homes, at least at
3 the outset, as opposed to all of our residential
4 homes.

5 Considering, for example, the cost of
6 doing audits in all of the homes that are below
7 the 75th percentile as is established would be
8 costly. And then again, how you define cost-
9 effective obviously will be very critical in terms
10 of the achieveability of these additional
11 measures.

12 So I'll limit my comments for now and
13 will provide again more substantive comments
14 later. But we appreciate your efforts and I'm
15 happy to answer any questions if you'd like.

16 ASSOCIATE MEMBER PFANNENSTIEL: Thank
17 you for being here, David, we appreciate your
18 input. I think it is really important to all of
19 us that we avoid unnecessary layers of paperwork
20 and complexity and so we look forward to your
21 input on how to avoid that. We know you share
22 with us the concern about making sure that we both
23 meet the criteria of the statute but also make
24 these programs as efficient as we can make them.

25 You know, hard to balance sometimes. So

1 look for ways to help us in terms of meeting that
2 but not putting an extra burden on either the
3 solar developers or the builders or the
4 homeowners. I think we really have to balance
5 that so we look forward to your comments.

6 MR. RUBIN: Commissioner, thank you.

7 PRESIDING MEMBER GEESMAN: Utility
8 incentives were an important part of encouraging
9 the staff in their efficiency objectives in new
10 construction. Do you envision assembling a
11 package of utility incentives for energy
12 efficiency in the retrofit sector?

13 MR. RUBIN: As you're aware we do have a
14 broad base of various types of efficiency programs
15 for all the various market sectors. One part of
16 that is not on-site audits for residential
17 customers, for example, so that would need to be
18 brought into focus as well. But in general yes,
19 we do.

20 PRESIDING MEMBER GEESMAN: Thank you.

21 MR. RUBIN: Thank you.

22 PRESIDING MEMBER GEESMAN: David Bruder,
23 Southern California Edison.

24 MR. BRUDER: Good morning. I also
25 wanted to commend the staff on their work on this

1 report, very well written, very clear articulation
2 of the differences between programs and set of
3 recommendations about how to go forward with
4 compliance for SB 1.

5 Edison wholeheartedly supports the staff
6 report recommendations regarding the energy
7 efficiency requirements, especially for buildings
8 receiving incentives under the CSI program. These
9 requirements are consistent with our belief in the
10 benefits of integration of all customer energy
11 management solutions. That's energy efficiency,
12 demand response and solar, in the order called out
13 in the EAP loading order, resource loading order.

14 We recognize also, as David mentioned,
15 that this adds complexity and cost to the program,
16 to the solar program and to customers doing solar.
17 We plan to provide a significant level of support
18 through our energy efficiency programs to
19 basically meet the requirements and assist the
20 industry, assist our customers in meeting these
21 requirements.

22 Our energy efficiency programs are --
23 beginning in 2006 are very much in line with the
24 requirements that are called out in the staff
25 recommendation. We have energy audits both for

1 residential customers and for nonresidential
2 customers. We have a \$15 million retro-
3 commissioning program that also includes ENERGY
4 STAR Portfolio Manager benchmarking as a
5 component. And of course both our residential and
6 nonresidential new construction programs are in
7 line with these requirements.

8 So we're mindful of the complexity but,
9 you know, again our intent is that we can provide
10 the support to the industry and our customers
11 that's needed to comply with these requirements.

12 So the requirements will impose some
13 additional costs and administrative requirements
14 on the energy efficiency side. Probably both,
15 actually both programs. And we expect that those
16 additional costs would be covered either through
17 the CSI funding or an energy efficiency program
18 funding.

19 And also we hope and expect that the
20 CPUC and the CEC will support and back the energy
21 savings that occur through the energy efficiency
22 requirements for solar installations and that
23 essentially they won't be considered free riders
24 in the process.

25 So again thank you for the opportunity

1 to comment and if you have any questions I'm happy
2 to answer them.

3 PRESIDING MEMBER GEESMAN: Thank you
4 David.

5 MR. BRUDER: You're welcome.

6 PRESIDING MEMBER GEESMAN: Andrew
7 McAllister, California Center for Sustainable
8 Energy.

9 MR. McALLISTER: Thanks for the
10 opportunity to put forth some comments. I agree
11 with the first two speakers that this is really a
12 fantastic document and there's a lot of great
13 ideas in the air, interesting ideas, and really
14 look forward to participating in the discussion as
15 it moves forward.

16 Just as some background, CCSE, we used
17 to be called the San Diego Regional Energy Office.
18 I think we're driving that home in everybody's
19 head these days but just to drive it home once
20 more. We support clean energy in the San Diego
21 region and beyond by providing technical
22 assistance and program administration services and
23 other services. And our core competencies really
24 are energy efficiency and renewable energy. And
25 of course we're the program administrator for the

1 solar initiative down in San Diego and in the
2 SDG&E service territory.

3 Energy efficiency and the loading order
4 are wonderful tools the state has at its disposal
5 to promote long-term sustainable energy and we
6 fully embrace the loading order and everything
7 that flows out of that.

8 Additionally Bill mentioned the zero
9 energy home goal and we very much, I personally am
10 and we as an institution very much support that.
11 In fact, CCSE is offering a solar water heating
12 program now that sort of goes along with that
13 general goal. I mean, you can't have a zero
14 energy home without solar water heating. It's
15 kind of the third component along with efficiency
16 and some kind of electric self-generation. So
17 that whole package is really important, I think,
18 to keep in mind.

19 As Claudia and the staff report
20 recognize, the existing buildings present
21 particular challenges and I'm going to focus on
22 those in my brief comments. It's a complex
23 sector, it's varied and the measures really do
24 need to be customized for that market. So the
25 challenge is how to go about that in an effective

1 and efficient way.

2 I think benchmarking and targeting makes
3 a lot of sense. It's worked in a lot of sectors
4 and countries throughout the world and I think has
5 really been proven to make a lot of rational
6 sense. The question is how to do it cost-
7 effectively.

8 As the California solar initiative
9 responsible for ensuring that program requirements
10 are met CCSE would expect and participate
11 vigorously to be integrally involved in the
12 development of the process for how to develop and
13 apply the benchmarking and targeting. Because
14 it's important actually not just probably for the
15 solar initiative but in general for efficiency
16 programs and policy going forward. So to develop
17 the processes and requirements, to really make it
18 operational and effective I think is important.

19 I want to point out that the San Diego
20 region is a little bit unique. I'm a transplant
21 from the Bay Area, from Berkeley. In the two
22 years I have been down in San Diego I've realized
23 how sort of different it is, Southern California
24 and Northern California, and many of you know this
25 already. But I just it bore mentioning.

1 Well first we have lots of sun so it's
2 really a great spot for high performing systems.
3 If the state's policy is to meet goals with solar
4 generation on a performance Southern California I
5 think is a very good place to do that.

6 On the market side of it, San Diego and
7 I think Southern California in general is fairly
8 different from say the Bay Area. And sometimes I
9 feel like I need to say this explicitly.
10 Everybody sort of knows it but I need to say it
11 explicitly. The overlap between energy efficiency
12 adopters and PV adopters really isn't assured like
13 maybe we assume it is. You know, oh gosh, if they
14 drive a Prius and they have energy -- they're
15 probably doing energy efficiency and they're
16 probably going to do solar, that kind of thing.

17 Well our installation base in the CSI is
18 actually somewhat counter to that intuition. We
19 have relatively large average system size and we
20 see a lot of the residential facilities in
21 general, in particular that are not that
22 concerned. They're seemingly not that concerned
23 about energy efficiency or an eco-lifestyle or
24 sort of living green and sustainably. They really
25 are making PV a statement sort of apart from many

1 of the other considerations.

2 So I think that this assumption, or at
3 least the danger might be that we sort of hold PV
4 installations somewhat hostage to some pending
5 energy efficiency installations and therefore, you
6 know, we're not making sure we have all policy,
7 all technical options for reducing greenhouse
8 gases moving forward in parallel. We're sort of
9 having a serial approach rather than a parallel
10 approach. So I think we just need to keep mindful
11 of that as we work through these new requirements.

12 And I also very much agree with that we
13 need to study the participants in the market to
14 make sure we understand what's going on with
15 energy efficiency and the characteristics of solar
16 adopters.

17 And just to finalize, we very much look
18 forward to working within the energy efficiency
19 portfolio. We are third party -- We have been the
20 third party administrator of energy efficiency
21 programs for a large number of programs. So we
22 look forward to further participation within the
23 energy efficiency portfolio for our region and
24 with other regional stakeholders. Obviously SDG&E
25 the local utility but also municipalities and

1 working with them to enforce --

2 Say Berkeley and San Francisco, when a
3 house changes hands you know they have to, they
4 have RECO and all that sort of thing. Trying to
5 get some of these policies that really grease the
6 skids for getting energy efficiency done
7 independent of whether or not a house may be
8 receiving an incentive from a CSI program.

9 So, you know, we think both of these
10 goals are wonderful and are very much committed to
11 both of them. We'll do our best to make that work
12 as the administrator down in San Diego so thanks.

13 PRESIDING MEMBER GEESMAN: Thanks for
14 your comments. I think you make some important
15 points, particularly with respect to retrofit
16 energy efficiency. You know, 25 years ago we came
17 within two votes on the floor of the state senate
18 requiring a retrofit obligation at the time of
19 sale on a statewide basis. It was initiatives at
20 the local level that I think prompted the
21 California Realtors Association to want to see a
22 statewide requirement.

23 MR. McALLISTER: Well I think the
24 municipalities are really in a great position to
25 do that. And we do have several municipalities

1 down south, in particular San Diego and Chula
2 Vista, the two largest cities in the county, that
3 are very committed to getting their greenhouse gas
4 emissions down. They have working groups really
5 doing substantive work on these issues and are
6 definitely open to these kinds of policies for
7 sure.

8 The City of San Diego, as were a couple
9 of other cities in California, was awarded a solar
10 America initiative -- a solar cities strategic
11 partnership award from the DOE to work on some of
12 these very issues. About looking at what policies
13 can help them reduce their carbon. We're a
14 subcontractor on that to the city.

15 So I think there's a lot of exciting
16 things going on and they play into this debate
17 that we're going to have, this discussion we're
18 going to have about this document because I think
19 there's a huge opportunity to integrate many
20 complementary goals in a way that's efficient.

21 Obviously our concern, which I think I
22 heard in the first two speakers, particularly
23 PG&E, is that we don't want to create artificial
24 bottlenecks. We want to make sure that it's a
25 seamless, efficient, transparent kind of process

1 and that we don't sort of rob Peter to pay Paul
2 kind of thing. So thank you.

3 PRESIDING MEMBER GEESMAN: Thanks for
4 your comments.

5 ASSOCIATE MEMBER PFANNENSTIEL: Excuse
6 me. Does the City of San Diego have a requirement
7 for an energy efficiency audit at time of sale?

8 MR. McALLISTER: I believe they do not.

9 ASSOCIATE MEMBER PFANNENSTIEL: Thank
10 you.

11 PRESIDING MEMBER GEESMAN: Bob Knight,
12 California Building Performance Contractors
13 Association.

14 MR. KNIGHT: Good morning, thanks for
15 this opportunity. We made six pages of written
16 comments so I am not going to try to go into
17 detail here but I would like to provide a little
18 bit of perspective. By the way, since we ran out
19 of copies of those this morning we'll put that on
20 the CBPCA website, cbpca.org and anybody can get
21 them there.

22 I'd like to just say a few words about
23 the perspective on existing homes. First of all
24 the existing housing stock, the homes that are
25 already built today are going to dominate the

1 housing stock for the rest of the lifetime of
2 everybody in this room. Not enough attention is
3 being given to existing homes. So we want to go
4 forward with that idea that improving the energy
5 efficiency of existing homes as well as adding
6 solar PV to those homes is of paramount importance
7 and I wouldn't want to see any kind of reduction
8 in the emphasis on energy efficiency.

9 Also a little bit about the importance
10 of comprehensive home performance improvement.
11 The home performance concept, which integrates
12 both shell and mechanical improvements to the
13 house, generates savings, energy savings that are
14 far greater than individual measures can ever
15 accomplish. So we think that this is an important
16 part of any portfolio.

17 Also the importance of offsetting the
18 cost of photovoltaic systems with energy
19 efficiency improvements. If you put four
20 kilowatts of solar on a typical house, which is
21 about the amount that is going to be needed to
22 reduce the peak, to get rid of the peak spike in
23 the summer in most homes in the Central Valley, it
24 is going to cost you in the range of \$40,000.

25 A home performance assessment and

1 comprehensive improvements will cut that cost in
2 half. So it's a better expenditure of the \$40,000
3 to do part of it on energy efficiency and reduce
4 the cost of the solar. You get better results or
5 you can spend less money.

6 Also a word on the limitations of the
7 cost-effectiveness idea, the cost-effectiveness
8 criteria. Surveys that we have done of people who
9 have had major improvements in energy efficiency
10 done to their house indicate clearly that most of
11 their motivation is for forces and purposes other
12 than saving money on their utility bills.

13 Therefore it is questionable to depend
14 heavily on a cost-effectiveness criterium that
15 involves the expenditure made by the homeowner.
16 It's apples and oranges. The homeowner is making
17 the expenditure for many other reasons. And the
18 only benefit that we're putting into that cost-
19 effectiveness criterium is the amount of money
20 that is saved or the amount of energy that is
21 saved when in fact there are many other benefits
22 that are completely ignored in the typical cost-
23 effectiveness calculation such as the photo-
24 resource cost test.

25 Finally the educational opportunity for

1 energy efficiency that is implicit. The great
2 opportunity in the California Solar Initiative.
3 We would not like to see that diminished in any
4 way. And we think that the information that is
5 provided to the California population about the
6 CSI and how to go about taking advantage of it
7 should include a lot of information that shows
8 people what their choices are in improving the
9 energy efficiency of existing homes.

10 So with that background and perspective
11 I'd like to say that we generally endorse very
12 strongly the ideas in the staff's conceptual
13 approach to this subject. Not in its details but
14 certainly in its intent. We have some suggestions
15 to make that we think could improve it. I am not
16 going to go into those in detail, they're in the
17 written comments.

18 The basis of that approach, that we
19 appreciate the staff's words on is the division of
20 the population of houses into four quartiles
21 according to energy use and a stronger focus on
22 what I think of as the top quartile. What I think
23 Claudia referred to as the bottom quartile but to
24 me the top quartile in energy use makes it a
25 little easier to remember. That's a very easy

1 measure because the utilities already have the
2 data.

3 We don't think -- This is a detail I
4 want to just briefly mention. We don't think that
5 energy use per square foot is the right measure,
6 we think total energy use is the right measure.
7 Because it doesn't matter whether a gross polluter
8 house is that way because of its size or its
9 deficiencies or the behavior of its occupants. It
10 is still a gross polluter and that should be
11 corrected. And the best measure for that is how
12 much energy is it using.

13 We believe that we're missing an
14 opportunity here with the staff's conclusion that
15 in 2009 we still would be doing nothing but an
16 online energy audit. We don't think that's
17 enough. And we think it's possible
18 administratively to do more than that much faster
19 than that.

20 We recognize limitations on staff time
21 and the difficulty of all the details that the
22 utilities have to go through but we're involved in
23 that process. And we know that they can do it.
24 There are 16 months between now and the beginning
25 of 2009. We think that's ample time to actually

1 implement something that could actually create
2 real energy efficiency instead of just an audit,
3 which historically every evaluation I've ever seen
4 indicates that they are of marginal value.

5 And if for any reason there isn't a
6 possibility of shortening the time span from 2009
7 back into the middle of 2008 or something like
8 that we think we should have an interim
9 improvement in the existing standard that would
10 involve requiring homes to make at least some
11 minimal level of improvement. And
12 administratively we've outlined how that can be
13 done with minimal effort in our comments that
14 we've submitted.

15 We proposed a specific program design
16 that is closely related to the staff's concept.
17 It is easy for low-use homes, almost falling off a
18 log easy, for the lowest quartile, a little harder
19 for the homes in the middle and quite a bit harder
20 for the homes at the top. It's all easily
21 administered as well as understandable to the
22 homeowner. And it can be implemented we believe
23 well before 2009.

24 So in conclusion I'd like to say that
25 the CBPCA, based on our experience in doing home

1 performance programs as we are now statewide for
2 both PG&E, Southern California Edison, Anaheim
3 Public Utilities, speaking with other utilities
4 about the same programs and extensions of our
5 present ones. We endorse the staff's concept. We
6 encourage much quicker action and implementation
7 that will actually really generate energy
8 efficiency improvements on a large scale. Thank
9 you.

10 PRESIDING MEMBER GEESMAN: Thank you for
11 your comments. Dan Perkins, Energy Smart Homes.

12 MR. PERKINS: Thank you for the
13 opportunity to say a few words. I agree with the
14 previous speaker that we really need an in-depth
15 look at what it is that can be done. The wheel
16 has already been invented. We have some loose
17 spokes but let's tighten it up and let's make what
18 we have in the way of a HERS rating work for us.

19 San Diego has been a leader in this kind
20 of thing as well as Sacramento. Bobbi Glassel has
21 been in this business for a long time. She'll
22 explain exactly where the rubber hits the road
23 when it comes to a HERS rater. But the HERS
24 rating is going to be the criteria that we're
25 going to bank on in order to make the decision on

1 what needs to be done.

2 You cannot start making little decisions
3 for homeowners out here. They are not, they're
4 going to rebuff. So if they have the rating in
5 their hand they can then make the decision that
6 \$8,000 that they spend on energy efficiency will
7 save \$15,000 in solar. And that is going to be an
8 important thing for that consumer to understand.

9 So we have a big education program that
10 needs to take place. We are in a position to be
11 able to make those education programs happen
12 through the Department of Real Estate in the
13 course that Bobbi will speak to.

14 So we're ready to go. We're looking
15 forward to working with you. We appreciate the
16 work that's been done. We want to help in any way
17 that we can. We're here to answer your questions.

18 PRESIDING MEMBER GEESMAN: Thanks for
19 your comments. Bobbi Glassel, Energy Efficient
20 Mortgage.

21 MS. GLASSEL: Good morning,
22 Commissioners. I think we all agree with the
23 energy efficiency and the solar, who is going to
24 write the check? This is a very expensive thing
25 for a homeowner to go energy efficiency and solar.

1 I have kind of gone along with AB 549
2 and I know that they are in the process right now
3 to conduct a complete HERS proceeding for the
4 rating. They're trying to develop training
5 materials and to design the HERS disclosure at
6 time of sale. And I have to tell everybody in the
7 room, this is a very powerful tool that we have,
8 the disclosure of the HERS rating.

9 When this comes out, not only EE but
10 solar, you are going to have a massive sales
11 force. There's 536,000 licensed realtors in
12 California. That's one out of 50 people have a
13 real estate license in California. Like that?
14 Want to buy a house? And another thing too, I am
15 not a realtor, I am not a lender. I work with the
16 homeowner, the mortgage lender, escrow, the
17 contractors to put together energy efficiency
18 packages. So don't ask me any lending questions.

19 We need to layer together our new and
20 existing programs. We need to finish up what we
21 have going. I'm in the trenches. I'm out there
22 every day with homeowners. They want energy
23 improvements.

24 I have been in the real estate business
25 for about 27 years. For the last 11 years I have

1 been doing the energy efficient mortgage. In
2 those 11 years when I have told the homebuyer or
3 homeowner they have an opportunity to get energy
4 improvements, and this is just my word but please
5 believe me, I've only had five or ten people say
6 they are not interested. They are interested.

7 Once I've ordered a HERS rating. And I
8 will tell you, all energy efficient mortgages,
9 every loan product requires a HERS rating for
10 justifying the financing. Once I've ordered a
11 HERS rating and that homeowner has seen the HERS
12 rating I have never been turned down on energy
13 improvements. Not once.

14 It's not cheap, like I say. People
15 cannot whip out a checkbook. I can't. I don't
16 now how many of you here can and pay \$8,000 for a
17 new heat and air. Maybe I want some attic
18 insulation. Maybe my house needs new windows.
19 We're going to finance this, not counting the
20 solar of course. It's going to be financed.

