

BEFORE THE
CALIFORNIA ENERGY COMMISSION

In the matter of 2010 Rulemaking on) Docket No. 09-AAER-2
Appliance Efficiency Regulations)
)
California Code of Regulations, Title)
20 Section 1601 through Section 1608)

Staff Workshop
2010 Rulemaking Proceedings
Phase II on Appliance Efficiency Regulations

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

MONDAY, OCTOBER 11, 2010
10:00 A.M.

Reported by:
Peter Petty

Commissioners Present

Anthony Eggert, Presiding Member, Efficiency Committee

Staff Present:

Mike Leao
Paula David
Ken Rider
Dennis Beck
Harinder Singh

Also Present (*via WebEx)Presenters

Pat Eilert, Pacific Gas & Electric (PG&E)
Jordana Cammarata, CA Public Utilities Commission (CPUC aka
PUC)
Bill Knox, CA Air Resources Board (CARB aka ARB)
Suzanne Foster Porter, Ecos Consulting
Pierre Delforge, Natural Resources Defense Council (NRDC)
Randall Higa, Southern California Edison (SCE)

Public

Larry Albert, Stanley/Black & Decker
Robert Nachtrieb, Lutron Electronics for NEMA
Wayne Morris, Association of Home Appliance Manufacturers
(AHAM)
*Jon McHugh
Rick Habben, Wahl Clipper Corp.
Rick Erdheim, Philips Electronics
Joanna Mauer, Appliance Standards Awareness Project

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P R O C E E D I N G S

1
2 OCTOBER 11, 2010

10:06 A.M.

3 MR. LEAON: Good morning and welcome. This morning
4 we are having a staff workshop on Battery Chargers and
5 Lighting Controls and I want to welcome everyone to the
6 meeting and we'll get things started here. For the record,
7 my name is Mike Leacon, I am the Manager of the Appliances
8 and Process Energy Office at the Energy Commission. I think
9 we have a very good workshop for you today. We will be
10 providing a little background on the battery chargers and
11 the development of the test method for battery chargers, and
12 provide some process background on how we got to where we
13 are today, talking about standards, efficiency standards for
14 battery chargers.

15 In addition, we will be talking about moving Title
16 24 Lighting Control Standards to Title 20 and the impacts of
17 that proposal. However, the centerpiece of the workshop
18 today will be the Case Report and the proposal from PG&E and
19 their consultants, Ecos, for Battery Charger Standards. And
20 we will be hearing from PG&E on that proposal today.

21 In addition, we will also hear some policy
22 discussion. We have representatives from Air Resources
23 Board here today and also the California Public Utilities
24 Commission, and I am very pleased to have their
25 participation, as well as a discussion on the benefits of

1 labeling from a representative with the National Resources
2 Defense Council, and we will also hear a talk from Randall
3 Higa with Southern California Edison on battery chargers for
4 on-road vehicles.

5 We do have a few housekeeping announcements that we
6 need to make, and then we will hear from the Presiding
7 Member of the Efficiency Committee, Anthony Eggert, who will
8 kick off the workshop with some opening remarks. At this
9 point, I would like to turn the presentation over to Paula
10 David, who is the Supervisor of the Appliances Unit here at
11 the Energy Commission, and she will run through - well, I
12 guess I have taken care of running through the Agenda,
13 Paula, my apologies - so she will run through some
14 housekeeping announcements for the workshop today. Thank
15 you.

16 MS. DAVID: Thank you, Mike. As Mike already noted,
17 my name is Paula David. I am the Supervisor of the
18 Appliance Standards Program, and our program includes, in
19 addition to the rulemaking activities, the certification,
20 compliance, and enforcement efforts, that all go along with
21 Title 20.

22 Our standard housekeeping items, for those of you
23 not familiar with the building, the closest restrooms are
24 located behind you, behind the frosted glass. There is a
25 snack bar on the second floor under the white awning, and

1 most importantly, in the event of an emergency and if the
2 building is evacuated, please follow our employees to the
3 appropriate exits. We will reconvene at Roosevelt Park,
4 which is diagonal across the street from this building.
5 Please proceed calmly and quickly, again, following the
6 employees with whom you are meeting, to safely exit the
7 building. Also, to mention today, both of our elevators are
8 down; the access to the second floor, therefore, is either
9 up the stairs, or we have a freight elevator in the back of
10 the first floor that meets ADA requirements. Also, a
11 reminder, please use the Ninth Street door, not the P Street
12 door, the P Street door will sound an alarm. And also a
13 reminder, there is a sign-in sheet in the front counter as
14 you came into the Hearing Room area, if you did not sign in
15 on the way and you definitely want to be included in our
16 mailing list, or listserv, please stop later and use the
17 sign-in sheet. You can also sign in for the listserv
18 yourself from the Internet, you do not need to use the sign-
19 in sheet.

20 Another item, the blue cards, if you are familiar
21 with workshops and hearings, we have a time at the end of
22 the agenda at 1:45 for the open discussion, and we will go
23 first come, first serve, with the blue cards. If you don't
24 have one, I will walk around afterward and hand out blue
25 cards to anyone who wants one. Also, they are located out

1 front on the front counter by the sign-in sheet.

2 On our website, we will also have - we actually do
3 now have posted a copy of the Agenda, and any minute now, a
4 copy of the Case Report that will be presented by PG&E
5 should be available on the Web, as well. And I think that
6 does it for the housekeeping items. Thank you, everyone for
7 coming. We really appreciate the time and effort you've
8 made to be here with us today. And I will turn the meeting
9 over to our Presiding Member of the Efficiency Committee,
10 Commissioner Anthony Eggert.

11 COMMISSIONER EGGERT: Thank you, Paula. Good
12 morning, everybody. I am excited about this workshop today,
13 particularly because this is about energy efficiency and
14 energy efficiency is California's most important resource.
15 I think probably most of you who are here are aware,
16 California has a loading order in terms of how we meet our
17 energy goals for the State, and the number one resource is
18 energy efficiency, followed by renewable energy, and then
19 followed by, if necessary, fossil generation. And I think
20 this order has served us quite well over the last 30 years,
21 it has delivered billions of dollars to California consumers
22 in the form of energy savings, it has allowed us to
23 stabilize our per capita consumption, it is really, I think,
24 the cornerstone of California's clean energy goals. Plug
25 loads represent one of the fastest growing loads on our

1 system, our electricity system, here in California, and
2 battery chargers at over 7,000 Gigawatt hours per year,
3 represent one of the largest and fastest growing
4 contributions to that load. Even more amazing, as I was
5 reading through the materials, is that more than half of
6 that energy never makes it to the end product, it is lost,
7 some might even say wasted, in the form of heat standby
8 power, and other parasitic losses.

9 The estimates in the case study that you will be
10 hearing about today from PG&E suggest that we could reduce
11 that loss by more than half, saving us more than 2,800
12 Gigawatt hours per year. This is the same amount of energy
13 that could power 400,000 - more than 400,000 households, a
14 tremendous potential savings for the State.

15 The workshop today is going to provide you, those
16 here in the industry, stakeholders, and the public, and
17 opportunity to provide input and comments on the concepts
18 and the supporting information that we will be using to
19 develop the standards for these chargers, and we need your
20 input to develop a good standard, one that achieves the
21 greatest potential savings that is cost-effective and
22 feasible.

23 I want to thank the staff for their hard work in
24 putting this workshop together. I also want to thank the
25 utilities, particularly PG&E, for providing the case study

1 that will be talked about, and I want to thank all of you,
2 the participants, especially those from the industry that
3 are intending to provide input into this process. I look
4 forward to seeing the results of this workshop. We are
5 going to be having a Committee workshop on November 18th, and
6 so the staff report will be made available before that and,
7 as the presiding member of the efficiency committee, I just
8 want to commit to everybody here that the committee is going
9 to pursue the standards, develop them as expeditiously as
10 possible, so that we can accrue the savings and help meet
11 our energy and environmental goals. So, I think with that,
12 I will turn it back over and I look forward to the result.
13 Thanks.

14 MR. LEAON: Thank you, Commissioner Eggert. Okay,
15 we are going to begin with a presentation from Ken Rider,
16 who is staff to the Appliances Unit. But I would like to
17 ask if there are questions for any of the presentations
18 today, that you be sure to fill out a blue card and bring
19 those up, and we will take a few questions after each
20 presentation, but we do have time at the end of the day for
21 open discussion, so I would like to stick to the schedule on
22 the agenda as close as we can, and we will provide time at
23 the end of the day for additional questions. But, as time
24 allows, we will take a few questions after each
25 presentation. And, with that, I would like to turn it over

1 to Ken for his presentation.

2 MR. RIDER: Hello, everyone. Good morning. My name
3 is Ken Rider. I am a Staff Engineer, an Electrical Engineer
4 with the Appliance Efficiency Program. Can you guys see
5 this? When I sat down there, it looked a little faded. If
6 you bear with me for a second, I am going to go ahead and
7 try to improve the lighting in this room. Is that better?
8 Okay. All right, so I am going to begin this presentation
9 kind of broad, talking about some of the policy and
10 authority of the Energy Commission, and then focus more on
11 what we are here to talk about, which is battery chargers
12 and lighting controls.

13 So, energy efficiency is a key strategy to meeting
14 several of the policies here in California. We have several
15 people here from other agencies, including the Public
16 Utilities Commission and Air Resources Board. I will let
17 them go into the specifics of those policies, but I want to
18 start by introducing the Warren-Alquist Act. That is the
19 Act that actually defines the Energy Commission and its
20 authority, and I will focus this presentation on that.

21 So, the Warren-Alquist Act dictates what an
22 Appliance Efficiency Standard is in terms of the California
23 Energy Commission. There are three - and Commissioner
24 Eggert just made these points - three primary attributes
25 that an Appliance Efficiency Standard must have in

1 California. The first is that the standard is for an
2 appliance that has significant statewide energy use, so that
3 way we can all regulate appliances that, you know, like a
4 wristwatch or something, so that it isn't a waste of time.
5 The second is that the Regulations be feasible and
6 attainable, that means it's actually possible for industry
7 to meet these standards, and the last, I'm just going to
8 read the quote straight from the Act: "It shall not result
9 in any added total cost to the consumer or the design life
10 of the appliance." In addition, the Warren-Alquist Act
11 gives the Energy Commission authority to set performance and
12 proscriptive standards. It also allows us to specify
13 testing, marketing, and labeling of appliances. And, in
14 addition, it allows us to enforce these regulations through
15 collection and verification of data.

16 I want to take the time to read these two findings
17 in the Warren-Alquist Act because they are very relevant to
18 why we do appliance efficiency standards. The first one is:
19 "The electrical energy is essential to the health, safety,
20 and welfare of the people of California and to its economy,
21 and it is the responsibility of the Energy Commission as a
22 State agency to ensure that a reliable supply of electrical
23 energy is maintained." Another finding is that: "There is a
24 concern that the rapid rate of growth in electrical energy
25 consumption due to wasteful and inefficient appliances that,

1 if left unabated, will result in serious depletion, or
2 irreversible commitment of energy, land, and water
3 resources, and potentially threatens the State's
4 environmental quality."

5 So, I would like to take the time to talk about a
6 few of the benefits of appliance efficiency. The first is
7 that, at least for now, it's the cheapest way to meet energy
8 demand. It's the lowest hanging fruit in terms of need and
9 demand in the State. So, through doing appliance efficiency
10 standards, we reduce this demand and that results in lesser
11 need to construct new power plants, to site new transmission
12 lines, and this in turn increases the system reliability.
13 In addition, I think Commissioner Eggert also mentioned
14 this, that it reduces the need to build fossil fuel-related
15 power plants, and therefore it helps California achieve some
16 of its renewable energy goals.

17 And this graph really illustrates some of the
18 benefits of energy efficiency. What we have here in blue is
19 California, and green is the United States. The Y Axis here
20 is kilowatt hours per capita, and the X Axis here is time.
21 And as you can see from about 1975 to 2000 on this graph,
22 the energy consumption per capita has remained relatively
23 flat, which is not the case in the United States, and this
24 is partially due to the fact that California has
25 aggressively pursued energy efficiency.

1 Just to give you an idea of some of the numbers and
2 to quantify the impact of appliance efficiency standards,
3 the few regulations we most recently adopted, one for
4 televisions and one for general service incandescent service
5 screw-based lamps, combined they are estimated to save
6 18,768 Gigawatt hours by the year 2020, that is a huge
7 number. In addition, our Demand Analysis Office estimates
8 that the existing Standards, the ones that are already in
9 place and effective, are already saving another 18,000
10 Gigawatt hours per year. And to try to convert, it is not a
11 clean conversion, but to try to convert this into a monetary
12 benefit to the State, if you take the average consumer rate
13 of \$.14 per kilowatt hour, and you multiply it by these two
14 numbers added together, that ends up being about \$5.2
15 billion in avoided utility bill costs. And that does not
16 even include avoided costs from constructing new power
17 plants and trying to site and build new transmission lines
18 in the State. In addition, to generate this amount of
19 energy, you would need 4,286 megawatts of electrical
20 generation, and that is approximately the same size as the
21 two biggest power plants in the State today.

22 So now I would like to get into the actual topics,
23 so Battery Charger Standards. This is something that has a
24 long history, actually, it is not something that we are just
25 beginning to talk about today. In 2001, in the middle of

1 the energy crisis, the Legislature passed AB 970, or
2 Assembly Bill 970, and that calls for the Energy Commission
3 to investigate any Energy Efficiency Standards that we could
4 to mitigate demand challenges we had in the energy crisis.
5 So, as a result of that, the Energy Commission had to
6 identify external power supplies and battery chargers as
7 being one of those savings opportunities. In 2004, we
8 initiated a rulemaking for both of these appliances. We
9 adopted regulations eventually for external power supplies,
10 but we found that the test procedure for the external power
11 supplies did not apply to battery chargers.

12 So, to address this, in 2005, PIER, which is the
13 Public Interest and Energy Research, that is a subdivision
14 of the Energy Commission that funds research and development
15 across the State, they funded the development of the Battery
16 Charger Test Procedure. As a result, in 2007, a Draft
17 Battery Charger Test Procedure was released, and in 2008,
18 through a rulemaking, which many of you here, I see, are
19 familiar from that, through that we adopted that Battery
20 Charger Test Procedure with some amendments. Since that
21 time, the test procedure has been used to gather data which
22 can be used for standards development, which is what we are
23 talking about today, which is the development of standards
24 for battery charger systems.

25 So I would like to begin to kind of identify the

1 scope of what we are talking about, it is very broad, we are
2 talking about small and large battery chargers, things
3 ranging from, you know, as small as a an MP3 player, or a AA
4 battery charger, all the way up to a forklift charger, but
5 with one notable exception, we are not considering at this
6 time any battery charger regulations for highway vehicles,
7 so plug-in, highly capable, maybe hybrid vehicles or
8 whatever is out there today. Again, the reason why we are
9 looking at battery chargers is not only because of the 2001
10 findings we had for AB 970, but also, in 2007, part of the
11 Scoping Order for the next set of rulemakings, including
12 battery chargers, so it has been identified several times as
13 a significant energy savings opportunity. In fact, I am
14 sure Ecos will get into this in more detail, the potential
15 looks to be about 2,700 gigawatt hours a year.

16 The other topic that we are here to discuss is
17 lighting controls. There have been lighting control
18 requirements in the Energy Commission's Building Regulations
19 since its first publication, which is, I don't know, I think
20 some time in the late '70s. The Code determines what kind
21 of lighting controls can be installed in buildings. The
22 Title 24 Regulations include requirements necessary to
23 achieve energy savings through Smart Control design.
24 Currently, lighting controls which do not meet requirements
25 can be sold, but cannot be installed in California. By

1 moving the regulations from Title 24 to Title 20, the
2 lighting controls which do not meet the requirements will
3 not be allowed to be sold or installed, which closes a
4 loophole in the regulations. In addition, it will cause
5 them to be certified at the Energy Commission the same way
6 that many appliances are certified today.

7 So I would like to run through the rulemaking
8 schedule. We are here today, October 11th, at the workshop,
9 a staff workshop, the deadline for written comments for this
10 workshop is October 29th, which is roughly three weeks from
11 today. We plan on releasing a staff report outlining some
12 proposed regulations on November 15th, and we plan on holding
13 a Committee workshop, as Commissioner Eggert mentioned, on
14 November 18th. And that will all funnel into a formal
15 rulemaking sometime in December, tentatively.

16 I would like to take the time to talk about the
17 written comment process. So, the comments will be used to
18 inform us and, as Commissioner Eggert mentioned, you know,
19 really give us feedback on what we should be looking at on
20 Battery Charger Systems. As I said, we plan to publish a
21 staff report on November 15th, any of the feedback we receive
22 will be very useful in drafting that report. You can submit
23 comments in the mail if you wish, probably the best way to
24 do it is by submitting it through e-mail to this e-mail
25 address here, Docket@Energy.State.CA.US, and please be sure

1 to include a docket number and that lets us know that you
2 intend for this to be a public comment on this subject and
3 we will include it in the docket.

4 In addition, staff is available to answer any
5 clarifying questions, both after this workshop through e-
6 mail, through phone, and again, just to reinforce this, the
7 deadline for comments is October 29th. And I will turn it
8 over to Mike, unless there are any questions, I suppose? Or
9 do we want to save that until the...?

10 MR. LEAON: Thank you, Ken. Yeah, let's see if we
11 have - do we have any blue cards in the room for questions
12 on this presentation? And I believe Paula is going to get
13 some blue cards. Do we have any? Yes, go ahead and bring
14 them up.

15 MR. RIDER: I am going to go ahead and turn the
16 lights back up for the moment.

17 MR. LEAON: All right, if anyone else wants to ask
18 questions on this presentation, please provide a blue card
19 and I will call you to come up, and when you come up to the
20 podium, if you could state your name and the organization
21 you represent, and I would also ask that you provide a
22 business card for our Court Reporter. Thank you. All
23 right, so the first question I have is from Larry Albert.
24 Larry, if you could come up and state your name and
25 organization?

1 MR. ALBERT: Larry Albert from Stanley/Black &
2 Decker, representing the Power Tool Institute. Just a
3 general question regarding the conduct of the meeting. We
4 understand there are going to be Case Reports and a proposal
5 presented today, and we understand also that it was just
6 posted on the website. We haven't had an opportunity to
7 review any of those documents prior to this meeting and, in
8 the spirit of trying to participate in a meaningful way, we
9 would like to have obviously some awareness of these
10 proposals prior to public meetings such as this. Is there
11 any opportunity now for stakeholders to have copies of those
12 Case Reports?

13 MR. LEAON: We will have the Case Report posted to
14 the Web today. We can look into seeing if we can get some
15 photocopies made for you today. Let me ask Ecos or PG&E
16 representative if they brought copies with them today. Any
17 response? All right, thank you. So, yes, we'll look into
18 having some photocopies made, but we will have the
19 presentation posted to the Web. And I appreciate your
20 comment and feedback.

21 MR. ALBERT: Is there any reason why it could not be
22 posted in advance of the meeting?

23 MR. LEAON: Well, this is a staff workshop and we
24 are working with PG&E and Ecos in reviewing the report, and
25 the report was not quite ready to be released prior to the

1 meeting, so, you know, I apologize for that, but we do have
2 the report that will be available today and, in the future,
3 we will make every effort to have these reports posted ahead
4 of time. But, for this particular staff workshop, we were
5 not able to do that.

6 MR. ALBERT: Just a point of comment, though, to
7 realize that stakeholders that may be traveling to
8 California from other places, and made a large investment in
9 their time and money to come participate in these meetings,
10 and it would be a much more productive use of our time if we
11 were provided with materials in advance of the meeting. It
12 seems like even 24 hours would have been something that
13 could have been useful for us because we would have had
14 access to those documents.

15 MR. RIDER: Larry, point taken. Thank you very
16 much. And if you would just consider written comments as a
17 result of this logistics issue, I think that would be very
18 much appreciated.

19 MR. LEAON: All right, thank you. Next blue card,
20 Robert Nachtrieb. I hope I didn't get that butchered too
21 badly.

22 MR. NACHTRIEB: Not bad, Nachtrieb. Thank you. My
23 name is Robert Nachtrieb. I work for Lutron Electronics and
24 I am the Vice Chairman of the Lighting Controls Section of
25 the National Electrical Manufacturers Association, or NEMA.

1 I have been asked to make a short statement on behalf of
2 member companies of the NEMA Lighting Systems Division
3 regarding moving Lighting Controls Regulations from Title 24
4 to Title 20 of the California Code of Regulations. NEMA is
5 pleased to have had the opportunity to work with the
6 California Energy Commission, in particularly for the 2010
7 Rulemaking Proceedings Phase II on Appliance Efficiency
8 Regulations. NEMA and CEC staff have had conference calls
9 and one face-to-face workshop. As we move into the 45-day
10 public comment period, I am confident that there will be few
11 substantive changes suggested by NEMA to the proposed
12 amendments to Title 20. And, looking forward to changes to
13 Title 24, NEMA hopes to continue to have the opportunity to
14 comment at the earliest stages. Thank you.

15 MR. LEAON: Thank you. Any other blue cards in the
16 room? Okay, Ken, any questions on WebEx?

17 MR. RIDER: Just a second, let me open all the lines
18 here. Hopefully, this is not too chaotic. Okay, so if
19 anyone has any questions on the phone, if you would go ahead
20 and say something, I suppose.

21 MR. LEAON: Any questions on the phone? Okay, all
22 right, well, let's proceed to the next presentation. We
23 will hear from Pat Eilert with PG&E, and he will be
24 providing some perspective on efficiency standards from the
25 utilities.

1 MR. EILERT: Thank you very much for the opportunity
2 to speak today. I would like to touch on three topics in my
3 presentation, the first topic I'd like to touch on is just
4 to provide a very brief overview of the investor-owned
5 Utilities Codes and Standards Program. The second area I'd
6 like to just sort of very briefly skip through is the sort
7 of interaction between our policy between our program and
8 the policy that is provided by various institutions here in
9 the State. Given all the other discussions today, I will
10 skip very lightly through those few slides. And then I'd
11 like to just briefly address some recurring issues related
12 to jobs in California and innovation.