21 Those folks of you who are not familiar
22 with energy efficient mortgage, it's a nationwide
23 program that Jimmy Carter started. It is not a
24 loan. Once a buyer qualifies for energy
25 improvements -- excuse me. Once a buyer qualifies

1 for their mortgage, they've already qualified for
2 it, they automatically qualify for cost-effective
3 energy improvements to be layered into that first
4 mortgage with no additional income qualifying, no
5 additional money down. The appraisal increases in
6 the amount of the energy improvements.

7 Is this hard to do? No. Cookie cutter,
8 no problem. It's not hard for the lender,
9 especially when he has me. It's not hard for the
10 underwriter. They just push a button and it's
11 done on DU, Desktop Underwriting.

12 The HERS rating is our first criteria
13 for energy efficiency before solar. Online that's
14 a nice little thing. I'm going to tell you,
15 nobody knows how much attic insulation they have.
16 They do not know how old that heat and air is and
17 what SEER it is. Their hot water heater, it gives
18 them hot water, they don't know how many gallons.
19 Some of them don't even know if it's gas or
20 electric.

21 The HERS rating before solar will
22 relieve the contractors, the solar contractors.
23 Let me see where I'm at. The responsibility of
24 confirming and verifying existing energy
25 improvements in a home. Will not slow down the

1 installation or the rebate program. Offers the
2 consumer a cost-effective and wise information so
3 they can go out and purchase the correct products
4 for energy efficiency.

5 In California our raters, and I'm not
6 going to tell you this but they're getting about
7 \$300 a rating and that goes up from there. It's
8 not prohibitive. It's in place and working. And
9 it can be driven by the real estate market. It's
10 consistent statewide. In fact I think CalCERTS
11 has a rater in every county in California. The
12 rating would produce -- The HERS rating will
13 produce energy efficiency.

14 I am also approved by the Department of
15 Real Estate. I give a DRE class, Energy
16 Efficiency Regulations and Financing.

17 And you've heard -- Every time you read
18 about real estate ratings, trying to sell, one of
19 the barriers is always the realtors and the
20 mortgage lenders are not interested. Next time
21 you come across that cross it out it's not true.
22 I'm telling you it's not true.

23 In my class I hand out a questionnaire.
24 And some of these answers, one to ten, they're all
25 tens. Would you get a rating, yes. Would you get

1 a rating on your new home. Would you recommend
2 it. It's all yes. They are ready to go.

3 Money talks. This is something that did
4 up to show, not you but I give this in my DRE
5 class. I didn't do it for you. If a family has
6 energy efficiency they upgrade their heat and air
7 -- And by the way, the HERS rating is real easy to
8 read. It just says, existing conditions, what the
9 rater wants to improve those conditions, annual
10 savings. Really cut and dry.

11 This particular one they updated their
12 heat and air. They did an additional thermostat.
13 Test and sealed their air ducts and installed a
14 whole house fan. Their monthly energy savings was
15 \$132. The increase in their payment was \$48.
16 That left them \$84 positive cash flow.

17 They got a rebate of \$875. That's a
18 one-time savings. An IRS tax credit of \$500.
19 Their energy savings for the year was \$1587. But
20 because the energy improvements are part of their
21 mortgage that interest is tax deductible. They
22 deducted \$438 on their taxes at the end of the
23 year from their mortgage.

24 First year. Now they have brand new
25 heat and air. First year savings in that family's

1 pocket was \$3,442. That's a lot of money to a
2 family. And it is very easy for us to obtain it.
3 I know --

4 PRESIDING MEMBER GEESMAN: Why don't we
5 wrap up in the next minute or so, Bobbi.

6 MS. GLASSEL: Okay.

7 PRESIDING MEMBER GEESMAN: I have a
8 large stack of other cards.

9 MS. GLASSEL: I just have to say that
10 FHA is rewriting. They've made the energy
11 efficient mortgage a priority. We have two
12 lenders. Citibank has given priority to the
13 energy efficiency mortgage. They're going to give
14 rebates of \$1,000 on the closing costs.

15 But I think if we do the HERS rating I
16 would like to see it on existing buildings just
17 the rating required. Once they order the rating
18 then they can figure out what they want with not a
19 lot of hoops to jump through.

20 PRESIDING MEMBER GEESMAN: Thank you for
21 your comments.

22 MS. GLASSEL: Thank you very much.

23 PRESIDING MEMBER GEESMAN: Peter Brehm,
24 Infinia Corporation.

25 MR. BREHM: If it pleases the

1 Commissioners, my comments are most appropriate
2 after the next section.

3 PRESIDING MEMBER GEESMAN: Okay, that
4 would be great. Erin Clark, Regrid Power.

5 MR. CLARK: My name is Erin Clark and I
6 work for Regrid Power, a solar contractor. I
7 believe that energy efficiency requirements are
8 necessary. Having a more efficient home, yes,
9 definitely will cost you less at the end of the
10 year.

11 In real world terms, implementing more
12 stringent requirements I think will slow down the
13 installation of solar. For this group here I
14 would love to see them raise their hands, who
15 actually has a solar system on their home. I
16 think that's pretty low for this group of people.
17 This is a pretty advanced group here. If we make
18 it harder for people --

19 It's dollars in real world. I go out
20 there, I sell, I've installed, I've done the whole
21 works. When you go out and talk to a customer
22 it's a new technology, you're trying to convince
23 them. Yes, you'll have a lower bill, you'll have
24 this.

25 Having them go through more hoops, more

1 jumps, multiple, multiple inspections. The
2 building department is going to come out and
3 inspect it. You're going to have the CSI
4 inspector home out. You're going to have now an
5 additional inspector come out. I think it will
6 slow it down.

7 You can't change people's habits. So
8 trying to change what they're doing. If they're
9 going to leave the lights on they're going to
10 leave the lights on. You're going to have a more
11 efficient light but they're still going to leave
12 it on.

13 And I believe that this will, like I
14 say, slow the process down. We want to achieve a
15 million solar roofs and it's going to be very
16 tough. I love the CSI program, it's a big
17 improvement from the previous program.
18 Orientation, performance based, very, very well
19 thought out. That's exactly what we need. But
20 having more restrictions is going to be very tough
21 on our customers and I think they will --

22 It's dollars. It'll cost them more to,
23 especially the New Solar Home Program. Now we're
24 going to have to, we have certified plans
25 examiners go through the plans. That's an

1 additional cost. On a new custom home we can get
2 the plans from the builder. The homeowner now has
3 to pay a certified plans examiner to calculate
4 their Title 24. So they're going to pay this
5 rating and their house might not meet energy
6 efficiency requirements. So they're already out.

7 They don't want to spend the \$3,000,
8 \$4,000, \$5,000 to upgrade it. They're already
9 maxxed out. And they're going to spend \$300 or
10 \$400 to get their plans examined. I think the
11 program is good how it is and it will slow down by
12 making it any more stringent.

13 PRESIDING MEMBER GEESMAN: Good points.
14 But as is often the case, when the Legislature
15 gets involved in this stuff they like to attach a
16 lot of strings to public money. That's why we're
17 here trying to sort through how many strings and
18 what should be attached to each string. But I
19 hear your point loud and clear.

20 MR. CLARK: It's a good program. The
21 implementations they have done with the new
22 program are appropriate. Now it is orientation to
23 geographic location, shading, definitely good.

24 But when you get out to Central
25 California or you get out to a different

1 environment than in this room where people already
2 have those ideas in their head, people here are
3 going to make energy efficiency improvements in
4 their home. They're going to recycle, they're
5 going to do their part. Try and sell that to the
6 35,000 people in the Central Valley or in
7 Porterville or Tulare or wherever. It's not as
8 easy as you make it sound.

9 Mortgages. There is the energy
10 efficient mortgage company. How many of those are
11 there? You go to the cheapest rate that you can
12 possibly find. Everything else is -- So it's
13 really money. This makes it a little more
14 expensive. Adding more strings. And it makes it
15 harder to achieve the goal. Thank you.

16 PRESIDING MEMBER GEESMAN: Thank you.
17 David Wind, Sundowner Homes.

18 MR. WIND: Thank you very much. I'm
19 surrounded by diplomats. I'm not one. I've been
20 in the building industry for 35 years. I started
21 out in geodesic domes. Now my company, Sundowner
22 Homes, in late 2005 we started a project, 48 lots,
23 48 homes, all of them with solar. We've got 22
24 homes finished.

25 In our last application to Southern

1 California Edison it was rejected. They said
2 well, these are new homes. You'll have to go
3 through the New Solar Home Partnership. I
4 reviewed it, it's a deal-breaker. I don't know
5 what I'm going to do. I've got 28 left and I'm
6 just stuck. I have to change all my plan specs,
7 submit a ton of paperwork, get more inspections,
8 jump through more hoops. It's basically dead.

9 I called the New Solar Homes Partnership
10 and asked, how many developers have signed up?
11 One. One. How many homes? My solar contractor,
12 the last custom home that he submitted was
13 application number 16. At the rate this is going
14 it will take 2,000 years to get a million homes
15 (laughter). I'm just a little guy but the big
16 guys aren't going to jump through these hoops.

17 People don't buy homes because of solar
18 power or energy efficiency. Up to a point. They
19 buy them, they buy what they can afford in a
20 location that they desire. My own house, which is
21 in my own subdivision, my electric bill last
22 month, July, was 95 cents. I don't exceed by 15
23 percent Title 24 calcs. None of my -- Well, a
24 couple of my houses depending on the orientation
25 do.

1 But the people that moved in, I mean,
2 their bills are like \$3.20. You know. Why do I
3 have to go through a whole other layer of
4 bureaucracy to do what I am already doing? And a
5 lot of people aren't going to follow me. They're
6 not going to do it. It's costly, time-consuming.
7 It doesn't help. It discourages builders, it
8 doesn't encourage them to do this.

9 Fifteen percent more efficient or 40
10 percent more efficient, plus solar. A ton of
11 money. And across the street a same size house,
12 you know, reasonable, meets Title 24, and it's
13 \$20,000 less. Forget it.

14 So I'm stuck. I'm right in the middle
15 of a project and now I've got to disassemble the
16 thing, put it back together and join a new
17 program. Where is the grandfather clause? What
18 about the guys like me that are already ahead of
19 the curve? That's a question. Is there an
20 answer?

21 ADVISOR TUTT: You can meet with our
22 staff.

23 MR. WIND: Do you actually know how many
24 homes have been done under the New Solar Homes
25 Partnership or how many developers have actually

1 signed up for this deal?

2 PRESIDING MEMBER GEESMAN: I know what
3 our staff has told us. I don't know myself.

4 MR. WIND: Your staff told me one
5 developer. And my solar guy said that his
6 application was number 16. There's 150,000 homes
7 built every year in California.

8 PRESIDING MEMBER GEESMAN: The last
9 information we received from our staff was
10 different than that.

11 MR. WIND: Well that was the information
12 they gave me last week on the phone. But I'd love
13 to know. Anyway, thanks a lot.

14 MR. PENNINGTON: So let me update the
15 information here. There has been a very slow
16 pickup from the beginning of the program until now
17 and those were almost all custom homes in the
18 first few months. There has been a dramatic
19 upswing in participation over the last couple of
20 months. And I think we're at 800 homes now.

21 MR. WIND: That have been approved?

22 MR. PENNINGTON: That are in the
23 reservation process.

24 MR. WIND: Well yeah. No, I heard that,
25 650 homes in the pipeline is what I was told. One

1 developer on board and 650 homes in the pipeline.

2 I mean, it's minuscule.

3 MR. PENNINGTON: So there's eight
4 developers that have come in under the reservation
5 process. So this is dramatically changed since
6 you first asked the question.

7 We're in this big upswing process, which
8 is what we expected. That it's going to take
9 developers a while to figure out what to do, you
10 know. We're getting into the construction season.
11 During the first part of the year we weren't in
12 the heavy construction season. We're also facing
13 a real downturn in the home building market. So
14 there's been a big change here over the last few
15 months. So that's the only comment.

16 MR. WIND: And thank you very much,
17 Commissioners and staff. I just, I want to urge
18 you to take a really close look at what you've
19 already done. It wasn't broken. I was going
20 along fine doing my job. A lot of other people
21 like me were starting to think in that same way.
22 I'm a big proponent of it, always have been. But
23 this, what's happened now is a deal killer for a
24 lot of us.

25 And if it continues into the existing

1 home market there will be no chance for a million
2 solar homes. I mean, do you really want a million
3 roofs or do you just want more bureaucracy. It
4 will fix itself. I mean, people will do it, it's
5 a great idea. But why stop it. And that's what's
6 happening. Thank you.

7 PRESIDING MEMBER GEESMAN: Thank you.
8 Matt Golden, Sustainable Spaces.

9 MR. GOLDEN: Thank you, Commissioners.
10 My name is Matt Golden, I'm with Sustainable
11 Spaces and we are actually a building performance
12 contractor. We work throughout the entire Bay
13 Area.

14 And I just wanted to really stress to
15 you guys and say, it's time to be bold, you know.
16 We've gone through this market creation process in
17 solar. I was part of it. And it was very
18 necessary to really subsidize solar and make the
19 market happen.

20 And we're in the process right now where
21 -- I don't know the state numbers but there's over
22 150 solar contractors in the Bay Area that are on
23 the list. And maybe 60 of them that are really
24 active.

25 We all at a fundamental level I think

1 know that the process that has the macro impact,
2 that has the biggest impact for ratepayers, for
3 the environment, for homeowners, is to address
4 efficiency and underlying issues first and then
5 put a much smaller, more appropriately sized
6 renewable energy systems as a next step towards
7 zero energy.

8 And we understand that if you look at
9 it, if you look at the dollars that go into
10 subsidizing production systems, I think there's a
11 recognition if you really look at it objectively
12 that right now efficiency and solar, when you
13 include the incentives, look pretty similar. But
14 it's because there are such massive incentives on
15 the solar side.

16 We really almost never use the rebate
17 programs even that are on the efficiency side
18 because they are more arduous than they're worth
19 for the kind of projects that we're doing when
20 we're looking at whole systems.

21 We in the Bay Area right now are
22 actually experiencing just the opposite of what
23 you're hearing here. We work with probably three
24 out of the top ten solar contractors in the state
25 in terms of residential construction and maybe a

1 dozen solar contractors.

2 They're coming to us faster than we can
3 actually work with them. We're actually literally
4 putting the brakes on these programs because we're
5 trying to expand to handle the demand that they're
6 getting from their customers for a more integrated
7 approach. And that is honestly what is happening.

8 They're paying for us to go out and
9 inspect their customers' houses right now as part
10 of their process. They're taking that on and
11 paying us to do that as a differentiator because
12 there is actual demand in the marketplace.

13 We also have contractors that are
14 actually building into their contracts allowances
15 for energy efficiency right now on the front end
16 because it differentiates them, it helps them sell
17 solar, and their clients know they're getting a
18 better product. And so this is the leading edge
19 of what is happening in the marketplace.

20 But to just push this back and to say
21 no, you know, we're going to wait for the market
22 to mature. It's a chicken and egg game. And
23 we're on the wrong side of it.

24 It's time to really demand market
25 creation to get behind efficiency, which we know

1 is the right course. We know that we should be
2 doing efficiency first, then production systems
3 and really take some bold steps in that direction.

4 And the market will come along and
5 homeowners will understand it. And they'll be
6 getting more value because they'll be getting a
7 better deal from a dollar standpoint but they're
8 also going to have healthier kids, a more
9 comfortable house, a better overall system. And
10 it's a better value proposition, it's not an
11 inhibitor.

12 It is a change in the way that this
13 market is going to work. But you're going to
14 create a better product that serves homeowners
15 better, serves ratepayers better and does better
16 for the environment at the end of the day.

17 So I just encourage you guys to be bold
18 and don't be afraid to take bold action and the
19 market will catch up. Thank you very much.

20 PRESIDING MEMBER GEESMAN: Thanks for
21 your comments. Mark Gaines from Sempra.

22 MR. GAINES: Thank you, Commissioners.
23 I am Mark gaines, director of customer programs
24 for both SoCal Gas and San Diego Gas & Electric.
25 I am responsible for the energy efficiency

1 programs and demand response programs of both
2 utilities. I appreciate the time to talk here
3 this morning and I do want to say that we support
4 the staff's recommendation for SB 1. A few goals
5 and that it certainly is consistent with the
6 energy action plan. It does properly prioritize
7 our customer incentives with energy efficiency
8 first followed by photovoltaics.

9 From a personal standpoint I am
10 responsible for meeting all the energy efficiency
11 goals at both utilities that are very aggressive
12 and any help we can get to meet those goals is
13 greatly appreciated.

14 A couple of suggestions we do have. You
15 might want to look at differentiating on the
16 residential existing, existing residential
17 customers, both multifamily and single-family. We
18 think there's differences in approach that would
19 be appropriate for those two different market
20 segments.

21 And secondly going back to the loading
22 order. There's discussions here about energy
23 efficiency programs. We also think we ought to
24 discuss the demand response programs that are
25 available.

1 We think that does diminish the peak
2 load obviously for homes and can reduce either the
3 need for photovoltaic or certainly the value that
4 is transmitted back to the system at the peak
5 time.

6 So on the residential side all three
7 investor-owned utilities have air conditioning
8 cycling programs available, smart thermostats are
9 coming in the future.

10 On the commercial/industrial side we
11 have numerous programs, either rate or incentive
12 programs that are available to customers that they
13 could participate in.

14 We have a goal of five percent reduction
15 of peak load at least available for demand
16 response. It seems like that might be a
17 reasonable expectation for customers that are
18 participating in that photovoltaic program to also
19 deliver that.

20 With that, that's our basic comments.
21 We do support the general direction.

22 ASSOCIATE MEMBER PFANNENSTIEL: Thank
23 you, Mark. Kenny Stein. Not here. Mike Bachand
24 from CalcERTS.

25 MR. BACHAND: Mike Bachand from

1 CalCERTS. Thank you, Commissioners and staff for
2 allowing me to give a few comments.

3 As you know I am a HERS provider here in
4 the California. And I am not speaking on behalf
5 of all of them but I would like to -- I would like
6 to thank Bobbi Glassel for that shameless plug she
7 gave me. I guess I owe her lunch.

8 Anyway, I wanted to say that the rater
9 community right now is really under-utilized. And
10 not just because the construction market is ailing
11 and hurting right now but has been even during
12 that process a year ago when the market had a huge
13 tail wind in it and things were going on.

14 The 2005 standards scared a whole bunch
15 of people into becoming raters. And good, that
16 helped a lot. We went from right around 100
17 raters in 2004 to around 750 right now and that is
18 growing.

19 In fairness, the solar part of what we
20 have done has been difficult to develop. It's
21 complicated, it's new, it involves some processes
22 that weren't contemplated initially. So I think
23 that it's been very helpful that staff has tried
24 to contain the solar HERS processes in the same
25 continuity that Title 24 has been going under in

1 the last decade.

2 I would also like to thank Charles
3 Segerstrom and PG&E for helping us develop the
4 training, providing an opportunity to get that
5 solar training at no cost to our people and to
6 really help us get through that process.

7 But I would like to emphasize most of
8 all, under-utilization. Not only in the field.
9 In other words, raters are ready to go to work.
10 They would love more work. They're out there,
11 they're hunting, they're ready for it.

12 But also our data acquisition registry.
13 I don't know how familiar you are as Commissioners
14 with how our data registry works, and this is for
15 all providers. I know staff is highly aware of
16 it. We acquire data from every inspection that's
17 done. And we could be acquiring lots of different
18 forms of helpful data that we are not necessarily
19 acquiring now.

20 So I would like to just bring that to
21 the Commission's attention. That maybe this is an
22 opportunity to help gather useful information.
23 Everything costs money, and we've heard that a lot
24 today so we understand that and our efforts have
25 been always to keep costs as low as we can.

1 And the final thing I'd like to say is
2 that the HERS industry, a year ago you didn't hear
3 about the HERS industry, you heard about these
4 HERS rater guys.

5 It is becoming an industry. It's
6 important that that be promoted and cultured so
7 that it becomes a useful, meaningful stakeholder
8 in all of this process.

9 And so I'd like to say that we are
10 interested in promoting that as an industry
11 growth. That would benefit us personally and
12 community-wise too. Thanks for your time.

13 ASSOCIATE MEMBER PFANNENSTIEL: Thank
14 you for your comments. Jeanne Clinton from the
15 PUC.

16 MS. CLINTON: Good morning. I thought I
17 would offer a few perspectives on some comments
18 that have been made today on how some of these
19 requirements would relate to the Public Utilities
20 Commission role in terms of improving budgets for
21 utilities, both for efficiency and for CSI.

22 And I should just say my role at the PUC
23 is as an advisor and some of the issues that I'm
24 going to point to today reflect decisions that
25 have already been taken by the Commission.

1 Other comments that I'll make are issues
2 that have not yet been -- the result of a formal
3 decision by the Commission. I'll try to make
4 those distinctions but I may forget. The general
5 point is that the remarks I'm saying are not all
6 reflective of actual decisions that have been
7 taken by the Commission so far.

8 I thought I'd clarify one thing. One
9 person was commenting on the cost effectiveness
10 issue. I think it's important in any policy
11 decision to distinguish cost effectiveness to
12 whom.

13 And the issue of what is cost effective
14 to a homeowner or a resident or a business that is
15 considering efficiency in solar is a different
16 question than is it a cost-effective use of
17 ratepayer money to pay for the efficiency programs
18 and solar incentives that are being expensed
19 against ratepayer funds.

20 And so those are just two different
21 perspective and we just need to make sure we look
22 at both of those as we consider options.

23 The second is -- I think the Energy
24 Commission staff understands this but I'm not sure
25 if it was fully reflected in the document. That

1 in 2005 the CPUC took a fundamentally different
2 approach to approving utility expenditures on
3 efficiency programs.

4 And that approach was to, what we call,
5 portfolio, it gives the utilities targets,
6 quantitative targets for energy savings and
7 megawatts, gigawatt hours and therms. It gives
8 guidelines on overall cost-effectiveness of the
9 portfolio.

10 And we do not give prescriptive
11 direction to the utilities on specifically which
12 programs they should include in their portfolio or
13 what the design features of those programs should
14 be.

15 So there are many instances in the staff
16 report where it says the utilities should offer
17 these kinds of programs or should fund these kinds
18 of things or the PUC should direct or order the
19 utilities to do X,Y,Z.

20 And at least from the point of the PUC
21 and the investor-owned utilities I just wanted to
22 clarify that we have taken this portfolio
23 approach. We do think that performance is
24 ultimately the name of the game forgetting these
25 preferred resources at the lowest cost. And we

1 don't take that approach of directing them to do
2 program X which features A, B and C. So that is
3 just a clarification.

4 On the comments that were in some of the
5 slides this morning about certain elements or
6 features being consistent with the Big, Bold,
7 Energy-Efficiency Strategies at the PUC.

8 Again, just to keep us clear on where we
9 are today. The Big, Bold Strategies are staff
10 proposals that have been put forward in a public
11 process. The Commission has not yet issued a
12 proposed decision or made a decision on those
13 issues.

14 So we don't know for sure if they will
15 become a platform. We are scheduled to release a
16 proposed decision in a few weeks, in early
17 September and have a vote by the Commission in
18 early October, 30 days after that. So certainly
19 by October we'll all have a better sense as to
20 whether that's an official position of the PUC.

21 Related to that, I think an important
22 philosophy that sort of underlies the concept of
23 big, bold is to try to engage the market
24 stakeholders in moving towards far-reaching,
25 energy efficiency integrated with other demand-

1 side solutions including solar and demand response
2 activities.

3 But our approach has been to try to
4 create a market demand or a market pull for these
5 things. To try to get stakeholders in the market
6 to see that it's in their economic interest to be
7 pushing these.

8 And I understand that the issue before
9 you today is to say, well should we take one slice
10 of the market, that being those customers that are
11 contemplating solar and have them perhaps be the
12 guinea pigs, if you will, for requirements that
13 might go in the exact same direction that we've
14 been proposing as staff in terms of Big, Bold.

15 So I just wanted to sort of a
16 philosophical and policy issue. Is the solar
17 market the time and opportunity to test on a
18 required basis some of the mechanisms that are
19 being put forth now on a voluntary basis to try
20 and move the market.

21 And one other comment on that is, as you
22 know the PUC strongly supports energy efficiency,
23 authorizes substantial amounts of funds for
24 energy-efficiency programs. The investor-owned
25 utilities who have commented today have indicated

1 that they are interested in many of these ideas,
2 have many programs either on the way or maybe on
3 the drawing boards and what I want to say about
4 this is these are good ideas.

5 And they should be offered broadly to
6 all customers in California. And I think what we
7 ought to be doing is trying to create enough
8 market interest and market demand to have these
9 broadly embraced.

10 And then we can address separately the
11 question of whether they ought to be mandatory at
12 the time of the seller decision. So I want to
13 underscore that.

14 And energy efficiency obviously is first
15 in the priority order in California. And these
16 are great ideas. And we need to be putting more
17 attention into how to get those ideas broadly out
18 there.

19 I think a related question about how we
20 look at combining solar energy efficiency is that
21 we know that one of the biggest obstacles right
22 now to solar is the cost.

23 And I think the challenge as we move
24 forward is how do we design our incentive programs
25 and policies in a way that will support driving

1 the cost down.

2 And we've both embraced the concept of,
3 both of our organizations have embraced the
4 concept of declining incentives which is sort of
5 the rabbit out there telling the industry you
6 really need to get your costs down, you really
7 need to get your costs down.

8 And so I think we have to look very
9 carefully in understanding other parallel
10 decisions we may make. And whether they are
11 supporting or perhaps competing with the goal of
12 not only getting our solar installed but in order
13 to get more solar installed we have to get the
14 costs down.

15 And so we have to look at the way that
16 solar is being sold in the market now and the way
17 energy efficiency is being delivered in the market
18 now. I know that there's an ambitious goal here
19 to have those broadly integrated in the way
20 they're delivered in the marketplace.

21 But the market isn't there yet. So the
22 question is, we don't have the same contractors
23 delivering both solar and all of the energy-
24 efficiency solutions for a home or a business.

25 And so I think the challenge in linking

1 these two in any kind of mandatory way would be,
2 who will do the delivering and what will the
3 elapsed timeline be for going through an analysis
4 process, a contracting process to get all the
5 pieces installed.

6 And I think we need to give some thought
7 to what will that look like, what will the cost
8 implications be and what will that do to our
9 policy hopes.

10 I have two more points and then I'll
11 stop. One is that obviously the Legislature has
12 directed the Energy Commission to adopt some
13 energy-efficiency requirements that are become
14 conditions of solar incentives.

15 And I'm not sure to what extent there's
16 been consideration given to coming up with some
17 minimum, prescriptive list of measures that would
18 be clearly identified and understood. So that
19 solar contractors can form business partnerships
20 with appropriate energy-efficiency contractors who
21 together can sell a packaged solution. Without
22 necessarily having to go off and get involved with
23 home energy raters or building performance
24 analysts or commissioning specialists who aren't
25 necessarily the ones who would then install the

1 efficiency measures.

2 So this is again thinking back to, we're
3 trying to get more solutions in front of customers
4 and have customers make informed choices and
5 perhaps some sort of a analyzed, prescriptive list
6 which isn't perfect but would allow the market to
7 operate in some sort of a clear and orderly
8 manner.

9 It might be considered and a starting
10 point for looking at what this could look like
11 would be to look at the half dozen or so retrofit-
12 on-sale ordinances in California, both in the
13 residential and commercial sectors and see what
14 kind of prescriptive measures are in those and
15 what's been the experience with those.

16 Finally I would just observe that the
17 California Solar Initiative Program as overseen by
18 the PUC also includes the industrial sector and
19 the agricultural sector.

20 And most of the efficiency
21 recommendations have been targeted at buildings.
22 We do have a substantial amount of participation
23 from the industry and ag sector, in particular,
24 wineries that are classified as agricultural.

25 So to the extent that solar systems are

1 being installed as trellises over parking areas on
2 dairy barns in other kinds of establishments that
3 aren't going to lend themselves to benchmarking or
4 energy star ratings I think, you might say, well
5 let's just exempt them, but I just thought I'd
6 point that out so that you can finish your
7 recommendations. Thank you.

8 ASSOCIATE MEMBER PFANNENSTIEL: Thanks
9 Jeanne. Let me say that I'm, it's really
10 important that the Energy Commission and the PUC
11 are in this together. I think not just in terms
12 of the dollars and the requirements but in terms
13 of the basic, underlying philosophies.

14 The two agencies together adopted this
15 electric loading order of energy efficiency and
16 then renewables. And we have common
17 responsibilities making that real. So I think
18 that our working with the PUC on the energy
19 efficiency part of the CSI is really important.

20 The other part of that of course is the
21 money that we have responsibility for billions of
22 dollars of ratepayer money over some period of
23 time as well as ratepayer money that goes in the
24 utility programs and then the public goods charge
25 monies that go into these programs.

1 And I think that we share your view that
2 we want to make sure those dollars are used for
3 the highest priorities first. And so we do need
4 to find the way of integrating energy efficiency
5 with the solar programs.

6 Clearly there are a lot of both
7 philosophical and I think we're hearing today a
8 lot of practical, administrative concerns of how
9 to do that. But I do think we need to make sure
10 that we are together in using our energy-
11 efficiency money to support the solar program not
12 to hinder it but in fact to be supportive of what
13 we're giving to people in the state for their
14 money.

15 I don't think this is different than
16 where you're coming from. But I do think that we
17 need to make sure that as we implement the CSI
18 that we are connected with the PUC in that.

19 MS. CLINTON: I would just offer an
20 observation that obviously we need a connection.
21 The question is how. And the question is to what
22 extent are there minimum requirements. And to
23 what extent are there other opportunities that
24 we're both broadly encouraging in marketing.

25 And this may be too black or white of an

1 analysis but California supports energy
2 efficiency. California supports solar.
3 California supports low-emission vehicles but we
4 don't tell a household, you can only get the
5 incentive to buy the Toyota Prius if you first
6 insulate your home.

7 They're all important. And each one is
8 in a different place in the market spectrum. And
9 each place has consumers and end users adopting
10 them for different reasons.

11 And I think the challenge is how do we
12 move all of those forward and to what extent to we
13 have the linkages. I would be the first one to
14 admit that there's a strong potential for our
15 residential, existing home market product that
16 says we'll come in and make your house a low-
17 carbon house. And we'll do all this efficiency in
18 solar.

19 And I think the challenge from a policy
20 perspective is what's the right set of steps in
21 phasing to get that kind of situation happening in
22 the market.

23 ASSOCIATE MEMBER PFANNENSTIEL: I agree
24 that that would be an interesting product. But
25 I'm not sure that's the only product that we are

1 bringing to together here. I think that there is
2 much more of a connection within the household or
3 the business or the commercial establishment
4 between energy efficiency and solar.

5 And it is very simply that we want to
6 make sure that we're giving the best, most
7 efficient use of the solar dollars with the system
8 that is sized for the most efficient house or
9 building that we can have.

10 And that was a philosophy that has been
11 driving the Energy Commission for several years
12 now. As we've looked at building a solar program
13 it was to make sure that we're using our solar
14 dollars to get the biggest bang for the buck, if
15 you will.

16 And that's driving where we are in the
17 CSI. I think that the partnership with the PUC on
18 this is the partnership with the PUC and of the
19 utilities and the solar industry and the building
20 industry, the construction industry in California.
21 And we have been working to build that to make
22 sure, we understand that there are administrative
23 obstacles and we're trying very hard to find ways
24 to alleviate them. We don't want this to be a
25 problem.

1 But we do want to make sure we're using
2 our incentive dollars as efficiently as we can. A
3 million solar homes or 3,000 megawatts or however
4 you want to measure it, there really isn't enough
5 money to pay for all of that if we're going to
6 have to keep those incentives at a very high
7 level.

8 But if we can move the, as you pointed
9 out, if we can move the cost down we can get that
10 many more solar installations for the money.

11 MS. CLINTON: So I think we're agreed
12 that we need to get the cost down so that we can
13 get more solar. And maybe if I could beg your
14 indulgence for just one more observation. Last
15 year before SB 1 passed the Public Utilities
16 Commission, in the course of presenting its first,
17 the staff proposal for the original design of the
18 CSI Program had a proposal there for connecting
19 energy efficiency to CSI, including not only the
20 energy audit requirement but we, as staff, had
21 floated the idea that in customers where there was
22 not a willingness to undertake energy efficiency
23 at the same time that perhaps we might cap the
24 size allowance of the solar system.

25 That obviously wasn't, didn't carry

1 forward because of a number of reasons including
2 becoming more evident that SB 1 was likely to pass
3 and that the Energy Commission would be
4 promulgating the requirements.

5 But I'll just share briefly with you the
6 thinking there was. Even if energy efficiency
7 were able to cut energy use at a home or business
8 by 50 percent that home or business still would
9 need some electricity.

10 And so the idea at that time was well
11 what if we say that the solar system could not be
12 sized more than 50 percent of the load reserving
13 the option for the energy efficiency to come in at
14 a later date and do the rest of it.

15 We didn't go forward on that. But I
16 just would share that we too shared that sense of
17 how do we spend ratepayer money correctly.

18 Thanks.

19 ASSOCIATE MEMBER PFANNENSTIEL: Thank
20 you Jeanne. I seem to have engendered some
21 additional blue cards. Julie Blunden, Sun Power
22 and Solar Alliance.

23 MS. BLUNDEN: Thanks very much. Madame
24 Chairman and advisors. A couple of data points
25 about Sun Power which I actually think are

1 relevant to this conversation.

2 Sun Power is based in San Jose. We
3 manufacture the highest efficiency solar cells and
4 panels in the world today.

5 We also are at this point we have now
6 grown to be the largest manufacture of residential
7 systems being installed in California. And we do
8 business with dozens of dealers across the state
9 and therefore have pretty good data about what's
10 happening in the markets.

11 We also have as a result of the
12 acquisition of Power Light in January, the largest
13 installed base of commercial systems in California
14 and therefore an excellent view of what customers
15 have done in the past.

16 You may know that we have worked very
17 closely with customers on energy efficiency issues
18 from public agencies like the SFPUC and the City
19 of San Francisco with the Moscone Center to Macy's
20 where we announced a couple of months ago that
21 we'll be doing 26 stores across the state that all
22 include major suite of measures associated with
23 energy efficiency.

24 We also have a large backlog of new
25 solar homes in the state, over 3,000 across both

1 the Energy Commission program and the muni
2 programs and therefore I think we've got an
3 excellent view of the general state of affairs in
4 terms of what's happening in which markets in the
5 state.

6 I also serve as the team lead for the
7 Solar Alliance in California. And we work very
8 closely with CalSEIA and Vote Solar. And we hope
9 to be able to put comments together for you by the
10 29th from all three groups on the staff report.

11 We very much appreciate the opportunity
12 to have this workshop. We consistently find that
13 the Energy Commission does an excellent job of
14 putting forward some material, putting together
15 presentations explaining the positions they came
16 up with. And I find these workshops personally to
17 always be informative in terms of the thought
18 process behind the positions put forward.

19 The team of the Solar Alliance, CalSEIA
20 and Vote Solar do not have a defined set of
21 positions that I'm going to try to speak to today.
22 But I wanted to put forward from Sun Power's
23 perspective a few things that I think may end up
24 seeing thematically in our broader comments.

25 Harking back to a couple of things that

1 Jeanne talked about. The operationalization of
2 this element of integrating energy efficiency into
3 the process of putting solar into somebody's roof
4 or their ground-mounted system is a challenging
5 one. And let me give you a couple of very
6 specific examples.

7 In the new solar homes market we are
8 working with multiple builders right now, some of
9 whom are very purposefully moving forward with a
10 very broad suite of home applications that they're
11 looking to differentiate on.

12 So for example we had a couple of our
13 builders, I think it was in May, put out data that
14 showed that their solar homes were selling twice
15 as fast as homes in the nearby community which is
16 outstanding. It's wonderful to have solar
17 actually being something that is helping the
18 housing market in an otherwise down cycle.

19 And it's appropriate in a new solar or
20 potentially new commercial building perspective to
21 integrate all of the energy efficiency stuff right
22 up front. It makes a ton of sense. It's a clean
23 slate. It makes lots of sense.

24 Retrofit market obviously different. As
25 staff noted trying to separate the program

1 requirements. One of the things that's
2 interesting in the commercial market is that solar
3 is not necessarily on the same track as other
4 energy initiatives within a commercial company.

5 So if we're going in and talking to
6 somebody who's very sophisticated in energy
7 procurement like a Macy's or Wal-Mart or Lowes,
8 Target, all of those folks have been procuring in
9 competitive markets in California and other parts
10 of the country for years and therefore have many
11 things operating in parallel.

12 So they may have a whole plan for energy
13 management system roll outs. A whole plan for
14 energy efficiency improvements. A whole plan
15 associated with solar. And they aren't
16 necessarily, solar is not necessarily going to be
17 the thing that instigates new efficiency measures.
18 It may be something that they decide to tag along
19 with. And it may be something that they had on
20 the back burner. We come in with solar. We say,
21 hey how about some energy efficiency too. And
22 they buy into it.

23 But I think it's important to recognize
24 that, particularly in the commercial market, that
25 may also be true in the ag market, that solar will

1 not necessarily be the driver and therefore
2 operationally thinking about the question of
3 sequencing and whether doing things in parallel or
4 in series ends up being incredibly important.

5 So that we not end up getting kind of
6 cart before the horse in terms of a very rational
7 plan for energy efficiency implementation that a
8 company is taking that would essentially delay
9 solar implementation beyond, for example, the
10 current step which would make it no longer as
11 attractive to do, a multi-site deployment for
12 example.

13 On the residential side it's
14 fascinating. We had a colleague up here earlier
15 talking about he's got more demand than he can
16 deal with right now from some the larger dealers
17 in the state coming and looking for help. It's
18 fantastic that the, apparently the, online audits
19 that are being used today are creating demand for
20 energy efficiency services. And I think that's
21 excellent market data suggesting something that I
22 think some folks looked at as being diminimus to
23 the point of is it worth the effort turns out to
24 have been worth the effort, in fact, perhaps not
25 diminimus at all.

1 Probably the theme that Jeanne ranged
2 that I would like to just build upon for a minute
3 is the notion of assignment of responsibility in
4 application of energy efficiency. The solar
5 dealers are, and I don't want to say struggling
6 because that sounds negative, but I just did, what
7 they're doing is very, working really, really hard
8 to grow their businesses really, really fast.

9 And that's something that at Sun Power
10 we're helping them do with our community dealers.
11 We're helping scale their services et cetera.
12 It's a major undertaking to take what was
13 potentially a mom-and-pop business with a couple
14 of folks and ask them to become a much larger
15 business really quickly.

16 What they aren't is energy efficiency
17 experts. They're just not. And to the extent
18 that we move forward with broader, big, bold plans
19 for energy efficiency linked to solar which I'm
20 all for conceptually I think the question is how
21 do we do that in a way so that the folks who first
22 of all have the money which are the utility
23 programs and have the expertise which are the
24 utility program managers and their contractors
25 actually take responsibility for the sales and

1 implementation of those efficiency measures.

2 So the way I think about it is both
3 sides have the potential to ledge in for the
4 other. We have, in fact just yesterday, received
5 updated interim marketing and outreach plans from
6 the program administrators for the CSI.

7 And the CSI has a great opportunity to
8 be linked with energy efficiency at marketing
9 material that's already going out to customers.
10 What a great thing to just add solar to the list
11 of opportunities that are already offered to
12 customers in bill inserts, et cetera.

13 In the same way with the CSI has an
14 opportunity in its marketing through its dealers
15 to market energy efficiency services that the
16 utilities offer whether it's commercial or
17 residential.

18 If I were to break things down what I
19 would say is that there's an opportunity for CSI
20 to essentially lead gen for the energy efficiency
21 programs that are coming in, a place and well-
22 funded, well-considered, as far as I can tell,
23 quite strong motivation from the utilities to
24 fully implement.