13 So, let me begin by just going over what we do as
14 investor-owned utilities in California. We collaborate to
15 implement a single statewide program in California and we do
16 this under the auspices of the California Public Utilities
17 Commission, which approves both the activities that we
18 conduct, as well as the budget that enables those
19 activities. The first subprogram here is the Appliance
20 Standards Program, and the two major areas of work in the
21 Appliance Standards subprogram include development of co-
22 proposals that we present to the California Energy
23 Commission and then participation in the public workshops
24 afterwards, in which we try to answer questions by both
25 staff and industry. Since Federal Standards are embodied in

1 Title 20 Standards, we are also active in the USDOE
2 Rulemakings.

3 The second subprogram that we coordinate around is
4 for Building Codes. And I think it is fair to say that, in
5 2010, most of our advocacy work in California has been in
6 this area in support of future 2011 Title 24 Building
7 Standards. We conduct the same sorts of activities in this
8 area as we do for Title 20 and, in an analogous manner,
9 we're engaged in National Standards that affect California.

10 Now, the only way that we're going to achieve energy
11 efficiency goals in California, of course, is to have
12 regular updates to Building and Appliance Standards, and
13 because of that, we have also implemented a Compliance
14 Enhancement subprogram in this program cycle, which is 2010
15 to 2012, to support education and training for industry
16 groups that are engaged in complying with both Building and
17 Appliance Standards. Once again, most of our work in 2010
18 has been aimed at Title 24 Building Standards. In 2011, we
19 expect to expand our work in the area of Appliance
20 Standards, as well.

21 The final subprogram here is in Reach Codes, we
22 provide technical support for local governments interested
23 in adopting Building Standards that go beyond Title 24
24 Building Standards, the State standards. We have seen this
25 curve once, what we have done just in the last couple of

1 weeks is just update the curve so that it goes up to 2009.
2 On the right is this sort of disaggregated view of some
3 accomplishments, and I think it sort of demonstrates the
4 accomplishments of policy in California in a historical
5 sense, just comparing California to the U.S. average. Going
6 forward, we have to bend that green curve down substantially
7 and do it very soon if we are going to achieve the goals
8 here in California. Mr. Knox, I believe, will be talking
9 about this fairly soon, so I am going to skip this slide.

10 So, this slide shows a representation of scenarios
11 from the California Energy Commission's Integrated Energy
12 Policy Report published in 2009, and it is a graphical
13 representation of scenarios which include committed as sort
14 of a baseline. And relative to 2020 goals, committed energy
15 efficiency savings include savings from previous energy
16 efficiency programs, as well as savings from previously
17 adopted standards. The scenarios to the right assume that
18 there will be savings produced from existing energy
19 efficiency programs, as well as - it also includes
20 assumptions for future adoptions in both Title 20 and Title
21 24 in the State. As you can see, the mid scenario from this
22 IEPR reports falls short of achieving AB 32 goals, so we
23 will have to work a little bit harder. I'm going to just
24 basically skip this, except to say that Title 20 directly
25 responds to California Public Utilities Commission's

1 strategic vision and goals, as well as their big bold
2 strategies.

3 This chart here, and let's look at the top right
4 chart, basically emphasizes the point that Commissioner
5 Eggert and I believe can have both made if we look at
6 miscellaneous plug loads here in the residential energy
7 sector, there are large projected increases in those loads
8 as we move forward in time. Additionally, if we look at the
9 bottom right chart, miscellaneous plug loads, as well as
10 office equipment, are also significant in terms of their
11 impacts on energy use in the State, going forward. We will
12 not meet zero net energy goals for either residential or
13 commercial buildings if we don't address these issues,
14 including, you know, office equipment, as well as consumer
15 electronics. This extract from the California Long Term
16 Energy Efficiency Strategic Plan just illustrates that there
17 are fairly close links between the IOUs' work and that
18 Strategic Plan.

19 I would like to say just a little bit here now about
20 the issue of job creation in the energy sector. There is a
21 recent, fairly important document that has been produced by
22 the Haas School of Business at Berkeley, this paper looks at
23 15 other papers with respect to the issue of job creation in
24 California. With respect to energy efficiency, the sort of
25 walking around number that they produced is that there are

1 .38 net jobs produced for each Gigawatt hour of energy saved
2 in California. And if we were to sort of use that number
3 and apply it to what has happened here in California in
4 terms of energy savings, between - just based on historical
5 energy savings, the job creation would exceed the 300,000
6 net jobs by 2020.

7 And finally, another sort of recurring topic here is
8 around innovation. There is a lot of legitimate concern
9 regarding whether or not Standards have a negative impact on
10 innovation, because innovation is really important to
11 achieving goals in California, as well. So, here are a
12 couple of charts which show patent activity and that it
13 increases fairly substantially in response to the Clean Air
14 Act and a couple of different categories. So, what this
15 sort of suggests is that regulation could have a really
16 positive impact on innovation, and empirically we see the
17 same thing occurring around energy efficiency. What we find
18 is that manufacturers are really good at responding to
19 Regulations and are able to develop new projects shortly
20 after new regulations go into effect, that help California
21 out a lot. Thank you. Should I stay here?

22 MR. LEAON: Yes, if you don't mind, Pat. Thank you
23 for that presentation. Do we have any blue cards in the
24 room? Okay, seeing none, Ken, if you can come up to the
25 podium and see if we have any questions via WebEx.

1 MR. RIDER: Sure thing. All right, the lines are
2 open.

3 MR. LEAON: Any questions on the phone? Okay, thank
4 you very much. Let's move on to our next presentation,
5 where we will hear from representatives from the California
6 Public Utilities Commission, Jordana Cammarata, and I hope I
7 pronounced that correctly.

8 MS. CAMMARATA: Yeah, that was good. Thank you.
9 Okay, hi everyone. My name is Jordana Cammarata and I work
10 at the California Public Utilities Commission. I am a
11 Regulatory Analyst in the Energy Efficiency Planning Section
12 and I focus on Commercial Buildings in the Commercial sector
13 and IOU Programs there, and also the Strategic Plan and some
14 of the Zero Net Energy goals for California. And so, today
15 I am going to talk a little bit about a couple of things,
16 the Strategic Plan, some of the main goals there for Zero
17 Net Energy with respect to the commercial sector, and plug
18 loads, and then talk a little bit about the Zero Net Energy
19 Action Plan that we recently launched, and give you guys a
20 little bit of background on that, which also highlights some
21 plug load issues, and then talk a little bit in general
22 about Zero Net Energy and plug loads. So, this actually I
23 probably will not since Bill Knox is here from CARB, I might
24 not really dwell on this one, but this is just highlighting
25 energy efficiency as a strategy in reducing our carbon

1 emissions, and also as an impetus for the Strategic Plan, as
2 well. This slide talks about the major objective in the
3 Strategic Plan, talking about market transformation, and
4 defining that as a long-lasting, sustainable change in the
5 marketplace where you can reduce barriers to the adoption of
6 energy efficiency measures to the point where continuation
7 of publicly-funded programs and intervention is no longer
8 needed.

9 So, some of the big bold goals that we have in the
10 Strategic Plan are focused on residential and commercial new
11 construction, so one is all new residential construction in
12 California will be Zero Net Energy by 2020; the second one
13 is all new commercial construction will be Zero Net Energy
14 by 2030; we have the HVAC industry will be transformed to
15 ensure that its energy performance is optimal for
16 California's climate, and then, lastly, all eligible load
17 income customers will be given the opportunity to
18 participate in low income energy efficiency programs by
19 2020. Of course, giving a quick definition as it is defined
20 in our Strategic Plan, we use at the Commission, and I
21 believe also that the Energy Commission uses a similar
22 definition, that Zero Net Energy is when the amount of
23 energy provided by on-site renewable energy sources is equal
24 to the amount of energy used in the building, and so,
25 basically as on-site electricity demand goes down, the

1 implementation of energy efficiency measures, you have that
2 point where distributed renewable energy is increasing and
3 these two points meet. There are a couple of different
4 definitions for Zero Net Energy, you will definitely
5 acknowledge that one, the Department of Energy has a few
6 definitions up on their website, as well, but this is the
7 one that we've been using.

8 So the Strategic Plan has a couple of major economic
9 sectors and lots of cross-cutting areas. I'm not going to
10 go through all of this, but basically the four major
11 economic sectors are residential, commercial, industrial,
12 and agriculture, and on the right-hand side are all of the
13 cross-cutting issues, or areas. And I want to highlight a
14 new one that we just adopted last month, was the lighting -
15 adding a lighting chapter to the Strategic Plan, which
16 wasn't there previously. This is a quick snapshot of what
17 the Strategic Plan kind of charts and matrix looks like.
18 You would have strategies on the left-hand side, so this is
19 for Zero Net Energy Commercial Buildings for the new
20 construction goal, we have got strategies on the side that
21 help achieve that goal, and then designed with near-term,
22 mid-term, long-term milestones on what are some of the
23 things that need to be done to achieve that strategy, and it
24 also highlights, which is missing, in between these two is
25 an area of relevant stakeholders that are important to

1 engage to help achieve some of these goals, as well.

2 So this Strategic Plan, basically we have kind of
3 transformed the Commercial chapter into a Zero Net Energy
4 Action Plan. Through last year, I had probably three to
5 four workshops on the two goals for Commercial, we had one
6 workshop based on New Construction Zero Net Energy Goals,
7 and then we had a second workshop based on the Existing
8 Building Goal for 50 percent, getting 50 percent of
9 Commercial buildings to Zero Net Energy by 2030, and then,
10 from those workshops, we kind of tried to find out what
11 actions do we need to do to help achieve some of the
12 strategies and some of these goals. And so this Action Plan
13 that was launched on September 1st was kind of the
14 culmination of all that stakeholder input and the work that
15 was done over the last year.

16 This is an example, again, of one of the strategies
17 that we have in the plan and how we built it out to kind of
18 include some champions, a champion network, these are people
19 who are working in these areas already in their field, and
20 have volunteered to help us champion some of the strategies
21 that we have, and we have also identified through those
22 workshops key actions, and what we need to do to achieve
23 that milestone, so we just drilled down into this Strategic
24 Plan and come up with actions, and also timelines, of
25 course, which is really important for showing how we're

1 doing on that and progress.

2 This is a Progress Indicator, and so basically,
3 let's go back to this, we figured out through a very simple
4 calculation, and it's very simple, basically figuring out
5 how many actions that we have identified for that milestone,
6 how many are complete, and if they are ongoing, again, a
7 certain percentage, and we divided it by the total actions
8 available there for the timeframe of 2010 to 2012. So,
9 looking at this, this kind of shows how we are doing on
10 those milestones, and it is really quick, it is not
11 weighted, and I am sure it could get more complicated as
12 some things are sequential, but we have kind of just done
13 this as a quick snapshot to help us know how we're doing.
14 This is another example of a priorities strategy that we've
15 identified for the Zero Net Energy Action Plan and it talks
16 about mandatory energy and carbon labeling, and for this
17 one, it's half-way complete, and this is referring to AB
18 1103, which is basically what the milestone had called for
19 back in 2008, after that was passed, mandating benchmarking.
20 And these are some of the champions that we have and some of
21 the actions. And, again, this is a Progress Indicator and
22 it kind of shows this strategy has four milestones and this
23 is how we're doing regarding each one of them.

24 And then, in general, the whole Action Plan as a
25 whole, this is how we're doing up until 2012, we are about

1 17 percent - or 13-17 percent on progress, and we hope to
2 see more. Since we just rolled this out, we hope to see
3 more progress over the next couple of years as we get this
4 off the ground.

5 Okay, so Zero Net Energy and Plug Load, this last
6 area I want to just try to highlight some of the connection.
7 As Pat had kind of previously mentioned, plug loads are
8 really important in trying to get to these Zero Net Energy
9 goals, and I actually want to disagree with that and kind of
10 say a little bit about these two. So, this is just basic
11 definitional stuff, which I don't know if I need to get into
12 detail with everyone in the room, but plug loads, they do
13 not fall into traditional end-use categories, they are for
14 both residential and for commercial, annual energy use
15 estimates vary from about 15-20 percent for residential and
16 10-15 percent of commercial electric use, and three to four
17 billion individual devices account for about 10 percent of
18 the total U.S. of electricity use. Oh, gosh, this comes off
19 kind of blurry on the screen, but this slide is talking
20 about residential energy use and basically what I want to
21 highlight, the change in residential energy use consumption
22 for selected end-uses in the referenced case from 2008 to
23 2035, and basically just looking over that timeframe, we are
24 expecting lighting to actually decrease, and other end uses
25 such as microwaves, coffee-makers, security systems, and

1 video and audio equipment to increase over time, and this
2 is, again, building kilowatt hours, you know, electricity -
3 so this shows basically that the increase in electricity
4 consumption are going to result from a proliferation of new
5 electric devices over time. Electricity use for TV sets and
6 set top boxes surpasses that for refrigeration-in this
7 crowd; in 2010, TVs on the market today are very
8 significantly, with respect to power draw, depending on
9 technology and screen size. And lastly, you know, the
10 increase of this other section is expected to average about
11 1.9 percent per year. This is, again, for residential.

12 And this next slide references Commercial and energy
13 use, and it actually goes by percent per year, and it looks
14 at commercial floor space, and so a couple of things I am
15 going to say with respect to here, so purchased electricity
16 use accounts for 59 percent for all commercial delivered
17 energy consumption in 2035. The two bottom bar graphs,
18 again, and I am going to be focusing on those two, one is
19 other and the other one is office equipment, focusing on
20 those buildings. And so the office equipment, as reliance
21 on the Internet for information and data transfer increases,
22 electricity for these other office equipment sector is going
23 to go up. It would include servers and mainframe computers,
24 and then, lastly, the other miscellaneous one above that is
25 really focusing on video displays and medical devices.

1 Okay, this slide is focused on Zero Net Energy and
2 the technical potential. This is a study that was conducted
3 by the U.S. Department of Energy. It is also in our Action
4 Plan as an Appendix, and it lists the depth of energy
5 savings required by building type to achieve Zero Net Energy
6 within the footprint of the building, assuming solar
7 installation to create the required renewable energy. And
8 basically the study indicates that achieving Zero Net Energy
9 in certain building types will be fairly easier than others,
10 and others are going to present some challenges such as
11 hospitals and labs. On average, they are going to require a
12 two-thirds reduction in energy use to approach Zero Net
13 Energy goals, and you know, warehouses might be a little bit
14 easier for unrefrigerated warehouses, and refrigerated about
15 58 percent. From a financial perspective, this is to try to
16 get to our 50 percent Zero Net Energy for existing
17 buildings, you know, achieving deep savings is really
18 important in existing buildings, and it goes against the
19 current paradigm of, you know, short payback times, and for
20 something like this, it is clear that we are going to need
21 to do a lot to be able to get to these emission reductions.
22 So, you know, it's going to require a change of thinking
23 about these goals.

24 Okay, this is a graph that is kind of looking at end
25 use in an office building, and it was from the California

1 Commercial End-Use Survey. It also highlights office plug
2 loads. According to this study, office equipment accounts
3 for 18 percent of a building's energy use, and the
4 miscellaneous category that is up here, this five percent,
5 includes other plug loads that aren't specified elsewhere,
6 and the office equipment is for both small and large
7 offices. And findings from this study, as well, highlights
8 the urgency to addressing energy reduction opportunities in
9 office plug loads. As improvements are made to HVAC and
10 lighting efficiency through Title 24, office plug loads, if
11 not addressed, will account for an even larger share of
12 commercial electricity consumption.

13 And this graph kind of looks at average share of
14 residential plug load energy use by product category. It
15 shows that entertainment is 41 percent of residential energy
16 use. We have IT, Information Technology, computers,
17 laptops, printers, etc., are about 31 percent, and other -
18 power tools, cordless phones, garage doors, lamps, and small
19 appliances, represent about 28 percent of residential by
20 product category. And at the bottom, it just says here, on
21 average, plug loads represent 1,800 kilowatt hours per year
22 of a typically household's electricity use, or about 17
23 percent of the household's electricity bill.

24 Then, these next couple of slides are just going to
25 talk about what we have in the Action Plan that is actually

1 what kind of goes along with some of what we're talking
2 about today, plug loads and Title 20. This is one strategy
3 for the Goal 1, which is the New Construction Goal, and it
4 talks about expanding Title 20 and 24 to address all
5 significant energy uses and end-uses, and it talks about the
6 milestone here, and these are some of the champions that we
7 have for this strategy, three actually from the CEC, three
8 of them I think are actually all here, and these are some of
9 the actions and this is very much in line with kind of the
10 process that goes along with expanding Title 20 and the
11 timeframes are kind of constantly ongoing on the schedule
12 that you guys - that Ken was referencing earlier. And this
13 is the Progress Indicator that we have associated with this
14 strategy to show how we are doing.

15 So what can we do? One of the strategies is 2-8,
16 and this is a Priorities Strategy that we have highlighted
17 and it says "to improve utilization of plug load
18 technologies within the Commercial sector, test and deploy
19 package of rebates, incentives." And voluntary industry
20 agreement is the milestone, "to bring significant numbers of
21 the best available technologies for managing plug loads
22 within the commercial sector." Those champions here are
23 Rich Lauman from Ecos Consulting and David Kaneda from
24 IDEAs, and we have got a bunch of, again, more actions on
25 what we need to be doing to get this. And so, what has been

1 going on with this strategy, particularly, is a lot of the
2 champions have been meeting and actually trying to
3 brainstorm what they can be doing to move this stuff along,
4 having meetings, and just having some brainstorming
5 sessions, is kind of the most up-to-date that I have been
6 aware of for this strategy. And, again, this is the
7 Products Indicator that is in the Action Plan, I actually
8 have one with me today if anyone wants to flip through it.
9 I didn't have time to print a bunch of them. And it is also
10 available online.

11 And lastly, I'm going to end, these are just a few
12 things that I want to mention for Zero Net Energy and plug
13 loads, these are some ideas and recommendations, aggressive
14 consumer education on the energy use of office electronics,
15 promotion of office electronics, electronics whose power
16 management features cannot be displayed, promotion of high
17 efficient products, and of high efficient power supplies,
18 use of Smart Plug shifts, and other automatic controls.
19 There are also some other ideas, additionally, future
20 program and policy design could include in the future,
21 rebates could be designed for office electronics that ship
22 with automatic controls, enable to power the device down to
23 a lower power mode when not in use, Smart Plug strips and
24 bearing design, but typically in place some combination of
25 load centers and remote controls and timers. Additional

1 research is underway, as we are finding out through these
2 studies to actually help understand and to quantify the
3 energy reduction potential from these devices, and results
4 from these studies can help inform policy makers such as
5 many people in the room, about priority products ready for
6 new mandatory standards for voluntary specifications.
7 California has led the nation in mandating power supply
8 efficiency, but for certain products the bar could be raised
9 even higher through widespread implementation of power
10 supply efficiency programs such as Energy Star, Ad-Plus, and
11 Climate Savers. Title 20 could address some commercial plug
12 loads that are increasingly ready for Standards
13 considerations. So, thanks everyone. And I am ready for
14 any questions any of you might have. And here is our
15 contact information, I am here with my colleague, Ayat
16 Osman, who works in the Codes and Standards, she is the
17 Analyst for Codes and Standards in Emerging Technologies,
18 and she has been helpful with putting this together. And
19 lastly, the Action Plan could be found on Guage360.com,
20 which is an energy efficiency web portal that will be
21 launching, I think, in the next month or so for California.

22 MR. LEAON: All right, thank you very much, Jordana.
23 Do we have any blue cards in the room? Okay, I see one.
24 Okay, Wayne Morris, if you could come up and, for the
25 record, state your name and organization.

1 MR. MORRIS: Good morning. My name is Wayne Morris.
2 I am with the Association of Home Appliance Manufacturers
3 and I just want to thank Ms. Cammarata for the presentation.
4 I am a little bit surprised that you did not mention one
5 other thing in terms of the plug load because it is
6 something that I think California can be very proud of, and
7 that is that California was one of the signatories to the
8 combined agreement that was reached between the energy
9 efficiency advocates, the appliance manufacturers, and the
10 Department of Energy, on new energy efficiency standards for
11 a large number of products. This multi-product agreement,
12 which is now moving through the necessary processes at the
13 Department of Energy, will call for new standards in a
14 number of different product categories, including
15 refrigerators of different types, dishwashers, room air-
16 conditioners, freezers, clothes washers and clothes dryers.
17 This particular rulemaking and exercise and agreement that
18 has been reached will take, for instance, a typically 20-
19 cubic-foot refrigerator and freezer on top would use about
20 390 kilowatt hours per year, which is down from 900 kilowatt
21 hours in the 1990 and down from about 1,700 kilowatt hours
22 in the early 1970's. Some people have said, including a
23 statement from the Appliance Standards Awareness Progress,
24 that, in fact, this particular agreement will save more
25 energy than all of the National Appliance Energy

1 Conservation Act has saved up until this time. The
2 agreement will save approximately \$2.2 billion for consumers
3 in the State of California, and about 20 percent of the
4 entire load used by households here in California, so it is
5 a very significant breakthrough. It was done in a
6 cooperative fashion, which is something that I think sets
7 the stage for future activities. I think that it is
8 something that California has been very active in since the
9 very beginning, and I would hope that California would take
10 pride in being part of this agreement. Thank you.

11 MR. LEAON: Thank you very much. Do we have any
12 other blue cards in the room?

13 MR. RIDER: Again for the record, this is Ken Rider.
14 I just had two quick clarifying questions. Those progress
15 bars that you were showing, were those - and maybe I missed
16 it, I don't know if I could see the Axes, were those for all
17 the way to 2020? Or were they -

18 MS. CAMMARATA: No, they were for 2012.

19 MR. RIDER: So we are actually not very far in terms
20 of getting to the - we have a few years, but I just - okay,
21 thank you. And the other thing is, we are talking a little
22 bit about battery chargers today. Would that fall in to the
23 "other" category? And do you know if that is included in
24 the "other?" Or -

25 MS. CAMMARATA: Oh, within those graphs? Yes, I

1 believe that would be in "other."

2 MR. RIDER: Okay, thank you very much.

3 MR. CAMMARATA: Thank you.

4 MR. LEAON: Okay, Ken, if you could check WebEx and
5 see if we have any questions on the phone.

6 MR. RIDER: All right, the lines are open if you
7 have any questions on the phone.

8 MR. LEAON: Any questions from the phone?

9 MR. MCHUGH: Yes, this is Jon McHugh. Jordana, do
10 you have particular goals in terms of gigawatt hour-type
11 goal savings for appliances that you all are projecting?