25 And our job is to figure out how to take

1 maximum advantage of a the marketing on both sides
2 of the equation, the energy-efficiency marketing
3 to cross market solar and the solar marketing to
4 cross market with energy efficiency.

5 I worry about ending up in a situation
6 where we either sequence that to the point where
7 we lose customers who would like to do both but
8 aren't, for whatever set of really legitimate
9 reasons, aren't willing to wait until they finish
10 their window installation to put their solar
11 system in.

12 So the kind of bottom line is that we do
13 very actively expect to see major cost declines in
14 the solar industry over the next five years. At
15 Sun Power we very publicly state that we will
16 reduce the installed cost of a system by 50
17 percent by the end of 2012.

18 We see needing to do that across the
19 value chain. Realizing that looking at today's
20 California prices about half the cost of a system
21 is downstream. That is, after you sell the panel
22 all the delivery to the customer costs about half
23 of the system.

24 That means we got to get that system
25 cost down by 50 percent just like we need to get

1 the module price down by 50 percent.

2 Asking the solar installers to become
3 energy efficiency wizards is not going to help us
4 reduce the costs. Helping the solar installers
5 quickly transfer customers over to the people who
6 are energy efficiency wizards would be in my mind
7 the most logical method of trying to meet the
8 goals of SB 1, the goals of the loading order but
9 also kind of legitimately address pragmatically
10 who is best served to do what. Any questions?

11 ASSOCIATE MEMBER PFANNENSTIEL: None,
12 thank you Julie. Steve Chadima, Energy
13 Innovations.

14 MR. CHADIMA: Thank you Madame Chairman.
15 I am here representing my own company, Energy
16 Innovations. We are also part of the Solar
17 Alliance. But at this point my reason for
18 stepping forward is actually to talk to you about
19 something that I did 25 years ago. I'm dating
20 myself.

21 But in Portland, Oregon that speaks
22 directly to the question of energy efficiency and
23 how you handle the question that everyone in one
24 way or another seemed to describe as unanswered
25 and sort of the devil that is the detail. And

1 that is the question of cost effectiveness.

2 We had a program. We had an ordinance,
3 energy efficiency ordinance in Portland that was
4 widely regarded by the citizens, the ratepayers in
5 Portland as very progressive and very acceptable
6 and very understandable.

7 The program was a three phase program.
8 But we required an energy audit. We required that
9 homeowners and businesses implement all the energy
10 efficiency improvements that had a five year
11 payback or less. And, and this is very critical,
12 we provided the incentives for them to do it.

13 We provided a low-interest loan program
14 that from day one, I think Bobbi was describing
15 something similar but, from day one the amount of
16 money that you would pay to fund the improvements
17 was less than the amount of energy savings that
18 would result from doing those improvements.

19 So you were cash flow positive from the
20 very first day that you implemented those energy
21 efficiency improvements. It was simple. It was
22 straight forward. It was understandable by
23 everyone. And no one resented the requirements.

24 The minute you start to dictate specific
25 efficiency improvements, R30 in the ceiling,

1 double-pane windows, whatever it might happen to
2 be, those may or may not be very cost effective
3 for the individual homeowner.

4 You've got a lot of homes in Portland
5 that were flat roofed. Requiring insulation
6 would, ceiling insulation would require building a
7 super structure on top of the home in order to get
8 the insulation in there.

9 The same thing goes though also by the
10 well meaning but unfortunately I think it turns
11 out to be self-defeating notion of requiring
12 improvements that would put a specific building
13 into the top quartile of buildings in their class.

14 The problem with using that kind of
15 measure is that it's a bit like chasing your tail.
16 It's not our call to evacuate to the park or
17 anything (very loud noise from workmen on the
18 roof) No? Okay. So I think it's probably best
19 illustrated by the kind of obviously silly notion,
20 if you ask a random sample of parents whether
21 their children are above average or average or
22 below, 80 percent of parents will tell you that
23 their kids are above average.

24 Well, obviously 80 percent of children
25 cannot be above average. The same thing goes with

1 buildings. If you start to stack everybody into
2 the top quartile that top quartile keeps escaping
3 you. And you're never going to get a situation
4 where you're going to be able to shut everybody
5 into the top 25 percent.

6 So you don't really need those kinds of
7 criteria. All you need to do is just use cost
8 effectiveness as an approach. And remember Jeanne
9 mentioned this and other people have raised this
10 question as well. Cost effective to whom.

11 But in this particular case it was to
12 the homeowner because it's the one thing that made
13 the most sense to them. And so I encourage you to
14 use that as really your criteria regardless of who
15 is responsible for implementing.

16 Julie had a suggestion that maybe the
17 utilities are best equipped to deal with the
18 energy efficiency improvements. Whoever it is,
19 make it sensible. Make it really common sense for
20 everyone to simply agree without a lot of
21 objections.

22 ASSOCIATE MEMBER PFANNENSTIEL: Thank
23 you for your thoughts. Adam Browning, The Vote
24 Solar Initiative.

25 MR. BROWNING: Thank you Commissioner.

1 My comments will be brief here. I just wanted to
2 start by saying that SB 1 is primarily a solar
3 program. And that as you implement the non-solar
4 aspects to it you keep in mind the effects that it
5 may have on the solar industry.

6 I think clearly the energy efficiency
7 requirements will add additional costs to the
8 implementation of the program both on the
9 administrative side as well as on the installers
10 side.

11 But it has the potential anyway. (Very
12 loud noise coming from roof) Someone doesn't
13 agree with my comments here, apparently.
14 (laughter) Should I just keep going. My comments
15 are brief. I'll be done here. It has the
16 potential of setting up a situation where you have
17 deal-killing requirements.

18 And the replacing of the building
19 envelope for example may be (continued very loud
20 noise from roof) - (laughter)

21 ASSOCIATE MEMBER PFANNENSTIEL: Why
22 don't we hold just a second and see if we can get
23 somebody to.

24 REPORTER: Commissioner this may not get
25 on the record because of this.

1 ASSOCIATE MEMBER PFANNENSTIEL: Well I
2 know but we're having trouble hearing it in the
3 room. Oh, I'm sorry, you mean what has just been
4 said won't be on the record because of the noise.

5 REPORTER: It may or may not be
6 depending on the final tape.

7 ASSOCIATE MEMBER PFANNENSTIEL: Okay, it
8 sounds like we've stopped it for now. I'm
9 terribly sorry. Can you go back over your last
10 thoughts.

11 MR. BROWNING: Certainly, no worries at
12 all. I was simply saying that SB 1 is primarily a
13 solar bill and that as you implement the non-solar
14 specific considerations that were contained in the
15 legislation be mindful of the impacts that it will
16 have on the solar market or could have on the
17 solar market.

18 So first and foremost it will definitely
19 add additional cost, both on the administration
20 side as well as on the implementer's side, the
21 solar installers. But more importantly there is
22 the potential for, on the proposed energy
23 efficiency requirements to have a deal-killing
24 requirements.

25 And other speakers have discussed the

1 definition of energy, of what is cost effective as
2 being key to this. I just mean to say that
3 replacing a building envelope may be cost
4 effective to someone's definition. But that could
5 definitely end up being an absolute deal killer to
6 the solar market.

7 So as you go forward I just encourage
8 you to focus on the realities of developing a
9 market transformation in the solar market and to
10 keep that in mind and keep the program flexible.
11 Thank you.

12 ASSOCIATE MEMBER PFANNENSTIEL: Thank
13 you very much. That's the pile of blue cards I
14 have on the energy efficiency area that we have
15 covered. Because I do have to leave at one I'm
16 going to beg everybody's indulgence and ask you to
17 hold off on the need for a lunch break right now.
18 I'm sorry.

19 MS. CHONG: We have one call on the
20 phone.

21 ASSOCIATE MEMBER PFANNENSTIEL: That's
22 fine. Just a second and I'll take that call. But
23 I think our schedule going forward will be -- I'll
24 ask Smita to, after taking this call to keep on
25 going because I would like this to be as much of a

1 commissioner workshop, a committee workshop as we
2 can get in.

3 We'll break just before one o'clock as
4 far as we've gotten at that point. And then I'd
5 suggest that you have a lunch break and reconvene
6 as a staff workshop. And I do think that there's
7 further comment that we would benefit from
8 hearing.

9 So that's my thoughts going forward.
10 And we have a caller on the line?

11 MS. CHONG: We have a Michael Keyes.

12 ASSOCIATE MEMBER PFANNENSTIEL: Go ahead
13 please.

14 MR. KEYES: Hello, can you hear me?

15 ASSOCIATE MEMBER PFANNENSTIEL: Yes,
16 perfectly.

17 MR. KEYES: Actually most of my comments
18 sort of reinforce somebody's previous comments. I
19 think the greatest concern is that this type of
20 requirements will inhibit sales. And probably 80
21 percent of the installation, solar installations,
22 physical installations are residences.

23 And that it is tricky to figure out the
24 exact cost-effective measures that, the cost-
25 effective measures that can be implemented in any

1 given residence. Each residence is different.

2 And each geographical area is different.

3 Earlier Andrew McAllister mentioned San Diego is
4 different. I'm from Sebastopol. And Sebastopol
5 for those of you who don't know it has the
6 highest, installed PV, number of PV systems per
7 capita of anywhere in the state.

8 And our clients up here are all very
9 aware of energy efficiency measures. That is not
10 that much of an issue. They don't all actually go
11 ahead and install new windows or ceiling
12 insulation. But it's not that they haven't
13 already put in lights and replaced the
14 refrigerator.

15 So the second point is and for us we
16 don't use air conditioning here, or very seldom.
17 It's not needed. And most energy efficiency
18 measures save natural gas not electricity. Which
19 is not a bad thing and I'm not saying that you
20 shouldn't incorporate energy efficiency measures
21 in some manner and require them in some manner.

22 But it's the kind of question of is this
23 the appropriate venue for doing it. So as thirdly
24 as the type of audit. Currently it's an online
25 audit that's normally done by customers

1 themselves. And it's rather than being an audit
2 per se that it's really more of an education for
3 the customer.

4 That to do a valid audit you would
5 really want to have either a HERS rater, a
6 building performance contractor come in and do
7 that. Sometimes you can't tell the condition of
8 your ducts until you do a duct test.

9 But those kinds of audits you're getting
10 into costs of \$500 to \$1,000. And it's going to
11 inhibit people if they have to do that first it's
12 going to inhibit them from even exploring solar
13 further.

14 And then Jeanne Clinton mentioned
15 earlier that perhaps a prescriptive approach would
16 work better. And that'll be something that would
17 at least be easier for installers to understand.
18 And clearer measures that affect electrical use
19 are things like lighting and your refrigerator and
20 then your clothes dryer and the rest of those
21 electrical items, electrical-use items are almost
22 more personal habit, like do you turn your lights
23 off and when do you use your clothes dryer and
24 those types of things.

25 So those are the comments that I wanted

1 to add. Thank you.

2 ASSOCIATE MEMBER PFANNENSTIEL: Thank
3 you very much for sharing those comments. Now I
4 think we'll move to the next, oops I'm sorry.

5 MS. CHONG: We have actually one more
6 phone call. It's from Tom Conlin.

7 ASSOCIATE MEMBER PFANNENSTIEL: Go ahead
8 please. Mr. Conlin.

9 MR. CONLIN: Yeah, thank you. I
10 apologize for not being able to be up there in
11 Sacramento in person today. And I just wanted to
12 make briefly some quick comments about the report.

13 It's not really my area of expertise but
14 it occurs to me that the solar component in
15 installation standards in the report. They
16 actually appear to be fairly well developed. And
17 I want to commend the staff for that.

18 However the energy efficiency
19 recommendations, particularly related to existing
20 homes, appear to me to be much less well
21 developed. And I'm concerned that the current
22 report may not really meet the mandate of SB 1.
23 In that area of requiring reasonable and cost-
24 effective energy efficiency. And consideration of
25 that as a condition of providing incentives for

1 eligible solar energy systems.

2 And I did hear, and I want to
3 acknowledge the concern of the solar industry
4 representatives who obviously at this period of
5 growth don't want to be burdened with unreasonable
6 requirements in a prescriptive standards or things
7 that would really get in the way of people who
8 want solar from being able to get it installed.

9 So I'm really trying to think through
10 how the report the conditional language that's in
11 the report turns like concepts rather than
12 eligibility criteria might be tightened up and
13 made a little bit more specific without really
14 limiting the ability for the industry to continue
15 to grow and meet customers' demands.

16 What I'm imagining is some kind of more
17 like a disclosure oriented approach. Essentially
18 the, placing a fairly light burden on the solar
19 contractors at this stage to simply document what
20 kind of energy efficiency analysis and disclosure
21 they have done as part of their applications for
22 solar incentives.

23 I'm thinking along the lines of a maybe
24 a one page form that would require them to simply
25 disclose what kind of energy efficiency analysis

1 was provided. For example, was it a self-
2 administered web audit, was provided, which
3 particular one was used, whether a HERS rater was
4 used.

5 And simply requiring that that
6 information be captured at the time that the solar
7 application is filed. Going beyond that to
8 require perhaps counting up the solar, I'm sorry
9 the existing consumption data, maybe 12 months of
10 billing data for the house, or I'm thinking
11 primarily about the existing residential sector
12 here aspect.

13 That gives generally in my experience
14 part of the solar quotation. And probably
15 wouldn't be an additional on the developer and may
16 already be part of the process for applying for
17 the incentive.

18 And then, if possible, identifying which
19 energy efficiency improvements were determined to
20 be cost-effective through that process. Again
21 this is just reiterating whatever came out of the
22 analytical process that was chosen.

23 So it doesn't strike me that that would
24 be terribly burdensome. And it would provide the
25 condition and the policy makers as well as the

1 utilities to get a lot of information on how are
2 different projects how is energy efficiency being
3 integrated into these different projects.

4 And it would also be a way of ensuring
5 that if energy efficiency analysis information was
6 coming into the dialogue with the customer at the
7 time that the decision is being made.

8 And as far as trying at this stage to
9 impose prescriptive mandates that strikes me as
10 being counter-productive as many of the solar
11 industry people have indicated that that would
12 simply be trying to, as it were, have a, require a
13 person to insulate their walls before buying a
14 Toyota Prius.

15 So I'm, just in summary I would
16 encourage a more of an information disclosure
17 basis approach as opposed to a very close-ended
18 specific set of guidelines. And thank you for
19 consideration of my comments.

20 ASSOCIATE MEMBER PFANNENSTIEL: Thank
21 you for your comments. Move on to Smita.

22 MS. GUPTA: Can you turn the lights
23 please. Good afternoon everybody. I'm Smita
24 Gupta from the Building and Appliances Office.
25 And in the presentation I'll be covering the staff

1 recommendations related to component and
2 installation standards.

3 The first slide here is a quick overview
4 here of what the SB 1 direct the Commission to set
5 up. Bill has already covered that. But just as a
6 recap the design and installation and electrical
7 output standards and the rating standards for
8 equipment and component. So, next slide please.

9 And in the component standards, of the
10 three main components related to the PV system
11 that we'll be covering are the modules, the
12 inverters and the performance meters.

13 So the first will be the PV modules
14 itself. The Commission has been moving away from
15 a capacity-based notion of describing systems and
16 therefore the eligibility criteria for PV modules
17 needs to be not based on the nameplate power
18 rating of the modules.

19 Because that does not provide adequate
20 indication of the performance that those modules
21 will have when a part of a system. And this would
22 be related to both SDC or the PTC rating standards
23 since those are conditions, very specific
24 conditions of solar radiation and temperature that
25 are imposed to create, to figure out the

1 properties of the module.

2 And also that a different cell
3 manufacturing technologies and of engineering
4 developments are not primarily focussed or
5 captured by the nameplate rating alone. It's a
6 bigger area of properties that describe the
7 performance of a module. You know distinguishing
8 of one kilowatt, amorphous silicone form
9 crystalline silicone. So that's just as an
10 example.

11 The other issue is to deal with the
12 international of being aware of the international
13 test standards and provide performance data that
14 is in accordance or modules that are tested in
15 accordance with international test standards.

16 Currently in the US the UL requirement
17 or the UL test 1703 for modules related to safety
18 is the only standard that is imposed on the
19 modules. But in Europe and worldwide there are
20 international tests, the IEC tests that address
21 more of the performance characteristics.

22 And so the staff recommends to use
23 those. And also that the tests be performed by
24 accredited independent laboratories to provide
25 credibility to the results that are being used.

1 Just to go over some of the module
2 performance characteristics that are recommended
3 here for being used rather than just the nameplate
4 capacity rating. That modules have an entire
5 curve of performance related to their current and
6 voltage. And it's seen right here.

7 So the nameplate rating would just give
8 you this point on the curve. But for this given
9 point there could be multiple shapes to this curve
10 which is what distinguishes one technology type,
11 one manufacturing type from the other. And so
12 therefore utilizing these other data points is
13 very important because they impact the overall
14 performance. This is just one specific condition.

15 The other thing is the normal operating
16 cell temperature which is a property since PV
17 modules tend to perform differently at different
18 temperature conditions. And therefore there is a
19 big difference in a rack-mounted versus building-
20 integrated products since they are in more close
21 contact with the substrate that they are installed
22 on and therefore tend to run at higher
23 temperatures compared to the given ambient
24 temperature.

25 And therefore the NOCT becomes an

1 important property of the module that would
2 determine its performance. The other are the
3 temperature coefficients which are seen in the
4 graph here as indicative. The drop or the change
5 in performance or the power output of a typical
6 module with increasing temperatures. So on the X
7 axis here you have increasing cell temperatures
8 and see the rapid decline in the power.

9 So that is another set of very important
10 indicators of the performance of modules when
11 actually installed in the field.

12 So based on this brief background the
13 staff recommends that the PV modules, all eligible
14 PV modules have the UL 1703 safety requirement
15 which is no change from what the current status
16 is. Because the earlier eligibility, CEC
17 eligibility criteria included that basic
18 requirement which is being used both by the CSI
19 and the NSHP program at this point.

20 The bigger step has been the inclusion
21 of the performance data related to the module
22 which the NSHP program has implemented. And there
23 over 100 modules that have been listed under the
24 program that have completed these test
25 requirements and provided performance data as

1 tested in accordance with IEC 61215 and 61646
2 which are two test standards related to
3 crystalline silicone and thin-film technologies
4 respectively.

5 And these test results be carried out by
6 an ILAC accredited laboratory which gives
7 credibility to the equipment and the test
8 performing capabilities of the lab in reporting
9 these requirements.

10 And the third bullet here if for the
11 NOCT as mentioned in just previously the NOCT or
12 the operating cell temperature is an important
13 property. And for a building integrated products
14 the Energy Commission under the New Solar Homes
15 Partnership has developed a specifications or
16 tests that describe how the NOCT for building
17 integrated products should be tested. Because the
18 status in the industry has been the NOCT is
19 provided typically in an open-rack condition which
20 is not the case for BIPV.

21 So as installed a BIPV panels built into
22 a relatively higher temperature and that needs to
23 be accounted for.

24 In making these recommendations it is
25 recognized that there are other national and

1 international efforts that are also developing
2 requirements. For example the Department of
3 Energy's Solar America Initiative and also in the
4 European Union there are efforts and so all the
5 test requirements here that's why will be aligned
6 with the international requirements.

7 For one we know that the UL 1703
8 requirement is slated for update in accordance
9 with international standards in the near future.

10 So just the staff recognizes those
11 efforts and changes and will align with them.

12 For inverters, there is no change
13 compared to what the current eligibility criteria
14 is. The Energy Commission since 2005 has adopted
15 testing protocol which in place to list eligible
16 inverters that provides detailed test data,
17 performance data for the inverters apart from
18 their UL Listed safety status.

19 And this is an eligibility criteria as
20 in used both at the Energy Commission and by the
21 CSI program. And so no change in that criteria is
22 suggested. Next slide please.

23 The only main, slight caveat to that is
24 since the whole performance data for the inverters
25 is available through these testing requirements

1 the Commission will recommend to make use of the
2 entire range of the performance data rather than
3 just the single, rated efficiency number that
4 abstracts the entire performance there will be
5 capability to address the performance of the
6 inverters at various operational conditions.

7 This is just an example curve here where
8 the efficiency tends to drop in the lower power
9 operation ranges. This will promote better match
10 up of modules and inverters and address under-
11 sizing and over-sizing issues more specifically.

12 The performance metering requirements at
13 this time are very well defined under the CSI
14 program. And so the staff recommendation is to
15 align totally with those. And as we understand
16 the CSI Metering Subcommittee is still developing
17 additional protocols and requirements for the five
18 percent accuracy meters and is acquiring ANSI
19 tests for the two percent accuracy meters.

20 And so the staff recommends that in
21 these guidelines we totally align with those
22 requirements in place.

23 Moving on to installation standards. In
24 this we'll cover some, these broad topic areas
25 which are related to calculation methodology,

1 shading, peak load, addressing peak load, field
2 verification and installers.

3 ASSOCIATE MEMBER PFANNENSTIEL: Excuse
4 me Smita. I think this is going to be a fairly
5 separate and significant part of your discussion.
6 I'm wondering if this would be a good time to
7 break. I think that rather than, I do need to
8 leave by one. And rather than having me leave in
9 the middle of what you're doing.

10 MS. GUPTA: Okay.

11 ASSOCIATE MEMBER PFANNENSTIEL: Maybe we
12 can break now. You can come back and finish this.
13 And then we can get comments on this. All of
14 which will be on the record. So I will capture
15 the comments as well as any written comments, of
16 course, that come in.

17 So why don't I suggest a break until two
18 o'clock. And then, Bill, would you conduct the
19 staff workshop thereafter?

20 MR. PENNINGTON: Sure.

21 ASSOCIATE MEMBER PFANNENSTIEL: All
22 right, so we will be adjourned until two o'clock.

23 (Whereupon, the lunch recess
24 was taken.)

25 --oOo--

1 AFTERNOON SESSION

2 MR. PENNINGTON: Okay, we're going to
3 start. Smita, you want to continue.

4 MS. GUPTA: Good afternoon everybody
5 again. We'll continue the presentation dealing
6 with the installation standards.

7 MR. PENNINGTON: Did people -- What
8 happened with the blue cards, anyway? Do we know?

9 MS. ORLANDO: I'd like to say one thing
10 about the blue cards, on the speakers. When you
11 come up to the podium be sure that there is a blue
12 card filled out or you hand the court reporter
13 your card so he can accurately capture your name,
14 your correct name and spelling.

15 MR. PENNINGTON: So is anyone else going
16 to want to comment this afternoon?

17 SPEAKER FROM THE AUDIENCE: Are you
18 going to use the existing pile or do you want us
19 to put a separate card in for afternoon comments?

20 MR. PENNINGTON: I prefer a separate
21 card.

22 MS. GUPTA: So the recommendations
23 related to installation standards, the main goal
24 is to have high performing systems that address
25 peak. The main mechanisms to address performance

1 are, one of them being the performance-based
2 incentives, which is where the bill encourages
3 most systems should be. And for that the staff
4 recommendation is to use the CSI deployment
5 schedule for requiring the performance-based
6 incentive approach, which is incentives which are
7 paid over time based on the ongoing performance of
8 a system.

9 The thresholds set for that are 50, are
10 systems that are 50 kilowatts or higher starting
11 in 2008 and it would become 30 kilowatts or higher
12 in 2010.

13 For the remainder of the systems, which
14 will need calculation of the expected performance
15 base, it becomes really important to have a
16 calculation methodology and other mechanisms in
17 place that will ensure the ongoing performance of
18 the system even though the incentives are being
19 paid up front.

20 So the calculation methodology that
21 accounts for all the performance factors is really
22 important. The issue of shading avoidance mainly,
23 and if unavoidable, accounting for it. Addressing
24 peak load. And having a field verification
25 protocol and methodology in place as well as

1 addressing the installer responsibilities. These
2 should all go together to ensuring high performing
3 systems that would be paid up-front incentive.

4 Here is a list of the factors that are
5 key to affecting the performance of the system.
6 I'll quickly go down the list here. The location,
7 of course, is the main one because that determines
8 the weather data, which is the solar resource, the
9 ambient temperature and wind, which are the
10 conditions under which the PV system would
11 operate.

12 Then the installation characteristics,
13 which would be the orientation, which is
14 characterized by the azimuth, that is north,
15 south, east, west, and the tilt at which the
16 installation is installed.

17 Then mounting type, which is the offset
18 of the modules above the surface that they are
19 closest to. In case of the IPV, which are in
20 direct contact versus rack-mounted systems which
21 have a frame and have a free flow of air
22 underneath them. Because as mentioned in the
23 previous section, the operating temperature, the
24 immediate conditions around the PV panels is
25 really key to the performance as well.

1 The mounting height of the system above
2 the ground in terms of if it's on one-story, two-
3 story or higher because that affects, again, the
4 conditions, the localized conditions around the
5 system in terms of wind and impact of wind at the
6 operating temperature.

7 Along with that would be the number of
8 modules and the way they are strung together in
9 terms of the electrical circuit, series and
10 parallel. Because different designers would
11 create systems to operate on high voltage or be in
12 parallel circuit to accommodate for various
13 mounting conditions available. So those also play
14 a key part in determining the performance because
15 the voltage and the power output at specific times
16 is affected by those.

17 And the installation related to shading.
18 Because the location after installation exposes it
19 to certain obstructions and shadings sometimes
20 during the day and year and that is, again, a very
21 important factor that needs to be accounted for.

22 Then carrying over to the specific
23 characteristics of the equipment that is selected
24 for each of the systems. We have discussed some
25 of the details of the equipment earlier in the

1 earlier section, the PV modules, the detailed
2 current and voltage performance, the normal
3 operating cell temperature, the temperature
4 coefficients, because these determine the
5 performance given a set of conditions for a
6 specific hour.

7 And the inverter performance data, which
8 when matched up with the output of the range at a
9 certain point makes it operate at different points
10 in its efficiency curve.

11 And then there are some overall system
12 level factors which are to some extent given as a
13 -- there is bound to be some dirt and dust buildup
14 and some mismatched wiring, which as an overall
15 impact the performance of a system.

16 Also the equipment mismatch, which is
17 partly a function of how the inverters and the
18 modules are matched up, both in terms of the
19 circuitry as well as the equipment and their
20 varying performance characteristics.

21 So based on all of these characteristics
22 that performance staff is recommending a
23 calculation of performance calculation methodology
24 that at minimum accounts for all these factors
25 that affect performance.

1 In order to incentivize high performing
2 systems, again going back to the notion of not
3 having just a single name plate number, a name
4 plate capacity number to incentivize the system
5 but rather the calculation approach to account for
6 all these factors.

7 These factors also include, part of
8 them, the different cell technologies that are
9 available in terms of addressing the performance
10 characteristics of the PV modules specifically and
11 also addressing different installation types.
12 Could be fixed systems, one and two axis tracking
13 systems, et cetera.

14 Also that the calculations be performed
15 on an hourly basis. Because that is really
16 important to be able to address the peak load
17 factor because the peak load is very hour-specific
18 in the year. So it is important for the
19 calculations to be determining performance at
20 specific times in the year and to be weighting the
21 performance during peak loads differently from
22 other times to incentivize systems or reward
23 systems that optimize their installation
24 characteristics and equipment characteristics to
25 address that time.

1 And the hourly calculations also allow
2 for addressing shading on an hourly basis.

3 Along with that goes the notion of being
4 able to generate a field verification table. As
5 we'll discuss a little bit later in more detail
6 that verification of performance is, again,
7 considered an important aspect of ensuring high
8 performing systems and the expected performance
9 realm. And then for the ability of the calculator
10 to generate tables which can be used easily in the
11 field to verify spot performance based on measured
12 ambient conditions such as solar radiation and
13 temperature.

14 So under the New Solar Homes Partnership
15 the Commission has developed such approach and the
16 ability of the calculator to generate such a
17 table. This is seen as one of the major things to
18 be used in the expected calculation approach.

19 I am going to go through a table here
20 which compares at a very broad level the two major
21 approaches that are used widely in California at
22 this time. We do recognize that there are other
23 programs that have different calculation
24 methodologies but for the focus, the majority at
25 this time are either CSI or NSHP.

1 We're just going to go through a one-on-
2 one comparison of these two approaches, which are
3 called the EPBB and the EPBI, respectively, the
4 Expected Performance Based Buydown versus the
5 Expected Performance Based Incentive. Just a
6 difference in terminology there.

7 So the column on the left, which is the
8 blue, is the CSI-EPBB approach and the one in
9 green on the right is the NSHP-EPBI approach.

10 So the first one here is dealing with
11 the module characteristics. This table is divided
12 -- Perhaps some of you are familiar with the
13 concept of the two approaches but just let me give
14 a quick review on that. The EPBB approach, which
15 is the CSI, uses the PTC watts rating of the
16 modules combined with inverter efficiency and
17 accounts for installation and geographic
18 differences through a design factor, which is
19 calculated using the PV watts engine. So this
20 first part of the table here is just dealing with
21 the non-design factor portion of the calculation.

22 The EPBI-NSHP approach has been to try
23 and move away from the capacity notion altogether
24 and use the reference system as a means to
25 establish dollars per kWh, which is TDV rated

1 conversion, and then applied to the hourly, annual
2 output from the system. So the comparison
3 sometimes is not, there may be some repeated
4 fields here just because of the difference in
5 addressing this calculation.

6 So the first one here is the module
7 characteristics and this is addressed in the EPBB
8 using the nameplate PTC rating after the module,
9 the proposed module. As we have been mentioning
10 in the earlier part of the presentation as well,
11 the detailed performance characteristics of the
12 module that are used in the NSHP-EPBI approach.

13 The module type in terms of either the
14 BIPV or a rack, which the NOCT value is the main,
15 different characteristic addressed in the recent
16 CPUC decision by adjusting the PTC for the EPBB.
17 In the EPBI there is a methodology to account for
18 that temperature if it is not reported in the
19 interim. But since the eligibility criteria
20 requires that all BIPV modules be tested in their
21 as-installed condition, the NOCT that is used does
22 reflect what is actually -- affects the
23 performance of the BIPV.

24 When the inverter is handled on a single
25 weighted efficiency number versus using the entire

1 performance curve for the range of operation
2 conditions in the EPBI approach.

3 Generating the field verification table
4 is one of the things that the NSHP program and the
5 EPBI calculation emphasize, which is carried out
6 by the CEC-PV calculator and that is not a part of
7 the EPBB calculations. Next please.

8 Now we will go to the factors that are
9 accounted for in the design factor portion and
10 compare those to the NSHP approach. But again,
11 just reminding that in the NSHP there is an hourly
12 calculation for every proposed system.

13 So the design factor. One of the key
14 things in the EPBB approach is that is always
15 capped at one. Whatever the reference system, the
16 performance and installation and the location of
17 the reference system is the maximum that is
18 rewarded. Whereas the EPBI-NSHP approach does not
19 cap any performance but rewards systems that
20 perform better than the reference. The selection
21 of the reference, if it's a BIPV system based in
22 San Jose, that's used only one time in order to
23 determine the effective dollars per kWh.
24 Thereafter any proposed system depending on their
25 annual production gets rewarded accordingly.

1 Other differences in the base
2 calculation engine that is used. The EPBI-CSI
3 calculator uses the NREL developed PVWatts2
4 calculator in the background to calculate the
5 performance of the system. As a contrast the
6 EPBI-NSHP has selected the five parameter model,
7 which has been enhanced with the inverter model
8 and customized for California. This came out of
9 the University of Wisconsin Solar Energy Lab,
10 Dr. William Beckman and his group. They are the
11 ones that have implemented this approach into a
12 California customized version for NSHP.

13 Then again I'm coming back into the
14 module characteristics because of the design
15 factor portion of the calculation. The module
16 characteristics are, in the EPBB calculations, are
17 the ones that are defaulted by the PVWatts engine
18 because in its base assumption the PVWatts engine
19 carries out the calculations for the values that
20 are typical of the characteristics of the module
21 and therefore in effect the NOCT or the
22 temperature coefficients or the performance curves
23 are identical for any system.

24 The NSHP calculations in contrast
25 recognize the difference in the different module

1 manufacturing technologies and engineered designs
2 and uses the entire range of performance
3 characteristics, which distinguish a different
4 module than manufacturers in the calculation.

5 In the inverter it's again the same,
6 weighted efficiency versus the entire performance
7 curve range. And also handling the match-up of
8 the inverter to the modules differently. The EPBB
9 approach uses a capacity-based reasoning to allow
10 for capping -- disallowing any under-sizing off
11 the inverter more than 25 percent.

12 Whereas in the NSHP approach the
13 inverter and the module, the array matched up is
14 totally based on the performance curve of the
15 inverter and the production capability of the
16 modules, limited by whichever is the, you know.
17 Whichever reaches the limit. If the modules reach
18 the production limit or of the inverter reaches
19 its handling capability.

20 And again this is on an hourly basis.
21 These performance, detailed performance
22 characteristics are recognized at conditions
23 operating at each hour.

24 The mounting height, we've talked about
25 that as the height above ground. So since the

1 NSHP calculator utilizes detailed weather data on
2 an hourly basis and recognizes the impact of wind
3 at various heights so that is scaled according to
4 the mounting height.

5 Then there is handling of the peak load
6 portion, which is addressed in the EPBB
7 calculations through recognizing production in the
8 summer months, which are defined May through
9 October. Versus in the EPBI-NSHP approach where
10 since the data is hourly there is recognition of
11 the exact hour and the year the production
12 happens.

13 And it is weighted using the TDV values,
14 which is the time dependant valuation weighting
15 methodology that is in use and been developed for
16 the energy efficiency standards, which rewards
17 energy savings at a particular hour in the year
18 according to the impact that they have in terms of
19 the generation and cost of generation and
20 transmission for the grid for that zone. That's
21 one of the key differences. Next please.

22 The handling of location and weather
23 data is again different in terms of since the EPBB
24 calculator uses PVWatts and the weather and
25 location selection is determined by the PVWatts of

1 selecting the closest selection weather data,
2 depending on the proposed location.

3 The NSHP-EPBI calculation uses the 16
4 climate zones weather data, which is used for the
5 Title 24 energy efficiency standards that
6 everybody is aware of in the building industry.
7 And again the data is, weather data is hourly and
8 uses solar radiation, temperature and wind data
9 for each hour.

10 There is a difference in selection of
11 the reference location. EPBB uses Orange,
12 California as a reference location and compares
13 systems in their geographic correction portion of
14 the design factor to compare against production in
15 Orange, California. And the EPBI uses San Jose,
16 installation in San Jose as a reference. But
17 again, only to calculate one time for a given
18 incentive level the dollars per kWh TDV and does
19 not limit any systems thereafter.

20 The orientation which is determined by
21 azimuth and tilt are slightly different again in
22 both approaches. It may be due to rules that are
23 decisions based on the proposed and the reference.
24 In the EPBB systems that are oriented between
25 south and west are compared to the same azimuth.

1 Whereas in the EPBI approach the reference system
2 is always fixed south. So potentially any --
3 again, since that is what set the incentive rate
4 per kWh TDV, so any systems that are oriented to
5 better or to optimize production greater than that
6 or less than that are rewarded accordingly.

7 And systems that in the EPBB, systems
8 that are relatively east, east or south are
9 compared to south. Whereas systems that are
10 relatively north of west and east are compared to
11 a west facing system. It's so that the production
12 in west is relatively lower compared to south
13 because of the low sun angles. So the systems
14 that are relatively north are compared to a lower
15 production value typically.

16 Tilt is also a part of the calculations
17 here. Addressed through, being compared to an
18 optimal tilt for a given location. And in the
19 EPBI approach the reference system is at,
20 considered at a tilt of 5:12 roof pitch. Because
21 for the New Solar Homes Partnership this addresses
22 production housing. A 5:12 roof pitch is
23 considered a typical roof pitch for the
24 installations.

25 However, through various analyses that

1 our staff has carried out for the most typical
2 ranges of azimuth, two ranges that are common to
3 roof pitches do not have a very significant impact
4 on the production. It's always within 10 percent
5 at the most.

6 Then shading is another of the key
7 things the staff has recognized that needs to be
8 addressed in the expected performance calculation
9 in order to have installers and verifiers aware of
10 the impact, potential impact of shading, which
11 could be disproportionately higher than the actual
12 shading amount in the case of PV systems.

13 And it can get a really complicated
14 methodology in order to estimate the exact impact,
15 therefore the production impact of shading. So to
16 try and come to a mid-level approach there has
17 been the use of this 2:1 minimal shading criteria,
18 which is in use both in the CSI and the NSHP
19 program that allows for obstructions that are
20 sited at least twice the distance from the array.
21 That they project above the array to be exempted
22 from being accounted for in the shading.

23 But any other obstructions do need to be
24 accounted for. And the methodology in the CSI-
25 EPBB approach right now is under discussion and

1 review in the CSI shading subcommittee
2 discussions, which I understand would have a
3 recommendation soon. But the current status is of
4 reporting a percentage of solar availability for
5 the summer months, which are the ones that are
6 used in accounting for the design factor.

7 In the NSHP-EPBI approach it has been to
8 use a more simplified methodology in which
9 obstructions are described in terms of the
10 distance and the height, the distance from the
11 array and the height that they project above the
12 array. And it is the calculator which analyzes
13 internally the hour and the year that the
14 obstruction will end up obstructing the solar
15 altitude at that given location. So the
16 measurements are more simplified.

17 And also that it accounts for things
18 like trees. Only the distance of the siting of
19 the tree from the array is more critical because
20 the methodology asks for the species of the tree
21 and categorizes trees, all trees in California
22 based on the USDA classification of trees as
23 small, medium or large and defaults mature tree
24 height to them. So that takes away from any
25 complicated measurements or effort in estimating

1 those things in order to promote more compliance
2 rather than avoidance of such analyses.

3 So that part is addressing the future
4 shade. So trees are one of the main things. And
5 also any other potential structures that may be
6 surrounding the array. In having this methodology
7 in place it makes both the installer/designer
8 aware of these impending obstructions that might
9 affect the performance of the system in the
10 future.

11 This is going to lead into the
12 discussion on shading and therefore we have given
13 all these facts about shading. The staff
14 recommendation has been to address shading in
15 enough detail and as described or based on the
16 NSHP methodology, which is recognized to be more
17 oriented towards new homes. But on that basis it
18 can be easily extended to existing residential and
19 the commercial sector as well. But to have the
20 NSHP methodology as a basis.

21 And again to say that to review the
22 findings and recommendations of the CSI shading
23 subcommittee and definitely pick up any of the
24 merits from there.

25 One thing I'd like to say is the shading

1 methodology bases itself in trying to minimize the
2 use of any complicated instrumentation, again
3 which is perceived to be as some of the reasons to
4 avoid or have non-compliance of doing enough
5 shading analysis. So having a very --

6 There is an option of using the detailed
7 shading analysis, two, that are available and
8 widely used at times by the solar industry. But
9 to use them to a level of determining the
10 elevation of the obstructions and then calculates
11 the effect in the calculation approach rather than
12 using the numbers that come from the tools
13 themselves and relying on those. Next please.

14 In terms of addressing the peak load the
15 staff recommends that there be hourly weighting of
16 the production in order to encourage systems that
17 perform higher on peak. And for that it is
18 suggested that the TDV weighting factors for every
19 hour of the year be used to value the production.

20 And field verification is also a very
21 important factor that helps ensure the performance
22 of the system in terms of ensuring that all the
23 intent of the system that was calculated does in
24 fact get installed in the field accurately.

25 So third party field verification is

1 seen as an important aspect to that and should
2 include verification of the equipment, the PV
3 modules, inverters, meters. The installation
4 characteristics, which is in terms of it's a PV
5 module, what azimuth tilt it's mounted at.

6 Also the performance verification, which
7 is another thing. To avoid any systems that are
8 not installed or have some missing, you know,
9 modules that are not connected. To otherwise
10 catch any systems that are, that could not have
11 the expected performance that was anticipated and
12 incentivized.