12 MS. CAMMARATA: Not currently, no, we don't.

13 MR. LEAON: Okay. Any other questions from the
14 phone? All right, thank you very much, Jordana. Let's move
15 to our next presenter. And for our next presentation, we
16 will hear from Bill Knox. Bill Knox worked in both the
17 private and public sector in energy efficiency and renewable
18 energy for over 20 years before joining the Air Resources
19 Board. He worked for the California Energy Commission in
20 the 1990's, then had a front row seat for the 2001 energy
21 crisis as a natural gas supplier to UC and CSU campuses,
22 state agencies, and local governments. In 2002, Bill and
23 colleagues formed the nonprofit Valley Energy Efficiency
24 Corporation and successfully ran a regional energy
25 efficiency program in Yolo County. At the Air Resources

1 Board, Bill is the point person for electricity and natural
2 gas issues in the Office of Climate Change, and provides
3 technical support on electricity issues for the Cap and
4 Trade Program. Welcome, Bill.

5 MR. KNOX: Thank you, Mike. It is really good to be
6 here this morning. Good morning, everybody - it is still
7 morning, I think. I did work for a long time at the Energy
8 Commission and also ran a Yolo County Energy Efficiency
9 Program before; a couple of years ago, I switched over to
10 the Air Board. And I am here today primarily to provide
11 sort of an Air Resources Board perspective on the importance
12 of the Appliance Efficiency Program.

13 Let's see, I'm not really going to take these
14 bullets in order, but just want to give a little background
15 first. AB 32, the California Global Warming Solutions Act
16 of 2006, required the Air Resources Board to develop a
17 Scoping Plan, a plan for how we were going to reduce
18 greenhouse gas emissions back to 1990 levels by 2020. And
19 in developing that plan, the Air Board relied greatly on the
20 support and the analysis done by both the Energy Commission
21 and by the Public Utilities Commission in order to formulate
22 our strategies in the electricity sector, including energy
23 efficiency.

24 Energy efficiency is really a cornerstone of
25 California's climate protection strategy. Up to 15 percent

1 of the total greenhouse gas reductions that we need to meet
2 our 2020 goal can come from energy efficiency, and possibly
3 even more. As mentioned by Pat and others, energy
4 efficiency is one of the lowest cost ways of reaching our
5 greenhouse gas emission reduction goals. And it's a very
6 important way, along with conservation and distributed
7 renewable generation, reducing the electricity consumption,
8 as seen from the supply side of the grid, both consumption
9 and demand. By reducing demand, we don't have to build as
10 many new power plants, be they gas or renewables, and we
11 don't have to build as much transmission. So energy
12 efficiency not only is the cheapest way of getting carbon
13 emission reductions, but it also makes the other ways
14 cheaper, as well. Now, there are some other cheap ways, as
15 well, for example, requiring higher miles per carbon -- or
16 miles per gallon -- in cars and switching to less carbon
17 intense fuels in cars and light duty vehicles.

18 But at any rate, our Scoping Plan, because we had
19 this collaborative relationship with the energy agencies,
20 you know, we worked with the Energy Commission based on
21 their plans for improving and making the Appliance Standards
22 broader and stronger in the future, and so we called out in
23 the Scoping Plan the need for appliance standards to address
24 televisions, and that has been done, consumer electronics,
25 in general, and then particularly battery chargers and

1 rechargeable battery products.

2 So why battery chargers? Why are we focused on that
3 today? Well, I think that the previous speakers, Pat and
4 Ken and Jordana, probably have a lot more information than
5 I'll ever have on this, but certainly rechargeable battery
6 products are a major driver of plug loads today. And I
7 understand from the Case Report that's just released, I
8 guess, today that battery charges use as much as 7,700
9 Gigawatt hours per year. And I think that the Case Report
10 also suggests that there is the potential to cut that by
11 almost 40 percent. And if we do that, that can reduce
12 greenhouse gas emissions statewide by well over a million
13 metric tons of carbon dioxide per year. And I think it is
14 actually probably, if you were going to round it, it's
15 probably closer to 2 million, which is the equivalent of
16 taking more than 100,000 cars off of the road.

17 I think from the Air Board's perspective, energy
18 efficiency is critical, other ways of reducing demand are
19 critical, and there is something particularly important
20 about appliance efficiency that I think kind of follows out
21 of what you've heard from the other two speakers today. We
22 have talked a lot about zero net energy buildings and that
23 is really critical, although it is difficult to do with
24 existing buildings, so that tends to be primarily a strategy
25 for new buildings of various kinds. On the other hand, in

1 the short term, between now and 2020, and probably even up
2 to 2030, there is a greater potential for savings by
3 reducing energy consumption in existing buildings, and
4 clearly, appliance energy efficiency is a very important and
5 key part of reducing energy usage in existing buildings.

6 So, what's next, or some of the things already
7 planned by the Energy Commission, continuing to address
8 other forms of consumer electronics, further addressing
9 small home appliances, especially in light of what was noted
10 in terms of the agreement with DOE and the industry on that.
11 And then, of course, office equipment for commercial
12 buildings, a very fast growing area of energy use in office
13 buildings. And then, of course, besides plug loads, there
14 are other things on the horizon that are very important, as
15 well, appropriate heating and cooling systems for the
16 diverse climates of California. Perhaps taking the Zero
17 Energy building strategy that is really a transformative and
18 overarching strategy that was really first developed in the
19 PUC's Long-Term Energy Efficiency Strategic Plan, you know,
20 continuing to focus on that, but perhaps also using the Zero
21 Energy building concept as what we are really trying to get
22 to existing buildings is to approach that, and we may not be
23 able to get there, but if we can get 10, 20, 30, 40, 50
24 percent, there is a huge potential there, and in the short
25 term, we really need to do a lot of that. And then,

1 finally, what's next? I think the other thing that is
2 really important is to continue to work to devise program
3 strategies that will be able to reduce electricity demand,
4 natural gas demand, and usage, both usage in kilowatt hours
5 and demand in kilowatts, because we need to be able to use
6 our electricity for vehicles as the fleet of electric and
7 plug-in electric vehicles grows, so it's really important to
8 continue this kind of work to reduce the energy consumption
9 of battery chargers and appliances of all kinds. And then,
10 finally, I'd like to finish just by saying that, as a
11 parent, I feel that we really owe it to future generations
12 to try and to mitigate as much as we can the potential
13 disastrous consequences of climate change. And that's why I
14 do the work that I do and that's why I so much value also
15 the work being done by my colleagues here at the Energy
16 Commission and at the PUC. Thank you very much.

17 MR. LEAON: Thank you very much, Bill. Do we have
18 any blue cards in the room? Any questions in the room?
19 Okay, Ken, if you could check WebEx and see if we have any
20 questions from folks on the phone.

21 MR. RIDER: All right, the phone lines are open.

22 MR. LEAON: Okay, do we have any questions from
23 folks on the phone?

24 MR. MCHUGH: Hi. This is Jon McHugh. Bill, for
25 your greenhouse gas plan, do you have particular goals set?

1 I know you have different goals set for overall data energy
2 consumption and consumption of buildings, do you have
3 particular goals, plans for appliance efficiency standards?

4 MR. KNOX: No. At ARB, first of all, we work very
5 closely with the energy agencies and I think that, at the
6 time that we put together our Scoping Plan in 2008, it
7 wasn't exactly clear what we could expect from energy
8 efficiency, or from different sectors such as utility
9 programs, appliance standards, building standards, and
10 there's been a lot of work done on that recently, including
11 the work of demand forecast energy efficiency quantification
12 workgroup that tried to look at how committed and
13 uncommitted efficiency affected demand. But essentially,
14 the type of work that Jordana was outlining today is what
15 will lead to new and better estimates of where that
16 potential lies and what kind of programs can reach the
17 levels of energy efficiency and conservation that we need,
18 and I hope that at least partially answers your question.

19 MR. MCHUGH: Yes, it does. Is there a follow-on
20 study or something that then tries to quantify that to help
21 refine the Strategic Plan?

22 MR. KNOX: I can't really address what's coming next
23 with the Strategic Plan, but in terms of our Scoping Plan
24 for reducing carbon emissions, the Scoping Plan is to be
25 updated every five years, and so it will be updated in 2013.

1 And the other thing, of course, is we have to look at -
2 we've come through and we're still in a major recession,
3 which has changed sort of baseline expectations for the
4 future. So, all of that stuff has to be brought together,
5 you know, by the time we're ready to look at the numbers
6 again, and publish what we expect. And one other thing I'd
7 like to say is that, you know, ultimately we don't - nobody
8 can predict exactly what sort of emissions reductions we're
9 going to get from energy efficiency or from electric
10 vehicles, or from biofuels, if they devise a way of making
11 biofuels from algae or something. But we also have to be
12 considered in December by our Board a potential cap-and-
13 trade regulation that would set a firm cap on emissions, and
14 so we feel that we'll be able to achieve the goals, whether
15 or not we can a priori say exactly how much is going to come
16 from which strategy.

17 MR. MCHUGH: Thank you very much.

18 MR. RIDER: Jon, one more thing, I'm fairly sure
19 that there is some broad - very broad, non-specific amount
20 of energy savings in the Scoping Plan. Again, all the
21 documents we've been talking about, the Energy Action Plan,
22 the IEPR, the Warren-Alquist Act, all these documents are
23 available on line for everyone out there.

24 MR. LEAON: Okay, do we have any other questions
25 from the phone. All right, thank you very much, Bill. We

1 appreciate your presentation. Next on the agenda is Suzanne
2 Foster Porter, and we are getting to the crux of the
3 workshop today; Suzanne will be talking about the Case
4 Report for Battery Chargers, and this morning's
5 presentation, we were attempting to set the table, providing
6 a broad policy background discussion, which highlighted the
7 importance of energy efficiency for a number of State goals,
8 including meeting AB 32 GHG reduction goals, complying with
9 our loading order adopted by the Energy Commission, which
10 helps to reduce the need for new power plants and
11 transmission lines. And battery charges, based on their
12 energy usage, represents a potential large energy savings
13 and we will hear more about that from Suzanne in her
14 presentation, so I can ask Suzanne to come on up to the
15 podium.

16 Suzanne is a Senior Manager with Ecos, Research and
17 Policy Department and is a technical consultant to PG&E on
18 the energy efficiency of battery charges. She co-authored
19 the 2008 CEC adopted Battery Charger Energy Efficiency Test
20 Procedure and the PG&E Case Report for Battery Chargers.
21 She has focused on uncovering cost-effective energy savings
22 opportunities on behalf of clients since 2002. And with
23 that, I will turn it over to Suzanne.

24 MS. FOSTER PORTER: Thanks, Mike. A question about
25 the schedule. It is 11:25 and I think the agenda indicated

1 that we would wrap up around 12:15, so I was looking for
2 guidance from you on if I should try to stay to the 12:15 or
3 run a little over, it looks like we are a little behind.

4 MR. LEAON: Yes, we are running a little behind.
5 Are there any objections in the room to us running a little
6 over? Okay, seeing none, yes, please proceed with your
7 presentation as planned and, if we need to go a little over,
8 that is okay.

9 MS. FOSTER PORTER: Great, thank you. Before I get
10 started, I just wanted to mention a correction to the agenda
11 that you have in front of you, which is that, although Ecos
12 had a significant contribution to this report, it is a PG&E
13 Case Report that was developed in close collaboration with
14 other investor-owned utilities, and so I would like to
15 acknowledge, in particular, Pacific Gas & Electric, Applied
16 Technology Services Group, the California Energy Commission,
17 Public Interest Energy Research Program, I think that Brad
18 Meister is here today, who manages that work, Southern
19 California Edison had an important contribution to this
20 report by submitting data for industrial battery charges, as
21 well as providing technical information on the technology.
22 In addition, the Electric Power Research Institute did a
23 significant amount of research under the funding from the
24 Energy Commission that contributed to the technical findings
25 of this report, so this is a - I'm up here today presenting

1 information for the IOUs, but it's been a long effort by a
2 number of organizations that deserve acknowledgement.

3 I am going to talk today about the technical and
4 market background for battery charges. We are going to look
5 at the battery charge test data and some of the things that
6 we uncovered as we started to test these charges. In
7 addition, I will overview some strategies, technical
8 strategies, to improve battery charger efficiency, the PG&E
9 proposed Title 20 Standards, and then wrap up with a summary
10 with some of the key highlights. And this is going to be a
11 fairly technically dense presentation compared to those that
12 we have seen before. I just ask that, if you have
13 questions, please jot them down and, in order to stay on
14 time, I would just prefer to take those either at the end,
15 or at a session later this afternoon. I do want to answer
16 everyone's questions, but I also want to make sure that
17 blood sugar does not drop below low levels and people get a
18 chance to go to lunch.

19 We heard today from the previous speakers about some
20 of the details. I think Mr. Rider highlighted a lot of the
21 efforts that have been underway, so I won't take the time to
22 go through all of these now, but just want to emphasize that
23 battery charger energy efficiency research for small
24 chargers has been underway since 2002, and for large
25 chargers since 1998, plus procedure development started at

1 Southern California Edison Labs at that time. Since that
2 time, PG&E has picked it up as an opportunity for standards
3 in California, as has the DOE, which is shown in the lower
4 part of this slide.

5 We've heard a lot today about how much energy
6 battery chargers use and I'd like to just talk a little bit
7 about why they're an important piece of the plug load policy
8 strategy. The figure that you have in front of you
9 illustrates kind of the realm of plug-in products that are
10 in use in people's homes and offices and industrial
11 facilities. There are two common denominator components to
12 plug load products, generally speaking; there's power
13 supplies, these are devices that convert the wall voltage,
14 Alternating Current, to the low voltage Direct Current
15 that's needed to operate many of our integrated control
16 circuits and other elements of plug loads today. There are
17 two types of power supplies, internal, shown on the lower
18 left, and external, which is just a physical distinction
19 between where the circuitry is located. In addition, many
20 of these products had battery charges. These battery
21 chargers can be used for providing portable power to
22 consumers for driving motive equipment and, in addition,
23 plug loads can be divided within these two categories. This
24 initiative on battery chargers is a horizontal policy
25 approach, which light external power supplies is meant to

1 improve the efficiency of a wide variety of products that
2 contain battery chargers. The CEC adopted an external power
3 supply standard, which is represented -- and the DOE and
4 other parts of the world adopted a standard - represented by
5 the blue horizontal element here, which is the external
6 power supply strategy. A battery charger strategy here is
7 shown in green, which is what we're talking about today,
8 which is mean to say many plug loads have battery chargers,
9 it's very difficult to address each individual product on
10 its own, but if we take a multiple product approach, we can
11 improve the efficiency of a wide suite of products
12 simultaneously. And in California, that number is about 170
13 million battery chargers. We are not talking today around
14 some other strategies that the CEC recently pursued on TV's,
15 which is in this orange internal power supply category;
16 those are plug loads that are large enough per unit used in
17 and of themselves to warrant an individual standard, and so
18 those types of products are things like televisions, set top
19 boxes, computers, and other large plug loads, but we're not
20 really talking about those today, today we are talking about
21 the horizontal approach to address many small products.

22 The number of battery chargers, particularly in the
23 consumer realm, continues to increase and new products are
24 routinely added. MP3 players are a recent example of a
25 portable power product that many people enjoy that weren't

1 available five years ago, so this standard is meant to
2 address the increasing number of portable products that we
3 have and carry around with us. The battery charger
4 standards that we'll talk about today in the PG&E proposal
5 address a wide variety of battery energy, from 10's of watt
6 hours to thousands of watt hours, and so, as a necessary
7 component of that, we have broken them up a little bit into
8 different product classes because there are some unique
9 elements to these products, but they generally have all the
10 same function. They include a power supply, which converts
11 high voltage Alternating Currents from the wall to low
12 voltage Direct Current needed to charge a battery. They
13 have charge control circuitry that regulates the current
14 that goes into the battery and, in addition, they have a
15 battery that stores energy, and these are sort of the three
16 fundamental components of battery chargers.

17 In addition, battery chargers have three primary
18 modes of operation, active in charge mode, maintenance mode
19 when the battery is full, but connected to the charger, and
20 the battery is being topped off from time to time to ensure
21 that there isn't sort of too much self-discharge,
22 particularly for some chemistries, and lastly, there is a no
23 battery mode, which is when you take that battery and you
24 pull it out of the charger entirely and the charger is still
25 plugged into the wall. And these are represented by high

1 power, typically, in active mode, lower in maintenance, and
2 even lower in no battery, although that is not universally
3 true with Current products, but this is sort of an example
4 of what you might expect.

5 In addition, battery chargers come in a wide variety
6 of foreign factors, so they are not always - those three
7 components that I talked about with power supply and charge
8 control and battery, are not always found in the same
9 housing, or in the same location. Up in the upper left-hand
10 corner is an example of a product, it is portable
11 commercial radio, the external power supply where the power
12 conversion occurs is separate from where the charge control
13 circuitry is, which is found in the base. The battery
14 housings themselves actually are inside the product, and so
15 that's one example of a foreign factor. There are various -
16 foreign factor 2 and 3 are different ways that the power
17 supply and battery and charge control can be located, but
18 also, if we just focused in on foreign factor 4, sometimes
19 the power supply, charge control, and battery are all found
20 in the same product, and this is an example of an emergency
21 egress light, which is located in buildings where the
22 battery is primarily used for back-up in the case of power
23 outages.

24 Battery charges not only vary widely in their energy
25 use, they also vary widely in the number that are used in

1 California. So, these are both logarithmic scales on the
2 vertical and horizontal axis. There are some products that
3 are typically used by consumers, where there is a wide
4 number of products in use, but they tend to use very low
5 energy per unit. An example of that is a cordless phone.
6 Other products like three-phased forklifts that are used in
7 industrial facilities tend to have a small number of units
8 in use in California, but their energy use per unit is quite
9 high. So, the orange dots that we are showing here are sort
10 of those that represent the highest energy use and number of
11 units, whereas the blue dots represent other battery
12 chargers that make up the scope of this proposal.

13 Today I'm going to talk about a proposal that breaks
14 the products up into small battery chargers and large
15 battery chargers. They have different characteristics. The
16 small battery chargers tend to have their batteries and
17 chargers still together, rather than separately. Their
18 usage patterns vary widely because there are so many
19 different end use products. Price and portability tend to
20 drive these markets for small chargers, sometimes products
21 need to be very inexpensive, other times the priority for
22 the market is to make a very portable and compact charger.
23 In addition, the significant savings potential for these
24 products is in charge and battery maintenance. Larger
25 battery chargers are typically not sold with their

1 batteries, so these are forklift chargers, moving equipment
2 used in airports and so forth, so the battery is procured
3 separately from the charger and they tend to be used more
4 heavily because they are used in industry where you're
5 constantly recharging and using the product, and there is
6 significant cost and energy usage for charging these
7 products regularly and so there is already some efficiency
8 gains in this market compared to the small battery charger
9 market. And so the cost effective savings we see here is
10 more in the active mode and it is associated with the
11 efficiency of the power conversion from Alternating Current
12 to Direct Current, as well as the charging behavior and
13 ensuring that that product is charged effectively regardless
14 of the depth of discharge. There are some other elements
15 here on the table, specifically the dominant charger
16 technology differs for small and large chargers, which I
17 will talk about in a moment. The efficiency metrics that
18 we're proposing in the Case Report are different, the test
19 procedure is different. You can see there is a wide
20 variation in the stock, most of the stock numbers are in the
21 small category, but their energy use is about the same. The
22 savings that we'll get from small chargers is much greater
23 as a percentage of total usage than for large.

24 I also want to highlight an important distinction in
25 the context of the USDOE rulemaking, which is focused

1 primarily - or, I should say, exclusively - on consumer
2 chargers. So, the USDOE is moving forward with the
3 rulemaking that I mentioned early in the presentation on
4 consumer chargers. This Title 20 Case Report that will be,
5 I guess, published today, but that I'm overlooking here,
6 includes both consumer and non-consumer chargers, and
7 specifically the small chargers have both consumer and non-
8 consumer products, and the large chargers are non-consumer
9 only. So, we're recommending that we look at standards for
10 both categories.

11 The Standards Proposal was developed with more than
12 100 products that were tested to inform the Standards
13 Development, both small and large. Many of those came from
14 Southern California Edison's labs, others were tested in
15 the Ecos Lab with PG&E, under the PG&E project, some data
16 reviews from the California Energy Commission PIER project.
17 It includes a wide array of products, including cell phones,
18 cordless phones, lawnmowers, digital cameras, forklifts, it
19 includes a wide array of battery capacities, charger
20 topologies, which is basically the charger circuit design,
21 as well as voltages. So, we tried to really find a broader
22 array of chargers to ensure that whatever standards we
23 proposed were suitable for these wide array of products.

24 I just want to say something briefly about the test
25 procedure. Mr. Rider mentioned that the current - that the

1 CEC adopted a test procedure in 2008 that addressed both
2 small chargers and large chargers. I have highlighted in
3 yellow here that the test procedures that are probably most
4 relevant to us, this is an overview of all of the battery
5 charger test procedures that are available today. So, the
6 current test procedure for Energy Star, and the Canadian
7 Standards Association, and the DOE, is a test procedure that
8 was originally developed by Energy Star for their program.
9 It addresses maintenance in no battery mode, and this is a
10 test procedure that doesn't include active, but it's
11 something that DOE is moving away from and Energy Star has
12 announced that they're moving away from, and so there is a
13 forthcoming method that's likely to be more in alignment
14 with the Energy Commission method that was adopted in 2008;
15 the final rule for that has not yet been issued, we expect
16 it in December of this year, or January of next year, and I
17 think we'll get some more information on that on Wednesday
18 at the DOE meeting. But we expect it to be more in
19 alignment with the CEC method, which measures charge,
20 maintenance, and no battery modes - altering modes. And
21 it's not exactly clear, I just want to be clear that we're
22 not sure that it's going to align directly with the CEC, but
23 it's clear that they're looking at active mode very
24 carefully.

25 Then, the last column on the right is the adopted

1 CEC method, and I just want to highlight that there are more
2 direct measurements with the large chargers and that is
3 because there are more - the products are more efficient and
4 more in-depth testing is required in order to uncover the
5 differences among them.