13 And the field verification table that
14 was mentioned earlier is the main mechanism to
15 ensure that in which the verifiable make a spot
16 measurement of incident solar radiation and
17 ambient temperature and look up the inverter
18 display for the corresponding production from the
19 system and verified against a look-up table for
20 that specific system. That is generated for the
21 specific system to verify that it indeed is
22 performing.

23 And there are tolerances that are built
24 in this protocol for each of these measurements to
25 account for any instrumentation discrepancies and

1 measurement discrepancies between the installer
2 and the verifier.

3 And to use a sampling approach when
4 verifying the system so that it does not place a
5 burden on having to verify 100 percent of the
6 systems. In the New Solar Homes Partnership, in
7 the production housing case the approach of one in
8 seven sampling is used, which is similar to what
9 is used for field verification purposes under the
10 Title 24 standards for verifying energy efficiency
11 measures. I know you talked about the tolerance.

12 And the last but not least thing is on
13 having installers also aware of all the field
14 verification protocol and use that to certify all
15 the systems that they install in order to ensure
16 that they are up to the performance level that the
17 field verifier is going to check for. So the
18 protocol says not only for the field verification
19 purposes but also for the installer as a guide to
20 know what aspects of the system that they need to
21 check for.

22 And the requirements for the installer
23 are totally consistent with what CSI and NSHP have
24 in terms of the qualification of the installers,
25 with the addition of requiring installers to

1 certify that the installation qualifies on all the
2 component installation and performance and shading
3 aspects. They have to verify all of that.

4 And that's all we have for the
5 installation.

6 MR. PENNINGTON: So I have a couple of
7 blue cards here. If there are other people that
8 would like to comment could I have your blue card.

9 So these are it, is that correct? I was
10 hoping your blue cards would say what you're going
11 to speak on. Some of them do. Okay. Could we
12 start with Steve Chadima. Is that correct?

13 MR. CHADIMA: My name is Steve Chadima,
14 I'm with Energy Innovations. Our company installs
15 large commercial systems in California and also is
16 developing a rooftop tracking concentrator for use
17 in the same program. So I have two comments
18 completely unrelated.

19 One of them has to do with the
20 standards, and particularly the IEC standards. In
21 addition to the two standards that you've noted
22 for silicon and for thin film there is a third IEC
23 standard for concentrators, which is under
24 development. It is being circulated around the
25 world now for comment and it should be, it should

1 be adopted by the IEC sometime this fall.

2 So I would only suggest that you think
3 about that as well. We support the IEC standards
4 as a mechanism for more realistically assessing
5 the peak capacity of the systems. So I would just
6 suggest that you keep a note of that.

7 The other is a question. I really have
8 to admire the level of detail that you guys have
9 gone to in looking at the potential impact of not
10 just, for example, average inverter efficiency but
11 inverter efficiency over a range. The same with
12 operating temperatures, orientation of the systems
13 and all.

14 The question I have for you though is,
15 have you taken a look to see how much more
16 accurate you would be using this what on the
17 surface seems to be a much more complex evaluation
18 system than the simpler system that is in place
19 right now?

20 I have this tendency to think that most
21 of us who have academic backgrounds, I'm a
22 mathematician by training, we love models and we
23 love the perfection of tweaking these models so
24 that they're exactly correct. But in the end it
25 may turn out that all of this complexity gives you

1 very little additional benefit for the ratepayers,
2 for the customers involved.

3 So I would just encourage you to really
4 take a look at trying to find some balance between
5 perfection and practicality and simplicity and
6 ease of installation. Because, you know, there is
7 the old saying about perfection being the enemy of
8 the good. Thank you. And I think that may be at
9 work here as much as I admire the level of work
10 that you have gone to.

11 MR. PENNINGTON: Do you want to respond,
12 Smita?

13 MS. GUPTA: Appreciate your comment
14 there. Just one. The response is that though the
15 whole methodology sounds complicated but to the
16 user, the end user as such, the amount of input
17 and the effort is going to be no different.
18 Because at the end of the day you're just
19 selecting a module, you're just selecting your
20 inverter.

21 And all the calculation burden really is
22 being handled at the back end by the computation
23 and the computation power these days is not a
24 limiting factor. Therefore if we have the ability
25 to use all these performance values that are

1 available and tested and provided we see the merit
2 in being able to use them at no detriment to the
3 end user and adding any complexity to their life.

4 MR. CHADIMA: As long as you've got that
5 in mind that's the most important thing.

6 MR. PENNINGTON: One other comment I
7 would have is that the, particularly the cell
8 temperature and the performance of the modules
9 relative to temperature is kind of the next
10 horizon for manufacturers to address. And in fact
11 they are addressing it and the performance of
12 these systems will be dependant on the improvement
13 at that level. So by having a system that takes
14 that into account you align your incentives to be
15 consistent with the goals of improving the
16 modules.

17 MR. CHADIMA: No argument. I don't
18 think you could find a person in the room who
19 would argue with the objectives of the program.
20 By the way on that note, one thing that it was
21 good to see in your comparison between the two
22 current EPBB type calculations is why there's a
23 cap of one on the EPBB calculation is beyond me.
24 I mean, you ding people for under-performing
25 systems but the PUC doesn't reward people for high

1 performing systems.

2 And I'm glad to see that the program
3 that you've at least pursued at the New Solar
4 Homes Partnership doesn't have a cap one way or
5 the other and it simply is what it is. You have a
6 performance system that has certain performance
7 characteristics and you're rewarded accordingly.
8 That's a good thing as they say, so I thank you.

9 MR. PENNINGTON: Okay, thank you, Steve.

10 Is it Joeline Monestier?

11 MS. MONESTIER: I just have a few
12 questions I wanted clarification on. And the
13 first one is kind of touching on what Steve had
14 brought up about the NSHP calculator allowing for
15 no caps on the incentive. However, maybe this is
16 just a clarification. To my knowledge the CPUC
17 has required that the incentive not go over a
18 certain step amount for that. So in recommending
19 that the New Solar Homes Partnership calculator be
20 used how would you basically address the fact that
21 it cannot go over the incentive to reward higher
22 performing systems?

23 MR. PENNINGTON: I don't know how to
24 answer that question. That's a policy decision
25 that the CPUC has made relative to that, that we

1 have not made. From our vantage point it makes
2 sense to incent the highest performance systems
3 and find a way to do that.

4 MS. MONESTIER: Okay. I just wanted
5 some clarification to see if that was possible to
6 look into.

7 Another question I had was, it was
8 addressed that the New Solar Homes Partnership has
9 the HERS raters to come out and do the inspections
10 and it was also addressed that the installers
11 would have a certification of installation.

12 The first question is, when there are
13 HERS raters that were coming out, it was addressed
14 earlier, that they cost anywhere from \$300 to
15 \$1,000 potentially to go out and do an inspection.
16 Is the installer required to pay for that, is the
17 customer required or the program administrator
18 required to pay for it?

19 MR. PENNINGTON: That --

20 MR. PERKINS: That's a good question.

21 MR. PENNINGTON: If you want to come
22 forward, sir. Come forward, sir.

23 MR. PERKINS: Dan Perkins.

24 MR. PENNINGTON: One clarification
25 before you respond, if I could.

1 MR. PERKINS: Pardon?

2 MR. PENNINGTON: One clarification
3 before you respond. You were talking previously
4 about doing a home energy rating for an existing
5 house, looking at the energy efficiency measures
6 that would be cost effective for that house.

7 MR. PERKINS: Yes, that's correct.

8 MR. PENNINGTON: And using a HERS rater
9 as a field verifier is a different task completely
10 than that and you wouldn't expect the field
11 verification costs to be as high as what you said.
12 So disagree with me.

13 MR. PERKINS: It could be as high as
14 that. First of all I'm Dan Perkins, Energy Smart
15 Homes, San Diego.

16 But it could be as high as that if it
17 were a very large home and if the homeowner wanted
18 more in-depth on their rating it could go as high
19 as \$1,000. Generally speaking it's \$300 to \$350
20 on the average home.

21 But the fiduciary responsibility is
22 between the rater and the homeowner or the person
23 that is going to buy that home. They have an
24 arm's length from anyone else that's involved in
25 this. So there is no responsibility that anyone

1 outside of that rater has other than to the
2 homeowner. Okay.

3 MR. PENNINGTON: So the other comment I
4 would have is that we also have a sampling
5 approach. So the \$350 or whatever was estimated
6 would be for the house that is sampled. So the
7 house, you know. And the total cost works out
8 very well for subdivisions in particular where
9 that cost gets spread so it turns out to be, you
10 know, one-seventh of that cost on average.

11 MR. PERKINS: Yes, and I'll speak to
12 that in a little bit.

13 MS. MONESTIER: I was going to say, so
14 in theory then a customer doesn't know when
15 they're purchasing a system whether or not
16 they're going to have to pay potentially \$350 at
17 the end to get their inspection because they don't
18 know if they're going to be the one in seven.

19 MR. PENNINGTON: I don't know. There's
20 other HERS raters in the audience that might
21 respond to that question.

22 MS. MONESTIER: Okay. And then my last
23 one was, you said the installer certifications for
24 installation, that each installer has to be
25 certified. Are you saying one person per

1 installer? So if there's say 100 installers in a
2 company that only one person would have to be
3 certified. Or would it be every installer?

4 MS. GUPTA: The certification is of the
5 system, not the installer. So the installer has
6 to certify the system is in accordance with what
7 was proposed for the incentive.

8 MS. MONESTIER: But didn't you say that
9 we had to be certified to be able to do an
10 inspection to make sure it's in line with the HERS
11 raters?

12 MS. GUPTA: No, the system has to be
13 certified by the installer. The requirement for
14 the installer is to have the contract, the
15 appropriate contract licensing requirement. But
16 the certification is for the system by the
17 installer.

18 MS. MONESTIER: Okay, so there is no
19 separate approval of installers.

20 MS. GUPTA: No, the NABCEP certification
21 is encouraged but not required.

22 MS. MONESTIER: Okay, thank you.

23 MR. PENNINGTON: Joelene, could you
24 identify yourself. I'm sorry, I didn't ask you.

25 MS. MONESTIER: Joelene Monestier with

1 SPG Solar.

2 MR. PENNINGTON: Thank you. Julie
3 Blunden.

4 MS. BLUNDEN: Julie Blunden from Sun
5 Power.

6 One of the things that was very helpful
7 in this section was to have the table that
8 described the differences between the two
9 calculators, very clearly delineating what the PUC
10 version does and what the Energy Commission does.
11 I think it would be incredibly helpful for those
12 of us needing to put in comments next week to have
13 something similar for the rest of these two
14 sections.

15 Because there's a whole bunch of issues
16 here where there has been a discussion in the
17 material about what your preference is but it is
18 not entirely clear whether that is different than
19 how it's currently operating in one or both
20 programs. So for example I noticed it looks as
21 though somebody had come in with a similar comment
22 because of the words on some of the slides saying,
23 like the New Solar Homes Program or like the PUC
24 program or like both or a combination thereof.

25 It would be incredibly helpful so very

1 specifically and concretely. If you look at the
2 field verification item, for example. In your VI,
3 page six, you --

4 MR. PENNINGTON: Chris, could you pull
5 that up.

6 MS. BLUNDEN: -- you designate field
7 verification. This is the bullet in the executive
8 summary:

9 "Staff recommends that a
10 sample of systems be required
11 to have third party field
12 verification for visually
13 checking components,
14 installation characteristics
15 and shading, verifying
16 performance using NSHP
17 protocol."

18 We have a measurement and evaluation program that
19 will be in place through the PUC program that will
20 have a sampling technique and requirements
21 thereof.

22 What I am not sure is whether you're
23 saying there needs to be something above and
24 beyond that or whether you're saying, use the M&E
25 protocol that the PUC comes up with but have that

1 protocol incorporate requirements that are part of
2 the New Solar Homes Program.

3 Whether you're saying, take the field
4 verification approach we're using in this New
5 Solar Homes Program and use the same one in the
6 PUC program. Or whether you're saying, do
7 something completely new that we're not doing in
8 either program currently.

9 So in order to have kind of a concrete
10 response to this and several of the other points
11 that you've made in both the installation and
12 component standards recommendations it would be
13 very, very helpful to have that level of detail in
14 terms of, here's what we're doing in one program,
15 here is what we're doing in the other. We're
16 recommending either one, the other or a third
17 thing.

18 Because this is such a dense piece of
19 work, in order for us to be legitimately thorough
20 in responding to things I am 100 percent confident
21 that we will miss a recommendation that we thought
22 was intended to be just a confirmation of
23 something we're doing currently but isn't. And
24 then we'll miss our opportunity to have a
25 contribution to the conversation. So that's kind

1 of point number one.

2 MR. PENNINGTON: So reacting to that.
3 Smita, did you want to react to that? One thing
4 is what's recommended here are the elements that
5 are covered by the NSHP field verification. And
6 we see that these are, from our view these are the
7 necessary things to be observing in the field or
8 measuring in the field.

9 MS. BLUNDEN: And have you compared
10 them?

11 MR. PENNINGTON: I think it's correct
12 that we don't know of a counterpart protocol.

13 MS. BLUNDEN: Okay, let me just ask our
14 program administrators. I believe we do have
15 inspection protocols set up for the Energy
16 Commission -- for the PUC program. Yes? And have
17 we compared those two protocols?

18 MR. PENNINGTON: If that was made
19 available to us we could probably do what you're
20 suggesting.

21 MS. BLUNDEN: Okay. So I have a concern
22 that if we don't have the ability to create the
23 same kind of table we have for the EPBB, EPBI, the
24 quality of the conversation is going to be
25 moderate to low as opposed to very good to

1 excellent.

2 So I think it's imperative actually that
3 we do a very clear side-by-side on each of these
4 major points so that we're clear on whether or not
5 we've actually got a difference of opinion between
6 the two programs. Is it some third new thing?
7 Because for those of us operating in both programs
8 we know what we like and what we don't about both
9 programs and we're not clear on what exactly is
10 being recommended for the entire program across
11 both agencies plus the munis.

12 MR. PENNINGTON: Okay. To give you
13 something that would help for comments immediately
14 we would need to do something very quickly. Our
15 attempt was to make these slides clear.

16 MS. BLUNDEN: Right, but this is a great
17 example where we actually don't know.

18 MR. PENNINGTON: I'm not sure there are
19 other examples.

20 MS. BLUNDEN: Well.

21 MR. PENNINGTON: We could talk off-line
22 if you have some further comments on that.

23 MS. BLUNDEN: Yeah. For example, on the
24 performance based incentives, I'll just go through
25 them one by one. If you look at the performance

1 based incentives we talk about continuing the
2 payment based on a discontinuation of incentives
3 based on capacity. To my knowledge the PUC
4 program no longer does that. We have the EPBB
5 there. So is there, is there a recommendation
6 that we move away from the EPBB program to
7 something else?

8 MR. PENNINGTON: We are recommending
9 that a calculation that takes into account all of
10 that stuff in the calculator is what we're
11 recommending.

12 MS. BLUNDEN: Okay. So I think that you
13 could argue that the EPBB calculator as set up
14 today is clearly a performance, expected
15 performance based calculation with a level of
16 detail less than what is in the Energy Commission.

17 MR. PENNINGTON: Okay.

18 MS. BLUNDEN: So the subject matter here
19 appears to suggest that there's a movement away
20 from something that I don't think actually is
21 being moved away from, I think we're already
22 there.

23 And each one of these I have a similar
24 kind of question, you know. What's the problem
25 statement and is the solution one program's

1 approach, the other program's approach or a third
2 approach?

3 So on the calculator I think what you're
4 saying is you want the EPBI to be used universally
5 across all programs including munis. Is that an
6 accurate statement?

7 MR. PENNINGTON: Yes.

8 MS. BLUNDEN: Okay.

9 MR. PENNINGTON: Tim.

10 ADVISOR TUTT: This is Tim Tutt from the
11 Energy Commission. And I think it's true that
12 we're talking about moving away from capacity-
13 based approaches. Many municipal utilities and
14 POU's have continued to have capacity-based
15 approaches and that's really what that is
16 referring to here. We recognize that there is a
17 performance estimation of a component in the EPBB
18 calculation.

19 MS. BLUNDEN: Okay.

20 ADVISOR TUTT: And just one other thing,
21 Julie, I'd say. That in these slides and in the
22 report it says, based on NSHP protocols or based
23 on something else. I think it's pretty clear if
24 you go through there that we're in many cases
25 talking about -- the proposal is either the NSHP

1 way of doing things or some other way that's in
2 there.

3 When we use words like based on we're
4 looking for a comment, I think, to say the final,
5 you know, the final document requirement in the SB
6 1 guidelines will reflect public input. It may
7 not be exactly what is initially proposed here by
8 staff.

9 MS. BLUNDEN: Okay.

10 MR. PENNINGTON: I agree with your
11 comment that the side-by-side table makes it
12 easier to review. The staff report tries to go
13 through all the issue areas that we see and
14 describe in detail what the issues are.

15 MS. BLUNDEN: Right.

16 MR. PENNINGTON: So that's kind of our
17 best shot at describing those issues. I doubt if
18 we can do significantly better than that before,
19 in time for you to get your comments together.

20 MS. BLUNDEN: Yes, we're worried about
21 that. We're pretty confident that the density of
22 the material without some sort of a basic overview
23 that says, here are all the issues that are
24 actually up for decision, a recommended decision
25 that is different than the way that one of the

1 programs is operating now, means that we're going
2 to miss, we're going to miss commenting on
3 something that turns out to be an actual decision.

4 So for example, at the PUC we actually
5 have in the back of a decision, findings of fact,
6 conclusions of law and then ordering paragraphs.
7 So it is pretty clear what decisions are actually
8 being made. And here we don't have that level of
9 specificity. Which I am not recommending going to
10 the PUC approach putting the last few pages onto
11 the decision but some sort of a summary would be
12 incredibly helpful.

13 Just turning to the second of three
14 points I have. EPBB versus EPBI. Just, Smita, to
15 go back to the question Steve kind of touched on.
16 I expect that somebody somewhere has sat down and
17 done a pretty thorough analysis of how the two
18 compare to each other in terms of the spread
19 between outputs for the incentive levels in
20 similar, you know, the same system, the same
21 climate zone, et cetera. Do you have data around
22 what that spread ranges from and to?

23 MS. GUPTA: That is a pretty extensive
24 piece of research that needs to be structured very
25 well in order to isolate different factors that

1 impact the calculation in each of the things.

2 As you realize, you know, going through
3 them, that both the calculation methodologies deal
4 with each aspect in such a different way it's
5 really hard to isolate the factors. Just one
6 thing is, you know, like the TDV and the weather
7 data itself can drive so many of the differences.

8 MS. BLUNDEN: Right. What I'm trying to
9 get a feel for is not the causality, just the
10 results. So are the results that we have a
11 difference as much as 50 percent in incentive
12 levels for the same system in the same location
13 between the two calculators? Or is the maximum
14 delta more like, you know, five percent?

15 MS. GUPTA: Bill?

16 MR. PENNINGTON: We don't have that.

17 MS. BLUNDEN: Okay. That would be
18 incredibly useful to do before coming up with a
19 conclusion about the value of going to the
20 additional detail. Because if it turns out that
21 the delta, the maximum deltas anybody can find are
22 five percent that would, obviously, suggest that
23 going to a big overhaul might be more trouble than
24 it's worth.

25 I know that we have found internally

1 that when, and have communicated with the Energy
2 Commission about concerns having dealt with both
3 calculators that the EPBI calculator comes up with
4 some non-intuitive results regarding different
5 climate zones and are trying to address that off-
6 line. But because of that experience and the lack
7 of resolution on those questions we have some
8 concerns about the EPBI as it currently exists.

9 And obviously it hasn't been used to the
10 same extent that EPBB has, just because of the
11 volume of residential applications that have gone
12 in through the PUC program. So that's been more
13 fully vetted just from an empirical perspective.
14 Which doesn't mean you couldn't get comfortable
15 with the other one, it's just that, you know, data
16 is still outstanding on comfort level.

17 The last point is, on the third party
18 verification it sounds to me as though this, you
19 know, logically it's stemming from the notion of a
20 home development, percent of home development kind
21 of approach. Given the auditing protocols of the
22 PUC's program are you, are you looking to
23 recommend -- I heard you say one in seven, Bill.
24 Are you looking to recommend a certain level of
25 penetration of audits?

1 Because I think that's, you know. We've
2 had that discussion over at the PUC and we've had
3 -- that's obviously part of the M&E program that's
4 paid for outside of, either a customer cost or an
5 installer cost. So it's essentially an admin
6 cost. I wanted to make sure I understood fully
7 what the expectation here is.

8 MR. PENNINGTON: Yeah. In the NSHP
9 program we don't have the option of paying for
10 that out of administrative costs.

11 MS. BLUNDEN: Right.

12 MR. PENNINGTON: And so we have tried to
13 internalize that verification in the market cost.
14 And relied on the market to provide that service
15 and have built up infrastructure to try to do
16 that.

17 MS. BLUNDEN: Right. Obviously we don't
18 need to export that issue to the rest of the
19 market because we do have the ability to have the
20 IOUs and other PAs -- they are specifically
21 awarded an admin budget and an M&E component to
22 the programs that are funded. There is no reason
23 to think that the publicly owned utilities, you
24 know, couldn't or wouldn't do the same thing? As
25 we would approach energy efficiency, right?

1 MR. PENNINGTON: Perhaps. I think the
2 POUs are quite concerned about program
3 administrative costs and might be -- I don't know,
4 I haven't heard comment about this directly but
5 might be interested in a market-based costing of
6 that.

7 MS. BLUNDEN: I think there might be
8 value to consider, particularly with the smaller
9 POUs, consider a contribution to a general fund
10 that has a, you know, a common M&E service to the
11 POUs. Thanks very much.

12 MR. PENNINGTON: Let's see. Raghu
13 Belur.

14 MR. BELUR: Good afternoon. My name is
15 Raghu Belur and I'm from Enphase Energy. Thank
16 you for the opportunity to speak.

17 This is an excellent document. As one
18 would expect the guidelines have been developed
19 based on existing technologies and existing
20 architecture. What I would like to encourage the
21 Commission is to be open-minded and develop
22 recommendations that would actually further
23 encourage and allow development of newer
24 technologies due into the market.

25 As a very simple example, current

1 deployment architecture really suffers from issues
2 such as shading and mismatch of panels, et cetera
3 and there are newer technologies that are coming
4 into the market that address specifically these
5 things.

6 So please develop guidelines that have
7 the flexibility to allow and encourage innovation.
8 PBI is definitely a step in the right direction.
9 That is the direction you want to go. However,
10 with a number of systems still being, still being
11 incentivized through EPBB you need to make sure
12 that newer technologies that solve some of the
13 endemic problems in existing solar systems are
14 rewarded so that newer technologies now can be
15 allowed to come in and flourish in the
16 marketplace. Thank you very much.

17 MR. PENNINGTON: Do you have specific
18 technologies in mind?

19 MR. BELUR: Yes. There are newer
20 technologies, inverter technologies as an example,
21 that are more robust in dealing with issues such
22 as shading, as an example. Systems, existing
23 systems, if there's 30 percent shading, suffer
24 from some quantified number of loss and output.

25 Whereas there are new inverter

1 technologies that address specifically that. Who
2 don't suffer as much. Are more robust in dealing
3 with these weaknesses. They are more robust in
4 dealing with, you know, localized dust and debris
5 and PPT efficiency. All of these things are being
6 developed, are being innovated on in the Valley,
7 in the Silicon Valley and everywhere.

8 All I request is that these guidelines
9 encourage that, and have the flexibility to
10 encourage that, and have the flexibility to take
11 into account as newer and newer technologies
12 become available. Thank you.

13 MS. GUPTA: Just, you know, that's been
14 an intent, you know, having the entire performance
15 range of the components be used. So if you feel
16 that the Energy Commission is always open to
17 recommendations, that if there are newer
18 technologies that address properties or
19 performance characteristics not addressed in any
20 of the ones that are currently listed and do end
21 up impacting to be definitely brought to our
22 attention.

23 MR. BELUR: Absolutely. Thank you very
24 much.

25 MR. PENNINGTON: Thank you. John Supp.

1 MR. SUPP: Hi, my name is John Supp and
2 I want to thank you all for letting me comment
3 today. I am the CSI program manager for the
4 California Center for Sustainable Energy in SDG&E
5 territory.

6 In the first six months of this program
7 we had been receiving feedback from the public
8 about specifically the shading methodology, the
9 impacts of shade, the process changes that went
10 into effect because of the way we need to
11 incorporate shade.

12 Prior to January 1 of this year
13 installation companies could know the cost of a
14 system and the incentive prior to having to do a
15 substantial shade impact study because the
16 previous incentive models for the last nine years
17 didn't incorporate shade into the incentive
18 component. So it's a substantial shift.

19 And during that time we found some
20 interesting, interesting impacts as a result of
21 that. Costs that had been increasing on the
22 contractor side because of an increased need to
23 send additional people onto roofs, which then
24 requires additional workers compensation
25 insurance, to additional tooling costs because

1 you're having to do more shade impacts.

2 We found some other interesting issues
3 as well. And one of them is we put together based
4 on this feedback, based on our inspection
5 feedback, based on results of a public forum we
6 had, to put together a shade subcommittee to
7 evaluate exactly what's been going on and how do
8 we fix it. And after evaluating all kinds of
9 different options we will be submitting our
10 official, our official recommendations.

11 We came down to a couple of very
12 specific, specific issues. And one of the issues
13 that came up on a recurring basis was this concept
14 of minimal shading. Because there is a practical
15 understanding of minimal shading, meaning, you
16 have a system that is not being impacted very much
17 at all by shade. But then you have the technical
18 definition which is, there are no objects closer
19 than two times their height relative -- two times
20 their height relative to the array or the 2:1.

21 Well mathematically a 2:1 ratio if you
22 actually had it could produce a very relatively
23 low availability yet still constitute minimal
24 shading. That minimal shading definition would
25 allow you to get a higher incentive.

1 What's happened is we've gone out and
2 inspected systems and found that they actually do
3 not fit the minimal shading definition but have
4 measured availabilities of 98, 99 percent and thus
5 we have to discount their incentive. So that's
6 led to some very unhappy customers, unhappy
7 installers, and actually very awkward inspectors
8 -- a position for inspectors as well who again are
9 the people who are using these tools, using and
10 making these measurements.

11 So we found a few things. One is that
12 definition may -- the majority of the committee
13 appears to be in favor of actually changing that
14 definition and making it more of a, determine what
15 the availability is. And then tell what would
16 constitute an unshaded or minimally system. And
17 if you are above that threshold then just count
18 that as an unshaded system. Or an unshaded month
19 or an unshaded -- And again, we'll provide the
20 actual details later.

21 So instead of saying that any system
22 right now mathematically, which could be as little
23 as an 82 percent availability depending on where
24 you're located, today would be a minimal shade
25 system. But systems that are above 82 percent may

1 not be minimally shaded.

2 So it results in, again, a lot of
3 wasted, I would say wasted program dollars in
4 rectifying very high performing systems that just
5 don't meet this technical definition of minimal
6 shading. That's the biggest, that's the biggest
7 finding we have.

8 The other thing that we found as a
9 result of that is a discontinuity in the incentive
10 level that occurs when you have that, such a hard
11 line distinction between it's either minimal
12 shaded or it's not.

13 And what we found is, if you have such a
14 jump we may be ending up with perversely incenting
15 people to mischaracterize or otherwise push the
16 boundaries of reasonableness when claiming how
17 much impact there is, shade impact there is.

18 If there is a 15 percent jump in
19 incentives if I'm at 84 percent and I meet the
20 minimal shading I would get 100 percent incentive.
21 But if I'm at 83 I would have to claim 83 and
22 that's a 17 percent drop. Well that's a very
23 awkward position for a program to try to put the
24 inspectors and the contractors alike when the
25 difference between an 83 and an 84 on an estimated

1 shade impact is really minimal.

2 So those are the two major areas that we
3 were trying to rectify. How do we, how do we
4 adopt a definition of minimal shading that always
5 means, the system is shaded minimally regardless
6 of, you know. Regardless of where the array is
7 facing and what not.

8 And two is to eliminate potential
9 discontinuity in the incentive such that we
10 wouldn't be putting contractors, inspectors or the
11 program administrators themselves into these, you
12 know, awkward one percent solutions.

13 About two-thirds of the way through the
14 shade subcommittee we received the CEC proposal,
15 which we have been looking at as well. We opted
16 to continue looking at the CSI program and how to
17 make recommendations to fix the shade protocol
18 within our existing program without making
19 wholesale changes to our calculator, design
20 factor, maximum and all the things that we have
21 been talking about here today.

22 So again, please look forward to our
23 recommendations. Are there any questions?

24 MS. GUPTA: Can I respond just briefly?
25 You know, the concern about the 2:1 in the NSHP

1 the calculation approach. Since we use the 2:1
2 ratio for the minimal shading and have done an
3 impact study that -- in detriment from the 2:1
4 shading, you know, if there was like a continuous
5 obstruction all around, which is supposedly an
6 implausible condition. You know, if you have like
7 a two-foot high fence one-foot away from the
8 entire array for some reason. Not plausible.

9 That's the time when you would actually
10 see the full, you know, the 84 and 85 percent
11 detriment that you're talking about. So the 2:1
12 is in order to provide the marketplace with a
13 convenience of not having to go through the detail
14 of conducting the shading study and having a rule
15 of thumb to avoid any shading. Because the sun
16 angles that are obstructed by 2:1 are fairly low,
17 below the 26 degree horizon. And the production
18 of those -- and again, the production is blocked
19 at those specific hours only that the sun is low.

20 MR. SUPP: Correct.

21 MS. GUPTA: So that is the whole intent.
22 And since the -- In the NSHP since the shading is
23 calculated in an hourly approach you don't run
24 into that situation as much where you have this
25 like 84 percent and 83 percent thing because it's

1 only for that specific hour in the day.

2 MR. SUPP: Sure.

3 MS. GUPTA: And for a given azimuth that
4 the obstruction is providing shade.

5 MR. SUPP: Absolutely. I don't -- The
6 intent of our recommendations were not to debate
7 time dependant valuation or not time dependant
8 valuation. We simply don't have it. So it's a
9 bit of a moot point currently because our tool
10 doesn't address it that way.

11 In reality though, when you have a home
12 that's already there and you have trees that are
13 already there and you're on the ground,
14 identifying 26.6 degrees is not, is actually very
15 similar to taking a shade measurement tool and
16 running a shade measurement evaluation. Because
17 to actually find 26.6 degrees throughout a 270
18 degree or 305 degree arc really does require some
19 sort of tooling of some kind.

20 So in practice it hasn't, it hasn't
21 necessarily saved time because making those
22 assessments, again without using some type of
23 surveying equipment or tooling, means that they're
24 either going to make a guess that it is minimal
25 shading and check minimal shading, or they're

1 going to take the actual measurements, one or the
2 other.

3 And we found very few people are really
4 interested in going on a roof with, you now, a
5 surveying tool, just to find whether they need to
6 do a shade impact. When for the same time they
7 could just take a shade impact. That's been a
8 sort of practical experience.

9 And again, the same question about the
10 theoretical minimal shade versus the actual
11 minimal shade. And again we run into the same
12 problem, which is, we can have genuinely minimally
13 shaded systems, 98 percent, 99 percent available
14 systems, that don't meet the definition of minimal
15 shading.

16 But the definition of minimal shading is
17 going to allow for a substantially under-
18 performing system to get a higher incentive. And
19 we don't feel that that's, that that's directly
20 supportable under trying to incentivize high
21 performance systems.

22 So in any event the general discussion
23 is to adopt some level of availability that's
24 consistent in all azimuths that would constitute
25 minimal shading. And that's based on a measured

1 quantity as opposed to an actual measured
2 percentage of availability. As opposed to a, you
3 know, a 2:1 or a 26.6 degree angle.

4 So in any event that's -- Any other
5 questions?

6 MR. PENNINGTON: Thank you. Thank you
7 very much. Mike Bachand.

8 MR. BACHAND: Mike Bachand from
9 CalcERTS. I just wanted to get on public record
10 the strongest language I can say in public
11 recommending continuity in this process between
12 the EPBB and the EPBI in terms of field
13 verification.

14 Because experience told us during the
15 time that the 2005 standards began to be
16 implemented that there were a lot of interpretive
17 issues still left open, which caused some
18 differences in training of raters and some
19 differences in interpretation at billing
20 departments and jurisdictions.

21 The results of all of that have been at
22 times difficult and inconsistent implementation at
23 the field level. So I am just trying to recommend
24 and state in the public record that the more
25 continuity we get out of these two processes,

1 wherever this all lands. I don't want to be
2 between these two commissions.

3 I just want to say that it will be
4 better implemented based on historical evidence of
5 confusion causing bad implementation or lack of
6 good implementation at times. I just want to make
7 clear that the more continuity we have, my
8 experience tells me, the better implementation
9 we'll have in the field. Thank you for your time.

10 MR. PENNINGTON: I have a couple of
11 cards here that perhaps should have been called at
12 some earlier time. They don't necessarily relate
13 directly to this discussion per se. But why don't
14 we take them anyway. Dan Perkins.

15 MR. PERKINS: Thank you. Thank you
16 again. Dan Perkins, Energy Smart Homes, San
17 Diego. I'm going to throw you a little curve ball
18 here. Does the thermal solar count as a solar
19 roof under the million solar roof program?

20 MR. PENNINGTON: I am not particularly
21 an expert on the absolute nuances of this.

22 MR. PERKINS: Okay.

23 MR. PENNINGTON: But it's a solar
24 electric system as defined by the statute, which
25 is a production-oriented system, right? Anyone

1 else want to respond to this question?

2 MR. PERKINS: Okay, I'll leave the
3 question to you to answer at some point in the
4 future. And if it does, as you know, we have a
5 pilot program going on in San Diego for a thermal
6 solar application. It may be determined that
7 there is an incentive program based on that
8 thermal pilot program and so we would like to
9 address that.

10 MR. PENNINGTON: Let me read you the
11 definition here.

12 MR. PERKINS: All right.

13 MR. PENNINGTON: A solar energy system
14 means a solar energy device that has the primary
15 purpose of providing for the collection and
16 distribution of solar energy for the generation of
17 electricity.

18 MR. PERKINS: And under that definition
19 then a parabolic dish that would run a --

20 MR. PENNINGTON: There are other
21 constraints.

22 MR. PERKINS: There are other
23 constraints, okay. It is something that we need
24 to look at in the future, if solar thermal is an
25 application, particularly with new technologies

1 that are coming on in evacuated tube. That could
2 generate electricity as well. We'd like to have
3 those considered at some time in the future.

4 Then my second issue is that we know
5 that a HERS energy rating is going to be, is
6 something that we really need in order to
7 substantiate what the criteria should be for an
8 incentive program.

9 There are some guidelines that we think
10 that need to be included in that as well. That
11 anything that is newer than ten years or within
12 this first, last ten year window, that they be
13 included as a Title 24 and under the ENERGY STAR
14 program of being Title 24 plus 15 percent.
15 Anything beyond that ten years would require a
16 HERS rating.

17 And that's our platform for this. That
18 if it's over ten years old in all cases at the
19 time of sale that the HERS rating be incorporated
20 as the guideline for what that criteria would be.
21 Not that the customer have any specific thing that
22 they have to do to accomplish. In other words, no
23 specific measure, no mandated measures, but only
24 those that be supported or the application be
25 supported with a HERS rating.

1 The customer then or the home buyer can
2 then make the decision as to whether they want to
3 do energy efficiency in lieu of solar or -- In
4 some cases that's the only choice they may have.
5 It may not be practical to do a solar system on a
6 particular house. Then the only application that
7 they have would be to do energy efficiency. Okay?

8 MR. PENNINGTON: Okay, thank you. And
9 Peter Brehm.

10 MR. BREHM: Thank you for the
11 opportunity to comment, specifically on the solar
12 energy system component.

13 MR. PENNINGTON: Could you identify --

14 MR. BREHM: I'm sorry, Peter Brehm with
15 Infinia, vice president of business development,
16 government relations for Infinia Corporation.

17 Thank you for the opportunity to comment
18 specifically on the solar energy system component
19 standards in the staff report. As I just
20 mentioned my name is Peter Brehm, I'm Infinia's
21 vice president of business development and
22 government relations. I speak on behalf of
23 Infinia Corporation, a Washington State company
24 headquartered -- We're headquartered in Washington
25 State and have developed a solar electric product.

1 Infinia's three kilowatt solar electric
2 product has been in prototype development and
3 testing for over two years and will enter
4 commercial production in 2008. It fully meets the
5 definition of a solar energy system in SB 1. When
6 introduced in 2008 Infinia's solar electric
7 product will convert solar energy into electricity
8 at significantly higher efficiency rates than any
9 PV product on the market today. It offers the
10 opportunity to significantly reduce the cost of
11 solar electricity in California.

12 Unfortunately, under the proposed
13 eligibility criteria for solar energy systems in
14 the staff report Infinia's solar electric product
15 will not qualify for any incentives because it is
16 not a PV product.

17 Adoption of the Energy Commission's
18 proposed eligibility criteria will limit consumer
19 choice to only those products that use PV. This
20 is clearly not good public policy because it
21 artificially limits the number of potential
22 solutions and solution providers available to the
23 market. And probably most importantly, is not in
24 compliance with SB 1.

25 In SB 1 California's lawmakers describe

1 the objective requirements and desired outcomes
2 for a dramatic, world-leading, solar electric
3 program. SB 1 explicitly defines the term, solar
4 energy systems, as meaning solar electric systems.
5 A much broader definition than the PV-only
6 approach put forward by the Commission staff.

7 In SB 1 lawmakers acknowledge that the
8 CPUC had adopted the California Solar Initiative
9 program which was expressly understood to be, and
10 was treated in SB 1, as a solar electric program
11 encompassing both solar thermal electric and PV
12 photovoltaic systems. The preponderance of
13 evidence throughout SB 1 clearly indicates and
14 requires customer-size solar electric programs.

15 SB 1 requires the Energy Commission to
16 establish eligibility criteria for solar energy
17 systems and it provided the explicit definition of
18 the term, describing a class of solar technology
19 that it intended the Commission to establish
20 criteria for. And that definition includes
21 Infinia's product.

22 By definition in SB 1 a historical
23 precedent in CPUC's CSI program, and by
24 straightforward application of market logic, the
25 term, solar energy systems, are solar electric

1 systems and include products based on solar
2 thermal electric as well as PV technologies.

3 The Commission staff by attempting to
4 redefine solar technologies, excuse me, by
5 attempting to redefine solar energy systems to be
6 solar energy in parentheses photovoltaic PV
7 systems, restricts the technologies that receive
8 incentives when SB 1 made no such restriction.

9 The SB requirement on the Energy
10 Commission does not refer to such a term. The
11 approach taken by the Commission staff in its
12 staff report defining PV eligibility criteria
13 rather than the broader, solar electric
14 eligibility criteria, does not meet the expressed
15 requirements of SB 1.

16 Now it has been suggested that the solar
17 thermal and solar water heating programs created
18 by SB 1 be used to, quote, accommodate non-PV
19 solar electric systems such as ours. This
20 approach fails to recognize that our solar
21 electric product generates electricity directly
22 from concentrated sunlight and may or may not make
23 use of any available thermal energy for other
24 uses.

25 An attempt to accommodate non-PV solar

1 electric systems in this solar thermal and solar
2 water heating program, and consequently to not
3 provide the appropriate eligibility criteria for
4 solar electric systems such as Infinia's product,
5 is not in compliance with SB 1.

6 SB 1 explicitly states that the
7 Legislature understood that the CPUC had adopted a
8 CSI program that included photovoltaic and solar
9 thermal electric applications. Then the
10 Legislature added a program for solar thermal and
11 solar water heating, which the CPUC correctly
12 interpreted to mean solar heating that displaces
13 electricity usage.