6 The results for the consumer charges and small
7 chargers vary over a fairly wide range, and I should say
8 something about the testing. The test procedure used to
9 collect our data was Part I of the California Energy
10 Commission test procedure, and that test procedure has three
11 key measurements, 24 hour efficiency, which is a measure of
12 how efficient the product is charging the battery,
13 maintenance mode power, which is when the battery is
14 connected to the charger, but it's totally full, and no
15 battery mode power. Twenty-four hour efficiency ranged
16 amazingly wide from less than a percent to 70+ percent. The
17 tested products average about 21 percent. If you look at
18 the Energy Weighted Annual Average, which is one way to look
19 at the average, it's about 10 percent efficient over the
20 charge mode. The maintenance mode power for the small
21 chargers range from a tenth of a watt to 170 watts, no
22 battery mode ranged from less than a milliwatt to 70 watts,
23 and off mode, which is quite rare for products, had some
24 range from milliwatts to a few watts. So, what this suggests
25 is that there is lots of opportunity for savings because

1 many of the products are not that efficient and there are
2 examples of products that are doing a much better job at
3 adjusting the power consumed to the utility that the device
4 provides.

5 Here's an example of two power tool chargers, both
6 with lithium ion batteries, with different 24-hour
7 efficiencies, 24 percent for the left-hand product, and 43
8 percent for the right, and variation and maintenance powers,
9 so we see that efficiencies are varying quite widely, even
10 within similar products and identical chemistries. In
11 addition, what we found in our dataset is that utility or
12 consumer features do not necessarily trend with efficiency,
13 so here's an example of a product on the left, this has a
14 very slow charge time and it's less efficient than some
15 other products we found in the dataset. The 24-hour
16 efficiency, which is a measure of the charge efficiency, was
17 about six percent, the maintenance mode power was 10 watts,
18 and the no battery mode was just under two, whereas the
19 product on the right is a faster charger and it has a charge
20 time of approximately one hour with a 60 percent efficiency
21 and with a maintenance mode and no battery mode of less than
22 a watt. In the dataset, I also want to highlight that there
23 are examples where this is switched, so some slow chargers
24 can be very very efficient, whereas also fast chargers can
25 be inefficient, but what we saw is there wasn't a clear

1 trend in terms of rate of charge, as one example, with
2 efficiency, that that seems to be quite independent in the
3 current market.

4 High battery maintenance mode power is one of the
5 opportunities I mentioned for small chargers. This is
6 particularly dramatic for high power chargers like this golf
7 cart. So this is a typical 24-hour test, power is shown on
8 the vertical axis, time is shown on the horizontal axis, and
9 this is an illustration of the way we typically conduct the
10 test under the CEC test procedure. So the battery is fully
11 discharged and then you put the battery as it is fully
12 discharged onto the charger. The charger then proceeds to
13 charge the battery from zero discharge all the way up to -
14 excuse me - to 100 percent depth of discharge all the way up
15 to totally full, and in that process it gives - delivers -
16 Direct Current to the battery, which is shown in the blue
17 here. The particular element I wanted to highlight is this
18 charger doesn't have the ability to recognize when the
19 battery is full and it energizes - it's a fare or resident
20 charger for golf carts - and the energy associated with
21 energizing the circuitry, even once the battery is full, is
22 still over 200 watts, so if this product is plugged in, it's
23 using about 200 watts in battery maintenance, even though we
24 do not measure any direct current going to the battery.

25 I will say a little bit about the industrial or

1 large charger test results. We have 47 tests on 15
2 chargers, these were performed, as I mentioned earlier, by
3 the PG&E Test Center, Southern California Edison, and then
4 Amatek, which is one of the manufacturers that supply data
5 to the Energy Commission during its data call for the test
6 procedure. And these results vary over a narrow range and,
7 as I mentioned before, because there has been some pressure
8 to improve efficiency for these chargers, they are generally
9 more efficient than the smaller chargers. There's about 20
10 percent variation in power conversion efficiency from 74 to
11 93, about 30 percent variation in what we call charge return
12 factor, which is a measure of how well the product charges
13 the battery at different depths of discharge, so if you put
14 a battery on a charger and it's 30 percent discharged, how
15 well does the charger know to just charge it to 100 percent
16 and stop, or does it overcharge it or undercharge it? That
17 is what charge return ratio is measuring.

18 Small improvements in this category of chargers add
19 up to a lot of energy because each product uses about 40
20 megawatt hours per year, and we saw a wide variation in
21 maintenance mode and no battery mode from tenths of a watt
22 to up to 300 watts. It shows room for improvement. And as
23 I mentioned before, there is a more elaborate test that is
24 used to test these products because they are more efficient
25 and a little bit - we have to make a more rigorous test

1 procedure to find the differences among them, but it's worth
2 doing because they use so much energy per unit.

3 I'd like to say a little bit about technical
4 improvements to battery chargers. A lot of what I'm going
5 to talk about in this presentation is pulled from a study
6 that was authored by EPRI. It was done under some work for
7 Mr. Brad Meister under the Public Interest Energy Research
8 funding. And it is *A Technical Primer for Designing and*
9 *Improving Battery Charger Systems*, and it is available at
10 efficientproducts.org for those that would like to review it
11 in greater detail. I'm going to pull out a few examples
12 here today. There are four dominant battery chemistries
13 that we find for all chargers, lead acid, nickel cadmium,
14 nickel metal hydride, and lithium ion. They have different
15 characteristics. As I mentioned before, some batteries have
16 high self-discharge and some have low, and what that means
17 is, if you put a battery on a shelf and let it sit without
18 being charged, some will self-discharge at a slow rate, and
19 others will just self-discharge at a high rate. This is
20 important when you're looking at battery maintenance power
21 and how high or low it needs to be in order to ensure that
22 the product stays charged, the battery stays charged.

23 In addition, there are still advances that are being
24 made in some chemistries, other chemistries are more
25 established, specifically lead acid and NiCd are more

1 established. The energy density, which is a measure of how
2 much energy you get from the battery compared to its weight
3 varies, and this means that different choices are made for
4 battery chemistries, depending on the application. Prices
5 vary and toxicity level vary, as well. And so it was
6 important for us to take into account all of these
7 characteristics of the batteries and why they're chosen,
8 including the price when considering standards. There are
9 four key topologies or battery charger types, and there are
10 a few others than this, but I'll focus on these four
11 dominant ones for now. Linear and switch-mode are similar
12 to linear and switch-mode technologies found in power
13 supplies, they tend to be used with smaller chargers,
14 consumer and non-consumer, fair resident and silicon
15 controlled rectifier are the dominant technologies found in
16 the larger chargers today. Their typical efficiencies vary
17 over a range, depending on the power application and the
18 specific design, but these are meant to give you a basic
19 indication.

20 There are a number of ways to improve linear charger
21 efficiency, which is one of the dominant technologies found
22 in consumer products, consumer and non-consumer small
23 chargers today. One obvious opportunity is to use the full
24 wave rectifier instead of the half-way rectifier to change
25 the alternating current to direct current, and it can

1 improve your efficiency pretty quickly that way, including
2 more sophisticated charge controls, such as voltage and
3 current controllers. You can replace linear power supplies
4 with switch-mode power supplies, which tend to be more
5 efficient, and you can substitute the entire linear battery
6 charger design with a switch-mode design. So, I'm going to
7 go through some of these details right now as an example of
8 the way to improve a small charger.

9 Here's a power tool charger. It's somewhat typical
10 in terms of its efficiency that we observed in our test
11 dataset. What you have in that black case is on the left-
12 hand side. The front part of that case has been removed, so
13 you can kind of see two - you might not be able to see it
14 because of the rendering on the screen, but there are sort
15 of two slots that batteries can go into, and what we've done
16 for the purposes of this picture is to pull out the
17 circuitry that was kind of tucked inside that case in order
18 to expose it, and then there's the external power supply to
19 the right that converts alternating current to direct
20 current, and the charge control circuitry is located on that
21 little board that's basically found in the charger cradle
22 that the batteries plug into. This particular charger has a
23 linear power supply, so it's a magnetic core with windings
24 and then a resistive current regulating element. And
25 although this isn't a diagram of this particular charger,

1 this is an example pulled from the Technical Primer that I
2 just mentioned, where you have a linear power supply that's
3 about 35 percent efficient, a resisted regulating element,
4 and the estimate of the efficiency over the 24 hours is
5 about 10 percent. So, this is somewhat typical of many
6 consumer chargers that we see on the market, primarily
7 because these chargers are driven by price point, so
8 manufacturers are trying to reduce the number of components
9 and bring a very economically priced product to market.

10 If we replace the linear power supply with the
11 switch-mode power supply, as might be done with the external
12 power supply initiative, you can increase charger efficiency
13 by about 15 percentage points because you put a super
14 efficient switch-mode power supply on the front, and you
15 still use the resistive regulating element, you're going to
16 be losing some energy in that resistive regulating element.
17 And what you have with the resisting regulating element is
18 what's shown here, and it's not the same product, but it's
19 the same type of technology, by the blue line, which is a
20 product that has a very - doesn't have sophisticated charge
21 control in order to be able to shut down the battery, and so
22 it continues on for a while and then drops off when the
23 battery is pulled out, but there's no distinguishing between
24 active mode and charge mode in terms of the energy that's
25 being drawn to the wall, and when you compare that to the

1 utility that's being delivered to the battery. An example
2 of a different design that does have Smart control
3 technology -- primarily because the chemistry requires it in
4 this case - is the green line, which actively monitors this
5 charger, actively monitors when the battery is full, and
6 then shuts off. So, if you move to a transistor-based
7 regulating element with Smart controls, that is, a control
8 that can sense when the battery is full and shut down, then
9 you can improve your efficiency further. So, we started at
10 10 percent, we moved to 25, and now we're looking at a
11 basically 34 percent efficient charger. And if we even go
12 further to improve the charge control by making it switch
13 mode charge control, we can make this charger 50 percent
14 efficient. So, this is just an example of the different
15 incremental steps that can be made to improve efficiency for
16 small chargers. And I wouldn't say that all of these steps
17 are appropriate and cost-effective for all chargers, but
18 this is the suite of things that can be addressed. The
19 average efficiency that we're going to talk about in a
20 minute for the standard is about 40 percent, so we're
21 actually not - it may not be necessarily required that you
22 go to a switch mode DC to DC converter for charge control.
23 But we do find examples of this in the marketplace, this is
24 an example of a charger, and we've opened it up. It's an
25 external power supply with charge control circuitry inside,

1 and you can get 50 percent efficiencies observed in the
2 market today where portability drives the market.

3 I just want to say something briefly, there is
4 silicon controlled rectifier chargers, some strategies to
5 improve those on the large charger side is by switching at
6 higher frequencies, and then a ferroresonant charger which
7 is a charger technology typically found for large chargers.
8 There's an opportunity for hybrid technology, optimizing the
9 magnetic flux coupling the transformer, and this is a little
10 bit outside my field, but Southern California Edison is
11 really the expert on this.

12 Here's an example of that same charger that we saw
13 before, two chargers that are fairly similar, where we could
14 reduce battery maintenance mode for ferroresonant chargers,
15 and this is a test that was conducted by EPRI and you can
16 see the blue line is the charger that has what they're
17 calling a cut-off circuit, which senses when the battery is
18 full, and takes the battery maintenance to zero, and then a
19 charger without, which is what we saw earlier. So there are
20 big opportunities to reduce maintenance mode even for large
21 chargers.

22 So, in summary, there are opportunities to improve
23 efficiency across a wide range of topologies, anywhere from
24 10-20 percent for improvements across all topologies, to get
25 within the range of the standard that we're proposing.

1 And now to the proposal. The scope includes
2 consumer and non-consumer chargers, it includes large and
3 small battery charger systems, and the proposal is to have a
4 two-tiered approach for standards for large chargers, and a
5 single tier approach for the small chargers. We're
6 proposing a multiple metric, which would be a 24-hour charge
7 and maintenance efficiency, a maintenance power, no battery
8 power, and a power factor requirement for small battery
9 chargers. For large battery chargers, it includes a charge
10 return factor, which I mentioned was a measure of how well
11 the charger tailors its charge to different dumps of
12 discharge, power conversion efficiency, which is how well it
13 converts the alternating current to direct current, power
14 factor, maintenance power, and no battery power. And these
15 standards are based on the test procedure that was developed
16 through funding from Pacific Gas & Electric and the Public
17 Interest Energy Research Group that was adopted by the
18 commission in 2008.

19 The effective date that we've put forward in the
20 PG&E proposal is 2012 for the small chargers, and 2013 for
21 the second tier, the large chargers. So, just to be clear,
22 let me restate that - the effective date would be 2012 for
23 the first tier of large chargers, and for the single tier,
24 small chargers; and then 2013 for the second tier of the
25 large chargers.

1 The reason why we're proposing multiple efficiency
2 metrics over an annual energy use metric for chargers is
3 primarily because of the nature of the product that we're
4 proposing regulation for. Just like external power
5 supplies, which have not worldwide had an annual energy use
6 metric, battery chargers are used with a wide variety of
7 products and a wide variety of duty cycles, and so it's very
8 difficult to predict what a particular duty cycle is. This
9 is complicated by the fact that data are not available on
10 duty cycles, and even if they - and when I say "duty cycle,"
11 I mean the way that the product is used, so even if we did
12 have data on the way the product was used, the expectation
13 is that that data would vary so widely that the deviation
14 within that would be very very high. And so that's why
15 we're proposing multiple metrics that address the energy use
16 in each mode of operation to ensure energy savings
17 regardless of the way that the battery charger is used by
18 the end user. The multiple metrics include charge,
19 maintenance, standby, and power factor.

20 I'm going to start with an overview of the small
21 charger standards, there are three classes of small chargers
22 that we proposed, and I'm using the word "classes" in part
23 because that's the language that DOE uses, but you could
24 call them "groups." There's one general class, which is for
25 most small chargers that we'll be talking about, and those

1 that you think about, and then two small classes, one for
2 emergency exit signs, which have special consideration
3 because of lighting requirements for safety, and another
4 small class for inductive chargers, which have, again,
5 special utility and safety considerations, including
6 corrosion of metal contacts in the wet environment. They
7 tend to be used with toothbrushes and shaver, and the like,
8 that are used in a wet environment. All other chargers fall
9 within the general standards proposal, and the standards
10 proposal is meant to be appropriate enough that many sort of
11 co-functions or functions of the battery charger other than
12 charging batteries can fit easily underneath this energy
13 efficiency requirement. That includes LED lights,
14 indication of charge, clocks, and other functions. The test
15 procedure does require you to turn off all other functions
16 that are possible to be switch selectable by the users, so
17 we are not accounting for those in these standards proposal.

18 And the focus - I'm going to focus my proposal today
19 on the general category, I do have a specific outline of the
20 other categories, but because the majority of products are
21 addressed in the general, I'm going to focus there today.

22 So, for the small charger standards proposal, as I
23 mentioned, multiple metrics, a 24-hour charge and
24 maintenance energy should be less than or equal to this
25 equation, and basically E_b is the battery capacity that's

1 measured of the individual chargers, so basically the
2 efficiency that's required scales with the size of the
3 battery; and 1.6 times is sort of the 160 percent of the
4 energy battery is allowed for the charge cycle, and then 12
5 additional watt hours are given for the purposes of battery
6 maintenance over the course of that 24-hour charge.
7 Maintenance power should be less than .5 watts. No battery
8 is less than .3. Power factor depends on the input current
9 and basically we're looking for input currents of an amp or
10 greater, and in those modes where the input current is an amp
11 or greater, a power factor of .9 is required, so it's really
12 only for large current applications. Here is the visual of
13 active mode efficiency requirements, so when you take that
14 equation and you make it into a line, and you graph it
15 against the data, what you see on the X axis is the measured
16 battery energy, so that's basically that E_b that you saw in
17 the equation, it is in watt hours, and this is an
18 logarithmic scale, so I just want to be clear about that,
19 it's logarithmic on the horizontal axis only. The blue line
20 is the proposed standard that PG&E is bringing forward, you
21 can see a number of products from a variety of chemistries
22 already past the standard that are in the marketplace. The
23 technical limit is an approximation, it is not meant to be
24 set in stone, but it's sort of what we think the technical
25 limit that is possible. This is far below that technical

1 limit and below what might be entirely cost-effective. That
2 is, the cost-effective - there are cost-effective savings
3 beyond this proposed standard, but for the purposes of this
4 proposal, we have put forward a savings or an average
5 efficiency of about 40 percent on that 24-hour, not as high
6 as 70 percent, which is closer to the technical limit. Here
7 is the battery maintenance mode data that we have from our
8 dataset at .5 watts. I want to say something about these
9 green dots on the far right side. Those are lead acid
10 chargers and you can see that none of the lead acid chargers
11 in the very high elements meet the .5 watts. The .5 watt
12 recommendation was developed in consultation with our
13 electrical engineering staff that determined that using low
14 power - current low power, power electronics technology - is
15 feasible for these larger chargers and the battery self-
16 discharge for lead acid batteries is not high enough over a
17 24-hour period to warrant a higher level until you get to
18 about 10,000 watt hours of battery energy. And no battery
19 mode level is essentially the same as a standby and we are
20 looking at a .3 watt proposal.

21 I'd like to say something quickly about the
22 emergency exit sign standard, this is a non-consumer battery
23 charger standard. It's given a little bit more energy in
24 the 24-hour requirement because of the need to light the
25 LEDs that indicate the exit. In addition, maintenance power

1 is higher because, again, the lights have to be engaged on a
2 continuous basis and cannot be shut off. I just want to say
3 that, for this particular - well, let me move forward.

4 For the inductive charger standards proposal, this
5 was developed with feedback from industry, and what we're
6 proposing is that the inductive chargers may either meet the
7 small standards proposal that I just walked through, or they
8 can meet this alternative proposal, which is essentially one
9 watt all the time. So, if you're charging one watt
10 maintenance power less than or equal to watt, no battery
11 power less than or equal to a watt, and this is what we hope
12 will encourage the best of inductive technologies save some
13 energy, but still allow for that safety requirement and
14 corrosion requirement for these specific products.

15 So, in case you thought there were too many metrics
16 for the consumer proposal, I thought I'd just throw some
17 more at you for the large battery charger systems. And the
18 charge return factor, it's important that the charge return
19 factor, which is that measure of how well the battery is
20 charged and how well the charger can respond to charge the
21 product, is within a certain acceptable range. Too low, and
22 the battery is compromised for a lifetime; too high, you
23 waste energy and the battery is compromised for a lifetime,
24 so we're looking for a charge return factor that's basically
25 in tier one, between 105 and 115 percent, for Tier II,

1 between 105 and 110 percent. We have a little bit different
2 expectation for 40 percent of discharge, and that's in part
3 because it's more difficult to design a charger that adjusts
4 its charge appropriately for lower depths of discharge, so
5 only when the battery is partially discharged. And so,
6 therefore, cost-effectively, it's not as appropriate to make
7 that as stringent.

8 For power conversation efficiency, we're looking at
9 somewhere, for Tier I, 84 percent; for Tier II, 89 percent,
10 so that's moving from the average that we saw between 75 and
11 90, pushing that toward the high end of what we see in the
12 marketplace today. We are looking at a power factor for
13 these products is important because they consume large
14 amounts of energy at high currents, and so we're looking for
15 power factor correction with a value of .85 for Tier I and
16 .95 for Tier II, and then we're tightening down on battery
17 maintenance and no battery power somewhat in Tier I, but
18 then more aggressively in Tier II in the 2013 timeframe.

19 Here are the data, this is also in the Case Report
20 where you can study it a little more carefully, there is so
21 much data it is difficult to show on screen, but we have
22 four different topology types along the top, the dominant
23 topologies today are ferroresonant and Silicon Controlled
24 Rectifier, or SCR, high frequency and hybrid are alternative
25 topologies that are designed for higher efficiency. So,

1 here is the data that is in the red, mean it doesn't pass
2 that metric. Similarly, here is the same standard, here is
3 the same data with Tier II requirements and, again, inside
4 the colored is passing and outside is not passing the
5 current standard.

6 I will take a few moments to address incremental
7 costs. For small battery charger systems, we're looking at
8 about 42 percent of the market as we estimate, currently
9 complies with the small battery charger standard. So,
10 nearly 100 million of the 170 in California needs some type
11 of improvement, where the average savings is around 11
12 kilowatt hours per year, so, as I mentioned, many products
13 in use, but not very much energy use per unit, so we see
14 small savings numbers per unit. But the incremental cost
15 associated with improving these products is fairly small.
16 Advanced battery charger system controller ICs that help
17 with the charge control issue are about \$.5 a piece in OEM
18 quantities. Some products might be required to have high
19 efficiency and modes where the consumer doesn't use them as
20 often, but when a charger is designed to be efficient, the
21 additional cost of improving each mode is relatively small.
22 And so we can get incremental costs of about \$.30 on average
23 per product to save \$.78 per year, so depending on the
24 lifetime assumption of the product, you have a return on
25 that initial \$.30 year over year, and in the first year, on

1 average.

2 For large battery chargers, the costs are much
3 higher, but so are the savings per unit. So, in Tier I, the
4 likely strategy to meet this standard would be modular add-
5 ons for Smart control electronics that are in the range of
6 \$100 to \$150. For Tier II, power conversion efficiency
7 technologies are more expensive because we really have to
8 get better power conversion in Tier II, about \$100 to \$400,
9 depending on the power and the design. Because these
10 chargers are used so heavily that incremental cost of these
11 more efficient chargers is recovered, we estimate, within
12 the first year of operation, and certainly within the
13 lifetime of the charger, which tends to be about - we're
14 estimating 15 years, but even if you say 10-15 years, still
15 clearly cost-effective.

16 Power factor correction, as you notice, was part of
17 the small battery charger system standards proposal, as well
18 as the large. Power factor correction, the attention on
19 power factor correction opportunities for energy savings was
20 recently brought to our attention in a Public Interest
21 Energy Research report that was created by EPRI and
22 published by the Energy Commission, and it showed that there
23 are measurable energy savings associated with reducing
24 losses in building wiring, associated with poor power
25 factor. And so, for the purposes of this proposal, we

1 determined that it is only cost-effective to look at power
2 factor correction for large currents, greater than an amp,
3 but it's not cost effective for very small currents. So
4 that's why you saw the greater than an amp requirement on
5 the power factor for small; because large chargers have
6 significantly high currents, then it is appropriate to have
7 a power factor requirement for all those products. And
8 between seven and eight percent of usage attributable to
9 losses in battery chargers is actually associated with poor
10 power factor, so the poor power factor results in losses in
11 the building wiring.

12 I want to provide some clarification about our
13 recommendation on test protocol for this standard. Right
14 now, the CEC has adopted - I should say, in 2008, they
15 adopted - a test procedure for Part I, which addressed small
16 chargers, Part II, which addressed large chargers. And the
17 DOE is expected to adopt a consumer battery charger test
18 procedure either later this year or early next year. What
19 we would recommend is that the CEC test procedure be
20 utilized for standards development in the interim, before
21 the DOE Final Rule has been issued, and we expect, then,
22 that the test procedures are going to be similar enough that
23 we should be able to make progress forward on a standard,
24 and then utilize the DOE consumer test procedure in place of
25 Part I of the CEC test procedure once it's finalized and

1 later this year, or early next year. Part II of the
2 California Energy Commission test procedure can be
3 freestanding, it addresses industrial chargers, it's non-
4 consumer applications, and so CEC should feel free to
5 proceed and use that for the large standards proposal we
6 have here.

7 Just a bit of summary on the savings. We found a
8 lot of different numbers thrown around and I think,
9 depending on how you count the energy savings, I think we
10 saw 2,700 as a possible savings. The number that we
11 prepared for the Case Report is around 2,400 gigawatt hours
12 per year after stock turnover, which is basically, depending
13 on the product category, 60-70 percent of current energy use
14 can be saved with small chargers. That's because currently
15 there are about, on average, 10 percent to 20 percent
16 efficient, depending on how you do the average, and we are
17 encouraging them to get closer to 40 percent efficient.

18 Large battery charger energy savings will be smaller
19 as a percent, it is eight percent of current energy use, and
20 the reason for that is those products are already quite
21 efficient compared to the consumer, so there's not as much
22 savings to be had, but we're looking at 300 gigawatt hours
23 per year with Tier II. All battery charger energy savings
24 is about 35 percent of current energy usage. This is almost
25 the equivalent of building one power plant, which is this

1 Measure of Rosenfield, it is a measure that has recently
2 been adopted in the Energy Efficiency community to talk
3 uniformly about power plant savings, and so we're looking
4 essentially at building one power plant, or close to one
5 power plant with this standard, which is equivalent to
6 almost 400,000 homes in California.

7 I didn't get too much into net present value today
8 in part because of time, but that's documented in the Case
9 Report, which I expect to be posted today, but it's \$450
10 million in the first year and \$2.4 billion after stock
11 turnover. Those are energy savings to the customers and
12 ratepayers of California. And all of the cost-effective
13 savings opportunity is higher, so we feel like this is a
14 standard that we are putting forward that is meant to be a
15 compromise between pushing all the cost-effective savings,
16 trying to get closer and closer to that technical limit. We
17 feel like we're not - the approach for the standard is not
18 to get all the way there, it's to make a first good step
19 toward improving the energy efficiency by taking the average
20 of 10-20 active mode efficiency up to around 40.

21 So, in summary, small chargers are high volume, high
22 tech products that had efficient charging solutions that are
23 inexpensive and widely available. We see them in the market
24 today in places where portability drives the market; in
25 places where price drives the market, those solutions have

1 not been implemented. PG&E research demonstrates the
2 feasibility in improving consumer chargers to 70 percent,
3 this standard does not go that far. As I said before, we
4 are looking at improving efficiency to around 40 percent.
5 And approximately two-thirds of the energy can be saved and
6 we're looking at a multiple metric because the duty cycles
7 are not well understood, or, if they were well understood,
8 are probably very high standard deviation for duty cycles.
9 And so, improving the energy use of each mode is important
10 to ensuring energy savings. For large chargers, the metric
11 is based on Part II of the CEC Test Procedure, it includes
12 power conversion efficiency, which is a measure of how well
13 you convert alternating current to direct current, charge
14 return ratio, how well that battery is charged to ensure
15 it's not under-charged or over-charged, regardless of the
16 depth of discharge of the battery when it's placed in the
17 cradle. Maintenance and no battery power in power factor,
18 incremental improvements are about 10 percent energy
19 savings. This is the specific number you'll see in the Case
20 Report, it is eight percent, and improvements for about 4
21 megawatt hours per year. The added cost could be anywhere
22 between \$100 and \$400, depending on the unit, but we can
23 save \$400 a year of energy per year for a 15-year life. So,
24 the puzzles that we're putting forward are meant to be a
25 reasonable compromise, that are clearly cost-effective, and

1 that can give the ratepayers of California an opportunity to
2 eliminate the split incentive, which is ensuring that, if
3 they pay a little bit more for a product up front, that it
4 saves the energy over the course of that product's life.

5 These are some references, they include the Case
6 Report, the Technical Primer that I talked about earlier, as
7 well as the test procedure. The Case Report should be
8 available on the CEC website, PG&E has submitted it to the
9 docket. The other two reports are available online at
10 efficientproducts.org. Thank you.

11 MR. LEAON: All right, thank you very much, Suzanne
12 for that very in-depth presentation, which details the
13 contents of the PG&E proposal. I understand we do have a
14 hard copy of the Case Report on the table, near the entrance
15 to the Hearing Room, and we will get that Case Report posted
16 to the website today. So, again, thank you for that in-
17 depth presentation. And I'd like to ask for any blue cards
18 in the room at this moment. Okay. Can I ask staff to
19 collect the blue cards? Thank you.

20 And I did want to emphasize that what we're working
21 towards today is the November 18th Committee meeting. Staff
22 is still reviewing the PG&E proposal and does not have a
23 recommendation today regarding that proposal. But we are
24 looking for your feedback in helping us to analyze the
25 proposal that's been put forward. We are asking for your

1 comments, written comments, by October 29th, and that will
2 help us to inform our analysis of the proposal. And we will
3 be bringing forward a staff report at the November 18th
4 Committee meeting, making a recommendation on Efficiency
5 Standards for Battery Chargers, so we are working towards
6 that as our next major milestone in the process, and
7 certainly are looking forward to receiving your comments on
8 the PG&E proposal.

9 Okay, I do have a few comments. And first up is
10 Rick Habben, if you could come on up to the podium. Thank
11 you.

12 MR. HABBEN: Hello. My name is Rick Habben from
13 Wahl Clipper Corporation, we are a manufacturer of beard and
14 mustache trimmers and shavers. I have several different
15 questions and I guess comments I want to just propose out
16 there, based on the presentation. I guess the first comment
17 that I have is, I'm curious as to why the California Energy
18 Commission is wanting to do a regulation on the consumer
19 battery chargers when the Department of Energy is currently
20 working on that, and the two regulations may be in conflict
21 with one another, with potentially a date of maybe a year
22 apart, where the DOE may be 2013, where you guys are
23 proposing 2012. This would make it very difficult for us as
24 manufacturers, you know, potentially having one particular
25 product for consumer use that would be for the DOE proposed

1 regulations, and for the California Energy Commission. I
2 don't know if you want to comment on each question as I go,
3 or if you want me to do them all and then have her comment
4 at the end.

5 MR. LEAON: Well, if you don't mind, why don't we
6 respond to each one as we go along. Suzanne, did you want
7 me to respond to that question? That was perhaps directed
8 more to the Energy Commission.

9 MS. FOSTER PORTER: Yeah, that would be good.
10 Please.

11 MR. LEAON: Okay. Well, regarding why California is
12 proposing to adopt standards for battery chargers, we've
13 invested quite a bit of time and effort in working with
14 stakeholders to develop the test method for the battery
15 chargers, and this is a continuation of that work. In
16 addition, the DOE does look towards California to help
17 inform its process, and by developing the standards at the
18 State level, we'll be helping to inform that process and, in
19 a sense, they don't have to reinvent the wheel when they go
20 through their process to develop these standards. And, in
21 addition, it's my understanding that the Energy savings that
22 accrue to the State by adopting a California standard will
23 benefit not only the utilities, but also the people of the
24 State of California, and that those savings can be passed
25 through to the public in the form of rebates. And if one of

1 our utility representatives wants to expand on that a little
2 bit, I would appreciate that. Is there anybody that would
3 like to speak on behalf of the utilities on that point?

4 Okay. Well, I think that's the short answer. It will help
5 inform the development of the Federal standards. This is a
6 continuation of the battery charger standards, and
7 California will benefit by realizing the energy savings from
8 the California standard before the Federal standard preempts
9 the State regulation.

10 MR. HABBEN: So the intent of the California Energy
11 Commission would be to push DOE to adopt basically to their
12 same regulations? Is that correct?

13 MR. LEAON: Not necessarily adopt the same
14 regulations, as we can inform their process. I guess what
15 I'm saying is we can't guarantee that they'll adopt the same
16 standards, but, yes, we do want to inform their process and
17 I think there is a benefit if they do adopt California State
18 standards, to both the industry and the public.

19 MR. HABBEN: Okay, I just hope that it's noted from
20 the Commission that, as you can see from a manufacturer, it
21 does make it difficult if you're making a product and it has
22 to comply with two different regulations.

23 MR. LEAON: Absolutely.

24 MR. HABBEN: The next thing that I just want to
25 comment on is that there is data from at least us as a

1 manufacturer, and I believe other manufacturers, regarding
2 the duty cycles for products. And the reason I want to
3 bring this up is that I think that, without knowing the duty
4 cycle of particular products, it greatly skews the amount of
5 savings that you're estimating that you're going to save.
6 And I'll give you a for example, we have data out there
7 that, on duty cycles, on rechargeable beard and mustache
8 trimmers that most of the time the product, the power
9 supply, the battery charger is unplugged and put in the
10 drawer and only pulled out when it needs a charging. And
11 one of the main reasons for this is that most women do not
12 like the clutter of the battery chargers on the counter and
13 the cords laying around, so I guess when you're bringing the
14 numbers up for the savings, you know, without knowing the
15 duty cycles, I think there's potential error there for the
16 amount of savings that you're actually saving there. That's
17 more just a comment. The next thing -

18 MS. FOSTER PORTER: May I address that and just to
19 clarify the way that we did the methodology for savings?
20 This is Suzanne Porter from Ecos. Just to be clear, we
21 agree that reasonable assumptions need to be made regarding
22 the duty cycle of each individual product, and we ourselves
23 have utilized whatever data is available, however limited,
24 or made reasonable assumptions when data are not available
25 in order to calculate the energy usage and the savings. We

1 feel like that's a necessary step in order to quantify
2 savings, so I don't want to give the impression that we're
3 not using any duty cycles to calculate the numbers. Our
4 only argument is that, if you have to make assumptions, then
5 those assumptions should not translate into the standard,
6 that this standard which is the regulating principle of how
7 to improve the efficiency of the charger should address each
8 mode individually so that we can ensure that there are
9 energy savings. Thank you.

10 MR. HABBEN: So moving on to the next issue that I
11 have to comment on, is regarding the battery maintenance
12 mode. You're proposing to set it at .5 watts. I guess, for
13 us in our company, this would be a definite hurdle for us to
14 overcome due to trying to keep the cost of the appliances
15 down where the consumer, it is affordable for them to
16 purchase. And I also understand that you have, you know,
17 had some approximate costs out there for components to
18 accomplish this. A couple different things - one is, what
19 were the type of quantities that those prices were? My
20 guess is that they would be fairly large to get that cheap
21 of a price. And then, the other thing that I wondered if
22 the case study had taken into consideration is that, if
23 there are products already out on the market that didn't
24 allow for these type of electronics or cut-offs to be in
25 them when they were designed, we have products right now

1 where we've tried to keep the products as small as possible
2 for the consumer, so now to try and put this type of
3 electronics in here to cut it off, we're basically looking
4 at new molds, new designs for our products to accommodate
5 these additional components. There's just not room in those
6 products to fit these additional charge control circuitry,
7 so it's not a matter of adding a five cent component, it's a
8 matter of replacing between a \$30,000 and a \$60,000 mold for
9 a product that has to be redesigned. So, you know, that's
10 something that needs to be considered when you guys are
11 going to implement this, it's not just a matter of us adding
12 an inexpensive charge circuit. When you also calculated the
13 energy savings that was going to be obtained for your case
14 study, were the products that were tested and measured, were
15 they products that were within the last year? Or were they
16 products that were greater than two, three, four years old?

17 MS. FOSTER PORTER: Our dataset varies in age, so we
18 first started testing products that are being used for this
19 Case Report as long ago as 2006, end of 2006, we tested
20 products in 2007 and 2008, but for the purposes of this
21 study, we actually were wondering if the market had changed,
22 so we tested 25 products for Pacific Gas & Electric earlier
23 this year, and the ranges of efficiency that we found
24 compared to the original dataset were fairly similar. So,
25 although some data are as many as three or four years old,

1 we did recently do a comparison study to see how it might
2 have changed over time and uncovered that it really hadn't.

3 MR. HABBEN: I think at this point in time, that's
4 all I have.

5 MR. BECK: Mr. Habben, my name is Dennis Beck, I am
6 a senior staff counsel with the California Energy
7 Commission. Thank you for coming and giving us this
8 information, but I do want to emphasize to yourself and
9 those others in the regulated community that, while your
10 comments are well taken, what we would really like to have,
11 and you mentioned this in your first question, is the -

12 MR. HABBEN: Usage?

13 MR. BECK: -- data that you had regarding the duty
14 cycles, I believe. This is something that, in order for the
15 Energy Commission to properly consider what is being told to
16 us by stakeholders, whether those are manufacturers or
17 others, we need more than just conclusions, but the data
18 that supports them. And when we get that data, we can
19 compare that to the data that we've received in the case
20 study or elsewhere, and it is only in that kind of a process
21 when we have the data to look at and compare that we can
22 really make a rigorous comparison and analysis. So, again,
23 of those people who are either going to be making comments
24 today, and hopefully you will file some comments to the
25 record that will contain some of this data, that's what

1 we're really looking for and that's one of the primary
2 reasons that we're having this staff workshop, is to get the
3 regulated community to start thinking about these battery
4 charger standards and looking at any data they may have that
5 would inform that process, and make sure that the standard
6 that we do eventually adopt is based on the most current
7 relevant data that we can get.

8 MR. HABBEN: And that's what we would like, as well.

9 MR. BECK: Thanks.

10 MR. LEAON: Thank you, Dennis. Okay, next blue card
11 is from Larry Albert.

12 MR. ALBERT: Thank you. Larry Albert from
13 Stanley/Black & Decker, representing the Power Tool
14 Institute. A series of questions here and, again, please
15 excuse if they seem a little disjointed here. I didn't
16 have, again, the benefit of reviewing the materials prior to
17 the meeting. Just to clarify a comment that was made
18 earlier from staff, that this a PG&E proposal and not a CEC
19 proposal?

20 MR. LEAON: That's correct. What's being presented
21 today is the PG&E proposal, this is not a staff proposal.
22 The staff proposal will be the subject of the November 18th
23 Committee Workshop.

24 MR. ALBERT: All right, thank you. Secondly, to
25 follow-up with Rick's comment and also the comment of staff

1 counsel there, I believe that Ecos did engage in a study of
2 plug loads in the State of California that was intended in
3 part to determine duty cycles of various plug loads. Did it
4 include battery chargers, do you know?

5 MS. FOSTER PORTER: Yeah, there were two studies
6 that were conducted for the Public Interest Energy Research
7 Program that Ecos performed, the first was in the
8 residential sector, and the second was in the commercial
9 sector. The focus of those studies was on the larger plug
10 loads, so things like TVs, computers, and other office
11 equipment, where data at that time were not very widely
12 available on those duty cycles, and so that was the focus of
13 the study. Some battery chargers were measured as a lower
14 priority element to the study, but those data were used for
15 our estimates. But they're very limited; for example, there
16 may only be one or two data points on a particular battery
17 charger. So, although it's useful for suggesting a duty
18 cycle, we also saw a real wide variation, generally
19 speaking, and so we wouldn't recommend it as a standards
20 approach because we only got a few data points, and the data
21 points we did get varied widely.

22 MR. ALBERT: But you did use that data as the basis
23 for your - for the estimates that you had with respect to
24 consumer savings of energy usage, is that correct?

25 MS. FOSTER PORTER: Yeah, you necessarily have to

1 make some assumptions about duty cycle for the energy usage
2 and savings, and those were informed by the study because no
3 other data were available. But, for the purposes of the
4 regulation, we would recommend not using those values.

5 MR. ALBERT: So do you have concerns about the
6 validity of your estimates?

7 MS. FOSTER PORTER: The estimates are based on the
8 best data available.

9 MR. ALBERT: You used several times the term "24-
10 hour efficiency." Could you explain that?

11 MS. FOSTER PORTER: Sure. I'd be happy to. Let me
12 use a slide to illustrate it. I'm not sure how to get the
13 slide cued where I can choose a slide, but here's the one.
14 So, the 24-hour efficiency test is specified in the
15 California Energy Commission test procedure, Part I, and in
16 that approach, the battery charger is plugged into the wall,
17 or plugged into the metering equipment, rather, the fully
18 discharged battery is placed on the charger, it has an
19 opportunity to charge the product, and then maintain the
20 product for a period of 24 hours, and although I used that
21 in the presentation for batteries that take longer than that
22 to charge, the test procedure allows for longer periods, and
23 so the total energy that's measured on the input side is
24 recorded, and then that is compared to the total of direct
25 current energy that is pulled out of the battery after that

1 sequence of charge. So what you get as an efficiency metric
2 is the total energy that you take out of the battery tank,
3 so to speak, divided by the total energy that goes into that
4 battery tank over the course of the 24 hours, or sometimes
5 longer, as required by the product.

6 MR. ALBERT: And while you use this metric in your
7 presentation quite a lot, you're not recommending that as a
8 metric for regulation?

9 MS. FOSTER PORTER: It is a metric, well, the actual
10 language that we recommend in the Case Report does specific
11 an efficiency level that is drawn by the curve, so let me
12 find - bear with me a moment, please - so the line here is
13 on a 24-hour efficiency scale, and you can look at the
14 metric in a couple different ways. You can say that the 24-
15 hour efficiency has to be less than a certain value
16 specified by the equation; alternatively, you can turn that
17 mathematically into an efficiency criteria where the
18 numerator is the energy of the battery as it's discharged
19 over the course of the test, and the denominator is that
20 equation for each individual, which is I think $12 + 1.6$
21 energy in the battery, so this line represents that
22 efficiency metric if you graph it visually as a function of
23 battery energy. So, we are proposing to use it as one part
24 of the metric.

25 MR. ALBERT: All right, thank you. The next

1 question is, you had a scatter plot, I think it was similar
2 to that one, except it was for maintenance power?

3 MS. FOSTER PORTER: Uh huh.

4 MR. ALBERT: All right, and so interestingly, while
5 the 24-hour efficiency is scalable based on Eb, you're not
6 recommending having the PM limit value scalable on the basis
7 of Eb, even though it certainly would seem, on the base of
8 the scatter plot to be trending in the direction of
9 increasing PM values based upon Eb value.

10 MS. FOSTER PORTER: That's right. The trend in the
11 marketplace is to have higher maintenance power for higher
12 battery energy, but that is a result of losses that occur
13 either in the power supply or the charge control circuitry
14 that can be dramatically reduced. And so, for the purpose
15 of this portion of the metric, we focused on technology that
16 could reduce the losses associated with the power supply and
17 the power conversion efficiency, and what we uncovered is
18 that, until you get to about 10,000 watt hours of battery
19 maintenance energy, you really can fairly easily meet the
20 standard of .5 watts.

21 MR. ALBERT: And I can only see it slightly better
22 now than before, but I'm looking at the NiCd data points
23 there. Are there any NiCd data points that are below the
24 limit line?

25 MS. FOSTER PORTER: This graph doesn't show any and

1 that's principally because NiCd chargers tolerate a very
2 high - or, I should say they easily tolerate overcharging,
3 so, as you probably know, you can triple charge a NiCd
4 battery unit and it doesn't present any safety concerns, and
5 so a lot of these higher maintenance powers associated with
6 NiCd are based on products that have low price points, where
7 they've principally been designed for price, and so they
8 haven't really shut off the triple charge quite as much as
9 you would see for like lithium ion where there are safety
10 concerns. So, although there are no current products that
11 we have, at least now shown on this visual with NiCd, we
12 feel, based on our analysis, the NiCd chargers could be
13 redesigned to have a lower battery maintenance limit that
14 more appropriately addresses actual energy lost through
15 self-discharge.

16 MR. ALBERT: And I am sure you are aware that NiCd
17 sales, in particular, have a requirement for maintenance
18 current that needs to be provided for them to be able to
19 retain their charge. What makes you believe that there are
20 NiCd chargers, particularly at a higher level of Eb that
21 would fall within the California proposed standard limit?

22 MS. FOSTER PORTER: The self-discharge requirement
23 can be addressed, and I didn't get into the technical
24 details here, but the limit that is proposed is not an
25 absolute limit, it is an average limit, so what that means

1 is that, as long as the average over the battery maintenance
2 cycle is less than .5 watts, the charger has latitude to
3 jump up to counter self-discharge, and then come back down,
4 it is really an accumulated energy average that we're
5 looking at for the .5 watts. So, based on the technology
6 available and the analysis we did on charge control, .5
7 watts is achievable with components that are readily
8 available on the market.

9 MR. ALBERT: And you've encountered one of these
10 chargers commercially available in the marketplace?

11 MS. FOSTER PORTER: No, the chargers that were
12 available in the marketplace were not necessarily NiCd, but
13 they were associated with chargers like nickel metal hydride
14 that have even higher self-discharge rates than the NiCd,
15 and you can see some of those are below the line.

16 MR. ALBERT: You mentioned earlier that there was a
17 battery control integrated circuit available for five cents.
18 Do you recall what functionality it performed?

19 MS. FOSTER PORTER: Yeah, my recollection of that is
20 it had the purpose of monitoring the battery, and then when
21 the battery was fully charged, it could shut down the
22 charger to a lower level.

23 MR. ALBERT: These are NiCd cells that you are
24 speaking of?

25 MS. FOSTER PORTER: They could be used with NiCd or

1 nickel metal hydride.

2 MR. ALBERT: So it is interchangeable?

3 MS. FOSTER PORTER: The IC itself - you are testing
4 the limits of my specific knowledge I can pull out of my
5 brain because I don't have it in front of me, but I don't
6 believe they're interchangeable, but I do think - my
7 recollection is that there were designs available, and we
8 can maybe address that in a more detailed comment later.