14 This solar heating program is for
15 products that capture solar thermal energy and use
16 it in a way that reduces electricity consumption.

17 As I mentioned earlier, while Infinia's
18 product can provide solar thermal energy for this
19 purpose the predominant use of this product is to
20 generate electricity directly from concentrated
21 sunlight, and so much more efficiently than PV
22 products can.

23 Infinia respectfully requests the
24 Commission's revise its eligibility criteria by
25 aligning it with SB 1's broader definition of

1 solar electric systems encompassing both solar
2 thermal electric and PV systems. This will ensure
3 California's access to the best available products
4 and technologies, converting sunlight into
5 electricity.

6 Thank you for the opportunity to comment
7 on this matter of great importance to Infinia and
8 thank you for the opportunity to introduce you to
9 a US manufacturer of near-term available solar
10 electric technology that can contribute to meeting
11 California's solar electric objectives. Thank
12 you.

13 MR. PENNINGTON: Thank you, appreciate
14 that. Those are all the blue cards I have for
15 this portion of the afternoon. Is there anyone
16 else that wanted to be heard at this point?
17 Benjamin Collinwood.

18 MR. COLLINWOOD: Should I just jump
19 right up?

20 MS. CHONG: I have one.

21 MR. PENNINGTON: I'm sorry, you have one
22 on the phone too, okay.

23 MR. COLLINWOOD: My name is Benjamin
24 Collinwood, I am a representative of Sanyo Energy
25 USA Corporation. We're a manufacturer of solar

1 photovoltaic panels. And I just had a couple of
2 comments on module certifications that have been
3 introduced in this program.

4 Mainly I wanted to say that frankly we
5 are okay with the new certifications. For
6 example, IEC performance testings that have been
7 required in the New Solar Homes Partnership
8 Program in order to get your panels listed and
9 approved and that kind of thing. And also the
10 tighter tolerances that have been requested as of
11 late.

12 However I did want to ask though and
13 mention that there are many new solar technology
14 start-ups introducing new panels and technology
15 and the testing centers are often maxxed out
16 currently. It is difficult to get products tested
17 in a reasonable amount of time.

18 The market is growing very fast. For
19 example there are many, many thin film companies
20 coming on line. A case in point is that Sanyo
21 recently introduced a new module and it took us 16
22 months to get it through the process. This was
23 excessively long.

24 And in order to facilitate faster
25 adoption or introduction of new solar technologies

1 I would like to ask that you consider the
2 restriction that only ILAC certified testing
3 centers are the approved ones to use.

4 For example, we had -- To do the IEC
5 performance characteristics of the modules we had
6 to submit the test results of that. Well we had
7 the panels tested at Sandia National Labs, a
8 government sponsored lab. And yet it was not ILAC
9 approved and therefore we couldn't submit that
10 data, even though we had everything we needed to
11 do. And we had to go back to another organization
12 and have our modules, excuse me, retested and
13 submit that data again.

14 So I would just like to ask you to
15 please consider the fact that the market is
16 booming. There are many new companies. There are
17 only a handful of certification centers where
18 modules can be tested and they are often maxxed
19 out and it takes quite a bit of time to do that.
20 So please consider opening it up to other
21 certification centers that are not only ILAC
22 approved. Thank you very much.

23 MR. PENNINGTON: Thank you. And Diana,
24 there is a person on the phone?

25 MS. CHONG: Right. It's Michael Keyes.

1 MR. PENNINGTON: Okay.

2 MR. KEYES: Hi, can you hear me?

3 MR. PENNINGTON: Yes.

4 MR. KEYES: I just want to comment. I
5 am assuming that the NSHP calculator will be used
6 in a CSI program at some point in the future, if
7 for no other reason than that it accommodates the
8 adjustment for time of use or time of production
9 and the current methodology doesn't.

10 But it also has other advantages. The
11 hourly estimated productions based on current
12 conditions. That as far as verification goes is
13 probably the only tool you need. Because if you
14 go and it's producing as expected you can just
15 assume everything else is correct. Or if it is
16 not correct it doesn't really matter. If they are
17 claiming 10 modules and they have 12 modules, who
18 cares?

19 I do have some -- I have actually a long
20 list of questions about the calculator but two
21 primary ones. One is, has it been calibrated
22 against actual systems in production across the
23 state? Do we know how accurate it actually is?

24 And then the second one. The EPBB
25 calculator is strictly intended for calculating

1 rebates. It has no other purpose. That's clearly
2 stated on the calculation worksheet. Is the NSHP
3 calculator designed to do or intended to do design
4 as well?

5 Those are sort of my two questions.

6 Well actually I sort of have a third question. I
7 was also on the CSI shading subcommittee with John
8 and he sort of covered most of what the committee
9 included but he didn't really talk about the CSI
10 shading methodology versus the NSHP methodology.

11 And the NSHP methodology is fairly
12 simple but at the same time it is also -- this is
13 a very high resolution. That it can be extremely
14 inaccurate very easily. And the CSI uses multiple
15 measurement locations. Currently the four corners
16 of the array, it averages them. Which if you have
17 a shading object that just covers part of an array
18 or a single part of a string may not have very
19 much impact but would be recorded as 100 percent
20 loss of production.

21 So are you looking at enhancing the
22 shading, how shading is done with the NSHP tool?
23 And those are sort of my questions. Thank you for
24 taking the time.

25 MS. GUPTA: Okay, Michael. Your first

1 question regarding the calibration of the NSHP
2 model. The NSHP calculations are based on the
3 five parameter model which has been developed, as
4 I mentioned earlier, by the University of
5 Wisconsin Solar Energy Lab. And the five
6 parameter model is a published model and has been
7 validated in the peer, has had by peer review and
8 been validated against tested data from various
9 sources. So the basis of the whole NSHP
10 calculation is already a pre-validated calculation
11 algorithm model.

12 We do have ongoing efforts to get high
13 resolution monitored data from various sites that
14 can provide good validation to the tool on an
15 ongoing basis to cover for any newer technologies
16 and systems that need to be addressed by the
17 calculation.

18 Your second question regarding the
19 strictly for rebate purposes. The NSHP
20 calculation methodology as such is definitely
21 usable for predicting performance but not
22 necessarily intended as a design tool. Maybe
23 because it has a whole layer of rules and
24 restrictions directed towards creating the
25 incentive amount. So the model as such has the

1 capability for use, but with the rules set on it,
2 it is strictly for incentive calculation purposes.

3 And your third comment about the shading
4 methodology. The methodology that has been
5 developed for the New Solar Homes Partnership is
6 at times primarily aimed towards new construction
7 and was cognizant of the fact that the shading
8 estimate at application time needs to be made on
9 systems that don't exist on the ground. Hence the
10 methodology was kept really simple.

11 So we feel that approach is good for,
12 suitable for new construction and definitely keep
13 the opportunity open to the recommendations from
14 the CSI shading committee to extend the basis of
15 this protocol to address any aspects of the market
16 in terms of the existing retrofit or large
17 commercial systems that would be more suitably
18 addressed through that methodology.

19 Does that answer all your questions?

20 MR. KEYES: Yes, thank you.

21 MR. PENNINGTON: Okay, thank you. One
22 other card, Dick Lowry.

23 MR. LOWRY: Hi, I'm Dick Lowry with
24 Sharp Electronics. We're the largest manufacturer
25 of solar modules worldwide. I just have a very

1 brief comment. I'm our manager of government
2 relations and I only point that out because
3 nowhere in my title will you find the word
4 engineer.

5 I just have a few notes that I'm passing
6 on from our engineers touching on some of the
7 testing protocols, et cetera. Some of what I'm
8 going to say is slightly different than what
9 Mr. Collinwood mentioned a moment ago. We work
10 together through the Solar Alliance. We will come
11 to a consensus position. But just for right now I
12 wanted to give a little bit of a different
13 viewpoint for balance.

14 To begin with, because the IEC testing
15 is not required throughout the rest of the country
16 we are wondering if there are certain pieces of
17 that testing, certain data points that you are
18 looking for and if we could actually just perform
19 those particular tests rather than have to go
20 through the entire IEC process.

21 MR. PENNINGTON: Do you want to respond
22 to that, Smita?

23 MS. GUPTA: Yes. That is the
24 specification for subsections that relate to the
25 performance data that is required are the ones

1 that are required, not necessarily the entire IEC
2 certification.

3 MR. LOWRY: Okay great.

4 MS. GUPTA: So that is desirable.

5 MR. LOWRY: Great, thank you.

6 In agreement with Mr. Collinwood, I am
7 under the impression that there are only two
8 independent labs that can run the testing that
9 you're asking for and we do feel that that will
10 take an extremely long time for the entire
11 industry to go through those labs.

12 But further we would like to potentially
13 recommend that similar to the current UL testing
14 that self-testing be allowed if there are
15 guidelines set for that testing by you. If we
16 are, you know, available for audit, you know, on
17 whatever kind of basis, you know, needs to be set.
18 That we be allowed to self-test, if that might be
19 a possibility.

20 And then the last note I have is we'd
21 like to see this testing become sort of module,
22 sort of platform-wide rather than each individual,
23 specific module. Obviously parameters would have
24 to be set. but there are a not of very small
25 modifications made to modules which will not

1 significantly impact their performance. We think
2 that to have to do all of the testing for each
3 individual little change is a bit onerous.

4 And that is all I have for now, we'll
5 submit more in writing.

6 MR. PENNINGTON: Thank you.

7 MR. LOWRY: Thank you.

8 MR. PENNINGTON: Okay, I think we'll
9 move to the next section of the agenda. Sandy.

10 MR. MILLER: Thank you Bill. I'm Sandy
11 Miller, I'm with the renewable energy program.
12 I'm going to be up here because I didn't bring my
13 glasses today. I want to be able to read what I
14 am talking about here.

15 This reminds me of a couple of weeks ago
16 I was at the PV managers meeting and I was the
17 last speaker before lunch and lunch was a half
18 hour late. So I don't know what's better. Being
19 at that meeting where you're just before lunch or
20 whether you're at this meeting where people are
21 starting to look at their watches and trying to
22 think about when they're going to go.

23 But my topic today, last but not least,
24 is the guidelines development and implementation
25 schedule for the SB guideline book. As you can

1 see here is basically a tentative schedule for the
2 development of the guidelines.

3 Now we are at today August 22nd.
4 Written comments are due on the 29th. We'd like
5 to have them earlier if possible because we have a
6 lot of development of the guidelines after this.

7 What we're shooting for is the
8 guidelines posted on September 20th. So we have
9 that amount of time, approximately three weeks
10 there, to get the guidelines in the book.
11 Basically the guidelines written.

12 We're planning on a committee workshop
13 on October 4th and this would be to discuss the
14 staff draft guidelines.

15 After the workshop we're planning,
16 actually we would be coming out with committee
17 proposed guidelines 30 days before the proposed
18 adoption, which would be 12/19.

19 Now as you can see from there, there are
20 other opportunities down the road to make comments
21 on the guidelines and the recommendations. The
22 first one after the 29th would be during the
23 committee workshop on October 4th.

24 After October 4th there is going to be,
25 we will have the committee proposed guidelines

1 out. Hopefully by that time most all of the major
2 recommendations from the various parties will have
3 been submitted.

4 There's still some opportunity probably
5 to put out some comments on that but by that time,
6 the committee workshop on October 4th, that period
7 of time after that, which we'll probably have
8 maybe another week or something after the October
9 4th date to give people an opportunity to provide
10 some written comments in there.

11 The implementation of the guidelines is
12 a companion issue here. All of this information
13 is out of Senate Bill 1. As many of you have read
14 the Senate Bill you are aware of the requirements
15 here. The first bullet there basically is that we
16 establish the guidelines and eligibility criteria.
17 And that is by January 1, 2008.

18 In the meantime under PUC sections the
19 publicly-owned utilities are required to initiate
20 and complete a public proceeding to fund solar
21 energy program by the same date.

22 So as many of you are aware it's almost,
23 it's a Catch-22 situation. We have until January
24 1, 2008 to put out the eligibility of criteria.
25 The publicly-owned utilities are required at the

1 same time to initiate their proceeding and put out
2 their guidelines and criteria by the same date.

3 So those are things that potentially
4 could be in conflict. We have proposed solutions
5 here that we can go through here in a second.

6 The other provisions here, the PUC codes
7 basically require the PUC to determine eligibility
8 of solar systems until the Energy Commission
9 establishes eligibility criteria.

10 It also says that the PUC in that same
11 time period is supposed to adopt a performance-
12 based incentive program by January 1, 2008, also
13 using some types of eligibility criteria.

14 So our proposed implementation schedule
15 basically is from January 1st through December
16 31st of 2008. It would be basically a transition
17 period to go from potentially a bare bones type
18 eligibility program that would be put in place.
19 And the publicly-owned utilities and the CPUC
20 would have a year to transition over to these
21 proposed provisions that have been discussed
22 earlier today.

23 The staff recommends the formation of a
24 working group to further the development of the
25 efficiency requirements. We would like to have

1 some comments on that.

2 Finally the last bullet there. The
3 effective date for all programs' conformance with
4 state guidelines would be January 1, 2009. So it
5 is basically giving everybody that one year to try
6 to put all of these provisions, which the final
7 guidelines would have in place.

8 So we're looking for comments and ideas
9 people have on the proposed schedule. The earlier
10 slide about our guideline schedule there is pretty
11 much, that's what we feel we need to abide by.
12 The transition period from going from when the
13 guidelines have been adopted to when all of the
14 provisions have been put in place for the one
15 year.

16 We also would like some recommendations
17 on updating procedures and stuff like that that
18 you may have. Consider that for your written
19 comments if you don't have any today. So that's
20 all I have to my presentation.

21 MR. PENNINGTON: Are there any questions
22 about that?

23 MS. BLUNDEN: Julie Blunden with Sun
24 Power. So just so we get a, we're clear on what
25 we're actually going to see on the 20th of

1 September.

2 When you talk about guidelines, the way
3 I'm used to working with the Energy Commission is
4 the Energy Commission puts out like a guidebook or
5 a redline to a guidebook and people get to comment
6 on it and you're real clear on what the changes
7 are going to be.

8 And I think what you're saying here is
9 you're not going to be putting out a guidebook per
10 se. Is it going to look more like the document
11 that has already been delivered or is it going to
12 look like something different that is closer to a
13 guidebook?

14 MR. MILLER: Well it may be a little bit
15 of semantics between guidebook and guidelines.
16 Senate Bill 1 specifies guidelines so we wanted to
17 be consistent with that language there.

18 MS. BLUNDEN: What I'd say is, going
19 back to my earlier comment about the need for like
20 a clear set of decisions. The thing that is so
21 handy about working on a program specifically is
22 you've got a guidebook. You know exactly what
23 proposal, what operational changes are being
24 proposed.

25 To the extent that you are not going to

1 be delivering something that is essentially a
2 draft guidebook for use either to be inserted into
3 the PUC's -- You know, there's a single handbook
4 which we worked on last fall and have since
5 updated and we have an advice letter. Obviously
6 there will be an advice letter process. I don't
7 know. Have you guys worked out the advice letter
8 discussion between the PUC and the Energy
9 Commission? Okay.

10 So I think it would be worthwhile to go
11 through the calendaring exercise. Figuring out
12 how the advice letter process would work should
13 these, whatever the guidelines are, require advice
14 letter adjustments in the PUC program.

15 And you know, ultimately what we need is
16 not a guideline. We need language for a handbook
17 or language for an operational manual of some way,
18 shape or form.

19 And I'm wondering if to shortcut the
20 exercise you could actually just either extract
21 the piece of the New Solar Homes Program that you
22 propose to use as-is or to adjust per whatever
23 your guidelines are or to extract the similar
24 language out of the handbook and say, we're going
25 to use this one instead.

1 But to get very concrete about, here is
2 what we think you should do. Because, you know,
3 I'm again going back to a bunch of the standard
4 discussions. I think at the end of the day what
5 you're saying is, you want to use a calculator
6 that has these elements in it.

7 Rather than going into the discussion
8 around here's shading and here's this and here's
9 that, you say look, here's what we're proposing.
10 Very concretely. And it has all these attributes
11 in it.

12 Then we don't end up in the same
13 position where we're going back and saying, well
14 what does that mean operationally. I'm concerned
15 that what we could end up with is a time period
16 between September 20th and October 4th where we're
17 still fuzzy on what it is that we think is going
18 to be trying to be operationalized by January 1st.

19 So to the extent, my recommendation
20 would be to try to get as concrete as possible
21 about a handbook or a guidebook language. Or, you
22 know, if it doesn't exist yet create some that
23 people can respond to.

24 MR. MILLER: Okay.

25 MR. PENNINGTON: I think that's really

1 consistent with what we were thinking. We're
2 developing the format of that document in our
3 minds right now but that is very consistent with
4 what we have been discussing.

5 MS. BLUNDEN: Great, thanks.

6 MR. PENNINGTON: Any other comments?

7 Yes.

8 MS. BROWN: My name is Leslie Brown, I'm
9 with the City of Santa Clara, Silicon Valley Power
10 and Municipal Electric Utility.

11 I've hesitated on making any comments
12 today because I had not had a thorough opportunity
13 to read through the report as much as I would have
14 liked to yet, and I am also not sure if what the
15 content might be of a coordinated municipal set of
16 comments would be. But I did want to comment on a
17 couple of points that, Sandy, you mentioned when
18 you were talking about the coordination of these
19 guidelines and schedules with municipal utilities
20 and any publicly-owned utility programs that might
21 already be in place.

22 I know that over the last, over the last
23 couple of years we've had several conversations at
24 different times. We have a working group of PV
25 managers within the public utilities that has been

1 together for quite some time.

2 And in the last couple of years I know
3 that we've definitely invited and had multiple
4 conversations with the Energy Commission,
5 legislators, trying to come together with bringing
6 together our programs and what is going to get on
7 with the investor-owned utility territories.

8 And trying to have a bit of cohesiveness
9 but still maintain our independence and our
10 ability to have our program guidelines that are
11 appropriate for our customers within our service
12 territories, dictated by our governing boards.
13 Which are our councils, our different utility
14 boards that are in place depending on where we are
15 within California.

16 I cannot speak for everybody, although I
17 think a lot of the other program managers at other
18 utilities would probably agree with me. But we
19 were not expecting that this guidebook would be
20 dictating program design and implementation
21 details for the publicly utilities. At least I
22 know I wasn't for our utility.

23 And I know I have been involved with
24 conversations over the last couple of years with
25 not just PG&E and the other investor-owned

1 utilities but with members of the Commission, the
2 Energy Commission, and other legislative bodies.

3 Where we were under the impression, or
4 at least I know I was, that we were going to be
5 having some conversations about design and system
6 components and not about overall implementation of
7 program design and decisions beyond a component or
8 an agreed-upon standard of elements within a PV
9 system and not necessarily administrative
10 decisions that were going to be not within our
11 ability to dictate what is appropriate for our
12 customers, responding to our own management,
13 utility boards.

14 So I hope I haven't overstepped my
15 bounds in making those comments but I felt like I
16 couldn't not say something. And I don't want to
17 be disrespectful in my comments and I don't want
18 to presume that I am speaking for anybody else
19 other than myself and my own experience in the
20 eight years that I have been with Silicon Valley
21 Power and been a part of Energy Commission
22 hearings and a part of legislation and a part of
23 program design for PV programs within the state of
24 California and municipal utilities.

25 I guess that's what I have to say, thank

1 you. Did you have any comments or questions or a
2 response or anything that I can address? Okay,
3 thank you.

4 MR. PENNINGTON: I think those are
5 legitimate comments. Any other comments?

6 Okay, well thank you very much. This is
7 a tremendous turnout. We got a lot of input and
8 we really appreciate it.

9 (Whereupon, at 4:05 p.m., the Committee
10 Workshop was adjourned.)

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CERTIFICATE OF REPORTER

I, JOHN COTA, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Committee Workshop; that it was thereafter transcribed into typewriting.

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

IN WITNESS WHEREOF, I have hereunto set my hand this 31st day of August, 2007.

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