9 MR. ALBERT: Okay, that would be good. You spoke
10 specifically about power factor correction, the value it had
11 on energy savings, not in the product necessarily, but in
12 residential wiring and commercial wiring, and it was only
13 applicable for chargers that would be over one amp input
14 current, RMS. Is that correct?

15 MS. FOSTER PORTER: The standard was only for
16 greater than one amp input current, although savings can be
17 achieved with lower input currents, they're just not cost-
18 effective, immediately obviously cost-effective.

19 MR. ALBERT: So were you able to determine whether a
20 regulation limiting power factor to .9 and above for one amp
21 in larger chargers was cost-effective? That is, the energy
22 savings realizable by the consumer, right, was offset by the
23 cost of employing a power factor correction circuitry?

24 MS. FOSTER PORTER: Yes.

25 MR. ALBERT: Okay, and that is in the Case Report?

1 MS. FOSTER PORTER: Yes. The methodology used for
2 calculating savings, as well as description of the costs are
3 in the Case Report.

4 MR. ALBERT: Okay, thank you. All right, thank you
5 so much for fielding my questions.

6 MS. FOSTER PORTER: Thank you.

7 MR. LEAON: Thank you, Mr. Albert. We do have a
8 couple more blue cards. In fact, can I ask that we keep the
9 questions brief at this point, for the folks on the phone, I
10 am going to ask that we'll come back to you during the open
11 discussion part of the workshop at the end of the day. I
12 think we need to break for lunch within the next 10-15
13 minutes, at most. You're ready for lunch now? Okay, well,
14 I do have two blue cards. Let me ask, I have one from Rick
15 Erdheim and one from Wayne Morris, so are you comfortable
16 holding your questions? Okay, let's go ahead and break for
17 lunch and meet back here at 1:30. There is a cafeteria on
18 the second floor here, there is also La Bou on the corner of
19 - let's see, it would be 11th and O, if you go out the front
20 door of the Commission, turn left, and go straight down O
21 Street two blocks, there is a La Bou there. If you go out
22 the front door to the right, and left one block down P
23 Street, there's a couple of restaurants kitty corner on 10th
24 and P.

25 (Off the record at 12:45 p.m.)

1 (Back on the record at 1:37 p.m.)

2 MR. LEAON: This is Mike Leao. We're about to
3 reconvene the workshop. If you could all get settled in, I
4 would like to propose that - we did have a couple blue cards
5 after our last presentation and I wanted to ask if it would
6 be okay if we held those until the open discussion part of
7 the workshop. All right, thank you. So, we'll hold those
8 questions until the open discussion phase and I'd like to go
9 ahead and introduce our next speaker, Pierre Delforge, with
10 the Natural Resources Defense Council (NRDC). And Pierre
11 will be presenting some information on appliance labeling.

12 MR. DELFORGE: All right, thank you. My name is
13 Pierre Delforge with the NRDC and I would like to thank the
14 Commission for the opportunity to make this short
15 presentation. So, why a proposal on efficiency labeling?
16 As you know, we were involved back in 2005, even before, in
17 creating the external power supply marking protocol, which
18 as we will see in a minute, was instrumental in helping
19 transform the market for external power supply efficiency.
20 And we recognized that, in this battery charger effort there
21 is probably a similar opportunity, and we wanted to
22 highlight and propose that we take a similar approach.
23 Oops, for those on the phone, we have a presentation problem
24 here.

25 So, the concept is to create a marking protocol or a

1 marking scheme with, you know, Roman numerals, it could be
2 something else, but just for the illustration, just like the
3 external power supply, a marking protocol. And the
4 rationale for this would be to create an okay, better, best
5 scheme that would make it easy to identify the level of
6 efficiency of a product. We all know that efficiency is
7 intangible and difficult to measure, especially for
8 different types of products, so that would give a simple way
9 to recognize and to manage the different levels of
10 efficiency. Interested jurisdictions could require
11 different levels, depending on how stringent they want to
12 be, or they could just require labeling without requiring a
13 elementary level. And it also provides flexibility to add
14 and to evolve over time as technology evolves and to require
15 more stringent levels.

16 The specific issues that we have to address with
17 electric chargers, first, as we saw this morning, and the
18 speakers mentioned this morning, we have a large number of
19 different types of small chargers, which makes it
20 challenging to collect data for each of the different types.
21 I think we have dozens, potentially even hundreds, of
22 different combinations and form factors, duty cycles,
23 battery capacity, and this makes it very challenging to have
24 the right level - you know, the exact data that would allow
25 us to have the tight standards. So the label would help to

1 have a simple scheme to recognize efficiency levels across
2 all these different types.

3 The other issue that we are facing is that we have a
4 number of jurisdictions, especially in the U.S., but also
5 around the world, which are currently looking at different
6 types of metrics, or a battery charge efficiency. I mean,
7 DOE, I think, seems to be looking at an annual energy use
8 metric, was, I think, the proposal that we saw this morning
9 about efficiency per mode metric, and I think we have an
10 opportunity with the labeling scheme to help harmonize these
11 metrics before we adopt different ones. I think the risk of
12 having diverging standards would be to increase the cost for
13 manufacturers, the cost of compliance. It would also
14 increase the cost of regulation for all regulators around
15 the world, and therefore slow adoptions. So, I think it
16 would be a lose-lose to have diverging metrics. So, I
17 think, you know, having a single marking scheme with a
18 common metric would be both faster to adopt and cheaper.
19 And the last point, which is not challenged by an
20 opportunity would be for California to really lead the
21 adoption of an international marking protocol similar to the
22 one that California did in 2005 with external power
23 supplies.

24 A quick reminder of the additional power supply
25 marking protocol, it was created in California - well, by

1 California in collaboration with Australia and China in
2 2005. It since then has had broad adoption, both in the
3 USDOE and EPA, but also internationally with Canada, EU, New
4 Zealand, I am sure other countries which I don't recall.
5 It's very simple to use for both utilities, regulators,
6 manufacturers, and it's been very effective at transforming
7 the market. Now, we have standards, manufacturing standards
8 for Level 4 which, you know, we started in 1, so it has gone
9 quite a way since then, and we have common level 5 EPAs on
10 the market today.

11 So the scope of the proposed marking protocol is
12 both small and large, but we believe that the priority
13 should be on the small because of the issue of having all
14 these different types of products. We've leveraged the
15 definition that is proposed in the Case Report of 3,000 watt
16 hours for the distinction between the two, something which
17 can be worked on, suggest a Straw Man, but we believe this
18 is, you know, if we can focus on the small chargers as high
19 priority. Ideally, we would like to have large chargers
20 covered, as well, if we can do both. We think that would be
21 the best outcome, but given the challenge that we are facing
22 with the small chargers in terms of numbers of different
23 types on the market, we believe this is the highest
24 priority.

25 In terms of the mark itself and the efficiency

1 levels, so we've proposed to leverage the Roman numeral
2 scheme for EPAs and just prefix it with BC for Battery
3 Charger, and then this is really a Straw Man where, you
4 know, we want to put it out there for discussion, it could
5 be anything else as long as it's compact and differentiated
6 from the external power supply mark, but follows a similar
7 concept. The levels - we propose to start at 1, and 1 not
8 having any specific criteria, just being less than 2, and
9 the reason for that is to allow jurisdictions that, you
10 know, beyond California. So, here we're trying to think
11 California, but also beyond, that we can try and have this
12 protocol become a national and actually international
13 standard. So, what we're thinking is, if we can't have a
14 level 1, less than a certain level of efficiency, then we
15 will allow other jurisdictions to adopt, to make monetary
16 laboring without necessarily having a name or requirement.

17 Level 2 would be modeled after the California
18 standard and, you know, I've just put these out there as an
19 illustration, it's not necessarily what the level 2 needs to
20 be, but we just wanted to allow it with whatever standard is
21 adopted in California. Then, we have Level 3 which could be
22 potentially the Energy Star or utility standards or anything
23 that is higher than - so not anything that is higher, but
24 some level of criteria which is higher than Level 2, and
25 then we can carry on using 4 and 5 options we'll use.

1 I just illustrated for the general small charger
2 standards, I mean, we would have to use similar -- different
3 similar criteria for the other classes of small chargers,
4 you know, the inductive and Emergency exit signs, and as
5 well for - if we extend it to the large, to have specific
6 criteria for the large class, but the concept would be
7 similar.

8 We have a number of open questions that still need
9 to be defined. I was talking about the exact criteria for
10 each product class to be defined, location of the mark, we
11 have a little bit of a challenge there in terms of not
12 having existing labels on battery chargers, contrary to
13 external power supplies, so we would have to figure out, you
14 know, depending on the form factors, where could that go and
15 whether it is practical, and ultimately to finalize the
16 mark. But I think all of these are issues that can be
17 figured out easily if we get an agreement on the concept and
18 principle and we work together to the final details.

19 So I just want to summarize before we open it up for
20 Q&A, you know, we believe this efficiency marking protocol
21 would help facilitate the transformation of the battery
22 charger market in a similar way as it did for the EPS
23 market. We think we have a short window of opportunity to
24 get going, to help converse with the U.S. protocols, and
25 that will make it easier and cheaper for both industry and

1 regulators to adopt the high levels of efficiency. And I
2 think it is also a very flexible scheme that would help, you
3 know, make it simpler and drive adoption faster. So that's
4 all I wanted to mention, and thank you for your attention
5 and if we can open it up to questions?

6 MR. LEAON: All right, thank you very much for that
7 presentation. Any blue cards in the room?

8 MR. ERDHEIM: Good afternoon. I'm Rick Erdheim with
9 Philips Electronics. The Department of Energy has proposed,
10 or at least has broken down battery chargers into 10
11 different categories, inductive and then 9, which I think
12 would be in the general category. So, would this system
13 work if we had 10 different categories, let's say, the one
14 you're proposing? Would that confuse consumers when they
15 look and they would see - they wouldn't know which product
16 went into which category?

17 MR. DELFORGE: In theory it would work, it means
18 that we will have to define criteria for each of these
19 different classes. Ideally, we would like to align, to
20 design the scheme so that it is simple and a fairly low
21 number of categories, and that's why we are trying to adapt
22 it to the California standard, would be ideal.

23 MR. ERDHEIM: But suppose the decision was made, the
24 CEC has not made even a proposal, suppose the CEC said, "We
25 need 10 different categories?"

1 MR. DELFORGE: So I think technically it could work.
2 The issue with the consumer recognition - this is not a
3 consumer - facing - it is not intended, it is not targeted
4 to consumers. I don't know anybody today who checks the
5 efficiency levels on their external power supplies. I think
6 it's really - what, Ken? So, I think it's really intended
7 for manufacturers to make it easy for them to request a
8 certain efficiency level to their component suppliers and
9 for regulators and industry to have the dialogue. I don't
10 think it's a consumer space. So, in that sense, I think it
11 would work within the high number.

12 MR. ERDHEIM: Okay, could you go back a slide or
13 two, another one? Yeah, that's the slide with the proposal?

14 MR. DELFORGE: Yes.

15 MR. ERDHEIM: So how did you have access to the
16 proposal, which was just put on the CEC site this morning?

17 MR. DELFORGE: Well, we've been involved in some
18 interactive discussions with PG&E. Again, this is
19 illustrative, it is not meant to be a standard. I did not
20 know until this morning whether it was the actual final
21 proposal, but you know, this is just an illustration of
22 saying what the California position of standards is going to
23 be -

24 MR. ERDHEIM: So you've been involved in developing
25 the proposal?

1 MR. DELFORGE: We've been involved in informing
2 discussion with PG&E.

3 MR. ERDHEIM: Okay, I just want to know who has been
4 involved because I know we haven't been involved, so I just
5 want to clarify who has been involved in this. Thanks.

6 MR. LEAON: Okay, do we have any additional blue
7 cards in the room? Yes.

8 MR. HABBEN: I guess, uh, this is Rick from Wahl
9 Clipper - one thing that, I guess, if we're going to have a
10 separate and new mark, one of the things that I think we
11 need to consider is that, if we have a battery charger which
12 currently has an energy efficiency EPS that's currently
13 being marked, it would be nice to have a mark that was
14 another one that you could use in combination with the
15 battery charger, so that you would know that it also met the
16 EPS efficiency level, along with the battery charger. And I
17 don't know how many battery chargers and EPS's that you've
18 looked at, but the smaller ones, there's not a lot of room
19 on the nameplates, and there's already a lot of approval
20 symbols on those, with the model numbers, with the output
21 and input ratings, so continuing to add more and complicated
22 marks, the real estate on those labels becomes ever
23 increasingly small. So, if there is going to be a separate
24 one, that'll need to be considered when you're looking at
25 this. And the other thing is, you know, I guess in the back

1 of my mind, if what you were saying earlier about the
2 consumers not really looking at the nameplate, then what's
3 the real purpose of having the mark on there to begin with
4 if the consumers aren't using the mark? I potentially
5 disagree with you in regards to the consumers using the
6 mark, but I guess I'd like to get your comment regarding the
7 purpose of the mark if the consumers aren't using it.

8 MR. DELFORGE: So, to your first question, I think
9 the mark is intended to go on the battery charger casing
10 itself, not on the external power supply. I know in some
11 cases it is different, we have to work out, you know, with
12 what Suzanne presented this morning in terms of the
13 different form factors, we'd have to work out exactly where
14 that would go. I don't have that, so I think it's one of
15 the things to work out, so that's a good question. On the
16 second one, so I don't have data on how many consumers are
17 actually aware of the mark and its meaning. I think it
18 could be interesting to look at it. I think the way, if we
19 look at why the EPS mark has been successful, we believe it
20 is because it has made it simpler for both industry and
21 regulators to have efficiency bands, rather than have
22 numbers which would be specific for each type. So I think
23 it's making it much simpler to manage. We believe that is
24 what is making the EPS successful and we believe we have the
25 same opportunity in this case.

1 MR. HABBEN: Okay. The other thing, if the PG&E
2 proposal is adopted close to what was proposed currently for
3 small battery charges, there was only going to be one level,
4 but I see you've already proposed four up here. So, if the
5 proposal was to go through, what mark would you guys be
6 proposing, that it would be marked at the BC2?

7 MR. DELFORGE: That's correct. So BC2 would be the
8 level adopted by CEC for California. BC1 would be anything
9 that is less efficient than that, so that if somebody wants
10 to - if a jurisdiction wants to require labeling without
11 requiring a minimum level, then it would be BC1 or BC2,
12 depending on the level of efficiency, and BC3 - this is just
13 to show - right now, it's not defined, it's just to show -
14 and to be leveraged by other programs for future and high
15 levels of efficiency.

16 MR. HABBEN: Okay. One other thing that I'd like
17 for people to consider is that maybe you can do it with the
18 mom and pop shops, but for mass retailers that have stores
19 in all 50 states, you know, if something like this is
20 implemented, it's almost impossible to control your
21 inventories so that the product that gets shipped to
22 California is different than the product that gets shipped
23 to Illinois. So I don't really see the need for the other
24 mark because, if you've got to comply with one state, with
25 the mass retailers effectively, you have to comply with them

1 all because the mass retailers aren't going to keep
2 different skews for different states. So, unfortunately, or
3 fortunately, however you want to look at it, you know, if
4 one state implements a particular requirement, more than
5 likely, you're going to be making it for most all the rest
6 of them.

7 MR. LEAON: All right, thank you. Do we have any
8 other blue cards? Any questions from the phone on this
9 topic?

10 MR. RIDER: The line is open.

11 MR. LEAON: Any questions from anyone on the phone?
12 Okay, thank you, Mr. Delforge and we'll proceed to our next
13 presentation. Randall Higa with Southern California Edison.

14 MR. HIGA: Hi, good afternoon. Thank you all for
15 hanging in there for the last presentation of the day. I
16 appreciate the time to make the presentation today. Mine is
17 going to be a little bit different in that it's not so much
18 a proposal, it's just sort of a status update of what's
19 going on with on-road battery chargers. My name is Randall
20 Higa, I manage the Codes and Standards Program for Southern
21 California Edison, and I am not the expert from Southern
22 California Edison to talk on this subject matter, so I've
23 been supplied the information and, if you guys have
24 questions that I can't answer, which I probably won't be
25 able to, we will certainly get them to the right people and

1 get back to you. So I'll get started here.

2 Southern California Edison has a electric vehicle
3 group that has been around for several years and they've
4 been doing a lot of research centered around efficiency on
5 both on-road and off-road vehicles. So, as Suzanne
6 mentioned previously, we're involved with some off-road
7 battery chargers, but we've also been working with on-road,
8 and so I just want to give you some status update of what's
9 been going on in the world of on-road battery chargers. And
10 frankly, as a result of that previous battery charger
11 rulemaking that the CEC was doing, that we're involved with,
12 the main automobile manufacturer -- automobile battery
13 charger and battery industry -- realized that there was an
14 interest in regulating and coming up with standards and
15 whatnot for on-road battery chargers. So, as a result of
16 what the CEC did, the automobile industry got together and
17 said, you know, maybe we ought to take a look at this,
18 ourselves. So the Society of Automotive Engineers decided
19 to come up or to start looking at power quality, which
20 includes efficiency. So, as you can see, there's two parts
21 to it, the first part one is the efficiency and power
22 quality regulations, and part two are the testing. And you
23 may ask, why is it backwards? Normally, there are test
24 standards, test protocols, whatnot, and then you set the
25 efficiency standards, and I can't exactly answer all of

1 that, other than to say that some of the testing is still in
2 progress and there are some very complicated aspects to it
3 that I'll get to in a little bit. So, let me start to tell
4 you how we're going to start to sort of begin this process.
5 So, first I wanted to just show you that EV standards have
6 been around for almost 100 years, at least, as witnessed by
7 this connector standard; it didn't have anything to do with
8 energy efficiency, but I thought it was a cool graphic, so I
9 had to show it to you.

10 So, a little bit of background since 1913. In 2009,
11 SAE wanted to look at both power quality and energy
12 efficiency, so that was what they wanted to do from the
13 outset. They put together a taskforce led by - again, this
14 is an industry organization, so a General Motors
15 representative, as well as one of our engineers from
16 Southern California Edison's EV Test Center, so the two of
17 them are co-chairing this, and are trying to get this done
18 as quickly as possible. And a further slide will give you
19 sort of a timeline of what they're looking at. So, SAE is
20 an ANC [ph.] organization, so their process for passing
21 standards and codes follows that. And, again, what they're
22 trying to do is develop standards which can be adopted by
23 the CEC, or whomever. So, that's sort of the intent of what
24 they're doing.

25 The scope of this will cover onboard, as well as

1 off-board chargers for all types of batteries, so the scope
2 is pretty wide. They're looking at anything on-road in
3 terms of technologies and configurations, and everything
4 else. And here is what they're proposing right now for the
5 efficiency standards. As Suzanne said before, I think the
6 highest power factor was 90 percent, again, as you get
7 larger, you can have a higher power factor, so up it's at
8 95. Let me say that the EPRI column there is sort of the -
9 I don't want to say "standard," it's sort of the legacy EPRI
10 -- sort of requirements that they've been looking at for a
11 number of years, so some of them are being matched, and most
12 of them we're trying to improve upon. So, you know, the big
13 one here is power transfer efficiency.

14 Now, you're asking yourself, why are we only looking
15 at power transfer efficiency? Basically, what we're looking
16 at is just on-peak - or, not on-peak - during the charge
17 cycle of what the efficiency of the charger is, we're not
18 looking at the energy in vs. energy output, nor are we
19 looking at return charge ratios or any of that yet. And the
20 reason for that is that, with a battery charger, it's not
21 like a conventional battery charger, when you plug your EV
22 in, you've got fans that kick on to cool the batteries, you
23 also have a lot of accessories that may be enabled during
24 the charge cycle. One of the features is that you can set
25 the air-conditioner to turn on, or keep the car at a certain

1 temperature so that when you come back to the car on a hot
2 day, the car will be cool, and because an EV doesn't rely on
3 an engine to operate the air-conditioner, it is all
4 electric-driven, you know, this stuff is not too difficult
5 to do. And as a convenience item, it makes a lot of sense
6 to do that. And, I don't know if you've ever been around a
7 Tesla charging, but it sounds like a hurricane. You've got
8 the fans going on the front end of the car, and the back of
9 the car, and I'm assuming one is a condenser fan and the
10 other one is cooling the batteries, but they're cycling on
11 and off continuously. And so the SAE is trying to figure
12 out how to separate the power that's going to these
13 auxiliaries vs. charging the battery, and trying to come up
14 with an appropriate metric. I mean, you know, if it's using
15 energy, we want to make sure that it's doing so efficiency,
16 but at the same time, you want to know how much of it is
17 being used to actually charge the battery in which you're
18 getting back out of the battery. So that's an issue.

19 Another thing I'll just mention is that most of the
20 off-road battery chargers, the large ones for forklifts and
21 the transportation things that go around the Airport, are
22 lead acid batteries, and the charges there are generally
23 pretty crude. If you remember from Suzanne's chart on the
24 different chemistries, you know, lead acids have a high
25 tolerance for overcharging, whereas the more advanced

1 batteries which are the EVs, the mostly lithium ion, have a
2 very low tolerance for over-charging. So the chargers, just
3 for the sake of battery longevity, are pretty good in terms
4 of the controls that cut off the current once the battery is
5 charged. It's a normal charger for EV for those types of
6 batteries, so are going to have a fair amount of technology
7 in them already that will make them energy efficient, so...

8 So, here is the status. Part 1 is currently in
9 ballot with the membership and they're expecting a public
10 release by November of this year. Part 2 is expected to be
11 in the early part of next year, and will be complete by the
12 end of next year. So it may be that we can start to do a
13 couple of things, one is to look at adopting it into Title
14 20, and secondly, also getting involved with some of the -
15 you know, after we get past the instantaneous sort of
16 efficiency, looking at more of a 24-hour, or more of an in
17 and out return ratio efficiency. So, those are sort of
18 possibilities for things coming up. And that's all I have.
19 And there's a *Nissan Leaf* in case anybody -

20 MR. LEAON: All right, thank you. Do we have any
21 blue cards in the room? All right, one in the back here.
22 Okay, Mr. Delforge, if you want to come up and make your
23 comments?

24 MR. DELFORGE: Thank you, Mr. Higa, for your
25 presentation. I have a couple of questions, the first one

1 probably for the CEC. I would like to know why the battery
2 chargers for EVs are not in scope for the battery charger
3 regulations which are being considered.

4 MR. LEAON: Let me have the staff come up to the
5 table.

6 MR. RIDER: To my knowledge, and, again, this is an
7 EV proposal, is the test method is yet to be developed. I
8 suppose, as Randall Higa, as he was just explaining, the
9 test method is not developed for these EV vehicles that have
10 all these extraneous things that are going on other than
11 charging the battery, for the fans and all these other
12 things. So it's my understanding that it's primarily a test
13 method issue and, secondarily, I would have to - Dennis Beck
14 left, unfortunately - oh, no, he's right there - I don't
15 know if there's a jurisdiction issue, as well, whether we
16 can cover that or not - oh, he's unsure. So, therefore, I'm
17 not sure.

18 MR. DELFORGE: All right, thank you for your answer.
19 I would just like to make the comment that our projections
20 show that there will be anywhere between 100,000 to 300,000
21 electric vehicles on the road by 2015 in California, which
22 is a very significant number, and that if we miss the boat,
23 if you want the window of opportunity including these type
24 of battery chargers in the current proceeding, then we may
25 miss a major source of efficiency opportunities. My second

1 question for Mr. Higa is, do you have any data on the
2 current level of efficiency of chargers today? I know we
3 only have a few vehicles on the road, but do you have that
4 data on the efficiency?

5 MR. HIGA: What I was told was that the EPRI - and,
6 again, we're just talking about sort of the instantaneous
7 charger efficiency - that 85 percent has generally been a de
8 facto standard that manufacture has been using, so I can't
9 say everybody is meeting that level, but at least that's
10 what people sort of - what I understand what they generally
11 designed for. And we could find out more if we had that
12 information. And again, these are mostly in the realm of
13 the lithium ion and probably nickel metal hydride chargers.

14 MR. DELFORGE: All right, thank you.

15 MR. LEAON: Any other questions in the room? Ken,
16 if you could open up the phone lines, we'll see if we have
17 any questions on the phone on this topic.

18 MR. RIDER: All right, the phone lines are open.

19 MR. LEAON: All right, do we have any questions on
20 the phone? Okay, all right, thank you, Mr. Higa, for your
21 presentation. That concludes the formal presentation phase
22 of the workshop. We do have time for open discussion now
23 and I'd like to pick up with a couple of blue cards from the
24 earlier presentation on the Case Report, and first up is
25 Rick Erdheim.

1 MR. ERDHEIM: Thanks, Mike, and good afternoon. A
2 procedural question, so I have a couple comments from the
3 blue cards this morning and then some additional comments I
4 wanted to make in the open period. Should I hold those off
5 at this point, and just do the comments from this morning?

6 MR. LEAON: I think we can cover both.

7 MR. ERDHEIM: All right, thanks. So, I want to
8 share the concerns raised by Rick Habben and Larry Albert
9 this morning about the duty cycles. Quite frankly, I was
10 confused in the discussion during the session and then
11 afterward as to whether there was actually any data that was
12 used by Ecos in the duty cycles. I would suggest that
13 common sense, alone, would provide a great deal of data.
14 Rick Habben used the example of a shaver, I'm sorry, of a
15 beard trimmer, that's something, a product I happen to have
16 a lot of experience with. I use my beard trimmer once a
17 week, I charge it, it lasts 13-14 trims, which means I
18 charge it once every three or four months, something like
19 that. It charges in four hours. If you do the
20 multiplication, it comes out to maybe 12 hours a year. But
21 let's say I forget the charger and let it go longer, so it's
22 maybe a day. So, the argument that we would include 365
23 days of charge for a beard trimmer wildly over-estimates the
24 savings that would be available. And I would suggest to you
25 that there are lots of products like that, portable DVDs

1 which we make, camcorders which we don't make, there's a
2 whole list of products. But I heard the statement, "Well,
3 we need data," so I would suggest that you look to the
4 Department of Energy Technical Report and the appendices
5 therein, which have usage data for virtually every product
6 that uses a battery charger, so the data does exist, or at
7 least the Department of Energy has made an estimate of the
8 data, and the statement that, "Well, we don't have the data,
9 or there isn't any data, therefore we didn't include the
10 data," is really not warranted. Now, I want to follow-up on
11 that because, in getting that data, the Department of Energy
12 worked with manufacturers; I know that we entered into an
13 agreement with the Department where we allowed our technical
14 experts to talk to Department contractors to get data that
15 was used in the technical report. And I have to just
16 confess to being somewhat surprised, and I guess I would say
17 even shocked, to hear that this report has been in the works
18 for five years, that people outside of Ecos and the PG&E
19 have seen the report, and yet the people who would be
20 affected by the report, the manufacturers, only saw the
21 report this morning when it was put on the website. And now
22 we're being told, "Well, you guys, you have three weeks to
23 comment." Now, I'll use the words "fundamentally unfair,"
24 and I'm sure Dennis will get very upset because that has
25 legal meaning, but it is fundamentally unfair that you have

1 something that you're working on, where there has been no
2 attempt to work with manufacturers, and then we're told,
3 "Well, take three weeks to comment on it." So, now I have
4 two questions for Suzanne. So, on the slide, I realize you
5 don't have the slides up, but on the slide that had the
6 inductive charge - and I appreciate the fact that you did
7 recognize that inductive charge products were different -
8 but on that slide, you said you had gotten feedback from
9 industry, so I'm wondering, when you say feedback, does that
10 mean industry supported the proposed limits? Or did you
11 show industry the proposed limits? Or -

12 MS. FOSTER PORTER: So, what I'm referencing is
13 conversations that my colleague, Dr. Paul Bendt, had with
14 Philips, and I don't know if that was you, in particular, or
15 someone else, regarding what was feasible for inductive
16 charging, and so the proposal was developed based on that
17 input. In addition, it's based on data that we have in our
18 dataset where we have measured an inductive charger used
19 with a toothbrush that uses .8 watts continuously, so the 1
20 watt proposal seemed reasonable based on the conversation
21 Dr. Bendt had, as well as the data site.

22 MR. ERDHEIM: I'm wondering, do you have any written
23 comments? Or this was just an oral conversation?

24 MS. FOSTER PORTER: We have documentation of the
25 conversation, I don't have that in front of me right now.

1 MR. ERDHEIM: Okay, that's fine. But Philips,
2 knowing Philips actually said, "Oh, this is fine?"

3 MS. FOSTER PORTER: No. The conversation was based
4 on a concern that Philips brought to us when they knew we
5 were looking at inductive charger standards, and so we
6 talked with them about what was feasible, and we didn't give
7 them the proposal at that time, the proposal was developed
8 later, but I wanted to acknowledge that we did have the
9 conversation with industry for this special case product
10 class.

11 MR. ERDHEIM: All right, and I appreciate that you
12 did that, I'm just not aware of the conversation and I'm not
13 sure that it's consistent with what I'm being told, so
14 that's the reason for my asking questions. On another
15 slide, you said that 42 percent of the products would comply
16 with the standards, but when you look at the Case Report,
17 zero percent of personal appliances would comply. So, I'm
18 wondering if what you did - let me rephrase that - in saying
19 42 percent complied, when I looked at it, it looked like
20 there were more higher end electronics that were the ones
21 that were complying.

22 MS. FOSTER PORTER: That's correct.

23 MR. ERDHEIM: So, now you've developed the standard
24 based on higher end electronics which are physically bigger,
25 which have more functionality, and probably higher priced,

1 and apply that to products that have less functionality, are
2 smaller, physically smaller, and have lower prices. Is that
3 correct?

4 MS. FOSTER PORTER: Let me modify that statement. I
5 think you're partially correct. So, the product categories
6 where we see very high compliance rates were those where the
7 market drivers are principally portability and, for large
8 chargers, efficiency. And so, the technologies that are
9 employed do come at an extra cost, and what we're suggesting
10 with the standards is that those same technologies which the
11 market has adopted for portability reasons could be adopted
12 by other products in the market that may be bigger or
13 smaller than those battery capacities, and the savings is
14 greater than incremental cost associated with that adoption.
15 So, yes, we are looking at technologies where portability
16 drives the market, where many component solutions are
17 available to meet compact, highly efficiency chargers, and
18 we're suggesting that that exact same technology be employed
19 in a wider array of chargers, where right now the price
20 drives the market instead of efficiency.

21 MR. ERDHEIM: So you're saying that all of the
22 technologies would be applicable to all of the products?

23 MS. FOSTER PORTER: No. I'm saying that there are
24 technology solutions found in high-tech products that can be
25 adopted by other products in the marketplace, and part of

1 the reason why the standard was set not at the highest
2 levels of efficiency of around 70 percent, but, rather,
3 closer to 40 on market average, is because we wanted to be
4 cautious about incremental cost equation, and that's why we
5 show payback periods in most cases of less than a year, but
6 certainly within the lifetime of products.

7 MR. ERDHEIM: Okay, thank you. So, let me just make
8 the general comments and then I'll let you move on to Wayne.
9 So, thank you very much for the workshop. Philips
10 Electronics has three major business lines, healthcare,
11 lighting and consumer lifestyle. And in all of those
12 business lines, we have products that use battery chargers
13 for lighting, we make emergency lights, and you've heard
14 something about that. In our healthcare sector, we use
15 portable oxygen tanks and nebulizers, and in our consumer
16 lifestyle, we have toothbrushes, shavers, trimmers, portable
17 DVD players, MP3 players, other portable consumer
18 electronics, battery chargers themselves, which charge
19 batteries, and baby monitors. And when you look, all of
20 those products are very different. You've even heard some
21 recognition, we have conductive has already been separated
22 out, we have various usage patterns where some products are
23 plugged in 100 percent of the time, some products are
24 plugged in for a particular period of time, and some
25 products are plugged in almost never. We also have

1 differences in cost and price, and we have differences in
2 the utility. Some may say, "Well, we really don't care that
3 much about personal appearance or entertainment products,"
4 but you might feel differently about products dealing with
5 safety such as Emergency lighting or baby monitors, or
6 health, dealing with portable oxygen tanks and toothbrushes.
7 And we only make a small subset of products using battery
8 chargers. And so I am stunned to see that we would have a
9 proposal that would have basically one standard for all
10 products, except for the Emergency lighting and for the
11 inductively charged products, that standard can't possibly
12 address all of the different factors. In fact, the
13 Department of Energy has put out a technical document that's
14 600 pages long, with hundreds of pages of appendices, they
15 spent a year working with manufacturers and others to
16 develop this document, and I'll tell you what I'll tell them
17 on Wednesday, I don't think they still accurately reflected
18 the marketplace. And as a result, I don't think they have
19 an accurate reading of what the potential energy savings are
20 and what the potential cost impacts are. California doesn't
21 have the resources of DOE, it hasn't put in the amount of
22 time that DOE has, and if DOE is not able to get it right, I
23 have severe doubts that the Department [sic] is going to be
24 able to get it right. And so we would oppose duplicating
25 the Department effort. The Department has every right to

1 participate, to want to effect the DOE process, you can do
2 that not through this process, but by participating in the
3 DOE rulemaking, you don't need this process, at least for
4 consumer products, and we would strongly urge the Commission
5 not to proceed with this rulemaking for consumer products.
6 I would note that DOE has proposed - and, again, we don't
7 know what they'll do, but they've got 10 different
8 categories and we don't even think that they got that right.
9 So, I don't see how one category or one with two special
10 cases can accurately reflect the savings that you would get
11 for particular products. Thanks.

12 MR. LEAON: Thank you very much, Mr. Erdheim. Wayne
13 Morris.

14 MR. BECK: Let me just say a couple things in
15 response to that. In terms of being upset, I never am upset
16 a day after the Oakland Raiders can actually manage to win a
17 football game. But, more importantly, more to the point, in
18 terms of the timeframe that stakeholders have to comment,
19 this is only the first of what will basically be three
20 opportunities for stakeholders to comment. There will be a
21 comment period that is, as we said, after this workshop,
22 there will be a comment period after the Committee workshop,
23 and, of course, once we issue what we call 45-day language
24 of the express terms as it is in the regulations, there will
25 be another 45-day comment period, so there will be multiple

1 opportunities to comment on the proposals as they move
2 forward.

3 MR. ERDHEIM: May I respond quickly?

4 MR. BECK: Sure.

5 MR. ERDHEIM: So, I thank you for that, I realize
6 there are other opportunities, my point is why didn't the
7 Department [sic] set up a process where they were working
8 with manufacturers from the beginning, rather than get into
9 this process where we comment on something that someone else
10 has done? I think that was a big mistake on the
11 Department's [sic] part, you may say it's legal, that's
12 fine, but I think it was a major mistake and, in fact, the
13 Department of Energy did the exact opposite, they worked
14 with manufacturers to try to get something right. It's not
15 a legal question, it's a policy question. And I think you
16 made a mistake, I think the staff made a mistake, in not
17 ordering PG&E to work with us. We're not saying, "Let's
18 have a meeting to talk about the details of this." Thank
19 you.

20 MR. BECK: But as you noted, of course, we cannot
21 order PG&E to go in and collaborate or have others to go and
22 collaborate. We are getting this and we're following the
23 process that we've used for multiple decades to set
24 standards on a variety of different products, and obviously
25 we're not going to come to an agreement on this, so there is

1 probably not a need to have too much back and forth on this,
2 but, again, this is a process that we have utilized very
3 successfully in the 30 plus years or whatever it is that the
4 Commission has been setting standards.

5 MR. ERDHEIM: I agree we won't go back and forth, so
6 let me make one final comment. I don't think you've ever
7 had a rulemaking where you've dealt with so many different
8 categories of products. You might have dealt with
9 televisions, you might have dealt with refrigerators, but
10 they're all one product; this is an inherently unique
11 rulemaking, and I think you made a major mistake moving
12 forward like this. Thank you.

13 MR. RIDER: This is Ken Rider. I would just like to
14 clarify something that maybe I think is my fault in the
15 presentation I gave. I was trying to explain as part of the
16 rulemaking history, as a result of passing the 2008
17 rulemaking standards, there was a very open request to
18 manufacturers and, in fact, I think it was on efficiency
19 products, that a general data sheet was put up there for
20 manufacturers to give input from testing of their products,
21 to give feedback. It went way beyond the metrics that we're
22 talking today, it included all sorts of measurements, so
23 just a clarification on what I was saying within my
24 presentation. I want to make it clear that I didn't go into
25 that level of detail, but that's what I intended to present

1 when I discussed the events that occurred after the 2008
2 rulemaking to develop the test procedure.

3 MS. FOSTER PORTER: Suzanne Porter from Ecos. I
4 just wanted to respond to the comment associated with
5 whether or not the Energy Commission had ever adopted a
6 standard that addressed so many different categories of
7 products and, in fact, they have within the external power
8 supply standard probably touched more different product
9 types than what we're doing with battery chargers, and it's
10 a fundamental approach to this standard as a horizontal
11 policy approach to look at components of a variety of
12 products that may necessarily touch tens of - if not
13 hundreds of different product types, just the nature of this
14 horizontal approach to improve plug loads.

15 MR. LEAON: Okay, Mr. Morris.

16 MR. MORRIS: Thank you, Mike. Wayne Morris with the
17 Association of Home Appliance Manufacturers. I had a couple
18 of questions for Suzanne and then a couple of comments that
19 I'd like to make. Suzanne, if I could, a lot of the
20 comparisons that you gave of the different types of products
21 within your presentation, how does the proposal for the
22 actual standards, for the general type of battery chargers,
23 compare to the Candidate Standard Levels that the Department
24 of Energy has in their TSD - I am sorry - Technical Support
25 Document.

1 MS. FOSTER PORTER: It's a little difficult to say,
2 in part because this was developed independently before DOE
3 released its Technical Support Document on the 15th of last
4 month, this had already been in development. So I don't
5 want to answer definitively about the comparison. What I
6 can say is, we focused on what I would call market
7 transferable technologies that looked at technologies that
8 exist in one part of battery chargers, but not in other
9 segments because of price pressures.

10 MR. MORRIS: I noticed that in the Technical Support
11 Document they noted that, although PG&E and Ecos had
12 contacted them and asked for a number of levels of
13 efficiency, that the Department responded that, in many
14 cases, those types of technologies were not readily
15 available, were, in fact, much higher priced, in order to
16 accommodate them into the exact configuration of a battery
17 charger for a general product. And so I'm curious whether
18 the proposal that PG&E and Ecos had made to the Department
19 of Energy, in response to the last workshop, is similar to
20 the response or the proposal that you've got now.

21 MS. FOSTER PORTER: This proposal - and I have not
22 reviewed the section that you're talking about, so I can't
23 respond to it directly - but the proposal that we put in
24 front of the U.S. Department of Energy is very similar to
25 this approach.

1 MR. MORRIS: Okay, so then, my own personal feeling
2 would be, then, that the Department of Energy's response to
3 the Commission would be that many of these types of
4 technologies are not transferable to a broad array of types
5 of battery chargers, or would come at a significant cost
6 increase, and that's what it seems to say from the TSD, and
7 I'll be glad to get you the citation in the exact section.
8 I guess I'm also curious about the cost numbers that you
9 were showing for this type of a technology transfer. The
10 Department of Energy has a fairly extensive amount of
11 appendix work in their TSD, in which they go through how you
12 go from a cost increase of an individual technology all the
13 way upward through the supply chain, because they recognize
14 in a battery charger, you're dealing with multiple levels in
15 the supply chain. You're dealing with the actual
16 manufacturer of the product, who buys the IC or the chip, or
17 whatever, and then they sell it to an OEM, who then sells it
18 to a retailer, who then sells it to a consumer, and there's
19 a - they call it, not my words - they call it a mark-up at
20 each phase. And I'm wondering if you used the same kind of
21 mark-up trend that DOE used?

22 MS. FOSTER PORTER: I can't say in the DOE document
23 whether or not we used the exact numbers, but we did use
24 mark-ups.

25 MR. MORRIS: And so I guess my comment, then, to the

1 Commission would be that we be very careful about that, that
2 if they spent, as Rick said, over a year, and probably close
3 to a million dollars in developing this document - and, by
4 the way, this is only half of the document, I only printed
5 up the regular section and not the appendices, I put them on
6 my computer, I figured I'd killed enough trees as it is
7 trying to do this one - but the difficulty then being that,
8 whatever mark-up situation that we use for looking at price
9 increases, we ought to be using the same. I mean, I know
10 that they didn't come out with theirs until probably
11 significantly after Ecos had done their proposal, but I
12 think that, when you redo it, which I understand you're
13 going to for the actual staff report and all, I think it
14 would be helpful if Ecos and PG&E did the same markups,
15 significant, so that we're on equal footing, so that we can
16 talk apples to apples on this situation. I was wondering,
17 also, and maybe Rick touched on this just a little bit, but
18 it seemed that, when you were looking at the products sort
19 of above and beyond the bar line, or above and below the bar
20 line, that there were a significant number of these that
21 seemed to discount out, or make it very difficult to find
22 nickel cadmium battery chargers, which, because of a number
23 of very attractive characteristics of the product, tend to
24 be the ones used in a large number of smaller, lesser priced
25 consumer products. You know, it's one thing to make a

1 battery rechargeable product for a \$500 iPod or a \$2,000
2 laptop, but it's another thing to try to do it for a \$29
3 rechargeable vacuum cleaner where the consumer can't exactly
4 pay the kind of price increases for a nickel metal hydride,
5 or, in some cases, even lithium. So, I was wondering, the
6 cutoff seems to, if you will, almost eliminate nickel
7 cadmium battery chargers. Was that sort of one of the
8 situations that was used to draw the lines?

9 MS. FOSTER PORTER: We purposefully drew the levels
10 such that all chemistries could pass. The principle driver,
11 as I mentioned before, of why NiCd efficiencies tend to be
12 lower than others are price, and there are ways that you can
13 charge a nickel cadmium battery that are - that are tailored
14 to the chemistry and are cost-effective. Simple ways to do
15 that are to lower battery maintenance in no battery mode
16 powers by having a low power circuit, and a standby circuit.

17 MR. MORRIS: Uh huh.

18 MS. FOSTER PORTER: Other ways include shutting off
19 the charger when the battery is fully charged, so those are
20 two very low cost ways to meet the standards. And NiCd
21 chargers can do that just as easily as other chargers. It's
22 just true in the market that they don't typically do it
23 today because there's a split incentive where, you know, the
24 manufacturers are trying to provide a low cost product and
25 the ratepayers of California are paying for the extra energy

1 use associated with that initial low cost.

2 MR. MORRIS: Okay. And I was just wondering whether
3 you looked at any issues that may occur with some of those
4 technologies having to do with IP or Intellectual Property?

5 MS. FOSTER PORTER: Most of the solutions that we
6 looked at were not intellectual property. I mean, these are
7 widely available components that can be purchased at a
8 relatively low cost.

9 MR. MORRIS: Okay.

10 MS. FOSTER PORTER: So, we're not trying to push to
11 max technology, like I said before, that's a much higher
12 level than what we're proposing. So those issues don't tend
13 to come up.

14 MR. MORRIS: Right, I did catch that, thank you. I
15 appreciate that. Thanks, Suzanne, that's all the questions
16 I had for you. I just would like to make a couple of just
17 general comments for the record, and appreciate the fact
18 that the Commission has had this hearing and allowed us to
19 work with the staff on this situation. I would reiterate
20 that, Ken, appreciate the fact that you said that Ecos has
21 had sort of an open call for data. The problem with that
22 comes from manufacturers, is that the difficulty of
23 divulging data to an individual outside of a governmental
24 authority is very difficult for most manufacturers, and
25 while an open call situation for data is a very nice thing,

1 if the Commission staff at any time would like to have data,
2 they can call me, I think they know - probably Ken, you've
3 probably got me on speed dial by now - and I would imagine
4 that any time you would like to have data from our
5 particular manufacturers on the consumer products, you know,
6 all you have to do is ask. That's not a guarantee that we
7 would supply it, I would have to check with my member
8 companies, of course, but you know, we would definitely
9 entertain that as a serious situation and we would try to
10 work with the Commission as we have worked with the
11 Department of Energy and other individuals on this type of
12 situation. I think it is important that, as Rick said, that
13 we not try to reinvent the wheel here on a lot of this
14 information. I am cognizant of the resource situation, that
15 the California Energy Commission and all agencies within the
16 State Government have right now with budgets, with time,
17 with furloughs of staff and other things, that we need to be
18 spending your time, particularly, I would think, the
19 citizens would want to be spending your time in the best way
20 possible. And while I do understand there is energy to be
21 had here, I think it's also important to recognize that
22 manufacturers do need lead time in order to re-manufacture.
23 I do understand that when someone says that external power
24 supplies are available on the market. And as we have
25 testified in this very room on several occasions, and I

1 think you can look back in transcripts and find it, I've
2 stood here at this microphone and asked the Commissioners to
3 consider that an external power supply and a battery charger
4 are two different things. An external power supply is, as
5 has been stated here by a number of individuals, rather a
6 commodity item. You basically can, as a manufacturer of
7 fax machine or a set of computer speakers, you can go to
8 open a catalogue and you can look at the requirements that
9 you may have for that type of thing, and you can order one
10 that fits your needs from one of the manufacturers, one of
11 the larger manufacturers; that is not true with battery
12 chargers. Battery chargers have very inherent and specific
13 needs associated with the design, and so it has to be
14 designed to fit the special case of what that battery is in
15 terms of the battery chemistry, in terms of the usage
16 patterns that the consumer is going to see, the charge rates
17 that the consumer is expecting to see charged, the lifespan
18 of the product involved, the price point the product needs
19 to meet in order to satisfy the consumer demands, and a
20 number of other factors associated with how the product is
21 used and designed. And so, consequently, it's not a
22 commodity item, and consequently, if the agency were to put
23 forward a change to a regulation, it would take
24 manufacturers a significant amount of time to redesign that
25 battery charger. I appreciate - Suzanne says there are

1 these available technologies, and there probably are, but to
2 fit them, to form fit them to a specific application such as
3 a cordless rechargeable vacuum cleaner, or an electric
4 shaver or something, is going to take hundreds and hundreds
5 of man hours of design time on the part of the
6 manufacturers. I would say that, at the very least, we
7 would be looking at two to two and a half years for redesign
8 time within the industry in order to meet such a
9 requirement. I certainly would - I would like to survey the
10 industry and we will put that into our written comments, but
11 I would say the one-year period of time that has been
12 suggested here is absolutely not enough for our industry to
13 respond to the situation. We are, after all, in the middle
14 of an economic recession. Our industry has been extremely
15 extremely hard hit by this recession. Many of our
16 manufacturers have had significant layoffs of staff, many of
17 them are down in their engineering staff, the actual
18 viability of many of these companies is in question. And to
19 put millions of dollars into the retooling and into
20 redesigning these products, coming on the hardship of the
21 economic recession that we're under, would cause a situation
22 that I know the Commission would not like to see, and that
23 is a reduction in the number of products on the marketplace,
24 a reduction in the survivability of companies that are able
25 to meet this type of situation. I would also ask the staff

1 that, as they are considering the cost side of this
2 situation, to not forget that the cost of the actual
3 redesign of the companies, that is, the engineering hours
4 that have to be put forward into the situation, as well as
5 the capital costs - Rick alluded to this in terms of
6 remanufacturing molds - molds depend upon volume, for some
7 high volume products, molds can cost in some cases upwards
8 of hundreds of thousands of dollars, that's a significant
9 capital cost that manufacturers would have to put into place
10 in order to meet these new requirements, as Rick Habben
11 pointed out. The products will likely grow in their size,
12 that will also grow packaging, which will then mean that
13 fewer products go onto trucks, which means that, then,
14 transportation per mile per product is a higher cost, so you
15 end up with a trade-off situation here. Now, I'm not trying
16 to suggest that the trade-off is maybe 1:1, but it needs to
17 be factored in if you're looking at the overall
18 sustainability of the product. I would also mention that
19 any one of these changes will require manufacturers to take
20 everyone of these designs back through the testing
21 organizations. You know, it's fine for an EPS manufacturer
22 to take his product to the testing organization, they can
23 very often do it as a family listing, so they can go to, for
24 instance, Underwriters Laboratories or Inter-Technical or
25 CSA, to get a safety listing for their product; they can do

1 so in a family arrangement from X number of watts to X
2 number of watts, and they can vary that in between,
3 accordingly. They very often will do a high and a low and a
4 medium. With battery chargers, it's different. Every
5 individual battery charger will have to be tested by the
6 safety agencies individually according to its individual
7 needs, which means every one of these new designs, hundreds
8 and hundreds of them, as the Department of Energy has put
9 forward in the TSD, will have to have safety certification.
10 Those safety certification costs are fairly significant.
11 They can range anywhere from \$20,000 to \$50,000 per product,
12 they are unique to every individual model, and I would ask
13 that, as the staff considers the cost increases, that they
14 would allow for the cost of the testing safety
15 certification, as well. Not to mention the fact that the
16 Department of Energy and probably California will require
17 outside third-party certification for the energy efficiency
18 of the product, which is another cost on top of this. So,
19 it's very important that the cost is not just the cost of an
20 IC chip, it's not the cost of going and getting a timer chip
21 and putting in the product, it is a much larger cost
22 associated with this situation. And I don't want to
23 minimize that at all and want to make sure that whatever we
24 do, we don't lose track of the situation here. We'd
25 certainly like to work with the Commission, we have worked

1 with them before on a lot of energy efficiency standards.
2 I've certainly been here to California now for almost 15
3 years working on various energy efficiency requirements. I
4 would mention that the statement was made earlier that it's
5 difficult to have workshops in which you involve industry;
6 I've not found that to be the case with the Commission over
7 the years, my experience with the Commission is that, when
8 the Commission wants to have a workshop and invite industry
9 in - in the very very early stages - they've always been
10 open to doing that type of thing. It seems that, in the
11 last few years, it's become a new situation where some of
12 the outside parties are making, if you will, sort of blind
13 presentations to the Commission without involving industry,
14 that we have this antagonistic or adversarial relationship,
15 and I don't think that necessarily has to happen. I know
16 that there were a number of workshops that were held with
17 the external power supply rulemaking in the very very early
18 stages, in which industry was invited in to comment on
19 technical issues, and that wasn't done on this case, and I
20 find that to be a bit surprising. And I'm certainly hoping
21 that, as we move forward, that type of situation is not one
22 that would continue. We've always had a very good
23 relationship with the staff at the Commission, they
24 certainly know how to reach us, now, I recognize that we
25 only represent one small segment of the battery charger

1 industry. The Department of Energy, I believe, alludes in
2 the TSD to about 35 different trade associations that
3 represent manufacturers of battery charging products. I'm
4 hoping that they are aware of what's going on through this
5 rulemaking. I'm rather surprised not to see a large number
6 of those other trade associations here. Maybe they're
7 represented on the telephone, I would certainly hope so.
8 But I think it's important that we reach out and make sure
9 that we have all the stakeholders involved. I know the
10 Commission has done a great job of that in the past and we
11 hope that they continue in the future. Thanks very much.

12 MR. LEAON: Thank you very much, Mr. Morris, for
13 those thoughtful comments. Do we have any other blue cards
14 in the room? Okay. All right, the first blue card is from
15 Joanna Mauer.

16 MS. MAUER: Thank you, I'm Joanna Mauer with the
17 Appliance Standards Awareness Project, and we just want to
18 express our support for the CEC conducting this rulemaking
19 and we think that it's important, even though DOE is
20 concurrently conducting a rulemaking that will eventually
21 establish Federal standards for battery chargers. And I
22 just wanted to briefly emphasize three points that I believe
23 have already been made today regarding the significance of
24 the CEC rulemaking in the context of the Federal rulemaking.
25 The first is that this rulemaking does include a broader

1 scope of coverage than the DOE rulemaking, in that it covers
2 battery chargers for both consumer and non-consumer
3 products, whereas the DOE rulemaking is only addressing
4 battery chargers for consumer products. And this means that
5 this rulemaking has the potential to achieve significant
6 additional energy savings for California beyond what the DOE
7 rulemaking will be able to achieve, due to the broader scope
8 of coverage. The second is that the strong CEC standard
9 that results in significant cost-effective energy savings
10 can influence the outcome of the DOE rulemaking and the
11 eventual Federal standards, and we hope that the CEC
12 rulemaking could at least set a floor for eventual Federal
13 standards. And the third is that these potential standards
14 that the CEC is considering would like go into effect about
15 a year earlier than the Federal standard, which would mean
16 that California would accrue an additional year of savings,
17 and given the potential impact of the California standards
18 on the national market, could yield additional savings on a
19 national level, as well. And while this would only be one
20 year of additional savings, it could be significant due to
21 the high annual sales volumes of these products that we're
22 examining. Thank you very much for the opportunity to
23 comment.

24 MR. LEAON: All right, thank you very much. The
25 next blue card is from Larry Albert.

1 MR. ALBERT: Thank you. Larry Albert from
2 Stanley/Black & Decker, representing the Power Tool
3 Institute. The first question are basically staff
4 questions, I think, and they relate a little bit to
5 confirming the schedule. As I understand it, the comments -
6 again, this is a PG&E proposal to the CEC. Is that correct?

7 MR. LEAON: That is correct.

8 MR. ALBERT: All right, so the CEC is not making a
9 proposal at this time, that will not be made until November
10 15th?

11 MR. LEAON: On November 18th, we'll have the
12 Efficiency Committee meeting with both Commissioner Eggert
13 and Commissioner Byron in attendance, and the focus of that
14 meeting will be a staff proposal based on PG&E's proposal
15 and the feedback we receive from industry and other
16 stakeholders in regard to that proposal.

17 MR. ALBERT: So you know this is a PG&E proposal
18 because there are no other proposals before the CEC staff
19 for consideration, it is essentially a CEC proposal?

20 MR. LEAON: No, it is a PG&E proposal. But, as you
21 say, there are currently no other proposals before the
22 Commission, but we are seeking input and feedback in regard
23 to the proposal, and we are going to shape any
24 recommendations that we bring forward to the Efficiency
25 Committee.

1 MR. ALBERT: So any stakeholder could make a
2 proposal and that the CEC would consider it on an equal
3 basis to that proposed by the PG&E proposal?

4 MR. LEAON: Well, I think it would have to be
5 supported by the necessary research and documentation that
6 would support it. Obviously, there has been a lot of effort
7 put into PG&E's proposal going into the committee workshop.

8 MR. ALBERT: So the public and stakeholders would
9 become aware of the staff proposal on November 18th? Or did
10 you mention that there was a release on November 15th?

11 MR. LEAON: We will release the staff report prior
12 to the committee workshop on the 18th. I would like to have
13 that available a week ahead of time, that is our goal.

14 MR. ALBERT: That would be preferable to this
15 situation. So, one of the questions is that, the comments
16 that are due back on October 29th, are they due back to the
17 CEC or back to PG&E?

18 MR. LEAON: I'm so sorry, back to staff - back to
19 CEC staff.

20 MR. ALBERT: Okay, on PG&E's proposal?

21 MR. LEAON: Yes, comments on their proposal and any
22 other feedback that you would like to provide.

23 MR. ALBERT: Has the CEC had an open call for
24 proposals with respect to Energy Efficiency Battery
25 Chargers? Or was PG&E the only entity that was contacted?

1 MR. LEAON: Well, to my knowledge, PG&E and the
2 other utilities, you know, worked on this proposal. As to
3 other entities, whether an industry or an environmental
4 group, I'm not aware that any proposal was solicited
5 specifically.

6 MR. ALBERT: But there were no open call for
7 proposals that any entity could have proposed comparable to
8 the one that PG&E did? I mean, it was not restriction on
9 who could have done it and it was made - the public was made
10 aware of the fact that the CEC was seeking proposals for
11 regulatory schemes for battery chargers?

12 MR. RIDER: If you don't mind, Mike, maybe I can
13 speak to this.

14 MR. LEAON: Yes, go ahead.

15 MR. RIDER: Mike is relatively new to the Appliance
16 Efficiency Program. In 2007, we had a Scoping workshop
17 where we did solicit very openly various proposals. The
18 only proposal we received was for a test methodology from,
19 again, PG&E at that time. We decided we needed to figure
20 out how we would test these before we figured out how we
21 would regulate them, so, as a result from the 2007 Scoping
22 workshop, we received a proposal -- and that was open to
23 everyone -- we received a proposal for a test methodology,
24 and PG&E was behind that proposal, and has followed-up now
25 with a regulatory proposal. So, it's never been shut, the

1 timing - it's been a while since that 2007 open
2 solicitation, but, you know, public feedback, you're not
3 restricted in any way in how you provide feedback on this
4 process, and everything you give us will inform the staff
5 report and we'll consider that in the staff report. But I
6 just wanted to go back, that 2007 was really when we openly
7 asked for it. And, again, maybe that's the fault in my
8 history presentation, but I will emphasize it.

9 MR. ALBERT: While you're up there, past November
10 18th, you went through the schedule, but could you just
11 repeat that for -

12 MR. RIDER: Yeah, let me just go ahead and pull up
13 that slide real quick. So, yeah, we have the staff report
14 on the due date of November 15th, November 18th is the
15 workshop, and then after that it's really an undisclosed
16 amount of time because, again, we're going to solicit
17 feedback. Depending on where we think we are with the
18 proposal, if we think we've got a good thing, a decent
19 proposal, I think we're looking at a rulemaking in December.
20 Again, that is a tentative date, it depends on the feedback
21 that we gain from today and from post that committee
22 workshop.

23 MR. ALBERT: So, presumably, 45 days after whatever
24 time in November you issue your rule, proposed rule, would
25 become the final rule, then manufacturers would have a year

1 to comply?

2 MR. RIDER: It could be. There is even within this
3 process, so you have 45 days to submit comment on the final
4 rule. At that point, you can disagree with what we've
5 proposed, and if it is a very legitimate concern or you
6 point out an obvious mistake, perhaps, that we made, then we
7 have the option of not making that the final rule and we can
8 reissue yet another proposed rule. But, in this formal
9 rulemaking process, it's very rigid, we have to follow very
10 strict guidelines. For instance, if you submit a comment
11 after the 45-day period, it's questionable whether we can
12 consider it or not, and so we prefer - the reason we do
13 these workshops, like the one we have today, is to get the
14 feedback earlier, sooner rather than later. I think that's
15 consistent with what industry has said. We want to involve
16 you guys sooner rather than later.

17 MR. ALBERT: Right, and again, I hate to bring up a
18 subject again, but the failure to provide advance notice
19 with respect to the agenda, with respect to content, was a
20 serious obstacle in the way of responsible stakeholder
21 involvement which is, I think, what the Commissioner
22 mentioned was one of the objectives. Thank you. I have a
23 question on the specific proposal with respect to the
24 payback analysis -

25 MR. SINGH: Hang on, Larry. This is Harinder Singh.

1 You know, one of the things is that our process is open and
2 it's not only the November 18th, but any time you can set up
3 a meeting with us, and we are always open to comments, any
4 discussions, so whenever you have time, tell us, we will be
5 available to you and any of the industries who wants to
6 discuss any standards or any issues with us. I just wanted
7 to mention that. Thank you.

8 MR. ALBERT: Thank you, Harry. I want to point out
9 to you, just to follow along with what Wayne said earlier
10 about past work that we've done specifically with you on the
11 test procedure, it was very productive, it was very
12 transparent, it was very collaborative, right? The tone
13 that was set at the beginning of the hearing today with
14 respect to the unavailability of materials set the stage for
15 a much more strained relationship, right? And I hope this
16 is an aberration in the overall relationship that the
17 Commission has with manufacturers going forward.

18 MR. SINGH: Thank you.

19 MR. LEAON: This is Mike. Let me just respond to
20 that briefly. Yes, this workshop today was originally
21 scheduled to be the Committee Workshop, but in looking at
22 the proposal and the amount of information that was
23 contained in the proposal, we decided that it would better
24 serve the stakeholders to make this a staff workshop so we
25 could facilitate input on what we were considering prior to

1 taking that to the efficiency committee meeting, so we made
2 an effort to include an additional workshop into the
3 process, in order to better engage industry and other
4 stakeholders in the process, and your point about the
5 materials not being available ahead of time, that, I think,
6 is an aberration, that is not something that - that's not
7 how we want to conduct business. And I don't think we'll
8 see a reoccurrence of that particular challenge, and I
9 recognize it was a challenge, and it would have been more
10 productive to have had those materials ahead of time. But
11 our objective in making this a staff workshop today was to
12 provide additional opportunity to comment and additional
13 time to look at what was being proposed.

14 MR. ALBERT: A question for, I think, Suzanne
15 regarding the proposal. Again, to follow-on with a couple
16 comments I made earlier with respect to the DOE TSD, did you
17 compare the payback analysis using the PG&E proposal, your
18 proposal, with that, which would be achievable employing the
19 regulatory methods that were addressed in the TSD?

20 MS. FOSTER PORTER: We have not had the availability
21 to do an analysis comparing our proposal to the DOE
22 proposal.

23 MR. ALBERT: If the DOE proposal were to prove to be
24 as effective, or more effective, why would that not be a
25 candidate proposal instead of the PG&E proposal?

1 MS. FOSTER PORTER: We developed an independent
2 proposal ahead of U.S. Department of Energy, which we've had
3 - we've been working on for some time, so I would just say
4 this is the proposal that we developed based on our
5 research, which is different from DOE's proposal.

6 MR. ALBERT: Then I guess it's really a Commission
7 question, a staff question. If the Commission does an
8 analysis of the DOE TSD and finds that that regulatory
9 direction would prove to be more effective with respect to
10 payback, all right, would it not consider that as an
11 alternative to PG&E?

12 MR. LEAON: Well, I think some of our objectives
13 have been - we've stated earlier today, and that is to
14 realize the efficiency savings that could accrue to
15 California before the Federal DOE standards take effect. On
16 the question of whether they're more effective, should we
17 reach that conclusion, then I think that is something we
18 would have to look at closely in regard to what we're
19 proposing to do. But I think we also want to recognize the
20 amount of work that has gone into developing the PG&E
21 proposal, as well, and following up to our work on the
22 testing procedure, and this rulemaking flows out of that
23 process, and, again, another objective is to influence any
24 Federal standards based on the work that we've performed.

25 MR. ALBERT: Thank you for your response.

1 MR. LEAON: Thank you. Do we have anymore blue
2 cards in the room? Yes, please come on up.

3 MR. HABBEN: This is Rick Habben from Wahl Clipper.
4 I have, really, it's just one comment here that I wanted to
5 bring up, and kind of going back to the issue that Suzanne
6 was talking about, about the technology that exists for the
7 products that are lower end, that do not have the circuitry
8 in them to meet the existing requirements, and I guess where
9 I'm coming at with our particular company and our products
10 is - there are two issues - one is, I have products, I
11 think, that are going to be very close to meeting the energy
12 efficiency in the active mode and the standby mode,
13 according to your requirements, I'll have to do testing, but
14 just looking at the overall numbers, I think it's going to
15 be close. But, regarding the maintenance mode of setting it
16 at .5 watts for your maintenance is going to be extremely
17 difficult to meet with the lower end, lower cost products.
18 And I've already stated, and I don't want to belabor the
19 issue, regarding the additional cost and the real estate of
20 putting that into existing products, but there's one other
21 issue and item that I didn't think about, and that is, with
22 our beard and mustache trimmers, in order to meet the lower
23 price points to give all consumers opportunity to have these
24 products, and the affordability, many of these products are
25 made with one battery in them, and it's either, in some

1 cases, the nickel metal hydride, or a NiCd battery. That
2 battery voltage is 1.2 to 1.5 volts, typically 1.35 for both
3 of those. Your IC circuits, in order to run in the power -
4 and correct me if I'm wrong, Suzanne - but normally it's
5 above that type of level. So right now, I have battery
6 chargers that are producing about 1.5 volts and 150 amps.
7 In order to use these new circuits with the cutoff, I'm
8 going to obtain a charger that's going to be up around 3 to
9 5 volts to run the IC circuits. So, now I'm buying a
10 charger that's actually going to produce more voltage and
11 potentially have more waste because I have to run the
12 circuit. That's on top of the additional cost of the
13 circuit and the real estate of where to put it in existing
14 products. So, I guess I say all that to say that, you know,
15 I believe this proposal, we really need to think about what
16 we're doing to these low end products with this proposal,
17 and the cost, and the energy efficiency -- the entire
18 efficiency -- on the end products.

19 MR. LEAON: Okay, thank you for those comments. Any
20 other comments in the room? Ken, if you could open the
21 phone lines and see if we have any comments on the phone?

22 MR. RIDER: All right, the lines are open.

23 MR. LEAON: Any comments from anyone on the phone?

24 MR. RIDER: Only crickets.

25 MR. LEAON: Okay. Last call for comments on the

1 phone. All right, okay, well, that concludes our workshop.
2 I want to thank our presenters today. I thought we had some
3 very informative presentations and, in particular, I want to
4 thank our PG&E representatives for presenting the Case
5 Report today; obviously, that was the focus of the workshop.
6 And I encourage stakeholders to submit written comments.
7 And in regard to any specific technical comments, if you can
8 support those with data, we would find that most helpful. I
9 certainly heard your concerns about process and the process
10 evolved here, and I recognize it's a very aggressive
11 timeline before we get to the November 18th Committee
12 meeting. I will be briefing the Efficiency Committee on the
13 results of the workshop today, and I will certainly share
14 your concerns and also characterize the type of feedback we
15 have received today. And, again, I want to thank all the
16 stakeholders for your valuable comments and insight, which
17 will help us in developing the Staff Report regarding the
18 proposal presented by PG&E. And, again, I urge you to
19 submit written comments, and I believe the deadline for that
20 was October 29th -

21 MR. RIDER: The 29th.

22 MR. LEAON: -- yes, thank you. And that wraps up
23 our workshop. Thank you for your participation.

24 MR. RIDER: Just one more thing. I would really
25 strongly encourage, if you're not part of the Listserv that

1 you join the Listserv. I can give details to anyone who is
2 interested afterwards. For instance, when we post these
3 presentations, if we post these presentations, which I think
4 we are -

5 MR. LEAON: Yes, we will be posting the
6 presentations.

7 MR. RIDER: -- all right, then you'll get an e-mail
8 letting you know that has been added to the docket. And, in
9 addition, breaking news, there is a website somewhere - and
10 I can get you guys the link - where all this information
11 already appears, the agenda, the notice, and the PG&E's case
12 study. And I can give you that website afterwards, too,
13 because I'm not sure what it is yet. But I saw it online,
14 so it's good to go. And eventually all of your comments, if
15 you choose to docket them, will appear there, as well.

16 MR. LEAON: All right, thank you everyone for your
17 participation today. The workshop is adjourned.

18 [Adjourned at 3:12 P.M.]

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